MAINE FIRE PROTECTION SYSTEMS

Water-Based Sprinkler System

Product Submittal

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CUT SHEETS

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

General Description

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

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following,

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

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

IMPORTANT

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

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

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

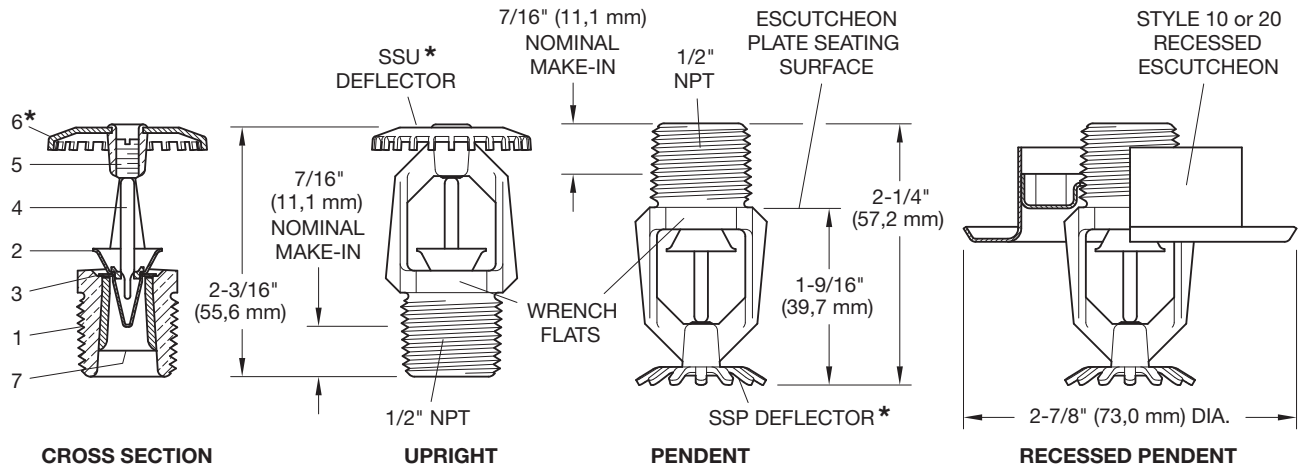
The Series TY-FRB Concealed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

Model/Sprinkler Identification Number (SIN)

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

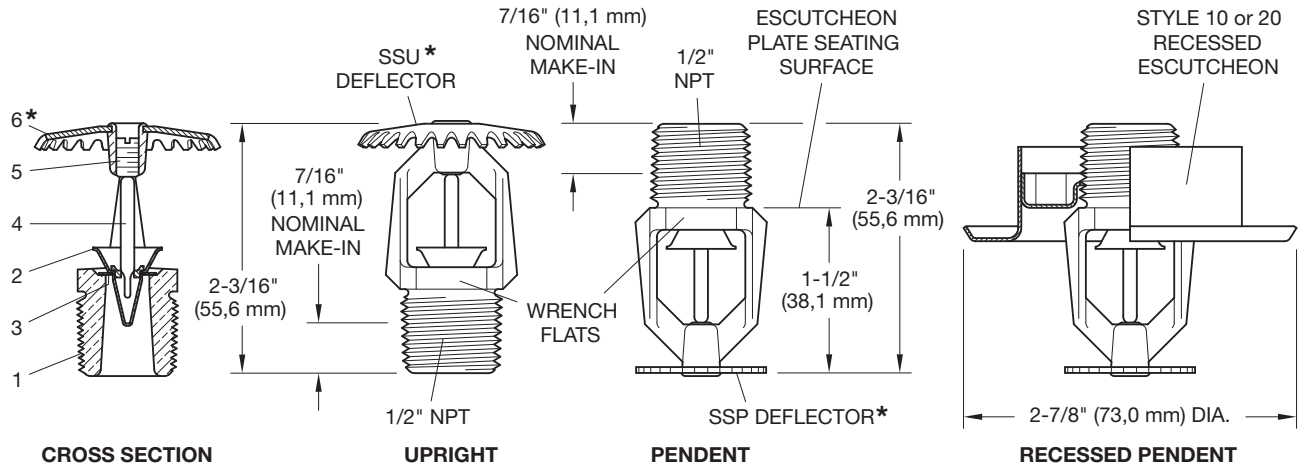
*Eastern Hemisphere Sales Only



1 - Frame
2 - Button
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector
7 - Bushing

* Temperature rating is indicated on deflector or adjacent to orifice seat on frame.

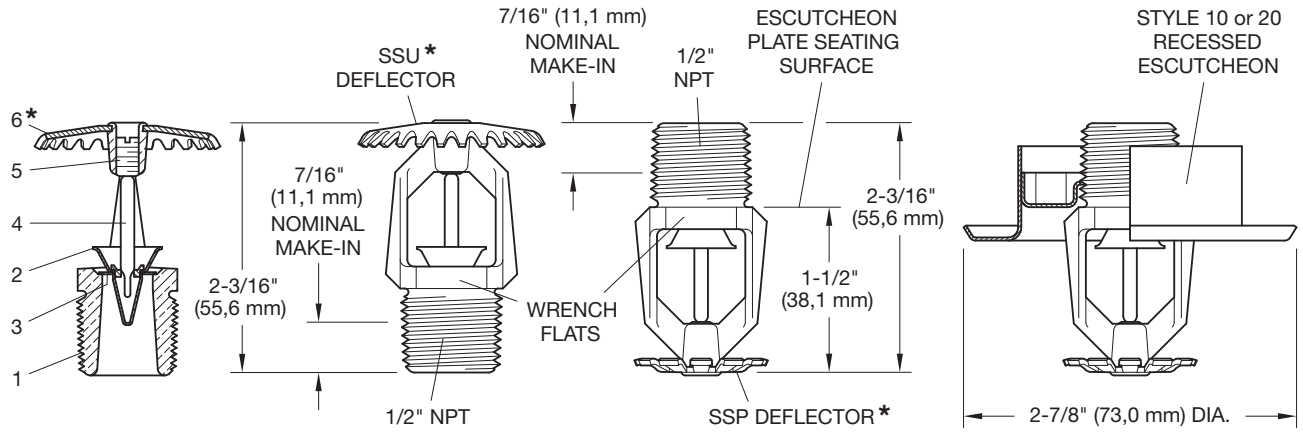
FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT



1 - Frame
2 - Button
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector

* Temperature rating is indicated on deflector or adjacent to orifice seat on frame.

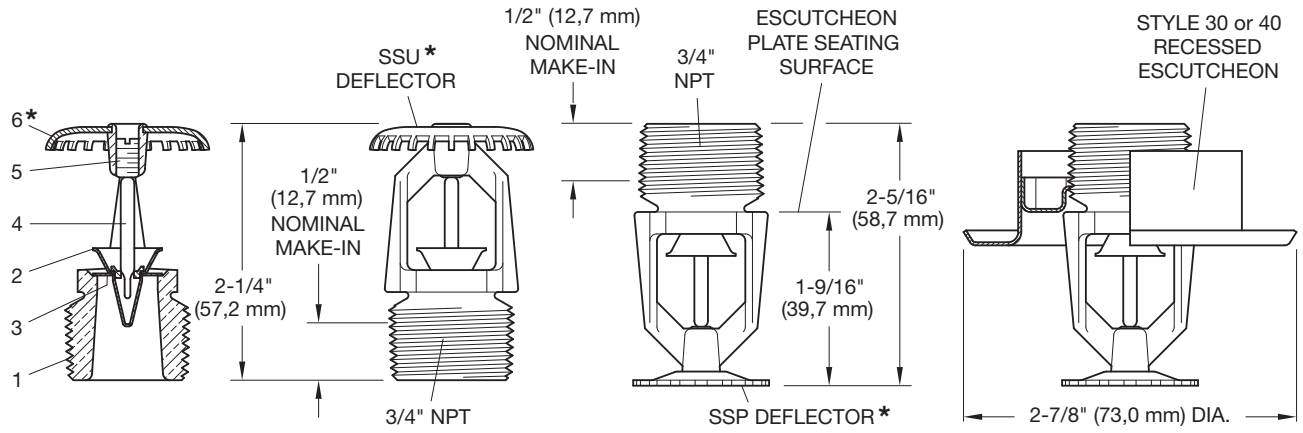
FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT



1 - Frame
2 - Button
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector

* Temperature rating is indicated on deflector or adjacent to orifice seat on frame.

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



1 - Frame
2 - Button
3 - Sealing Assembly
4 - Bulb
5 - Compression Screw
6 - Deflector

* Temperature rating is indicated on deflector or adjacent to orifice seat on frame.

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

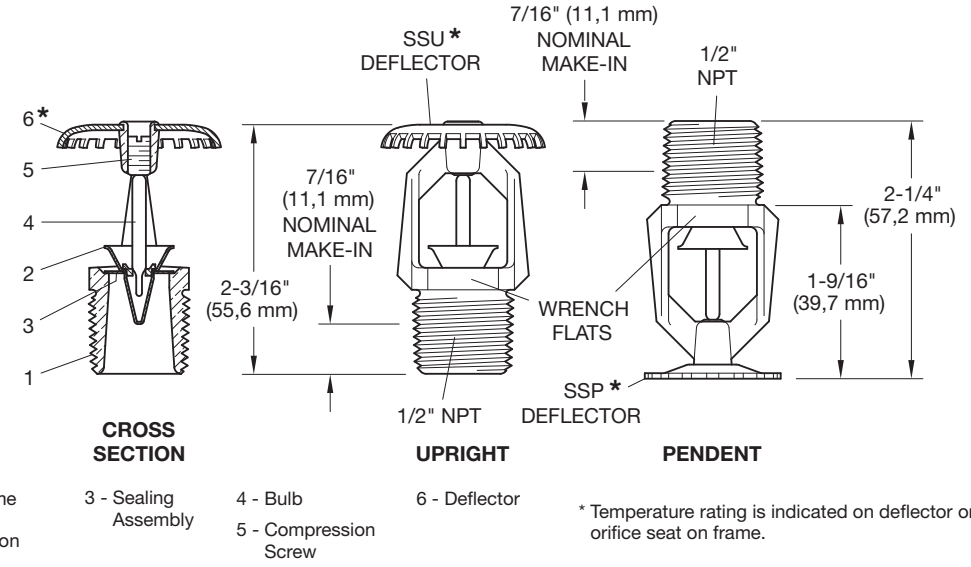


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient

K=2.8 GPM/psi$^{1/2}$	(40,3 LPM/bar$^{1/2}$)
K=4.2 GPM/psi$^{1/2}$	(60,5 LPM/bar$^{1/2}$)
K=5.6 GPM/psi$^{1/2}$	(80,6 LPM/bar$^{1/2}$)
K=8.0 GPM/psi$^{1/2}$	(115,2 LPM/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table A and B.
Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated.

Physical Characteristics

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

† Registered Trademark of Dupont

Operation

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

Design Criteria

The TYCO Series TY-FRB Pendent and Upright Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB Sprinklers must be installed in accordance with the following instructions.

NOTICE

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F/57°C and 3/32 inch (2,4 mm) for the 286°F/141°C temperature ratings.

Obtain a leak-tight 1/2 inch NPT sprinkler joint by applying a minimum to maximum torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

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

1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.
2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.
3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 14). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	WHITE*** POLYESTER
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F/57°C	Orange	1, 2, 3, 4		
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			
		286°F/141°C	Blue			
	RECESSED PENDENT (TY1231)* Figure 6	135°F/57°C	Orange	1, 2, 4		
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			
	RECESSED PENDENT (TY1231)** Figure 7	135°F/57°C	Orange			
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F/57°C	Orange	1, 2		
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			
		286°F/141°C	Blue			
	RECESSED PENDENT (TY2231)* Figure 8	135°F/57°C	Orange			
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			
	RECESSED PENDENT (TY2231)** Figure 9	135°F/57°C	Orange			
		155°F/68°C	Red			
		175°F/79°C	Yellow			
		200°F/93°C	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.

** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.

*** Frame and Deflector only. Listings and approvals apply to color (Special Order).

N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	WHITE*** POLYESTER	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F/57°C	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
	RECESSED PENDENT (TY3231)* Figure 10	135°F/57°C	Orange	1, 2, 4, 5			N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
	RECESSED PENDENT (TY3231)** Figure 11	135°F/57°C	Orange	1, 2, 3, 4, 5			N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F/57°C	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
	RECESSED PENDENT (TY4231)* Figure 12	135°F/57°C	Orange	1, 2, 5			N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
	RECESSED PENDENT (TY4231)** Figure 13	135°F/57°C	Orange	1, 2, 3, 5			N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F/57°C	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				

NOTES:

1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only. Listings and approvals apply to color (Special Order).
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	WHITE POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY3231)				N/A
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

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

1. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.
2. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 15). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.
3. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with the following instructions.

NOTICE

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

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

Exercise care to avoid damage to sprinklers before, during, and after installation. Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory.

Replace sprinklers that:

- were modified or over-heated.
- were damaged by dropping, striking, wrench twisting, wrench slippage, or the like.
- are leaking or exhibiting visible signs of corrosion.
- were exposed to corrosive products of combustion but have not operated, if you cannot easily remove combustion by-products with a cloth.
- have a cracked bulb or have lost liquid from the bulb. Refer to the Installation section in this data sheet.

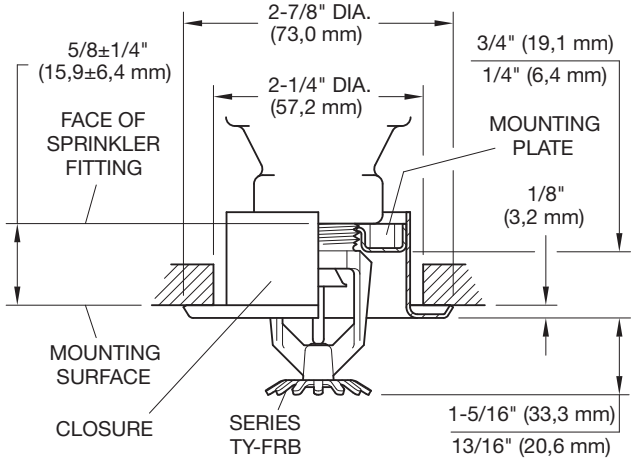


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

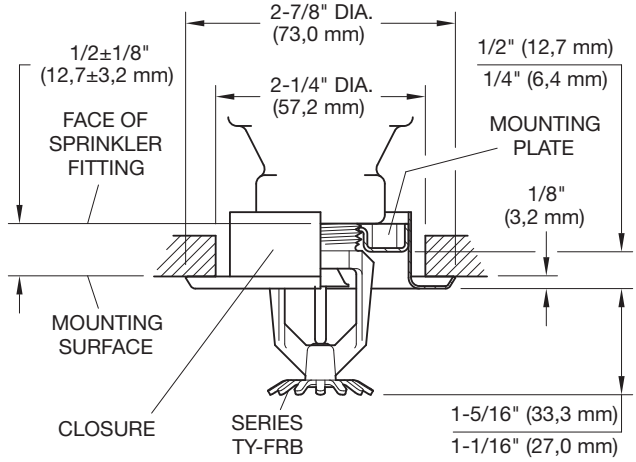


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

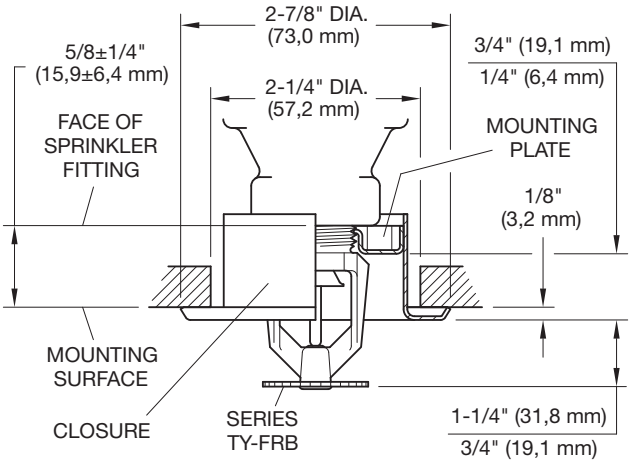


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

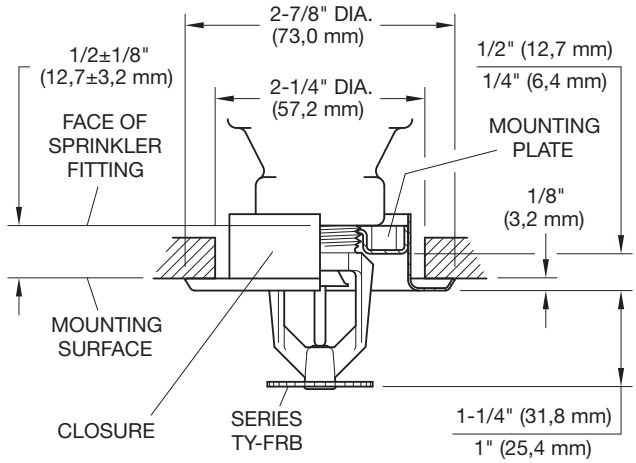


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

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

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

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

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

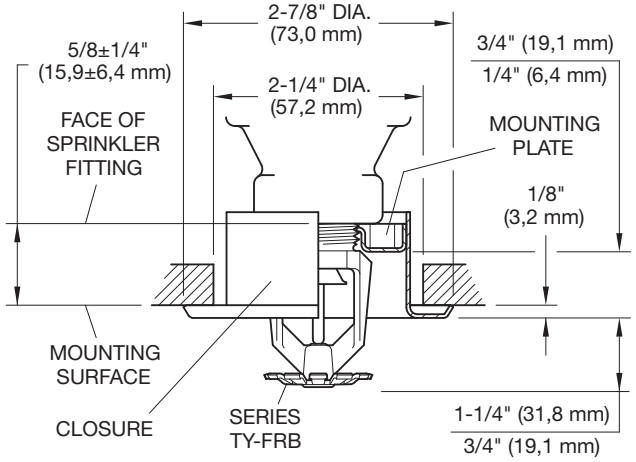


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

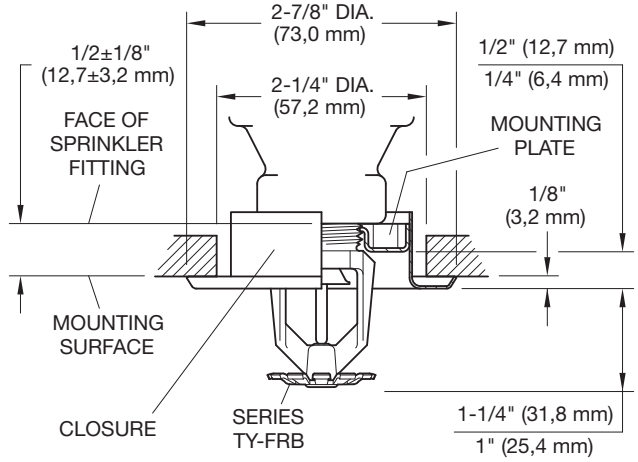


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

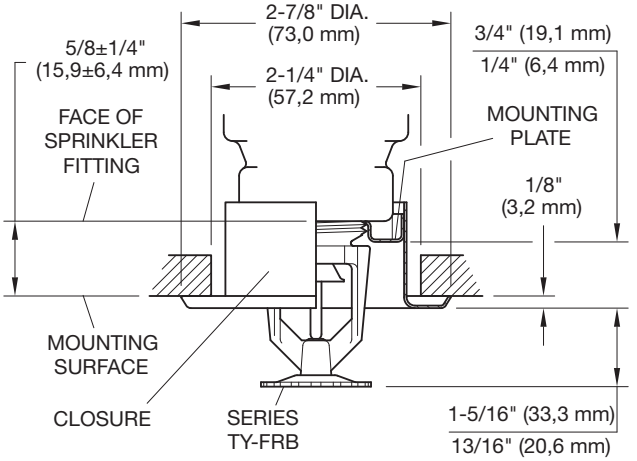


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

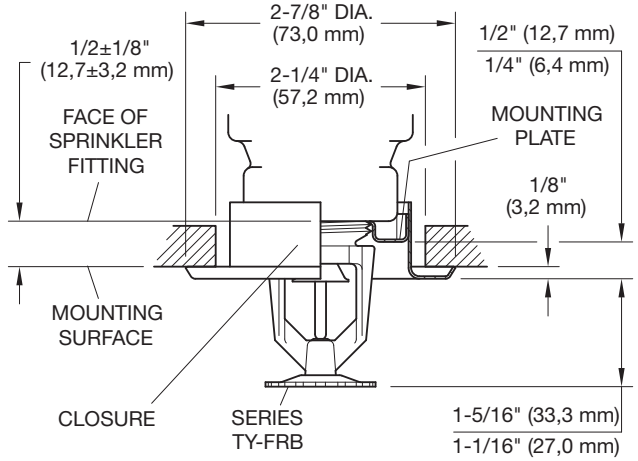


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

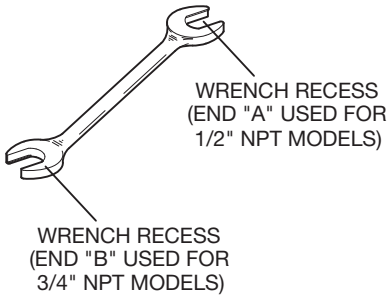


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

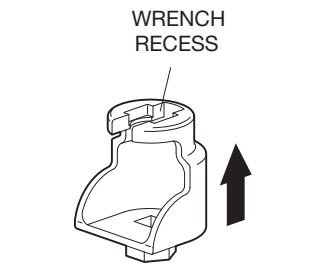


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

P/N 57 – XXX – X – XXX

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

	SPRINKLER FINISH
1	NATURAL BRASS
4	WHITE POLYESTER
3	WHITE (RAL9010)*
9	CHROME PLATED
7	LEAD COATED

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

* Eastern Hemisphere sales only.

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

Limited Warranty

Products manufactured by Tyco Fire Suppression & Building Products (TFSBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFSBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFSBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFSBP to be defective shall be either repaired or replaced, at TFSBP's sole option. TFSBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFSBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFSBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFSBP was informed about the possibility of such damages, and in no event shall TFSBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

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

Sprinkler Assemblies with NPT Thread Connections
Specify: (Specify Model/SIN), Quick Response, (specify K-factor), (specify temperature rating), Series TY-FRB (specify Pendent or Upright) Sprinkler with (specify type of finish or coating), P/N (specify from Table D).

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

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

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

* Refer to Technical Data Sheet TFP770.

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Series TY-FRB — 5.6 K-factor Horizontal and Vertical Sidewall Sprinklers Quick Response, Standard Coverage

General Description

The Series TY-FRB, 5.6 K-Factor, Horizontal and Vertical Sidewall Sprinklers described in this data sheet are quick response - standard coverage, decorative 3 mm glass bulb type spray sprinklers designed for use in light and ordinary hazard, commercial occupancies such as banks, hotels, shopping malls, etc. They are designed for installation along a wall or the side of a beam and just beneath a smooth ceiling. Sidewall sprinklers are commonly used instead of pendent or upright sprinklers due to aesthetics or building construction considerations, where piping across the ceiling is not desirable.

The recessed version of the Series TY-FRB Horizontal Sidewall Sprinkler is intended for use in areas with a finished wall. It uses a two-piece Style 10 Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush sidewall position, or a two-piece Style 20 Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush sidewall position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe nipples to the sprinklers must be cut.

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

WARNINGS

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

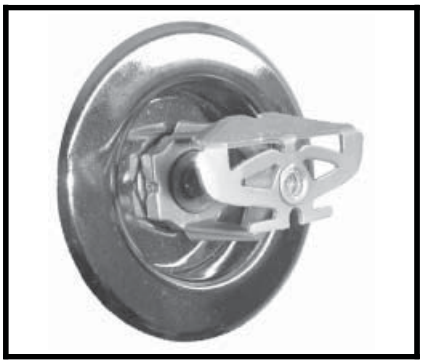
The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

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

Model/Sprinkler Identification Numbers

TY3331 - **Horizontal**
TY3431 - **Vertical**



Technical Data

Approvals
UL and C-UL Listed.
FM, LPCB, and NYC Approved.
(Refer to Table A for complete approval information including corrosion resistant status.)

Maximum Working Pressure
Refer to Table B.

Discharge Coefficient
K = 5.6 GPM/psi$^{1/2}$ (80,6 LPM/bar$^{1/2}$)

Temperature Ratings
Refer to Table A.

Finishes
Sprinkler: Refer to Table A.
Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated.

K	TYPE	TEMP.	BULB LIQUID	SPRINKLER FINISH (See Note 11)			
				NATURAL BRASS	CHROME PLATED	WHITE*** POLYESTER	LEAD COATED
5.6 1/2" NPT	HORIZ. SIDEWALL (TY3331)	135°F/57°C	Orange	1, 2, 3, 4, 9, 10		1, 2, 3, 9	1, 2, 3, 9
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				
	RECESSED HORIZ. SIDEWALL (TY3331)* Figure 3	135°F/57°C	Orange	1, 2, 4, 9, 10		1, 2, 9	N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
	RECESSED HORIZ. SIDEWALL (TY3331)** Figure 4	135°F/57°C	Orange	1, 2, 3, 4, 9			N/A
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
5.6 1/2" NPT	VERTICAL SIDEWALL (TY3431) Installed Pendent or Upright	135°F/57°C	Orange	5, 6, 7, 8, 9			5, 6, 7, 9
		155°F/68°C	Red				
		175°F/79°C	Yellow				
		200°F/93°C	Green				
		286°F/141°C	Blue				

NOTES:

1. Listed by Underwriters Laboratories, Inc. (UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies at a 4 to 12 inch (100 to 300 mm) top of deflector to ceiling distance.
2. Listed by Underwriters Laboratories Inc. for use in Canada (C-UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies at a 4 to 12 inch (100 to 300 mm) top of deflector to ceiling distance.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers for use in Light Hazard Occupancies at a 4 to 12 inch (100 to 300 mm) top of deflector to ceiling distance.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007a/04) at a 4 to 6 inch (100 to 150 mm) top of deflector to ceiling distance. The LPC does not rate the thermal sensitivity of horizontal sidewall sprinklers.
5. Listed by Underwriters Laboratories, Inc. as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies.
6. Listed by Underwriters Laboratories for use in Canada (C-UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies.
7. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers for use in Light Hazard Occupancies.
8. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06 & 007a/04) as Quick Response Sprinklers.
9. Approved by the City of New York under MEA 354-01-E.
10. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) at a 4 to 6 inch (100 to 150 mm) top of deflector to ceiling distance. The LPC does not rate the thermal sensitivity of horizontal sidewall sprinklers.
11. Where Polyester Coated and Lead Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion Resistant Sprinklers. Where Lead Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as Corrosion Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) 3/4" Total Adjustment Recessed Escutcheon.
** Installed with Style 20 (1/2" NPT) 1/2" Total Adjustment Recessed Escutcheon.
*** Frame and deflector only. Listings and approvals apply to color (Special Order).

TABLE A
LABORATORY LISTINGS AND APPROVALS

Physical Characteristics

Frame . . . . . Bronze
Button . . . . . Brass/Copper
Sealing Assembly . . . . . Beryllium Nickel w/Teflon†
Bulb . . . . . Glass
Compression Screw . . . . . Bronze
HSW Deflector . . . . . Bronze
VSW Deflector . . . . . Copper

Patents

U.S.A. 5,810,263

Operation

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

† DuPont Registered Trademark

K	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	WHITE POLYESTER	LEAD COATED
5.6 1/2" NPT	HORIZONTAL SIDEWALL (TY3331)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			175 PSI (12,1 BAR)
	RECESSED HORIZ. SIDEWALL (TY3331)				N/A
	VERTICAL SIDEWALL (TY3431)	175 PSI (12,1 BAR)			

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories, Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE B, MAXIMUM WORKING PRESSURE

Design Criteria

The Series TY-FRB Horizontal and Vertical Sidewall Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (e.g., UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10 or 20 Recessed Escutcheon, as applicable, is to be used for recessed horizontal installations.

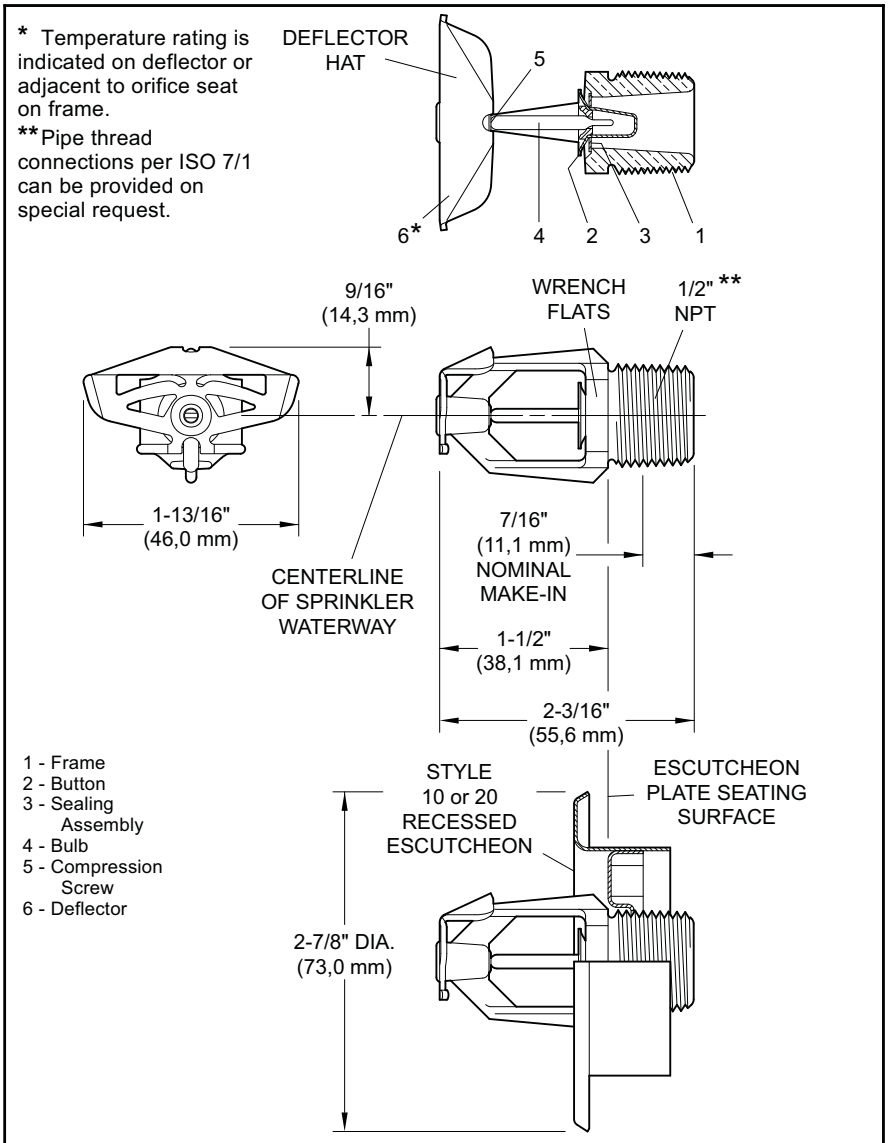


FIGURE 1
5.6 K-FACTOR QUICK RESPONSE
SERIES TY-FRB HORIZONTAL SIDEWALL (TY3331) SPRINKLERS

Installation

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

NOTES

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F/57°C to 3/32 inch (2,4 mm) for the 286°F/141°C temperature ratings.

A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). A maximum of 21 ft. lbs. (28,5 Nm) of torque may be used to install sprinklers with 1/2 NPT connections. Higher levels of torque may distort the sprinkler and cause leakage or impairment of the sprinkler.

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

The **Series TY-FRB Horizontal and Vertical Sidewall Sprinklers** must be installed in accordance with the following instructions.

Step 1. Horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the Deflector is to face towards the ceiling.

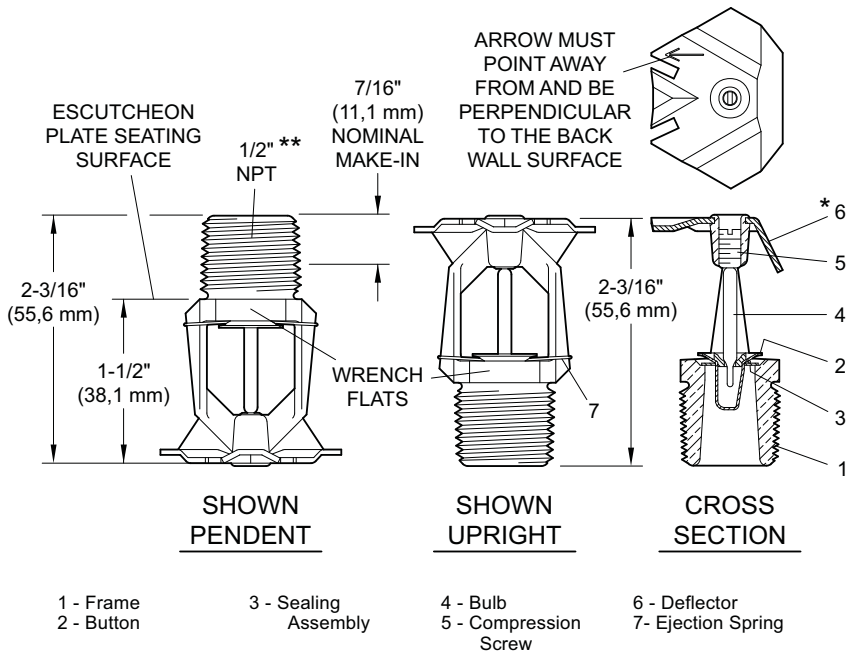
Vertical sidewall sprinklers are to be installed in the pendent or upright position with the arrow on the Deflector pointing away from the wall.

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

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Ref. Figure 5), With reference to Figure 1 or 2, the W-Type 6 Sprinkler Wrench is to be applied to the wrench flats.

The **Series TY-FRB Recessed Horizontal Sidewall Sprinklers** must be installed in accordance with the following instructions.

Step A. Recessed horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the Deflector is to face towards the ceiling.



* Temperature rating is indicated on deflector or adjacent to orifice seat on frame.

** Pipe thread connections per ISO 7/1 can be provided on special request.

FIGURE 2
5.6 K-FACTOR QUICK RESPONSE
SERIES TY-FRB VERTICAL SIDEWALL (TY3431) SPRINKLERS

Step B. After installing the Style 10 or 20 Mounting Plate over the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Ref. Figure 6). With reference to Figure 1, the W-Type 7 Recessed Sprinkler Wrench is to be applied to the sprinkler wrench flats.

Step D. After the ceiling has been installed or the finish coat has been applied, slide on the Style 10 or 20 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling

Care and Maintenance

The Series TY-BFR Sprinklers must be maintained and serviced in accordance with the following instructions:

NOTES

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

The owner must assure that the sprinklers are not used for hanging of any objects; otherwise, non-operation in the event of a fire or inadvertent operation may result.

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

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

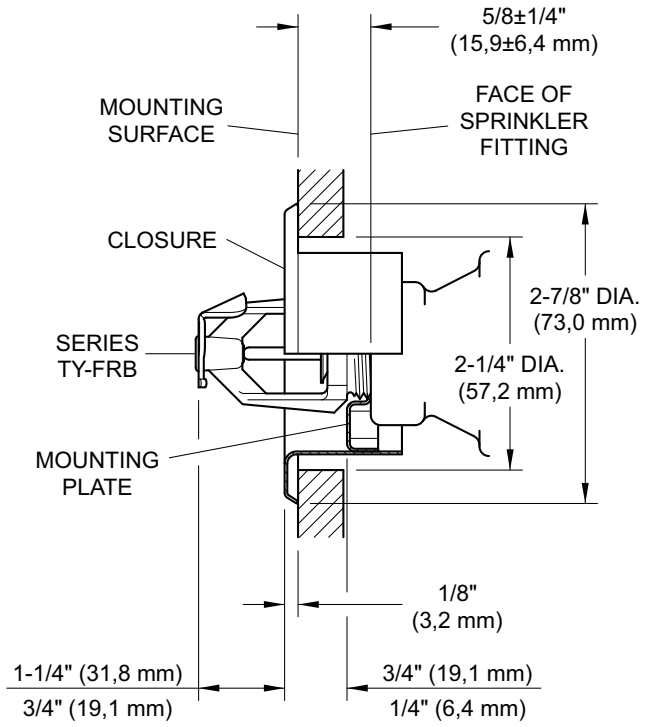


FIGURE 3
SERIES TY-FRB RECESSED HORIZONTAL SIDEWALL SPRINKLER WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON

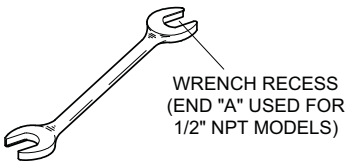


FIGURE 5
W-TYPE 6 SPRINKLER WRENCH

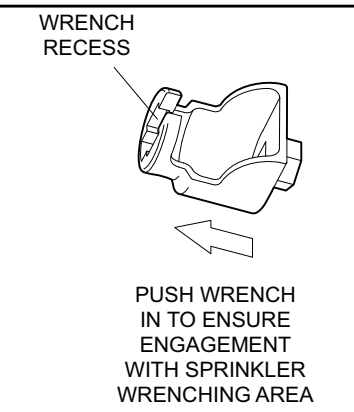


FIGURE 6
W-TYPE 7 RECESSED SPRINKLER WRENCH

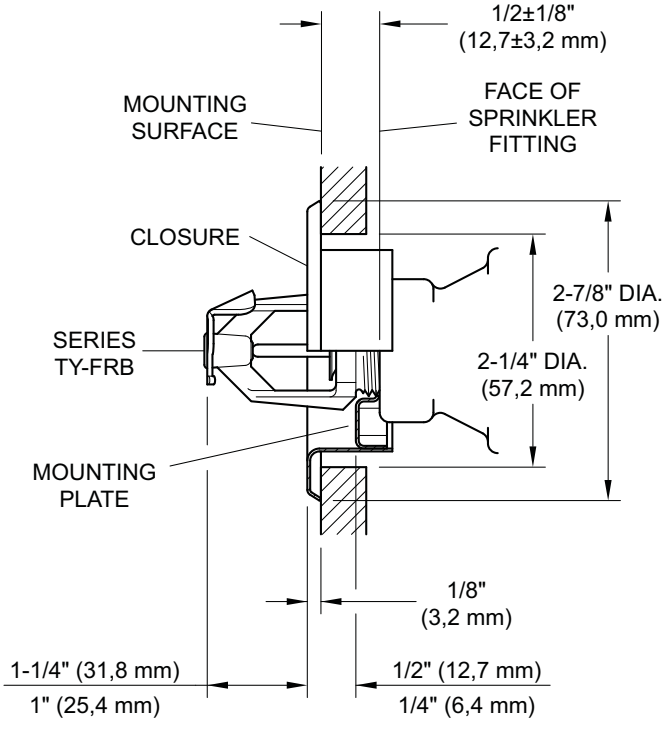


FIGURE 4
SERIES TY-FRB RECESSED HORIZONTAL SIDEWALL SPRINKLER WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT STYLE 20 RECESSED ESCUTCHEON

must be replaced.

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

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

Frequent visual inspections are recommended to be initially performed for corrosion resistant coated sprinklers, after the installation has been completed, to verify the integrity of the corrosion resistant coating. Thereafter, annual inspections per NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the

P/N 57 — XXX — X — XXX

		MODEL/SIN
378	HORIZONTAL SIDEWALL	TY3331
375	VERTICAL SIDEWALL	TY3431

	SPRINKLER
1	NATURAL BRASS
4	WHITE POLYESTER
3	WHITE RAL9010)*
9	CHROME PLATED
7	LEAD COATED

	TEMPERATURE RATING
135	135°F/57°C
155	155°F/68°C
175	175°F/79°C
200	200°F/93°C
286	286°F/141°C

* Eastern Hemisphere sales only.

TABLE C
PART NUMBER SELECTION
SERIES TY-FRB HORIZONTAL AND VERTICAL SIDEWALL SPRINKLERS

corrosion resistant coating, as it may be affected by the corrosive conditions present.

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 (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

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

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

When placing an order, indicate the full product name. Refer to the Price List for complete listing of Part Numbers.

Contact your local distributor for availability.

Sprinkler Assemblies with NPT Thread Connections:
Specify: (Specify Model/SIN), Quick Response, (specify K-factor), (specify temperature rating), Series TY-FRB (specify Horizontal Sidewall or Vertical Sidewall) Sprinkler with (specify type of finish or coating), P/N (specify from Table C).

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

* Refer to Technical Data Sheet TFP770.

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

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

Technical Services
800-381-9312
+1-401-781-8220
www.tyco-fire.com

Series RFII — 5.6 K-factor "Royal Flush II" Concealed Pendent Sprinklers Quick & Standard Response, Standard Coverage

General Description

The TYCO Series RFII Quick Response (3-mm bulb) and Standard Response (5-mm bulb), 5.6 K-Factor, "Royal Flush II" Concealed Pendent Sprinklers are decorative sprinklers featuring a flat cover plate designed to conceal the sprinkler. These sprinklers are optimal for architecturally sensitive areas such as hotel lobbies, office buildings, churches, and restaurants.

Each sprinkler includes a Cover Plate/Retainer Assembly and a Sprinkler/Support Cup Assembly. The separable, two-piece assembly design provides the following benefits:

- Allows installation of the sprinklers and pressure testing of the fire protection system prior to installation of a suspended ceiling or application of the finish coating to a fixed ceiling.
- Permits the removal of suspended ceiling panels for access to building service equipment without having to first shut down the fire protection system and remove sprinklers.
- Provides for 1/2 inch (12,7 mm) of vertical adjustment to allow a measure of flexibility in determining the length of fixed piping to cut for the sprinkler drops.

The Series RFII Sprinklers are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed during installation and replaced to help protect the sprinkler during ceiling installation or finish. The tip of the Protective Cap can be used to mark the center of the ceiling hole into plaster board or ceiling tiles by gently pushing the ceiling product against the Protective Cap. When ceiling installation is complete, the Protective Cap is removed and the Cover Plate/Retainer Assembly is installed.

As an option, the Series RFII Standard Response (5-mm bulb) "Royal Flush II" Concealed Pendent Sprinklers can be fitted with a silicone Air and Dust Seal. (Refer to Figure 5.) The Air and Dust Seal is intended for sensitive areas where it is desirable to prevent air and dust from the area above the ceiling to pass through the cover plate.

NOTICE

The Series RFII Concealed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

IMPORTANT

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

Sprinkler Identification Number (SIN)

TY3531 — 3 mm bulb
TY3551 — 5 mm bulb

Technical Data

Sprinkler Approvals
Approvals apply only to the service conditions indicated in the Design Criteria section.

- TY3531 (3-mm Bulb) is UL Listed, C-UL Listed, VdS Approved (Certificate No. G4090007), and NYC Approved (MEA 353-01-E) as Quick Response.
- TY3531 (3-mm Bulb) is FM and LPCB Approved (Ref. No. 094a/10) Approved as Standard Response. Factory Mutual and LPCB do not approve any concealed sprinklers for quick response.
- TY3551 (5-mm Bulb) is UL Listed, C-UL Listed, FM Approved, LPCB Approved (Ref. No. 094a/9), and NYC Approved (MEA 353-01-E) as Standard Response.

Approvals for Air and Dust Seal
UL and C-UL Listed for use with the RFII Standard Response Concealed Sprinkler (TY3551).

Maximum Working Pressure
Maximum 250 psi (17,3 bar) by UL, C-UL, and NYC

Maximum 175 psi (12,1 bar) by FM, VdS, and LPCB

Temperature Rating
155°F (68°C) Sprinkler with
139°F (59°C) Plate

200°F (93°C) Sprinkler with
165°F (74°C) Plate

Discharge Coefficient
K= 5.6 GPM/psi$^{1/2}$ (80,6 LPM/bar$^{1/2}$)

Adjustment
1/2 inch (12,7 mm)

Finishes
See the Ordering Procedure section.

Physical Characteristics

Frame	Bronze
Support Cup	Chrome Plated Steel
Guide Pins	Stainless Steel
Deflector	Bronze
Compression Screw	Brass
Bulb	Glass
Cap	Bronze or Copper
Sealing Assembly	Beryllium Nickel w/ TEFLON
Cover Plate	Brass
Retainer	Brass
Ejection Spring	Stainless Steel

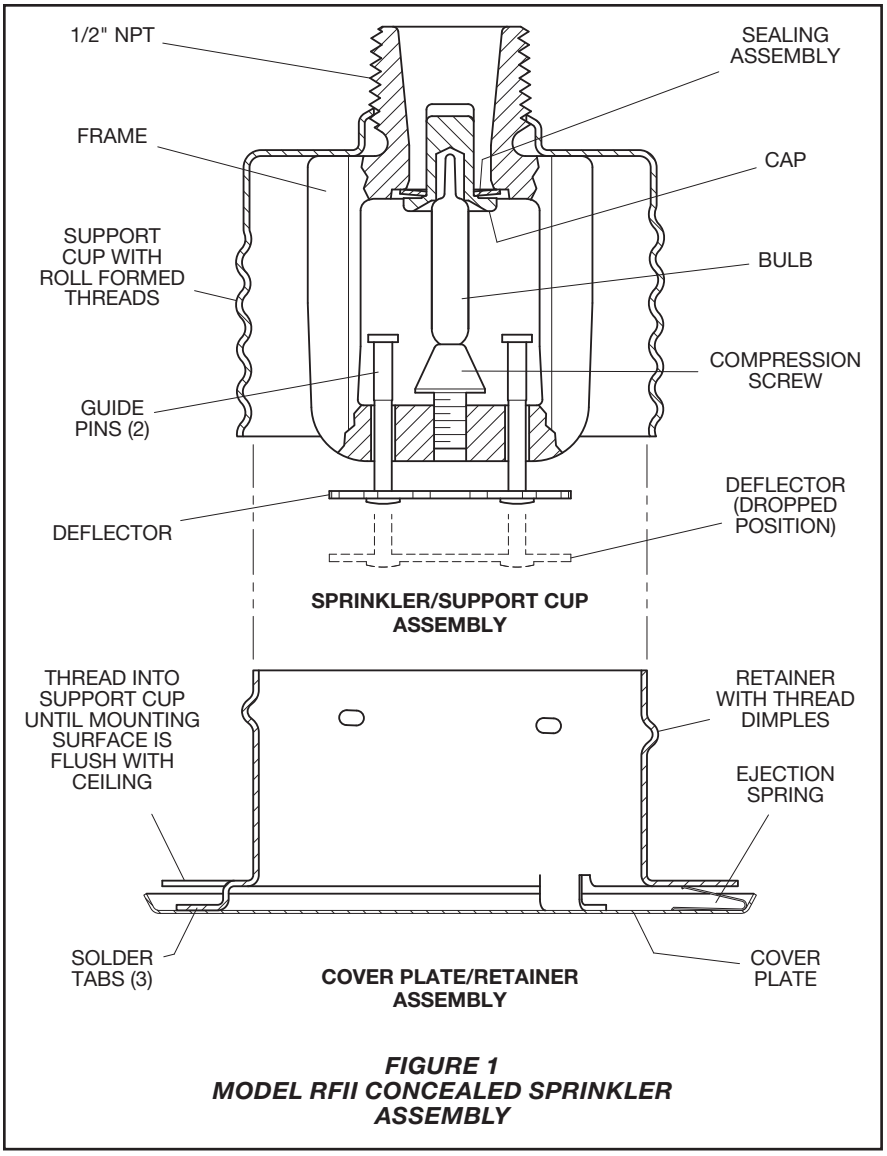
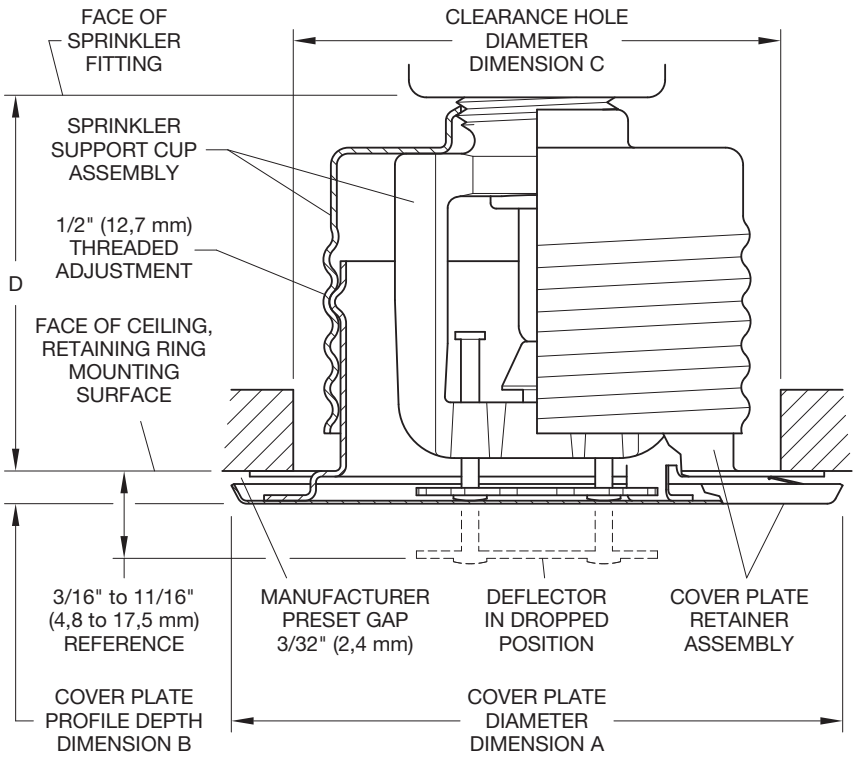


FIGURE 1
MODEL RFII CONCEALED SPRINKLER ASSEMBLY



A: 3-1/4 inches (82,6 mm)

B: 3/16 inches (4,8 mm)

C: 2-3/8 to 2-5/8 inches (60,3 to 66,7 mm)

D: 1-3/4 to 2-1/4 inches (44,5 to 57,2 mm)

FIGURE 2
SERIES CONCEALED SPRINKLER INSTALLATION DIMENSIONS

Design Criteria

The TYCO Series RFII Concealed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 and VdS Approval is based on the CEA 4001.

For more information on LPCB and VdS Approvals, contact Tyco Fire Suppression & Building Products at the following office:

Enschede, Netherlands
Telephone: 31-53-428-4444
Fax: 31-53-428-3377

The Series RFII Concealed Pendent Sprinklers are only listed and approved with the Series RFII Concealed Cover Plates having a factory applied finish.

NOTICE

Do not use the Series RFII in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Sprinkler/Support Cup Assembly can delay sprinkler operation in a fire situation.

Operation

When exposed to heat from a fire, the Cover Plate, normally soldered to the Retainer at three points, falls away to expose the Sprinkler/Support Cup Assembly.

The Deflector—supported by the Guide Pins—then drops down to its operational position.

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

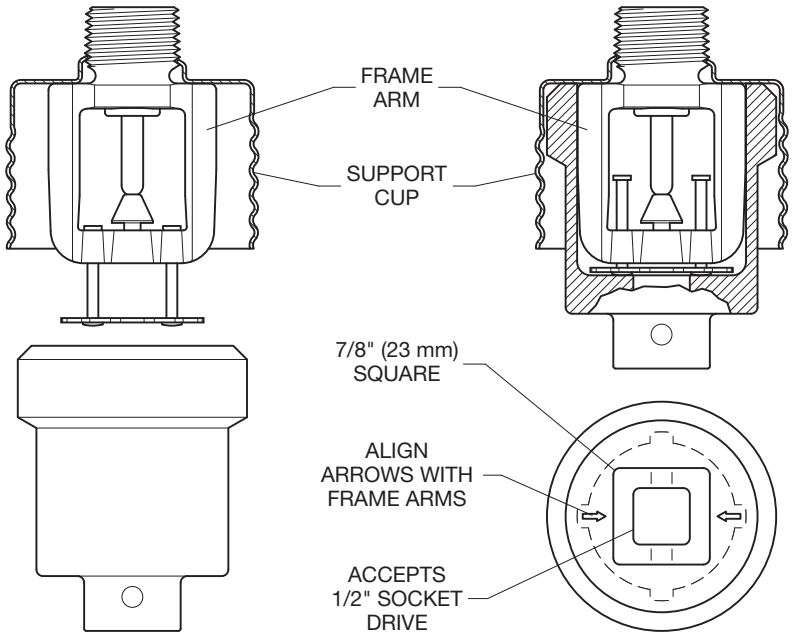


FIGURE 3
RFII SPRINKLER WRENCH

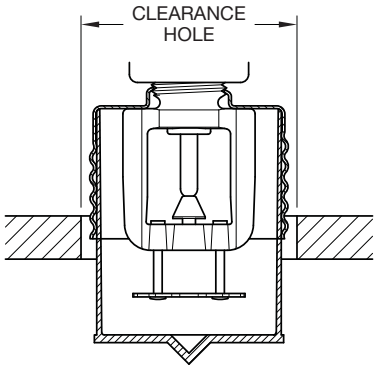


FIGURE 4
DISPOSABLE PROTECTIVE CAP

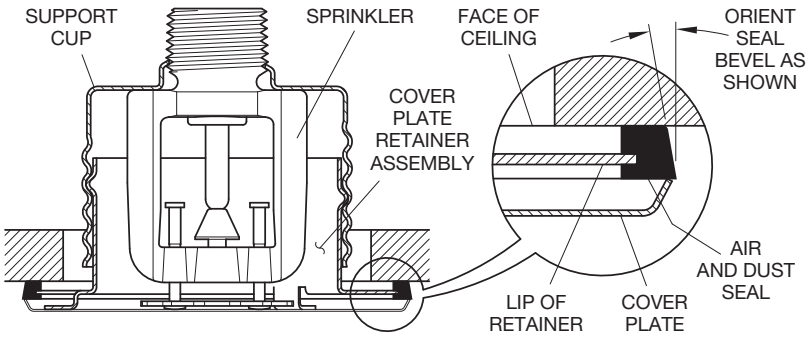


FIGURE 5
OPTIONAL AIR AND DUST SEAL FOR SERIES RFII (TY3551)

Installation

The TYCO Series RFII must be installed in accordance with the following instructions.

NOTICE

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 155°F/68°C and 3/32 inch (2,4 mm) for the 200°F/93°C temperature ratings.

Obtain a 1/2 inch NPT sprinkler joint by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Sprinkler by under- or over-tightening the Sprinkler/Support Cup Assembly. Re-adjust the position of the sprinkler fitting to suit.

Step 1. Install the sprinkler only in the pendent position with the center-line of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 4. Wrench-tighten the sprinkler using only the RFII Sprinkler Wrench. (Refer to Figure 3.) Apply the RFII Sprinkler Wrench to the Sprinkler as shown in Figure 3.

Step 5. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. (Refer to Figure 4.) The Protective Cap helps prevent damage to the Deflector and Arms during ceiling installation and/or finish. You can also use the Protective Cap to locate the center of the clearance hole by gently pushing the ceiling material up against the center point of the Protective Cap.

NOTICE

As long as the Protective Cap remains in place, the system is considered "Out of Service".

Step 6. After the ceiling has been completed with the 2-1/2 inch (63,5 mm) diameter clearance hole and in preparation for installing the Cover Plate/Retainer Assembly, remove and discard the Protective Cap. Verify that the Deflector moves up and down freely.

If the Sprinkler is damaged and the Deflector does not move up and down freely, replace the entire Sprinkler. Do not attempt to modify or repair a damaged sprinkler.

Step 7. When installing an Air and Dust Seal, refer to Figure 5; otherwise, proceed to Step 8. To attach the Air and Dust Seal, verify the angle of the outside edge of the seal is oriented according to Figure 5. Start the edge of the Retainer in the grooved slot of the Air and Dust Seal and continue around the retainer until the entire Air and Dust Seal is engaged.

Step 8. Screw on the Cover Plate/Retainer Assembly until the Retainer (shown in Figure 2) or the Air and Dust Seal (shown in Figure 5) contacts the ceiling. Do not continue to screw on the Cover Plate/Retainer Assembly so that it lifts a ceiling panel out of its normal position. If you cannot engage the Cover Plate/Retainer Assembly with the Support Cup or you cannot engage the Cover Plate/Retainer Assembly sufficiently to contact the ceiling, you must reposition the Sprinkler Fitting.

Care and Maintenance

The TYCO Series RFII must be maintained and serviced in accordance with the following instructions.

NOTICE

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

Absence of the Cover Plate/Retainer Assembly can delay sprinkler operation in a fire situation.

When properly installed, there is a nominal 3/32 inch (2,4 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 2.

This air gap is necessary for proper operation of the sprinkler. If the ceiling requires repainting after sprinkler installation, ensure that the new paint does not seal off any of the air gap.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Replace sprinklers that:

- are leaking or exhibiting visible signs of corrosion.
- were modified or over-heated.

Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory. Never repaint factory-painted Cover Plates. If necessary, replace them with factory-painted units. Non-factory applied paint can adversely delay or prevent sprinkler operation in the event of a fire.

Exercise care to avoid damage to sprinklers before, during, and after installation. Replace sprinklers damaged by dropping, striking, wrench twisting, wrench slipping, or the like. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Refer to the Installation section.)

If you must remove a sprinkler, do not reinstall it or a replacement without reinstalling the Cover Plate/Retainer Assembly. If a Cover Plate/Retainer Assembly becomes dislodged during service, replace it immediately.

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

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.

Limited Warranty

Products manufactured by Tyco Fire Protection Products (TFPP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFPP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFPP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFPP to be defective shall be either repaired or replaced, at TFPP's sole option. TFPP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFPP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFPP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFPP was informed about the possibility of such damages, and in no event shall TFPP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name.

Sprinkler/Support Cup Assembly
Specify: (SIN), (temperature rating from below) Series RFII Concealed Pendent Sprinkler, P/N (specify).

	155°F/68°C	200°F/93°C
TY3531	51-792-1-155	51-792-1-200
TY3551	51-790-1-155	51-790-1-200

Separately Ordered Cover Plate/ Retainer Assembly:
Specify: (temperature rating from below) Series RFII Concealed Cover Plate with (finish), P/N (specify).

	139°F/59°C(a)	165°F/74°C(b)
Brass	56-792-1-135	56-792-1-165
Chrome	56-792-9-135	56-792-9-165
Brushed Chrome	56-792-8-135	56-792-8-165
Signal White (RAL 9003)	56-792-4-135	56-792-4-165
Grey White (RAL 9002)	56-792-0-135	56-792-0-165
Pure White (c) (RAL 9010)	56-792-3-135	56-792-3-165
Custom	56-792-X-135	56-792-X-165

(a) For use with 155°F/68°C sprinklers.
(b) For use with 200°F/93°C sprinklers.
(c) Eastern Hemisphere sales only.

Sprinkler Wrench
Specify: RFII Sprinkler Wrench, P/N 56-000-1-075.

Air and Dust Seal
Specify: Air and Dust Seal, P/N 56-908-1-001.

tyco Fire Suppression & Building Products

Technical Services 800-381-9312 | +1-401-781-8220
www.tyco-fire.com

Series DS-1 Dry-Type Sprinklers 5.6K Pendent, Upright, and Horizontal Sidewall Standard Response, Standard Coverage

General Description

TYCO Series DS-1 Dry-Type Sprinklers, 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response (5 mm Bulb) and Standard Coverage, are decorative glass bulb automatic sprinklers typically used where:

- pendent sprinklers are required on dry pipe systems that are exposed to freezing temperatures; for example, sprinkler drops from unheated portions of buildings
- sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures; for example, sprinkler drops from wet systems into freezers, sprinkler sprigs from wet systems into unheated attics, or horizontal piping extensions through a wall to protect unheated areas of a building such as loading docks, overhangs, and building exteriors
- sprinklers are used on systems that are seasonably drained to avoid freezing; for example, vacation resort areas

NOTICE

Series DS-1 Dry-Type Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other Authorities Having Jurisdiction. Failure to do so may impair the performance of these devices.

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

Series DS-1 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.

IMPORTANT

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

Model/Sprinkler Identification Numbers (SINs)

TY3255 - Pendent
TY3155 - Upright
TY3355 - Horizontal Sidewall

Technical Data

Approvals

UL and C-UL Listed
FM Approved
LPCB Approved: Ref No. 094a/11
CE Certified: EN 122.59-1
NYC Approved under MEA 352-01-E

Refer to Table A.

Maximum Working Pressure

175 psi (12,1 bar)

Inlet Thread Connections

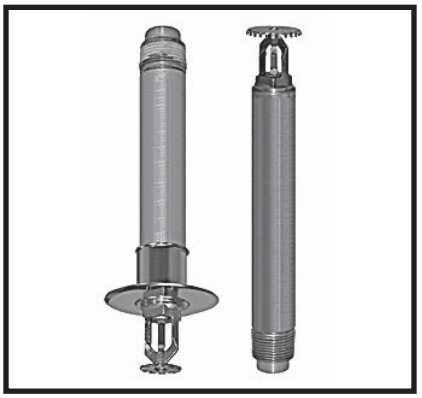
1-inch NPT (Standard Order)
ISO 7-R1

Discharge Coefficient

K = 5.6 GPM/psi$^{1/2}$
(80,6 LPM/bar$^{1/2}$)

Temperature Ratings

Refer to Table A.



Finishes

Sprinkler: Natural Brass, Chrome Plated, White Polyester

Escutcheon: White Coated, Chrome Plated, Brass Plated

Physical Characteristics

Inlet	Copper
Plug	Copper
Yoke	Stainless Steel
Casing	Galvanized Carbon Steel
Insert	Bronze
Bulb Seat	Stainless Steel
Bulb	Glass
Compression Screw	Bronze
Deflector	Bronze
Frame	Bronze
Guide Tube	Stainless Steel
Water Tube	Stainless Steel
Spring	Stainless Steel
Sealing Assembly	Beryllium Nickel w/Teflon*
Escutcheon	Carbon Steel

*DuPont Registered Trademark

Temperature Rating	Bulb Color Code	TY3255 Pendent with Standard Recessed Escutcheon (Figure 3) with Wide Flange Recessed Escutcheon (Figure 4)			TY3255 Pendent with Standard Escutcheon (Figure 5) with Deep Escutcheon (Figure 6) without Escutcheon (Figure 7) TY3155 Upright without Escutcheon (Figure 8)			TY3355 Horizontal Sidewall with top of Deflector-to-Ceiling distance of 4 to 12 inches (100 to 300 mm) with Standard Escutcheon (Figure 9) with Deep Escutcheon (Figure 10) without Escutcheon (Figure 13)		
		SPRINKLER FINISH								
		Natural Brass	Chrome Plated	White Polyester	Natural Brass	Chrome Plated	White Polyester	Natural Brass	Chrome Plated	White Polyester
135°F (57°C)	Orange	1, 2, 3, 5		1, 2, 5	1, 2, 3, 4, 5		1, 2, 4, 5	1*, 2*, 3**, 4, 5		1*, 2*, 4, 5
155°F (68°C)	Red									
175°F (79°C)	Yellow									
200°F (93°C)	Green									
286°F (141°C)	Blue	N/A			4, 5					
360°F (182°C)	Mauve				N/A			1*, 2*, 5		N/A

Notes

1. Listed by Underwriters Laboratories, Inc. (maximum order length of 48 inches)
2. Listed by Underwriters Laboratories for use in Canada (maximum order length of 48 inches)
3. Approved by Factory Mutual Research Corporation (maximum order length of 48 inches)
4. Loss Prevention Certification Board and CE conformity apply to these temperature ratings only
5. Approved by the City of New York under MEA 352-01-E

* Light and Ordinary Hazard Occupancies Only

** Light Hazard Occupancies Only

N/A - Not Available

TABLE A
SERIES DS-1 STANDARD RESPONSE, STANDARD COVERAGE, DRY-TYPE SPRINKLERS
— LABORATORY LISTINGS AND APPROVALS —

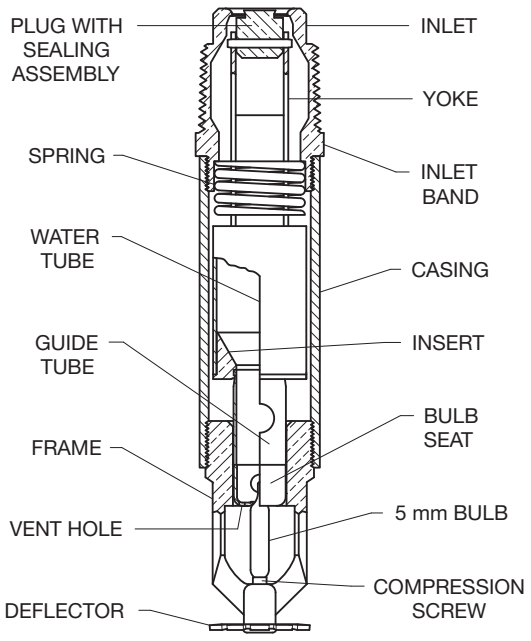


FIGURE 1
SERIES DS-1 STANDARD RESPONSE DRY-TYPE SPRINKLERS
— ASSEMBLY —

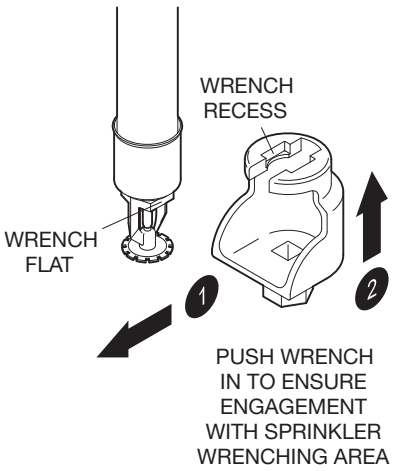


FIGURE 2
W-TYPE 7 SPRINKLER WRENCH

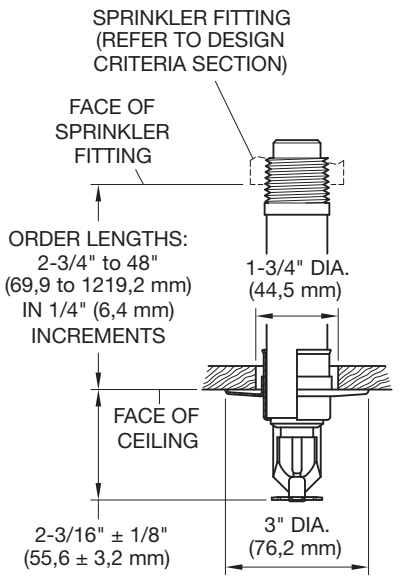


FIGURE 3
PENDENT TY3255
WITH STANDARD ESCUTCHEON

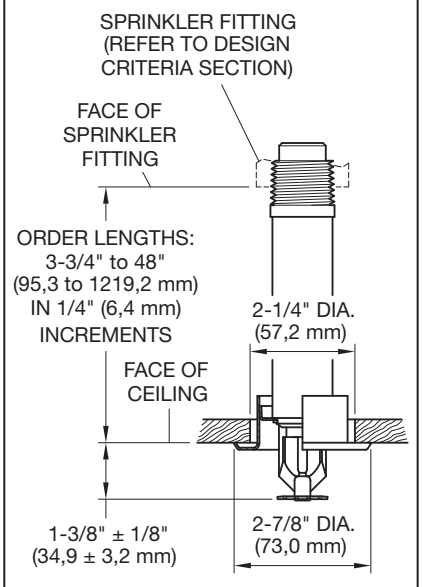


FIGURE 4
PENDENT TY3255
WITH STANDARD
RECESSED ESCUTCHEON

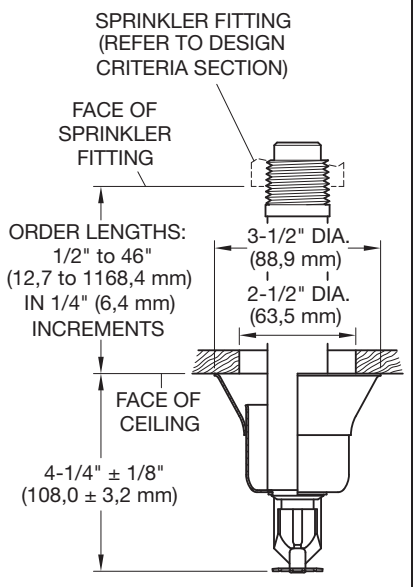


FIGURE 5
PENDENT TY3255
WITH DEEP ESCUTCHEON

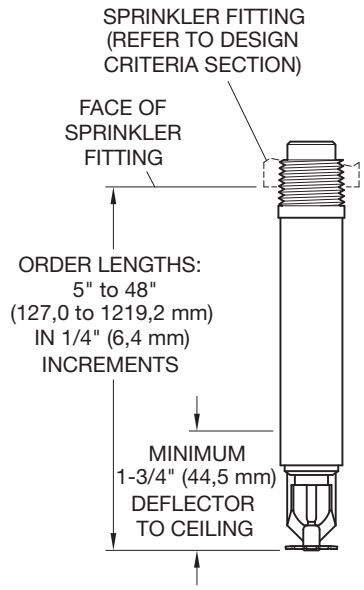


FIGURE 6
PENDENT TY3255
WITHOUT ESCUTCHEON

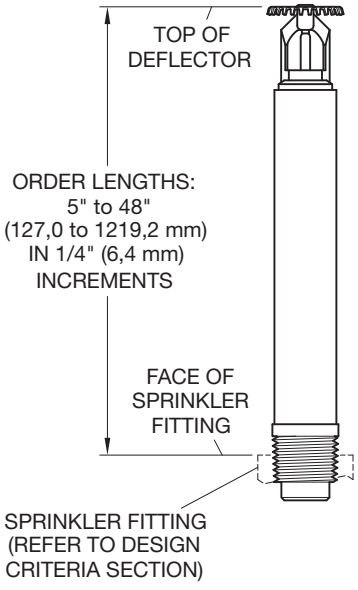


FIGURE 7
UPRIGHT TY3155
WITHOUT ESCUTCHEON

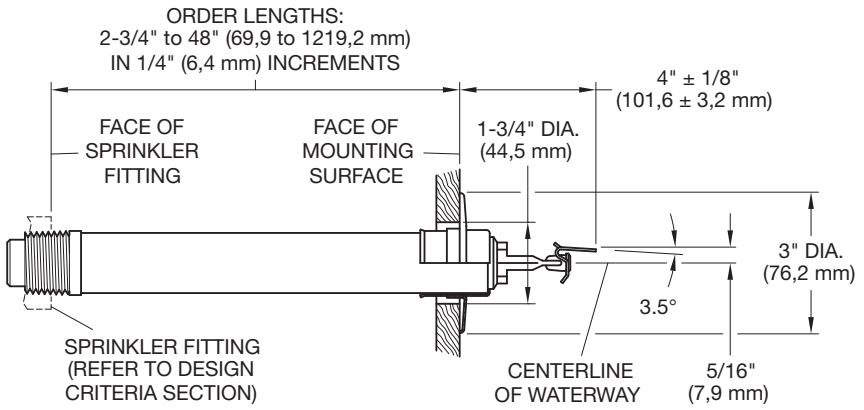


FIGURE 8
TY3355 HORIZONTAL SIDEWALL WITH STANDARD ESCUTCHEON

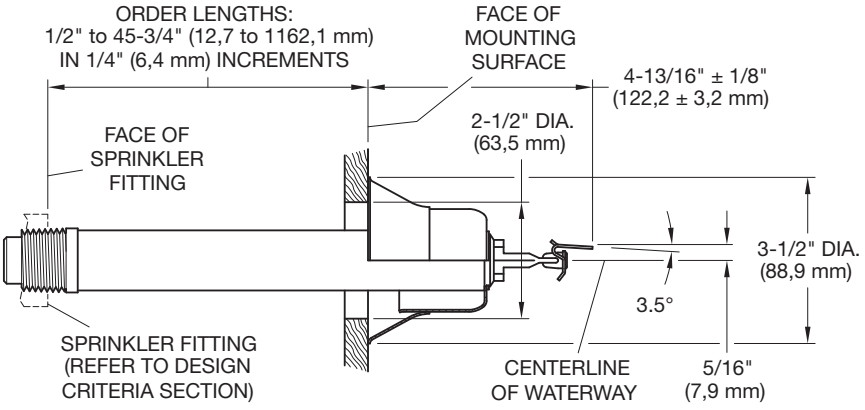


FIGURE 9
TY3355 HORIZONTAL SIDEWALL WITH DEEP ESCUTCHEON

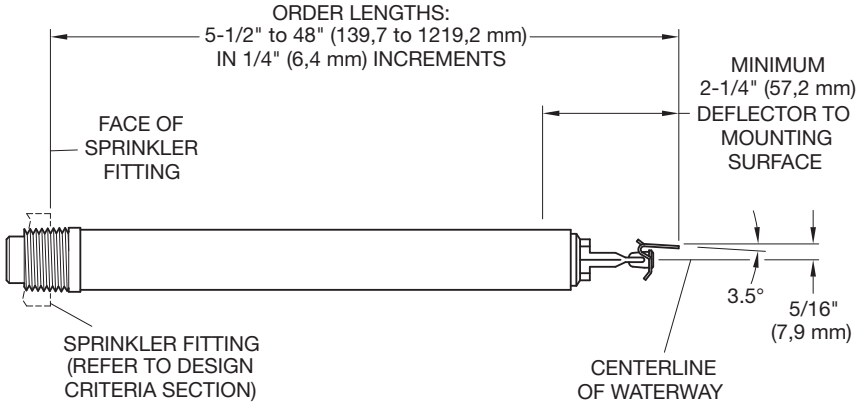


FIGURE 10
TY3355 HORIZONTTAL SIDEWALL WITHOUT ESCUTCHEON

Operation

When TYCO Series DS-1 Dry-Type Sprinklers are in service, water is prevented from entering the assembly by the Plug with Sealing Assembly (Figure 1) in the Inlet of the Sprinkler.

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, and the Bulb Seat is released.

The compressed Spring is then able to expand and push the Water Tube as well as the Guide Tube outward. This action simultaneously pulls inward on the Yoke, withdrawing the Plug with Sealing Assembly from the Inlet, allowing the sprinkler to activate and flow water.

Design Criteria

TYCO Series DS-1 Dry-Type Sprinklers are intended for use in fire sprinkler systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency; for example, UL Listing is based on NFPA 13 requirements. For more information on LPCB Approval, contact TYCO Fire Suppression & Building Products at the following office:

Kopersteden 1
7547 TJ Enschede
The Netherlands
Tel: +31-(0)53-428-4444
Fax: +31-(0)53-428-3377

Sprinkler Fittings

Install 1-inch NPT Series DS-1 Dry-Type Sprinklers are to be installed in the 1-inch NPT outlet or run of the following fittings:

- malleable or ductile iron threaded tee fittings that meet the dimensional requirements of ANSI B16.3 (Class 150)
- cast iron threaded tee fittings that meet the dimensional requirements of ANSI B16.4 (Class 125).

Do not install Series DS-1 Dry-Type Sprinklers into elbow fittings. The Inlet of the sprinkler can contact the interior of the elbow.

The unused outlet of the threaded tee is plugged as shown in Figure 12.

You can also install Series DS-1 Dry-Type Sprinklers in the 1-inch NPT outlet of a GRINNELL Figure 730 Mechanical Tee. However, the use of the Figure 730 Tee for this arrangement is limited to wet pipe systems.

Ambient Temperature Exposed to Discharge End of Sprinkler	Temperatures for Heated Area[1]		
	40°F (4°C)	50°F (10°C)	60°F (16°C)
	Minimum Exposed Barrel Length, Inches (mm)[2]		
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (200)	1 (25)	0
0°F (-18°C)	12 (305)	3 (75)	0
-10°F (-23°C)	14 (355)	4 (100)	1 (25)
-20°F (-29°C)	14 (355)	6 (150)	3 (75)
-30°F (-34°C)	16 (405)	8 (200)	4 (100)
-40°F (-40°C)	18 (455)	8 (200)	4 (100)
-50°F (-46°C)	20 (510)	10 (255)	6 (150)
-60°F (-51°C)	20 (510)	10 (255)	6 (150)

Notes

1. For protected area temperatures that occur between values listed above, use the next cooler temperature.
2. These lengths are inclusive of wind velocities up to 30 mph (18,6 kph).

TABLE B
EXPOSED SPRINKLER BARRELS IN WET PIPE SYSTEMS
— MINIMUM RECOMMENDED LENGTHS —

The configuration shown in Figure 13 is only applicable for wet pipe systems where the sprinkler fitting and water-filled pipe above the sprinkler fitting are not subject to freezing and where the length of the Dry-Type Sprinkler has the minimum exposure length depicted in Figure 11. Refer to the Exposure Length section.

For wet pipe system installations of 1-inch NPT Series DS-1 Dry-Type Sprinklers connected to CPVC piping, use only the following TYCO CPVC fittings:

- 1" x 1" NPT Female Adapter (P/N 80145)
- 1" x 1" x 1" NPT Sprinkler Head Adapter Tee (P/N 80249).

For dry pipe system installations, use only the side outlet of maximum 2-1/2-inch reducing tee when locating Series DS-1 Dry-Type Sprinklers directly below the branch line. Otherwise, use the configuration shown in Figure 12 to assure complete water drainage from above Series DS-1 Dry-Type Sprinklers and the branch line. Failure to do so may result in pipe freezing and water damage.

NOTICE

Do not install Series DS-1 Dry-Type Sprinklers into any other type fitting without first consulting the Technical Services Department. Failure to use the appropriate fitting may result in one of the following:

- *Failure of the sprinkler to operate properly due to formation of ice over the Inlet Plug or binding of the Inlet Plug.*
- *Insufficient engagement of the Inlet pipe-threads with consequent leakage.*

Drainage

In accordance with the minimum requirements of the National Fire Protection Association for dry pipe sprinkler systems, branch, cross, and feed-main piping connected to Dry Sprinklers and subject to freezing temperatures must be pitched for proper drainage.

Exposure Length

When using Dry Sprinklers in wet pipe sprinkler systems to protect areas subject to freezing temperatures, use Table B to determine a sprinkler's appropriate exposed barrel length to prevent water from freezing in the connecting pipes due to conduction. The exposed barrel length measurement must be taken from the face of the sprinkler fitting to the surface of the structure or insulation that is exposed to the heated area. Refer to Figure 11 for an example.

For protected area temperatures between those given above, the minimum recommended length from the face of the fitting to the outside of the protected area may be determined by interpolating between the indicated values.

Clearance Space

In accordance with Section 8.4.9.2 of the 2010 edition of NFPA 13, when connecting an area subject to freezing and an area containing a wet pipe sprinkler system, the clearance space around the sprinkler barrel of Dry-Type Sprinklers must be sealed. Due to temperature differences between two areas, the potential for the formation of condensation in the sprinkler and subsequent ice build-up is increased. If this condensation is not controlled, ice build-up can occur that might damage the dry-type sprinkler and/or prevent proper operation in a fire situation.

Use of the Model DSB-2 Dry Sprinkler Boot, described in technical data sheet TFP591 and shown in Figures 14 and 15, can provide the recommended seal.

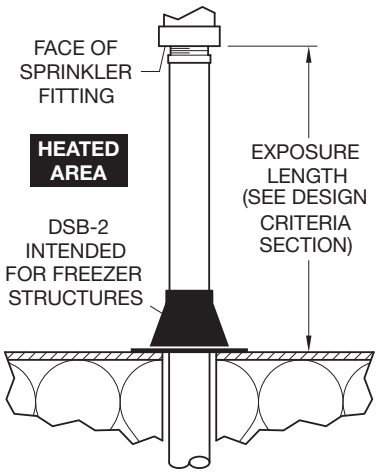


FIGURE 11
— EXPOSURE LENGTH —

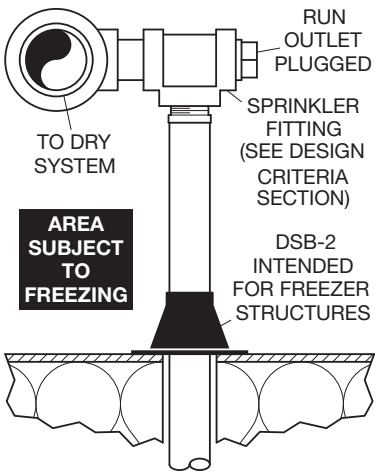


FIGURE 12
SPRINKLER FITTING
— UNHEATED AREA —

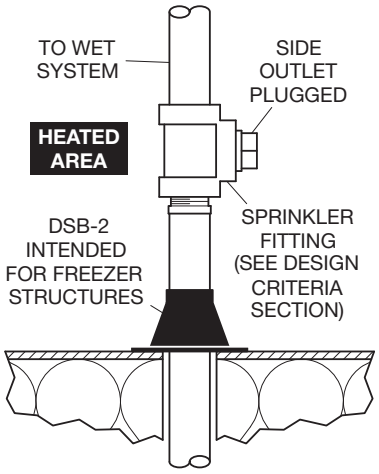


FIGURE 13
SPRINKLER FITTING
— HEATED AREA —

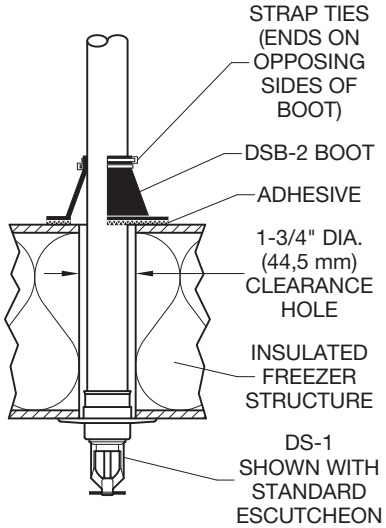


FIGURE 14
MODEL DSB-2 DRY SPRINKLER BOOT WITH PENDENT SERIES DS-1 DRY-TYPE SPRINKLER

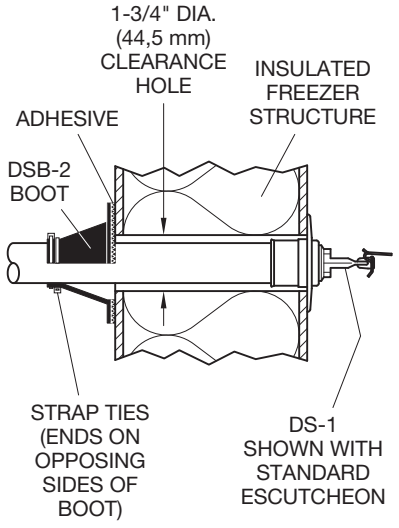


FIGURE 15
MODEL DSB-2 DRY SPRINKLER BOOT WITH SIDEWALL SERIES DS-1 DRY-TYPE SPRINKLER

Installation

TYCO Series DS-1 Dry-Type Sprinklers must be installed in accordance with the following instructions.

NOTICE

Series DS-1 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section. Refer to the Design Criteria section for other important requirements regarding piping design and sealing of the clearance space around the Sprinkler Casing.

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) rating to 1/8 inch (3,2 mm) for the 360°F (182°C) rating.

Obtain a leak-tight 1-inch NPT sprinkler joint by applying a minimum-to-maximum torque of 20 to 30 ft. lbs. (26,8 to 40,2 Nm). Higher levels of torque may distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under or over-tightening the Sprinkler. Re-adjust the position of the sprinkler fitting to suit.

1. Install pendent sprinklers only in the pendent position; install upright sprinklers only in the upright position. The deflector of a pendent or upright sprinkler is to be parallel to the ceiling.

   Install horizontal sidewall sprinklers in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. Ensure the word “TOP” on the Deflector faces the ceiling.

2. With a non-hardening pipe-thread sealant such as Teflon* applied to the Inlet threads, hand-tighten the sprinkler into the sprinkler fitting.

3. Wrench-tighten the sprinkler using either:

   - a pipe wrench on the Inlet Band or the Casing (Figure 1).
   - the W-Type 7 Sprinkler Wrench on the Wrench Flat (Figure 2).

   Apply the Wrench Recess of the W-Type 7 Sprinkler Wrench to the Wrench Flat.

   Note: *If sprinkler removal becomes necessary, remove the sprinkler using the same wrenching method noted above. Sprinkler removal is easier when a non-hardening sealant was used and torque guidelines were followed. After removal, inspect the sprinkler for damage.*

4. After installing the ceiling or wall and applying a ceiling finish, slide on the outer piece of the Escutcheon until it comes in contact with the ceiling/wall. Do not lift the ceiling panel out of its normal position.

   When using the Deep Escutcheon, hold the outer piece in contact with the mounting surface (ceiling or wall). Then rotate the inner piece approximately 1/4 turn with respect to the outer piece, to hold the Deep Escutcheon firmly together.

Care and Maintenance

TYCO Series DS-1 Dry-Type Sprinklers must be maintained and serviced in accordance with the following instructions.

NOTICE

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

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

A Vent Hole is provided in the Bulb Seat (Figure 1) to indicate if the Dry Sprinkler is remaining dry. Evidence of leakage from the Vent Hole indicates potential leakage past the Inlet seal and the need to remove the sprinkler to determine the cause of leakage; for example, an improper installation or an ice plug. Close the fire protection system control valve and drain the system before removing the sprinkler.

Exercise care to avoid damage before, during, and after installation. Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory.

Never repaint factory-painted Cover Plates. When necessary, replace cover plates with factory-painted units. Non-factory applied paint can adversely delay or prevent sprinkler operation in the event of a fire.

Replace sprinklers that:

- were damaged by dropping, striking, wrench twisting, wrench slippage, or the like.
- were modified or over-heated.
- have cracked bulbs or have lost liquid from the bulbs. Refer to the Installation Section in this data sheet.
- are leaking or exhibiting visible signs of corrosion.

Responsibility lies with owners for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (for example, NFPA 25), in addition to the standards of any other Authorities Having Jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to 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.

*DuPont Registered Trademark

Limited Warranty

Products manufactured by Tyco Fire Suppression and Building Products (TFSBP) are warranted solely to the original Buyer against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire twelve (12) months from installation or eighteen (18) months from delivery, whichever occurs first. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFSBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFSBP to be defective shall be either repaired or replaced, at TFSBP's sole option. TFSBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFSBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFSBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFSBP was informed about the possibility of such damages, and in no event shall TFSBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

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

Dry Sprinklers

When ordering 5.6 K-Factor Series DS-1, Standard Response , Standard Coverage (5 mm Bulb), Dry-Type Automatic Sprinklers, specify the following information:

- Model/SIN
  Pendent TY3255, Upright TY3155, or Horizontall Sidewall TY3355
- Deflector Style
- Order Length
  Dry-Type Sprinklers are furnished based upon Order Length as measured per Figures 3 through 10, as applicable. After the measurement is taken, round it to the nearest 1/4 inch increment.
- Inlet Connections
  1-inch NPT or ISO 7-R1
- Temperature Rating
- Sprinkler Finish
- Escutcheon Style and Finish, as applicable
- Part Number from Table B. Part numbers are for 1-inch NPT standard order sprinklers. Orders for all other sprinkler assemblies must be accompanied by a complete description.

Sprinkler Wrench

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

Sprinkler Boot

Specify Model DSB-2 Dry Sprinkler Boot, P/N 63-000-0-002. This Part Number includes one Boot, two Strap Ties, and 1/3 oz. of Adhesive (a sufficient quantity for installing one boot).

P/N* 60 – XXX – X – XXX

		MODEL/SIN
96	Pendent with Standard Escutcheon (1" NPT)	TY3255 (Figure 3)
93	Pendent with Deep Escutcheon (1" NPT)	TY3255 (Figure 5)
97	Pendent with Standard Recessed Escutcheon (1" NPT)	TY3255 (Figure 4)
92	Pendent without Escutcheon (1" NPT)	TY3255 (Figure 6)
94	Sidewall with Standard Escutcheon (1" NPT)	TY3355 (Figure 8)
53	Sidewall with Deep Escutcheon (1" NPT)	TY3355 (Figure 9)
54	Sidewall without Escutcheon (1" NPT)	TY3355 (Figure 10)
98	Upright without Escutcheon (1" NPT)	TY3155 (Figure 7)

	SPRINKLER FINISH	ESCUTCHEON FINISH (1)
1	NATURAL BRASS	WHITE
4	WHITE POLYESTER	WHITE
9	CHROME PLATED	CHROME
0	CHROME PLATED	WHITE
2	NATURAL BRASS	BRASS PLATED

	TEMPERATURE RATING (2)
0	135°F (57°C)
1	155°F (68°C)
2	175°F (79°C)
3	200°F (93°C)
4	286°F (141°C)
5	360°F (182°C)

	ORDER LENGTH (3)
055	5.50"
082	8.25"
180	18.00"
187	18.75"
372	37.25"
480	48.00"

Notes

* Use Prefix "I" for ISO 7-R1 Connection; for example, I-60-961-1-180).

1. Escutcheon Finish applies to sprinklers provided with escutcheons.
2. 286°F (141°C) and 360°F (182°C) temperature ratings apply to non-recessed sprinkler assemblies.
3. Dry-Type Sprinklers are furnished based upon "Order Length" as measured per Figures 3 through 10, as applicable, and for each individual sprinkler where it is to be installed. After the measurement is taken, round it to the nearest 1/4 inch increment.

TABLE C
SERIES DS-1 STANDARD RESPONSE, STANDARD COVERAGE, DRY-TYPE SPRINKLERS
— PART NUMBER SELECTION —

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Model CC2 — 4.2 and 5.6 K-factor Combustible Concealed Space Sprinklers™ Specific Application, Upright

General Description

The Tyco® Model CC2 Combustible Concealed Sprinklers are fast response, upright specific application sprinklers designed to provide protection of specific light hazard combustible, as well as non-combustible, concealed spaces requiring sprinkler protection. The CC2 Sprinklers comply with the criterion for the protection of combustible concealed spaces as described in NFPA 13.

The Model CC2 Sprinklers are designed for installation on BlazeMaster® CPVC wet pipe systems and steel wet pipe or dry pipe sprinkler systems (refer to the respective Design Criteria sections). They provide the following features as compared to the 2.8 K-factor Model CC1 Sprinklers described on Technical Data Sheet TFP630:

- Can be used on steel dry pipe sprinkler systems.
- Increased spacing from 10 ft. (3,1 m) to 12 ft. (3,7 m).
- Increased coverage area from 100 ft^2 (9,3 m^2) to 144 ft^2 (13,4 m^2).

The effectiveness of the Model CC2 Sprinklers in combustible concealed spaces was clearly evident during the full scale fire testing for this product.

IMPORTANT

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

Concealed spaces between floors, as well as low pitch attics (slope of 2:12 or less) are inherently shallow. Standard spray sprinklers, by design, have an umbrella like spray pattern that poses a difficult challenge when trying to achieve effective coverage within a shallow space. The Model CC2 Combustible Concealed Space Sprinklers have addressed the difficult "above ceiling" fire challenge for both wet pipe and dry pipe sprinkler systems.

WARNING

The Model CC2 Combustible Concealed Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. ***Failure to do so may impair the performance of these devices.***

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

Sprinkler Identification Number

TY2189 - Upright, 4.2 K
TY3189 - Upright, 5.6 K

Technical Data

Approvals
UL Listed.
(Listings and approvals only apply to the service conditions indicated in the Design Criteria sections.)

Maximum Working Pressure
175 psi (12,1 bar)

Pipe Thread Connection
1/2 inch NPT or ISO 7-R3/4

Discharge Coefficient
K = 4.2 GPM/psi$^{1/2}$
(60,5 LPM/bar$^{1/2}$)
K = 5.6 GPM/psi$^{1/2}$
(80,6 LPM/bar$^{1/2}$)

Temperature Rating
175°F/79°C

Finish
Natural Brass

Physical Characteristics
Frame . . . . . Brass
Button . . . . . Bronze
Sealing Assembly . . . . . Stainless Steel w/Teflon†
Bulb . . . . . Glass (3 mm dia.)
Compression Screw . . . . . Brass
Deflector . . . . . Bronze
† DuPont Registered Trademark

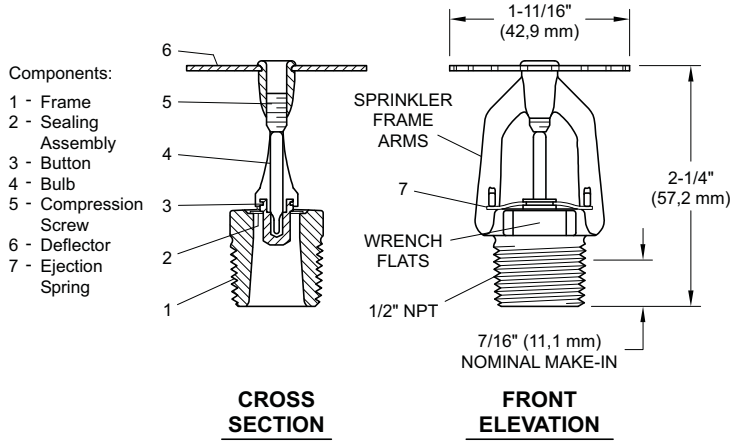


FIGURE 1, MODEL CC2 SPRINKLER

Operation

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

Design Criteria

Design criteria is provided as follows

- 175°F/79°C, Model CC2 Combustible Concealed Sprinklers with CPVC Pipe and horizontal slope above sprinklers not exceeding 2:12 (Refer to Page 2).
- 175°F/79°C, Model CC2 Combustible Concealed Sprinklers with Steel Pipe and horizontal slope above sprinklers not exceeding 2:12 (Refer to Page 3).

CPVC Pipe

CC2 Temperature Rating (CPVC Pipe):
175°F/79°C

Area Of Use (CPVC Pipe):
Horizontal (slope not exceeding 2:12) combustible concealed spaces of

- Wood truss construction or bar joist construction (Fig. 2).
- Non-combustible insulation filled solid wood or composite wood joist construction (Fig. 3).

NOTE

In order to be considered "non-combustible insulation filled solid wood or composite wood joist construction", the insulation (including insulation provided with a combustible vapor barrier), must completely fill the pockets between the joists to the bottom of the joists, and the insulation must be secured in place with metal wire netting. The metal wire netting is intended to hold the insulation in place should the insulation become wetted by the operation of the CC2 Sprinklers in the event of a fire.

Concealed Space Area (CPVC Pipe):
The area of the concealed space is not limited; however, for both Fig. 2 and Fig. 3, where CPVC pipe is being utilized, draft-curtains or full height walls must be provided at 1000 ft^2 (93 m^2) areas. This draft curtain shall be at least 1/3 the depth of the concealed space or 8 inches (200 mm), whichever is greater, and be constructed using a material that will not allow heat to escape through or above the draft curtain.

Concealed Space Size (CPVC Pipe):
The depth of the concealed space is 36 inches (915 mm) maximum to 12 inches (305 mm) minimum.

System Type (CPVC Pipe):
Light hazard, wet pipe system.

Minimum Distance Between CC2 Sprinklers (CPVC Pipe):
7 feet (2,1 m). *Minimum spacing does not apply to any additional sprinklers required for protection of BlazeMaster CPVC that is offset over an obstruction.*

Maximum Distance Between CC2 Sprinklers (CPVC Pipe):
12 feet (3,7 m).

Maximum Coverage Area (CPVC Pipe):
144 ft^2 (13,4 m^2).

Deflector Position (CPVC Pipe):
1-1/2 to 4 inches (40 to 100 mm) below upper deck for wood truss construction or bar joist construction (Fig. 2).

1-1/2 to 4 inches (40 to 100 mm) below solid wood or composite wood joists (Fig. 3).

Minimum Distance Away From Trusses (CPVC Pipe):
4-1/2 inches (114 mm).

Remote Area (CPVC Pipe):
The remote area is 1000 ft^2 (93 m^2).

The remote area does not include any additional sprinklers required for protection of BlazeMaster CPVC that is offset over an obstruction.

Required Density (CPVC Pipe):
0.10 gpm/ft^2 (4,1 mm/min).

Minimum Operating Pressure (CPVC Pipe):
7 psi (0,48 bar).

Note: The minimum resulting flow for the 4.2 K is 11.1 GPM, and the minimum resulting flow for the 5.6K is 14.8 GPM. Therefore, for coverage areas less than the maximum permitted coverage area of 144 ft^2, the 4.2K may provide a hydraulic advantage. The use of the CC1 sprinkler having a K-factor of 2.8, minimum operating pressure of 10 psi, and resulting minimum flow of 9.5 GPM may provide a further hydraulic advantage for yet smaller coverage areas. The CC1 is described in Technical Data Sheet TFP630.

Obstructions (CPVC Pipe):
All obstruction criteria per NFPA for standard spray sprinklers apply (Ref. Figure 8), unless modified by this Technical Data Sheet.

Use Of UL Listed BlazeMaster CPVC Piping With Model CC2 Sprinklers:
Only BlazeMaster CPVC product may be used in concealed spaces requiring automatic sprinklers, when used in conjunction with Model CC2 Sprinklers. In order to use the BlazeMaster CPVC product for wood truss or bar joist construction, the horizontal run of pipe must be a maximum of 6 Inches (150 mm) above the ceiling or non-combustible ceiling insulation, or 1/3 the depth of concealed space (as measured from the top surface of the ceiling to the bottom of the deck above), whichever is smaller (Fig. 2). For insulation filled solid wood or composite wood joist construction, the horizontal run of pipe must be a maximum of 6 Inches (150 mm) above ceiling or non-combustible ceiling insulation, or 1/3 the depth of concealed space (as measured from the top surface of the ceiling to the bottom surface of the joist insulation above), whichever is smaller (Fig. 3). The CPVC piping can then be used to supply the Model CC2 Sprinklers, as well as the sprinklers below the ceiling. Unless modified by this Technical Data Sheet, all other guidelines of the

"BlazeMaster — Installation Instructions & Technical Manual" must be met. When using 1 inch (DN25) or larger pipe, a hanger must be located at the truss nearest a sprig for purposes of restraint. If using 3/4 inch (DN19) piping, all sprigs over 12 inches (305 mm) must be laterally braced using methods described in the NFPA standards.

Where the CPVC must be offset up and over an obstruction and the pipe exceeds the allowed horizontal positioning requirements specified above as well as shown in Figure 2 and 3, additional Model CC2 Sprinklers are to be installed as shown in Figure 2 and 3 to protect the BlazeMaster CPVC product.

A minimum lateral distance of 18 inches (460 mm) must be maintained between the CPVC pipe and heat pumps, fan motors, and heat lamps.

Steel Pipe

CC2 Temperature Rating (Steel Pipe):
175°F/79°C

Area Of Use (Steel Pipe): Horizontal (slope not exceeding 2:12) combustible concealed spaces of

- Wood truss construction or bar joist construction (Fig. 4).
- Solid wood joist construction (Fig. 5) where the upper deck and ceiling joists may have a maximum depth of 12 inches (300 mm) and typical on center joist spacing of minimum 16 inches (400 mm).
- Non-combustible insulation filled solid wood joist or wood composite joist construction (Fig. 6).

NOTE

In order to be considered "non-combustible insulation filled solid wood joist or composite wood joist construction", the insulation (including insulation provided with a combustible vapor barrier), must completely fill the pockets between the joists to the bottom of the joists, and the insulation must be secured in place with metal wire netting. The metal wire netting is intended to hold the insulation in place should the insulation become wetted by the operation of the CC2 Sprinklers in the event of a fire.

Concealed Space Area (Steel Pipe):
The area of the concealed space is not limited; however,

- for wood truss construction or concealed spaces of non-combustible bar joist construction (Fig. 4) draftcurtains or full height walls must be provided at 1000 ft^2 (93 m^2) areas. This draft curtain shall be at least 1/3 the depth of the concealed space or 8 inches (200 mm), whichever is greater, and be constructed using a material that will not allow heat to escape through or above the draft curtain.
- for solid wood joist construction (Fig. 5), blocking must be provided in each upper deck and ceiling joist channel at a maximum 32 feet (9,75 m) intervals. This blocking shall be installed to the full depth of the joists and be installed so as to not allow heat to escape through or above the blocking. The blocking must be constructed using a non-combustible material or the joist construction material.

  Draft curtains must protrude below the joist a minimum of 6 inches (150 mm) or 1/3 the space, whichever is greatest and run parallel with the joist spaced at 31 feet (9,4 m) width maximum to limit the area to a maximum of 1000 ft^2 (93 m^2). The draft curtain may be constructed of 1/4 inch (6,4 mm) plywood to prevent heat from escaping beyond the area.
- for non-combustible insulation filled solid wood joist or composite wood joist construction (Fig. 6), the requirement for draft curtains or blocking does not apply.

Concealed Space Size (Steel Pipe):
The minimum and maximum concealed space depth is as follows:

For wood truss construction or concealed spaces of non-combustible bar joist construction (Fig. 4) the depth of the concealed space is 36 inches (915 mm) maximum to 12 inches (305 mm) minimum.

For solid wood joist construction (Fig. 5) or for non-combustible insulation filled solid wood or composite wood joist construction (Fig. 6), the maximum depth of the concealed space is 54 inches (1372 mm) from bottom of upper deck to top of ceiling, and the minimum depth is 6 inches (150 mm) from the bottom of the upper deck joists to the top of the ceiling joists.

System Type (Steel Pipe):
Light hazard, wet or dry pipe system using steel pipe.

NOTES

Use of the 4.2 K sprinklers in dry pipe systems is permitted by section 8.3.4.3 of NFPA 13 (2007 edition) where piping is corrosion resistant or internally galvanized.

Minimum Distance Between CC2 Sprinklers (Steel Pipe):
7 feet (2,1 m).

Maximum Distance Between CC2 Sprinklers (Steel Pipe):
12 feet (3,7 m)

Maximum Coverage Area (Steel Pipe):
144 ft^2 (13,4 m^2).

Deflector Position (Steel Pipe):
1-1/2 to 4 inches (40 to 100 mm) below upper deck for wood truss construction or concealed spaces of non-combustible bar joist construction (Fig. 4).

1-1/2 to 2 inches (40 to 50 mm) below solid wood joists (Fig. 5).

1-1/2 to 4 inches (40 to 100 mm) below non-combustible insulation filled solid wood joists or composite wood joists (Fig. 6).

Remote Area (Steel Pipe):
The remote area for wood truss construction or bar joist construction (Fig. 4) or solid wood joist construction (Fig. 5) is 1000 ft^2 (93 m^2) for wet pipe systems or 1300 ft^2 (121 m^2) for dry pipe systems.

The remote area for non-combustible insulation filled solid wood joist or wood composite joist construction (Fig. 6) is to be calculated per the requirements of NFPA 13.

Required Density (Steel Pipe):
0.10 gpm/ft^2 (4,1 mm/min)

Minimum Operating Pressure (Steel Pipe):
7 psi (0,48 bar).

Note: The minimum resulting flow for the 4.2 K is 11.1 GPM, and the minimum resulting flow for the 5.6K is 14.8 GPM. Therefore, for coverage areas less than the maximum permitted coverage area of 144 ft^2, the 4.2K may provide a hydraulic advantage. The use of the CC1 sprinkler having a K-factor of 2.8, minimum operating pressure of 10 psi, and resulting minimum flow of 9.5 GPM may provide a further hydraulic advantage for yet smaller coverage areas when designing wet pipe systems. The CC1 is described in Technical Data Sheet TFP630.

Obstructions (Steel Pipe):
All obstruction criteria per NFPA for standard spray sprinklers apply (Ref. Figure 8), unless modified by this Technical Data Sheet.

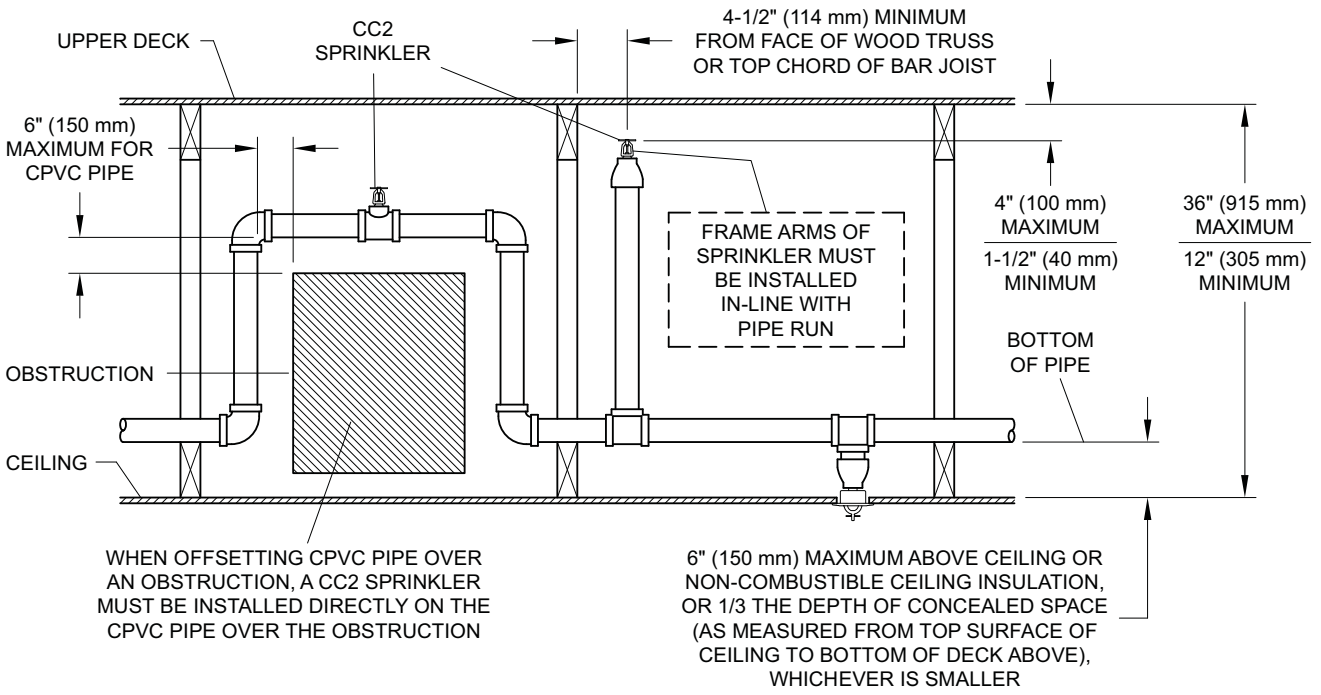


FIGURE 2
WOOD TRUSS CONSTRUCTION OR COMBUSTIBLE BAR JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
— CPVC PIPE —

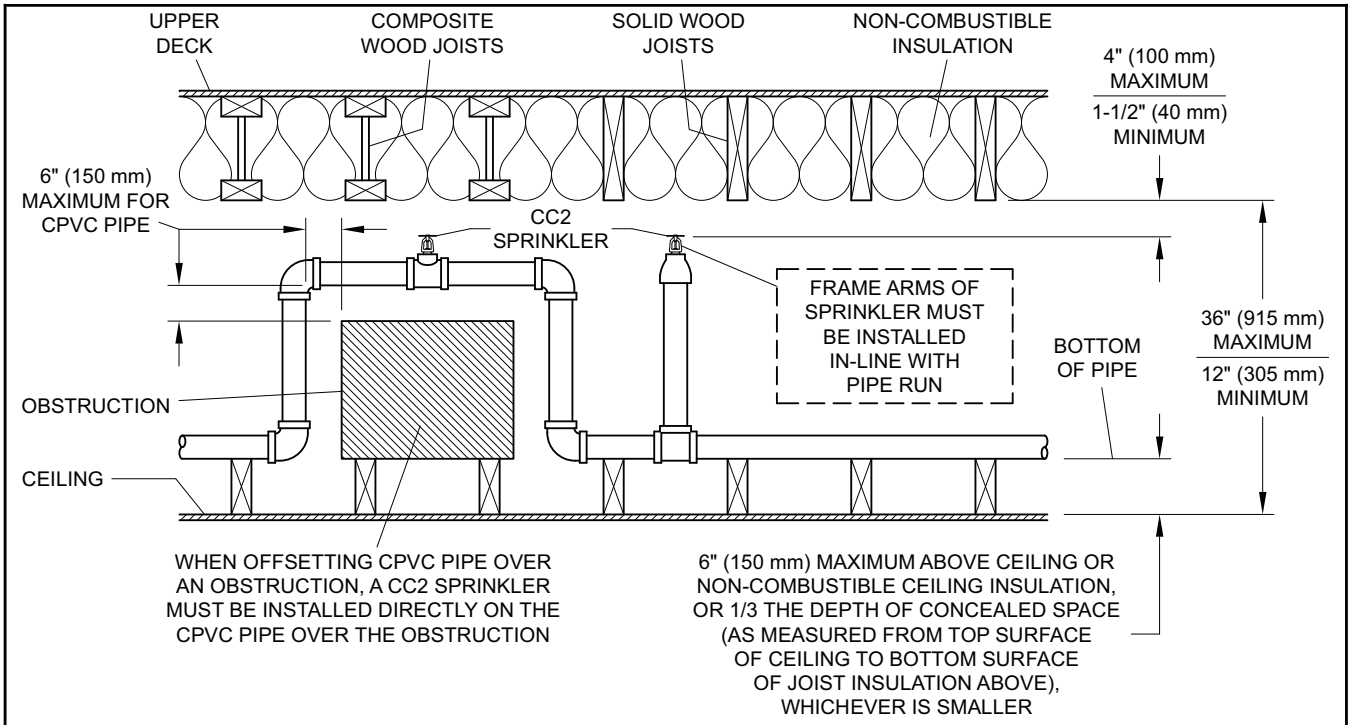


FIGURE 3
NON-COMBUSTIBLE INSULATION FILLED UPPER DECK
SOLID WOOD OR COMPOSITE WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
— CPVC PIPE —

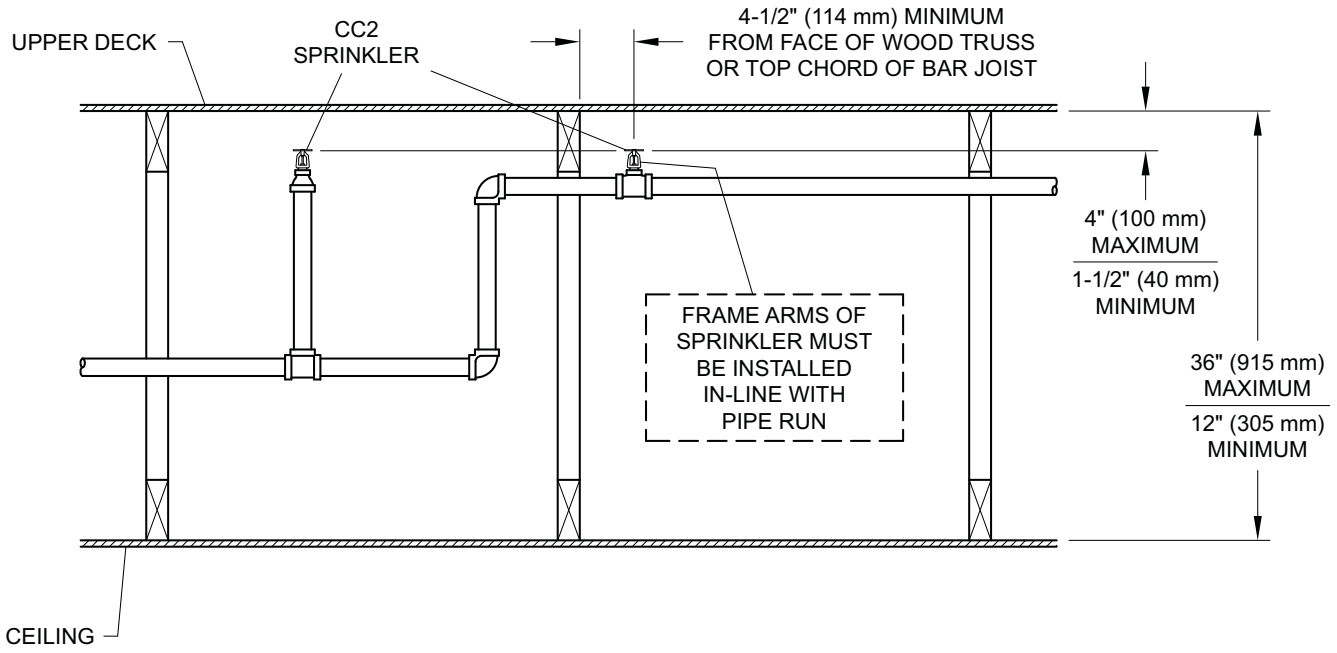


FIGURE 4
WOOD TRUSS CONSTRUCTION OR NON-COMBUSTIBLE BAR JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
— STEEL PIPE —

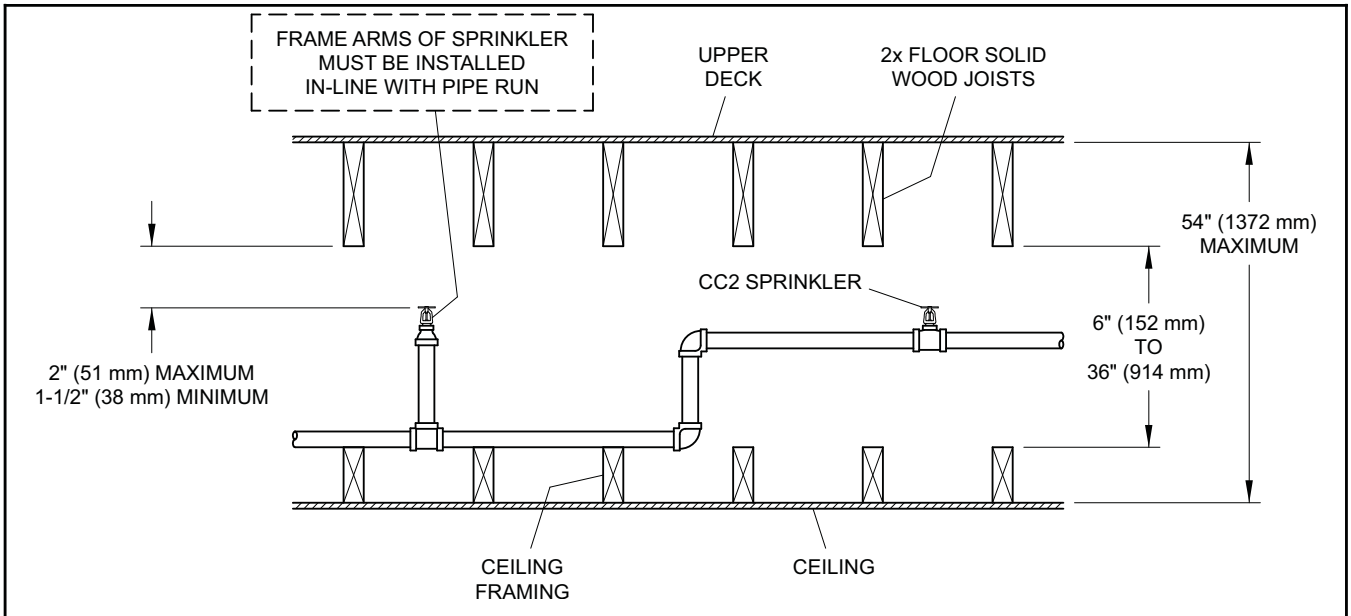


FIGURE 5
SOLID WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
— STEEL PIPE —

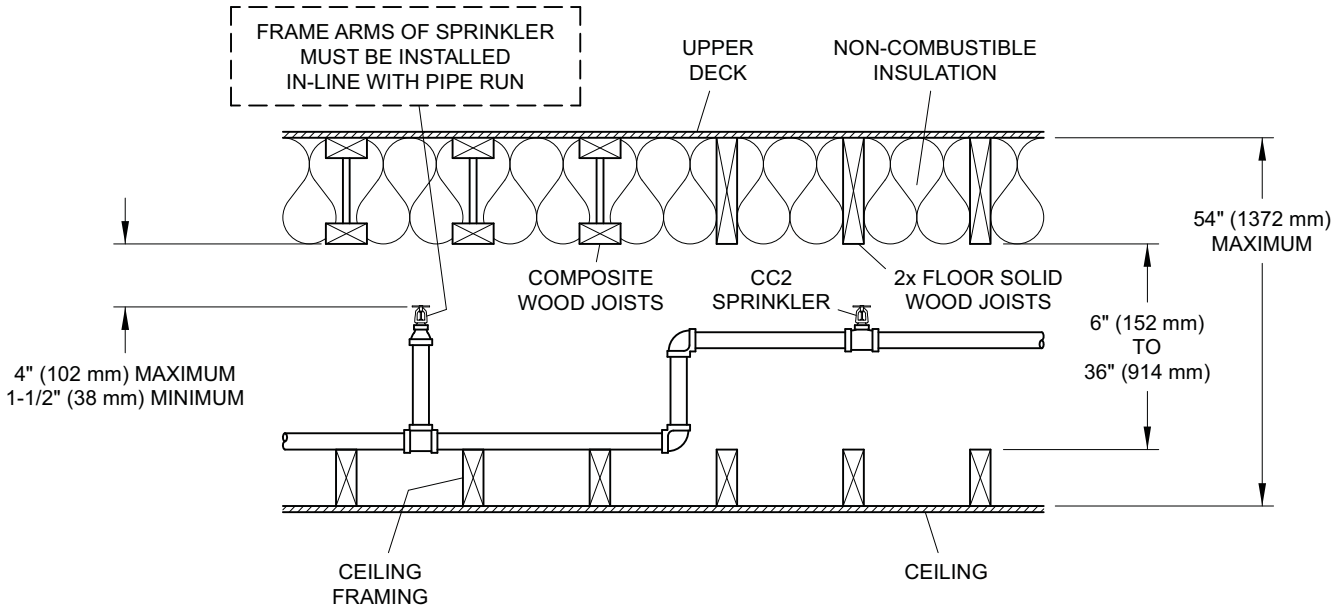


FIGURE 6
NON-COMBUSTIBLE INSULATION FILLED UPPER DECK
SOLID WOOD OR COMPOSITE WOOD JOIST CONSTRUCTION
CROSS SECTION ELEVATION VIEW
— STEEL PIPE —

Installation

The Model CC2 Sprinklers must be installed in accordance with the following instructions:

NOTES

The CC2 Sprinklers are to be installed upright and with their frame arms (ref. Figure 2, 3, 4, 5, or 6 as applicable) in-line with the pipe run.

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 175°F/79°C temperature rating.

A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). A maximum of 20 ft.lbs. (28,5 Nm) of torque is to be used to install sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

The Model CC2 Sprinklers must only be installed in the upright position with the deflector parallel to the upper deck. With pipe thread sealant applied to the pipe threads, use only the W-Type 6 (End A) Sprinkler Wrench (Figure 7) for installation of the Model CC2 Sprinklers by applying the wrench to the sprinkler wrench flats only.

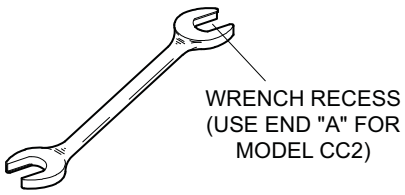


FIGURE 7
W-TYPE 6 SPRINKLER
WRENCH

Care and Maintenance

The Model CC2 Sprinklers must be maintained and serviced in accordance with the following instructions:

NOTE

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

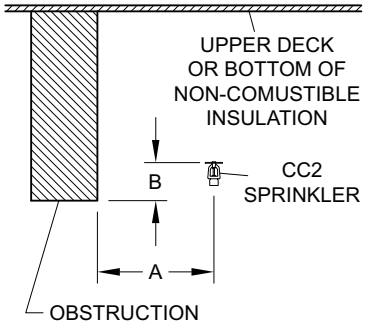
Sprinklers that are found to be leaking or exhibiting visible signs of corrosion must be replaced.

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

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

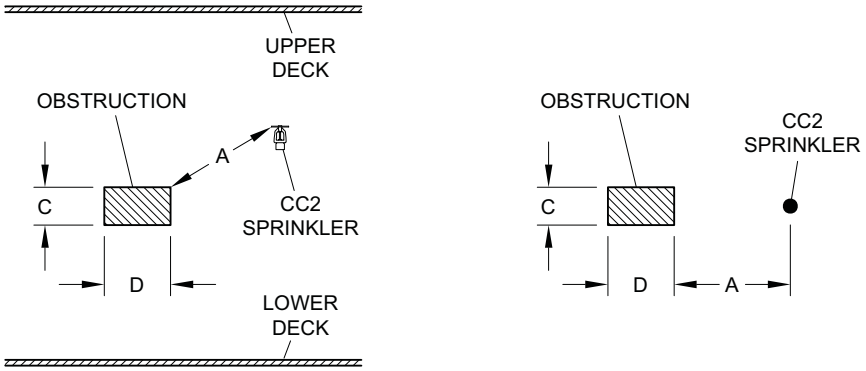
The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities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

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



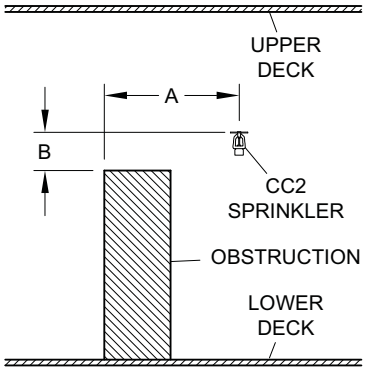
NOTE:
WEB MEMBERS AND GUSSETS SHALL NOT BE CONSIDERED OBSTRUCTIONS PROVIDED THE MINIMUM 4-1/2 INCH LATERAL DISTANCE (FIG. 2) REQUIRED BY THE SPECIFIC APPLICATION LISTING IS MAINTAINED.

Distance from Centerline of Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector Above Bottom of Obstruction (B)
<12" <(304,8 mm)	0" (0 mm)
12" to <18" (304,8 mm to <457,2 mm)	2-1/2" (63,5 mm)
18" to <24" (457,2 mm to <609,6 mm)	3-1/2" (88,9 mm)
24" to <30" (609,6 mm to <762,0 mm)	5-1/2" (139,7 mm)
30" to <36" (762,0 mm to <914,4 mm)	7-1/2" (190,5 mm)
36" to <42" (914,4 mm to <1066,8 mm)	9-1/2" (241,3 mm)
42" to <48" (1066,8 mm to <1219,2 mm)	12" (304,8 mm)
48" to <54" (1219,2 mm to <1371,6 mm)	14" (355,6 mm)
54" to <60" (1371,6 mm to <1524,0 mm)	16-1/2" (419,1 mm)



ELEVATION VIEW PLAN VIEW

A≥3C or 3D
A≤24" (609,6 mm)
(Use dimension C or D, whichever is greater)



Horizontal Distance (A)	Minimum Vertical Distance Below Deflector (B)
≤6" (≤152,4 mm)	3" (76,2 mm)
>6" to 9" (>152,4 to 228,6 mm)	4" (101,6 mm)
>9" to 12" (>228,6 mm to 304,8 mm)	6" (88,9 mm)
>12" to 15" (>304,8 mm to 381,0 mm)	8" (203,2 mm)
>15" to 18" (>381,0 to 457,2 mm)	9-1/2" (241,3 mm)
>18" to 24" (457,2 mm to 609,6 mm)	12-1/2" (317,5 mm)
>24" to 30" (>609,6 mm to 762,0 mm)	15-1/2" (393,7 mm)
>30" (>762,0 mm)	18" (457,2 mm)

FIGURE 8
NFPA 13 OBSTRUCTION TO WATER DISTRIBUTION CRITERIA (REFERENCE)

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Contact your local distributor for availability.

Sprinkler Assemblies with NPT Thread Connections:
Specify: (specify SIN and K-Factor), Model CC2, 175°F/79°C, Upright, Specific Application, Combustible Concealed Space Sprinkler, P/N (specify).

175°F/79°C

SIN TY2189, 4.2K	51-311-1-175
SIN TY3189, 5.6K	51-301-1-175

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

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Model DPV-1 Dry Pipe Valve, External Resetting 2-1/2 thru 6 Inch (DN65 thru DN150) 250 psi (17,2 bar)

General Description

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

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

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

Available End Connections and Sizes

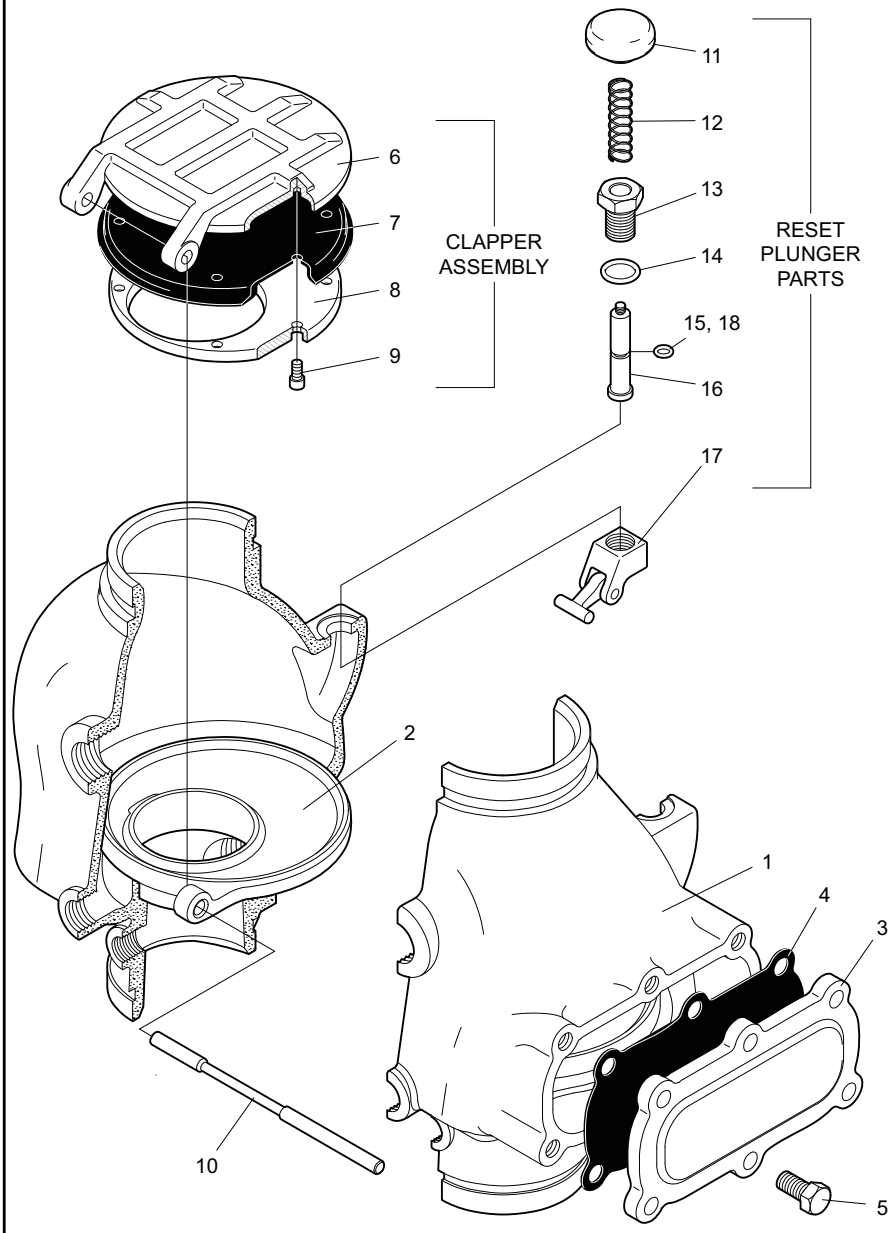
End Connection	Nominal Valve Size			
	2-1/2 Inch (DN65)	3 Inch (DN80)	4 Inch (DN100)	6 Inch (DN150)
Flange x Flange	N/A	N/A	●	●
Flange x Groove	N/A	N/A	●	●
Groove x Groove	●	●	●	●

● Available
N/A Not Available

WARNING

The Model DPV-1 Dry Pipe Valves described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. ***Failure to do so may impair the performance of these devices.***

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



NO.	DESCRIPTION	QTY.	REF.
1	Valve Body	1	NR
2	Air and Water Seat	1	NR
3	Handhole Cover	1	NR
4	Handhole Cover Gasket	1	See (b)
5	1/2-13 UNC x 1" Hex Head Cap Screw: 2-1/2 & 3 Inch Valves	5	CH
	4 Inch Valve	6	CH
6	Clapper	1	See (a)
7	Clapper Facing	1	See (a) or (b)
8	Clapper Facing Retaining Plate	1	See (a)
9	2-1/2 and 3 Inch Valves: 1/4" x 3/8" Long #10-32 Shoulder Screw	5	See (a)
	4 Inch Valve: 1/4-20 UNC x 1/2" Socket Head Cap Screw	7	See (a)
10	Clapper Hinge Pin	1	See (a)
11	Reset Knob	1	See (c)
12	Reset Spring	1	See (c)
13	Reset Bushing	1	See (c)
14	Reset Bushing O-Ring	1	See (b) or (c)
15	Reset Plunger O-Ring	1	See (b) or (c)
16	Reset Plunger	1	See (c)
17	Reset Latch Subassembly	1	See (c)
18	Dow Corning FS3452 Flourosilicone Grease, 1.5 g	1	See (b) or (c)

NR: Not Replaceable
CH: Common Hardware

REPLACEMENT PARTS

NO.	DESCRIPTION	P/N
(a)	Clapper Assembly Includes Items 6-10:	
	2-1/2 & 3 Inch Valves	92-309-2-203
	4 Inch Valve	92-309-2-403
(b)	Repair Parts Kit Includes Items 4, 7, 14, 15, & 18:	
	2-1/2 & 3 Inch Valves	92-309-1-204
	4 Inch Valve	92-309-1-404
(c)	Reset Plunger Parts Kit Includes Items:	
	11 through 18	92-309-1-405

FIGURE 1 — Part 1 of 2
MODEL DPV-1 DRY PIPE VALVES
2-1/2, 3, and 4 INCH (DN65, DN80, and DN100)
— ASSEMBLY —

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

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

NO.	DESCRIPTION	QTY.	REF.
8	5/8-11 UNC x 1" Hex Head Cap Screw	6	CH
9	Clapper	1	See (a)
10	Clapper Facing	1	See (a) or (b)
11	Clapper Facing Retaining Plate	1	See (a)
12	1/4-20 UNC x 1/2" Socket Head Cap Screw	9	See (a)
13	Clapper Hinge Pin	1	See (a)
14	Reset Knob	1	See (c)
15	Reset Spring	1	See (c)
16	Reset Bushing	1	See (c)
17	Reset Bushing O-Ring	1	See (b) or (c)
18	Reset Plunger O-Ring	1	See (b) or (c)
19	Reset Plunger	1	See (c)
20	Reset Latch Subassembly	1	See (c)
21	Dow Corning FS3452 Flourosilicone Grease, 1.5 g	1	See (b) or (c)

NR: Not Replaceable
CH: Common Hardware

REPLACEMENT PARTS		
NO.	DESCRIPTION	P/N
(a)	Clapper Assembly Includes Items: 9 through 13	92-309-2-603
(b)	Repair Parts Kit Includes Items: 7, 10, 17, 18, 21	92-309-1-604
(c)	Reset Plunger Parts Kit Includes Items: 14 through 21	92-309-1-405

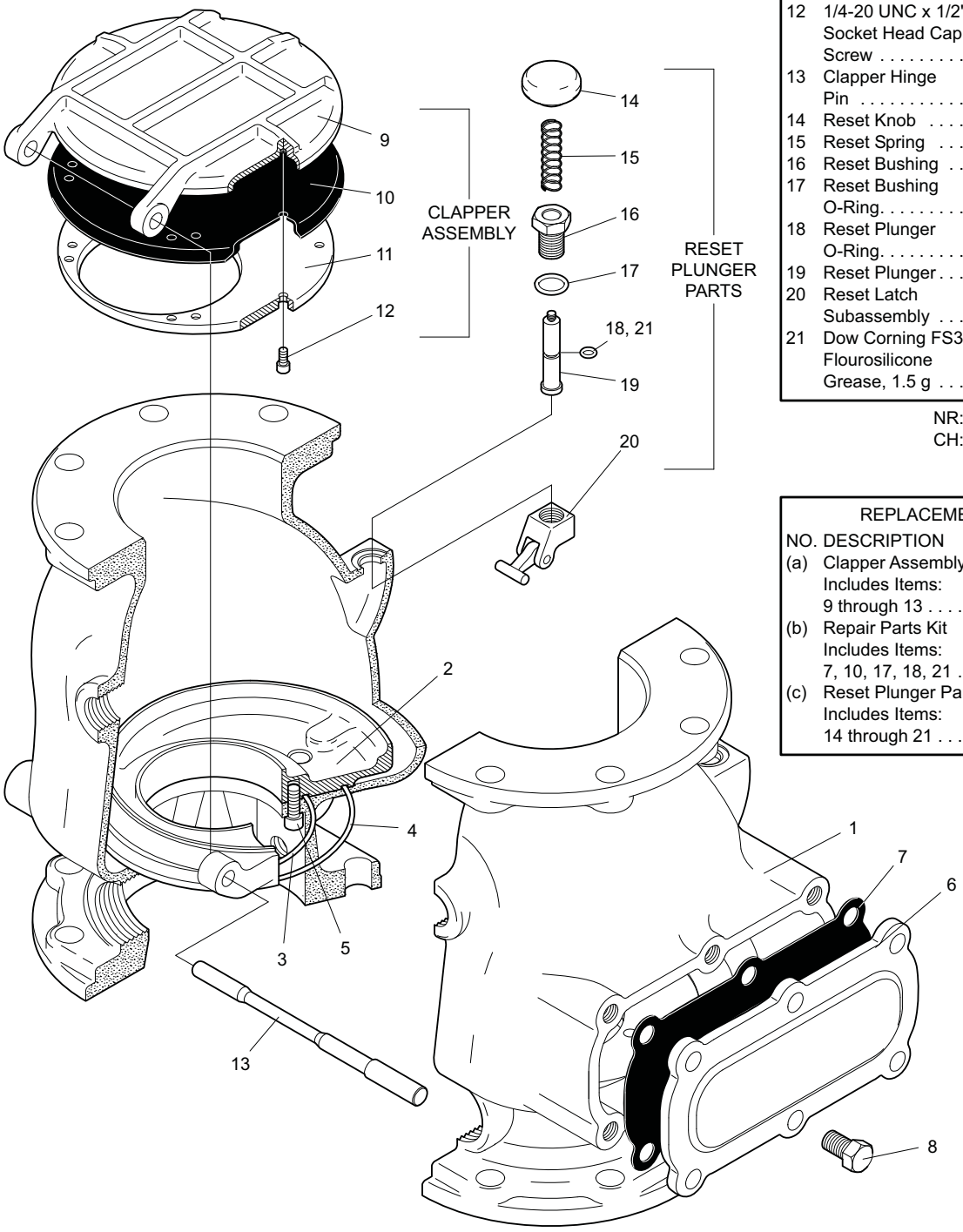


FIGURE 1 — Part 2 of 2
MODEL DPV-1 DRY PIPE VALVES
6 INCH (DN150)
— ASSEMBLY —

Technical Data

Approvals:
UL and C-UL Listed. FM Approved. NYC under MEA 172-02-E (4 and 6 inch).

Dry Pipe Valve:
The Model DPV-1 Dry Pipe Valves are for vertical installations (flow going up), and they are rated for use at a maximum service pressure of 250 psi (17,2 bar). The Valve dimensions are shown in Figure 7.

Flanged connections are available drilled per ANSI, ISO, AS, and JIS specifications (Ref. Table A). The grooved outlet connections, as applicable, are cut in accordance with standard groove specifications for steel pipe. They are suitable for use with grooved end pipe couplings that are listed or approved for fire protection system service. Available combinations of inlet and outlet connections are detailed in the Ordering Procedure section.

Threaded port connections of valves having flanges drilled to ANSI, AS, or JIS specifications are NPT threaded per ANSI Standard B1.20.1. Threaded port connections of valves having flanges drilled to ISO are available either threaded per ISO 7/1 or NPT threaded per ANSI Standard B1.20.1. Valves with NPT threaded ports will readily accept the trim arrangements detailed in Figures 4, 5, and 6.

Components of the DPV-1 Valves are shown in Figure 1. The Body and Handhole Cover are ductile iron. The Handhole Cover Gasket is neoprene, and the Clapper Facing is EPDM. The Air/Water Seat Ring is brass, the Clapper is bronze or aluminum bronze, and both the Clapper Retaining Plate and Latch are bronze. The Hinge Pin is aluminum bronze, and the fasteners for the Handhole Cover are carbon steel.

Valve Trim:
Installation dimensions are given in Figure 7, and the Valve Trim is illustrated in Figures 4, 5, and 6. The Valve Trim forms a part of the laboratory listings and approval of the DPV-1 Valve and is necessary for the proper operation of the DPV-1 Valve. Each package of trim includes the following items:

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

NOTE

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

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

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

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

Quick Opening Device:

As an option, the Model DPV-1 Dry Pipe Valve may be equipped with the Model QRS Electronic Dry Pipe Valve Accelerator (4 and 6 inch sizes) as detailed in Technical Data Sheet TFP1100 or the Model ACC-1 Mechanical Dry Pipe Valve Accelerator (2-1/2, 3, 4, and 6 inch sizes) as detailed in Technical Data Sheet TFP1112.

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

Patents:
U.S.A. Patent No. 6,557,645

Nominal Valve Size	Flange Drilling Specification											
	Nominal Dimensions in Inches and (mm)											
	ANSI B16.1 [1] (Class 125)			ISO 7005-2 (PN16) [2]			JIS B 2210 (10K)			AS 2129 (Table E)		
	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N
4 Inch (DN100)	7.50 (190,5)	0.75 (19,0)	8	7.09 (180,0)	0.75 (19,0)	8	6.89 (175,0)	0.59 (15,0)	8	7.00 (178,0)	0.71 (18,0)	8
6 Inch (DN150)	9.50 (241,3)	0.88 (22,2)	8	9.45 (240,0)	0.91 (23,0)	8	9.45 (240,0)	0.75 (19,0)	8	9.25 (235,0)	0.87 (22,0)	8

[1] Same drilling as for ANSI B16.5 (Class 150) and ANSI B16.42 (Class 150).

[2] Same drilling as for BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16).

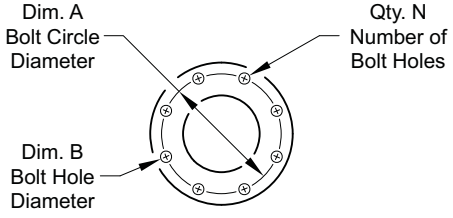
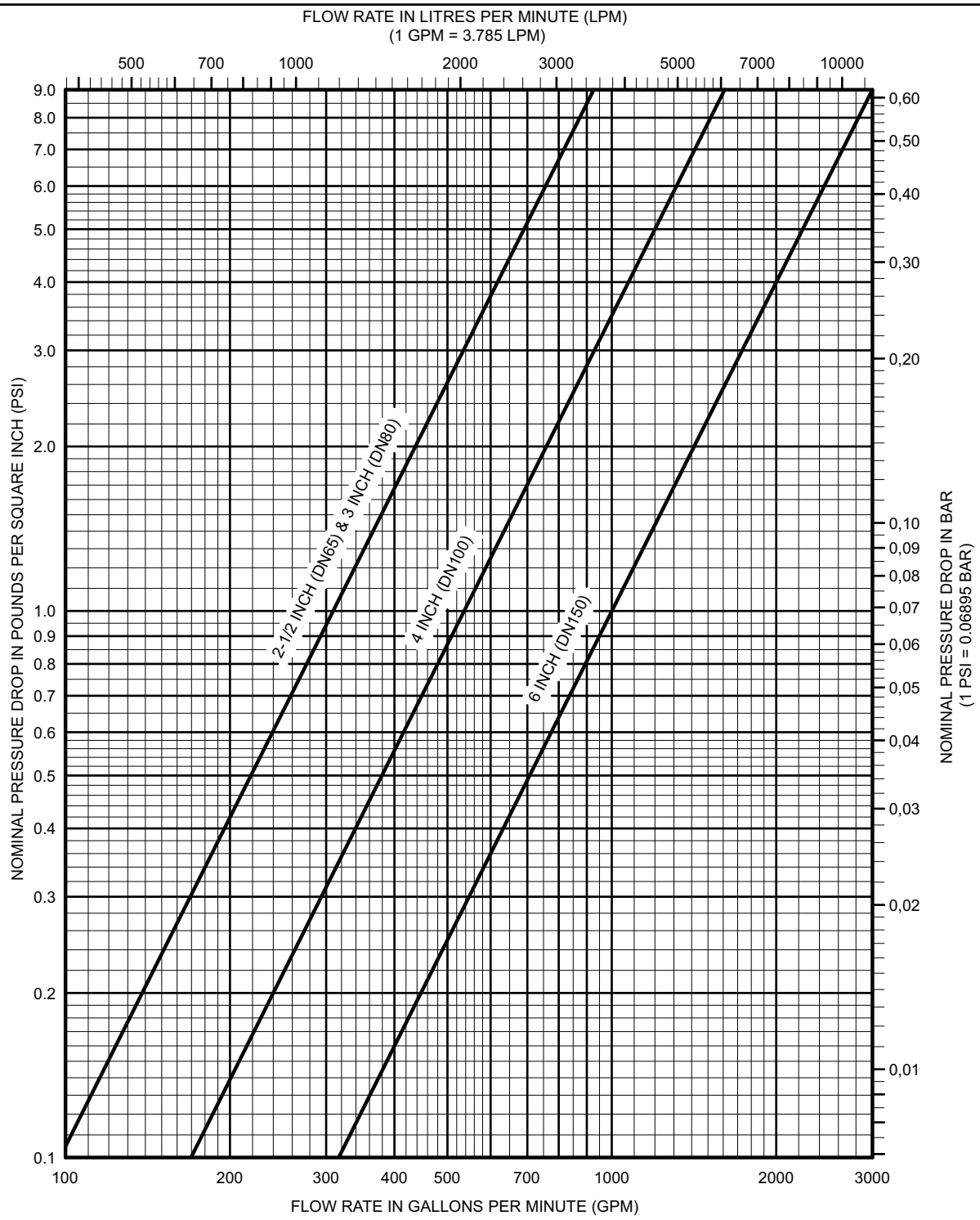


TABLE A
DIMENSIONAL SPECIFICATIONS
FOR SELECTION OF FLANGE DRILLING



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

2.2 feet for the 2-1/2 inch valve at a typical flow rate of 250 GPM
4.9 feet for the 3 inch valve at a typical flow rate of 350 GPM
8.9 feet for the 4 inch valve at at typical flow rate of 600 GPM
22 feet for the 6 inch valve at a typical flow rate of 1500 GPM

FIGURE 2
MODEL DPV-1 DRY PIPE VALVES
— NOMINAL PRESSURE LOSS VERSUS FLOW —

Operating Principles

The Model DPV-1 Dry Pipe Valve is a differential type valve that utilizes a substantially lower system (air or nitrogen) pressure than the supply (water) pressure, to maintain the set position shown in Figure 3A. The differential nature of the DPV-1 is based on the area difference between the air seat and the water seat in combination with the ratio of the radial difference from the Hinge Pin to the center of the Water Seat and the Hinge Pin to the center of the Air Seat. The difference is such that 1 psi (0,07 bar) of system air pressure can hold approximately 5.5 psi (0,38 bar) of water supply pressure.

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

The Intermediate Chamber of the DPV-1 is formed by the area between the Air Seat and Water Seat as shown in Figure 3B. The Intermediate Chamber normally remains at atmospheric pressure through the Alarm Port connection and the valve trim to the normally open Automatic Drain Valve (Fig. 4, 5, or 6). Having the Intermediate Chamber, Figure 3B, open to atmosphere is critical to the DPV-1 Valve remaining set, otherwise the full resulting pressure of the system air pressure on top of the Clapper Assembly cannot be realized.

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

When one or more automatic sprinklers operate in response to a fire, air pressure within the system piping is relieved through the open sprinklers. When the air pressure is sufficiently reduced, the water pressure overcomes the differential holding the Clapper Assembly closed and the Clapper Assembly swings clear of the water seat, as shown in Figure 3C, This action permits water flow into the system piping and subsequently to be discharged from any open sprinklers. Also, with the Clapper Assembly open, the intermediate chamber is pressurized and water flows through the alarm port (Ref. Figure 3B) at the rear of the DPV-1 Valve to actuate system water flow alarms. The flow from the alarm port is also sufficient to close the otherwise normally open Automatic Drain Valve in the valve trim.

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

During the valve resetting procedure and after the system is completely drained, the external reset knob can be easily depressed to externally unlatch the Clapper Assembly as shown in Figure 3E. As such, the Clapper Assembly is returned to its normal set position to facilitate setting of the dry pipe sprinkler system, without having to remove the Handhole Cover.

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

TABLE B
SYSTEM AIR PRESSURE REQUIREMENTS

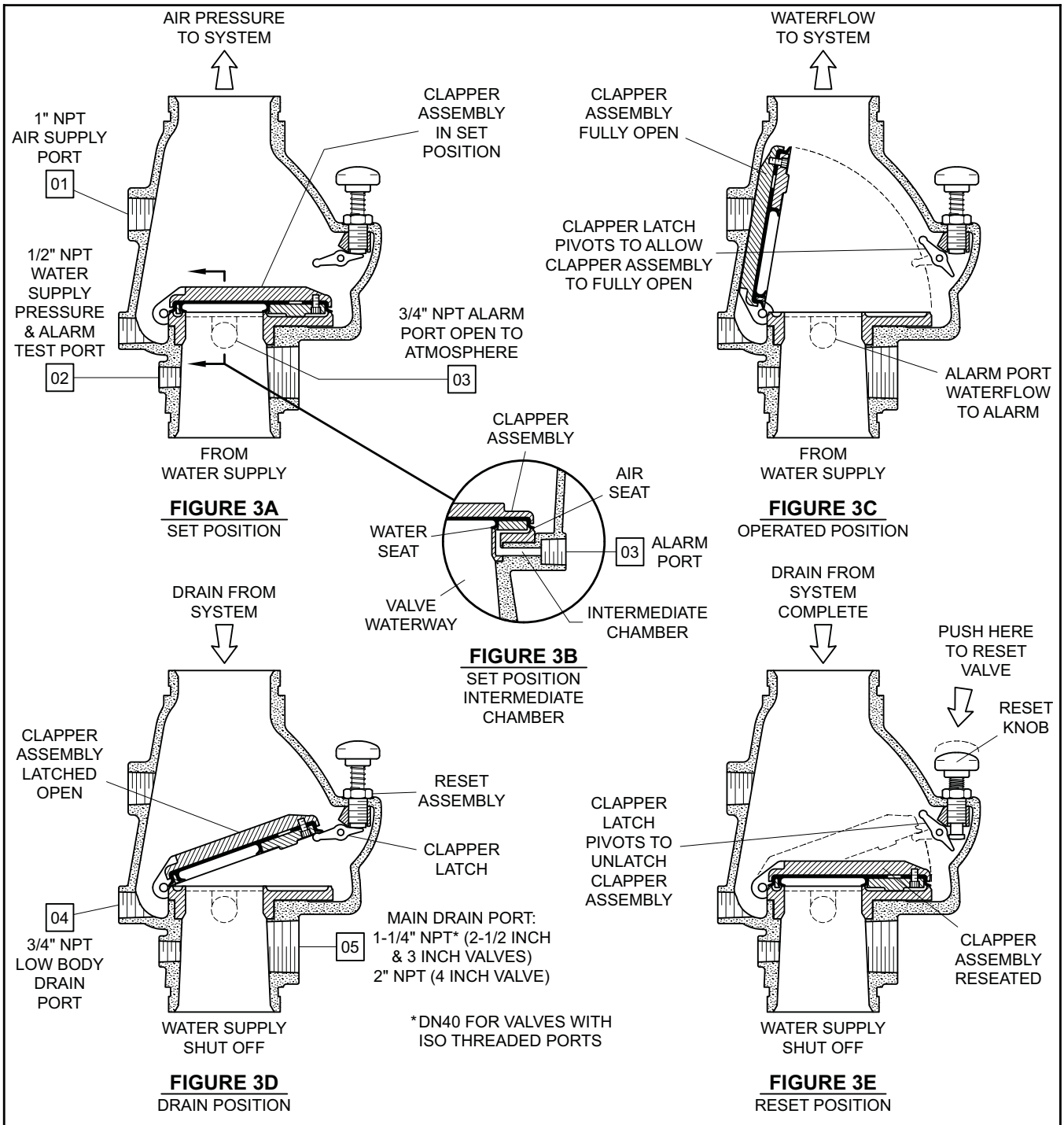


FIGURE 3 — Part 1 of 2
MODEL DPV-1 DRY PIPE VALVES
2-1/2, 3, and 4 INCH (DN65, DN80, and DN100)
— SET AND OPEN POSITIONS —

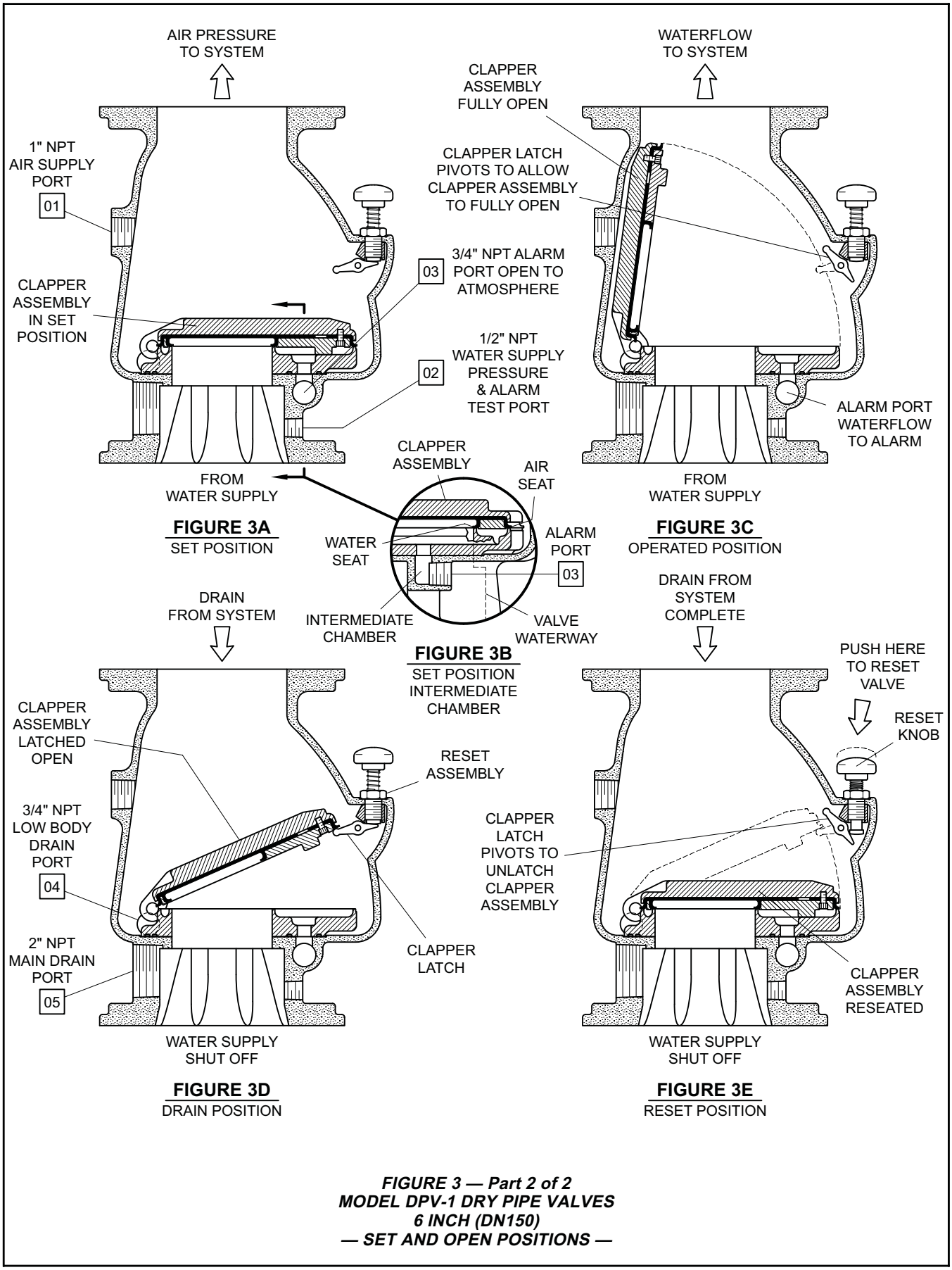
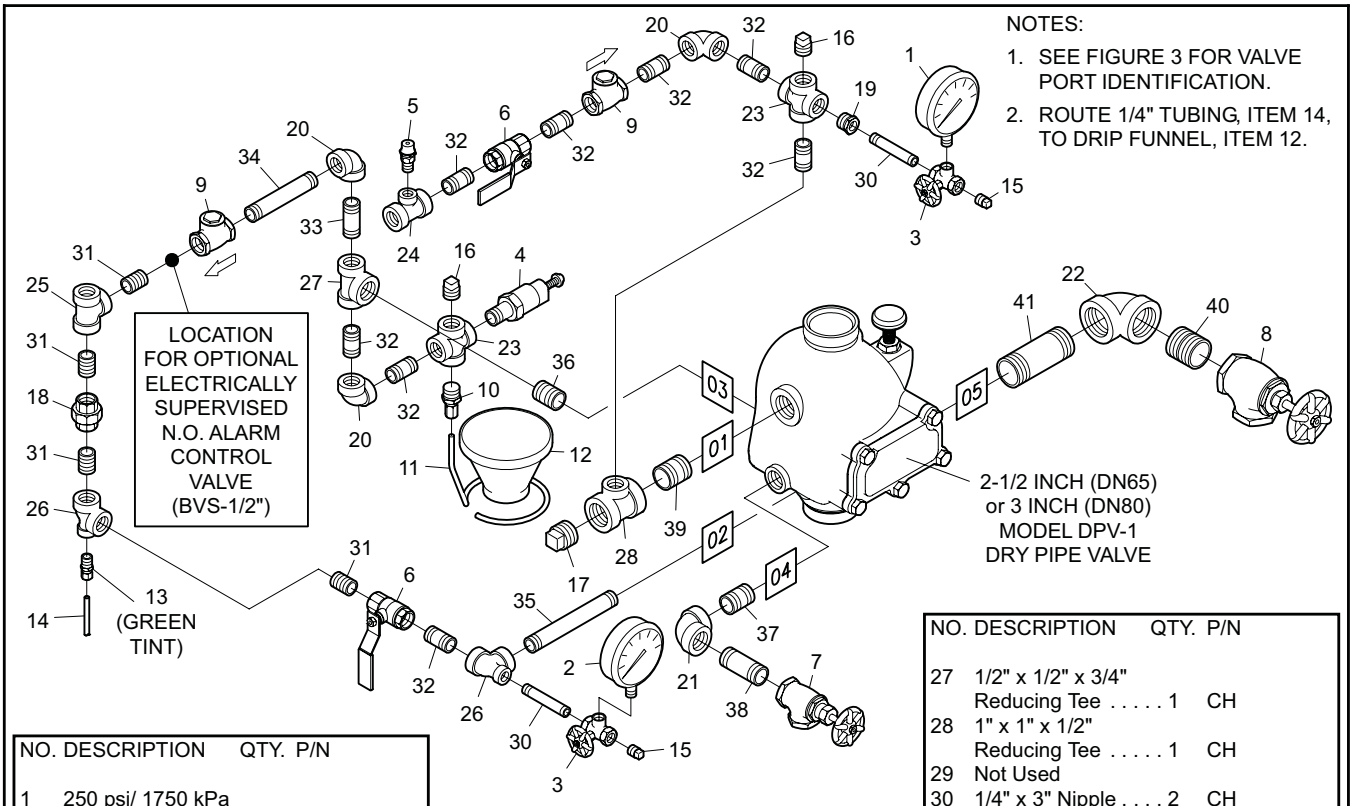


FIGURE 3 — Part 2 of 2
MODEL DPV-1 DRY PIPE VALVES
6 INCH (DN150)
— SET AND OPEN POSITIONS —



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

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

NO.	DESCRIPTION	QTY.	P/N
27	1/2" x 1/2" x 3/4" Reducing Tee	1	CH
28	1" x 1" x 1/2" Reducing Tee	1	CH
29	Not Used		
30	1/4" x 3" Nipple	2	CH
31	1/2" x Close Nipple	4	CH
32	1/2" x 1-1/2" Nipple	8	CH
33	1/2" x 2" Nipple	1	CH
34	1/2" x 4-1/2" Nipple	1	CH
35	1/2" x 6" Nipple	1	CH
36	3/4" x Close Nipple	1	CH
37	3/4" x 1-1/2" Nipple	1	CH
38	3/4" x 2-1/2" Nipple	1	CH
39	1" x Close Nipple	1	CH
40	1-1/4" x Close Nipple	1	CH
41	1-1/4" x 4" Nipple	1	CH

All Fittings and Nipples are Galvanized

CH: Common Hardware

FIGURE 4 — Part 1 of 2
2-1/2 and 3 INCH (DN65 and DN80) MODEL DPV-1 DRY PIPE VALVES
— EXPLODED VIEW OF VALVE TRIM —

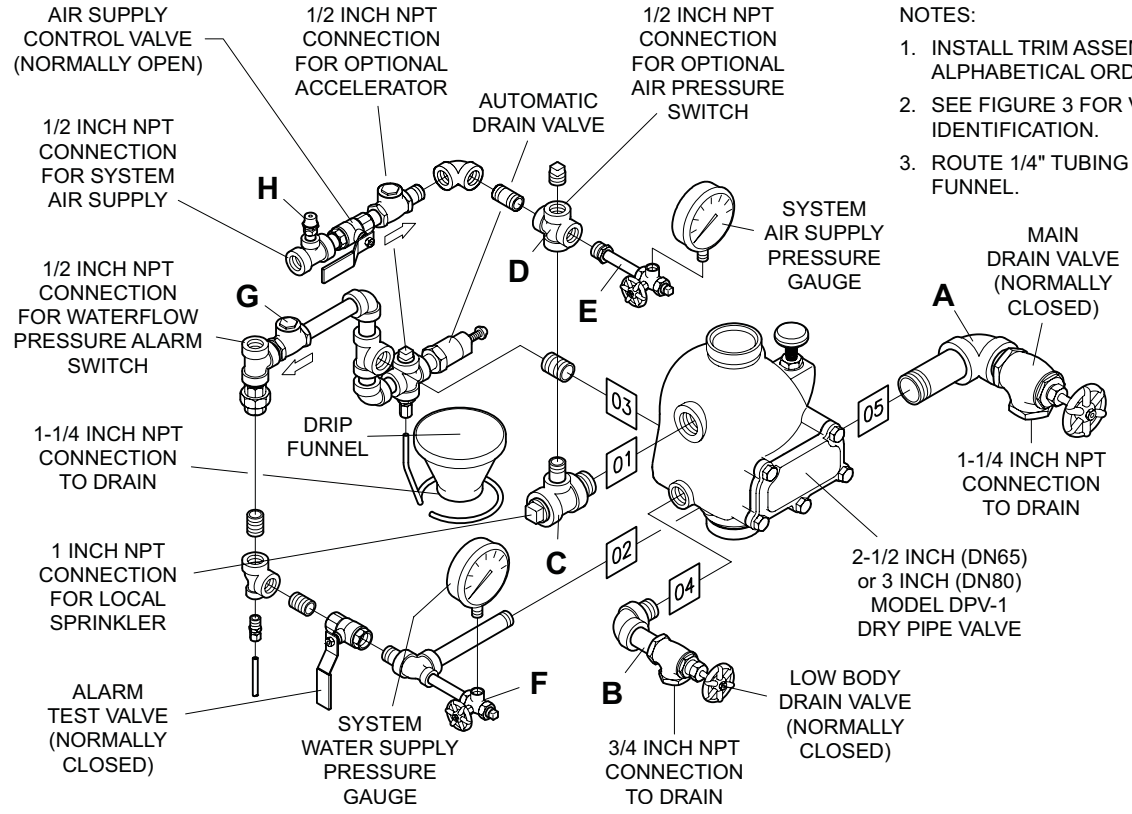
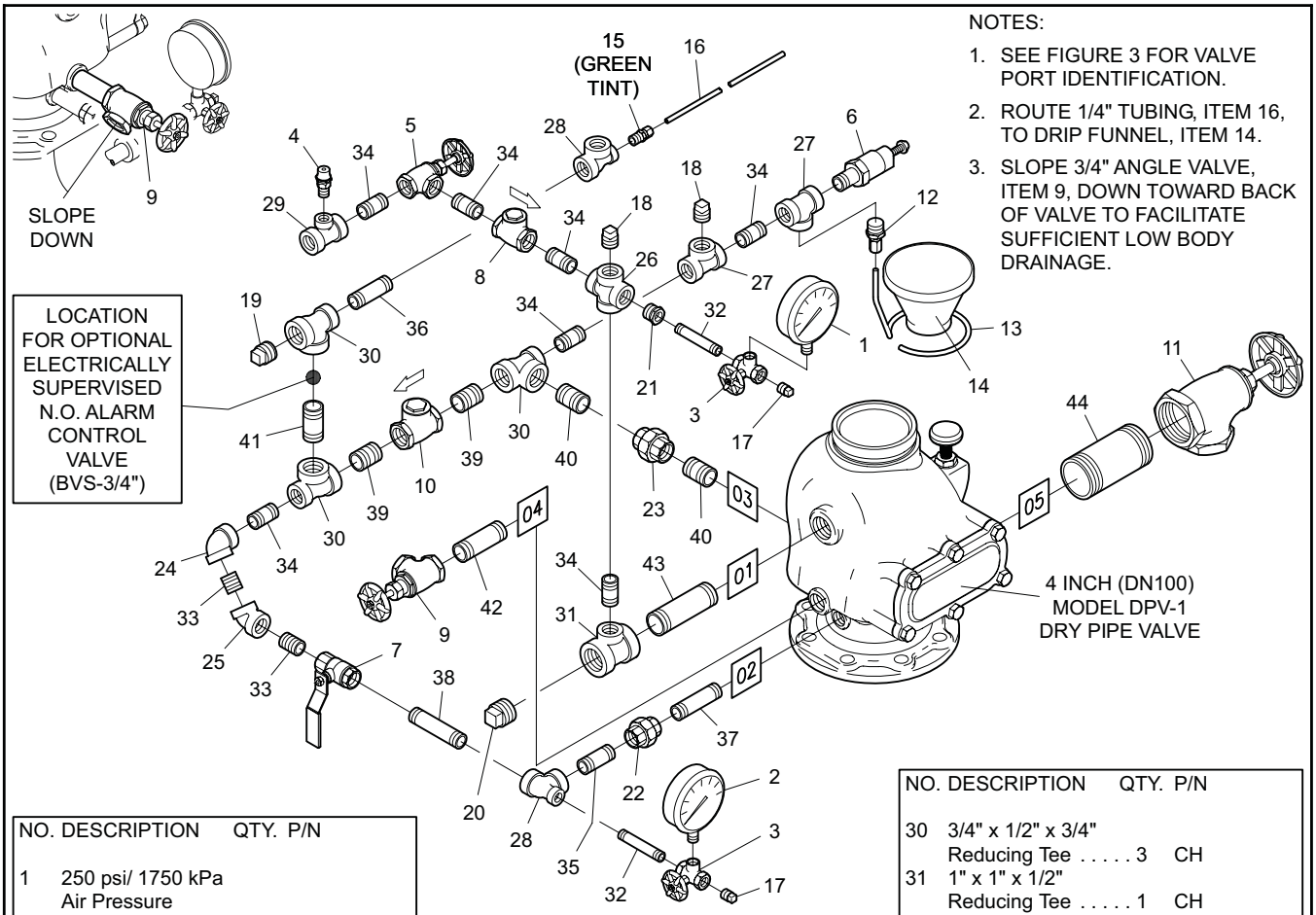


FIGURE 4 — Part 2 of 2
2-1/2 and 3 INCH (DN65 and DN80) MODEL DPV-1 DRY PIPE VALVES
— ASSEMBLY PROCEDURE FOR VALVE TRIM —



NO.	DESCRIPTION	QTY.	P/N
1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
2	300 psi/ 2000 kPa Water Pressure Gauge	1	92-343-1-005
3	1/4" Gauge Test Valve	2	46-005-1-002
4	1/4" Pressure Relief Valve	1	92-343-1-020
5	1/2" Angle Valve	1	46-048-1-004
6	Model AD-1 Automatic Drain Valve	1	52-793-2-004
7	1/2" Ball Valve	1	46-050-1-004
8	1/2" Swing Check Valve	1	46-049-1-004
9	3/4" Angle Valve	1	46-048-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	2" Angle Valve	1	46-048-1-009
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007

NO.	DESCRIPTION	QTY.	P/N
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" Tube, 24" Long	1	CH
17	1/4" Plug	2	CH
18	1/2" Plug	2	CH
19	3/4" Plug	1	CH
20	1" Plug	1	CH
21	1/2" x 1/4" Reducing Bushing	1	CH
22	1/2" Union	1	CH
23	3/4" Union	1	CH
24	1/2" 90° Elbow	1	CH
25	1/2" 45° Elbow	1	CH
26	1/2" Cross	1	CH
27	1/2" Tee	2	CH
28	1/2" x 1/4" x 1/2" Reducing Tee	2	CH
29	1/2" x 1/2" x 1/4" Reducing Tee	1	CH

NO.	DESCRIPTION	QTY.	P/N
30	3/4" x 1/2" x 3/4" Reducing Tee	3	CH
31	1" x 1" x 1/2" Reducing Tee	1	CH
32	1/4" x 3" Nipple	2	CH
33	1/2" x Close Nipple	2	CH
34	1/2" x 1-1/2" Nipple	7	CH
35	1/2" x 2" Nipple	1	CH
36	1/2" x 2-1/2" Nipple	1	CH
37	1/2" x 3" Nipple	1	CH
38	1/2" x 3-1/2" Nipple	1	CH
39	3/4" x Close Nipple	2	CH
40	3/4" x 1-1/2" Nipple	2	CH
41	3/4" x 2" Nipple	1	CH
42	3/4" x 3" Nipple	1	CH
43	1" x 4" Nipple	1	CH
44	2" x 4-1/2" Nipple	1	CH

All Fittings and Nipples are Galvanized

CH: Common Hardware

FIGURE 5 — Part 1 of 2
4 INCH (DN100) MODEL DPV-1 DRY PIPE VALVES
— EXPLODED VIEW OF VALVE TRIM —

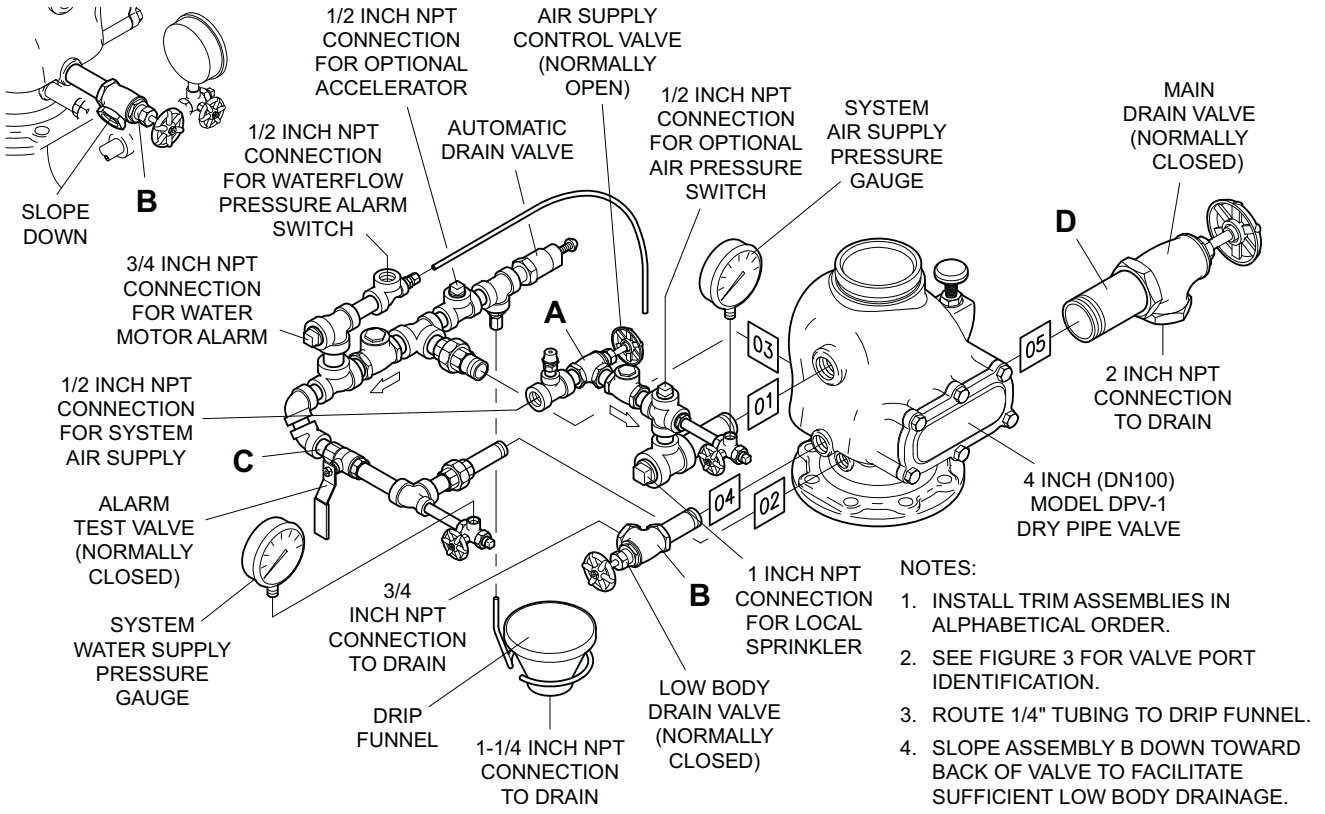
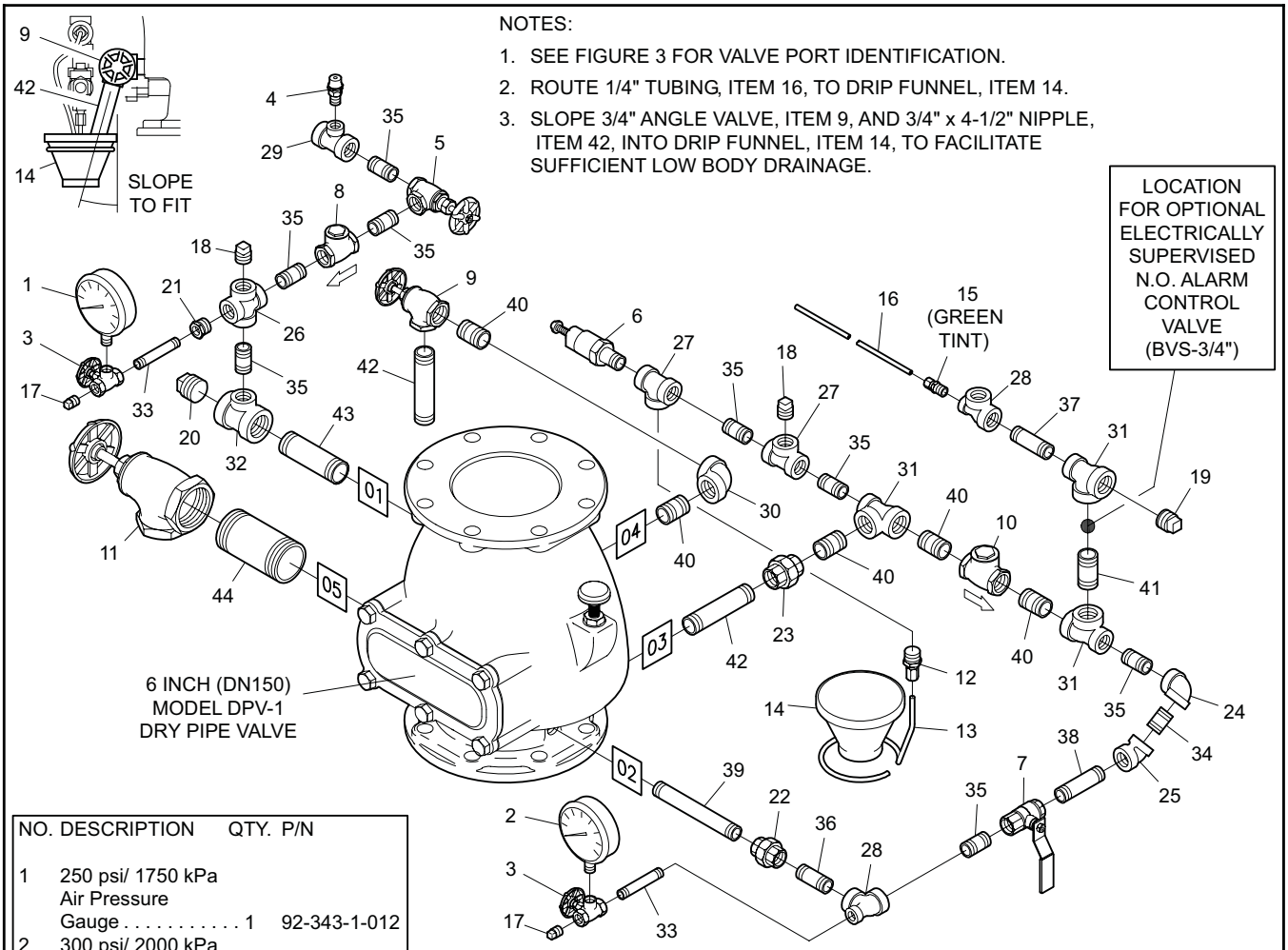


FIGURE 5 — Part 2 of 2
4 INCH (DN100) MODEL DPV-1 DRY PIPE VALVES
— ASSEMBLY PROCEDURE FOR VALVE TRIM —



NO.	DESCRIPTION	QTY.	P/N
1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
2	300 psi/ 2000 kPa Water Pressure Gauge	1	92-343-1-005
3	1/4" Gauge Test Valve	2	46-005-1-002
4	1/4" Pressure Relief Valve	1	92-343-1-020
5	1/2" Angle Valve	1	46-048-1-004
6	Model AD-1 Automatic Drain Valve	1	52-793-2-004
7	1/2" Ball Valve	1	46-050-1-004
8	1/2" Swing Check Valve	1	46-049-1-004
9	3/4" Angle Valve	1	46-048-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	2" Angle Valve	1	46-048-1-009
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" Tube, 24" Long	1	CH

NO.	DESCRIPTION	QTY.	P/N
17	1/4" Plug	2	CH
18	1/2" Plug	2	CH
19	3/4" Plug	1	CH
20	1" Plug	1	CH
21	1/2" x 1/4" Reducing Bushing	1	CH
22	1/2" Union	1	CH
23	3/4" Union	1	CH
24	1/2" 90° Elbow	1	CH
25	1/2" 45° Elbow	1	CH
26	1/2" Cross	1	CH
27	1/2" Tee	2	CH
28	1/2" x 1/4" x 1/2" Reducing Tee	2	CH
29	1/2" x 1/2" x 1/4" Reducing Tee	1	CH
30	3/4" 90° Elbow	1	CH
31	3/4" x 1/2" x 3/4" Reducing Tee	3	CH
32	1" x 1" x 1/2" Reducing Tee	1	CH
33	1/4" x 3" Nipple	2	CH

NO.	DESCRIPTION	QTY.	P/N
34	1/2" x Close Nipple	1	CH
35	1/2" x 1-1/2" Nipple	8	CH
36	1/2" x 2" Nipple	1	CH
37	1/2" x 2-1/2" Nipple	1	CH
38	1/2" x 3" Nipple	1	CH
39	1/2" x 6" Nipple	1	CH
40	3/4" x 1-1/2" Nipple	5	CH
41	3/4" x 2" Nipple	1	CH
42	3/4" x 4-1/2" Nipple	2	CH
43	1" x 4" Nipple	1	CH
44	2" x 4-1/2" Nipple	1	CH

All Fittings and Nipples are Galvanized

CH: Common Hardware

FIGURE 6 — Part 1 of 2
6 INCH (DN150) MODEL DPV-1 DRY PIPE VALVES
— EXPLODED VIEW OF VALVE TRIM

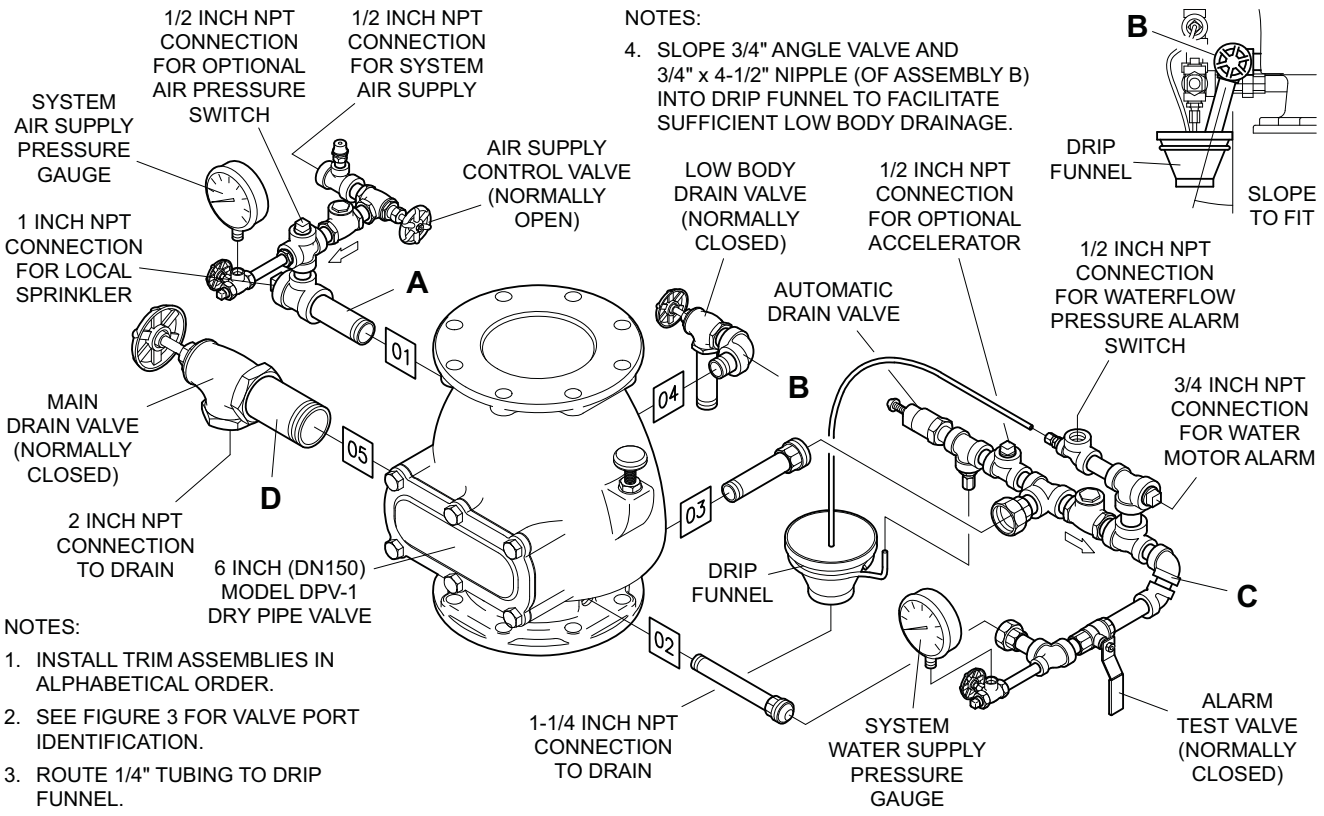


FIGURE 6 — Part 2 of 2
6 INCH (DN150) MODEL DPV-1 DRY PIPE VALVES
— ASSEMBLY PROCEDURE FOR VALVE TRIM —

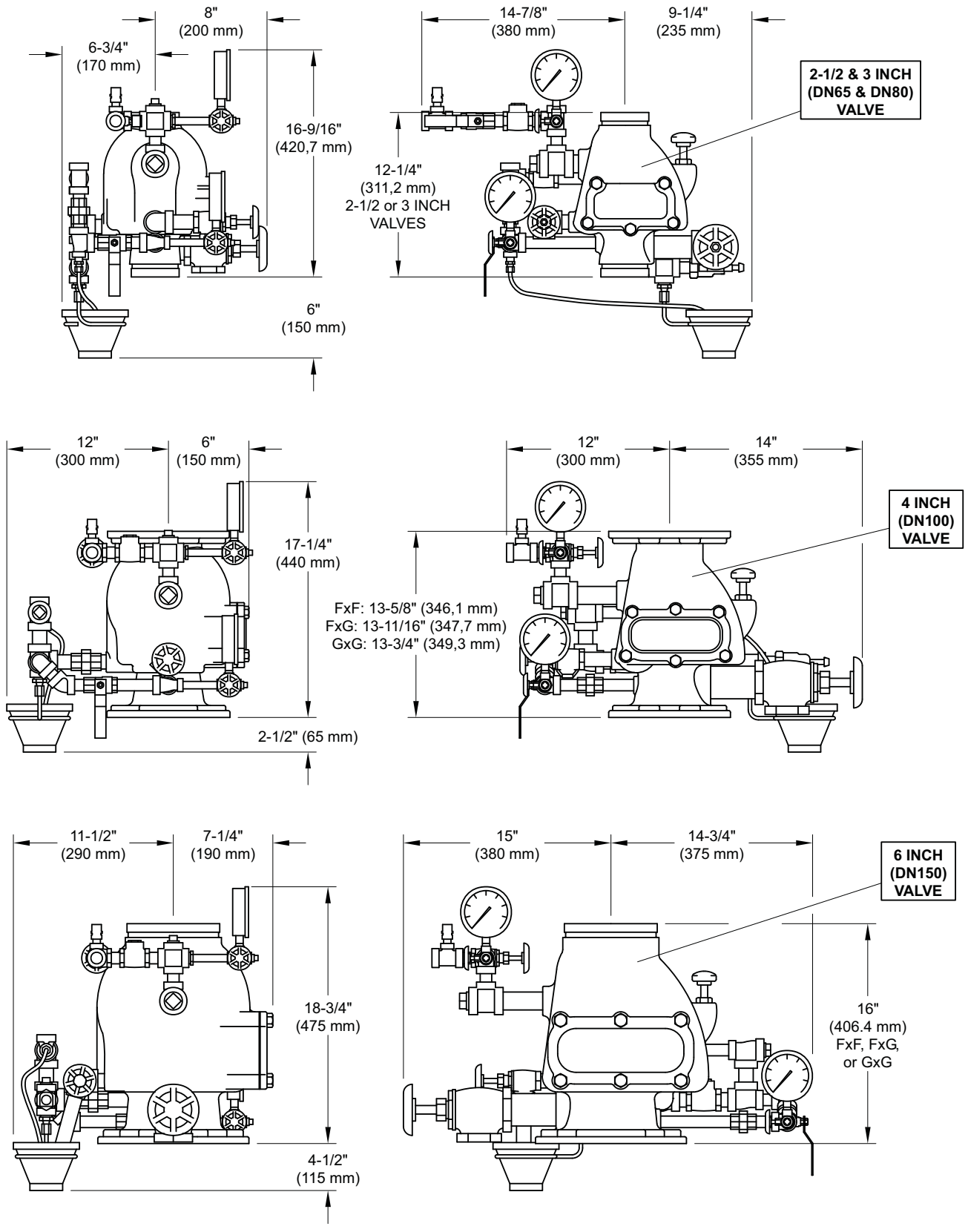


FIGURE 7
MODEL DPV-1 DRY PIPE VALVE
— INSTALLATION DIMENSIONS —

Installation

NOTES

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

Failure to latch open the Clapper Assembly prior to a system hydrostatic test may result in damage to the Clapper Assembly.

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

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

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

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

Step 1. All nipples, fittings, and devices must be clean and free of scale and burrs before installation. Use pipe thread sealant sparingly on male pipe threads only.

Step 2. The DPV-1 Valve must be trimmed in accordance with Figures 4, 5, or 6, as applicable. If the DPV-1 is to be equipped with a Dry Pipe Valve Accelerator, refer to the Technical Data Sheet TFP1100 for the Model QRS Electronic Dry Pipe Valve Accelerator or TFP1112 for the Model ACC-1 Mechanical Dry Pipe Valve Accelerator.

Step 3. Care must be taken to make sure that check valves, strainers, globe valves, etc. are installed with the flow arrows in the proper direction.

Step 4. Drain tubing to the drip funnel must be installed with smooth bends that will not restrict flow.

Step 5. The main drain and drip funnel drain may be interconnected provided a check valve is located at least 12 inches (300 mm) below the drip funnel. The Low Body Drain Valve (Fig. 4, 5, or 6) may be piped so as to discharge into the Drip Funnel or to a separate drain.

Step 6. Suitable provision must be made for disposal of drain water. Drainage water must be directed such that it will not cause accidental damage to property or danger to persons.

Step 7. Unused pressure alarm switch and/or water motor alarm connections must be plugged.

Step 8. The Pressure Relief Valve provided with the Valve Trim is factory set to relieve at a pressure of approximately 45 psi (3,1 bar), which can typically be used for a maximum normal system air pressure of 40 psi (2,8 bar). The Pressure Relief Valve may be reset to a lower or higher pressure; however, it must be be reset to relieve at a pressure which is in accordance with the requirements of the Authority Having Jurisdiction.

To reset the Pressure Relief Valve, first loosen the jam nut and then adjust the cap accordingly — clockwise for a higher pressure setting or counterclockwise for a lower pressure setting. After verifying the desired pressure setting, tighten the jam nut.

Step 9. Installation of an Air Maintenance Device, as described in the Technical Data Section, is recommended.

Step 10. An Inspector's Test Connection as required By NFPA 13 must be provided on the system piping at the most remote location from the Model DPV-1 Valve.

Step 11. Conduit and electrical connections are to be made in accordance with the requirements of the authority having jurisdiction and/or the National Electric Code.

Step 12. Before a system hydrostatic test is performed in accordance with NFPA 13 system acceptance test requirements, the Clapper Assembly is to be manually latched open (Ref. Fig. 3D); the Automatic Drain Valve (Fig. 4, 5, or 6) is to be temporarily replaced with a 1/2 inch NPT plug, the 3/32 inch Vent Fitting (Item 13, Fig. 4; Item 15, Fig. 5; or Item 15, Fig. 6) is to be temporarily replaced with a 1/4 inch NPT plug, and the Handhole Cover Bolts are to be tightened using a cross-draw sequence.

Valve Setting Procedure

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

NOTES

If the DPV-1 is equipped with a Dry Pipe Valve Accelerator, refer to its resetting instructions before resetting the DPV-1. Refer to TFP1100 for the QRS or TFP1112 for the ACC-1.

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

Step 1. Close the Main Control Valve, and close the Air Supply Control Valve (Fig. 4, 5, or 6). If the DPV-1 is equipped with a Dry Pipe Valve Accelerator, remove the Dry Pipe Valve Accelerator from service in accordance with its Technical Data Sheet (Refer to TFP1100 for the QRS or TFP1112 for the ACC-1).

Step 2. Open the Main Drain Valve (Fig. 4, 5, or 6) and all auxiliary drains in the system. Close the auxiliary drain valves after water ceases to discharge. Leave the Main Drain Valve open.

Step 3. Depress the plunger of the Automatic Drain Valve (Fig. 4, 5, or 6) to verify that it is open and that the DPV-1 Valve is completely drained.

Step 4. Open the Optional Alarm Control Valve (Fig. 4, 5, or 6), as applicable, if it was closed to silence local alarms.

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

NOTE

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

Step 6. Push down on the Reset Knob (Fig. 3E) to allow the Clapper Assembly to reseat.

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

Also partially open the Low Body Drain Valve (Fig. 4, 5, or 6) to assure that the riser is completely drained. Close the Low Body Drain Valve as soon as water ceases to discharge.

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

Step 9. Depress the plunger on the Automatic Drain Valve to make sure it is open and that there is no air discharging.

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

Step 10. Partially open the Main Control Valve. Slowly close the Main Drain Valve as soon as water discharges from the drain connection.

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

If there are no leaks, the DPV-1 Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

NOTE

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

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

Care and Maintenance

The following procedures and inspections should be performed as indicated, in addition to any specific requirements of the NFPA, and any impairment must be immediately corrected.

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 (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service.

NOTES

The operational test procedure and waterflow pressure alarm test procedure will result in operation of the associated alarms. Consequently, notification must first be given to the owner and the fire department, central station, or other signal station to which the alarms are connected.

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

Annual Operation Test Procedure

Proper operation of the DPV-1 Valve (i.e., opening of the DPV-1 Valve during a fire condition) should be verified at least once a year as follows:

Step 1. If water must be prevented from flowing beyond the riser, perform the following steps.

- Close the Main Control Valve.
- Open the Main Drain Valve.
- Open the Main Control Valve one turn beyond the position at which water just begins to flow from the Main Drain Valve.
- Close the Main Drain Valve.

Step 2. Open the system's Inspector's Test Connection.

Step 3. Verify that the DPV-1 Valve has operated, as indicated by the flow of water into the system and that all waterflow alarms operate properly.

Step 4. Close the system's Main Control Valve.

Step 5. Reset the DPV-1 Valve in accordance with the Valve Setting Procedure.

NOTE

It is recommended that the requirement of NFPA 25 to annually inspect the inside of the valve be performed at this time and prior to resetting the DPV-1 Valve. Refer to the Automatic Drain Valve Inspection sub-section Steps 2 through 5 for instructions with regard to the inspection of the Clapper Facing.

Quarterly Waterflow Alarm Test Procedure

Testing of the system waterflow alarms should be performed quarterly. To test the waterflow alarm, open the Alarm Test Valve, which will allow a flow of water to the Waterflow Pressure Alarm Switch and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve.

Water Pressure Inspection

The Water Pressure Gauge is to be inspected monthly (per NFPA 25) to ensure that normal system water pressure is being maintained.

Air Pressure Inspection

The Air Pressure Gauge is to be inspected monthly (per NFPA 25) to ensure that normal system air pressure is being maintained.

Automatic Drain Valve Inspection

The Automatic Drain Valve should be inspected monthly (per NFPA 25) by depressing the plunger and checking to ensure that the Automatic Drain Valve is not discharging water and/or air. A discharge of water and/or air is an indication that the air and/or water seats are leaking, which could subsequently cause a false operation should the intermediate chamber become inadvertently pressurized.

If leakage is present, take the DPV-1 Valve out of service (i.e., close the main control valve, open the main drain valve, close the air supply control valve, remove the Dry Pipe Valve Accelerator from service, as applicable, in accordance with its Technical Data Sheet (Refer to TFP1100 for the QRS or TFP1112 for the ACC-1), and open the Inspector's Test Connection to relieve the system air pressure to 0 psig as indicated on the System Air Pressure Gauge), and then after removing

the Handhole Cover, perform the following steps:

Step 1. Make sure that the Seat Ring is clean and free of any nicks or significant scratches.

Step 2. Remove the Clapper Assembly from the valve by first pulling out the Hinge Pin.

Step 3. Disassemble the Clapper Facing Retainer from the Clapper so that the Clapper Facing can be removed and inspected. Make sure that the Clapper Facing does not show signs of compression set, damage, etc. Replace the Clapper Facing if there is any signs of wear.

Step 4. Clean the Clapper Facing, Clapper, and Clapper Facing Retainer, and then reassemble the Clapper Assembly.

Step 5. Reinstall the Clapper Assembly with its Hinge Pin and then reinstall the Handhole Cover.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

NOTE

Refer to Table A for Flange Drilling Specifications.

Part Numbers for factory pre-trimmed Model DPV-1 Valves are provided in the Price Book.

Standard DPV-1 Dry Pipe Valve (American Standard Flange Drilling, Threaded Ports, and Groove Outside Diameter, as applicable):

Specify: (specify size) Model DPV-1 Dry Pipe Valve with (specify inlet x outlet) end connections, P/N (specify).

2-1/2 Inch (DN65)

G x G,
2.88 inch (73,1 mm) O.D. Groove x 2.88 inch (73,1 mm) O.D. Groove . . . . . P/N 52-310-1-925

3 Inch (DN80)

G x G,
3.50 inch (88,9 mm) O.D. Groove x 3.50 inch (88,9 mm) O.D. Groove . . . . . P/N 52-310-1-930

4 Inch (DN100)

G x G,
4.50 inch (114,3 mm) O.D. Groove x 4.50 inch (114,3 mm) O.D. Groove . . . . . P/N 52-310-1-940

F x G,
ANSI Drilled Flange x 4.50 inch (114,3 mm) O.D. Groove . . . . . P/N 52-310-1-440

F x F,
ANSI Drilled Flange x ANSI Drilled Flanged . . . . . P/N 52-310-1-040

6 Inch (DN150)

G x G,
6.62 inch (168,3 mm) O.D. Groove x 6.62 inch (168,3 mm) O.D. Groove . . . . . P/N 52-310-1-960

F x G,
ANSI Drilled Flange x 6.62 inch (168,3 mm) O.D. Groove . . . . . P/N 52-310-1-460

F x F,
ANSI Drilled Flange x ANSI Drilled Flanged . . . . . P/N 52-310-1-060

Standard Galvanized DPV-1 Trim (Ref. Figure F):

Specify: 2-1/2 and 3 Inch DPV-1 Semi-Preassembled Galvanized Trim, P/N 52-309-2-005.

Specify: 4 Inch DPV-1 Semi-Preassembled Galvanized Trim, P/N 52-309-2-001.

Specify: 6 Inch DPV-1 Semi-Preassembled Galvanized Trim, P/N 52-309-2-002.

Optional Accelerator:

Model QRS Electronic Accelerator (Details provided in TFP1100)

Specify: Model QRS Electronic Dry Pipe Valve Accelerator Package, P/N 52-312-2-101.

Model ACC-1 Mechanical Accelerator (Details provided in TFP1112)

Specify: Model ACC-1 Dry Pipe Accelerator, P/N 52-311-1-001, and

Galvanized Accelerator Trim for Model DPV-1 Dry Pipe Valve, P/N 52-311-2-010.

Optional 600 PSI Water Pressure Gauge:

Specify: 600 PSI Water Pressure Gauge, P/N 92-343-1-004.

Accessories:

Order the Technical Data Sheets for the following, as applicable, for details and additional accessories:

Model PS10-2A
Potter Electric Waterflow Pressure Alarm Switch . . . . . P/N 54-281-1-002

Model WMA1
Water Motor Alarm . . . . . P/N 52-630-1-001

Model AMD-1
Air Maintenance Device. . . . . P/N 52-324-2-002

Model AMD-2
Air Maintenance Device. . . . . P/N 52-326-2-001

Model AMD-3
Nitrogen Maintenance Device . . . . . P/N 52-328-2-001

Replacement Valve Parts:

Specify: (description) for use with (specify size) Model DPV-1 Dry Pipe Valve, P/N (see Figure 1A and 1B).

Replacement Trim Parts :

Specify: (description) for use with (specify size) Model DPV-1 Dry Pipe Valve, P/N (see Figure 4, 5, or 6, as applicable).

Weights:

The following are the nominal weights for the valves and trim:

2-1/2 Inch (DN65)
Model DPV-1
G x G Dry Pipe Valve . . . . . 37 lbs. (17 kg)

3 Inch (DN80)
Model DPV-1
G x G Dry Pipe Valve . . . . . 38 lbs. (18 kg)

2-1/2 & 3 Inch (DN65/80) Valve Trim . . . . . 23 lbs. (11 kg)

4 Inch (DN100)
Model DPV-1
G x G Dry Pipe Valve . . . . . 57 lbs. (26 kg)

4 Inch (DN100)
Model DPV-1
F x G Dry Pipe Valve . . . . . 67 lbs. (31 kg)

4 Inch (DN100)
Model DPV-1
F x F Dry Pipe Valve . . . . . 77 lbs. (36 kg)

4 Inch (DN100) Valve Trim . . . . . 30 lbs. (14 kg)

6 Inch (DN150)
Model DPV-1
G x G Dry Pipe Valve. . . . . 95 lbs. (44 kg)

6 Inch (DN150)
Model DPV-1
F x G Dry Pipe Valve . . . . . 108 lbs. (50 kg)

6 Inch (DN150)
Model DPV-1
F x F Dry Pipe Valve . . . . . 121 lbs. (56 kg)

6 Inch (DN150) Valve Trim . . . . . 30 lbs. (14 kg)

Other DPV-1 Dry Pipe Valves:

NOTES

Other DPV-1 Dry Pipe Valves are valves ordered with a any combination of flange, threaded ports, or groove outside diameter not offered under "Standard DPV-1 Dry Pipe Valve" offerings.

Valves with NPT threaded ports are intended for use with the "Standard Galvanized DPV-1 Valve Trim" offered and detailed in this document. Valves with ISO threaded ports are intended for use with special order trim that is provided by local distributors to meet the specific needs of certain localities. Please contact your local distributor regarding valves and valve trim for specific localities.

Specify: (specify size) Model DPV-1 Dry Pipe Valve with (specify inlet x outlet) connections with (specify NPT or ISO) threaded ports, P/N (specify).

Part Numbers For Other 2-1/2 Inch (DN65) Dry Pipe Valves:

Valves with NPT Ports

G x G,
3.00"(76,1 mm) Outside Dia. Groove x 3.00"(76,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-930

Valves with ISO Ports

G x G,
2.88"(73,0 mm) Outside Dia. Groove x 2.88"(73,0 mm) Outside Dia. Groove . . . . . P/N 52-309-1-920

G x G,
3.00"(76,1 mm) Outside Dia. Groove x 3.00"(76,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-940

Part Numbers For Other 3 Inch (DN80) Dry Pipe Valves:

Valves with ISO Ports

G x G,
3.50"(88,9 mm) Outside Dia. Groove x 3.50"(88,9 mm) Outside Dia. Groove . . . . . P/N 52-309-1-922

Part Numbers For Other 4 Inch (DN100) Dry Pipe Valves:

Valves with NPT Ports

F x G,
ISO Flange x 4.50"(114,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-253

F x G,
AS Flange x 4.50"(114,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-613

F x G,
JIS Flange x 4.50"(114,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-813

F x F,
ISO Flange x ISO Flange . . . . . P/N 52-309-1-133

F x F,
AS Flange x AS Flange. . . . . P/N 52-309-1-513

F x F,
JIS Flange x JIS Flange . . . . . P/N 52-309-1-713

Valves with ISO Ports

G x G,
4.50"(114,3 mm) Outside Dia. Groove x 4.50"(114,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-923

F x G,
ISO Flange x 4.50"(114,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-213

F x F,
ISO Flange x ISO Flange . . . . . P/N 52-309-1-113

Part Numbers For Other 6 Inch (DN150) Dry Pipe Valves:

Valves with NPT Ports

G x G,
6.50"(165,1 mm) Outside Dia. Groove x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-935

F x G,
ANSI Flange x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-435

F x G,
ISO Flange x 6.62"(168,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-255

F x G,
ISO Flange x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-335

F x G,
AS Flange x 6.62"(168,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-615

F x G,
AS Flange x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-635

F x G,
JIS Flange x 6.62"(168,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-815

F x G,
JIS Flange x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-835

F x F,
ISO Flange x ISO Flange. . . . . P/N 52-309-1-135

F x F,
AS Flange x AS Flange . . . . . P/N 52-309-1-515

F x F,
JIS Flange x JIS Flange . . . . . P/N 52-309-1-715

Valves with ISO Ports

G x G,
6.62"(168,3 mm) Outside Dia. Groove x 6.62"(168,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-925

G x G,
6.50"(165,1 mm) Outside Dia. Groove x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-945

F x G,
ISO Flange x 6.62"(168,3 mm) Outside Dia. Groove . . . . . P/N 52-309-1-215

F x G,
ISO Flange x 6.50"(165,1 mm) Outside Dia. Groove . . . . . P/N 52-309-1-315

F x F,
ISO Flange x ISO Flange. . . . . P/N 52-309-1-115

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Identification Signs For Sprinkler Systems and Devices NFPA 13 Signing Requirements

General Description

Identification Signs (Ref. Figure 1) are designed to provide information to the end user about the sprinkler system and its components. They are available with a variety of wording combinations to meet the signing requirements of NFPA 13.

The five basic types of Identification Signs are as follows:

Type A- Control Valve Sign

Type B- Multi-Purpose Text Signs (See Below)

Type D- Fire Alarm Sign

Type E- Hydraulic Calculation Sign

Type B- Identification Signs are available with the following text options:

AIR CONTROL
AIR LINE
ALARM TEST
ANTIFREEZE SYSTEM
AUXILIARY DRAIN
CONTROL VALVE
DRAIN
DRAIN VALVE
INSPECTORS TEST
MAIN CONTROL
MAIN DRAIN

WARNINGS

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

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

Technical Data

Material & Finish
18 gauge aluminum with mylar facing.

	Width x Height	
	Inches	**(mm)**
Type A	9 x 7	(229 x 178)
Type B	6 x 2	(152 x 51)
Type C	7¾ x 1¼	(197 x 32)
Type D	9 x 7	(229 x 178)
Type E	5 x 7	(127 x 178)

Installation

The Identification Signs are provided with 1⁄8 Inch (3,2 mm) diameter or larger holes (or slots) in the corners for easy attachment using standard hardware chain, wire, plastic lock ties, or light gauge metal strap (not included).

Care and Maintenance

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

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

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

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

INSPECTION PROCEDURE

Annual visual inspections are recommended to ensure that Identification Signs are properly located.

SIGN- TYPE A, P/N 2300A

SIGN- TYPE D

RECTANGULAR 6-1/2" X 8-1/2", P/N 2316
OR
ROUND 7-1/4" DIAMETER, P/N 2329

SIGN- TYPE B,
AVAILABLE WITH THE
FOLLOWING TEXT OPTIONS

"AIR CONTROL" . . . . . P/N 2328
"AIR LINE" . . . . . P/N 2302
"ALARM TEST" . . . . . P/N 2304A
"ANTIFREEZE SYSTEM" . . . . . P/N 2306
"AUXILIARY DRAIN" . . . . . P/N 2307
"CONTROL VALVE" . . . . . P/N 2310
"DRAIN" . . . . . P/N 2311
"DRAIN VALVE" . . . . . P/N 2327
"INSPECTORS TEST" . . . . . P/N 2313
"MAIN CONTROL" . . . . . P/N 2319
"MAIN DRAIN" . . . . . P/N 2320

SIGN- TYPE E, P/N 2317

FIGURE 1
IDENTIFICATION SIGNS

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Orders must include the description and Part Number (P/N). Contact your local distributor for availability.

Hardware for hanging is not supplied with the Sign. It must be ordered separately.

Identification Signs, (Types A, C, D, or E)
Specify: Type (A, C, D, or E) Identification Sign, P/N (specify).

Identification Signs (Type B)
Specify: Type B Identification Sign inscribed (specify, e.g. "AIR CONTROL"), P/N (specify).

Type A . . . . . P/N 2300A
Type D (Round). . . . . P/N 2329
Type D (Rectangle). . . . . P/N 2316
Type E . . . . . P/N 2317

Type B
"AIR CONTROL" . . . . . P/N 2328
"AIR LINE". . . . . P/N 2302
"ALARM TEST". . . . . P/N 2304A
"ANTIFREEZE SYSTEM" . . . . . P/N 2306
"AUXILIARY DRAIN". . . . . P/N 2307
"CONTROL VALVE" . . . . . P/N 2310
"DRAIN" . . . . . P/N 2311
"DRAIN VALVE" . . . . . P/N 2327
"INSPECTORS TEST" . . . . . P/N 2313
"MAIN CONTROL" . . . . . P/N 2319
"MAIN DRAIN" . . . . . P/N 2320

FIG. 7401

Rigidlok® Coupling

The Fig. 7401 Rigidlok Coupling from Gruvlok provides a rigid, locked in pipe connection. Rigidity is attained simply; it is designed in.

The Fig. 7401 Rigidlok coupling is based on a technologically advanced housing design that conforms to and grips the pipe. With the Fig. 7401 there emerges a new generation of rigid couplings.

Coupling installation is fast and easy, remove only one nut and swing the housing over the gasket and into the grooves. The exclusive Guidelok® feature automatically separates the grooved pipe ends and guides the coupling into position as the bolts are tightened. Precisely sized and oriented tines in the housing key section firmly grip the pipe. The combination of these designed in features produce a secure, rigid pipe joint connection.

This coupling is an ideal connector for service and applications that require a rigid connection.

The Fig. 7401 Rigidlok Coupling is designed for use with roll grooved or cut grooved standard weight and roll grooved lightweight pipe, as well as with grooved-end fittings and valves.

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

The Rigidlok Coupling maintains a rigid connection with support and hanging in conformance with applicable ANSI B31.1 Power Piping Code, ANSI B31.9 Building Service Pipe Code as well as NFPA 13 sprinkler systems.

The Fig. 7401 Rigidlok Coupling allows for working pressure ratings to 750 psi (51.7 bar) when used on standard wall roll or cut grooved pipe.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

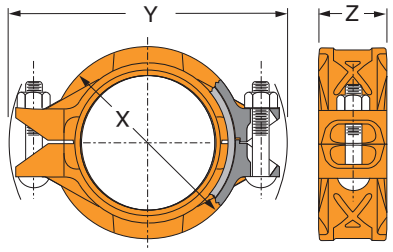
Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
C Style (Standard 1" - 12")
Flush Gap (Standard 14" - 24", Available 1" - 12")

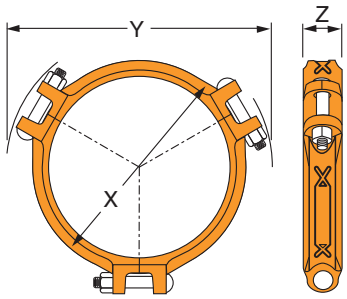
LUBRICATION:
Standard
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7401

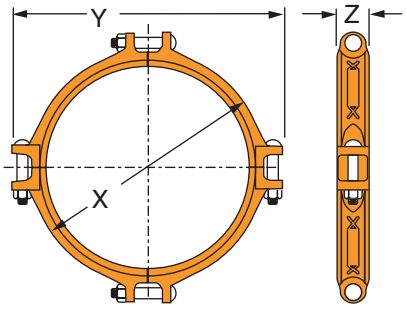
Rigidlok® Coupling



SIZES 1 1/2" - 14"



SIZE 16"



SIZES 18" - 24"

FIGURE 7401 RIGIDLOK COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
1½	1.900	750	2,126	0-1/32	3	5⅛	1⅞	2	⅜ x 2¼	30	45	1.8
40	*48.3*	*51.7*	*9.46*	*0-0.79*	*76*	*130*	*48*		*M10 x 57*	*40*	*60*	*0.8*
2	2.375	750	3,323	0-1/32	3½	5⅝	1⅞	2	⅜ x 2½	30	45	2.4
50	*60.3*	*51.7*	*14.78*	*0-0.79*	*89*	*143*	*48*		*M10 x 63*	*40*	*60*	*1.1*
2½	2.875	750	4,869	0-1/32	4	6⅛	1⅞	2	⅜ x 2½	30	45	2.9
65	*73.0*	*51.7*	*21.66*	*0-0.79*	*102*	*156*	*48*		*M10 x 63*	*40*	*60*	*1.3*
3 O.D.	*2.996*	*750*	*5,207*	*0-1/32*	*4⅛*	*6⅛*	*1⅞*	*2*	*½ x 3*	*80*	*100*	*3.4*
76.1	76.1	51.7	23.52	0-0.79	105	156	48		M12 x 76	110	150	1.5
3	3.500	750	7,216	0-1/32	4¾	7¼	1⅞	2	½ x 3	80	100	3.6
80	*88.9*	*51.7*	*32.10*	*0-0.79*	*121*	*184*	*48*		*M12 x 76*	*110*	*150*	*1.6*
4	4.500	750	11,928	0-3/32	5⅞	8⅜	2⅛	2	½ x 3	80	100	5.0
100	*114.3*	*51.7*	*53.06*	*0-2.38*	*149*	*213*	*54*		*M12 x 76*	*110*	*150*	*2.3*
5½ O.D.	*5.500*	*750*	*17,819*	0-3/32	*7*	*9¼*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*6.9*
139.7	139.7	51.7	79.26	*0-2.38*	178	248	54		M16 x 85	135	175	3.1
5	5.563	750	18,229	0-3/32	7	10	2⅛	2	⅝ x 3½	100	130	6.9
125	*141.3*	*51.7*	*81.09*	*0-2.38*	*178*	*254*	*54*		*M16 x 85*	*135*	*175*	*3.1*
6½ O.D.	*6.500*	*750*	*24,887*	*0-3/32*	*8*	*11*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*7.6*
165.1	165.1	51.7	110.70	0-2.38	203	279	54		M16 x 85	135	175	3.4
6	6.625	750	25,854	0-3/32	8⅛	11⅛	2⅛	2	⅝ x 3½	100	130	7.9
150	*168.3*	*51.7*	*115.00*	*0-2.38*	*206*	*283*	*54*		*M16 x 85*	*135*	*175*	*3.6*
8	8.625	600	35,056	0-3/32	10½	14⅛	2⅝	2	¾ x 4½	130	180	15.9
200	*219.1*	*41.4*	*155.94*	*0-2.38*	*267*	*359*	*67*		*M20 x 110*	*175*	*245*	*7.2*
10	10.750	500	45,381	0-3/32	12⅞	17½	2⅝	2	1 x 6	200	250	25.6
250	*273.1*	*34.5*	*201.87*	*0-2.38*	*327*	*445*	*67*		*M24 x 150*	*270*	*340*	*11.6*
12	12.750	400	51,070	0-3/32	15	19½	2⅝	2	⅞ x 6	180	220	30.5
300	*323.9*	*27.6*	*227.17*	*0-2.38*	*381*	*495*	*67*		*M22 x 150*	*245*	*300*	*13.8*
14	14.000	300	46,181	0-3/32	16¼	19¾	3	2	⅞ x 5½	180	220	36.1
350	*355.6*	*20.7*	*205.43*	*0-2.38*	*413*	*502*	*76*		*M22 x 140*	*245*	*300*	*16.4*
16	16.000	300	60,319	0-3/32	18⅛	22¼	3	3	⅞ x 5½	180	220	42.0
400	*406.4*	*20.7*	*268.31*	*0-2.38*	*460*	*565*	*76*		*M22 x 140*	*245*	*300*	*19.1*
18	18.000	300	76,341	0-3/32	20½	24⅜	3⅛	4	1 x 4	200	250	51.6
450	*457.2*	*20.7*	*339.58*	*0-2.38*	*521*	*619*	*79*		*M24 x 100*	*270*	*340*	*23.4*
20	20.000	300	94,248	0-3/32	23	26⅞	3⅛	4	1 x 4	200	250	68.3
500	*508.0*	*20.7*	*419.23*	*0-2.38*	*581*	*683*	*79*		*M24 x 100*	*270*	*340*	*31.0*
24	24.000	250	113,097	0-3/32	27⅛	30⅞	3⅛	4	1 x 4	200	250	89.3
600	*609.6*	*17.2*	*503.08*	*0-2.38*	*689*	*784*	*79*		*M24 x 100*	*270*	*340*	*40.5*

NOTE:
Range of Pipe End Seperation values are for roll grooved pipe and may be doubled for cut groove pipe.

For additional details see "Coupling Data Chart Notes" on page 17.
* Available in ANSI or metric bolt sizes only as indicated.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 155.
Not for use in copper systems.

FIG. 7401-2

Rigidlok® Coupling

Gruvlok® introduces new 2-piece large diameter standard groove couplings in both rigid and flexible styles

- Uses standard grooves (conforming to AWWA C-606)
- No special grooves or grooving tools needed
- Pressures to 350 P.S.I. on cut or roll grooved pipe with a wall thickness of 0.250" or greater
- No special fittings needed
- No special valves needed
- Up to 23% less weight than competitive models
- Sizes: 14" through 24" in Rigid: Figure 7401-2

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code) Standard
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

GASKET TYPE:
Flush Gap (Standard)

LUBRICATION:
Standard
Gruvlok Xtreme™

WORKING PRESSURE, END LOAD & PIPE END SEPARATION:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

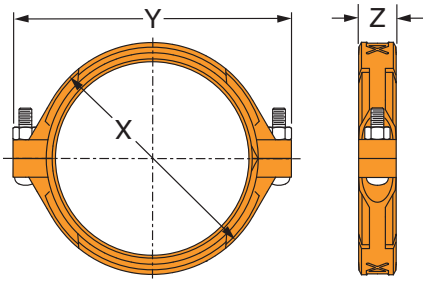


FIGURE 7401-2 RIGIDLOK COUPLING

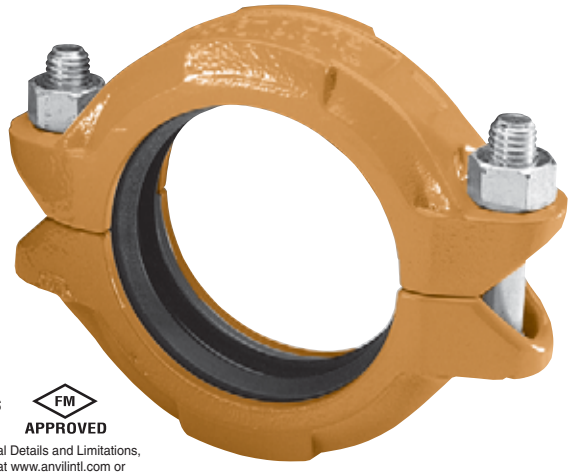
Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
14 *350*	14.000 *355.6*	350 *24.1*	53,878 *239.66*	0-3/32 *0-2.38*	16 1/4 *413*	19 3/4 *502*	3 *76*	2	7/8 x 5 1/2 –	180 *245*	220 *300*	36.5 *16.6*
16 *400*	16.000 *406.4*	350 *24.1*	70,372 *313.03*	0-3/32 *0-2.38*	18 5/16 *465*	22 *558*	3 *76*	2	1 x 5 1/2 –	250 *340*	300 *408*	46.0 *20.9*
18 *450*	18.000 *457.2*	350 *24.1*	89,064 *396.18*	0-3/32 *0-2.38*	20 3/4 *527*	24 1/4 *615*	3 1/8 *79*	2	1 x 5 1/2 –	250 *340*	300 *408*	62.5 *28.3*
20 *500*	20.000 *508.0*	350 *24.1*	109,956 *489.11*	0-3/32 *0-2.38*	23 *582*	27 1/8 *691*	3 1/8 *79*	2	1 1/8 x 5 1/2 –	375 *510*	425 *578*	73.5 *33.3*
24 *600*	24.000 *609.6*	350 *24.1*	158,336 *704.31*	0-3/32 *0-2.38*	27 1/4 *688*	31 1/8 *791*	3 3/16 *81*	2	1 1/8 x 5 1/2 –	375 *510*	425 *578*	90.5 *41.1*

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.
See Installation & Assembly directions on page 157.

FIG. 7001
Standard Coupling

The Gruvlok® Fig. 7001 Standard Coupling forms a flexible grooved end pipe joint connection with the versatility for a wide range of applications. Services include mechanical and plumbing, process piping, mining and oil field piping, and many others. The coupling design supplies optimum strength for working pressures to 1000 PSI (69 bar) without excessive casting weight.

The flexible design eases pipe and equipment installation while providing the designed-in benefit of reducing pipeline noise and vibration transmission without the addition of special components. To ease coupling handling and assembly and to assure consistent quality, sizes 1" through 14" couplings have two 180° segment housings, 16" have three 120° segment housings, and 18" through 24" sizes have four 90° segment housings, while the 28" O.D. and 30" O.D. couplings have six 60° segment housings. The 28" O.D. and 30" O.D. are weld-ring couplings.



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

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
C Style (Standard 1" - 12")
Flush Gap (Standard 14" - 24", Available 1" - 12")

LUBRICATION:
Standard
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

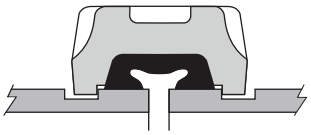


Fig. 7001 with Standard Gasket

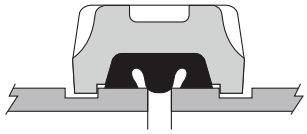
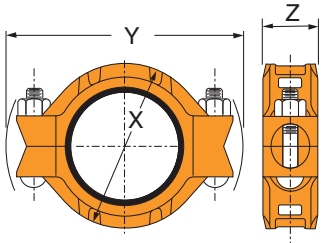
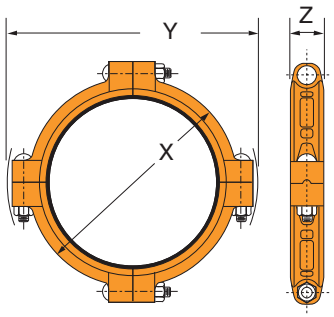


Fig. 7001 with Flush Gap Gasket

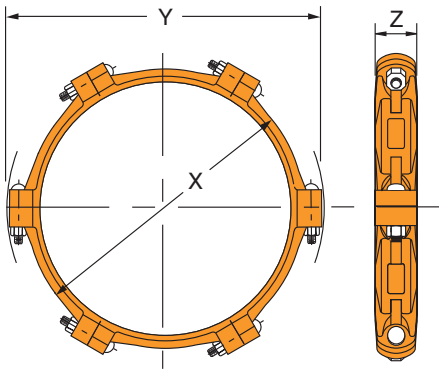
FIG. 7001
Standard Coupling



SIZES 1" - 14"



SIZES 16" - 24"



SIZES 28" - 30"

FIGURE 7001 STANDARD COUPLING

Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Bolt Dimensions*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-m*		*Lbs./kg*
1 *25*	1.315 *33.4*	1000 *68.9*	1,358 *6.04*	0-1/32 *0-0.79*	1° 22'	0.29 *23.8*	2½ *64*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.3 *0.6*
1¼ *32*	1.660 *42.2*	1000 *68.9*	2,164 *9.63*	0-1/32 *0-0.79*	1° 5'	0.23 *18.8*	2¾ *70*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.4 *0.6*
1½ *40*	1.900 *48.3*	1000 *68.9*	2,835 *12.61*	0-1/32 *0-0.79*	0° 57'	0.20 *16.5*	3 *76*	4⅝ *117*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.5 *0.7*
2 *50*	2.375 *60.3*	1000 *68.9*	4,430 *19.71*	0-1/32 *0-0.79*	0° 45'	0.16 *13.1*	3⅝ *92*	6⅛ *156*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.1 *1.4*
2½ *65*	2.875 *73.0*	1000 *68.9*	6,492 *28.88*	0-1/32 *0-0.79*	0° 37'	0.13 *10.9*	4¼ *108*	6½ *165*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.7 *1.7*
3 O.D. 76.1	*2.996* 76.1	*1000* 68.9	*7,050* 31.36	*0-1/32* *0-0.79*	*0° 36'*	*0.13* 10.4	*4¼* 108	*6¾* 171	*1⅞* 48	*2*	*½ x 3* M12 x 76	*80* 110	*100* 150	*4.3* 2.0
3 *80*	3.500 *88.9*	1000 *68.9*	9,621 *42.80*	0-1/32 *0-0.79*	0° 31'	0.11 *8.9*	4⅞ *124*	7⅛ *181*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	4.3 *2.0*
3½ *90*	4.000 *101.6*	1000 *68.9*	12,566 *55.90*	0-1/32 *0-0.79*	0° 27'	0.09 *7.8*	5¼ *133*	8¼ *210*	1⅞ *48*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	5.1 *2.3*
4 *100*	4.500 *114.3*	1000 *68.9*	15,904 *70.75*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	6¼ *159*	8¾ *222*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.8 *3.1*
5 *125*	5.563 *141.3*	1000 *68.9*	24,306 *108.12*	0-3/32 *0-2.38*	0° 58'	0.20 *16.8*	7¼ *184*	11¼ *286*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	9.6 *4.4*
6½ O.D. 165.1	*6.500* 165.1	*1000* 68.9	*33,183* 147.61	*0-3/32* *0-2.38*	*0° 50'*	*0.17* 14.4	*8¼* 210	*11¾* 298	*2* 51	*2*	*¾ x 4½* M20 x 110	*130* 175	*180* 245	*11.8* 5.4
6 *150*	6.625 *168.3*	1000 *68.9*	34,472 *153.34*	0-3/32 *0-2.38*	0° 49'	0.17 *14.1*	8⅝ *219*	11¾ *298*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	11.8 *5.4*
8 *200*	8.625 *219.1*	800 *55.2*	46,741 *207.91*	0-3/32 *0-2.38*	0° 37'	0.13 *10.9*	11 *279*	14⅜ *365*	2⅜ *60*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	21.7 *9.8*
10 *250*	10.750 *273.0*	800 *55.2*	72,610 *322.99*	0-3/32 *0-2.38*	0° 30'	0.11 *8.7*	13⅛ *333*	16⅝ *422*	2⅝ *67*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	27.0 *12.2*
12 *300*	12.750 *323.9*	800 *55.2*	102,141 *454.35*	0-3/32 *0-2.38*	0° 25'	0.09 *7.3*	15½ *394*	18⅝ *473*	2⅝ *67*	2	⅞ x 6 *M22 x 150*	180 *245*	220 *300*	35.0 *15.9*
14 *350*	14.000 *355.6*	300 *20.7*	46,181 *205.43*	0-3/32 *0-2.38*	0° 23'	0.08 *6.7*	16⅛ *410*	20½ *521*	3 *76*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	37.0 *16.8*
16 *400*	16.000 *406.4*	300 *20.7*	60,319 *268.31*	0-3/32 *0-2.38*	0° 20'	0.07 *5.9*	18⅛ *460*	22⅞ *581*	3 *76*	4	1 x 4 *	200 -	250 -	50.0 *22.7*
18 *450*	18.000 *457.2*	300 *20.7*	76,341 *339.58*	0-3/32 *0-2.38*	0° 18'	0.06 *5.2*	21⅛ *537*	25⅜ *645*	3⅛ *79*	4	1 x 4 *	200 -	250 -	72.0 *32.7*
20 *500*	20.000 *508.0*	300 *20.7*	94,248 *419.23*	0-3/32 *0-2.38*	0° 16'	0.06 *4.7*	23 *584*	28¼ *718*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	82.0 *37.2*
24 *600*	24.000 *609.6*	300 *20.7*	135,717 *603.70*	0-3/32 *0-2.38*	0° 13'	0.05 *3.9*	27 *686*	32⅜ *822*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	90.0 *40.8*
28" O.D. *733.4*	28.875 *733.4*	150 *10.3*	98,226 *436.93*	0-3/32 *0-2.38*	0° 11'	0.04 *3.2*	33½ *851*	35½ *902*	3⅛ *79*	6	1 x 5½ *	200 -	250 -	105.0 *47.6*
30" O.D. *787.4*	31.00 *787.4*	150 *10.3*	113,215 *503.61*	0-3/32 *0-2.38*	0° 10'	0.04 *3.0*	33¾ *857*	38¼ *972*	3⅝ *92*	6	1 x 5½ *	200 -	250 -	137.0 *62.1*

NOTES:
Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 190 for details.
Refer to page 196 for Misalignment & Deflection Calculations and page 197 for Curve Layout Calculations.

* Available in ANSI or metric bolt sizes only as indicated.
For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 156.
Not for use in copper systems.

FIG. 7001-2
Standard Coupling

Gruvlok® introduces new 2-piece large diameter standard groove couplings in both rigid and flexible styles

- Uses standard grooves (conforming to AWWA C-606)
- No special grooves or grooving tools needed
- Pressures to 350 P.S.I. on cut or roll grooved pipe with a wall thickness of 0.250" or greater
- No special fittings needed
- No special valves needed
- Up to 23% less weight than competitive models
- Sizes: 14" through 24" in Flexible: Figure 7001-2

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code) Standard
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

GASKET TYPE:
Flush Gap (Standard)

LUBRICATION:
Standard
Gruvlok Xtreme™

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

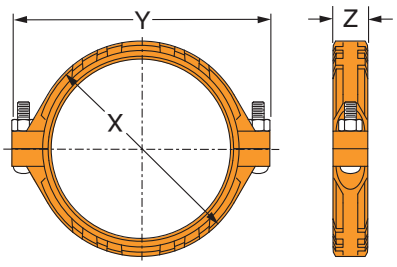
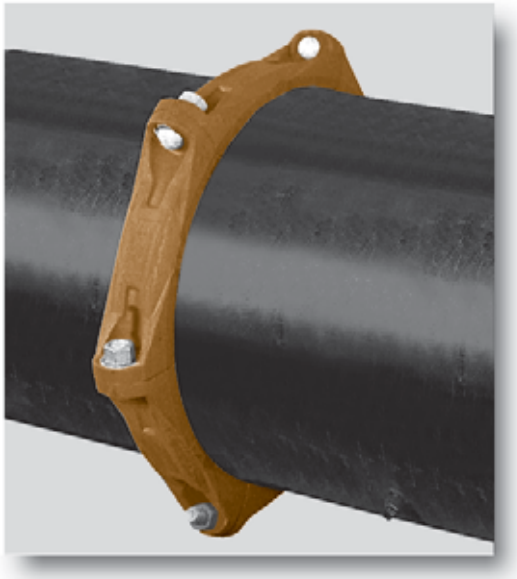


FIGURE 7001-2 STANDARD COUPLING

Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Bolt Dimensions*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-m*		*Lbs./kg*
14 *350*	14.000 *355.6*	350 *24.1*	53,878 *239.66*	0-3/32 *0-2.38*	0° 23'	0.08 *6.7*	16¼ *413*	19¾ *502*	3 *76*	2	⅞ x 5½ –	180 *245*	220 *300*	36.0 *16.3*
16 *400*	16.000 *406.4*	350 *24.1*	70,372 *313.03*	0-3/32 *0-2.38*	0° 20'	0.07 *5.9*	18 5/16 *465*	22 *558*	3 *76*	2	1 x 5½ –	250 *340*	300 *408*	45.0 *20.4*
18 *450*	18.000 *457.2*	350 *24.1*	89,064 *396.18*	0-3/32 *0-2.38*	0° 18'	0.06 *5.2*	20¾ *527*	24¼ *615*	3⅛ *79*	2	1 x 5½ –	250 *340*	300 *408*	60.0 *27.2*
20 *500*	20.000 *508.0*	350 *24.1*	109,956 *489.11*	0-3/32 *0-2.38*	0° 16'	0.06 *4.7*	23 *582*	27⅛ *691*	3⅛ *79*	2	1⅛ x 5½ –	375 *510*	425 *578*	72.5 *32.9*
24 *600*	24.000 *609.6*	350 *24.1*	158,336 *704.31*	0-3/32 *0-2.38*	0° 13'	0.05 *3.9*	27¼ *688*	31⅛ *791*	3 3/16 *81*	2	1⅛ x 5½ –	375 *510*	425 *578*	90.0 *40.8*

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe.
See Installation & Assembly directions on page 157.

FIG. 7011
Standard Coupling



The Gruvlok® Figure 7011 Standard Coupling is a flexible coupling designed to join roll grooved or cut grooved 30" O.D. pipe for a wide range of applications, including Commercial/Industrial Construction, Mining, Process Piping and many others. This coupling's operating temperature ranges from –40°F to 230°F (-40°C to 110°C) with the Grade E EPDM gasket and –20°F to 180°F (-29°C to 82°C) with the Grade T Nitrile gasket. The operating pressure ranges 15" of Hg. vacuum to 300 psig on standard wall steel pipe.

MATERIAL SPECIFICATIONS

HOUSING DESIGN:
This six-segment coupling's housing is cast in ductile iron per ASTM A 536 Grade 65-45-12. Each housing segment is machined to assure a close dimensional fit with pipe ends that are prepared in accordance with Gruvlok "Large Diameter Roll and Cut Groove Specifications."

GASKET DESIGN:
The gasket design is a "C" Style cross section and features a larger cross section to provide optimal sealing throughout the range of pipe dimensional variations and operating conditions. The gasket is available in EPDM and Nitrile, to facilitate use in a wide range of applications. For Gruvlok gasket material recommendations see the Gruvlok catalog.

BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track bolts of carbon steel conforming to ASTM A 183 Grade 2, with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563. Bolts and nuts are zinc plated per ASTM B 633 as standard.

PIPE END PREPARATION:
Pipe grooving is simple, easy and quick. It is critical that the pipe ends be prepared in accordance with the Gruvlok "Large Diameter Roll and Cut Groove Specifications." **For roll grooved pipe, grinding the weld seam on the interior and exterior of the pipe may be required. Not performing this operation may result in improper assembly of the coupling, gasket leakage and damage to the roll grooving machine.**

FIG. 7011
Standard Coupling

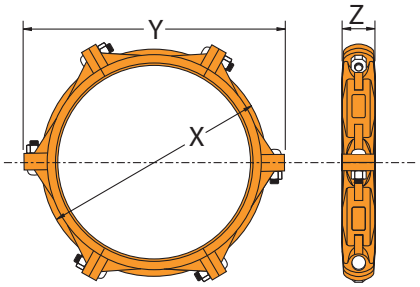
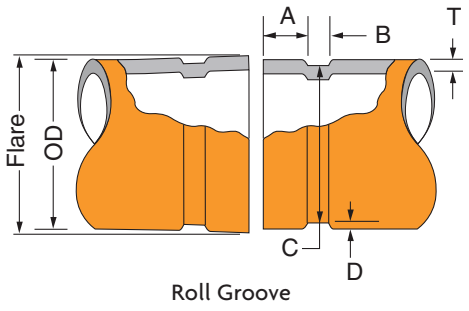


FIGURE 7011 STANDARD COUPLING

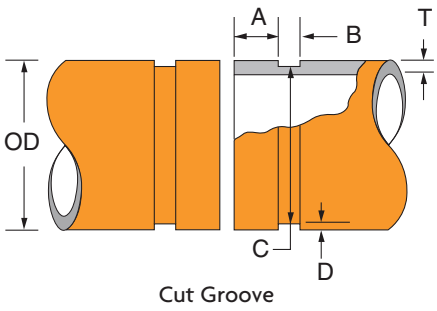
Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
30 O.D. *750*	30.000 *762.0*	300 *20.7*	212,058 *943.2*	0-9/64 *0-3.57*	0° 16'	0.06 *4.7*	34 *864*	39½ *1003*	5 *127*	6	1¼ x 4⅜ –	600 -	800 -	200 *90.9*

NOTE:
Working pressure and end load values are for standard wall pipe.
Range of pipe end separation values are for cut grooved pipe.
Roll and Cut Grooving Specifications can be found in the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
* Available in ANSI or metric bolt sizes only as indicated.
§ – For additional Bolt Torque information,see page 190.
See Installation & Assembly directions on page 158.



Roll Groove



Cut Groove

LARGE DIAMETER PIPE ROLL & CUT GROOVE SPECIFICATIONS

Nominal IPS Pipe Size	O.D.			Gasket Seat "A" +.030/-.060 +.77/-1.54	Groove Width "B" ±.030 ±.77	Groove Diameter "C"		Groove Depth "D" (Ref. Only)	Min. Wall Thickness "T"		Max. Flare Dia.
	Actual	Tolerance				Actual	Tol +0.000		Roll Groove	Cut Groove	
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
30 O.D.	30.000	0.093	0.031	1.750	0.625	29.500	0.063	0.250	0.250	0.625	30.200
750	*762.0*	*2.36*	*0.79*	*44.45*	*15.88*	*749.30*	*1.60*	*6.35*	*6.35*	*15.88*	*767.1*

- Pipe O.D. must be within specified dimensions.
- Gasket Seat must be free from scores, seams, chips, rust or other scale, which may interfere with proper sealing of the gasket. Gasket Seat width, dimension A, is to be measured from the pipe end to the vertical flank in the groove.
- Groove width, dimension B, is to be measured between the vertical flank of the grooveside walls.
- Groove depth must be uniform depth around the entire pipe circumference. (Reference column 6.)
- Maximum Flare Diameter is to be measured at the most extreme pipe end.
- **Out of Roundness:** Difference between the maximum and minimum pipe O.D. measured at 90° must not exceed the total pipe O.D. tolerance listed (Reference column 2).
- The maximum allowable tolerance from square cut ends is .125" measured from a true square line.
- Beveled end pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.

SPECIAL ROLL GROOVING INSTRUCTION:
- Weld seams must be ground flush with the pipe O.D. and I.D. prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

FIG. 7000

Lightweight Flexible Coupling

c UL us LISTED FM APPROVED

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

The Fig. 7000 Lightweight Flexible Coupling is designed for applications where system flexibility is desired.

The Fig. 7000 Coupling is approximately 30% lighter in weight than the Fig. 7001 Coupling, and allows for working pressure ratings up to 600 psi (41.4 bar).

The Figure 7000 Lightweight Flexible Coupling is intended for use in several applications. See gasket Grade Index for gasket recommendations.

See technical data section for design factors.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7000

Lightweight Flexible Coupling

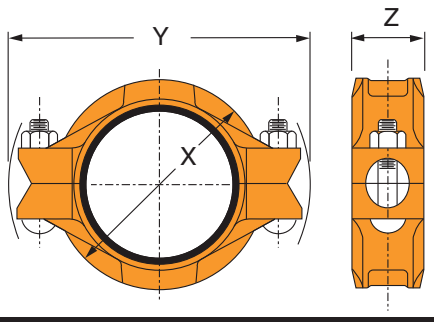


FIGURE 7000 COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1 25	1.315 33.4	600 41.4	815 3.62	0-1/32 0-0.79	1° 22'	0.29 23.8	2 3/8 60	4 1/4 108	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.3 0.6
1 1/4 32	1.660 42.2	600 41.4	1,299 5.78	0-1/32 0-0.79	1° 5'	0.23 18.8	2 3/4 70	4 3/8 111	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.4 0.6
1 1/2 40	1.900 48.3	600 41.4	1,701 7.57	0-1/32 0-0.79	0° 57'	0.20 16.5	3 76	4 5/8 117	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.5 0.7
2 50	2.375 60.3	600 41.4	2,658 11.82	0-1/32 0-0.79	0° 45'	0.16 13.1	3 1/2 89	5 1/2 140	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.7 0.8
2 1/2 65	2.875 73.0	600 41.4	3,895 17.33	0-1/32 0-0.79	0° 37'	0.13 10.9	4 102	5 3/4 146	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.9 0.9
3 O.D. 76.1	*2.996* 76.1	*600* 41.4	*4,230* 18.82	*0-1/32* *0-0.79*	*0° 36'*	*0.13* 10.4	*4* 102	*6 1/8* 156	*1 3/4* 44	*2*	*3/8 x 2 1/4* M10 x 57	*30* 40	*45* 60	*2.3* 1.0
3 80	3.500 88.9	600 41.4	5,773 25.68	0-1/32 0-0.79	0° 31'	0.11 8.9	4 5/8 117	6 3/4 171	1 3/4 44	2	1/2 x 2 3/4 M12 x 70	80 110	100 150	2.9 1.3
3 1/2 90	4.000 101.6	600 41.4	7,540 33.54	0-1/32 0-0.79	0° 27'	0.09 7.8	5 1/8 130	7 5/8 194	1 3/4 44	2	1/2 x 3 M12 x 76	80 110	100 150	3.1 1.4
4 1/4 O.D. 108.0	*4.250* 108.0	*600* 41.4	*8,512* 37.86	*0-3/32* 0-2.38	*1° 16'*	*0.26* 22.0	*5 1/2* 140	*7 3/4* 197	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*4.0* 1.8
4 100	4.500 114.3	600 41.4	9,543 42.45	0-3/32 0-2.38	1° 12'	0.25 20.8	5 7/8 149	8 1/8 206	2 51	2	1/2 x 3 M12 x 76	80 110	100 150	4.6 2.1
5 1/4 O.D. 133.0	*5.236* 133.0	*500* 34.5	*10,766* 47.89	*0-3/32* 0-2.38	*1° 2'*	*0.21* 17.9	*6 1/2* 165	*9 1/8* 232	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*5.7* 2.6
5 1/2 O.D. 139.7	*5.500* 139.7	*500* 34.5	*11,879* 52.84	*0-3/32* 0-2.38	*0° 59'*	*0.20* 17.0	*6 3/4* 171	*9 3/8* 238	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*6* 2.7
5 125	5.563 141.3	500 34.5	12,153 54.06	0-3/32 0-2.38	0° 58'	0.20 16.8	7 178	9 5/8 244	2 51	2	5/8 x 3 1/2 M16 x 85	100 135	130 175	6.1 2.8
6 1/4 O.D. 159.0	*6.259* 159.0	*500* 34.5	*15,384* 68.43	*0-3/32* 0-2.38	*0° 51'*	*0.18* 14.9	*7 1/2* 191	*10 3/8* 264	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*6.7* 3.0
6 1/2 O.D. 165.1	*6.500* 165.1	*500* 34.5	*16,592* 73.80	*0-3/32* 0-2.38	*0° 50'*	*0.17* 13.1	*7 3/4* 197	*10 3/4* 273	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*7.0* 3.2
6 150	6.625 168.3	500 34.5	17,236 76.67	0-3/32 0-2.38	0° 49'	0.17 14.1	8 203	11 279	2 51	2	5/8 x 3 1/2 M16 x 85	100 135	130 175	8.1 3.7
8 200	8.625 219.1	500 34.5	29,213 129.95	0-3/32 0-2.38	0° 37'	0.13 10.9	10 1/2 264	12 13/16 337	2 1/2 60	2	3/4 x 4 1/2 M20 x 110	130 175	180 245	14.2 6.4

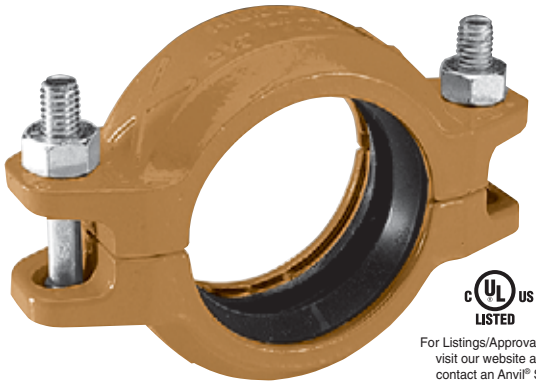
NOTES:

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 190 for details. Refer to page 196 for Misalignment & Deflection Calculations and page 197 for Curve Layout Calculations.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 159.
Not for use in copper systems.

FIG. 7400

Rigidlite® Coupling



VdS

DN 50 and DN 200 sizes are VdS approved.

c UL us LISTED

FM APPROVED

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The Fig. 7400 Rigidlite Coupling from Gruvlok is specially designed to provide a rigid, locked-in pipe connection to meet the specific demands of rigid design steel pipe and copper tube systems. Fast and easy swing-over installation of the rugged lightweight housing produces a secure, rigid pipe joint.

The Fig. 7400 Rigidlite Coupling is UL/ULC Listed and FM Approved for 300 psi (20.7 bar) with roll grooved or cut grooved steel pipe prepared in accordance with Gruvlok grooving specifications. Figure 7400 Rigidlite Coupling is available with the Grade "E" EPDM, "C" Style Gasket intended for use with the Gruvlok Advanced Copper Method.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7400
Rigidlite® Coupling

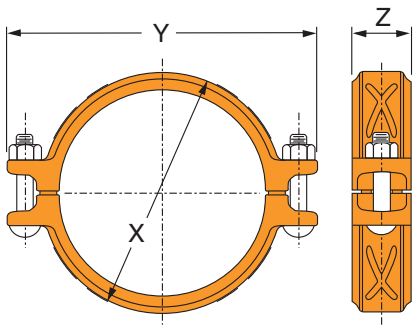


FIGURE 7400 RIGIDLITE COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1 *25*	1.315 *33.4*	300 *20.7*	407 *1.81*	0-1/32 *0-0.79*	2 1/4 *57*	4 1/2 *114*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.2 *0.5*
1 1/4 *32*	1.660 *42.2*	300 *20.7*	649 *2.89*	0-1/32 *0-0.79*	2 5/8 *67*	4 3/4 *121*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.3 *0.6*
1 1/2 *40*	1.900 *48.3*	300 *20.7*	851 *3.78*	0-1/32 *0-0.79*	2 7/8 *73*	4 7/8 *124*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.4 *0.6*
2 *50**	2.375 *60.3*	300 *20.7*	1,329 *5.91*	0-1/32 *0-0.79*	3 1/4 *83*	5 1/2 *140*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	300 *20.7*	1,948 *8.66*	0-1/32 *0-0.79*	3 7/8 *98*	6 *152*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.9 *0.9*
3 O.D. 76.1	*2.996* 76.1	*300* 20.7	*2,115* 9.41	*0-1/32* 0-0.79	*4* 102	*5 7/8* 149	*1 3/4* 44	*2*	*3/8 x 2 1/4* M10 x 57	*30* 40	*45* 60	*1.9* 0.9
3 *80*	3.500 *88.9*	300 *20.7*	2,886 *12.84*	0-1/32 *0-0.79*	4 1/2 *114*	6 3/4 *171*	1 3/4 *44*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	2.1 *1.0*
4 *100*	4.500 *114.3*	300 *20.7*	4,771 *21.22*	0-3/32 *0-2.38*	5 5/8 *143*	7 3/4 *197*	1 7/8 *48*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	3.1 *1.4*
5 1/2 O.D. 139.7	*5.500* 139.7	*300* 20.7	*7,127* 31.70	*0-3/32* 0-2.38	*6 3/4* 171	*9 1/4* 235	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*4.5* 2.0
5 *125*	5.563 *141.3*	300 *20.7*	7,292 *32.44*	0-3/32 *0-2.38*	6 7/8 *175*	9 1/4 *235*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	4.6 *2.1*
6 1/2 O.D. 165.1	*6.500* 165.1	*300* 20.7	*9,955* 44.28	*0-3/32* 0-2.38	*7 3/4* 200	*10 3/8* 264	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*5.5* 2.5
6 *150*	6.625 *168.3*	300 *20.7*	10,341 *46.00*	0-3/32 *0-2.38*	7 7/8 *200*	10 3/8 *264*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	5.5 *2.5*
8 *200**	8.625 *219.1*	300 *20.7*	17,528 *77.97*	0-3/32 *0-2.38*	10 1/4 *260*	12 3/4 *324*	2 3/8 *60*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	8.4 *3.8*

NOTE:
Range of Pipe End Seperation values are for roll grooved pipe and may be doubled for cut groove pipe.
Other sizes available, contact an Anvil Representative for more information.

For additional details see "Coupling Data Chart Notes" on page 17.
* DN 50 and DN 200 sizes are VdS approved.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 160.
For use in copper systems, see page 111.

FIG. 7003

Hingelok® Coupling

SIZES 1" - 4"

SIZES 5" - 8"

The Fig. 7003 Hingelok Coupling is specially designed for applications requiring a quick connection and/or disconnection of a pipe joint. The Fig. 7003 Hingelok Coupling is ideal for those applications where frequent pipe removal is required for maintenance or any other reason. Fig. 7003 Hingelok Coupling provides for system working pressure ratings up to 300 psi (20.7 bar).

The Fig. 7003 Hingelok Coupling halves are permanently hinged to provide an assembly that eases handling and installation. The two coupling halves are hinged for ease of handling and are secured by a cam-action handle. Sizes 1" to 4" use toggle link plates and sizes 5" to 8" use a toggle bolt to attach the cam-action handle to the housings. The cam-action locking handle permits rapid installation without the need for additional tools and maintains secure closure of the coupling into the pipe grooves. Final assembly of the locking pin to the Hingelok Coupling adds an extra measure of security required in critical pipe joint applications.

MATERIAL SPECIFICATIONS

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

HANDLE:
Sizes 1" - 4": Cold Rolled Carbon Steel Handles
Sizes 5" - 8": Cast Ductile Iron Handles

LINKS:
Sizes 1" - 4": Cold Rolled Carbon Steel Links
Sizes 5" - 8": Heat Treated Steel Links

LOCKING PIN:
Locking Pin: Spring Steel

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.
DO NOT USE GRUVLOK XTREME LUBRICANT WITH GRADE "L" SILICONE GASKET.

GASKET TYPE:
Standard C Style
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7003

Hingelok® Coupling

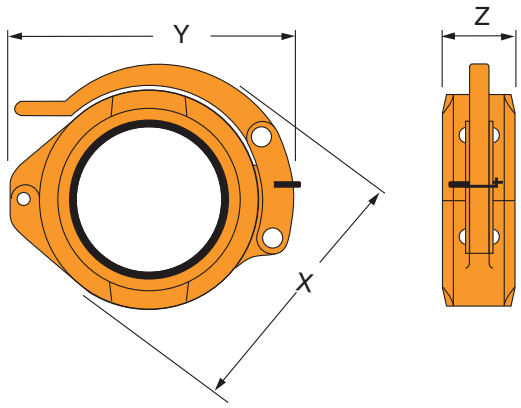


FIGURE 7003 HINGELOK COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	300 *20.7*	407 *1.81*	0-1/32 *0-0.79*	1° 22'	0.29 *23.8*	3 *76*	4 *101*	1 3/4 *44*	1.4 *0.6*
1 1/4 *32*	1.660 *42.2*	300 *20.7*	649 *2.89*	0-1/32 *0-0.79*	1° 5'	0.23 *18.8*	3 7/16 *87*	4 7/16 *113*	1 7/8 *48*	1.5 *0.7*
1 1/2 *40*	1.900 *48.3*	300 *20.7*	851 *3.78*	0-1/32 *0-0.79*	0° 57'	0.20 *16.5*	3 5/8 *92*	4 1/4 *108*	1 7/8 *48*	1.7 *0.8*
2 *50*	2.375 *60.3*	300 *20.7*	1,329 *5.91*	0-1/32 *0-0.79*	0° 45'	0.16 *13.1*	4 1/4 *108*	4 7/8 *124*	1 7/8 *48*	2.2 *1.0*
2 1/2 *65*	2.875 *73.0*	300 *20.7*	1,948 *8.66*	0-1/32 *0-0.79*	0° 37'	0.13 *10.9*	5 1/4 *133*	5 7/8 *149*	1 7/8 *48*	3.2 *1.5*
3 *80*	3.500 *88.9*	300 *20.7*	2,886 *12.84*	0-1/32 *0-0.79*	0° 31'	0.11 *8.9*	5 5/8 *143*	6 1/2 *165*	1 7/8 *48*	3.6 *1.6*
4 *100*	4.500 *114.3*	300 *20.7*	4,771 *21.22*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	7 *178*	7 3/4 *197*	2 *51*	5.1 *2.3*
5 *125*	5.563 *141.3*	300 *20.7*	7,292 *32.44*	0-3/32 *0-2.38*	0° 58'	0.20 *16.8*	8 5/8 *219*	9 1/2 *241*	2 1/8 *54*	9.5 *4.3*
6 *150*	6.625 *168.3*	300 *20.7*	10,341 *46.00*	0-3/32 *0-2.38*	0° 49'	0.17 *14.14*	9 7/8 *251*	10 7/8 *276*	2 1/8 *54*	11.2 *5.1*
8 *200*	8.625 *219.1*	300 *20.7*	17,528 *77.97*	0-3/32 *0-2.38*	0° 37'	0.13 *10.9*	12 *305*	13 1/8 *333*	2 1/2 *64*	18.1 *8.2*

NOTES:

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 190 for details. Refer to page 196 for Misalignment & Deflection Calculations and page 197 for Curve Layout Calculations.

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 162.
Not for use in copper systems.

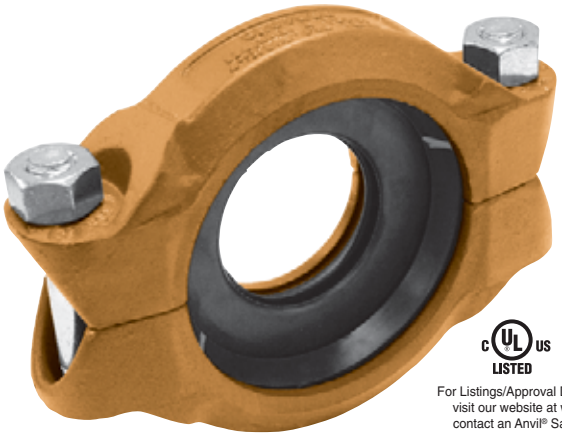
SPECIAL NOTE:

Fig. 7003 Hingelok Couplings are not designed for eccentric loading and thereforeare not recommended for use at the end of concrete pumping booms or vertical risers above 30 feet (9.1 meters). Shockload must be considered and is to be included in the maximum working pressure listed above. Coupling keys, gasket cavity, and pipe grooves must be kept free of all foreign matter. Proper anchoring practice must always be exercised.

CAUTION:

Hammering or banging on the handle or coupling housing could cause serious damage to the locking device and coupling assembly. The result may be an unsuitable pipe joint and unusable coupling assembly.
When re-using, always check for gasket damage, housing hinge and handle for looseness, distortion bent or any other damage.

FIG. 7010
Reducing Coupling



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The Fig. 7010 Reducing Coupling makes it possible to directly connect two different pipe sizes, eliminating the need for two couplings and a reducing fitting. The specially designed reducing coupling gasket with a center rib assures proper positioning of the gasket and prevents the smaller pipe from telescoping into the larger during assembly. Fig. 7010 Reducing Coupling allows for working pressure ratings up to 500 PSI (34.5 bar).

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12, or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7010
Reducing Coupling

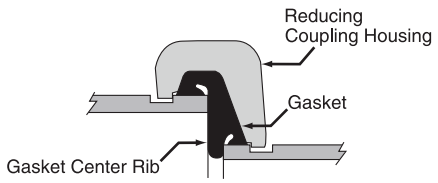


Fig. 7010
Coupling with Gasket

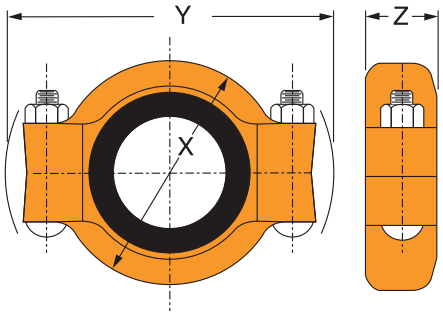


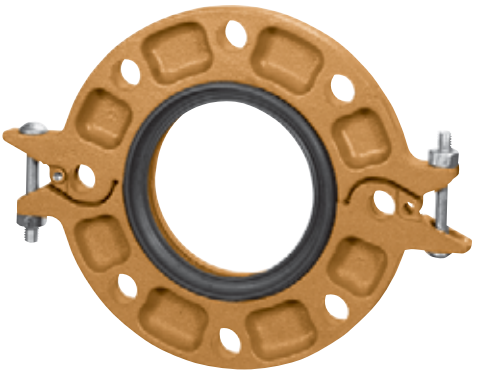
FIGURE 7010 REDUCING COUPLING

Nominal Size	Larger O.D.	Smaller O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
						Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
2 x 1½ *50 x 40*	2.375 *60.3*	1.900 *48.3*	500 *34.5*	2,215 *9.85*	0-1/32 *0-0.79*	0° 45'	0.16 *13.1*	3 5/8 *92*	5 7/8 *149*	1 7/8 *48*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	2.0 *0.9*
2½ x 2 *65 x 50*	2.875 *73.0*	2.375 *60.3*	500 *34.5*	3,246 *14.44*	0-1/32 *0-0.79*	0° 37'	0.13 *10.9*	4¼ *108*	6 3/8 *162*	1 7/8 *48*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	3.5 *1.6*
3 x 2 *80 x 50*	3.500 *88.9*	2.375 *60.3*	500 *34.5*	4,811 *21.40*	0-1/32 *0-0.79*	0° 31'	0.11 *8.9*	4 7/8 *124*	7 1/8 *181*	1 7/8 *48*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	4.4 *2.0*
3 x 2½ *80 x 65*	3.500 *88.9*	2.875 *73.0*	500 *34.5*	4,811 *21.40*	0-1/32 *0-0.79*	0° 31'	0.11 *8.9*	4 7/8 *124*	7 1/8 *181*	1 7/8 *48*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	4.1 *1.9*
4 x 2 *100 x 50*	4.500 *114.3*	2.375 *60.3*	500 *34.5*	7,952 *35.37*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	6¼ *159*	8 7/8 *225*	2 *51*	2	5/8 x 3½ *M16 x 85*	100 *135*	130 *175*	8.9 *4.0*
4 x 2½ *100 x 65*	4.500 *114.3*	2.875 *73.0*	500 *34.5*	7,952 *35.37*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	6¼ *159*	8 7/8 *225*	2 *51*	2	5/8 x 3½ *M16 x 85*	100 *135*	130 *175*	7.9 *3.6*
4 x 3 *100 x 80*	4.500 *114.3*	3.500 *88.9*	500 *34.5*	7,952 *35.37*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	6¼ *159*	8 7/8 *225*	2 *51*	2	5/8 x 3½ *M16 x 85*	100 *135*	130 *175*	6.7 *3.0*
5 x 4 *125 x 100*	5.563 *141.3*	4.500 *114.3*	500 *34.5*	12,153 *54.06*	0-3/32 *0-2.38*	1° 58'	0.20 *16.8*	7¼ *184*	10 5/8 *270*	2 1/8 *54*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	11.4 *5.2*
6 x 4 *150 x 100*	6.625 *168.3*	4.500 *114.3*	500 *34.5*	17,236 *76.67*	0-3/32 *0-2.38*	0° 49'	0.17 *14.1*	8¼ *210*	11 5/8 *295*	2 1/8 *54*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	13.4 *6.1*
6 x 5 *150 x 125*	6.625 *168.3*	5.562 *141.3*	500 *34.5*	17,236 *76.67*	0-3/32 *0-2.38*	0° 49'	0.17 *14.1*	8½ *216*	11 5/8 *295*	2 1/8 *54*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	13.5 *6.1*
8 x 6 *200 x 150*	8.625 *219.1*	6.625 *168.3*	500 *34.5*	29,213 *129.95*	0-3/32 *0-2.38*	0° 37'	0.13 *10.9*	10½ *267*	14 *356*	2¼ *57*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	17.7 *8.0*

NOTES:
Fig. 7010 Reducing Coupling should not be used with end caps in systems where a vacuum may be developed. Contact your Anvil Representative for details.
Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 190 for details.
Refer to page 196 for Misalignment & Deflection Calculations and page 197 for Curve Layout Calculations.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 163.
Not for use in copper systems.

FIG. 7012
Gruvlok Flanges



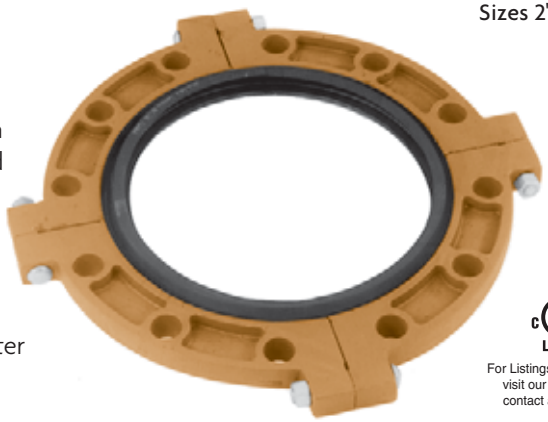
Sizes 2" - 12"

The Gruvlok® Fig. 7012 Flange allows direct connection of Class 125 or Class 150 flanged components to a grooved piping system. The two interlocking halves of the 2" thru 12" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

The 14" thru 24" sizes of the Gruvlok Fig. 7012 Flange are cast in four segments. A sleek profile gasket design allows quick and easy assembly of the Gruvlok Flange onto the pipe.

All Gruvlok Fig. 7012 Flanges have designed-in anti-rotation tines which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

The Gruvlok Fig. 7012 Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces. In copper systems a phenolic adapter insert is required, in place of the steel adapter insert. (See Installation and Assembly Instructions Section or contact your Anvil Rep. for details.)



Sizes 14" - 24"

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MATERIAL SPECIFICATIONS

LATCH BOLT/NUT (2" - 12")
SEGMENT BOLT/NUT (14" - 24"):
Heat treated, zinc electroplated, carbon steel oval neck track bolts conforming to ASTM A 183 and zinc electroplated heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard), Red (optional)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

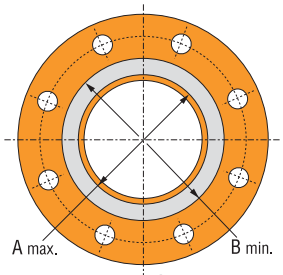
For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER.

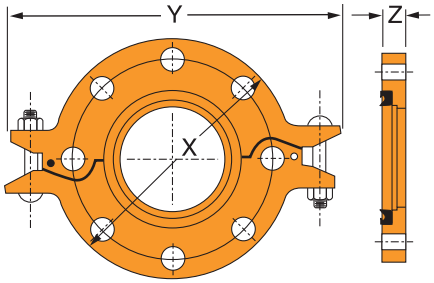
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7012

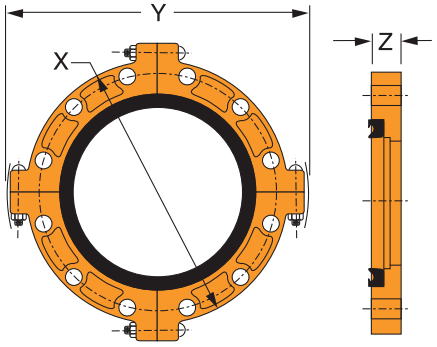
Gruvlok Flanges



Mating Flange



2"-12" sizes



14"-24" sizes

GRUVLOK FIGURE 7012 FLANGE: ANSI CLASS 150 OR ISO PN10 OR PN16 BOLT PATTERNS

Nominal Size	O.D.	Max. Working Pressure▼	Max. End Load▼	Latch Bolt			Dimensions			Sealing Surface		Mating Flange Bolts						Approx. Wt. Ea.
				Latch Bolt Size*	Specified Torque §		X	Y	Z	A Max.	B Min.	Mating Flange Bolts		Bolt Circle Diameter	Bolt Hole Diameter	Specified Torque §		
					Min.	Max.						Qty. ANSI	Size (ANSI)			Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Ft.-Lbs/N-m*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*PN10 (16)*	*in. (ISO) mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2	2.375	300	1,329	⅜ x 2¾	30	45	6¼	8⅜	¾	2⅜	3⁷⁄₁₆	4	⅝ x 2¾	4¾	¾	110	140	4.2
50	*60.3*	*20.7*	*5.91*	*M10 x 70*	*40*	*60*	*159*	*213*	*19*	*60*	*87*	*4*	*M16 x 70*	*120.7*	*19.1*	*149*	*190*	*1.9*
2½	2.875	300	1,948	⅜ x 2¾	30	45	7	9½	¾	2⅞	4	4	⅝ x 2¾	5½	¾	110	140	4.6
65	*73.0*	*20.7*	*8.66*	*M10 x 70*	*40*	*60*	*178*	*241*	*19*	*73*	*102*	*-*	*M16 x 70*	*139.7*	*19.1*	*149*	*190*	*2.1*
3 O.D.	*2.996*	*300*	*2,115*	*-*	*30*	*45*	*7¼*	*9¾*	*¾*	*3*	*4⅛*	*-*	*-*	*-*	*-*	*110*	*140*	*4.8*
76.1	76.1	20.7	9.41	M10 x 70	40	60	184	248	19	76	105	4	M16 x 70	-	-	149	190	2.2
3	3.500	300	2,886	⅜ x 2¾	30	45	7⅞	10½	¾	3½	4⁹⁄₁₆	4	⅝ x 2¾	6	¾	110	140	6.0
88.9	*88.9*	*20.7*	*12.84*	*M10 x 70*	*40*	*60*	*200*	*267*	*19*	*89*	*116*	*8*	*M16 x 70*	*152.4*	*19.1*	*149*	*190*	*2.7*
4	4.500	300	4,771	⅜ x 2¾	30	45	9	11½	¾	4½	5⁹⁄₁₆	8	⅝ x 2¾	7½	¾	110	140	6.3
100	*114.3*	*20.7*	*21.22*	*M10 x 70*	*40*	*60*	*229*	*292*	*19*	*114*	*141*	*8*	*M16 x 70*	*190.5*	*19.1*	*149*	*190*	*2.9*
5½ O.D.	*5.500*	*300*	*7,127*	*-*	*30*	*45*	*9⅞*	*12⅞*	*⅞*	*5⁹⁄₁₆*	*6¾*	*-*	*-*	*-*	*-*	*220*	*250*	*15.6*
139.7	139.7	20.7	31.70	M10 x 70	40	60	251	327	22	141	171	8	M16 x 75	-	-	298	339	7.1
5	5.563	300	7,292	⅜ x 2¾	30	45	10	12½	⅞	5⁹⁄₁₆	6¾	8	¾ x 2⅞	8½	⅞	220	250	8.8
125	*141.3*	*20.7*	*32.44*	*M10 x 70*	*40*	*60*	*254*	*318*	*22*	*141*	*171*	*-*	*-*	*215.9*	*22.2*	*298*	*339*	*4.0*
6½ O.D.	*6.500*	*300*	*9,955*	*-*	*30*	*45*	*11¼*	*14*	*⅞*	*6⅝*	*7¹³⁄₁₆*	*-*	*-*	*-*	*-*	*220*	*250*	*9.7*
165.1	165.1	20.7	44.28	M10 x 70	40	60	286	356	22	168	198	8	M20 x 80	-	-	298	339	4.4
6	6.625	300	10,341	⅜ x 2¾	30	45	11	14	⅞	6⅝	7¹³⁄₁₆	8	¾ x 3⅛	9½	⅞	220	250	9.6
150	*168.3*	*20.7*	*46.00*	*M10 x 70*	*40*	*60*	*279*	*356*	*22*	*168*	*198*	*8*	*M20 x 80*	*241.1*	*22.2*	*298*	*339*	*4.4*
8	8.625	300	17,528	⅜ x 2¾	30	45	13½	16½	1	8⅝	10	8	¾ x 3¼	11¾	⅞	220	250	15.6
200	*219.1*	*20.7*	*77.97*	*M10 x 70*	*40*	*60*	*343*	*419*	*25*	*219*	*254*	*8 (12)*	*M20 x 80*	*298.5*	*22.2*	*298*	*339*	*7.1*
10	10.750	300	27,229	⅜ x 2¾	30	45	16	19	1	10¾	12⅛	12	⅞ x 3½	14¼	1	320	400	18.2
250	*273.1*	*20.7*	*121.12*	*M10 x 70*	*40*	*60*	*406*	*483*	*25*	*273*	*308*	*12*	*M20 x 90*	*362.0*	*25.4*	*439*	*542*	*8.3*
12	12.750	300	38,303	⅜ x 2¾	30	45	19	21¾	1¼	12¾	14⅛	12	⅞ x 3¾	17	1	320	400	29.9
300	*323.9*	*20.7*	*170.38*	*M10 x 70*	*40*	*60*	*483*	*552*	*32*	*324*	*359*	*12*	*-*	*431.8*	*25.4*	*439*	*542*	*13.6*
12 (PN)	*12.750*	*300*	*38,303*	*-*	*30*	*45*	*18⅛*	*21¼*	*1*	*12¾*	*14⅛*	*12*	*-*	*-*	*-*	*320*	*400*	*20.9*
300	323.9	20.7	170.38	M10 x 70	40	60	460	540	25	324	359	12	M20 x 90 ✛	-	-	439	542	9.5
14	14.000	300	46,181	⅝ x 4¼	100	130	21	24	1½	14	16	12	1 x 4¼	18¾	1⅛	360	520	52.5
350	*355.6*	*20.7*	*205.43*	*-*	*136*	*176*	*533*	*610*	*38*	*356*	*406*	*-*	*-*	*476.3*	*28.6*	*488*	*705*	*23.8*
16	16.000	300	60,319	⅝ x 4¼	100	130	23½	26½	1½	16	18	16	1 x 4¼	21¼	1⅛	360	520	67.0
400	*406.4*	*20.7*	*268.31*	*-*	*136*	*176*	*597*	*673*	*38*	*406*	*457*	*-*	*-*	*539.8*	*28.6*	*488*	*705*	*30.4*
18	18.000	300	76,341	¾ x 5	130	180	25	29	1⅝	18	20	16	1⅛ x 4¾	22¾	1¼	450	725	82.5
450	*457.2*	*20.7*	*339.58*	*-*	*176*	*244*	*635*	*737*	*41*	*457*	*508*	*-*	*–*	*577.9*	*31.8*	*610*	*983*	*37.4*
20	20.000	300	94,248	¾ x 5	130	180	27½	31½	1¾	20	22	20	1⅛ x 4¾	25	1¼	450	725	106.5
500	*508.0*	*20.7*	*419.23*	*-*	*176*	*244*	*699*	*800*	*44*	*508*	*559*	*-*	*–*	*635.0*	*31.8*	*610*	*983*	*48.3*
24	24.000	250	113,097	⅞ x 5½	180	220	32	36½	1⅞	24	26	20	1¼ x 5½	29½	1⅜	620	1,000	138.5
600	*609.6*	*17.2*	*503.08*	*-*	*244*	*298*	*813*	*927*	*48*	*610*	*660*	*-*	*-*	*749.3*	*34.92*	*841*	*1,356*	*62.8*

NOTES:

The Gruvlok Flange bolt hole pattern conforms to ANSI Class 150 and Class 125 flanges.

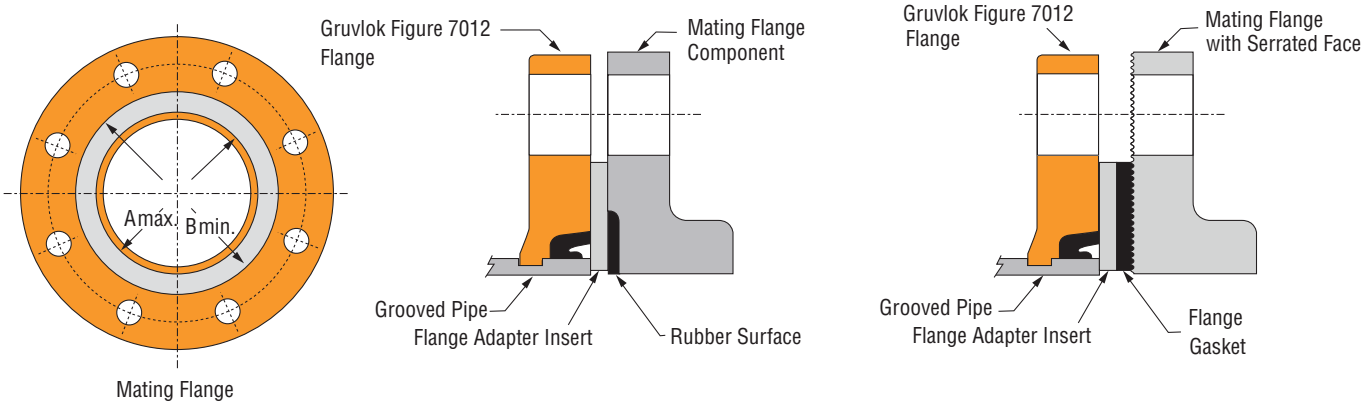
To avoid interference issues, flanges cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve only.

Mating flange bolts must be at least Intermediate Strength Bolting per ASME B16.5. Bolts with material properties equal or greater than SAE J429 Grade 5 are acceptable.

Refer to Gruvlok Products Catalog or Anvil's web site for more information on installing this flange.

For additional details see "Coupling Data Chart Notes" on page 17.
+ PN 16 uses M24 x 90 (PN) Dimensions for bolt circle PN 10 & 16 Flange.
* Available in ANSI or metric bolt sizes only as indicated.
▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 164-166.

FIG. 7012
Gruvlok Flanges



A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7012 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

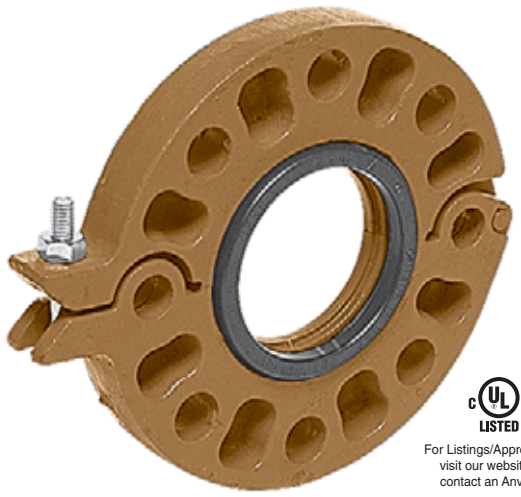
G. Contact Gruvlok for Di-Electric Flange connections.

Applications which require a Gruvlok Flange Adapter Insert:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FIG. 7013

Gruvlok Flanges (#300 Flange)



c UL us LISTED FM APPROVED

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

The Gruvlok Fig. 7013 300# Flange allows direct connection of Class 250 or Class 300 flanged components to a Gruvlok piping system. The two halves of the 2" thru 12" sizes of both Gruvlok Flanges are drawn together by a latch bolt which eases assembly on the pipe. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

Gruvlok Flanges have designed-in anti-rotation tines which bite into and grip the side of the pipe groove to provide a secure, rigid connection.

Gruvlok flange adapter insert required when mating to rubber surfaces or serrated faced mating flanges.

*** The 7013 Gruvlok adapter flange should not be used with the 78FP or 7800 check valve.**

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

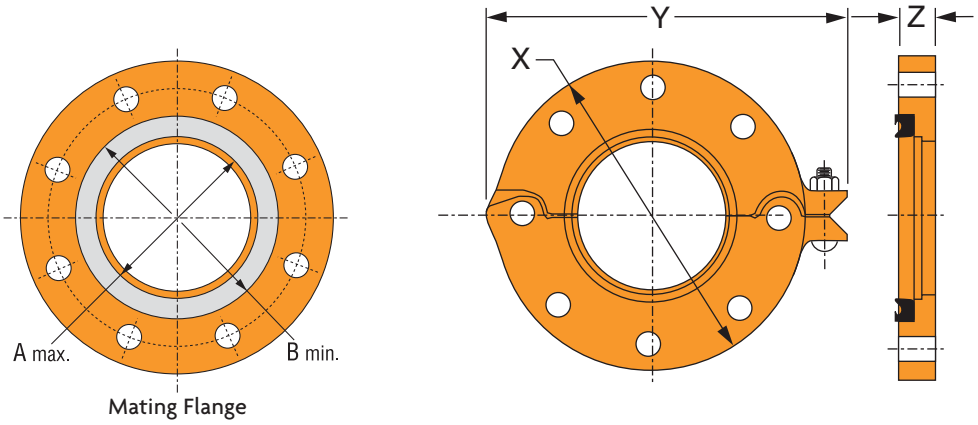
For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use for Grade "L")

FIG. 7013

Gruvlok Flanges (#300 Flange)



GRUVLOK FIGURE 7013 FLANGE: ANSI CLASS 250 AND 300 BOLT PATTERN

Nominal Size	O.D.	Max. Wk. Pressure ▼	Max. End Load ▼	Latch* Bolt Size	Specified Torque §		Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.
					Min.	Max.	X	Y	Z	A Max.	B Min.	Qty. ANSI	Size (ANSI) in.	Bolt Circle Dia.	Bolt Hole Dia.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In.*	*Ft.-Lbs/N-m*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*(ISO) mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *14.78*	⅜ x 2½ -	30 -	45 -	6½ *165*	8 *203*	1 *25*	2⅜ *60*	3 7/16 *87*	8 -	⅝ x 3 -	5 *127.0*	¾ *19.1*	5.0 *2.3*
2½ *65*	2.875 *73.0*	750 *51.7*	4,869 *21.66*	⅜ x 2½ -	30 -	45 -	7½ *191*	9⅛ *232*	1 *25*	2⅞ *73*	4 *102*	8 -	¾ x 3¼ -	5⅞ *149.2*	⅞ *22.2*	6.9 *3.1*
3 *80*	3.500 *88.9*	750 *51.7*	7,216 *32.10*	⅜ x 2½ -	30 -	45 -	8¼ *210*	9⅞ *251*	1⅛ *29*	3½ *89*	4 9/16 *116*	8 -	¾ x 3½ -	6⅝ *168.3*	⅞ *22.2*	9.4 *4.3*
4 *100*	4.500 *114.3*	750 *51.7*	11,928 *53.06*	⅜ x 2½ -	30 -	45 -	10 *254*	11⅜ *289*	1¼ *32*	4½ *114*	5⅝ *143*	8 -	¾ x 3¾ -	7⅞ *200.0*	⅞ *22.2*	14.4 *6.5*
5 *125*	5.563 *141.3*	750 *51.7*	18,229 *81.09*	⅜ x 2½ -	30 -	45 -	11 *279*	12⅝ *321*	1⅜ *35*	5 9/16 *141*	6¾ *171*	8 -	¾ x 4½ -	9¼ *235.0*	⅞ *22.2*	18.3 *8.3*
6 *150*	6.625 *168.3*	750 *51.7*	25,854 *115.00*	⅜ x 2½ -	30 -	45 -	12½ *318*	14⅛ *359*	1½ *38*	6⅝ *168*	7 13/16 *198*	12 -	¾ x 4½ -	10⅝ *269.9*	⅞ *22.2*	24.9 *11.3*
8 *200*	8.625 *219.1*	750 *51.7*	43,820 *194.92*	½ x 3½ -	80 -	100 -	15 *381*	16⅞ *429*	1⅝ *41*	8⅝ *219*	10 *254*	12 -	⅞ x 4¾ -	13 *330.2*	1 *25.4*	35.4 *16.1*
10 *250*	10.750 *273.1*	750 *51.7*	68,072 *302.80*	½ x 3½ -	80 -	100 -	17½ *445*	19⅜ *492*	1⅞ *48*	10¾ *273*	12⅛ *308*	16 -	1 x 5 -	15¼ *387.4*	1⅛ *28.6*	54.0 *24.5*
12 *300*	12.750 *323.9*	750 *51.7*	95,757 *425.95*	½ x 3½ -	80 -	100 -	20½ *521*	22½ *572*	2 *51*	12¾ *324*	14 3/16 *360*	16 -	1⅛ x 5¾ -	17¾ *450.9*	1¼ *31.8*	74.8 *33.9*

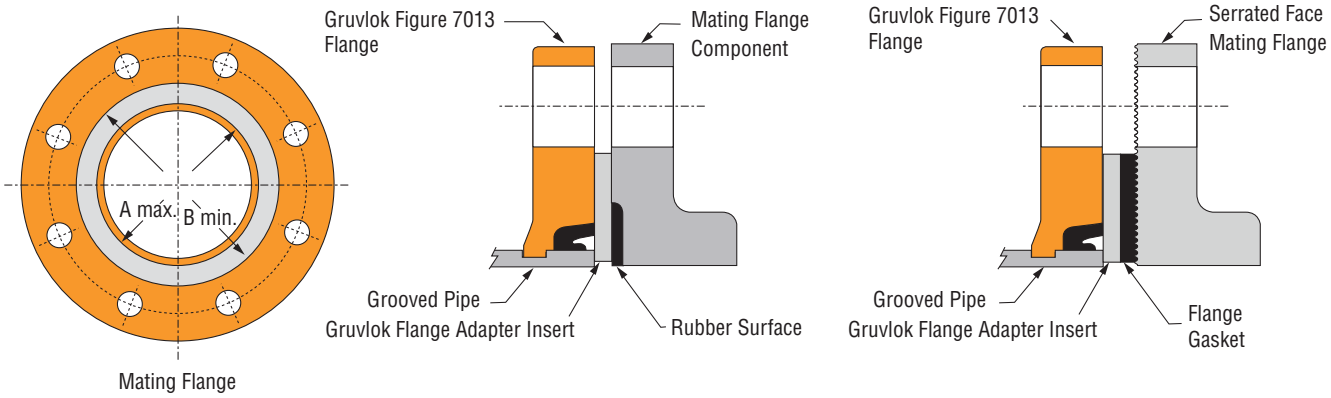
NOTES:

Effective sealing area of mating flange must be free from gouges, undulations or deformities of any type to ensure proper sealing of the gasket. Flange cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve.

For additional details see "Coupling Data Chart Notes" on page 17.
* Available in ANSI or metric bolt sizes only as indicated.
▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions or contact your Anvil Representative
Not for use with copper systems.

FIG. 7013

Gruvlok Flanges (#300 Flange)



A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7013 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. Contact Gruvlok for Di-Electric Flange connections.

Applications which require a Gruvlok Flange Adapter Insert:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard fullfaced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FIG. 7240

Expansion Joints

NOTE: Expansion joint shown with shipping support. Contact an Anvil representative for proper installation support requirements.

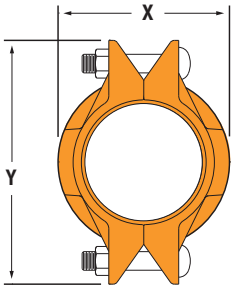
The Gruvlok® Figure 7240 Expansion Joints take advantage of the axial expansion capabilities of the Gruvlok flexible couplings to produce a reliable grooved end expansion joint. The expansion joints are comprised of the Gruvlok Figure 7000 or 7001 flexible couplings and precision machined grooved end pipe nipples. Ties are used to custom preset the expansion joints in the expanded, compressed or intermediate position to provide for the desired expansion and/or contraction compensation.

Installation is easy, simply follow the Gruvlok coupling installation and assembly instructions to install the expansion joint in the system and after installation is complete, remove the ties.

The expansion joints can be used as flexible connectors, however, they will not simultaneously provide for full axial expansion and angular deflection. Expansion joints require pipe anchoring capable of restraining the maximum system pressure end load.

The service conditions are the same as the service conditions for coupling and gasket used in the expansions joint. Unless otherwise requested, this product will contain a silicone based lubricant. Refer to the Gruvlok catalog for coupling performance capabilities and material specifications. To order please provide the order form on the page 214.

NOTE: The Gruvlok Figure 7240 Expansion Joint is also available in stainless steel for use in grooved copper systems.



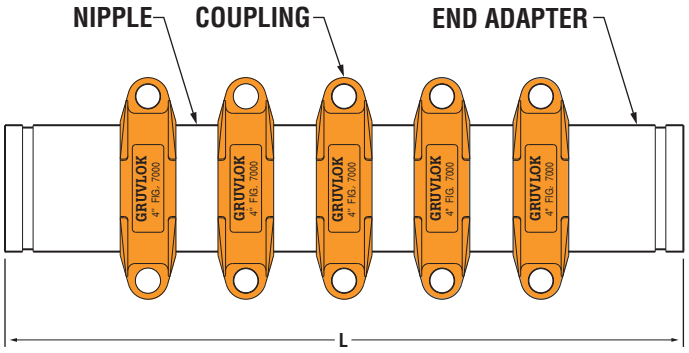
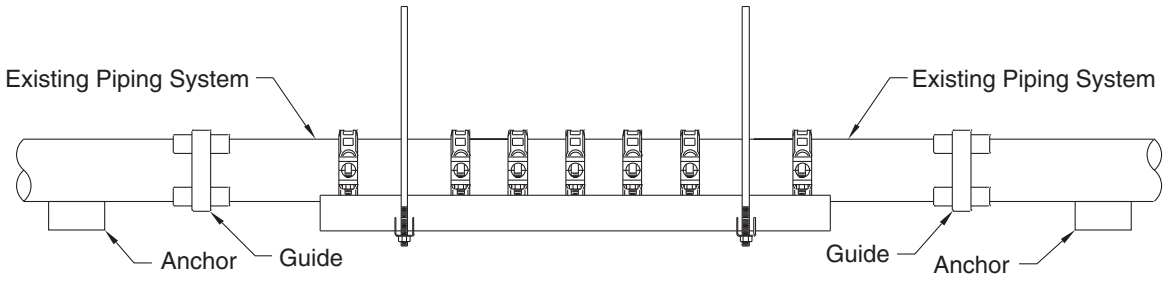


FIGURE 7240 PERFORMANCE DATA (INCHES)

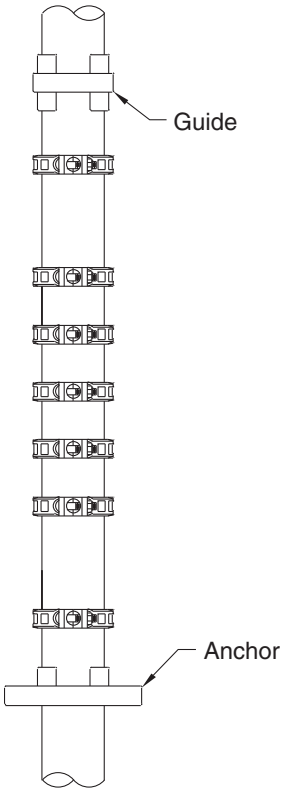
Nominal Size	O.D.	Coupling Figure	X	Y	Compressed Length L	Expanded Length L	Coupling Movement Capability	Number of Couplings	Total Movement Capability
In./DN(mm)	*In./mm*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*
2 *50*	2.375 *60.3*	7000	3½ *89*	5½ *125*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
2½ *65*	2.875 *73.0*	7000	4 *100*	5¾ *146*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
3 *80*	3.500 *88.9*	7000	4⅝ *117*	6¾ *171*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
4 *100*	4.500 *114.3*	7000	5⅞ *149*	8⅛ *206*	17½ *445*	18¾ *476*	¼ *6.4*	5	1¼ *31.8*
5 *125*	5.562 *141.3*	7000	7 *178*	9⅝ *244*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
6 *150*	6.625 *168.3*	7000	8 *200*	11 *279*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
8 *200*	8.625 *219.0*	7000	10⅜ *264*	13¼ *337*	22½ *572*	23¾ *603*	¼ *6.4*	5	1¼ *31.8*
10 *250*	10.750 *273.1*	7001	12⅞ *327*	17½ *445*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*
12 *300*	12.750 *323.9*	7001	15 *381*	19½ *495*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*

FIG. 7240
Expansion Joints

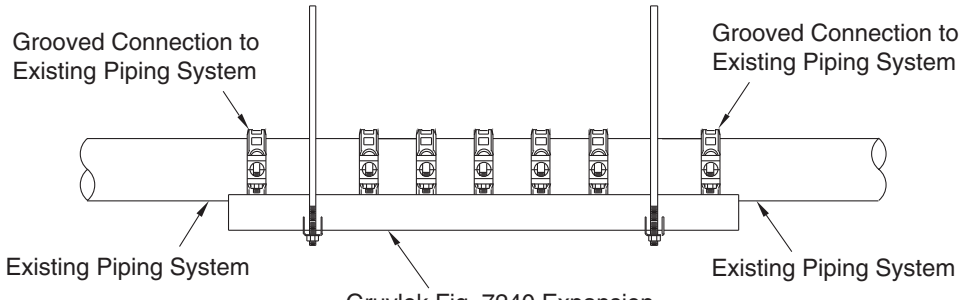
HANGER DETAILS



Vertical Support



Horizontal Support



Gruvlok Fig. 7240 Expansion Joint and Trough Hanger

Trough and Hanger

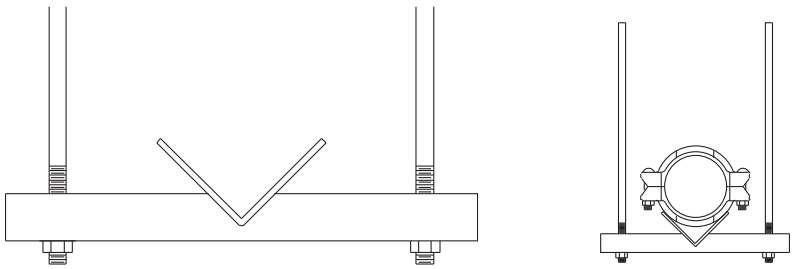
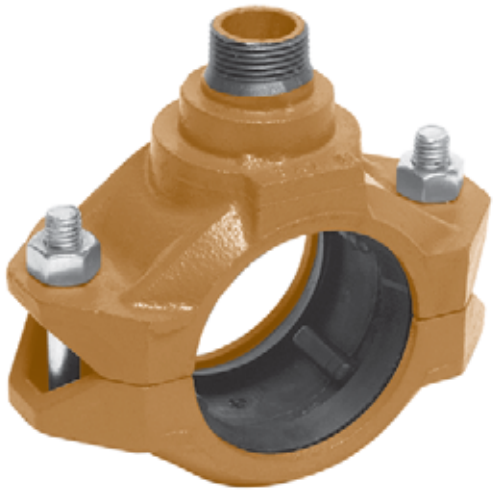


FIG. 7042
Outlet Coupling

The Gruvlok Fig. 7042 Outlet Coupling is designed to join two sections of grooved end pipe and form a reducing outlet connection. The outlet couplings are available for the 1 1/2" through 6" IPS or ISO run pipe sizes with the outlet pipe sizes ranging from 1/2" through 2".

Assembly of the coupling will create a gap between the pipe ends allowing the space required for the introduction of an outlet connection. The outlet connections are available grooved (Fig. 7042G), FPT (Fig. 7042F) and MPT (Fig. 7042M).

The gaskets are available in EPDM and Nitrile to suit a wide range of applications. The gasket design is a unique pressure responsive design that provides a higher sealing force as pressure is increased. The outlet gasket seal is reinforced by a steel ring and is mated to a machined housing surface to assure a leak-tight outlet seal. Center ribs inside the gasket ease positioning of the pipe during installation and provide additional support to the gasket. The outlet couplings are NOT recommended for vacuum applications or for use with the Gruvlok Advanced Copper Method.



The Figure 7074 Cast Caps are **NOT** recommended for use on run connections. Figure 7075 Bull Plugs must be used on end of line run connections. Figure 7074 Cast Caps may be used on Figure 7042G outlet connections. Flow into the outlet connection of the Figure 7042 Outlet Couplings must not exceed 7 ft./sec.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

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

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

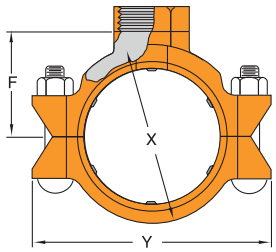
Grade "E" EPDM (Green color code)
-40°F to 150°F (Service Temperature Range)(-40°C to 66°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 150°F (Service Temperature Range)(-29°C to 66°C)
Recommended for petroleum applications. air with oil vapor and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

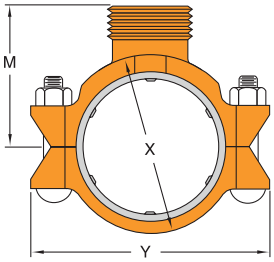
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™(Do Not use with Grade "L")

FIG. 7042

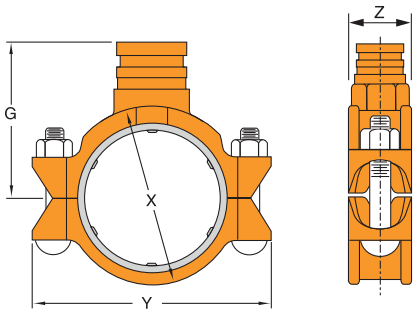
Outlet Coupling



Female IPS Outlet- 7042F



Male IPS Outlet - 7042M



Grooved Outlet - 7042G

FIGURE 7042 - OUTLET COUPLING

Nominal Pipe Size			Working Pressure	Max. Run End Load	Range of Pipe End Separation	Coupling Dimensions						Bolt Size	Approx. Wt. Each
Run	Outlet					X	Y	Z	FPT F	MPT M	Grv. G		
	FPT F	MPT/Grv. M/G											
In./DN(mm)	*In./mm*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1½ 40	½ 15	— —	500 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4 3/4 121	2 3/4 70	2 1/16 52	— —	— —	3/8 x 2 1/8 -	2.6 1.2
	¾ 20	— —	500 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4 3/4 121	2 3/4 70	2 1/16 52	— —	— —	3/8 x 2 1/8 -	2.6 1.2
	1 25	— —	500 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4 3/4 121	2 3/4 70	1 15/16 49	— —	— —	3/8 x 2 1/8 -	2.9 1.3
2 50	½ 15	— —	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5 1/4 133	2 3/4 70	2 5/16 59	— —	— —	3/8 x 2 1/8 -	3.1 1.4
	¾ 20	— —	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5 1/4 133	2 3/4 70	2 5/16 59	— —	— —	3/8 x 2 1/8 -	3.1 1.4
	1 25	1 25	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5 1/4 133	2 3/4 70	2 3/16 56	2 7/8 73	3 1/2 89	3/8 x 2 1/8 -	3.3 1.5
2½ 65	½ 15	— —	500 34.5	3246 14.44	1 3/16-1 1/2 30-38	4 3/16 106	6 1/2 165	3 1/4 83	2 9/16 65	— —	— —	½ x 2 3/8 -	4.8 2.2
	¾ 20	— —	500 34.5	3246 14.44	1 3/16-1 1/2 30-38	4 3/16 106	6 1/2 165	3 1/4 83	2 9/16 65	— —	— —	½ x 2 3/8 -	4.6 2.1
	1 25	— —	500 34.5	3246 14.44	1 3/16-1 1/2 30-38	4 3/16 106	6 1/2 165	3 1/4 83	2 7/16 62	— —	— —	½ x 2 3/8 -	4.4 2.2
	— —	1¼ 32	500 34.5	3246 14.44	1 3/16-1 1/2 30-38	4 3/16 106	6 1/2 165	3 1/4 83	— —	3 5/8 92	3 5/8 92	½ x 2 3/8 -	5.1 2.3
	— —	1½ 40	500 34.5	3246 14.44	1 3/16-1 1/2 30-38	4 3/16 106	6 1/2 165	3 1/4 83	— —	3 5/8 92	3 5/8 92	½ x 2 3/8 -	5.9 2.4
3 80	¾ 20	— —	500 34.5	4811 21.40	1 3/16-1 1/2 30-38	4 3/4 121	7 1/4 184	3 1/4 83	2 13/16 72	— —	— —	½ x 3 -	5.9 2.7
	1 25	1 25	500 34.5	4811 21.40	1 3/16-1 1/2 30-38	4 3/4 121	7 1/4 184	3 1/4 83	2 3/4 70	3 3/8 86	4 102	½ x 3 -	6.2 2.8
	— —	1½ 40	500 34.5	4811 21.40	1 3/16-1 1/2 30-38	4 3/4 121	7 1/4 184	3 1/4 83	— —	4 102	4 102	½ x 3 -	6.4 2.9
4 100	¾ 20	— —	500 34.5	7952 35.37	1 9/16-1 7/8 40-48	6 3/16 157	8 7/8 225	3 5/8 92	3 11/16 94	— —	— —	5/8 x 3 1/2 -	9.2 4.2
	1 25	— —	500 34.5	7952 35.37	1 9/16-1 7/8 40-48	6 3/16 157	8 7/8 225	3 5/8 92	3 9/16 91	— —	— —	5/8 x 3 1/2 -	9.5 4.3
	— —	1½ 40	500 34.5	7952 35.37	1 9/16-1 7/8 40-48	6 3/16 157	8 7/8 225	3 5/8 92	— —	4 7/8 124	4 7/8 124	5/8 x 3 1/2 -	9.5 4.3
	— —	2 50	500 34.5	7952 35.37	1 9/16-1 7/8 40-48	6 3/16 157	8 7/8 225	3 5/8 92	— —	4 7/8 124	4 7/8 124	5/8 x 3 1/2 -	9.9 4.5
6 150	1 25	— —	500 34.5	17236 76.66	1 5/8-1 15/16 41-51	8 1/8 206	11 1/4 286	3 11/16 94	4 3/4 121	— —	— —	5/8 x 3 1/2 -	13.2 6.0
	1½ 40	1½ 40	500 34.5	17236 76.66	1 5/8-1 15/16 41-51	8 1/8 206	11 1/4 286	3 11/16 94	4 3/4 121	6 154	6 152	5/8 x 3 1/2 -	13.6 6.2
	— —	2 50	500 34.5	17236 76.66	1 5/8-1 15/16 41-51	8 1/8 206	11 1/4 286	3 11/16 94	— —	6 154	6 152	5/8 x 3 1/2 -	14.3 6.5

NOTES:

Pipe ends must be prepared in accordance with Gruvlok "Roll or Cut Groove Specifications for Steel and Other IPS or ISO size Pipe".
Pressure and end load ratings are for use with standard wall steel pipe.
For a one-time field test only, the maximum working pressure may be increased 1½ times the figure shown.

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 167.
Not for use in copper systems.

FIG. 7045

Clamp-T, FPT Branch

c UL us LISTED FM APPROVED

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

The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available in various sizes allowing greater versatility in piping design.

NOTE: Variable End Configurations are Possible — Thd x Thd and Gr. x Thd.
Sizes — 2" x 1/2" through 8" x 4"

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size Inches	Fig. 7045 Threaded Branch	
	C.V. Value	Equiv. Pipe Length Feet
DN/mm		*Meters*
1/2 *15*	22 -	1.0 *0.3*
3/4 *20*	25 -	2.0 *0.6*
1 *25*	44 -	2.0 *0.6*
1 1/4 *32*	76 -	2.5 *0.8*
1 1/2 *40*	89 -	4.0 *1.2*
2 *50*	164 -	3.5 *1.1*
2 1/2 *65*	152 -	12.5 *3.8*
3 *80*	318 -	8.5 *2.6*
4 *100*	536 -	8.0 *2.4*

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

U-BOLT:
Cold drawn steel and zinc plated.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements Contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7045

Clamp-T, FPT Branch

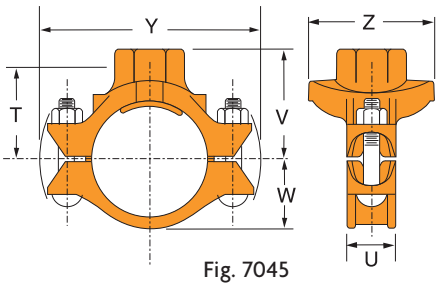


Fig. 7045

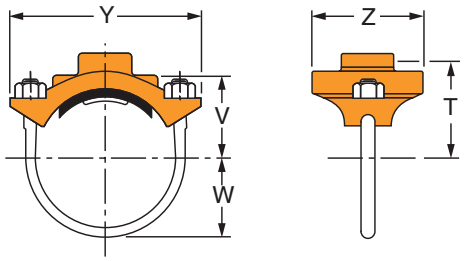


Fig. 7045 (U-Bolt)

FIGURE 7045-FPT BRANCH (TABLE CONTINUES TO NEXT PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2 x ½ *50 x 15*	2.375 x 0.840 *60.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *56*	9/16 *14*	2⅝ *67*	½ *12*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x ¾ *50 x 20*	2.375 x 1.050 *60.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 1/16 *52*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x 1 *50 x 25*	2.375 x 1.315 *60.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	1 15/16 *51*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.6 *1.2*
2 x 1¼ *50 x 32*	2.375 x 1.660 *60.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	5½ *140*	3½ *89*	½ U-Bolt -	30	40	2.7 *1.2*
2 x 1½ *50 x 40*	2.375 x 1.900 *60.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	7 *178*	3½ *89*	½ U-Bolt -	30	40	2.5 *1.1*
2½ x ½ *65 x 15*	2.875 x 0.840 *73.0 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	3.0 *1.4*
2½ x ¾ *65 x 20*	2.875 x 1.050 *73.0 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1 *65 x 25*	2.875 x 1.315 *73.0 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1¾ *44*	6⅛ *156*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1¼ *65 x 32*	2.875 x 1.660 *73.0 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
2½ x 1½ *65 x 40*	2.875 x 1.900 *73.0 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
3 x ½ *80 x 15*	3.500 x 0.840 *88.9 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 9/16 *65*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.2*
3 x ¾ *80 x 20*	3.500 x 1.050 *88.9 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1 *80 x 25*	3.500 x 1.315 *88.9 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1¼ *80 x 32*	3.500 x 1.660 *88.9 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½x 2¾ -	80	100	3.4 *1.5*
3 x 1½ *80 x 40*	3.500 x 1.900 *88.9 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½ x 2¾ -	80	100	4.4 *2.0*
3 x 2 *80 x 50*	3.500 x 2.375 *88.9 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	4⅛ *105*	½ x 2¾ -	80	100	4.6 *2.1*
4 x ½ *100 x 15*	4.500 x 0.840 *114.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *76*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.9 *1.3*
4 x ¾ *100 x 20*	4.500 x 1.050 *114.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *78*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.3*
4 x 1 *100 x 25*	4.500 x 1.315 *114.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 13/16 *73*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
4 x 1¼ *100 x 32*	4.500 x 1.660 *114.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.5 *2.0*
4 x 1½ *100 x 40*	4.500 x 1.900 *114.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.6 *2.1*
4 x 2 *100 x 50*	4.500 x 2.375 *114.3 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	3 5/16 *84*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅛ *105*	½ x 2¾ -	80	100	7.7 *3.5*
4 x 2½ *100 x 65*	4.500 x 2.875 *114.3 x 73.0*	2¾ *70*	2⅞ *73*	500 *34.5*	3 11/16 *78*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅜ *111*	½ x 2¾ -	80	100	5.2 *2.4*
4 x 3 O.D. 100 x 80	*4.500 x 2.996* 114.3 x 76.1	*2¾* 70	*2⅞* 73	*500* 34.5	*3* 76	*1⅞* 48	*4* 102	*2⅝* 67	*7½* 191	*4⅜* 111	*½ x 2¾* -	*80*	*100*	*5.2* 2.4
4 x 3 *100 x 80*	4.500 x 3.500 *114.3 x 88.9*	3½ *89*	3⅝ *92*	500 *34.5*	3¼ *83*	1⅞ *48*	4¼ *108*	2⅝ *67*	7½ *191*	5¼ *133*	½ x 3½ -	80	100	6.5 *2.9*

NOTE:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.

(Additional larger sizes on next page.)

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 168.
Not for use with copper systems.

FIG. 7045

Clamp-T, FPT Branch

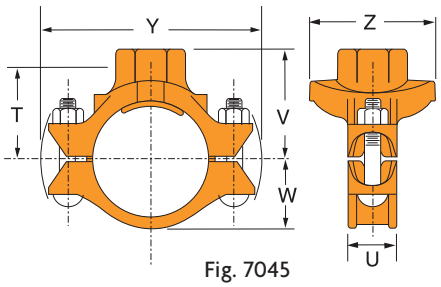


Fig. 7045

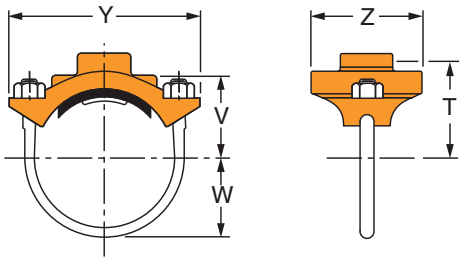


Fig. 7045 (U-Bolt)

FIGURE 7045-FPT BRANCH (CONTINUED FROM PREVIOUS PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
5 x 1¼	5.563 x 1.660	2	2⅛	500	3 1/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.4
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.4*
5 x 1½	5.563 x 1.900	2	2⅛	500	3 1/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.5
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	3 13/16	1⅞	4½	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.7
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*97*	*48*	*114*	*83*	*232*	*105*	-			*2.6*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	3 13/16	1⅞	4¾	3¼	9⅛	4⅜	⅝ x 3¼	100	130	7.0
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*97*	*48*	*121*	*83*	*232*	*111*	-			*3.2*
5 x 3 O.D.	*5.563 x 2.996*	*2¾*	*2⅞*	*500*	*3¾*	*1⅞*	*4¾*	*3¼*	*9⅛*	*4⅜*	*¾ x 4½*	*130*	*180*	*7.0*
125 x 80	141.3 x 76.1	70	73	34.5	95	48	121	83	232	111	-			3.2
5 x 3	5.563 x 3.500	3½	3⅝	500	4	1⅞	5	3¼	9⅛	5¼	⅝ x 3¼	100	130	8.7
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*102*	*48*	*127*	*83*	*232*	*133*	-			*3.9*
6 x 1¼	6.625 x 1.660	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 32	*168.3 x 42.4*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 1½	6.625 x 1.900	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 2	6.625 x 2.375	2½	2⅝	500	4 3/16	2	4⅞	3⅞	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*106*	*51*	*124*	*98*	*257*	*105*	-			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	4 3/16	2	5⅛	3⅞	10⅛	4⅜	⅝ x 4¼	100	130	8.4
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*106*	*51*	*130*	*98*	*257*	*111*	-			*3.8*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*4⅛*	*2*	*5⅛*	*3⅞*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*8.4*
150 x 80	168.3 x 76.1	70	73	34.5	105	51	130	98	257	111	-			3.8
6 x 3	6.625 x 3.500	3½	3⅝	500	4⅜	2	5⅜	3⅞	10⅛	5¼	⅝ x 4¼	100	130	9.6
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*111*	*51*	*137*	*98*	*257*	*133*	-			*4.4*
6 x 4	6.625 x 4.500	4½	4⅝	500	4⅜	2	5½	3⅞	10⅛	6½	⅝ x 4¼	100	130	10.5
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*111*	*51*	*140*	*98*	*257*	*165*	-			*4.8*
8 x 2	8.625 x 2.750	2½	2⅝	500	5 3/16	2¼	5⅞	5	12¾	4⅛	¾ x 4¼	130	180	11.3
200 x 50	*219.1 x 70.0*	*64*	*67*	*34.5*	*132*	*57*	*149*	*127*	*324*	*105*	-			*5.1*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	5 5/16	2¼	6¼	5	12¾	4⅜	¾ x 4½	130	180	11.1
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*134*	*57*	*159*	*127*	*324*	*111*	-			*5.0*
8 x 3 O.D.	*8.625 x 2.996*	*2¾*	*2⅞*	*500*	*5¼*	*2¼*	*6¼*	*5*	*12¾*	*4⅜*	*¾ x 4½*	*130*	*180*	*11.1*
200 x 80	219.1 x 76.1	70	73	34.5	133	57	159	127	324	111	-			5.0
8 x 3	8.625 x 3.500	3½	3⅝	500	5⅜	2¼	6⅜	5	12¾	5¼	¾ x 4½	130	180	13.0
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*137*	*57*	*162*	*127*	*324*	*133*	-			*5.9*
8 x 4	8.625 x 4.500	4½	4⅝	500	5⅜	2¼	6½	5	12¾	6½	¾ x 4½	130	180	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*137*	*57*	*165*	*127*	*324*	*165*	-			*7.3*

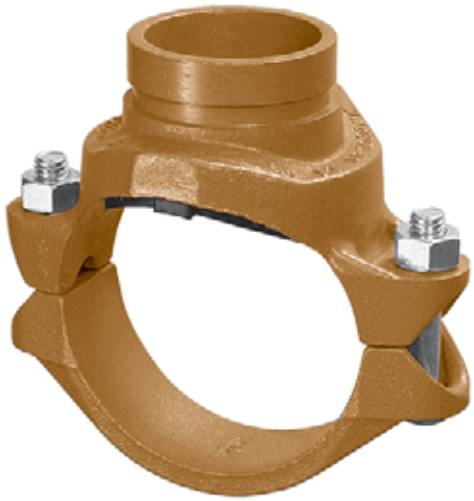
NOTE:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.

(Additional smaller sizes on previous page.)

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 168.
Not for use with copper systems.

FIG. 7046

Clamp-T, Grooved Branch



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The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

Clamp-T cross connections are available in most sizes allowing greater versatility in piping design.

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size	Fig. 7046 Grooved Branch	
	C.V. Value	Equiv. Pipe Length
In./DN/mm		*Ft./Meters*
1¼ *32*	5.4	5.0 *1.5*
1½ *40*	95	3.5 *1.1*
2 *50*	148	4.5 *1.4*
2½ *65*	205	7.0 *2.1*
3 *80*	294	9.5 *2.9*
4 *100*	571	7.0 *2.1*

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

U-BOLT:
Cold drawn steel and zinc plated.

STAINLESS STEEL BOLTS & NUTS:
Stainless Steel Bolts and Nuts are also available. Contact an Anvil Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7046

Clamp-T, Grooved Branch

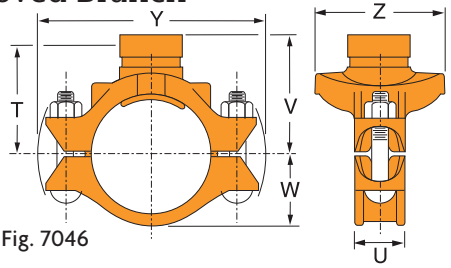

Fig. 7046

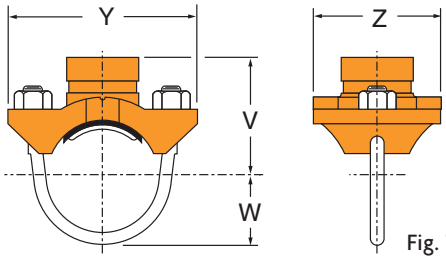

Fig. 7046 (U-Bolt)

FIGURE 7046-GR BRANCH

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions					Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		U	V Grooved	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2½ x 1¼•	2.875 x 1.660	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 32	*73.0 x 42.4*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
2½ x 1½	2.875 x 1.900	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 40	*73.0 x 48.3*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
3 x 1¼	3.500 x 1.660	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	3.4
80 x 32	*88.9 x 42.4*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*1.5*
3 x 1½	3.500 x 1.900	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	4.4
80 x 40	*88.9 x 48.3*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*2.0*
3 x 2	3.500 x 2.375	2½	2⅝	500	1½	3½	2⅛	6⅞	4⅛	½ x 2¾	80	100	4.6
80 x 50	*88.9 x 60.3*	*64*	*67*	*34.5*	*38*	*89*	*54*	*175*	*105*	-			*2.1*
4 x 1¼	4.500 x 1.660	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.2
100 x 32	*114.3 x 42.4*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*1.9*
4 x 1½	4.500 x 1.900	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.3
100 x 40	*114.3 x 48.3*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*2.0*
4 x 2	4.500 x 2.375	2½	2⅝	500	1⅞	4	2⅝	7½	4⅛	½ x 2¾	80	100	4.6
100 x 50	*114.3 x 60.3*	*64*	*67*	*34.5*	*48*	*102*	*67*	*191*	*105*	-			*2.1*
4 x 2½	4.500 x 2.875	2¾	2⅞	500	1⅞	4	2⅝	7½	4⅜	½ x 2¾	80	100	5.0
100 x 65	*114.3 x 73.0*	*70*	*73*	*34.5*	*48*	*102*	*67*	*191*	*111*	-			*2.3*
4 x 3 O.D.	*4.500 x 2.996*	*2¾*	*2⅞*	*500*	*1⅞*	*4*	*2⅝*	*7½*	*4⅜*	*½ x 2¾*	*80*	*100*	*5.0*
100 x 80	114.3 x 76.1	70	73	34.5	48	102	67	191	111	-			2.3
4 x 3	4.500 x 3.500	3½	3⅝	500	1⅞	4	2⅝	7½	5¼	½ x 3½	80	100	5.6
100 x 80	*114.3 x 88.9*	*89*	*92*	*34.5*	*48*	*102*	*67*	*191*	*133*	-			*2.5*
5 x 1¼	5.563 x 1.660	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	½ x 2¾	80	100	5.6
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 1½	5.563 x 1.900	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.6
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	1⅞	4¼	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.5
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*48*	*108*	*83*	*232*	*105*	-			*2.5*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	1⅞	4¼	3¼	9⅛	4⅜	⅝ x 3¼	100	130	5.8
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*48*	*108*	*83*	*232*	*111*	-			*2.6*
5 x 3	5.563 x 3.500	3½	3⅝	500	1⅞	4⅝	3¼	9⅛	5¼	⅝ x 3¼	100	130	7.1
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*48*	*117*	*83*	*232*	*133*	-			*3.2*
6 x 1½	6.625 x 1.900	2	2⅛	500	2	5	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.2
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*51*	*127*	*98*	*257*	*95*	*			*3.3*
6 x 2	6.625 x 2.375	2½	2⅝	500	2	5	3⅞	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*51*	*127*	*98*	*257*	*105*	*			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	2	5⅛	3⅞	10⅛	4⅜	⅝ x 4¼	100	130	7.6
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*51*	*130*	*98*	*257*	*111*	*			*3.4*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*2*	*5⅛*	*3⅞*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*7.6*
150 x 80	168.3 x 76.1	70	73	34.5	51	130	98	257	111	*			3.4
6 x 3	6.625 x 3.500	3½	3⅝	500	2	5⅛	3⅞	10⅛	5¼	⅝ x 4¼	100	130	8.0
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*51*	*130*	*98*	*257*	*133*	*			*3.6*
6 x 4	6.625 x 4.500	4½	4⅝	500	2	5¼	3⅞	10⅛	6½	⅝ x 4¼	100	130	10.4
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*51*	*133*	*98*	*257*	*165*	*			*4.7*
8 x 2	8.625 x 2.375	2½	2⅝	500	2¼	6⅛	5	12¾	4¼	¾ x 4½	130	180	10.4
200 x 50	*219.1 x 60.3*	*64*	*67*	*34.5*	*57*	*156*	*127*	*324*	*108*	-			*4.7*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	2¼	6⅛	5	12¾	4⅜	¾ x 4½	130	180	10.6
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*57*	*156*	*127*	*324*	*111*	*M20 x 110*	*175*	*245*	*4.8*
8 x 3	8.625 x 3.500	3½	3⅝	500	2¼	6⅛	5	12¾	5¼	¾ x 4½	130	180	11.5
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*57*	*156*	*127*	*324*	*133*	*M20 x 110*	*175*	*245*	*5.2*
8 x 4	8.625 x 4.500	4½	4⅝	500	2¼	6¼	5	12¾	6½	¾ x 4½	130	180	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*57*	*159*	*127*	*324*	*165*	*M20 x 110*	*175*	*245*	*7.3*

NOTES:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.
• Cannot be used in cross configuration.

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 190.
See Installation & Assembly directions on page 168.
Not for use with copper systems.

FIG. 7047, FIG. 7048 & FIG. 7049

Clamp-T, Cross

Fig. 7047

Fig. 7048

Fig. 7049

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available allowing greater versatility in piping design.

NOTE: 2 1/2" x 1 1/4" Figure 7046 cannot be used in cross configuration.

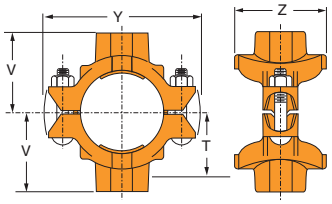

Fig. 7047 - Thread x Thread

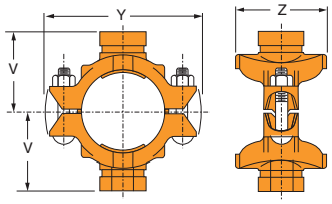

Fig. 7048 - Groove x Groove

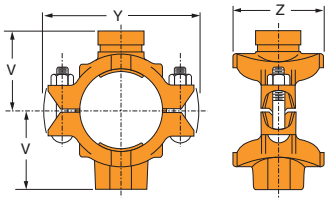

Fig. 7049 - Groove x Thread

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NOTE: In addition, 2 x 1/2" through 2 x 1 1/2" can now be made into crosses from the new design.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A 183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A 563 Grade A or Grade B, or J995 Grade 2. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

Not for use in copper systems.

GRUVLOK FITTINGS FOR GROOVED-END PIPE

Gruvlok fittings are available through 24" nominal pipe size in a variety of styles. Use the Fitting Size Table to convert nominal pipe size to corresponding pipe O.D.

These fittings are designed to provide minimum pressure drop and uniform strength.

Depending on styles and size, Gruvlok fittings are provided in various materials including malleable iron, ductile iron, forged steel or fabricated steel.

Pressure ratings of Gruvlok standard fittings conform to those of Fig. 7001 Gruvlok coupling.

Not for use in copper systems.

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FLOW DATA – FRICTIONAL RESISTANCE (EXPRESSED AS EQUIVALENT STRAIGHT PIPE)

Nom. Size	O.D.	Pipe Wall Thickness	Elbow		Tee	
			90°	45°	Branch	Run
In./DN(mm)	*In./mm*	*In./mm*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*
1 *25*	1.315 *33.4*	0.133 *3.4*	1.7 *0.5*	0.9 *0.3*	4.4 *1.3*	1.7 *0.5*
1¼ *32*	1.660 *42.2*	0.140 *3.6*	2.3 *0.7*	1.2 *0.4*	5.8 *1.8*	2.3 *0.7*
1½ *40*	1.900 *48.3*	0.145 *3.7*	2.7 *0.8*	1.3 *0.4*	6.7 *2.0*	2.7 *0.8*
2 *50*	2.375 *60.3*	0.154 *3.9*	3.4 *1.0*	1.7 *0.5*	8.6 *2.6*	3.4 *1.0*
2½ *65*	2.875 *73.0*	0.203 *5.2*	4.1 *1.2*	2.1 *0.6*	10.3 *3.1*	4.1 *1.2*
3 O.D. 76.1	*2.996* 76.1	*0.197* 5.0	*4.3* 1.3	*2.2* 0.7	*10.8* 3.3	*4.3* 1.3
3 *80*	3.500 *88.9*	0.216 *5.5*	5.1 *1.6*	2.6 *0.8*	12.8 *3.9*	5.1 *1.6*
4¼ O.D. 108.0	*4.250* 108.0	*0.220* 5.6	*6.4* 2.0	*3.2* 1.0	*16.1* 4.9	*6.4* 2.0
4 *100*	4.500 *114.3*	0.237 *6.0*	6.7 *2.0*	3.4 *1.0*	16.8 *5.1*	6.7 *2.0*
5¼ O.D. 133.0	*5.236* 133.0	*0.248* 6.3	*8.0* 2.4	*4.0* 1.2	*20.1* 6.1	*8.0* 2.4
5½ O.D. 139.7	*5.500* 139.7	*0.248* 6.3	*8.3* 2.5	*4.2* 1.3	*20.9* 6.4	*8.3* 2.5
5 *125*	5.563 *141.3*	0.258 *6.6*	8.4 *2.6*	4.2 *1.3*	21.0 *6.4*	8.4 *2.6*
6¼ O.D. 159.0	*6.259* 159.0	*0.280* 7.1	*9.7* 3.0	*4.9* 1.5	*24.3* 7.4	*9.7* 3.0
6½ O.D. 165.1	*6.500* 165.1	*0.280* 7.1	*10.0* 3.0	*5.0* 1.5	*24.9* 7.6	*10.0* 3.0
6 *150*	6.625 *168.3*	0.280 *7.1*	10.1 *3.1*	5.1 *1.6*	25.3 *7.7*	10.1 *3.1*
8 *200*	8.625 *219.1*	0.322 *8.2*	13.3 *4.1*	6.7 *2.0*	33.3 *10.1*	13.3 *4.1*
10 *250*	10.750 *273.1*	0.365 *9.3*	16.7 *5.1*	8.4 *2.6*	41.8 *12.7*	16.7 *5.1*
12 *300*	12.750 *323.9*	0.375 *9.5*	20.0 *6.1*	10.0 *3.0*	50.0 *15.2*	20.0 *6.1*
14 *350*	14.000 *355.6*	0.375 *9.5*	22.2 *6.8*	17.7 *5.4*	64.2 *19.6*	22.9 *7.0*
16 *400*	16.000 *406.4*	0.375 *9.5*	25.5 *7.8*	20.4 *6.2*	73.9 *22.5*	26.4 *8.0*
18 *450*	18.000 *457.2*	0.375 *9.5*	28.9 *8.8*	23.1 *7.0*	87.2 *26.6*	31.1 *9.5*
20 *500*	20.000 *508.0*	0.375 *9.5*	32.2 *9.8*	25.7 *7.8*	97.3 *29.7*	34.8 *10.6*
24 *600*	24.000 *609.6*	0.375 *9.5*	38.9 *11.9*	31.1 *9.5*	113.0 *34.4*	40.4 *12.3*

For the reducing tee and branches, use the value that is corresponding to the branch size. For example: for 6" x 6" x 3" tee, the branch value of 3" is 12.8 ft (3.9).

MATERIAL SPECIFICATIONS

CAST FITTINGS:

Ductile iron conforming to ASTM A 536
Malleable iron conforming to ASTM A 47

FABRICATED FITTINGS:

1-6" Carbon steel, Schedule 40, conforming to ASTM A 53, Grade B
8-12" Carbon steel, Schedule 30, conforming to ASTM A 53, Grade B
14-24" Carbon steel, 0.375 wall, conforming to ASTM A 53, Grade B

COATINGS:

Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A 153 (optional)
Other Colors Available (IE: RAL3000 and RAL9000)

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.4*	5 *140*	5.563 *141.3*
1¼ *32*	1.660 *42.4*	*6¼ O.D.* 159.0	*6.259* 159.0
1½ *40*	1.900 *48.3*	*6½ O.D.* 165.1	*6.500* 165.1
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*
3 O.D. 76.1	*2.996* 76.1	10 *250*	10.750 *273.0*
3 *80*	3.500 *88.9*	12 *300*	12.750 *323.9*
3½ *65*	4.000 *101.6*	14 *350*	14.000 *355.6*
4¼ O.D. 108.0	*4.250* 108.0	16 *400*	16.000 *406.4*
4 *100*	4.500 *114.3*	18 *450*	18.000 *457.2*
5¼ O.D. 133.0	*5.236* 133.0	20 *500*	20.000 *508.0*
5½ O.D. 139.7	*5.500* 139.7	24 *600*	24.000 *609.6*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in/mm.

FIG. 7050

90° Elbow*

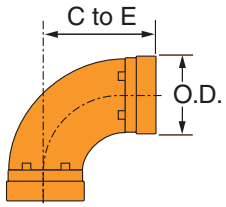


FIGURE 7050 90° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ C *57*	0.6 *0.3*
1¼ *32*	1.660 *42.2*	2¾ C *70*	1.0 *0.5*
1½ *40*	1.900 *48.3*	2¾ C *70*	1.2 *0.5*
2 *50*	2.375 *60.3*	3¼ C *83*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3¾ C *95*	2.6 *1.2*
3 O.D. 76.1	*2.996* 76.1	*4 C* 102	*3.6* 1.6
3 *80*	3.500 *88.9*	4¼ C *108*	4.0 *1.8*
3½ *90*	4.000 *101.6*	4½ C *114*	5.5 *2.5*
4¼ O.D. 108.0	*4.250* 108.0	*4¾ C* 121	*7.7* 3.5
4 *100*	4.500 *114.3*	5 C *127*	7.7 *3.5*
5¼ O.D. 133.0	*5.236* 133.0	*5¼ C* 133	*10.4* 4.7
5½ O.D. 139.7	*5.500* 139.7	*5¼ C* 133	*10.9* 4.9
5 *125*	5.563 *141.3*	5½ C *140*	11.1 *5.0*
6¼ O.D. 159.0	*6.259* 159.0	*6 C* 152	*15.2* 6.9
6½ O.D. 165.1	*6.500* 165.1	*6½ C* 165	*17.4* 7.9
6 *150*	6.625 *168.3*	6½ C *165*	16.5 *7.5*
8 *200*	8.625 *219.1*	7¾ C *197*	30.6 *13.9*
10 *250*	10.750 *273.1*	9 C *229*	53.5 *24.3*
12 *300*	12.750 *323.9*	10 C *254*	82 *37.2*
14 *350*	14.000 *355.6*	21 *533*	169.0 *76.7*
16 *400*	16.000 *406.4*	24 *610*	222.0 *100.7*
18 *450*	18.000 *457.2*	27 *686*	280.0 *127.0*
20 *500*	20.000 *508.0*	30 *762*	344.0 *156.0*
24 *600*	24.000 *609.6*	36 *914*	490.0 *222.3*

FIG. 7051

45° Elbow*

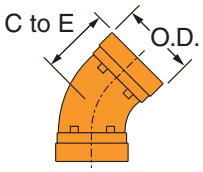
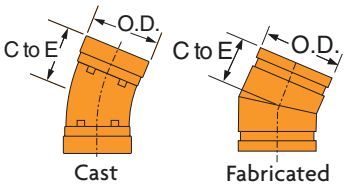


FIGURE 7051 45° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1¾ C *44*	0.5 *0.2*
1¼ *32*	1.660 *42.2*	1¾ C *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	1¾ C *44*	0.9 *0.4*
2 *50*	2.375 *60.3*	2 C *51*	1.5 *0.7*
2½ *65*	2.875 *73.0*	2¼ C *57*	1.9 *0.9*
3 O.D. 76.1	*2.996* 76.1	*2½ C* 64	*2.2* 1.0
3 *80*	3.500 *88.9*	2½ C *64*	3.3 *1.5*
3½ *90*	4.000 *101.6*	2¾ C *70*	4.3 *2.0*
4¼ O.D. 108.0	*4.250* 108.0	*2⅞ C* 83	*4.4* 2.0
4 *100*	4.500 *114.3*	3 C *76*	5.4 *2.4*
5¼ O.D. 133.0	*5.236* 133.0	*3¼ C* 83	*7.3* 3.3
5½ O.D. 139.7	*5.500* 139.7	*3¼ C* 83	*7.8* 3.5
5 *125*	5.563 *141.3*	3¼ C *83*	9.0 *4.1*
6¼ O.D. 159.0	*6.259* 159.0	*3½ C* 89	*10.1* 4.6
6½ O.D. 165.1	*6.500* 165.1	*3½ C* 89	*11.1* 5.0
6 *150*	6.625 *168.3*	3½ C *89*	11.2 *5.1*
8 *200*	8.625 *219.1*	4¼ C *108*	19.8 *9.0*
10 *250*	10.750 *273.1*	4¾ C *121*	34.3 *15.6*
12 *300*	12.750 *323.9*	5¼ C *133*	50.0 *22.7*
14 *350*	14.000 *355.6*	8¾ *222*	92.0 *41.7*
16 *400*	16.000 *406.4*	10 *254*	117.0 *53.1*
18 *450*	18.000 *457.2*	11¼ *286*	146.0 *66.2*
20 *500*	20.000 *508.0*	12½ *317*	179.0 *81.2*
24 *600*	24.000 *609.6*	15 *381*	255.0 *115.7*

FIG. 7052

22 ½° Elbow



Cast Fabricated

FIGURE 7052 22½° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3¼ *83*	0.5 *0.2*
1¼ *32*	1.660 *42.2*	1¾ *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	1¾ *44*	0.8 *0.4*
2 *50*	2.375 *60.3*	1⅞ C *48*	1.5 *0.7*
2½ *65*	2.875 *73.0*	2 *51*	1.9 *0.9*
3 *80*	3.500 *88.9*	2¼ C *57*	3.2 *1.5*
3½ *90*	4.000 *101.6*	2½ *64*	4.0 *1.8*
4 *100*	4.500 *114.3*	2⅝ C *67*	5.3 *2.4*
5 *125*	5.563 *141.3*	2⅞ *73*	7.2 *3.3*
6 *150*	6.625 *168.3*	3⅛ C *79*	8.2 *3.7*
8 *200*	8.625 *219.1*	3⅞ C *98*	17.8 *8.1*
10 *250*	10.750 *273.1*	4⅜ *111*	30.0 *13.6*
12 *300*	12.750 *323.9*	4⅞ *124*	40.4 *18.3*
14 *350*	14.000 *355.6*	5 *127*	46.0 *20.9*
16 *400*	16.000 *406.4*	5 *127*	52.2 *23.7*
18 *450*	18.000 *457.2*	5½ *140*	65.0 *29.5*
20 *500*	20.000 *508.0*	6 *152*	80.0 *36.3*
24 *600*	24.000 *609.6*	7 *178*	112.0 *50.8*

FIG. 7052i

22 ½° Elbow

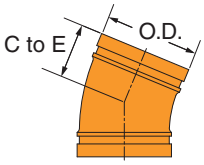


FIGURE 7052i 22½° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1⅝ *41.28*	0.5 *0.227*
1¼ *32*	1.675 *42.2*	1¾ *44.45*	1.0 *0.454*
1½ *40*	1.900 *48.3*	1¾ *44.45*	1.0 *0.454*
2 *50*	2.375 *60.3*	1⅞ *47.63*	1.5 *0.680*
2½ *65*	2.875 *73.0*	2 *50.8*	2.0 *0.907*
3 O.D. 76.1	*2.996* 76.1	*2* 50.8	*2.0* 0.907
3 *80*	3.500 *88.9*	2¼ *57.15*	2.5 *1.134*
4 *100*	4.5 *114.3*	2⅝ *66.68*	5.0 *2.268*
5½ O.D. 139.7	*5.500* 139.7	*2⅞* 73.03	*7.0* 3.175
5 *125*	5.563 *141.3*	2⅞ *73.03*	7.5 *3.402*
6½ O.D. 165.1	*6.500* 165.1	*3⅛* 79.38	*10.0* 4.536
6 *150*	6.625 *168.3*	3⅛ *79.38*	10.0 *4.536*
8 *200*	8.625 *219.1*	3⅞ *98.43*	18.5 *8.391*
10 *250*	10.75 *237.1*	4⅜ *111.13*	32.5 *14.741*
12 *300*	12.75 *323.9*	4⅞ *123.83*	48.0 *21.772*

All 7052i fittings are cast ductile iron.

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

C - Cast malleable or ductile iron, all others are fabricated steel.

* 14"-24" Standard Radius 90° & 45° Elbows are 1 ½.

Center to end dimensions and weights may differ from those shown in chart, contact an Anvil Representative for more information.

FIG. 7053

11 ¼° Elbow

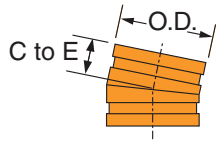

FIGURE 7053
11¼° ELBOW*

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
1 25	1.315 33.4	1⅜ 35	0.3 0.1
1¼ 32	1.660 42.2	1⅜ 35	0.5 0.2
1½ 40	1.900 48.3	1⅜ 35	0.7 0.3
2 50	2.375 60.3	1⅜ 35	0.9 0.4
2½ 65	2.875 73.0	1½ 38	1.5 0.7
3 80	3.500 88.9	1½ 38	2.0 0.9
3½ 90	4.000 101.6	1¾ 44	2.8 1.3
4 100	4.500 114.3	1¾ 44	3.3 1.5
5 125	5.563 141.3	2 51	5.0 2.3
6 150	6.625 168.3	2 51	6.5 2.9
8 200	8.625 219.1	2 51	10.0 4.5
10 250	10.750 273.1	2⅛ 54	14.5 6.6
12 300	12.750 323.9	2¼ 57	18.7 8.5
14 350	14.000 355.6	3½ 89	32.1 14.6
16 400	16.000 406.4	4 102	42.0 19.1
18 450	18.000 457.2	4½ 114	53.2 24.1
20 500	20.000 508.0	5 127	65.7 29.8
24 600	24.000 609.6	6 152	96.0 43.5

FIG. 7050LR

90° Long Radius Elbow*

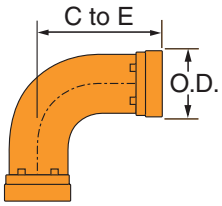

FIGURE 7050 LR
LONG RADIUS 90° ELBOW*

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
1 25	1.315 33.4	3½ 89	0.9 0.4
1¼ 32	1.660 42.2	3⅞ 98	1.3 0.6
1½ 40	1.900 48.3	4¼ 108	1.7 0.8
2 50	2.375 60.3	4⅜ C 136	2.5 1.1
2½ 65	2.875 73.0	5¾ 146	4.9 2.2
3 80	3.500 88.9	5⅞ C 181	6.5 2.9
3½ 90	4.000 101.6	7¼ 184	9.7 4.4
4 100	4.500 114.3	7½ C 191	11.5 5.2
5 125	5.563 141.3	9½ 241	20.9 9.5
6 150	6.625 168.3	10¾ 273	29.1 13.2
8 200	8.625 219.1	15 381	59.2 26.9
10 250	10.750 273.1	18 457	104.0 47.2
12 300	12.750 323.9	21 533	147.0 66.7
14 350	14.000 355.6	21 533	169.0 76.7
16 400	16.000 406.4	24 610	222.0 100.7
18 450	18.000 457.2	27 686	280.0 127.0
20 500	20.000 508.0	30 762	344.0 156.0
24 600	24.000 609.6	36 914	490.0 222.3

FIG. 7051LR

45° Long Radius Elbow*

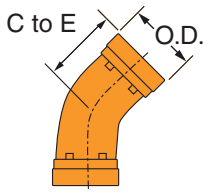

FIGURE 7051 LR
LONG RADIUS 45° ELBOW*

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
1 25	1.315 33.4	2½ 64	0.7 0.3
1¼ 32	1.660 42.2	2½ 64	1.0 0.5
1½ 40	1.900 48.3	2½ 64	1.2 0.5
2 50	2.375 60.3	2¾ 70	1.7 0.8
2½ 65	2.875 73.0	3 76	2.9 1.3
3 80	3.500 88.9	3⅜ 86	4.3 2.0
3½ 90	4.000 101.6	3½ 89	5.3 2.4
4 100	4.500 114.3	4 102	7.2 3.3
5 125	5.563 141.3	5 127	12.2 5.5
6 150	6.625 168.3	5½ 140	17.4 7.9
8 200	8.625 219.1	7¼ 184	34.0 15.4
10 250	10.750 273.1	8½ 216	57.4 26.0
12 300	12.750 323.9	10 254	82.6 37.5
14 350	14.000 355.6	8¾ 222	92.0 41.7
16 400	16.000 406.4	10 254	117.0 53.1
18 450	18.000 457.2	11¼ 286	146.0 66.2
20 500	20.000 508.0	12½ 317	179.0 81.2
24 600	24.000 609.6	15 381	255.0 115.7

C - Cast malleable or ductile iron, all others are fabricated steel.
* 14"-24" Standard Radius 90° & 45° Elbows are 1 ½.
Center to end dimensions and weights may differ from those shown in chart, Contact an Anvil Representative for more information.

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FIG. 7063

Tee w/ Threaded Branch

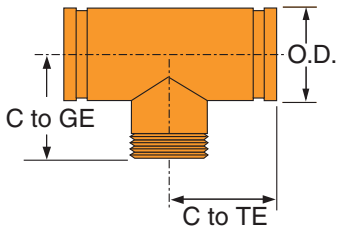

FIGURE 7063
TEE WITH THREADED BRANCH

Nominal Size	O.D.	C to GE	C to TE	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	2¼ *57*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	2¾ *70*	2¾ *70*	1.4 *0.6*
1½ *40*	1.900 *48.3*	2¾ *70*	2¾ *70*	1.7 *0.8*
2 *50*	2.375 *60.3*	3¼ *83*	4¼ *108*	2.9 *1.3*
2½ *65*	2.875 *73.0*	3¾ *95*	3¾ *95*	4.7 *2.1*
3 *80*	3.500 *88.9*	4¼ *108*	6 *152*	8.1 *3.7*
3½ *90*	4.000 *101.6*	4½ *114*	4½ *114*	8.8 *4.0*
4 *100*	4.500 *114.3*	5 *127*	7¼ *184*	13.5 *6.1*
5 *125*	5.563 *140*	5½ *140*	5½ *140*	16.7 *7.6*
6 *150*	6.625 *168.3*	6½ *165*	6½ *165*	25.6 *11.6*
8 *200*	8.625 *219.1*	7¾ *197*	7¾ *197*	45.0 *20.4*
10 *250*	10.750 *273.1*	9 *229*	9 *229*	73.0 *33.1*
12 *300*	12.750 *323.9*	10 *254*	10 *254*	98.0 *44.5*

c UL us LISTED FM APPROVED

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C - Cast malleable or ductile iron, all others are fabricated steel.

FIG. 7061

Reducing Tee Standard

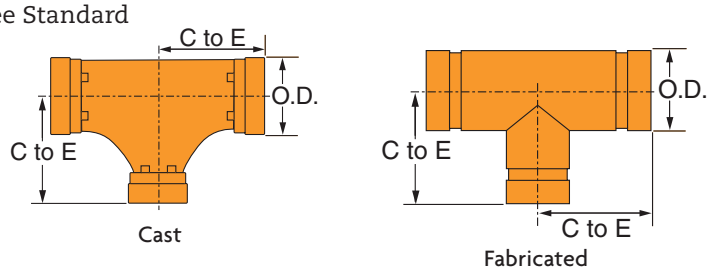


FIGURE 7061 STANDARD REDUCING TEE

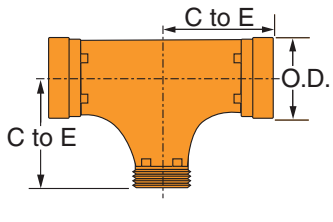
Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
1¼ x 1¼ x 1 *32 x 32 x 25*	2¾ *70*	1.5 *0.7*	6 x 6 x 2½ *150 x 150 x 65*	6½ C *165*	26.5 *12.0*	14 x 14 x 8 *350 x 350 x 200*	11 *279*	103 *46.7*
1½ x 1½ x 1 *40 x 40 x 25*	2¾ *70*	1.8 *0.8*	6 x 6 x 3 *150 x 150 x 80*	6½ C *165*	26.5 *12.0*	14 x 14 x 10 *350 x 350 x 250*	11 *279*	104 *47.2*
1½ x 1½ x 1¼ *40 x 40 x 32*	2¾ *70*	1.8 *0.8*	6 x 6 x 4 *150 x 150 x 100*	6½ C *165*	26.5 *12.0*	14 x 14 x 12 *350 x 350 x 300*	11 *279*	105 *47.6*
2 x 2 x 1 *50 x 50 x 25*	3¼ C *83*	2.6 *1.2*	6 x 6 x 5 *150 x 150 x 125*	6½ C *165*	28.0 *12.7*	16 x 16 x 4 *400 x 400 x 100*	12 *305*	126 *57.2*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	1.7 *0.8*	8 x 8 x 1½ *200 x 200 x 40*	7¾ *197*	33.0 *15.0*	16 x 16 x 6 *400 x 400 x 150*	12 *305*	127 *57.6*
2 x 2 x 1½ *50 x 50 x 40*	3¼ C *83*	2.7 *1.2*	8 x 8 x 2 *200 x 200 x 50*	7¾ *197*	32.7 *14.8*	16 x 16 x 8 *400 x 400 x 200*	12 *305*	128 *58.1*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	4.1 *1.9*	8 x 8 x 2½ *200 x 200 x 65*	7¾ *197*	33.0 *15.0*	16 x 16 x 10 *400 x 400 x 250*	12 *305*	129 *58.5*
2½ x 2½ x 1¼ *65 x 65 x 32*	3¾ *95*	4.2 *1.9*	8 x 8 x 3 *200 x 200 x 80*	7¾ *197*	33.5 *15.2*	16 x 16 x 12 *400 x 400 x 300*	12 *305*	130 *59.0*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	4.3 *2.0*	8 x 8 x 4 *200 x 200 x 100*	7¾ C *197*	50.0 *22.7*	16 x 16 x 14 *400 x 400 x 350*	12 *305*	132 *59.9*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	4.4 *2.0*	8 x 8 x 5 *200 x 200 x 125*	7¾ *197*	34.7 *15.7*	18 x 18 x 4 *450 x 450 x 100*	15½ *394*	188 *85.3*
3 x 3 x 1 *80 x 80 x 25*	4¼ C *108*	7.0 *3.2*	8 x 8 x 6 *200 x 200 x 150*	7¾C *197*	54.0 *24.5*	18 x 18 x 6 *450 x 450 x 150*	15½ *394*	190 *86.2*
3 x 3 x 1¼ *80 x 80 x 32*	4¼ *108*	5.8 *2.6*	10 x 10 x 1½ *250 x 250 x 40*	9 *229*	52.0 *23.6*	18 x 18 x 8 *450 x 450 x 200*	15½ *394*	192 *87.1*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	5.9 *2.7*	10 x 10 x 2 *250 x 250 x 50*	9 *229*	52.2 *23.7*	18 x 18 x 10 *450 x 450 x 250*	15½ *394*	194 *88.0*
3 x 3 x 2 *80 x 80 x 50*	4¼ C *108*	5.5 *2.5*	10 x 10 x 2½ *250 x 250 x 65*	9 *229*	52.6 *23.9*	18 x 18 x 12 *450 x 450 x 300*	15½ *394*	196 *88.9*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	6.3 *2.9*	10 x 10 x 3 *250 x 250 x 80*	9 *229*	53.0 *24.0*	18 x 18 x 14 *450 x 450 x 350*	15½ *394*	201 *91.2*
4 x 4 x 1 *100 x 100 x 25*	3¾ *95*	7.0 *3.2*	10 x 10 x 4 *250 x 250 x 100*	9 *229*	53.6 *24.3*	18 x 18 x 16 *450 x 450 x 400*	15½ *394*	203 *92.1*
4 x 4 x 1¼ *100 x 100 x 32*	5 *127*	9.6 *4.4*	10 x 10 x 5 *250 x 250 x 125*	9 *229*	54.2 *24.6*	20 x 20 x 6 *500 x 500 x 150*	17¼ *438*	240 *108.9*
4 x 4 x 1½ *100 x 100 x 40*	5 *127*	10.2 *4.6*	10 x 10 x 6 *250 x 250 x 150*	9 *229*	55.0 *24.9*	20 x 20 x 8 *500 x 500 x 200*	17¼ *438*	242 *109.8*
4 x 4 x 2 *100 x 100 x 50*	5 C *127*	10.2 *4.6*	10 x 10 x 8 *250 x 250 x 200*	9 *229*	64.7 *29.3*	20 x 20 x 10 *500 x 500 x 250*	17¼ *438*	244 *110.7*
4 x 4 x 2½ *100 x 100 x 65*	5 C *127*	11.2 *5.1*	12 x 12 x 1 *300 x 300 x 25*	10 *254*	77.0 *34.9*	20 x 20 x 12 *500 x 500 x 300*	17¼ *438*	246 *111.6*
4 x 4 x 3 *100 x 100 x 80*	5 C *127*	11.4 *5.2*	12 x 12 x 2 *300 x 300 x 50*	10 *254*	80.0 *36.3*	20 x 20 x 14 *500 x 500 x 350*	17¼ *438*	248 *112.5*
5 x 5 x 1 *125 x 125 x 25*	5½ *140*	13.6 *6.2*	12 x 12 x 2½ *300 x 300 x 65*	10 *254*	78.0 *35.4*	20 x 20 x 16 *500 x 500 x 400*	17¼ *438*	250 *113.4*
5 x 5 x 1½ *125 x 125 x 40*	5½ *140*	13.8 *6.3*	12 x 12 x 3 *300 x 300 x 80*	10 *254*	74.6 *33.8*	20 x 20 x 18 *500 x 500 x 450*	17¼ *438*	252 *114.3*
5 x 5 x 2 *125 x 125 x 50*	5½ *140*	14 *6.4*	12 x 12 x 4 *300 x 300 x 100*	10 *254*	75.1 *34.1*	24 x 24 x 8 *600 x 600 x 200*	20 *508*	327 *148.3*
5 x 5 x 2½ *125 x 125 x 65*	5½ *140*	14.3 *6.5*	12 x 12 x 5 *300 x 300 x 125*	10 *254*	75.6 *34.3*	24 x 24 x 10 *600 x 600 x 250*	20 *508*	330 *149.7*
5 x 5 x 3 *125 x 125 x 80*	5½ *140*	14.6 *6.6*	12 x 12 x 6 *300 x 300 x 150*	10 *254*	76.2 *34.6*	24 x 24 x 12 *600 x 600 x 300*	20 *508*	334 *151.5*
5 x 5 x 4 *125 x 125 x 100*	5½ C *140*	17.9 *8.1*	12 x 12 x 8 *300 x 300 x 200*	10 *254*	76.3 *34.6*	24 x 24 x 14 *600 x 600 x 350*	20 *508*	340 *154.2*
6 x 6 x 1 *150 x 150 x 25*	6½ *165*	20.5 *9.3*	12 x 12 x 10 *300 x 300 x 250*	10 *254*	77.6 *35.2*	24 x 24 x 16 *600 x 600 x 400*	20 *508*	342 *155.1*
6 x 6 x 1½ *150 x 150 x 40*	6½ *165*	21.0 *9.5*	14 x 14 x 4 *350 x 350 x 100*	11 *279*	100.0 *45.4*	24 x 24 x 18 *600 x 600 x 450*	20 *508*	345 *156.5*
6 x 6 x 2 *150 x 150 x 50*	6½ C *165*	26.4 *12.0*	14 x 14 x 6 *350 x 350 x 150*	11 *279*	101 *45.8*	24 x 24 x 20 *600 x 600 x 500*	20 *508*	347 *157.4*

Center to end dimensions and weights may differ from those shown in chart, contact an Anvil Representative for more information.

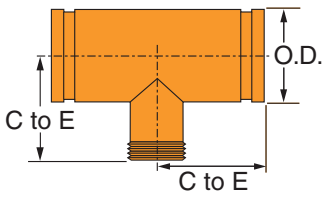
See Fitting Size chart on page 50 for O.D.

FIG. 7064

Reducing Tee w/ Threaded Branch



Cast



Fabricated

FIGURE 7064 REDUCING TEE WITH THREADED BRANCH

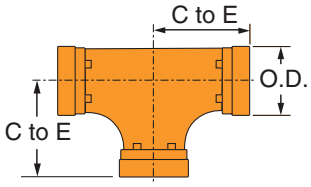
Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*	*In./DN(mm)*	*In./mm*	*Lbs/Kg*
2 x 2 x ¾ *50 x 50 x 20*	3¼ *83*	1.6 *0.7*	8 x 8 x 4 *200 x 200 x 100*	7¾ *197*	50.0 *22.7*
2 x 2 x 1 *50 x 50 x 25*	3¼ C *83*	2.6 *1.2*	8 x 8 x 5 *200 x 200 x 125*	7¾ *197*	41.0 *18.6*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	1.7 *0.8*	8 x 8 x 6 *200 x 200 x 150*	7¾ *197*	54.0 *24.5*
2 x 2 x 1½ *50 x 50 x 40*	3¼ C *83*	2.7 *1.2*	10 x 10 x 2 *250 x 250 x 50*	9 *229*	61.8 *28.0*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	4.1 *1.9*	10 x 10 x 3 *250 x 250 x 80*	9 *229*	63.0 *28.6*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	4.3 *2*	10 x 10 x 4 *250 x 250 x 100*	9 *229*	64.0 *29.0*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	4.4 *2*	10 x 10 x 5 *250 x 250 x 125*	9 *229*	65.1 *29.5*
3 x 3 x ¾ *80 x 80 x 20*	4¼ *108*	5.7 *2.6*	10 x 10 x 6 *250 x 250 x 150*	9 *229*	55.0 *24.9*
3 x 3 x 1 *80 x 80 x 25*	4¼ C *108*	7.0 *3.2*	10 x 10 x 8 *250 x 250 x 200*	9 *229*	64.7 *29.3*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	5.3 *2.4*	12 x 12 x 3 *300 x 300 x 80*	10 *254*	84.9 *38.5*
3 x 3 x 2 *80 x 80 x 50*	4¼ *108*	5.5 *2.5*	12 x 12 x 4 *300 x 300 x 100*	10 *254*	85.8 *38.9*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	5.8 *2.6*	12 x 12 x 5 *300 x 300 x 125*	10 *254*	87.0 *39.5*
4 x 4 x ¾ *100 x 100 x 20*	3¾ *95*	7.2 *3.3*	12 x 12 x 6 *300 x 300 x 150*	10 *254*	88.3 *40.1*
4 x 4 x 1 *100 x 100 x 25*	3¾ *95*	7.0 *3.2*	12 x 12 x 8 *300 x 300 x 200*	10 *254*	91.2 *41.4*
4 x 4 x 1½ *100 x 100 x 40*	5 *127*	9.2 *4.2*	12 x 12 x 10 *300 x 300 x 250*	10 *254*	94.8 *43.0*
4 x 4 x 2 *100 x 100 x 50*	5 *127*	10.2 *4.6*	14 x 14 x 8 *350 x 350 x 200*	11 *279*	110.0 *49.7*
4 x 4 x 2½ *100 x 100 x 65*	5 *127*	11.2 *5.1*	14 x 14 x 10 *350 x 350 x 250*	11 *279*	114.0 *51.5*
4 x 4 x 3 *100 x 100 x 80*	5 *127*	11.4 *5.2*	14 x 14 x 12 *350 x 350 x 300*	11 *279*	117.0 *52.8*
5 x 5 x 2 *125 x 125 x 50*	5½ *140*	14.5 *6.6*	16 x 16 x 8 *400 x 400 x 200*	12 *305*	135.0 *61.2*
5 x 5 x 3 *125 x 125 x 80*	5½ *140*	16.1 *7.3*	16 x 16 x 10 *400 x 400 x 250*	12 *305*	139.0 *63.0*
5 x 5 x 4 *125 x 125 x 100*	5½ *140*	17.9 *8.1*	16 x 16 x 12 *400 x 400 x 300*	12 *305*	142.0 *64.4*
6 x 6 x 2 *150 x 150 x 50*	6½ *165*	26.4 *12*	18 x 18 x 10 *450 x 450 x 250*	15½ *394*	204.0 *92.5*
6 x 6 x 2½ *150 x 150 x 65*	6½ *165*	26.5 *12*	18 x 18 x 12 *450 x 450 x 300*	15½ *394*	209.0 *94.8*
6 x 6 x 3 *150 x 150 x 80*	6½ *165*	26.5 *12*	18 x 18 x 14 *450 x 450 x 350*	15½ *0*	211.0 *95.7*
6 x 6 x 4 *150 x 150 x 100*	6½ *165*	26.5 *12*	18 x 18 x 16 *450 x 450 x 400*	15½ *0*	216.0 *98.0*
6 x 6 x 5 *150 x 150 x 125*	6½ *165*	28.0 *12.7*	24 x 24 x 8 *600 x 600 x 200*	20 *508*	334.0 *152*
8 x 8 x 2 *200 x 200 x 50*	7¾ *197*	37.5 *17*	24 x 24 x 10 *600 x 600 x 250*	20 *508*	342.0 *155*
8 x 8 x 3 *200 x 200 x 80*	7¾ *197*	38.7 *17.6*	24 x 24 x 12 *600 x 600 x 300*	20 *508*	349.0 *158*

C - Cast malleable or ductile iron, all others are fabricated steel.

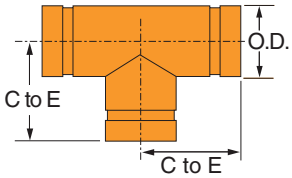
See Fitting Size chart on page 50 for O.D.

FIG. 7060

Tee



Cast



Fabricated

FIGURE 7060 – TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ C *57*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	2¾ C *70*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ C *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ C *83*	2.4 *1.1*
2½ *65*	2.875 *73.0*	3¾ C *95*	4.0 *1.8*
3 O.D. 76.1	*2.996* 76.1	*4 C* 101	*4.6* 2.1
3 *80*	3.500 *88.9*	4¼ C *108*	5.8 *2.6*
3½ *90*	4.000 *101.6*	4½ C *114*	9.8 *4.4*
4¼ O.D. 108.0	*4.250* 108.0	*4¾ C* 121	*9.3* 4.2
4 *100*	4.500 *114.3*	5 C *127*	10.3 *4.7*
5¼ O.D. 133.0	*5.236* 133.0	*5¼ C* 133	*14.1* 6.4
5½ O.D. 139.7	*5.500* 139.7	*5½ C* 140	*16.1* 7.3
5 *125*	5.563 *141.3*	5½ C *140*	16.2 *7.3*
6¼ O.D. 159.0	*6.259* 159.0	*6 C* 152	*20.8* 9.4
6½ O.D. 165.1	*6.500* 165.1	*6½ C* 165	*24.4* 11.1
6 *150*	6.625 *168.3*	6½ C *165*	25.7 *11.7*
8 *200*	8.625 *219.1*	7¾ C *197*	41.1 *18.6*
10 *250*	10.750 *273.1*	9 C *229*	74.5 *33.8*
12 *300*	12.750 *323.9*	10 C *254*	94.7 *43.0*
14 *350*	14.000 *355.6*	11 *279*	118.0 *53.5*
16 *400*	16.000 *406.4*	12 *305*	146.0 *66.2*
18 *450*	18.000 *457.2*	15½ *394*	218.0 *98.9*
20 *500*	20.000 *508.0*	17¼ *438*	275.0 *125*
24 *600*	24.000 *609.6*	20 *508*	379.0 *172*

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FIG. 7076

Gr x Thd

Concentric Reducers

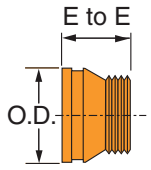

FIGURE 7076 – CONCENTRIC REDUCER GROOVE BY THREAD

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1 *40 x 25*	2½ *6 4*	0.6 *0.3*
2 x ¾ *50 x 80*	2½ *64*	1.0 *0.5*
2 x 1 *50 x 25*	2½ *64*	0.8 *0.4*
2 x 1¼ *50 x 32*	2½ *64*	1.3 *0.6*
2 x 1½ *50 x 40*	2½ *64*	1.3 *0.6*
2½ x 1 *65 x 25*	2½ *64*	1.0 *0.5*
2½ x 1¼ *65 x 32*	2½ *64*	1.0 *0.5*
2½ x 1½ *65 x 40*	2½ *64*	1.3 *0.6*
2½ x 2 *65 x 50*	2½ *64*	1.2 *0.5*
3 x ¾ *80 x 80*	2½ *64*	1.2 *0.5*
3 x 1 *80 x 25*	2½ *64*	1.2 *0.5*
3 x 1½ *80 x 40*	2½ *64*	1.3 *0.6*
3 x 2 *80 x 50*	2½ *64*	1.3 *0.6*
3 x 2½ *80 x 65*	2½ *64*	1.5 *0.7*
3½ x 3 *90 x 80*	3 *76*	1.8 *0.8*
4 x 1 *100 x 25*	3 *76*	2.2 *1.0*
4 x 1½ *100 x 40*	3 *76*	2.3 *1.0*
4 x 2 *100 x 50*	3 *76*	2.3 *1.0*
4 x 2½ *100 x 65*	3 *76*	2.3 *1.0*
4 x 3 *100 x 80*	3 *76*	2.6 *1.2*
4 x 3½ *100 x 90*	3 *76*	2.5 *1.1*
5 x 4 *125 x 100*	3½ *89*	4.5 *2.0*
6 x 1 *150 x 25*	4 *102*	6.0 *2.7*
6 x 2 *150 x 50*	4 *102*	6.0 *2.7*
6 x 3 *150 x 80*	4 *102*	6.0 *2.7*
6 x 4 *150 x 100*	4 *102*	5.9 *2.7*
6 x 5 *150 x 125*	4 *102*	5.8 *2.6*

All are Fabricated Steel.

See Fitting Size chart on page 50 for O.D.

FIG. 7073 & FIG. 7097

Eccentric Reducers

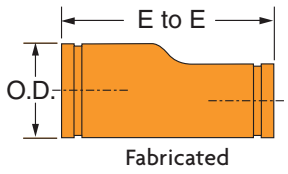

Fig. 7073– Gr. x Gr.

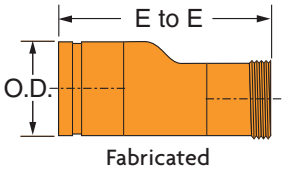

Fig. 7097 – Gr. x Thd.

FIGURE 7073 & 7097 ECCENTRIC REDUCER

Nominal Size	End to End	Approx. Wt. Ea.	Nominal Size	End to End	Approx. Wt. Ea.	Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
1¼ x 1 *32 x 25*	8½ *216*	1.5 *0.7*	4 x 3½ *100 x 90*	10 *254*	8.5 *3.9*	14 x 6 *350 x 150*	13 *330*	78 *35.4*
1½ x ¾ *40 x 20*	8½ *216*	1.6 *0.7*	5 x 2 *125 x 50*	11 *279*	9.3 *4.2*	14 x 8 *350 x 200*	13 *330*	80 *36.3*
1½ x 1 *40 x 25*	8½ *216*	1.7 *0.8*	5 x 2½ *125 x 65*	11 *279*	9.9 *4.5*	14 x 10 *350 x 250*	13 *330*	84 *38.1*
1½ x 1¼ *40 x 32*	8½ *216*	4.5 *2.0*	5 x 3 *125 x 80*	11 *279*	10.7 *4.9*	14 x 12 *350 x 300*	13 *330*	88 *39.9*
2 x ¾ *50 x 80*	9 *229*	2.1 *1.0*	5 x 4 *125 x 100*	11 *279*	11.9 *5.4*	16 x 8 *400 x 200*	14 *356*	91 *41.3*
2 x 1 *50 x 25*	9 *229*	2.2 *1.0*	6 x 1 *150 x 25*	11½ *292*	12.0 *5.4*	16 x 10 *400 x 250*	14 *356*	96 *43.5*
2 x 1¼ *50 x 32*	9 *229*	2.4 *1.1*	6 x 1½ *150 x 40*	11½ *292*	12.1 *5.5*	16 x 12 *400 x 300*	14 *356*	99 *44.9*
2 x 1½ *50 x 40*	9 *229*	2.5 *1.1*	6 x 2 *150 x 50*	11½ *292*	12.2 *5.5*	16 x 14 *400 x 350*	14 *356*	104 *47.2*
2½ x 1 *65 x 25*	9½ *241*	3.2 *1.5*	6 x 2½ *150 x 65*	11½ *292*	12.8 *5.8*	18 x 10 *450 x 250*	15 *381*	110 *49.9*
2½ x 1¼ *65 x 32*	9½ *241*	3.4 *1.5*	6 x 3 *150 x 80*	11½ *292*	13.6 *6.2*	18 x 12 *450 x 300*	15 *381*	113 *51.3*
2½ x 1½ *65 x 40*	9½ *241*	3.6 *1.6*	6 x 4 *150 x 100*	11½ *292*	14.9 *6.8*	18 x 14 *450 x 350*	15 *381*	117 *53.1*
2½ x 2 *65 x 50*	9½ *241*	4.0 *1.8*	6 x 5 *150 x 125*	11½ *292*	16.2 *7.3*	18 x 16 *450 x 400*	15 *381*	121 *54.9*
3 x 1 *80 x 25*	9½ *241*	4.0 *1.8*	8 x 3 *200 x 80*	12 *305*	17.9 *8.1*	20 x 10 *500 x 250*	20 *508*	145 *65.8*
3 x 1¼ *80 x 32*	9½ *241*	4.3 *2.0*	8 x 4 *200 x 100*	12 *305*	19.7 *8.9*	20 x 12 *500 x 300*	20 *508*	149 *67.6*
3 x 1½ *80 x 40*	9½ *241*	4.5 *2.0*	8 x 5 *200 x 125*	12 *305*	21.4 *9.7*	20 x 14 *500 x 350*	20 *508*	152 *68.9*
3 x 2 *80 x 50*	9½ *241*	4.8 *2.2*	8 x 6 *200 x 150*	12 *305*	23.2 *10.5*	20 x 16 *500 x 400*	20 *508*	156 *70.8*
3 x 2½ *80 x 65*	9½ *241*	5.6 *2.5*	10 x 4 *250 x 100*	13 *330*	29.7 *13.5*	20 x 18 *500 x 450*	20 *508*	160 *72.6*
3½ x 3 *90 x 80*	9½ *241*	6.6 *3.0*	10 x 5 *250 x 125*	13 *330*	31.7 *14.4*	24 x 10 *600 x 250*	20 *508*	174 *78.9*
4 x 1 *100 x 25*	10 *254*	5.9 *2.7*	10 x 6 *250 x 150*	13 *330*	34.0 *15.4*	24 x 12 *600 x 300*	20 *508*	179 *81.2*
4 x 1¼ *100 x 32*	10 *254*	6.3 *2.9*	10 x 8 *250 x 200*	13 *330*	34.4 *15.6*	24 x 14 *600 x 350*	20 *508*	184 *83.5*
4 x 1½ *100 x 40*	10 *254*	6.4 *2.9*	12 x 4 *300 x 100*	14 *356*	44.8 *20.3*	24 x 16 *600 x 400*	20 *508*	189 *85.7*
4 x 2 *100 x 50*	10 *254*	6.7 *3.0*	12 x 6 *300 x 150*	14 *356*	45.2 *20.5*	24 x 18 *600 x 450*	20 *508*	194 *88*
4 x 2½ *100 x 65*	10 *254*	7.3 *3.3*	12 x 8 *300 x 200*	14 *356*	47.7 *21.6*	24 x 20 *600 x 500*	20 *508*	199 *90.3*
4 x 3 *100 x 80*	10 *254*	7.9 *3.6*	12 x 10 *300 x 250*	14 *356*	52.0 *23.6*			

Fabricated Steel *Figure 7097 is available in sizes 1¼ x 1 through 12 x 10.

Center to end dimensions may differ from those shown above. Contact an Anvil Representative for more information.

See Fitting Size chart on page 50 for O.D.

See Fitting Size chart on page 50 for O.D.

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FIG. 7077, FIG. 7078 & FIG. 7079

Swaged Nipples

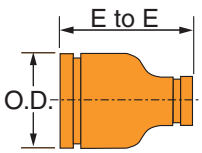

Fig. 7077
Gr x Gr

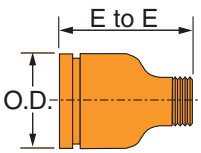

Fig. 7078
Gr x Thd

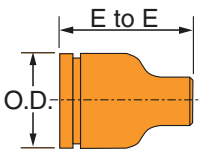

Fig. 7079
Gr x Bev

FIGURE 7077, 7078 & 7079 SWAGED NIPPLES

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2 x 1 *50 x 25*	6½ C *165*	2.0 *0.9*
2 x 1¼ *50 x 32*	6½ *165*	2.0 *0.9*
2 x 1½ *50 x 40*	6½ *165*	2.0 *0.9*
2½ x 1 *65 x 25*	7 *178*	3.5 *1.6*
2½ x 1¼ *65 x 32*	7 *178*	3.5 *1.6*
2½ x 1½ *65 x 40*	7 *178*	3.5 *1.6*
2½ x 2 *65 x 50*	7 *178*	3.5 *1.6*
3 x 1 *80 x 25*	8 *203*	5.0 *2.3*
3 x 1¼ *80 x 32*	8 *203*	5.0 *2.3*
3 x 1½ *80 x 40*	8 *203*	5.0 *2.3*
3 x 2 *80 x 50*	8 *203*	5.0 *2.3*
3 x 2½ *80 x 65*	8 *203*	5.0 *2.3*
3½ x 3 *90 x 80*	8 *203*	7.0 *3.2*
4 x 1 *100 x 25*	9 *229*	8.0 *3.6*
4 x 1¼ *100 x 32*	9 *229*	8.0 *3.6*
4 x 1½ *100 x 40*	9 *229*	8.0 *3.6*
4 x 2 *100 x 50*	9 *229*	8.0 *3.6*
4 x 2½ *100 x 65*	9 *229*	8.0 *3.6*
4 x 3 *100 x 80*	9 *229*	8.0 *3.6*
4 x 3½ *100 x 90*	9 *229*	8.0 *3.6*
5 x 2 *125 x 50*	11 *279*	12.0 *5.4*
5 x 2½ *125 x 65*	11 *279*	12.0 *5.4*
5 x 3 *125 x 80*	11 *279*	12.0 *5.4*
5 x 4 *125 x 100*	11 *279*	12.0 *5.4*
6 x 1 *150 x 25*	12 *305*	19.0 *8.6*
6 x 1¼ *150 x 32*	12 *305*	19.0 *8.6*
6 x 1½ *150 x 40*	12 *305*	19.0 *8.6*
6 x 2 *150 x 50*	12 *305*	19.0 *8.6*
6 x 2½ *150 x 65*	12 *305*	19.0 *8.6*
6 x 3 *150 x 80*	12 *305*	19.0 *8.6*
6 x 3½ *150 x 90*	12 *305*	17.0 *7.7*
6 x 4 *150 x 100*	12 *305*	19.0 *8.6*
6 x 5 *150 x 125*	12 *305*	19.0 *8.6*

This product is not ULC Listed.
See Fitting Size chart on page 50 for O.D.

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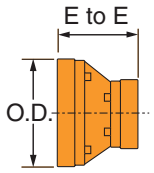
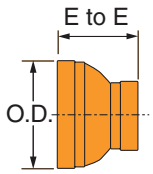
FIG. 7072 – Gr x Gr Concentric Reducers



Cast



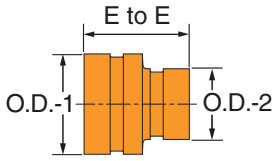
Fabricated

FIGURE 7072 CONCENTRIC REDUCER

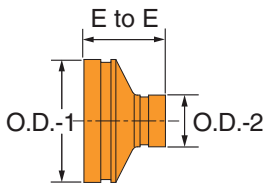
Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*
1¼ x 1 *32 x 25*	2½ *64*	0.6 *0.3*
1½ x 1 *40 x 25*	2½ *64*	0.6 *0.3*
1½ x 1¼ *40 x 32*	2½ *64*	0.6 *0.3*
2 x 1 *50 x 25*	2½ *64*	0.8 *0.4*
2 x 1¼ *50 x 32*	2½ C *64*	1.3 *0.6*
2 x 1½ *50 x 40*	2½ C *64*	1.3 *0.6*
2½ x 1 *65 x 25*	2½ *64*	1.0 *0.5*
2½ x 1¼ *65 x 32*	2½ *64*	1.0 *0.5*
2½ x 1½ *65 x 40*	2½ *64*	1.3 *0.6*
2½ x 2 *65 x 50*	2½ C *64*	1.6 *0.7*
3 x 1 *80 x 25*	2½ *64*	1.2 *0.5*
3 x 1¼ *80 x 32*	2½ *64*	1.3 *0.6*
3 x 1½ *80 x 40*	2½ *64*	1.3 *0.6*
3 x 2 *80 x 50*	2½ C *64*	1.4 *0.6*
3 x 2½ *80 x 65*	2½ C *64*	1.5 *0.7*
3½ x 3 *90 x 80*	3 *76*	1.8 *0.8*
4 x 1 *100 x 25*	3 *76*	2.2 *1.0*
4 x 1¼ *100 x 32*	3 *76*	2.2 *1.0*
4 x 1½ *100 x 40*	3 *76*	2.3 *1.0*
4 x 2 *100 x 50*	3 C *76*	2.4 *1.1*
4 x 2½ *100 x 65*	3 C *76*	2.6 *1.2*
4 x 3 *100 x 80*	3 C *76*	3.2 *1.5*
4 x 3½ *100 x 90*	3 *76*	3.6 *1.6*
5 x 2 *125 x 50*	3½ *89*	4.6 *2.1*
5 x 2½ *125 x 65*	3½ *89*	4.5 *2.0*
5 x 3 *125 x 80*	3½ *89*	4.4 *2.0*
5 x 4 *125 x 100*	3½ C *89*	4.5 *2.0*
6 x 1 *150 x 25*	4 *102*	6.8 *3.1*
6 x 1½ *150 x 40*	4 *102*	6.9 *3.1*
6 x 2 *150 x 50*	4 C *102*	6.0 *2.7*
6 x 2½ *150 x 65*	4 *102*	6.0 *2.7*
6 x 3 *150 x 80*	4 C *102*	5.4 *2.4*
6 x 4 *150 x 100*	4 C *102*	5.6 *2.5*
6 x 5 *150 x 125*	4 C *102*	6.0 *2.7*
8 x 3 *200 x 80*	5 *127*	12.0 *5.5*
8 x 4 *200 x 100*	5 C *127*	9.0 *4.1*
8 x 5 *200 x 125*	5 *127*	11.5 *5.2*
8 x 6 *200 x 150*	5 C *127*	10.6 *4.8*
10 x 4 *250 x 100*	6 *152*	20 *9.1*
10 x 5 *250 x 125*	6 *152*	20 *9.1*
10 x 6 *250 x 150*	6 C *152*	20 *9.1*
10 x 8 *250 x 200*	6 *152*	23.9 *10.8*
12 x 4 *300 x 100*	7 *178*	25 *11.3*
12 x 6 *300 x 150*	7 *178*	29 *13.2*
12 x 8 *300 x 200*	7 *178*	29 *13.2*
12 x 10 *300 x 250*	7 *178*	32.4 *14.7*
14 x 6 *350 x 150*	13 *330*	54.3 *24.6*
14 x 8 *350 x 200*	13 *330*	54.5 *24.7*
14 x 10 *350 x 250*	13 *330*	55.7 *25.3*
14 x 12 *350 x 300*	13 *330*	57.3 *26.0*
16 x 8 *400 x 200*	14 *356*	65.4 *29.7*
16 x 10 *400 x 250*	14 *356*	66.7 *30.3*
16 x 12 *400 x 300*	14 *356*	68.1 *30.9*
16 x 14 *400 x 350*	14 *356*	71.0 *32.2*
18 x 10 *450 x 250*	15 *381*	82.3 *37.3*
18 x 12 *450 x 300*	15 *381*	83.6 *37.9*
18 x 14 *450 x 350*	15 *381*	86.2 *39.1*
18 x 16 *450 x 400*	15 *381*	87.2 *39.6*
20 x 10 *500 x 250*	20 *508*	123.0 *55.8*
20 x 12 *500 x 300*	20 *508*	125.0 *56.7*
20 x 14 *500 x 350*	20 *508*	129.0 *58.5*
20 x 16 *500 x 400*	20 *508*	131.0 *59.4*
20 x 18 *500 x 450*	20 *508*	133.0 *60.3*
24 x 10 *600 x 250*	20 *508*	147.0 *66.7*
24 x 12 *600 x 300*	20 *508*	149.0 *67.6*
24 x 14 *600 x 350*	20 *508*	152.0 *68.9*
24 x 16 *600 x 400*	20 *508*	153.0 *69.4*
24 x 18 *600 x 450*	20 *508*	154.0 *69.9*
24 x 20 *600 x 500*	20 *508*	155.0 *70.3*

C - Cast malleable or ductile iron, all others are fabricated steel.

FIG. 7072i – Gr x Gr Concentric Reducers



Sizes 1¼" x 1" to 80mm x 76.1mm



Sizes 4" x 1" and larger

FIGURE 7072i CONCENTRIC REDUCER

Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs/Kg*
1¼ x 1 *32 x 25*	1.660 x 1.315 *42.2 x 33.4*	2½ *63.5*	0.5 *0.227*
1½ x 1 *40 x 25*	1.900 x 1.315 *48.3 x 33.4*	2½ *63.5*	0.5 *0.227*
1½ x 1¼ *40 x 32*	1.900 x 1.660 *48.3 x 42.2*	2½ *63.5*	1.0 *.454*
2 x 1 *50 x 25*	2.375 x 1.315 *60.3 x 33.4*	2½ *63.5*	1.0 *.454*
2 x 1¼ *50 x 32*	2.375 x 1.660 *60.3 x 42.2*	2½ *63.5*	1.0 *.454*
2 x 1½ *50 x 40*	2.375 x 1.900 *60.3 x 48.3*	2½ *63.5*	1.0 *.454*
2½ x 1 *65 x 25*	2.875 x 1.315 *73.0 x 33.4*	2½ *63.5*	1.5 *0.680*
2½ x 1¼ *65 x 32*	2.875 x 1.660 *73.0 x 42.2*	2½ *63.5*	1.5 *0.680*
2½ x 1½ *65 x 40*	2.875 x 1.900 *73.0 x 48.3*	2½ *63.5*	1.5 *0.680*
2½ x 2 *65 x 50*	2.875 x 2.375 *73.0 x 60.3*	2½ *63.5*	1.5 *0.680*
3 O.D. x 1 76.1 x 25	*2.996 x 1.315* 76.1 x 33.4	*2½* 63.5	*1.5* 0.680
3 O.D. x 1¼ 76.1 x 32	*2.996 x 1.660* 76.1 x 42.2	*2½* 63.5	*1.5* 0.680
3 O.D. x 1½ 76.1 x 40	*2.996 x 1.900* 76.1 x 48.3	*2½* 63.5	*1.5* 0.680
3 O.D. x 2 76.1 x 50	*2.996 x 2.375* 76.1 x 60.3	*2½* 63.5	*1.5* 0.680
3 x 1½ *80 x 40*	3.500 x 1.900 *88.9 x 48.3*	2½ *63.5*	1.5 *0.680*
3 x 2 *80 x 50*	3.500 x 2.375 *88.9 x 60.3*	2½ *63.5*	2.0 *0.907*
3 x 2½ *80 x 65*	3.500 x 2.875 *88.9 x 73.0*	2½ *63.5*	2.0 *0.907*
3 x 3 O.D. 80 x 76.1	*3.500 x 2.996* 88.9 x 76.1	*2½* 63.5	*2.0* 0.907
4 x 1 *100 x 25*	4.500 x 1.315 *114.3 x 33.4*	3 *76.2*	2.5 *1.134*
4 x 1½ *100 x 40*	4.500 x 1.900 *114.3 x 48.3*	3 *76.2*	2.5 *1.134*
4 x 2 *100 x 50*	4.500 x 2.375 *114.3 x 60.3*	3 *76.2*	2.5 *1.134*
4 x 2½ *100 x 65*	4.500 x 2.875 *114.3 x 73.0*	3 *76.2*	2.5 *1.134*
4 x 3 O.D. 100 x 76.1	*4.500 x 2.996* 114.3 x 76.1	*3* 76.2	*2.5* 1.134
4 x 3 *100 x 80*	4.500 x 3.500 *114.3 x 88.9*	3 *76.2*	2.5 *1.134*
5½ O.D. x 3 O.D. 139.7 x 76.1	*5.500 x 2.996* 139.7 x 76.1	*3½* 88.9	*4.0* 1.814
5½ O.D. x 3 139.7 x 80	*5.500 x 3.500* 139.7 x 88.9	*3½* 88.9	*4.0* 1.814
5½ O.D. x 4 139.7 x 100	*5.500 x 4.500* 139.7 x 114.3	*3½* 88.9	*4.0* 1.814
5 x 2 *125 x 50*	5.563 x 2.375 *141.3 x 60.3*	3½ *88.9*	4.0 *1.814*
5 x 2½ *125 x 65*	5.563 x 2.875 *141.3 x 73.0*	3½ *88.9*	4.0 *1.814*
5 x 3 *125 x 80*	5.563 x 3.500 *141.3 x 88.9*	3½ *88.9*	4.0 *1.814*
5 x 4 *125 x 100*	5.563 x 4.5 *141.3 x 114.3*	3½ *88.9*	5.0 *2.041*
6½ O.D. x 3 O.D. 165.1 x 76.1	*6.500 x 2.996* 165.1 x 76.1	*4* 101.6	*5.0* 2.268
6½ O.D. x 3 165.1 x 80	*6.500 x 3.500* 165.1 x 88.9	*4* 101.6	*5.5* 2.495
6½ O.D. x 4 165.1 x 100	*6.500 x 4.500* 165.1 x 114.3	*4* 101.6	*6.0* 2.720
6½ O.D. x 5½ O.D. 165.1 x 139.7	*6.500 x 5.500* 165.1 x 139.7	*4* 101.6	*6.5* 2.948
6 x 2 *150 x 50*	6.625 x 2.375 *168.3 x 60.3*	4 *101.6*	5.0 *2.268*
6 x 2½ *150 x 65*	6.625 x 2.875 *168.3 x 73.0*	4 *101.6*	5.5 *2.495*
6 x 3 O.D. 150 x 76.1	*6.625 x 2.996* 168.3 x 76.1	*4* 101.6	*5.5* 2.495
6 x 3 *150 x 80*	6.625 x 3.500 *168.3 x 88.9*	4 *101.6*	5.5 *2.495*
6 x 4 *150 x 100*	6.625 x 4.500 *168.3 x 114.3*	4 *101.6*	6.5 *2.948*
6 x 5½ O.D. 150 x 139.7	*6.625 x 5.500* 168.3 x 139.7	*4* 101.6	*6.5* 2.948
6 x 5 *150 x 125*	6.625 x 5.563 *168.3 x 141.3*	4 *101.6*	6.0 *2.720*
6 x 6½ O.D. 150 x 165.1	*6.625 x 6.500* 168.3 x 165.1	*4* 101.6	*7.5* 3.402
8 x 4 *200 x 100*	8.625 x 4.500 *219.1 x 114.3*	5 *127.0*	10.0 *4.536*
8 x 6½ O.D. 200 x 165.1	*8.625 x 6.500* 219.1 x 165.1	*5* 127.0	*11.0* 4.990
8 x 6 *200 x 150*	8.625 x 6.625 *219.1 x 168.3*	5 *127.0*	11.0 *4.990*
10 x 8 *250 x 200*	10.750 x 8.675 *273.1 x 219.1*	6 *152.4*	19.5 *8.845*

All 7072i fittings are cast ductile iron.

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FIG. 7069

45° Lateral

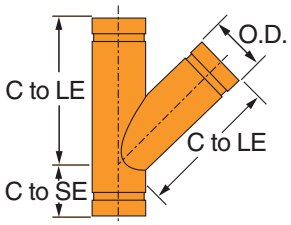

FIGURE 7069 LATERALS

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	5 *127*	2¼ *57*	1.5 *0.7*
1¼ *32*	1.660 *42.2*	5¾ *146*	2½ *64*	2.5 *1.1*
1½ *40*	1.900 *48.3*	6¼ *159*	2¾ *70*	3.5 *1.6*
2 *50*	2.375 *60.3*	7 *178*	2¾ *70*	4.5 *2.0*
2½ *65*	2.875 *73.0*	7¾ *197*	3 *76*	10.0 *4.5*
3 *80*	3.500 *88.9*	8½ *216*	3¼ *83*	11.0 *5.0*
3½ *90*	4.000 *101.6*	10 *254*	3½ *89*	14.0 *6.4*
4 *100*	4.500 *114.3*	10½ *267*	3¾ *95*	18.3 *8.3*
5 *125*	5.563 *141.3*	12½ *318*	4 *102*	30.0 *13.6*
6 *150*	6.625 *168.3*	14 *356*	4½ *114*	46.6 *21.1*
8 *200*	8.625 *219.1*	18 *457*	6 *152*	82.8 *37.6*
10 *250*	10.750 *273.1*	20½ *521*	6½ *165*	127 *57.4*
12 *300*	12.750 *323.9*	23 *584*	7 *178*	165 *74.8*
14 *350*	14.000 *355.6*	26½ *673*	7½ *191*	215 *97.5*
16 *400*	16.000 *406.4*	29 *737*	8 *203*	345 *157*
18 *450*	18.000 *457.2*	32 *813*	8½ *216*	425 *193*
20 *500*	20.000 *508.0*	35 *889*	9 *229*	517 *235*
24 *600*	24.000 *609.6*	40 *1016*	10 *254*	940 *426*

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FIG. 7070

45° Reducing Lateral

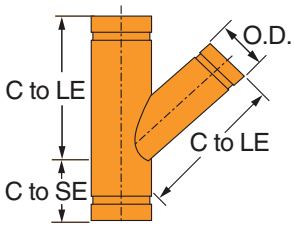

FIGURE 7070 REDUCING LATERAL

Nominal Size	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
3 x 3 x 2 *80 x 80 x 50*	8½ *216*	3¼ *83*	9.8 *4.4*
3 x 3 x 2½ *80 x 80 x 65*	8½ *216*	3¼ *83*	11.5 *5.2*
4 x 4 x 2 *100 x 100 x 50*	10½ *267*	3¾ *95*	15.5 *7.0*
4 x 4 x 2½ *100 x 100 x 65*	10½ *267*	3¾ *95*	17.0 *7.7*
4 x 4 x 3 *100 x 100 x 80*	10½ *267*	3¾ *95*	18.5 *8.4*
5 x 5 x 2 *125 x 125 x 50*	12½ *318*	4 *102*	22.5 *10.2*
5 x 5 x 3 *125 x 125 x 80*	12½ *318*	4 *102*	26.5 *12.0*
5 x 5 x 4 *125 x 125 x 100*	12½ *318*	4 *102*	30.5 *13.8*
6 x 6 x 2 *150 x 150 x 50*	14 *356*	4½ *114*	33.0 *15.0*
6 x 6 x 3 *150 x 150 x 80*	14 *356*	4½ *114*	37.0 *16.8*
6 x 6 x 4 *150 x 150 x 100*	14 *356*	4½ *114*	40.0 *18.1*
6 x 6 x 5 *150 x 150 x 125*	14 *356*	4½ *114*	45.0 *20.4*
8 x 8 x 4 *200 x 200 x 100*	18 *457*	6 *152*	59.6 *27.0*
8 x 8 x 5 *200 x 200 x 125*	18 *457*	6 *152*	68.0 *30.8*
8 x 8 x 6 *200 x 200 x 150*	18 *457*	6 *152*	75.0 *34.0*
10 x 10 x 4 *250 x 250 x 100*	20½ *521*	6½ *165*	83.0 *37.6*
10 x 10 x 5 *250 x 250 x 125*	20½ *521*	6½ *165*	100.0 *45.4*
10 x 10 x 6 *250 x 250 x 150*	20½ *521*	6½ *165*	105.0 *47.6*
10 x 10 x 8 *250 x 250 x 200*	20½ *521*	6½ *165*	116.0 *52.6*
12 x 12 x 4 *300 x 300 x 100*	23 *584*	7 *178*	137.0 *62.1*
12 x 12 x 6 *300 x 300 x 150*	23 *584*	7 *178*	140.0 *63.5*
12 x 12 x 8 *300 x 300 x 200*	23 *584*	7 *178*	147.0 *66.7*
12 x 12 x 10 *300 x 300 x 250*	23 *584*	7 *178*	168 *76.2*
14 x 14 x 4 *350 x 350 x 100*	26½ *673*	7½ *191*	173 *78.5*
14 x 14 x 6 *350 x 350 x 150*	26½ *673*	7½ *191*	185 *83.9*
14 x 14 x 8 *350 x 350 x 200*	26½ *673*	7½ *191*	195 *88.5*
14 x 14 x 10 *350 x 350 x 250*	26½ *673*	7½ *191*	223 *101*
14 x 14 x 12 *350 x 350 x 300*	26½ *673*	7½ *191*	240 *109*
16 x 16 x 6 *400 x 400 x 150*	29 *737*	8 *203*	235 *107*
16 x 16 x 8 *400 x 400 x 200*	29 *737*	8 *203*	250 *113*
16 x 16 x 10 *400 x 400 x 250*	29 *737*	8 *203*	263 *119*
16 x 16 x 12 *400 x 400 x 300*	29 *737*	8 *203*	283 *128*
16 x 16 x 14 *400 x 400 x 350*	29 *737*	8 *203*	307 *139*
18 x 18 x 6 *450 x 450 x 150*	32 *813*	8½ *216*	275 *125*
18 x 18 x 8 *450 x 450 x 200*	32 *813*	8½ *216*	306 *139*
18 x 18 x 10 *450 x 450 x 250*	32 *813*	8½ *216*	321 *146*
18 x 18 x 12 *450 x 450 x 300*	32 *4813*	8½ *216*	333 *151*
18 x 18 x 14 *450 x 450 x 350*	32 *813*	8½ *216*	358 *162*
18 x 18 x 16 *450 x 450 x 400*	32 *813*	8½ *216*	382 *173*
20 x 20 x 12 *500 x 500 x 300*	35 *889*	9 *229*	390 *177*
20 x 20 x 14 *500 x 500 x 350*	35 *889*	9 *229*	410 *186*
20 x 20 x 16 *500 x 500 x 400*	35 *889*	9 *229*	440 *200*
24 x 24 x 16 *600 x 600 x 400*	40 *1016*	10 *254*	725 *329*
24 x 24 x 20 *600 x 600 x 500*	40 *1016*	10 *254*	785 *356*

See Fitting Size chart on page 50 for O.D.

FIG. 7066 – Tee Wye

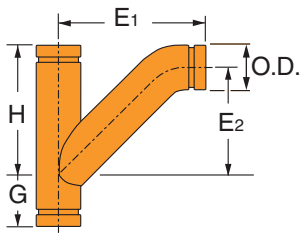

FIGURE 7066 TEE WYES

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 x 2 x 2 *50 x 50 x 50*	2¾ *70*	7 *178*	9 *229*	4⅝ *117*	6.4 *2.9*
2½ x 2½ x 2½ *65 x 65 x 65*	3 *76*	7¾ *197*	10½ *267*	5¾ *146*	11.5 *5.2*
3 x 3 x 3 *80 x 80 x 80*	3¼ *83*	8½ *216*	11½ *292*	6½ *165*	16.5 *7.5*
3½ x 3½ x 3½ *90 x 90 x 90*	3½ *89*	10 *254*	13 *330*	7¾ *197*	22 *10.0*
4 x 4 x 3 *100 x 100 x 80*	3¾ *95*	10½ *267*	12⅞ *327*	7⅞ *200*	23 *10.4*
4 x 4 x 4 *100 x 100 x 100*	3¾ *95*	10½ *267*	13⅝ *346*	8⅛ *206*	26 *11.8*
5 x 5 x 3 *125 x 125 x 80*	4 *102*	12½ *318*	14¼ *362*	9¼ *235*	32 *14.5*
5 x 5 x 4 *125 x 125 x 100*	4 *102*	12½ *318*	15⅛ *384*	9⅝ *244*	35 *15.9*
5 x 5 x 5 *125 x 125 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	40 *18.1*
6 x 6 x 3 *150 x 150 x 80*	4½ *114*	14 *356*	15 5/16 *389*	10 5/16 *262*	50 *22.7*
6 x 6 x 4 *150 x 150 x 100*	4½ *114*	14 *356*	16¼ *413*	10¾ *273*	55 *24.9*
6 x 6 x 5 *150 x 150 x 125*	4½ *114*	14 *356*	17¼ *438*	11⅛ *283*	58 *26.3*
6 x 6 x 6 *150 x 150 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	60.5 *27.4*
8 x 8 x 3 *200 x 200 x 80*	6 *152*	18 *457*	18 3/16 *462*	13 3/16 *335*	100 *45.4*
8 x 8 x 4 *200 x 200 x 100*	6 *152*	18 *457*	19 *483*	13½ *343*	110 *49.9*
8 x 8 x 5 *200 x 200 x 125*	6 *152*	18 *457*	20 *508*	13⅞ *352*	111 *50.3*
8 x 8 x 6 *200 x 200 x 150*	6 *152*	18 *457*	21⅛ *537*	14⅜ *365*	112 *50.8*
8 x 8 x 8 *200 x 200 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	120 *54.4*
10 x 10 x 3 *250 x 250 x 80*	6½ *165*	20½ *521*	19⅞ *505*	14⅞ *378*	130 *59.0*
10 x 10 x 4 *250 x 250 x 100*	6½ *165*	20½ *521*	20¾ *527*	15¼ *387*	135 *61.2*
10 x 10 x 5 *250 x 250 x 125*	6½ *165*	20½ *521*	21⅞ *556*	15¾ *400*	140 *63.5*
10 x 10 x 6 *250 x 250 x 150*	6½ *165*	20½ *521*	22⅞ *581*	16⅛ *410*	145 *65.8*
10 x 10 x 8 *250 x 250 x 200*	6½ *165*	20½ *521*	27¼ *692*	19¼ *489*	150 *68.0*
10 x 10 x 10 *250 x 250 x 250*	6½ *165*	20½ *521*	27¼ *692*	18 *457*	190 *86.2*
12 x 12 x 3 *300 x 300 x 80*	7 *178*	23 *584*	20¾ *527*	15¾ *400*	140 *63.5*
12 x 12 x 4 *300 x 300 x 100*	7 *178*	23 *584*	21½ *546*	16 *406*	145 *65.8*
12 x 12 x 6 *300 x 300 x 150*	7 *178*	23 *584*	23¾ *603*	17 *432*	165 *74.8*
12 x 12 x 8 *300 x 300 x 200*	7 *178*	23 *584*	26 *660*	18 *457*	175 *79.4*
12 x 12 x 10 *300 x 300 x 250*	7 *178*	23 *584*	28 *711*	18¾ *476*	200 *90.7*
12 x 12 x 12 *300 x 300 x 300*	7 *178*	23 *584*	31 *787*	20½ *521*	240 *109*

FIG. 7067 – Reducing Tee Wye

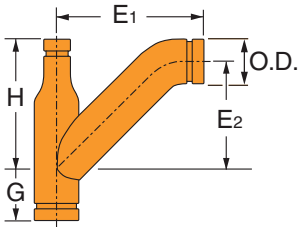

FIGURE 7067 REDUCING TEE WYES

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 3 x 3 *100 x 80 x 80*	1⅝ *41*	7⅜ *187*	10¾ *273*	5⅝ *143*	16.0 *7.3*
4 x 3 x 4 *100 x 80 x 100*	3¾ *95*	10½ *267*	13⅝ *346*	8⅛ *206*	27.0 *12.2*
5 x 3 x 3 *125 x 80 x 80*	1¼ *32*	9¾ *248*	11½ *292*	6½ *165*	25.0 *11.3*
5 x 3 x 5 *125 x 80 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	44.0 *20.0*
5 x 4 x 3 *125 x 100 x 80*	1⅞ *48*	9⅛ *232*	11⅞ *302*	6⅞ *175*	21.0 *9.5*
5 x 4 x 4 *125 x 100 x 100*	1⅞ *48*	9⅛ *232*	12¾ *324*	7¼ *184*	25.0 *11.3*
6 x 4 x 6 *150 x 100 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	61.0 *27.7*
6 x 5 x 3 *150 x 125 x 80*	1¼ *32*	10¾ *273*	13 *330*	8 *203*	27.0 *12.2*
6 x 5 x 4 *150 x 125 x 100*	1¼ *32*	10¾ *273*	13⅞ *352*	8⅜ *213*	31.0 *14.1*
8 x 6 x 4 *200 x 150 x 100*	1 *25*	12 *305*	14¾ *375*	9¼ *235*	45.0 *20.4*
8 x 6 x 8 *200 x 150 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	95.0 *43.1*

See Fitting Size chart on page 50 for O.D.

FIG. 7071 – True Wye

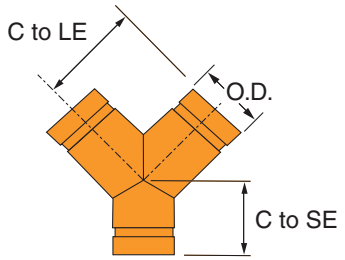

FIGURE 7071 TRUE WYE

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	2 W4 *57*	1.1 *0.5*
1¼ *32*	1.660 *42.2*	2¾ *70*	2½ *64*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ *70*	2¾ *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ *83*	2¾ *70*	2.3 *1.0*
2½ *65*	2.875 *73.0*	3¾ *95*	3 *76*	5.0 *2.3*
3 *80*	3.500 *88.9*	4¼ *108*	3¼ *83*	6.1 *2.8*
3½ *90*	4.000 *101.6*	4½ *114*	3½ *89*	8.3 *3.8*
4 *100*	4.500 *114.3*	5 *127*	3¾ *95*	10.5 *4.8*
5 *125*	5.563 *141.3*	5½ *140*	4 *102*	15 *6.8*
6 *150*	6.625 *168.3*	6½ *165*	4½ *114*	21.6 *9.8*
8 *200*	8.625 *219.1*	7¾ *197*	6 *152*	36.0 *16.3*
10 *250*	10.750 *273.1*	9 *229*	6½ *165*	51.0 *23.1*
12 *300*	12.750 *323.9*	10 *254*	7 *178*	160.0 *72.6*
14 *350*	14.000 *355.6*	11 *279*	7½ *191*	136.0 *61.7*
16 *400*	16.000 *406.4*	12 *305*	8 *203*	166.0 *75.3*
18 *450*	18.000 *457.2*	15½ *394*	8½ *216*	234 *106*
20 *500*	20.000 *508.0*	17¼ *438*	9 *229*	281 *128*
24 *600*	24.000 *609.6*	20 *508*	10 *254*	523 *237*

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FIG. 7087 GR X FPT

Female Thread Adapter

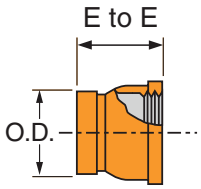

FIGURE 7087 FEMALE THREAD ADAPTER			
Nominal Size	Grooved End O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/16 *52*	0.7 *0.3*
1 1/4 *32*	1.660 *42.2*	2 5/16 *59*	1.4 *0.6*
1 1/2 *40*	1.900 *48.3*	2 5/16 *59*	1.5 *0.7*
2 *50*	2.375 *60.3*	2 1/2 *64*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	– –	1.6 *0.7*
3 *80*	3.500 *88.9*	2 3/4 *70*	2.5 *1.1*
4 *100*	4.500 *114.3*	3 1/4 *83*	4.5 *2.0*

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FIG. 7055 GR X MPT

90° Adapter Elbow

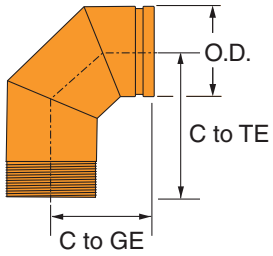

FIGURE 7055 90° ADAPTER ELBOWS				
Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/4 *57*	2 1/4 *57*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	2 3/4 *70*	2 3/4 *70*	1.0 *0.5*
1 1/2 *40*	1.900 *48.3*	2 3/4 *70*	2 3/4 *70*	1.2 *0.5*
2 *50*	2.375 *60.3*	3 1/4 *83*	4 1/4 *108*	2.3 *1.0*
2 1/2 *65*	2.875 *73.0*	3 3/4 *95*	3 3/4 *95*	3.7 *1.7*
3 *80*	3.500 *88.9*	4 1/4 *108*	6 *152*	6.5 *2.9*
3 1/2 *90*	4.000 *101.6*	4 1/2 *114*	6 1/4 *159*	8.2 *3.7*
4 *100*	4.500 *114.3*	5 *127*	7 1/4 *184*	11 *5.0*
6 *150*	6.625 *168.3*	6 1/2 *165*	6 1/2 *165*	19.8 *9.0*

FIG. 7056 GR X MPT

45° Adapter Elbow

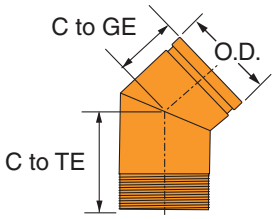

FIGURE 7056 45° ADAPTER ELBOWS				
Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1 3/4 *44*	1 3/4 *44*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	1 3/4 *44*	1 3/4 *44*	0.7 *0.3*
1 1/2 *40*	1.900 *48.3*	1 3/4 *44*	1 3/4 *44*	0.8 *0.4*
2 *50*	2.375 *60.3*	2 *51*	3 *76*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	2 1/4 *57*	2 1/4 *57*	2.2 *1.0*
3 *80*	3.500 *88.9*	2 1/2 *64*	4 1/4 *108*	4.3 *2.0*
3 1/2 *90*	4.000 *101.6*	2 3/4 *70*	2 3/4 *70*	4.2 *1.9*
4 *100*	4.500 *114.3*	3 *76*	5 1/4 *133*	7.5 *3.4*
6 *150*	6.625 *168.3*	3 1/2 *89*	3 1/2 *89*	11.1 *5.0*

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REDUCING BASE SUPPORT ELBOW

FIG. 7050RF – Grooved x 150# Flanged (GxF)

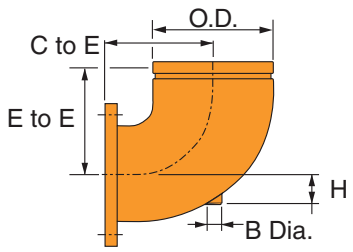

FIGURE 7050 RF REDUCING BASE SUPPORT ELBOWS

Nominal Size	Grooved End O.D.	Center to End	H	B Dia. Threaded	Approx. Wt. Ea. GxF
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*NPSC*	*Lbs./Kg*
6 x 4 *150 x 100*	6.625 *168.3*	12 *305*	2½ *64*	1½ *38*	38.5 *17.5*
6 x 5 *150 x 125*	6.625 *168.3*	12½ *318*	2½ *64*	1½ *38*	45.4 *20.6*
8 x 5 *200 x 125*	8.625 *219.1*	16 *406*	3 *76*	1½ *38*	65.5 *29.7*
8 x 6 *200 x 150*	8.625 *219.1*	16 *406*	3 *76*	1½ *38*	73 *33.1*
10 x 6 *250 x 150*	10.750 *273.1*	19 *483*	3½ *89*	1½ *38*	100 *45.4*
10 x 8 *250 x 200*	10.750 *273.1*	19 *483*	3½ *89*	1½ *38*	127 *57.6*
12 x 8 *300 x 200*	12.750 *323.9*	22 *559*	4 *102*	1½ *38*	155 *70.3*
12 x 10 *300 x 250*	12.750 *323.9*	22 *559*	4 *102*	1½ *38*	186 *84.4*

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GROOVED FLANGE NIPPLES

FIG. 7084 – Groove x Class 150 Flange Nipples

FIG. 7085 – Groove x Class 300 Flange Nipples

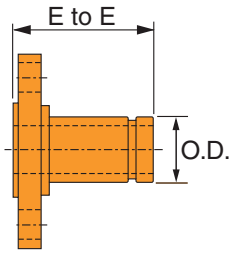

FIGURE 7084 GROOVE X CLASS 150 FLANGE NIPPLES

Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3 *76*	2.5 *1.1*
1¼ *32*	1.660 *42.2*	4 *102*	3.8 *1.7*
1½ *40*	1.900 *48.3*	4 *102*	4.1 *1.9*
2 *50*	2.375 *60.3*	4 *102*	6.0 *2.7*
2½ *65*	2.875 *73.0*	4 *102*	9.2 *4.2*
3 *80*	3.500 *88.9*	4 *102*	10.4 *4.7*
3½ *90*	4.000 *101.6*	4 *102*	14.0 *6.4*
4 *100*	4.500 *114.3*	6 *152*	19.1 *8.7*
5 *125*	5.563 *141.3*	6 *152*	23.0 *10.4*
6 *150*	6.625 *168.3*	6 *152*	29.5 *13.4*
8 *200*	8.625 *219.1*	6 *152*	43.5 *19.7*
10 *250*	10.750 *273.1*	8 *203*	68.2 *30.9*
12 *300*	12.750 *323.9*	8 *203*	96.1 *43.6*
14 *350*	14.000 *355.6*	* *	* *
16 *400*	16.000 *406.4*	* *	* *
18 *450*	18.000 *457.2*	* *	* *
20 *500*	20.000 *508.0*	* *	* *
24 *600*	24.000 *609.6*	* *	* *

FIGURE 7085 GROOVE X CLASS 300 FLANGE NIPPLES

End to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
3 *76*	3.6 *1.6*
4 *102*	4.6 *2.1*
4 *102*	7.1 *3.2*
4 *102*	8.2 *3.7*
4 *102*	11.9 *5.4*
4 *102*	15.5 *7.0*
4 *102*	21.0 *9.5*
6 *152*	28.0 *12.7*
6 *152*	35.0 *15.9*
6 *152*	50.0 *22.7*
6 *152*	72.0 *32.7*
8 *203*	* *
8 *203*	* *
* *	* *
* *	* *
* *	* *
* *	* *
* *	* *

* Contact an Anvil Representative for dimensions & weights.

This product is not UL/ULC Listed or FM Approved.

FIG. 7074

Cap

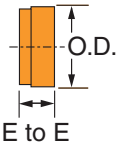

FIGURE 7074 CAP			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1C *25*	1.315 *33.4*	1¼ *32*	0.3 *0.1*
1¼ C *32*	1.660 *42.2*	1¼ *32*	0.4 *0.2*
1½ C *40*	1.900 *48.3*	1¼ *32*	0.5 *0.2*
2 C *50*	2.375 *60.3*	1 *25*	0.5 *0.2*
2½ C *65*	2.875 *73.0*	1 *25*	0.7 *0.3*
3 O.D. C 76.1	*2.996* 76.1	*1* 25	*0.8* 0.4
3 C *80*	3.500 *88.9*	1 *25*	1.1 *0.5*
3½ C *90*	4.000 *101.6*	1 *25*	1.4 *0.6*
4¼ O.D. C 108.0	*4.250* 108.0	*1⅛* 29	*2.0* 0.9
4 C *100*	4.500 *114.3*	1⅛ *29*	2.8 *1.3*
5¼ O.D. C 133.0	*5.236* 133.0	*1⅛* 29	*3.2* 1.5
5½ O.D. C 139.7	*5.500* 139.7	*1⅛* 29	*4.0* 1.8
5 C *125*	5.563 *141.3*	1⅛ *29*	4.0 *1.8*
6¼ O.D. C 159.0	*6.259* 159.0	*1⅛* 29	*5.1* 2.3
6½ O.D. C 165.1	*6.500* 165.1	*1⅛* 29	*6.0* 2.7
6 C *150*	6.625 *168.3*	1 5/16 *33*	6.0 *2.7*
8 C *200*	8.625 *219.1*	1½ *38*	12.5 *5.7*
10 C *250*	10.750 *273.1*	1½ *38*	21.9 *9.9*
12 C *300*	12.750 *323.9*	1½ *38*	33.8 *15.3*
14* *350*	14.000 *355.6*	8½ *216*	40 *18.1*
16* *400*	16.000 *406.4*	9 *229*	45 *20.4*
18* *450*	18.000 *457.2*	10 *254*	58 *26.3*
20* *500*	20.000 *508.0*	11 *279*	79 *35.8*
24* *600*	24.000 *609.6*	12½ *318*	100 *45.4*

* Machined Cap
C - Cast Malleable or Ductile Iron

FIG. 7075

Bull Plug

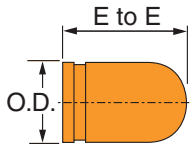

FIGURE 7075 BULL PLUG			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	2.5 *1.1*
2½ *65*	2.875 *73.0*	5 *127*	3.1 *1.4*
3 *80*	3.500 *88.9*	6 *152*	4.4 *2.0*
4 *100*	4.500 *114.3*	7 *178*	7.4 *3.4*
5 *125*	5.563 *141.3*	* *	* *
6 *150*	6.625 *168.3*	10 *254*	18.5 *8.4*

* Contact an Anvil Representative for dimensions & weights.
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FIG. 7068

Cross

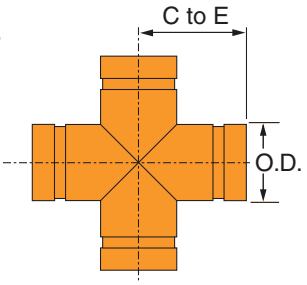

FIGURE 7068 CROSS			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	1.3 *0.6*
1¼ *32*	1.660 *42.2*	2¾ *70*	2.1 *1.0*
1½ *40*	1.900 *48.3*	2¾ *70*	2.5 *1.1*
2 *50*	2.375 *60.3*	3¼ *83*	2.9 *1.3*
2½ *65*	2.875 *73.0*	3¾ *95*	5.2 *2.4*
3 *80*	3.500 *88.9*	4¼ *108*	7.5 *3.4*
3½ *90*	4.000 *101.6*	4½ *114*	9.8 *4.4*
4 *100*	4.500 *114.3*	5 *127*	12.2 *5.5*
5 *125*	5.563 *141.3*	5½ *140*	17.6 *8.0*
6 *150*	6.625 *168.3*	6½ *165*	28.3 *12.8*
8 *200*	8.625 *219.1*	7¾ *197*	48.0 *21.8*
10 *250*	10.750 *273.1*	9 *229*	70.0 *31.8*
12 *300*	12.750 *323.9*	10 *254*	110 *49.9*
14 *350*	14.000 *355.6*	11 *279*	140 *63.5*
16 *400*	16.000 *406.4*	12 *305*	170 *77.1*
18 *450*	18.000 *457.2*	15½ *394*	260 *118*
20 *500*	20.000 *508.0*	17¼ *438*	320 *145*
24 *600*	24.000 *609.6*	20 *508*	585 *265*

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NIPPLES

FIG. 7086

GR x HOSE Nipples

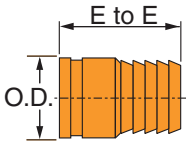

FIGURE 7086 HOSE NIPPLES			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3¼ *83*	0.4 *0.2*
1¼ *32*	1.660 *42.2*	3⅝ *92*	0.7 *0.3*
1½ *40*	1.900 *48.3*	4 *102*	0.8 *0.4*
2 *50*	2.375 *60.3*	4⅝ *117*	1.3 *0.6*
2½ *65*	2.875 *73.0*	5½ *140*	2.1 *1.0*
3 *80*	3.500 *88.9*	6 *152*	3.3 *1.5*
4 *100*	4.500 *114.3*	7¼ *184*	5.5 *2.5*
5 *125*	5.563 *141.3*	9¾ *248*	8.1 *3.7*
6 *150*	6.625 *168.3*	11 *279*	13.2 *6.0*
8 *200*	8.625 *219.1*	12½ *318*	24.0 *10.9*
10 *250*	10.750 *273.1*	14 *356*	29.0 *13.2*
12 *300*	12.750 *323.9*	16 *406*	46.0 *20.9*

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FIG. 7080

GR x GR

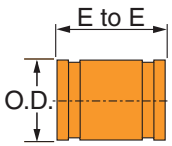


FIG. 7081

GR x MPT

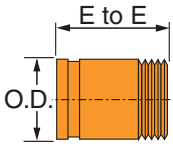
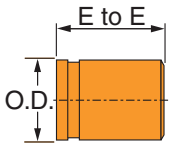


FIG. 7082

GR x BEV



FIGURES 7080, 7081 & 7082 ADAPTER NIPPLES			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3 *76*	0.4 *0.2*
1¼ *32*	1.660 *42.2*	4 *102*	0.8 *0.4*
1½ *40*	1.900 *48.3*	4 *102*	0.9 *0.4*
2 *50*	2.375 *60.3*	4 *102*	1.2 *0.5*
2½ *65*	2.875 *73.0*	4 *102*	1.9 *0.9*
3 *80*	3.500 *88.9*	4 *102*	2.5 *1.1*
3½ *90*	4.000 *101.6*	4 *102*	3.1 *1.4*
4 *100*	4.500 *114.3*	6 *152*	5.5 *2.5*
5 *125*	5.563 *141.3*	6 *152*	7.4 *3.4*
6 *150*	6.625 *168.3*	6 *152*	9.5 *4.3*
8 *200*	8.625 *219.1*	6 *152*	14.2 *6.4*
10 *250*	10.750 *273.1*	8 *203*	27.0 *12.2*
12 *300*	12.750 *323.9*	8 *203*	33.0 *15.0*

This product is not ULC Listed.

FIG. 7062

Bullhead Tee Specialty Tees (GR x GR x FPT)

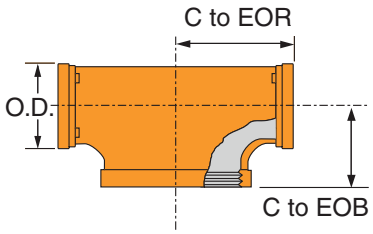


FIGURE 7062 BULLHEAD TEE
(GR x GR x FPT)

Nominal Size	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
5 x 5 x 8 *125 x 125 x 200*	7¾ *197*	5½ *140*	31.0 *14.1*
6 x 6 x 8 *150 x 150 x 200*	7¾ *197*	6½ *165*	37.6 *17.1*

See Fitting Size chart on page 50 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

FIG. 7065

Standpipe Tee (GR x GR x FPT)

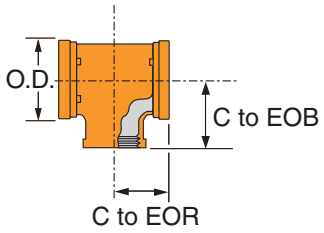


FIGURE 7065 STANDPIPE TEE
(GR x GR x FPT)

Nominal Size	O.D.	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 4 x 2½ *100 x 100 x 65*	4.500 *114.3*	3¼ *83*	4 *102*	7.6 *3.4*
6 x 6 x 2½ *150 x 150 x 65*	6.625 *168.3*	3¼ *83*	5⅛ *130*	11.2 *5.1*

See Fitting Size chart on page 50 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

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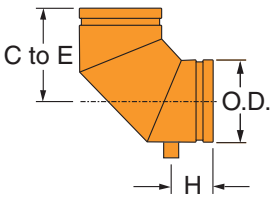
FIG. 7050DR

90° Drain elbow



Available fabricated Schedule 10 only.
Drain elbow has a standard 1" female NPT outlet.

FIGURE 7050DR 90° DRAIN ELBOW

Nominal Size	O.D.	Max Working Pressure	Dimensions		Approx. Wt. Ea.
			C to E	H	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./Kg*
1¼ *32*	1.660 *42.2*	300 *20.7*	2¾ *69*	1¾ *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	300 *20.7*	2¾ *69*	1¾ *44*	1.7 *0.8*
2 *50*	2.375 *60.3*	300 *20.7*	3¼ *83*	1¾ *44*	2.0 *0.9*
2½ *65*	2.875 *73.0*	300 *20.7*	3¾ *95*	1⅞ *48*	2.5 *1.1*
3 *80*	3.500 *88.9*	300 *20.7*	4¼ *108*	2 *51*	3.2 *1.5*
4 *100*	4.500 *114.3*	300 *20.7*	5 *127*	2¼ *57*	4.6 *2.1*
5 *125*	5.583 *141.3*	300 *20.7*	5½ *140*	2⅜ *60*	11.5 *5.2*
6 *150*	6.625 *168.3*	300 *20.7*	6½ *165*	2⅜ *60*	9.6 *4.4*
8 *200*	8.625 *219.1*	300 *20.7*	7¾ *197*	2½ *64*	15.8 *7.2*
10 *250*	10.750 *273.1*	300 *20.7*	9 *229*	2¾ *69*	48.5 *22.0*
12 *300*	12.750 *323.9*	300 *20.7*	10 *254*	2¾ *69*	66.0 *29.0*

GRUVLOK® FIRE-RITE™ SHORT PATTERN FITTINGS

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FIG. 7450

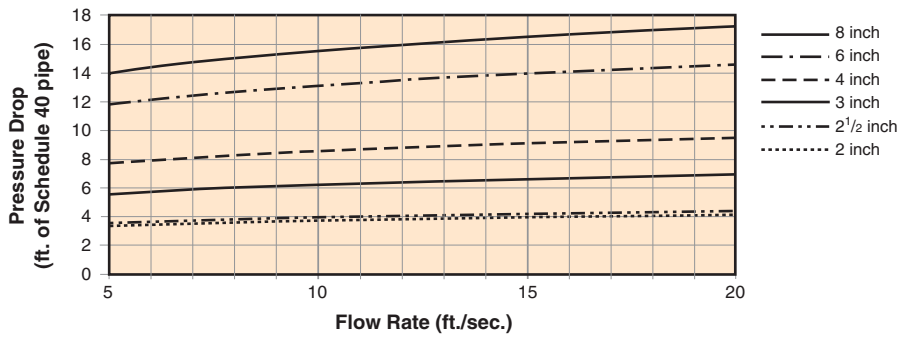
90° Short Pattern Elbow

The Gruvlok® Fire-Rite™ short pattern 90° elbows in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD designed increased internal diameters provides superior flow capability.

FIGURE 7450 90° ELBOW SHORT PATTERN FITTING – PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7450 90° grooved end elbows use the value shown.

Note: Above values are shown for Schedule 40 pipe to be consistent with industry practices.

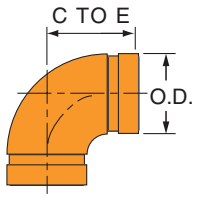


FIGURE 7450 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3 *76*	2.6 *1.2*
3 *80*	3.500 *88.9*	3⅜ *86*	3.5 *1.6*
4 *100*	4.500 *114.3*	4 *102*	6.5 *3.0*
6 *150*	6.625 *168.3*	5½ *140*	14.8 *6.7*
8 *200*	8.625 *219.1*	6⅞ *175*	25.6 *11.6*

All are Ductile Iron.

FIG. 7460

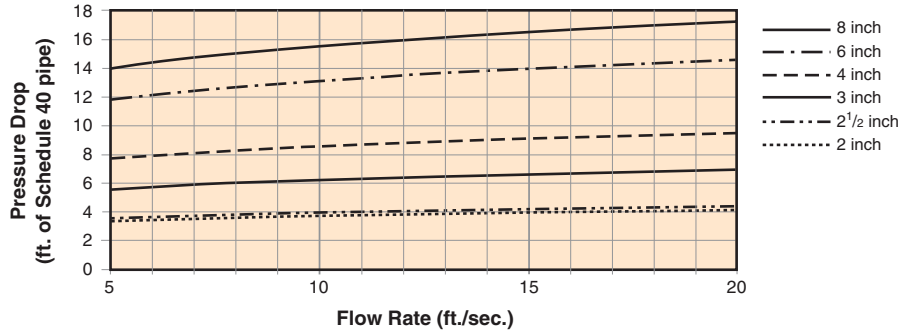
Short Pattern Tee

The Gruvlok® Fire-Rite™ short pattern fitting tees in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD designed increased internal diameters provides superior flow capability.

FIGURE 7460 TEE SHORT PATTERN FITTING – PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7460 Tee branch use 2½ times the value shown.

For Fig. 7460 Tee run use the value shown.

Note: Above values are shown for Schedule 40 pipe to be consistent with industry practices.

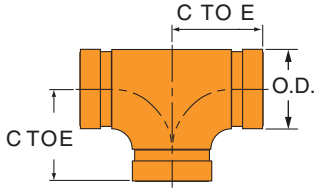


FIGURE 7460 TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	2.5 *1.1*
2½ *65*	2.875 *73.0*	3 *76*	3.5 *1.6*
3 *80*	3.500 *88.9*	3⅜ *86*	4.8 *2.2*
4 *100*	4.500 *114.3*	4 *102*	8.1 *3.7*
6 *150*	6.625 *168.3*	5½ *140*	19.1 *8.7*
8 *200*	8.625 *219.1*	6⅞ *175*	35.2 *16.0*

All are Ductile Iron.

FIG. 7050 3D

Long Radius Elbows

1. Long radius elbows 3D in sizes up to and including 4" are provided with 4" (101.6 mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain-end available - specify choice on order.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± ⅛" (3.2 mm); 8" through 16" ± ¼" (6.4 mm); 18" through 24" + ⅜" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

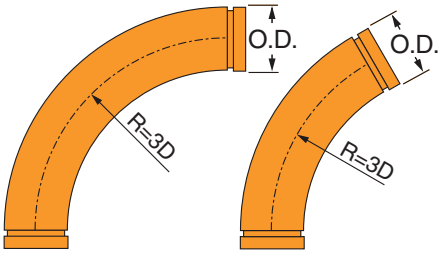


Fig. 7050-3D, 90° Elbow

Fig. 7057-3D, 60° Elbow

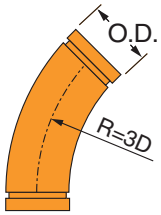


Fig. 7051-3D, 45° Elbow

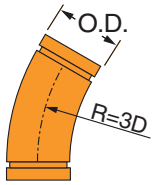


Fig. 7058-3D, 30° Elbow

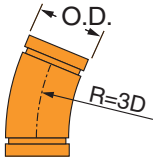


Fig. 7052-3D, 22½° Elbow

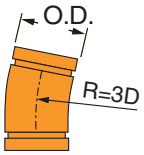


Fig. 7053-3D, 11¼° Elbow

FIGURE 7050-3D 90° ELBOW				FIG. 7057-3D 60° ELBOW		FIG. 7051-3D 45° ELBOW		FIG. 7058-3D 30° ELBOW		FIG. 7052-3D 22½° ELBOW		FIG. 7053-3D 11¼° ELBOW	
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	10 *254*	5.3 *2.4*	7½ *191*	4.3 *2.0*	6½ *165*	3.9 *1.8*	5¾ *146*	3.4 *1.5*	5¼ *133*	3.2 *1.5*	4½ *114*	2.8 *1.3*
2½ *65*	2.875 *73*	11½ *292*	9.5 *4.3*	8¼ *210*	7.7 *3.5*	7¼ *184*	6.7 *3.0*	6 *152*	5.8 *2.6*	5½ *140*	5.3 *2.4*	4¾ *121*	4.6 *2.1*
3 *80*	3.500 *88.9*	13 *330*	14.0 *6.4*	9¼ *235*	11.0 *5.0*	7¾ *197*	9.5 *4.3*	6½ *165*	8.0 *3.6*	5¾ *146*	7.3 *3.3*	5 *127*	6.2 *2.8*
3½ *90*	4.000 *101.6*	14½ *368*	18.6 *8.4*	10 *254*	14.4 *6.5*	8½ *216*	12.3 *5.6*	6¾ *171*	10.2 *4.6*	6 *152*	9.2 *4.2*	5 *127*	7.6 *3.4*
4 *100*	4.500 *114.3*	16 *406*	24.1 *10.9*	11 *279*	18.5 *8.4*	9 *229*	15.7 *7.1*	7¼ *184*	12.8 *5.8*	6½ *165*	11.4 *5.2*	5¼ *133*	9.3 *4.2*
5 *125*	5.563 *141.3*	20 *508*	40.9 *18.6*	13¾ *349*	31.3 *14.2*	11¼ *286*	26.5 *12.0*	9 *229*	21.8 *9.9*	8 *203*	19.4 *8.8*	6½ *165*	15.8 *7.2*
6 *150*	6.625 *168.3*	24 *610*	63.7 *28.9*	16½ *419*	48.8 *22.1*	13½ *343*	41.3 *18.7*	10¾ *273*	33.9 *15.4*	9½ *241*	30.1 *13.7*	7¾ *197*	24.6 *11.2*
8 *200*	8.625 *219.1*	32 *813*	127.8 *58.0*	22 *559*	97.9 *44.4*	18 *457*	82.9 *37.6*	14½ *368*	68.0 *30.8*	12¾ *324*	60.5 *27.4*	10½ *267*	49.3 *22.4*
10 *250*	10.750 *273.1*	40 *1016*	226.4 *102.7*	27¼ *692*	173.4 *78.7*	22½ *572*	146.9 *66.6*	18 *457*	120.5 *54.7*	16 *406*	107.2 *48.6*	13 *330*	87.3 *39.6*
12 *300*	12.750 *323.9*	48 *1219*	332.7 *150.9*	32¾ *832*	254.8 *115.6*	27 *686*	215.9 *97.9*	21¾ *552*	177.0 *80.3*	19¼ *489*	157.5 *71.4*	15½ *394*	128.3 *58.2*
14 *350*	14.000 *355.6*	56 *1422*	427.3 *193.8*	38¼ *972*	327.3 *148.5*	31½ *800*	227.3 *103.1*	25¼ *641*	227.3 *103.1*	22½ *572*	202.3 *91.8*	18¼ *464*	164.8 *74.8*
16 *400*	16.000 *406.4*	64 *1626*	560.1 *254.1*	43¾ *1111*	429.0 *194.6*	36 *914*	363.5 *164.9*	29 *737*	297.9 *135.1*	25½ *648*	265.2 *120.3*	20¾ *527*	216.0 *98.0*
18 *450*	18.000 *457.2*	72 *1829*	710.7 *322.4*	49¼ *1251*	544.4 *246.9*	40½ *1029*	461.3 *209.2*	32½ *826*	378.1 *171.5*	28¾ *730*	336.5 *152.6*	23.35 *593*	274.1 *124.3*
20 *500*	20.000 *508*	80 *2032*	879.3 *398.8*	54¾ *1391*	673.5 *305.5*	45 *1143*	540.7 *245.3*	36 *914*	467.8 *212.2*	32 *813*	416.3 *188.8*	26 *660*	339.2 *153.9*
24 *600*	24.000 *609.6*	96 *2438*	1270.3 *576.2*	65½ *1664*	973.0 *441.3*	53¾ *1365*	824.4 *373.9*	43¼ *1099*	675.7 *304.1*	38¼ *972*	601.4 *272.8*	31 *787*	490.0 *222.3*

FIG. 7050 5D

Long Radius Elbows

1. Long radius elbows 5D in sizes up to and including 4" are provided with 4" (101.6 mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain-end available.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16" ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

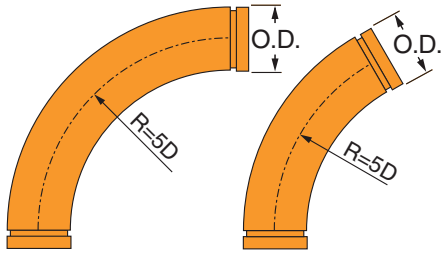


Fig. 7050-5D, 90° Elbow

Fig. 7057-5D, 60° Elbow

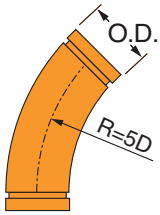


Fig. 7051-5D, 45° Elbow

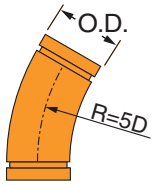


Fig. 7058-5D, 30° Elbow

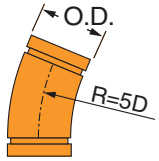


Fig. 7052-5D, 22½° Elbow

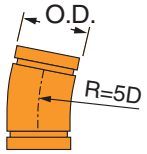


Fig. 7053-5D, 11¼° Elbow

FIGURE 7050-5D 90° ELBOW				FIG. 7057-5D 60° ELBOW		FIG. 7051-5D 45° ELBOW		FIG. 7058-5D 30° ELBOW		FIG. 7052-5D 22½° ELBOW		FIG. 7053-5D 11¼° ELBOW	
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	14 *356*	7.2 *3.3*	9¾ *248*	5.6 *2.5*	8¼ *210*	4.8 *2.2*	6¾ *171*	4.0 *1.8*	6 *152*	3.6 *1.6*	5 *127*	3.0 *1.4*
2½ *65*	2.875 *73*	16½ *419*	13.3 *6.0*	11¼ *286*	10.2 *4.6*	9¼ *235*	8.6 *3.9*	7½ *191*	7.0 *3.2*	6½ *165*	6.2 *2.8*	5¼ *133*	5.0 *2.3*
3 *80*	3.500 *88.9*	19 *483*	19.9 *9.0*	12¾ *324*	15.0 *6.8*	10¼ *260*	12.5 *5.7*	8 *203*	10.0 *4.5*	7 *178*	8.8 *4.0*	5½ *140*	6.9 *3.1*
3½ *90*	4.000 *101.6*	21½ *546*	26.9 *12.2*	12¼ *311*	20.0 *9.1*	11¼ *286*	16.5 *7.5*	8¾ *222*	13.0 *5.9*	7½ *191*	11.3 *5.1*	5¾ *146*	8.7 *3.9*
4 *100*	4.500 *114.3*	24 *610*	35.4 *16.1*	15½ *394*	26.0 *11.8*	12½ *318*	21.3 *9.7*	9½ *241*	16.6 *7.5*	8 *203*	14.3 *6.5*	6 *152*	10.7 *4.9*
5 *125*	5.563 *141.3*	30 *762*	60.0 *27.2*	19½ *495*	44.1 *20.0*	15½ *394*	36.1 *16.4*	11¾ *298*	28.1 *12.7*	10 *254*	24.1 *10.9*	7½ *191*	18.2 *8.3*
6 *150*	6.625 *168.3*	36 *914*	93.5 *42.4*	23¼ *591*	68.6 *31.1*	18½ *470*	56.2 *25.5*	14 *356*	43.8 *19.9*	12 *305*	37.6 *17.1*	9 *229*	28.3 *12.8*
8 *200*	8.625 *219.1*	48 *1219*	187.6 *85.1*	31 *787*	137.7 *62.5*	24½ *622*	112.8 *51.2*	18¾ *476*	87.9 *39.9*	16 *406*	75.4 *34.2*	12 *305*	56.8 *25.8*
10 *250*	10.750 *273.1*	60 *1524*	332.4 *150.8*	39 *991*	244.1 *110.7*	30¾ *781*	199.9 *90.7*	23½ *597*	155.8 *70.7*	20 *508*	133.7 *60.6*	15 *381*	100.6 *45.6*
12 *300*	12.750 *323.9*	72 *1829*	488.4 *221.5*	46¾ *1187*	358.6 *162.7*	37 *940*	293.7 *133.2*	28 *711*	228.9 *103.8*	24 *610*	196.4 *89.1*	18 *457*	147.8 *67.0*
14 *350*	14.000 *355.6*	84 *2134*	627.4 *284.6*	54½ *1384*	460.7 *209.0*	43 *1092*	377.3 *171.1*	32¾ *832*	294.0 *133.4*	28 *711*	252.3 *114.4*	21 *533*	189.8 *86.1*
16 *400*	16.000 *406.4*	96 *2438*	822.2 *372.9*	62¼ *1581*	603.8 *273.9*	49¼ *1251*	494.5 *224.3*	37½ *953*	385.3 *174.8*	32 *813*	330.7 *150.0*	24 *610*	248.8 *112.9*
18 *450*	18.000 *457.2*	108 *2743*	1,043.4 *473.3*	70 *1778*	766.2 *347.5*	55¼ *1403*	627.6 *284.7*	42¼ *1073*	489.0 *221.8*	36 *914*	419.7 *190.4*	27 *686*	315.7 *143.2*
20 *500*	20.000 *508*	120 *3048*	1,290.9 *585.5*	77¾ *1975*	947.9 *430.0*	61½ *1562*	776.4 *352.2*	46¾ *1187*	605.0 *274.4*	40 *1016*	519.2 *235.5*	30 *762*	390.6 *177.2*
24 *600*	24.000 *609.6*	144 *3658*	1,864.8 *845.9*	93¼ *2369*	1,369.3 *621.1*	73¾ *1873*	1,121.6 *508.7*	56¼ *1429*	873.9 *396.4*	48 *1219*	750.1 *340.2*	35¾ *908*	564.3 *256.0*

FIG. 7050 6D

Long Radius Elbows

1. Long radius elbows 6D in sizes up to and including 4" are provided with 4" (101.6 mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain-end available.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16" ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

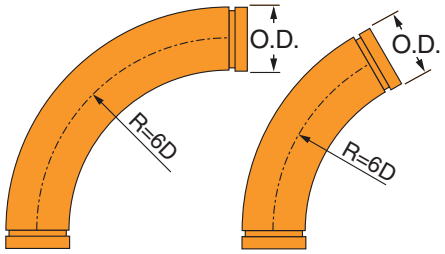


Fig. 7050-6D, 90° Elbow

Fig. 7057-6D, 60° Elbow

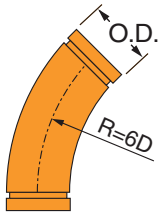


Fig. 7051-6D, 45° Elbow

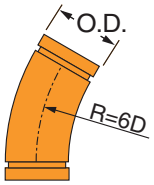


Fig. 7058-6D, 30° Elbow

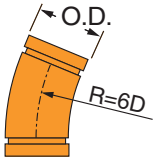


Fig. 7052-6D, 22½° Elbow

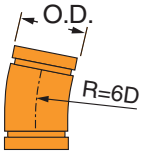


Fig. 7053-6D, 11¼° Elbow

FIGURE 7050-6D 90° ELBOW			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	16 406	8.2 3.7
2½ 65	2.875 73	19 483	15.2 6.9
3 80	3.500 88.9	22 559	22.9 10.4
3½ 90	4.000 101.6	25 635	31.1 14.1
4 100	4.500 114.3	28 711	41.1 18.6
5 125	5.563 141.3	35 889	69.6 31.6
6 150	6.625 168.3	42 1067	108.4 49.2
8 200	8.625 219.1	56 1422	217.5 98.7
10 250	10.750 273.1	70 1778	385.4 174.8
12 300	12.750 323.9	84 2134	566.2 256.8
14 350	14.000 355.6	98 2489	727.4 329.9
16 400	16.000 406.4	112 2845	953.3 432.4
18 450	18.000 457.2	126 3200	1,209.7 548.7
20 500	20 508	140 3556	1,496.6 678.8
24 600	24 609.6	168 4267	2,162.0 980.7

FIG. 7057-6D 60° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
11 279	6.3 2.9
12¾ 324	11.4 5.2
14½ 368	17.0 7.7
16¼ 413	22.8 10.3
18 457	29.8 13.5
22¼ 565	50.5 22.9
26¾ 679	78.6 35.7
35¾ 908	157.7 71.5
44¾ 1137	279.4 126.7
53½ 1359	410.5 186.2
62½ 1588	527.3 239.2
71½ 1816	691.1 313.5
80½ 2045	877.1 397.8
89¼ 2267	1,085.1 492.2
107¼ 2724	1,567.5 711.0

FIG. 7051-6D 45° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
9 229	5.3 2.4
10¼ 260	9.5 4.3
11½ 292	14.0 6.4
12¾ 324	18.6 8.4
14 356	24.1 10.9
17½ 445	40.9 18.6
21 533	63.7 28.9
28 711	127.8 58.0
35 889	226.4 102.7
41¾ 1060	332.7 150.9
48¾ 1238	427.3 193.8
55¾ 1416	560.1 254.1
62¾ 1594	710.7 322.4
69¾ 1772	879.3 398.8
83¾ 2127	1,270.3 576.2

FIG. 7058-6D 30° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
7¼ 184	4.3 2.0
8 203	7.7 3.5
8¾ 222	11.0 5.0
9¾ 248	14.4 6.5
10½ 267	18.5 8.4
13 330	31.3 14.2
15¾ 400	48.8 22.1
21 533	97.9 44.4
26 660	173.4 78.7
31¼ 794	254.8 115.6
36½ 927	327.3 148.5
41¾ 1060	429.0 194.6
47 1194	544.4 246.9
52¼ 1327	673.5 305.5
62½ 1588	973.0 441.3

FIG. 7052-6D 22½° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
6½ 165	3.9 1.8
7 178	6.7 3.0
7½ 191	9.5 4.3
8¼ 210	12.3 5.6
8¾ 222	15.7 7.1
11 279	26.5 12.0
13¼ 337	41.3 18.7
17½ 445	82.9 37.6
22 559	146.9 66.6
26¼ 667	215.9 97.9
30¾ 781	277.3 125.8
35¼ 895	363.5 164.9
39½ 1003	461.3 209.2
44 1118	570.7 258.9
52.34 1329	824.4 373.9

FIG. 7053-6D 11¼° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
5¼ 133	3.2 1.5
5½ 140	5.3 2.4
5¾ 146	7.3 3.3
6 152	9.2 4.2
6½ 165	11.4 5.2
8 203	19.4 8.8
9½ 241	30.1 13.7
12¾ 324	60.5 27.4
16 406	107.2 48.6
19 483	157.5 71.4
22¼ 565	202.3 91.8
25½ 648	265.2 120.3
28¾ 730	336.5 152.6
31¾ 806	416.3 188.8
38¼ 972	601.4 272.8

SERIES 7700

Butterfly Valve

AN-7721-3

Series 7700 butterfly valve
with 10 position lever lock

AN-7722-3

Series 7700 butterfly valve
with gear operator

Used in commercial grooved-end piping systems 2" through 12".

The uniqueness of the Series 7700 Gruvlok Butterfly Valve begins with the spherical bore of the disc seat area. This facilitates a constant DISC-TO-SEAT loading that maintains a leak tight stem seal regardless of disc position. The stem sealing force is constant through the full disc cycle and operating torques are kept low which increases valve life. The design provides a bubble tight seal from full vacuum to 300 psi when the valve is closed. The valve is rated for dead-end service to a full pressure rating of 300 psi.

NSF/ANSI 61

2" - 10" Series 7700
Certified to NSF/ANSI 61
(cold water) and Annex G

The stem-to-disc connection provides zero backlash. The high strength, corrosion resistant, stainless steel stems are blow-out proof. Each stem is fitted with a secondary seal that also provides a lifetime lubrication chamber.

The Series 7700 valve is designed with the contractor in mind. The valve body is a rugged one-piece casting with an integral mounting base for gear operator or handle actuation, while providing room for a minimum of 2" of pipe insulation. The valve is designed and manufactured to meet or exceed the requirements of MSS SP-67.

For data on fire protection listings/approvals, contact your Anvil representative.

SERIES 7700

Butterfly Valve

MATERIAL SPECIFICATIONS

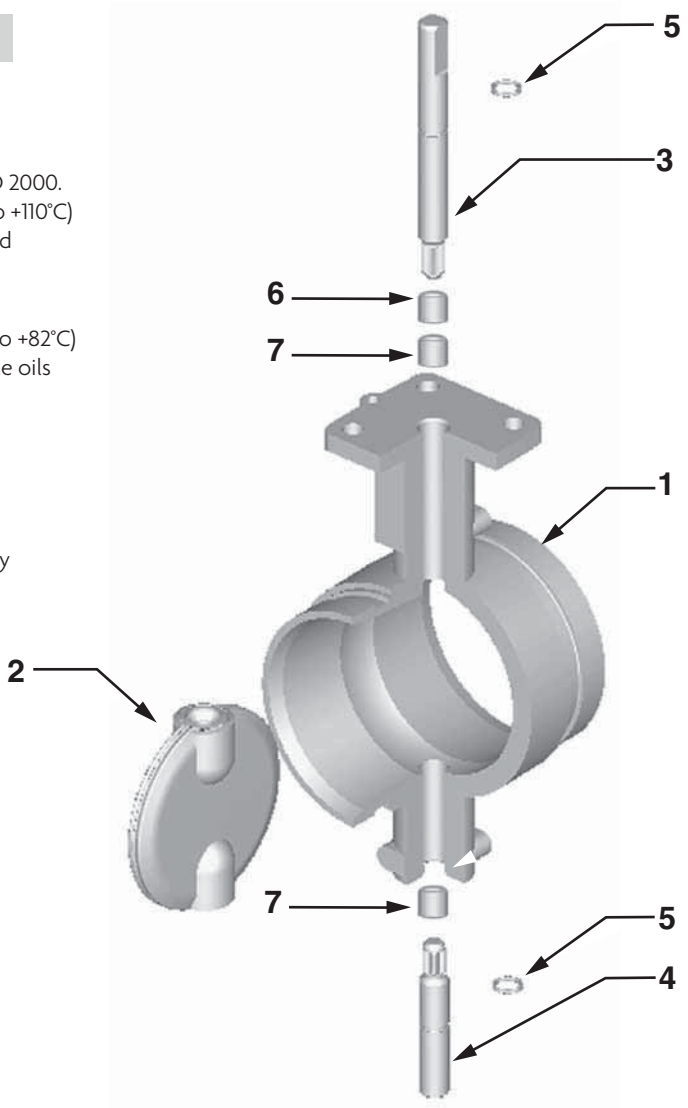
1. **BODY:** Ductile Iron conforming to ASTM A 536, Grade 65-45-12
   Body Coating: Nylon: +230°F (+110°C) maximum service temperature
2. **DISC:** Ductile Iron conforming to ASTM A 536 Grades 65-45-12
   Disc Encapsulation: Properties as specified in accordance with ASTM D 2000.
   ❑ **Grade E** (EPDM): Service Temperature Range -40°F to +230°F (-40°C to +110°C)
   Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.
   NOT FOR USE IN PETROLEUM SERVICES.

   ❑ **Grade T** (Nitrile): Service Temperature Range -20°F to +180°F (-29°C to +82°C)
   Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
   NOT FOR USE IN HOT WATER SERVICES.

3, 4. **UPPER AND LOWER SHAFT:** Type 416 Stainless Steel

5. **O-RINGS:** Compatible with disc coating

6, 7. **TOP AND BOTTOM BRONZE SLEEVE BUSHINGS:** 8", 10", & 12" Valve only



*** Special Options -**
Call an Anvil Representative for pricing and availability.
E- Silicone Free

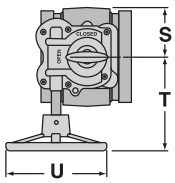
GRUVLOK BUTTERFLY VALVE SERIES 7700 (ORDERING INFORMATION)

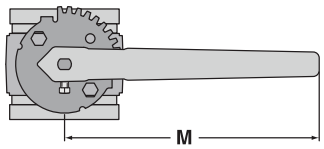
Sample Part Number 8" AN7721-3* —>	8"	A	N	77	2	1 -	3*
	Size	Body Style	Body Coating	Series	Disc Coating	Operator	Stem
	2" - 12"	A	**N** - Nylon	77-77XX	**1** - Nitrile (Grade T) **2** - EPDM (Grade E)	**0** - None **1** - 10 Pos. L/Lock **2** - Gear Operator **D** - Infinite Pos. w/Memory Stop **4** - Short 10 Pos. L/lock Operator	**3** - 416 S.S.

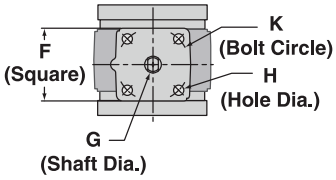
NOTE: For operator safety, hand levers on 8" valves are limited to applications with a 25 PSI (1.7 bar) maximum pressure.
For operator safety, hand levers on 10" and 12" valves are not available.

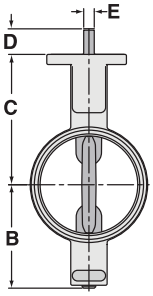
SERIES 7700

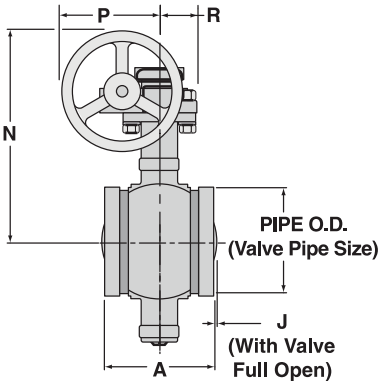
Butterfly Valve

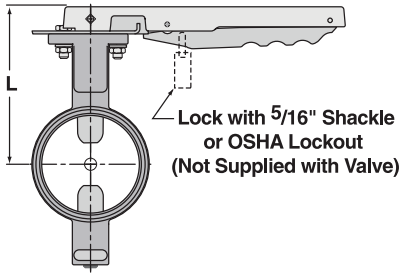












SERIES 7700 BUTTERFLY VALVE DIMENSIONS

Dimensions	Valve Size (ANSI/DN)								
	2	2½	3	4	5	6	8	10	12
In./mm	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*
O.D. *In./mm*	2⅜ *60.3*	2⅞ *73.0*	3½ *88.9*	4½ *114.3*	5⁹⁄₁₆ *141.3*	6⅝ *168.3*	8⅝ *219.1*	10¾ *273.1*	12¾ *323.9*
A	3³⁄₁₆ *81.0*	3¹³⁄₁₆ *96.8*	3¹³⁄₁₆ *96.8*	4⅝ *117.3*	5¹³⁄₁₆ *147.6*	5¹³⁄₁₆ *147.6*	5¼ *133.4*	6¼ *158.8*	6½ *165.1*
B	3 *75.4*	3³⁄₁₆ *80.8*	3¹³⁄₁₆ *96.5*	4¼ *108.5*	5 *126.5*	5½ *138.9*	6¹⁵⁄₁₆ *175.8*	8 *202.9*	9 *229.4*
C	4³⁄₁₆ *105.9*	4⅜ *111.3*	5¹⁄₁₆ *129.0*	5⅜ *136.7*	5⅞ *149.4*	6⅜ *161.8*	7¾ *196.9*	9½ *240.3*	10½ *266.7*
D	1¹⁄₁₆ *26.9*	1¹⁄₁₆ *26.9*	1¹⁄₁₆ *26.9*	1¹⁄₁₆ *26.9*	1¹⁄₁₆ *26.9*	1¹⁄₁₆ *26.9*	1⅝ *41.1*	1⅝ *41.1*	1⅝ *41.1*
E	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	¾ *19.1*	¾ *19.1*	¾ *19.1*
F	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	5 *127.0*	5 *127.0*	5 *127.0*
G	⁹⁄₁₆ *14.3*	⁹⁄₁₆ *14.3*	⁹⁄₁₆ *14.3*	⁹⁄₁₆ *14.3*	⅞ *22.2*	⅞ *22.2*	1 *25.4*	1¼ *31.8*	1¼ *31.8*
H	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	7⁄₁₆ *11.1*	½ *13.5*	½ *13.5*	½ *13.5*
J	- -	- -	- -	- -	- -	⅛ *3.3*	1⅜ *34.8*	1⅞ *47.0*	2¾ *70.1*
K	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	5 *127.0*	5 *127.0*	5 *127.0*
L	5⁵⁄₁₆ *135.1*	5½ *140.5*	6¼ *158.2*	6½ *165.9*	7 *178.6*	7½ *191.0*	9⁷⁄₁₆ *240.3*	- -	- -
M	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	15 *381.0*	- -	- -
N	7¹³⁄₁₆ *198.0*	8 *203.3*	8¹¹⁄₁₆ *221.1*	9 *228.7*	9½ *241.4*	10 *253.9*	14¹⁵⁄₁₆ *379.2*	16⅝ *422.7*	20¹¹⁄₁₆ *525.3*
P	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	8¹⁄₁₆ *204.5*	8¹⁄₁₆ *204.5*	11⅝ *295.4*
R	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	2⁵⁄₁₆ *58.5*	2⁵⁄₁₆ *58.5*	2⁹⁄₁₆ *65.5*
S	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2⅝ *66.0*	2⅝ *66.0*	3¼ *83.0*
T	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	10¹³⁄₁₆ *275.3*	10¹³⁄₁₆ *275.3*	13¹³⁄₁₆ *350.3*
U	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	12 *304.8*	12 *304.8*	18 *457.2*

Note: 3" or 5" handwheels may be included on valves sizes 2" - 4". Contact your Anvil Rep. for additional information.

SERIES 7700

Butterfly Valve Performance Data

Maximum Working Pressure Rating: 300 PSI

(Commercial Applications - Sizes 2" thru 12")

CV VALUES

Valve Size	O.D.	Disc Position (degrees open)							
		25°	30°	40°	50°	60°	70°	80°	90°
In./mm	*In./mm*								
2 *50*	2.375 *60.3*	4 *0.3*	7 *0.5*	19 *1.3*	44 *3.0*	48 *3.3*	80 *5.5*	111 *7.7*	158 *10.9*
2½ *65*	2.875 *73.0*	9 *0.6*	14 *1.0*	34 *2.3*	78 *5.4*	84 *5.8*	142 *9.8*	196 *13.5*	280 *19.3*
3 *80*	3.500 *88.9*	14 *1.0*	20 *1.4*	50 *3.4*	112 *7.7*	128 *8.8*	215 *14.8*	285 *19.7*	400 *27.6*
4 *100*	4.500 *114.3*	29 *2.0*	41 *2.8*	100 *6.9*	239 *16.5*	250 *17.2*	420 *29.0*	582 *40.1*	826 *57.0*
5 *125*	5.563 *141.3*	62 *4.3*	76 *5.2*	182 *12.5*	415 *28.6*	445 *30.7*	780 *53.8*	1,100 *75.8*	1,480 *102.0*
6 *150*	6.625 *168.3*	96 *6.6*	141 *9.7*	325 *22.4*	755 *52.1*	809 *55.8*	1,370 *94.5*	1,920 *132.4*	2,678 *184.6*
8 *200*	8.625 *219.1*	172 *11.9*	252 *17.4*	592 *40.8*	1,365 *94.1*	1,460 *100.7*	2,430 *167.5*	3,410 *235.1*	4,819 *332.3*
10 *250*	10.750 *273.1*	230 *15.9*	328 *22.6*	792 *54.6*	1,825 *125.8*	1,962 *135.3*	3,260 *224.8*	4,590 *316.5*	6,431 *443.4*
12 *300*	12.750 *323.9*	418 *28.8*	604 *41.6*	1,440 *99.3*	3,350 *231.0*	3,590 *247.5*	5,980 *412.3*	8,750 *603.3*	11,947 *823.7*

HEADLOSS EQUIVALENT LENGTH OF PIPE

Valve Size	O.D.	Equivalent Feet of Pipe* C=120			Max. Insulating Thickness
		Sch. 10	Sch. 30	Sch. 40	
In./mm	*In./mm*	*Ft./m*			*In./mm*
2 *50*	2.375 *60.3*	5.8 *1.8*	- -	4.7 *1.4*	2 *50*
2½ *65*	2.875 *73.0*	5.1 *1.6*	- -	3.7 *1.1*	2½ *65*
3 *80*	3.500 *88.9*	9.6 *2.9*	- -	7.2 *2.2*	2 *50*
4 *100*	4.500 *114.3*	7.5 *2.3*	- -	5.7 *1.7*	2½ *65*
5 *125*	5.563 *141.3*	7.0 *2.1*	- -	5.6 *1.7*	2½ *65*
6 *150*	6.625 *168.3*	6.1 *1.9*	- -	4.8 *1.5*	2½ *65*
8 *200*	8.625 *219.1*	6.3 *1.9*	5.7 *1.7*	- -	2½ *65*
10 *250*	10.750 *273.1*	11.3 *3.4*	10.2 *3.1*	- -	3 *80*
12 *300*	12.750 *323.9*	8.4 *2.6*	7.4 *2.3*	- -	3½ *90*

* The equivalent feet of pipe is based on the Hazen and Williams formula and the flow rates typically used with each size valve.

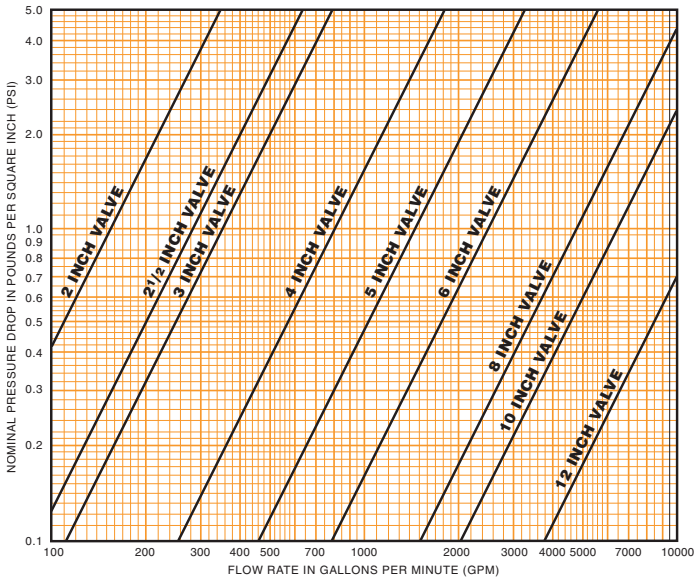
VALVE WEIGHT AND TORQUE VALUES

Valve Size	O.D.	* Approx. Wt. Ea.	Operating Pressure				
			50 PSIG	100 PSIG	150 PSIG	200 PSIG	300 PSIG
In./mm	*In./mm*	*Lbs./Kg*	*†Breakaway Torque (In. - Lbs) / N-m*				
2 *50*	2.375 *60.3*	5 *2.3*	65 *7.3*	72 *8.1*	75 *8.5*	80 *9.0*	85 *9.6*
2½ *65*	2.875 *73.0*	10 *4.5*	75 *8.5*	82 *9.3*	82 *9.3*	90 *10.2*	94 *10.6*
3 *80*	3.500 *88.9*	11 *5.0*	75 *8.5*	85 *9.6*	95 *10.7*	115 *13.0*	120 *13.6*
4 *100*	4.500 *114.3*	15 *6.8*	180 *20.3*	195 *22.0*	200 *22.6*	205 *23.2*	220 *24.9*
5 *125*	5.563 *141.3*	20 *9.0*	224 *25.3*	307 *34.7*	320 *36.2*	347 *39.2*	452 *51.1*
6 *150*	6.625 *168.3*	46 *20.9*	276 *31.2*	376 *42.5*	404 *45.6*	428 *48.4*	599 *67.7*
8 *200*	8.625 *219.1*	68 *30.8*	613 *69.3*	694 *78.4*	794 *89.7*	880 *99.4*	1,067 *120.6*
10 *250*	10.750 *273.1*	78 *35.4*	742 *83.8*	864 *97.6*	1,160 *131.1*	1,452 *164.1*	1,680 *189.8*
12 *300*	12.750 *323.9*	91 *41.3*	2,220 *250.8*	2,633 *297.5*	2,917 *329.6*	3,210 *362.7*	4,200 *474.5*

† These values are valid for water and lubricating fluid service only.
Contact Anvil for information on torques for dry and non-lubricating fluid service.

* Weights may vary based on valve options selected.

PRESSURE DROP (PSI) VS. (GPM)



SERIES 7700

Butterfly Valve

Resistance to various chemicals, as a function of temperature °F (Fahrenheit)

NYLON COATING

Coating Condition after 18 months immersion

RESISTANCE	68°F	104°F	140°F	176°F
Alcohols				
benzyl alcohol	L	P	P	P
butanol	G***	L	P	
ethanol (pure)	G***	G	L	
glycerine (pure)	G	G	L	P
glycol	G	G	G	P
methanol (pure)	G***	L	P	
Chlorinated solvents				
carbon tetrachloride	P			
methyl bromide	G	P		
methyl chloride	G	P		
perchloroethylene	G	G	L	
trichloroethane	L	P		
trichloroethylene	G	L		
Phenols				
	P	P	P	P
Various Organic Compounds				
anethole	G			
carbon disulphide	G***	L**	P	
diacetone alcohol	G	G***	L	P
dimethyl formamide	G	G	L	
ethylene chlorhydrin	P	P		
ethylene oxide	G	G	L	P
furfurol	G	G***	L	P
glucose	G	G	G	G
tetraethyl lead	G			
tetrahydrofurare	G	G	L	
Salts, esters, ethers				
amyl acetate	G	G	G	L
butyl acetate	G	G	G	L
diethyl ether		G		
dioctylphosphate	G	G	G	L
dioctylphthalate	G	G	G	L
ethyl acetate	G	G	G	
fatty acid esters	G	G	G	G
methyl acetate	G	G	G	
methyl sulfate	G	L		
tributylphosphaate	G	G	G	L
tricresylphosphate	GG	G	G	L
Various Products				
beer	G			
cider	G			
crude petroleum	G	G	G***	
diesel fuel	G	G	G***	
fruit juices	G	G		
fuel-oil	G	G	G	
greases	G	G	G	G
ground nut oil	G	G		
high octane gasoline	G	G	G***	
kerosene (paraffin)	G	G	G***	
linseed cake	G	G	G	G
milk	G	G	G	G
mustard	G			
normal gasoline	G	G	G***	
oils	G	G	G	G

RESISTANCE	68°F	104°F	140°F	176°F
Various Products (cont'd.)				
solutions or emulsions of D.D.T. or lindane hudroxy-quinoline (agricultural sprays)	G			
soap solution	G			
stearin	G	G	G	
solvent naptha	G	G	G***	
natural gas	G	G		
turpentine	G	G	G***	
vinegar	G			
wine	G			
Inorganic Acids				
chromic acid (10%)	P	P	P	P
hydrochlorhic acid (1%)	G	L	P	P
hydrochlorhic acid (10%)	G	L	P	P
nitric acid (all concentrations)	P	P	P	P
phosphoric acid (50%)	G	L	P	P
sulphuric acid (1%)	G	L	L	P
sulphuric acid (10%)	G	L	P	P
sulphur trioxide	L	P	P	P
Other Inorganic products				
agriculture sprays	G	G		
bleach solutions	L	P	P	P
bromine	P	P		
chlorine	P	P	P	P
fluorine	P	P	P	P
hydrogen	G	G	G	G
hydrogen peroxide (20 volumes)	G	L		
mercury	G	G	G	G
oxygen	G	G	L	P
ozone	L	P	P	P
potassium permanganate (5%)	P	P		
sea water	G	G	G	
soda water	G	G	G	G
sulphur	G	G		
water	G	G	G	G
Aldehydes & Ketones				
acetaldehyde	G	L	P	
acetone	G	G***	L	P
benzaldehyde	G	L	P	
cyclohexanone	G	L	P	
formaldehyde (technical grade)	G	L	P	
methylethylketone (MEK)	G	G	L	P
methylethylketone (MIBK)	G	G	L	P
Hydrocarbons				
acetylene	G	G	G	G
benzene	G	G***	L	
butane	G	G	G	
cyclohexane	G	G	G	L
decaline	G	G	G	L
HFA (Forane®)	G			
hexane	G	G	G	
methane	G	G	G	
naphthalene	G	G	G	L
propane	G	G	G	
styrene	G	G***		

RESISTANCE	68°F	104°F	140°F	176°F
Hydrocarbons (cont'd.)				
tulene	G	G***	L	L
xylene	G	G***	L	L
Inorganic Bases				
ammonium hydroxide (concentrated)	G	G	G	G
ammonia (liquid or gas)	G	G		
lime-wash	G	G	G	
potassium hydroxide (50%)	G	L	P	P
sodium hydroxide (5%)	G	G	L	
sodium hydroxide (10%)	G	L	L	
sodium hydroxide (50%)	G	L	P	P
Organic acids & anhydrides				
acetic acid	L	P	P	P
acetic anhydrie	L	P	P	P
citric acid	G	G	L	P
formic acid	P	P	P	P
lactic acid	G	G	G	L
oleic acid	G	G	G	L
oxalic acid	G	G	L	P
picric acid	L	P	P	P
tartaric acid (saturated solution)	G	G	G	L
uric acid	G	G	G	L
Inorganic Salts				
alum	G	G	G	
aluminium sulphate	G	G	G	G
ammonium nitrate	G	G	G	
barium chloride	G	G	G	G
calcium arsenate (concentrated solutions or slurries)	G	G	G	
calcium chloride	G	G	G	G
calcium sulphate	G	G	L	
copper sulphate	G	G	G	G
diammonium phosphate	G	G	L	
magnesium chloride (50%)	G	G	G	G
potassium ferrocyanide	G	G	G	
potassium nitrate	G*	L*	P	P
potassium sulphate	G	G	G	G
sodium carbonate	G	G	L	P
sodium chloride (saturated)	G	G	G	G
sodium silicate	G	G	G	
sodium sulphide	G	L	L	
trisodium phosphate	G	G	G	G
Organic bases				
aniline (pure)	L	P	P	P
diethanolamine (20%)	G	G***	G***	L
pyridine (pure)	L	P	P	P
urea	G	G	L	L

LEGEND		
*	=	Slight Yellowing
**	=	Yellowing
***	=	Swelling observed
G	=	Good
L	=	Limited
P	=	Poor

SERIES 7600

Butterfly Valve

The versatile Series 7600 Grooved-End Butterfly Valve has features that can satisfy a wide range of service requirements and allow it to be used with diverse fluids. Its ductile iron body is epoxy coated to resist atmospheric attack, and the elastomer encapsulated disc can be ordered with EPDM or nitrile materials. Rugged enough to take the punishment, yet the Series 7600 Valve is light in weight for easy handling and installation.

The Series 7600 Valve is rated 200 PSI (13.8 bar) to full vacuum, at temperatures from 0° to 150° F (-17.8° to 65.6° C). Every valve is seat tested to 110% of rated pressure.

GENERAL SPECIFICATIONS

BODY: One-piece ductile iron, fully epoxy coated – light weight for easy handling.

DISC: Streamlined profile for maximum flow and minimal seat wear. The ductile iron disc is available with a choice of EPDM or Nitrile coverings.

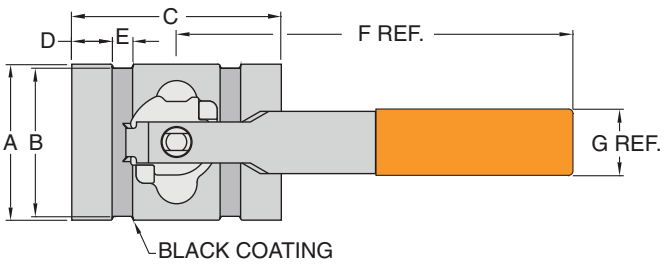
STEM/DISC ATTACHMENT: A splined interference fit creates a permanent rigid connection between the disc and stem, and eliminates the need for pins or bolts in the flow way.

STEM: Two-piece design for maximum flow. Top stem is Double D, giving positive indication of disc position at all times.

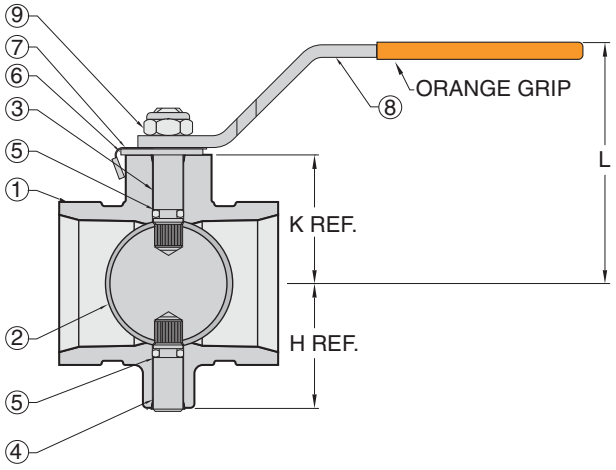
STEM SEAL: The interference between the rubber covered disc hub and the smooth, epoxy coated body provides the primary stem seal. O-rings on both upper and lower stems provide a secondary seal.

HANDLE: Two position on/off handle is standard.

TESTING AND CONFORMANCE: Testing to MSS SP-67. Grooved ends conform to the requirements of AWWA C606 for steel pipe.



MATERIAL SPECIFICATIONS



1. **BODY:** Epoxy Coated, ASTM A 536
2. **DISC:** EPDM or NBR, ASTM A 536
3. **LOWER STEM:** AISI 410
4. **UPPER STEM:** AISI 410
5. **STEM O-RING:** NBR
6. **LATCH PLATE:** Zinc Plated, ASTM A 228
7. **LATCH SPRING:** Electrolytic Coloring, ASTM A 228
8. **NUT, SELF LOCKING:** ASTM A 563
9. **HANDLE:** Zinc Plated, ASTM A 619

SERIES 7600 BUTTERFLY VALVE DIMENSIONS

Size	DIMENSIONS									
	A	B	C	D	E	F	G	H	K	L
In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm
2 50	2 3/8 60.3	2 1/4 57.2	3 7/16 87.4	5/8 15.9	5/16 8.7	6 152.4	1 25.4	1 13/16 46.0	2 50.8	3 3/16 81.0
2 1/2 65	2 15/16 74.2	2 3/4 70.2	3 13/16 96.8	5/8 15.9	3/8 8.9	6 152.4	1 25.4	2 1/16 52.3	2 7/16 62.0	3 5/8 91.9
3 80	3 9/16 90.3	3 3/8 86.4	3 13/16 96.8	5/8 15.9	3/8 8.9	8 7/16 214.4	1 25.4	2 5/8 66.5	2 11/16 68.1	4 1/4 108.0
4 100	4 9/16 116.1	4 3/8 111.8	4 5/8 117.3	5/8 15.9	3/8 8.9	8 7/16 214.4	1 25.4	3 5/16 84.1	3 5/16 84.1	4 15/16 125.5
6 150	6 3/4 171.0	6 9/16 166.6	5 1/4 133.4	5/8 15.9	3/8 8.9	12 1/4 311.2	1 1/4 31.8	4 3/8 111.3	4 3/8 111.3	7 177.8

SERIES 8000GR

Butterfly Valve

For use in Grooved-End Piping Systems 14" to 24"

FEATURES

- Up to 200 psig (13.8 bar) WOG (non-shock)
- Outstanding flow characteristics
- Low torque operation
- Superior flow control
- Streamline profile disc
- Suitable for HVAC applications
- Vacuum service to 29.5" (750 mm) Hg
- End-of-line service capabilities

BUTTERFLY VALVE PERFORMANCE DATA

PRESSURE RATINGS:
150 PSIG (10.3 bar) WOG (non-shock)
200 PSIG (13.8 bar) WOG (non-shock)
Special order - available upon request.
29.5" (750 mm) Hg Vacuum Service

TEMPERATURE RATINGS:

Grade E (EPDM):
-40°F to 230°F (-40°C to 110°C) (Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T (Nitrile)
-20°F to 180°F (Service Temperature Range) (-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES.

FIGURE 8000GR - WEIGHT

Valve Size ANSI	O.D.	Weight	
		Valve Only	Valve with Gear Operator
In./DN(mm)	*In./mm*	*Lbs./Kg.*	*Lbs./Kg.*
14 *350*	14 *355.6*	354 *160.6*	378 *171.5*
16 *400*	16 *406.4*	428 *194.1*	452 *205.0*
18 *450*	18 *457.2*	524 *237.7*	548 *248.6*
20 *500*	20 *508.0*	704 *319.3*	728 *330.2*
24 *600*	24 *609.6*	1,027 *465.8*	1,097 *497.6*

SERIES 8000GR

Butterfly Valve

MATERIAL SPECIFICATIONS

BODY: Cast Iron - ASTM A 126 CL.B

EXTENSION BODY:
Pipe - ASTM A 53 Steel
Flange - ANSI B16.5 Forged Steel

LINER: Grade E (EPDM), GRADE T (Nitrile)

DISC:
Stainless Steel - ASTM A 351
Aluminum Bronze - ASTM B 148 C95400
Ductile Iron - ASTM A 536 Grade 65-45-12

DRIVE SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

BOTTOM SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

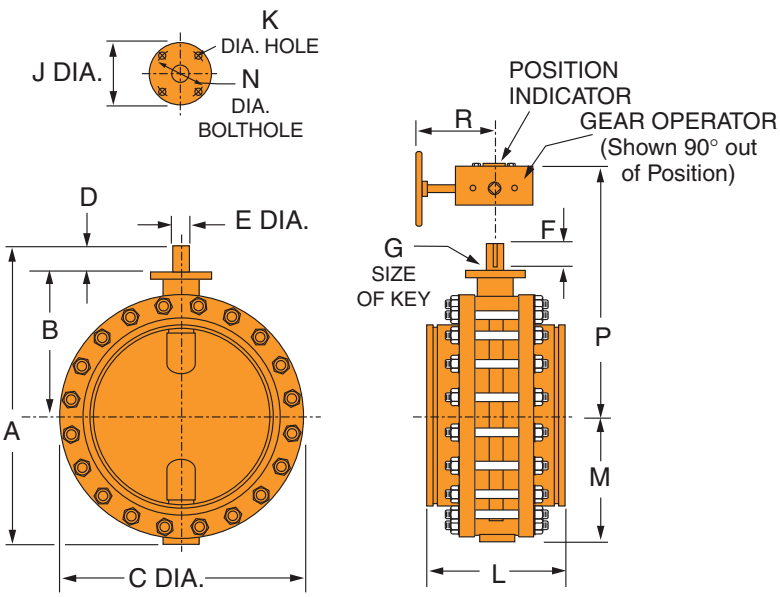
RETAINING SCREW: Steel

THRUST WASHER: Acetal

PLUG: Cast Iron - ASTM A 126 CL.B

UPPER BEARING: Teflon (Reinforced)

LOWER BEARING: Teflon (Reinforced)



SERIES 8000GR BUTTERFLY VALVES - DIMENSIONS

Valve Size ANSI	O.D.	A	B	C	D	E	F	G	J	K	L	M	N	P	R
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
14 *350*	14.000 *356*	26¼ *667*	13¼ *337*	21 *533*	2¼ *57*	1½ *38*	2 *51*	⅜ x ⅜ *87*	6 *152*	½ *13*	13¹⁄₁₆ *332*	10¾ *273*	5 *127*	17¹⁵⁄₁₆ *456*	10 *254*
16 *400*	16.000 *406*	29½ *749*	14¾ *375*	23½ *597*	2¼ *57*	1½ *38*	2 *51*	⅜ x ⅜ *87*	6 *152*	½ *13*	14⁵⁄₁₆ *364*	12½ *318*	5 *127*	19⁷⁄₁₆ *494*	10 *254*
18 *450*	18.000 *457*	32¾ *832*	15¾ *400*	25 *635*	3 *76*	1¾ *44*	2⅜ *60*	⅜ x ⅜ *87*	6¾ *171*	½ *13*	15⅜ *391*	14 *356*	5 *127*	20⁷⁄₁₆ *519*	10 *254*
20 *500*	20.000 *508*	34 *864*	16¼ *413*	27½ *699*	3 *76*	1¾ *44*	2⅝ *66*	⅜ x ⅜ *87*	6¾ *171*	½ *13*	16⅜ *416*	15 *381*	5 *127*	20¹⁵⁄₁₆ *532*	10 *254*
24 *600*	24.000 *610*	39⅜ *1,000*	19⅛ *486*	32 *813*	3 *76*	2¼ *57*	3¼ *83*	½ x ½ *116*	9½ *241*	¹³⁄₁₆ *21*	18¼ *464*	16¾ *425*	6½ *165*	24⅜ *619*	10¼ *260*

SERIES 8000GR BUTTERFLY VALVES (ORDERING INFORMATION)

Sample Part Number
18" GC-8282-6 —>

18"	G	C -	8	2	8	2	6
Valve Size	**Body Style**	**Body Material**	**Series**	**Seat Material**	**Disc Material**	**Operator**	**Stem**
14" - 24"	**G** - Grooved End	**C** - Cast Iron	8 - 8000	**1** - Nitrile **2** - EPDM	**0** - Nickel Plate Ductile Iron **7** - 316 S.S **8** - Bronze (Al-Brz.)	**0** - None **2** - Gear Operator **3** - Pneumatic **4** - Electric **5** - Spring Return Pneumatic **6** - Square Nut (with Gear Operator) **7** - Chain Wheel (with Gear)	**6** - 416 S.S. w/ RTFE Bearing **7** - 316 S.S. w/ RTFE Bearing

SERIES 8000GR

Butterfly Valve

Torque is the rotary effort required to operate a value. This turning force in a butterfly valve is determined by three factors; the friction of the disc and seat due to interference for sealing, bearing friction, and fluid dynamic torque.

Breakaway torque is the total of the torques resulting from bearing friction and disc/seat interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve, and is used to size the actuator. Listed below are recommended sizing torques.

NOTE: These values are based on testing performed in the Gruvlok Research & Development Center. These values include a safety factor and are valid for water and lubricating fluids only at 70° F (21° C).

Since torques are greatly increased for dry and non-lubricating fluids and temperature variations, contact your Anvil Sales Office for accurate values in these applications.

ACTUATOR SIZING FOR GENERAL SERVICE APPLICATION
SERIES 8000GR BREAKAWAY TORQUE

Line Pressure	Valve Size (In.)				
	14	16	18	20	24
(PSI)/Bar	*Breakaway Torque (In. - Lbs.) / N-m*				
50 *3.4*	4,000 *452*	4,800 *542*	5,400 *610*	10,000 *1,130*	13,000 *1,469*
100 *6.9*	4,800 *542*	5,200 *588*	6,200 *701*	12,500 *1,412*	18,000 *2,034*
150 *10.3*	5,500 *621*	6,500 *734*	8,500 *960*	13,500 *1,525*	21,500 *2,429*

NOTE: For Teflon seated valves, contact your Anvil Sales Office.
These values are valid for water and lubricating fluid service only.
Contact factory for information on torques for dry and non-lubricating fluid service.

CV VALUES (WATER @ 70°F SP. GR. = 1.00)

Valve Size	Disc Position (Degrees Open)							
	25°	***30°***	***40°***	***50°***	***60°***	***70°***	***80°***	***90°***
In./mm								
14 *350*	650 *44.8*	825 *56.9*	1,500 *103.4*	2,300 *158.6*	3,500 *241.3*	6,200 *427.5*	9,700 *668.8*	10,500 *723.9*
16 *400*	850 *58.6*	1,000 *68.9*	1,850 *127.6*	2,900 *199.9*	4,600 *317.2*	7,500 *517.1*	10,600 *730.8*	13,500 *930.8*
18 *450*	1,100 *75.8*	1,400 *96.5*	2,450 *168.9*	3,800 *262.0*	5,000 *344.7*	9,700 *668.8*	13,850 *954.9*	18,000 *1,241.1*
20 *500*	1,400 *96.5*	1,650 *113.8*	3,050 *210.3*	4,800 *330.9*	7,400 *510.2*	12,500 *861.8*	17,750 *1,223.8*	23,000 *1,585.8*
24 *600*	2,000 *137.9*	2,400 *165.5*	4,200 *289.6*	6,600 *455.1*	10,500 *723.9*	17,000 *1,172.1*	23,000 *1,585.8*	31,000 *2,137.4*

Fluid Dynamic Torque is the force exerted when a fluid passes over the surface of the butterfly valve disc. The magnitude of this force is dependent on valve size, disc opening and flow through the valve. Typically, fluid dynamic torque is a maximum at an approximate 75° disc opening. Generally, the effects of dynamic torque can be ignored when the velocity is less than 15 feet/second for liquids and 15,000 feet/minute for gases to minimize the effects of turbulence on the valve. For applications above these limits, consult engineering.

The formula for determining the velocity for liquids is:

$$V = 0.0022 \frac{Q}{A}$$

V = Velocity of liquid (feet/second)
Q = Flow (gallons/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" chart

The formula for determining the velocity of gases:

$$Vg = \frac{Qf}{A}$$

Vg = Velocity of gas (feet/minute)
Qf = Flow of gas @ flowing condition*
(cubic feet/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" Chart

* Flowing condition means at temperature and pressure of gas stream in the valve

AREA OF PIPE

Pipe Size (Sch 40)	Area
In./mm	*Sq. ft/Sq. cm*
14 *350*	0.940 *873.29*
16 *400*	1.227 *1,140*
18 *450*	1.553 *1,443*
20 *500*	1.931 *1,794*
24 *600*	2.792 *2,594*

FIG. 141S, FIG. 171N & FIG. 171S

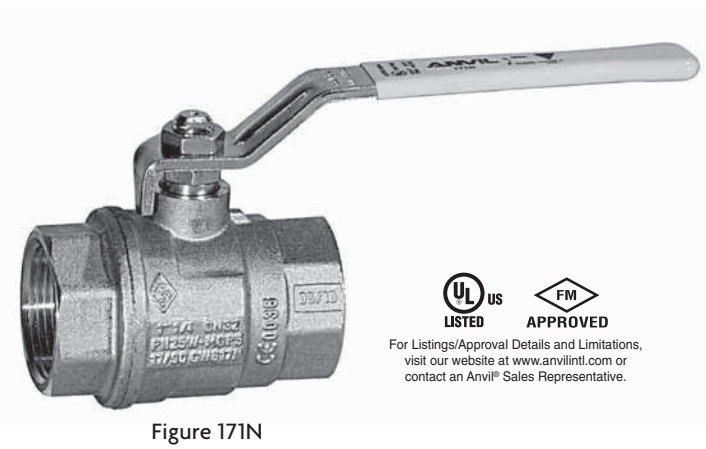
International Brass Ball Valves

The Anvil Figure 141S, 171N and 171S Brass Ball Valves have a rugged, dependable design, meeting rigid specification for world wide use. Every valve is individually tested in an open and closed position at 80 psi (5.5 bar). The two piece 171S and 171N full port design are available in sizes ¼" - 4". A "T" handled version of the 171N is also available as Figure 171N-T in sizes ⅜" - 1". The two piece 141S standard port is available in sizes ½" - 2". All valves conform to MSS-SP-110, MSS-SP-25 and Federal Specification WW-V-35B Type II, Class A Style 3.

Features of these valves include triple stem seal, hard chrome plated ball, blowout proof stem, adjustable packing gland, a bubble tight shut off and a floating ball for an economical solution for residential, commercial and industrial applications.

Anvil's Brass Ball Valves are available in the soldered end standard port (Figure 141S), full port threaded end (Figure 171N), and full port soldered end (Figure 171S).

Size Range: ½" - 2" (141S)
¼" - 4" (171N/171S)



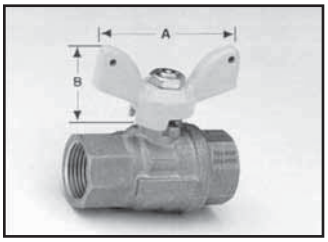
LISTED APPROVED

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

Figure 171N

Pressure Rating: from full vacuum to 600 psi (41.4 bar)
WOG 150 psi (10.3 bar) steam

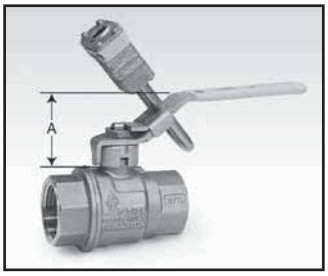
"T" HANDLE



171N "T" HANDLE

Size	A	B
In./DN(mm)	In./mm	In./mm
¼ - ⅜ - ½ 8 - 10 - 15	2.0 50	1.08 27.5
¾ - 1 20 - 25	2.5 64	1.30 33.0

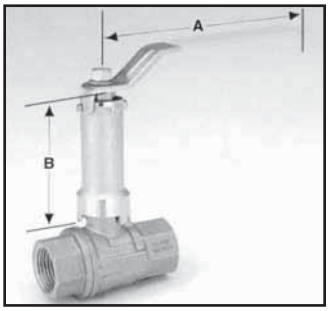
LOCK DEVICE



171N LOCK DEVICE

Size	A
In./DN(mm)	In./mm
¼ - ⅜ - ½ 8 - 10 - 15	1.28 32.5
¾ - 1 20 - 25	1.57 40.0
1¼ - 1½ 32 - 40	1.91 48.5
2 50	1.95 49.5

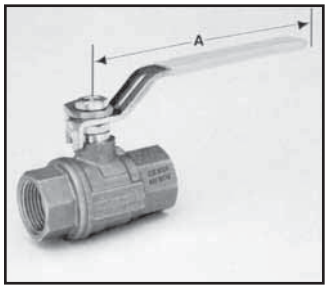
STEM EXTENSION (Brass)



171N STEM EXTENSION (BRASS)

Size	A	B
In./DN(mm)	In./mm	In./mm
¼ - ⅜ - ½ 8 - 10 - 15	3.8 97.0	2.4 60.5
¾ - 1 20 - 25	4.8 121.5	2.6 67.0
1¼ - 1½ 32 - 40	5.9 151.0	2.6 67.0
2 50	6.4 162.0	2.6 67.0

MEMORY STOP



MEMORY STOP

Size	A
In./DN(mm)	In./mm
¼ - ⅜ - ½ 8 - 10 - 15	3.8 97.0
¾ - 1 20 - 25	4.8 121.5
1¼ - 1½ 32 - 40	5.9 151.0
2 50	6.4 162.0

MATERIAL SPECIFICATIONS

BODY: Brass, ASTM B 124, Alloy C37700
RETAINER: Brass, ASTM B 124, Alloy C37700
BALL: Brass, ASTM B 124, Alloy C37700 Chrome Plated
STEM: Brass, ASTM B 124, Alloy C37700 Nickel Plated
SEAT RING: PTFE
PACKING: PTFE
PACKING NUT: Steel, Zinc
PACKING GLAND: Brass, ASTM B 124, Alloy C37700 Nickel Plated
FRICTION WASHER: PTFE
STEM O-RING: NBR 75 Shore A
HANDLE: Steel, Zinc Plated to 2", Aluminum to 4"
HANDLE COVER: Yellow PVC Coated to 2", Yellow Enamel to 4"
HANDLE NUT: Steel, Zinc Plated

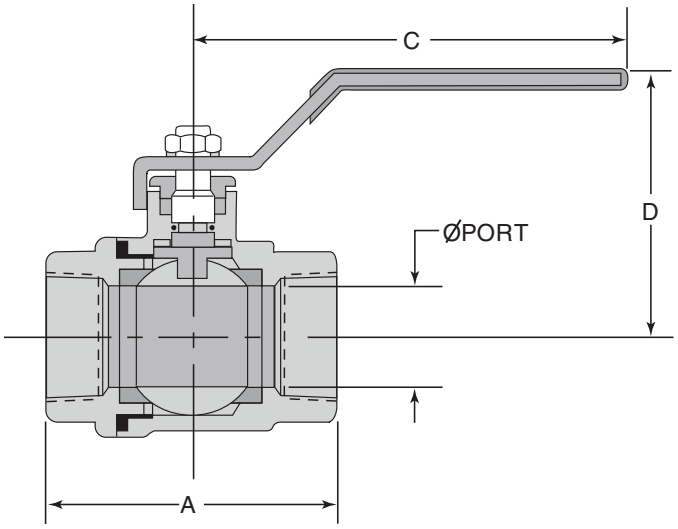
AVAILABLE OPTIONS*

LEVER HANDLE: ¼" - 4"
LOCK DEVICE: ¼" - 2" (171N)
MEMORY STOP: ¼" - 2" (171N/171S)
STEM EXTENSION: ¼" - 4" (171N)
"T" HANDLE: ¼" - 1" (171N)

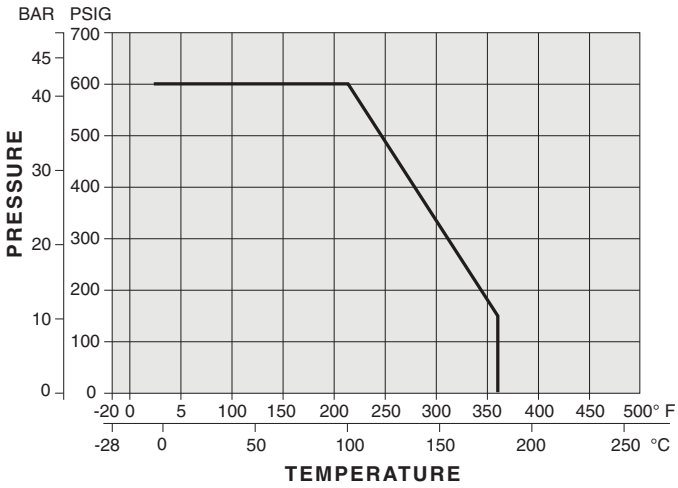
* Not all options available for all sizes. Please contact your Anvil Representative for assistance.

FIG. 141S, FIG. 171N & FIG. 171S

International Brass Ball Valves



PRESSURE VS. TEMPERATURE



NOTES

1. Dimensions of solder joint ends conform to ANSI B16.22. Solder end valves are designed to be used with solders not exceeding a melting point of 470°F/250°C. Higher temperatures may damage the seal material.
2. For solder joint valves, the pressure/temperature rating is dependent on the solder material used. Please refer to the limitations listed in ANSI B16.18.
3. Rate of Flow Calculations for liquids: To determine the flow rate of a liquid passing through a valve, use the following formula:

$$Q_L = C_V \left(\sqrt{\frac{\Delta P}{S_L}} \right)$$

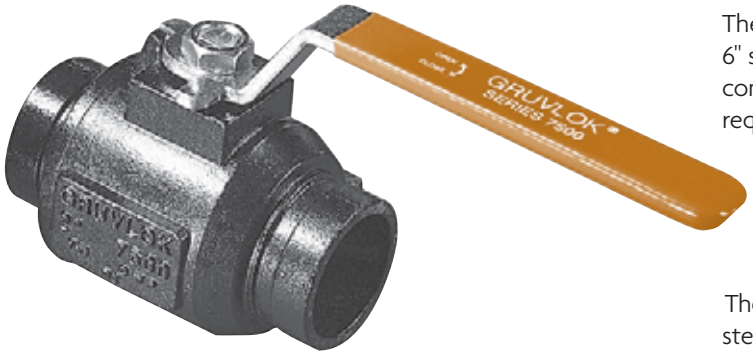
Where: Q_L = flow of liquid in gallons per minute (GPM)
C_V = flow coefficient
ΔP = pressure drop (PSI)
S_L = specific gravity of liquid

DIMENSIONS

Valve Code	Size	Port Dia.	A	C	D	Cv	Approx. Wt. Ea.
	In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
141S STANDARD PORT SOLDERED END	½ 15	½ 12	2 1/16 52	3 7/8 98	1 13/16 46	6.3	0.7 0.3
	¾ 20	9/16 14	2 11/16 68	3 7/8 98	1 15/16 49	9.5	0.8 0.4
	1 25	¾ 19	3 3/16 81	4 13/16 122	2 5/16 59	22.2	1.1 0.5
	1¼ 32	1 25	3 9/16 90	4 13/16 122	2½ 63	30.8	1.5 0.7
	1½ 40	1¼ 32	4 102	6 152	3 1/16 78	60.9	2.2 1.0
	2 50	1 9/16 40	5 1/16 128	6 152	3 5/16 84	92.9	3.1 1.4
171N FULL PORT THREADED END	¼ 8	⅜ 10	2 51	3 7/8 98	1¾ 45	6	0.3 0.1
	⅜ 10	⅜ 10	2 51	3 7/8 98	1¾ 45	7	0.3 0.1
	½ 15	9/16 14	2 7/16 62	3 7/8 98	1 7/8 48	19	0.4 0.2
	¾ 20	¾ 19	2 11/16 68	4 13/16 122	2¼ 57	35	.7 0.3
	1 25	15/16 24	3 1/16 78	4 13/16 122	2 7/16 62	50	1.0 0.5
	1¼ 32	1¼ 32	3 7/16 87	6 152	3 1/16 78	104	2.0 0.9
	1½ 40	1 9/16 40	3 7/8 98	6 152	3 5/16 84	268	3.1 1.4
	2 50	1 15/16 49	4 5/16 110	6 3/8 162	3 13/16 97	309	4.2 1.9
	2½ 65	2 9/16 65	5 9/16 141	8 1/16 205	5 127	629	8.0 3.7
	3 80	3⅛ 79	6 7/16 164	8 5/16 205	5 7/16 138	1018	12.0 5.9
	4 100	3 15/16 100	7 5/8 194	10¼ 260	6 5/16 160	1622	22.0 10.0
171S FULL PORT SOLDERED END	½ 15	9/16 14	2½ 64	3 7/8 98	1 7/8 48	19	0.5 0.2
	¾ 20	¾ 19	3 76	4 13/16 122	2 5/16 59	35	0.7 0.3
	1 25	1 25	3 9/16 91	4 13/16 122	2½ 64	50	1.1 0.5
	1¼ 32	1¼ 32	4 1/16 103	6 152	3⅛ 79	104	2.0 0.9
	1½ 40	1 9/16 40	4 9/16 116	6 152	3⅜ 86	268	2.7 1.2
	2 50	1 15/16 49	5 7/16 138	6 7/16 164	3 11/16 94	309	3.9 1.8
	2½ 65	2 9/16 65	6 7/8 175	8 1/16 205	5 127	629	9.4 4.3
	3 80	3⅛ 79	8 3/16 208	8 1/16 205	5 7/16 138	1018	14.5 6.6
	4 100	3 15/16 100	10 5/16 262	10¼ 260	6 5/16 160	1622	24.7 11.2

SERIES 7500

Ball-valves



The Series 7500 grooved-end ball valve line consists of a 2" to 6" standard port, two piece design, and is available in configurations to address a broad spectrum of application requirements.

The Series 7500 has generous factors of safety for pressure retention and stem torsional strength. In addition, it has a blow-out proof stem design, low operating torque, and high Cv.

The Series 7500 is compliant with NACE MR01-75 when stainless steel trim is specified.

Grooved ends conform to the requirements of AWWA C606 for steel pipe.

For special configurations, contact your Anvil representative.

For stainless steel, see the stainless steel section.

PRESSURE-RATING:

740 psig CWP (51 bar) in ASTM A 395 Ductile Iron

FIGURE 7500 MATERIAL SPECIFICATIONS

DUCTILE IRON/CARBON STEEL

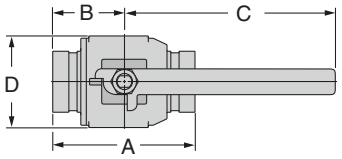
BODY: Ductile Iron ASTM A 395
ENDPLATE: Ductile Iron ASTM A 395
BALL: Carbon Steel Chrome Plated
STEM: Carbon Steel Chrome Plated
THRUST WASHER: RTFE
STEM SEAL: Flouroelastomer
RETAINING RING: Carbon Steel
HANDLE: Carbon Steel Zinc Plated
HANDLE NUT: Carbon Steel Zinc Plated
SEAT: RTFE
BODY SEAL: Flouroelastomer
LOCK PLATE*: 300 Series Stainless Steel
* Optional

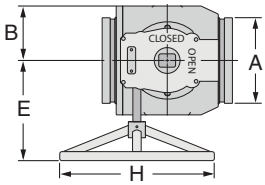
DUCTILE IRON/STAINLESS STEEL

BODY: Ductile Iron ASTM A 395
ENDPLATE: Ductile Iron ASTM A 395
BALL: Stainless Steel ASTM A 351 Grade CF8M
STEM: 316 Stainless Steel
THRUST WASHER: RTFE
STEM SEAL: Flouroelastomer
RETAINING RING: Carbon Steel
HANDLE: Carbon Steel Zinc Plated
HANDLE NUT: 300 Series Stainless Steel
SEAT: RTFE
BODY SEAL: Flouroelastomer
LOCK PLATE*: 300 Series Stainless Steel
* Optional

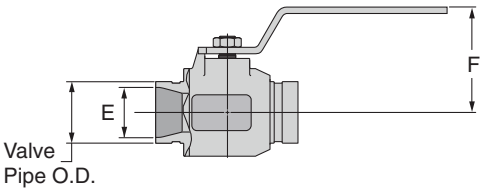
SERIES 7500

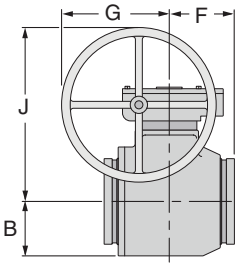
Ball-valves

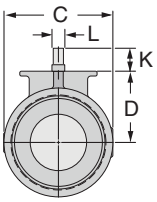




6" - 7500
Ball Valve with
Gear Actuator







7500 BALL VALVE

Size ANSI	O.D.	Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	Cv	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	5½ *140*	2¾ *70*	8¼ *209*	3 13/16 *81*	1 15/16 *49*	4⅛ *105*	165	8 *3.6*
3 *80*	3.500 *88.9*	6¾ *171*	3⅜ *85*	10 *254*	4 13/16 *122*	2⅞ *74*	4 13/16 *121*	310	18 *8.2*
4 *100*	4.500 *114.3*	8¼ *210*	4⅛ *105*	16 *406*	6 5/16 *176*	3 13/16 *97*	6 *152*	815	38 *17.2*
6 * *150*	6.625 *168.3*	10⅛ *257*	5 1/16 *128*	28 *711*	8 7/16 *215*	5 11/16 *144*	7⅝ *194*	1500	106 *48.1*

* Bare Stem

7500 BALL VALVE WITH GEAR ACTUATOR

Size ANSI	O.D.	Dimensions											Approx. Wt. Ea.
		A	B	C	D	E	F	G	H	J	K	L	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
6 *150*	6.625 *168.3*	6⅝ *168.7*	4¼ *107.4*	8 7/16 *214.6*	5½ *140.5*	10¼ *260.4*	5 1/16 *128.0*	8⅛ *206.4*	12 *304.8*	13½ *342.9*	1 13/16 *45.2*	1 *25.4*	9.6 *4.4*

SERIES 7500 BALL VALVES (ORDERING INFORMATION)

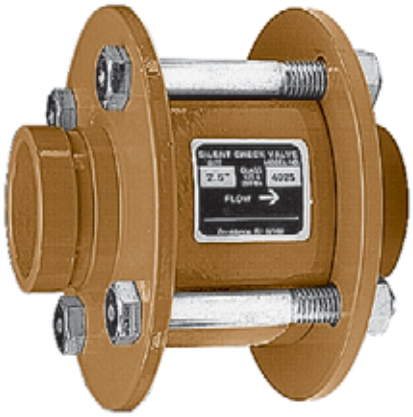
Sample Part Number 4" GI-7512-1 —>	4"	G	I -	75	1	2 -	1
	Size	Configuration	Body/End Material	Series	Ball and Stem Material	Seat Material	Operator
	2" - 6"	**G** - 2 Way Grooved End	**I** - Ductile Iron ASTM A395	75 - 7500	**1** - Chrome Plated Carbon Steel **2** - 316 Stainless Steel	**2** - RTFE / Flouroelastomer Special Requirements X - Write on Order	**1** - 2 Position Handle **2** - 2 Position Locking Handle **3** - Bare Stem **4** - Gear Actuator (6" Only)

6" is available bare stem or with gear actuator.

FIG. 400G

Grooved-End Silent Check Valve

Available in Sizes 2" thru 10"



The 400G is a center guided, spring loaded, silent check valve. Designed and engineered for silent operation with low head loss, the valve disc will close prior to the reversal of flow, thereby preventing or minimizing water hammer and damaging shock.

- The 400G can be used in any HVAC, industrial or commercial grooved piping systems.
- The valve is designed for liquid service with any pipe orientation, flow up or down.
- Bronze metal seats are standard, with Stainless Steel or resilient seats available as an option.
- Flow coefficients for this valve are some of the lowest in the industry and are listed for each size on the drawing.

NOTE: Valve is designed for liquid service only. Install 3 to 4 pipe diameters downstream from pump discharge or elbows to avoid flow turbulence.

MAX. NON-SHOCK WORKING PSI
125# ANSI B16.1 FLANGE RATING

Size	Temperature	
2" - 10"	150˚F *65˚C*	200˚F *90˚C*
	200 PSI *13.8 bar*	190 PSI *13.1 bar*

FIGURE 400G GROOVED-END SILENT CHECK VALVE

Valve Size	O.D.	Model	A	B	Cv Flow *	Approx. Wt. Each
In./mm	*In./mm*	*Number*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	402G	6 *152*	6 *152*	66 *1,676*	12 *5.4*
2½ *65*	2.875 *73.0*	4025G	6¼ *159*	7 *178*	88 *2,235*	15 *6.8*
3 *80*	3.500 *88.9*	403G	6 7/16 *164*	7½ *191*	130 *3,302*	20 *9.1*
4 *100*	4.500 *114.3*	404G	8⅛ *206*	9 *229*	228 *5,791*	36 *16.3*
5 *125*	5.563 *141.3*	405G	11¼ *286*	10 *254*	350 *8,890*	50 *22.7*
6 *150*	6.625 *168.3*	406G	12¼ *311*	11 *279*	520 *13,208*	68 *30.8*
8 *200*	8.625 *219.1*	408G	13¾ *349*	13½ *343*	900 *22,860*	140 *63.5*
10 *250*	10.750 *273.1*	410G	16 *406*	16 *406*	1,450 *36,830*	198 *89.8*

* Flow coefficient is the number of U.S. gallons/minute of 60˚ F (16˚ C) water that will flow through a valve with 1 psi (0.069 bar) of pressure drop across the valve.

MATERIAL SPECIFICATIONS

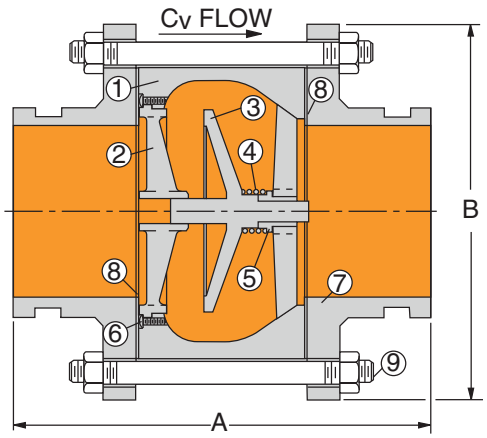
STANDARD MATERIALS:
Cast Iron body ASTM A 48, Class 35
Bronze Disc and Seat ASTM B 584 Alloy 838
Ductile Iron Grooved-Ends ASTM A 395

OPTIONAL TRIM MATERIALS:
Bronze with Nitrile seats
Stainless Steel seats
Stainless with Nitrile seats

1. **BODY:** Cast Iron ASTM A 48, Class 35
2. **SEAT:** Bronze ASTM B 584, Copper Alloy 838
3. **PLUG:** Bronze ASTM B 584, Copper Alloy 838
4. **SPRING:** Stainless Steel T304, ASTM A 313
5. **BUSHING:** Bronze ASTM B 584, Copper Alloy 836
6. **SCREWS:** Stainless Steel T304, ASTM A 276
7. **GROOVED-END:** Ductile Iron ASTM A 395
8. **GASKET:** Non Asbestos

   For gasket grade recommendations see the Technical Data section
9. **BOLTS:** Carbon Steel

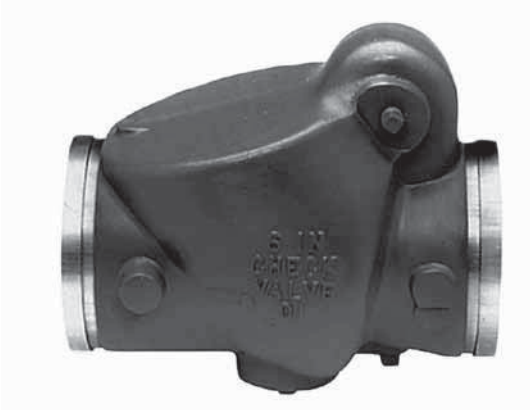
Other materials and resilient seats are available... contact your Anvil representative.



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems



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

The Gruvlok Series 7800 Check Valve is a compact, cost effective valve offering low pressure-drop, non-slam performance. The Series 7800 Check Valve assembly is lighter and faster to install, and costs less than flanged and wafer valve assemblies.

In the full-open position the Series 7800 swing clapper is held tightly against the valve body, out of the flow stream, to provide maximum flow area and prevention of clapper flutter. The clapper design produces quick, non-slam closure before flow reversal can occur, while meeting FM requirements for an anti-water hammer valve rating.

Each valve is hydrostatically tested for leak tightness to 500 PSI. The clapper-seat design permits leak free sealing of back pressures in service conditions ranging from 300 PSI (20.7 bar) to as low as 1 PSI (0.07 bar) (28" water head).

PERFORMANCE:

Pressure Rating:

Commercial Applications - Sizes 2" thru 12" inclusive, 300 psi (20.7 bar) maximum working pressure.

MATERIAL SPECIFICATIONS

BODY: Ductile iron conforming to ASTM A 536, Grade 65-45-12

COATING: Rust inhibiting paint on exterior and interior - color, black enamel

CLAPPER: 2"- 5" Type 304 or 302 stainless steel to ASTM A 167
6"-12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

CLAPPER FACING:

Grade E EPDM: -40° to 230°F (-40° to 110°C) Service Temperature Range
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T Nitrile: -20° to 180°F (-29° to 80°C) Service Temperature Range
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES.

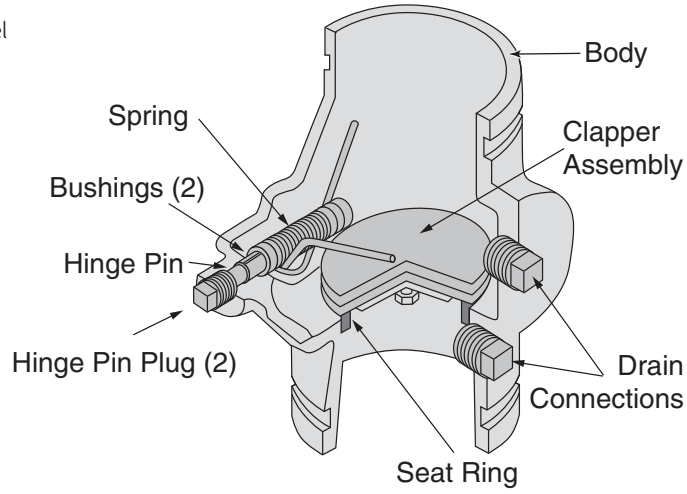
SEAT RING: Type 304 stainless steel to ASTM A 123, ASTM A 213, ASTM A 312 or ASTM A 269

SPRING: Type 302 stainless steel to ASTM A 313

HINGE PIN: Type 304 or 302 stainless steel to ASTM A 580

HINGE PIN BUSHINGS: Sintered bronze to ASTM B 438

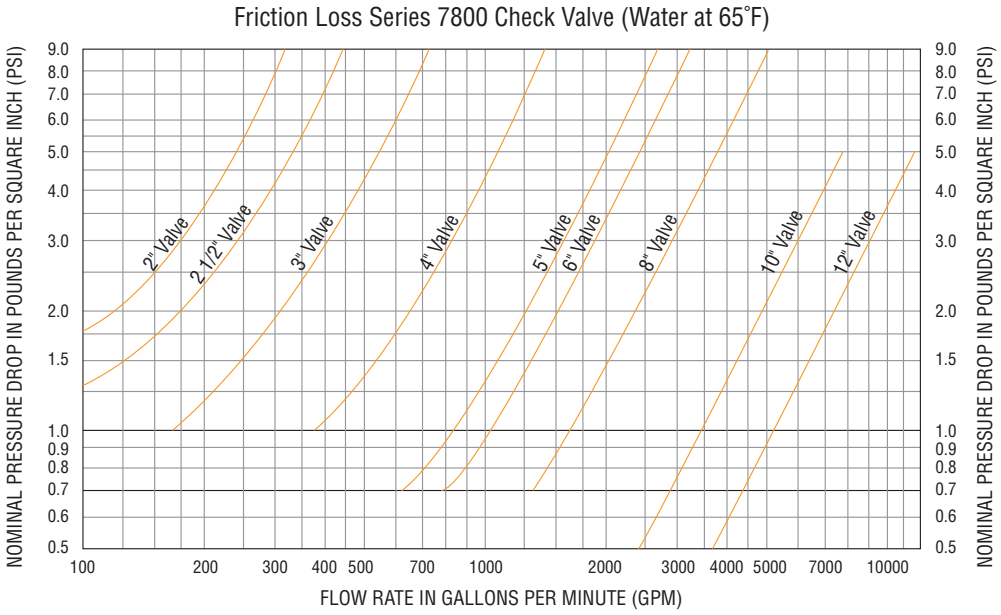
HINGE PIN PLUGS & DRAIN PLUGS: Cast iron to ASTM A 126 Class A



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems



FLOW DATA:

The approximate friction losses, based on the Hazen and Williams formula, expressed in equivalent length of pipe is given below. The friction losses have been calculated on the basis of flow rates typically used with each size valve.

FLOW DATA - FRICTION LOSS (FT. OF PIPE)

Valve Size	O.D.	C=100			C=120		
		Sch. 10	Sch. 30	Sch. 40	Sch. 10	Sch. 30	Sch. 40
In./mm	*In./mm*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*
2 *50*	2.375 *60.3*	10 *3.0*	— —	8 *2.4*	14 *4.3*	— —	11 *3.4*
2½ *65*	2.875 *73.0*	14 *4.3*	— —	10 *3.0*	20 *6.1*	— —	15 *4.6*
3 *80*	3.500 *88.9*	17 *5.2*	— —	12 *3.7*	23 *7.0*	— —	17 *5.2*
4 *100*	4.500 *114.3*	17 *5.2*	— —	13 *4.0*	23 *7.0*	— —	18 *5.5*
5 *125*	5.563 *141.3*	14 *4.3*	— —	11 *3.4*	20 *6.1*	— —	15 *4.6*
6 *150*	6.625 *168.3*	23 *7.0*	— —	19 *5.8*	33 *10.1*	— —	26 *7.9*
8 *200*	8.625 *219.1*	35 *10.7*	32 *9.8*	30 *9.1*	50 *15.2*	45 *13.7*	43 *13.1*
10 *250*	10.750 *273.1*	28 *8.5*	25 *7.6*	24 *7.3*	40 *12.2*	36 *11.0*	34 *10.4*
12 *300*	12.750 *323.9*	31 *9.4*	28 *8.5*	26 *7.9*	44 *13.4*	39 *11.9*	37 *11.3*

IMPORTANT NOTE:

Check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow.
Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices.
Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.
This valve may be installed vertically or horizontally. In a horizontal installation, the hinge pin is to be located on top.
Not for use in copper systems.

SERIES 7800

Check Valves

For use in Grooved-End Piping Systems

SERIES 7800 CHECK VALVES (ORDERING INFORMATION)					
Sample Part Number 4" 7811—>	4"	78	1	1	X
	Size	Series	Clapper Facing Material	Body Finish	Special Configuration
	2" - 12"	78 - 7800	**1** - EPDM (Std) **2** - Nitrile (Std)	**1** - Painted (Std)	**1** - Stainless Steel Clapper sizes (6" - 12") **2** - Other*

* Contact an Anvil representative for more information.

MATERIAL SPECIFICATIONS

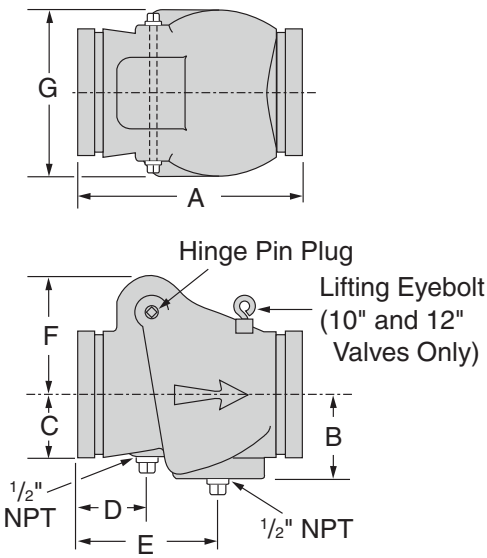


FIGURE 7800 CHECK VALVE

Nominal Size	O.D.	Nominal Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	G	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg.*
2 *50*	2.375 *60.3*	6¾ *171*	2⅜ *60*	1⁷⁄₁₆ *36*	1¾ *44*	4½ *114*	3³⁄₁₆ *81*	4⅜ *111*	7.5 *3.4*
2½ *65*	2.875 *73.0*	7¼ *184*	2⁷⁄₁₆ *61*	1⁹⁄₁₆ *39*	1¾ *44*	3¹³⁄₁₆ *96*	3⅝ *92*	4½ *114*	10.5 *4.8*
3 *80*	3.500 *88.9*	7¾ *197*	2⅝ *67*	2 *51*	11³⁄₁₆ *46*	4¹⁄₁₆ *103*	3¹¹⁄₁₆ *93*	4¹⁵⁄₁₆ *125*	11.5 *5.2*
4 *100*	4.500 *114.3*	8⅛ *206*	3⅛ *79*	2¼ *57*	2½ *64*	5¹⁄₁₆ *128*	4¼ *108*	6 *152*	13.5 *6.1*
5 *125*	5.563 *141.3*	9¾ *248*	3½ *89*	2¾ *70*	2⁷⁄₁₆ *61*	5¹³⁄₁₆ *147*	4⅝ *117*	6¾ *171*	19.0 *8.6*
6 *150*	6.625 *168.3*	12¾ *324*	4¼ *108*	3⁵⁄₁₆ *84*	3⅛ *79*	6¼ *159*	6¾ *171*	8½ *216*	33.5 *15.2*
8 *200*	8.625 *219.1*	14⅜ *365*	5¹⁄₁₆ *128*	3¹⁵⁄₁₆ *100*	4 *102*	5¹⁵⁄₁₆ *150*	8 *203*	10¼ *260*	59.0 *26.8*
10 *250*	10.750 *273.1*	18 *457*	6⁵⁄₁₆ *160*	4¹⁵⁄₁₆ *125*	4⁹⁄₁₆ *115*	6⅞ *175*	9³⁄₁₆ *233*	12¹¹⁄₁₆ *322*	130.0 *59.0*
12 *300*	12.750 *323.9*	21 *533*	7⁵⁄₁₆ *185*	6 *152*	5¹⁄₁₆ *128*	7¼ *184*	10⅜ *264*	14¾ *375*	183.0 *83.0*

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

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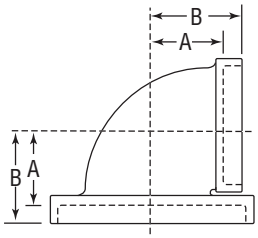
Cast Iron Threaded Fittings Pressure - Temperature Ratings					
Temperature		Pressure			
		Class 125		Class 250	
(°F)	*(°C)*	psi	*bar*	psi	*bar*
-20° to 150°	*-28.9 to 65.6*	175	*12.1*	400	*27.6*
200°	*93.3*	165	*11.4*	370	*25.5*
250°	*121.1*	150	*10.3*	340	*23.4*
300°	*148.9*	140	*9.7*	310	*21.4*
350°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

Cast Iron Threaded Fittings

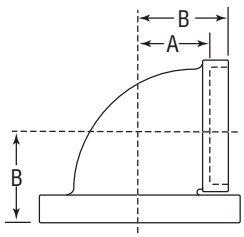
Class 125 (Standard)

FIGURE 351
90° Elbow



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

FIGURE 371
90° Elbow,
Flange & Screw



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

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

Note: See page 37 for pressure-temperature ratings.

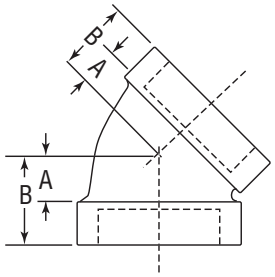
Cast Iron Threaded Fittings

Class 125 (Standard)

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

FIGURE 356 (Straight)

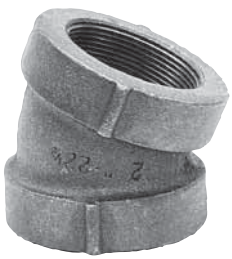
Figure 356R (Reducing)

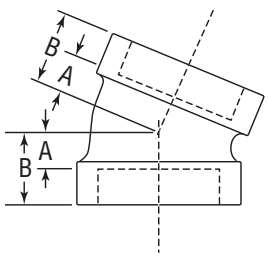


Size		A		B		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
1/4	*8*	7/16	*11*	3/4	*19*	0.16	*0.07*
3/8	*10*	7/16	*11*	13/16	*22*	0.23	*0.10*
1/2	*15*	7/16	*11*	7/8	*22*	0.37	*0.17*
3/4	*20*	1/2	*13*	1	*25*	0.55	*0.25*
1	*25*	9/16	*14*	1 1/8	*29*	0.83	*0.38*
1 1/4	*32*	5/8	*16*	1 1/4	*32*	1.33	*0.60*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

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

FIGURE 356A
22 1/2° Elbow





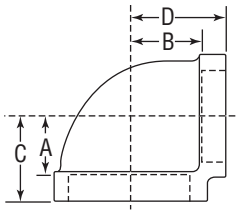
Size		A		B		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	lbs	*kg*
3/4	*20*	3/8	*10*	7/8	*22*	0.52	*0.24*
1	*25*	7/16	*11*	1	*25*	0.80	*0.36*
1 1/4	*32*	1/2	*13*	1 1/8	*29*	1.40	*0.63*
1 1/2	*40*	5/8	*16*	1 1/4	*32*	1.64	*0.74*
2	*50*	3/4	*19*	1 7/16	*37*	2.50	*1.13*
2 1/2	*65*	3/4	*19*	1 5/8	*41*	3.95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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 352
90° Elbow, Reducing



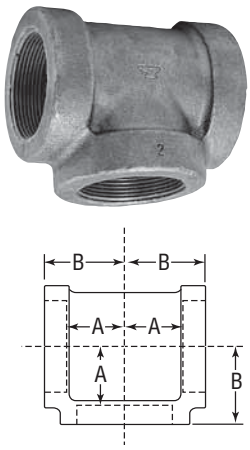
Size				A		B		C		D		Unit Weight Black	
NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
1/2	*15*	1/4	*8*	5/8	*16*	3/4	*19*	1 1/16	*27*	1 1/16	*27*	0.40	*0.18*
		3/8	*10*	5/8	*16*	11/16	*17*	1 1/16	*27*	1 1/16	*27*	0.34	*0.15*
3/4	*20*	1/2	*15*	11/16	*17*	13/16	*22*	1 1/4	*32*	1 1/4	*32*	0.51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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

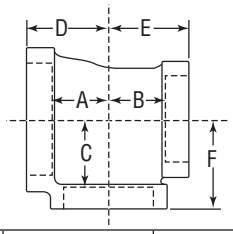
Class 125 (Standard)

FIGURE 358
Tee



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

FIGURE 359
Tee Reducing



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

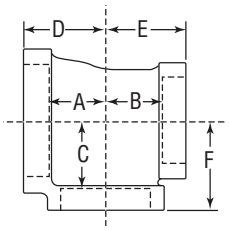
Note: See page 37 for pressure-temperature ratings.

Continued on next page.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



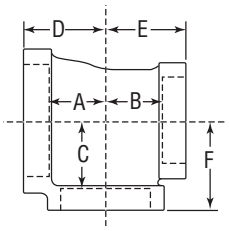
Size						A		B		C		D		E		F		Unit Weight Black	
NPS	DN	NPS	DN	NPS	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
1¼	32	½	15	½	15	13/16	22	13/16	22	1 1/8	29	1 7/16	37	15/16	24	1 5/8	41	1.00	0.45
				1	25	1 5/16	24	15/16	24	1 1/8	29	1 9/16	40	1 3/8	35	1 11/16	43	1.38	0.63
				1¼	32	1 1/8	29	1 1/8	29	1 1/8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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



Size						A		B		C		D		E		F		Unit Weight Black	
NPS	*DN*	NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
2	*50*	½	*15*	1 1/2	*40*	15/16	*24*	1 3/8	*35*	1 1/2	*38*	2	*51*	1 13/16	*47*	2 1/8	*54*	2.95	*1.34*
				2	*50*	1 9/16	*40*	1 7/16	*37*	1 9/16	*40*	2 1/4	*57*	1 7/8	*48*	2 1/4	*57*	3.30	*1.50*
		¾	*20*	1 1/4	*32*	1 3/16	*22*	1 1/8	*29*	1 7/16	*37*	1 7/8	*48*	1 3/4	*44*	2 1/16	*52*	2.50	*1.13*
				1 1/2	*40*	1 5/16	*24*	15/16	*24*	1 1/2	*38*	2	*51*	1 13/16	*47*	2 1/8	*54*	3.40	*1.54*
				2	*50*	1 9/16	*40*	1 7/16	*37*	1 9/16	*40*	2 1/4	*57*	1 15/16	*49*	2 1/4	*57*	3.31	*1.50*
		1	*25*	1	*25*	11/16	*17*	11/16	*17*	1 7/16	*37*	1 3/4	*44*	1 5/8	*41*	2	*51*	2.70	*1.22*
				1 1/4	*32*	13/16	*22*	1 1/8	*29*	1 1/2	*38*	1 7/8	*48*	1 3/4	*44*	2 1/16	*52*	2.94	*1.33*
				1 1/2	*40*	15/16	*24*	1 1/4	*32*	1 1/2	*38*	2	*51*	1 13/16	*47*	2 1/8	*54*	2.85	*1.29*
				2	*50*	1 9/16	*40*	1 7/16	*37*	1 9/16	*40*	2 1/4	*57*	2	*51*	2 1/4	*57*	3.46	*1.57*
				2 1/2	*65*	1 7/8	*48*	1 13/16	*47*	1 9/16	*40*	2 9/16	*65*	2 3/8	*60*	2 7/16	*62*	4.88	*2.21*
		1 1/4	*32*	½	*15*	11/16	*17*	1	*25*	1 7/16	*37*	1 3/4	*44*	1 5/8	*41*	2	*51*	2.48	*1.12*
				¾	*20*	7/8	*22*	7/8	*22*	1 7/16	*37*	1 9/16	*40*	1 1/2	*38*	1 15/16	*49*	2.50	*1.13*
				1	*25*	11/16	*17*	1	*25*	1 7/16	*37*	1 3/4	*44*	1 5/8	*41*	2	*51*	2.73	*1.24*
				1 1/4	*32*	13/16	*22*	1 1/8	*29*	1 7/16	*37*	1 7/8	*48*	1 3/4	*44*	2 1/16	*52*	2.90	*1.32*
				1 1/2	*40*	15/16	*24*	1 1/4	*32*	1 1/2	*38*	2	*51*	1 7/8	*48*	2 1/8	*54*	3.13	*1.42*
				2	*50*	1 9/16	*40*	1 7/16	*37*	1 9/16	*40*	2 1/4	*57*	2 1/16	*52*	2 1/4	*57*	3.71	*1.68*
				2 1/2	*65*	1 7/8	*48*	1 3/4	*44*	1 9/16	*40*	2 9/16	*65*	2 3/8	*60*	2 7/16	*62*	4.54	*2.06*
		1 1/2	*40*	½	*15*	13/16	*22*	13/16	*22*	1 7/16	*37*	1 1/2	*38*	1 7/16	*37*	1 7/8	*48*	2.34	*1.06*
				¾	*20*	7/8	*22*	7/8	*22*	1 7/16	*37*	1 9/16	*40*	1 1/2	*38*	1 15/16	*49*	2.46	*1.12*
				1	*25*	11/16	*17*	1	*25*	1 7/16	*37*	1 3/4	*44*	1 5/8	*41*	2	*51*	2.66	*1.21*
				1 1/4	*32*	13/16	*22*	13/16	*22*	1 7/16	*37*	1 7/8	*48*	1 13/16	*47*	2 1/16	*52*	2.98	*1.35*
				1 1/2	*40*	15/16	*24*	15/16	*24*	1 1/2	*38*	2	*51*	1 15/16	*49*	2 1/8	*54*	3.24	*1.47*
				2	*50*	1 9/16	*40*	1 1/2	*38*	1 9/16	*40*	2 1/4	*57*	2 1/8	*54*	2 1/4	*57*	3.70	*1.68*
				2 1/2	*65*	1 7/8	*48*	1 15/16	*49*	1 9/16	*40*	2 9/16	*65*	2 9/16	*65*	2 7/16	*62*	5.46	*2.48*
		2	*50*	½	*15*	13/16	*22*	13/16	*22*	1 7/16	*37*	1 1/2	*38*	1 1/2	*38*	1 7/8	*48*	2.74	*1.24*
				¾	*20*	7/8	*22*	7/8	*22*	1 7/16	*37*	1 9/16	*40*	1 9/16	*40*	1 15/16	*49*	2.86	*1.30*
				1	*25*	11/16	*17*	11/16	*17*	1 7/16	*37*	1 3/4	*44*	1 3/4	*44*	2	*51*	3.05	*1.38*
				1 1/4	*32*	13/16	*22*	13/16	*22*	1 7/16	*37*	1 7/8	*48*	1 7/8	*48*	2 1/16	*52*	3.38	*1.53*
				1 1/2	*40*	15/16	*24*	15/16	*24*	1 1/2	*38*	2	*51*	2	*51*	2 1/8	*54*	3.59	*1.63*
				2 1/2	*65*	1 7/8	*48*	1 7/8	*48*	1 9/16	*40*	2 9/16	*65*	2 9/16	*65*	2 7/16	*62*	5.17	*2.34*
				3	*100*	3	*76*	3	*76*	2 7/16	*62*	3 11/16	*94*	3 11/16	*94*	3 1/2	*89*	7.87	*3.57*

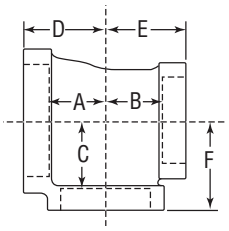
Continued on next page.

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



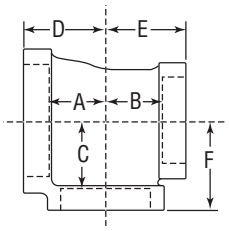
Size						A		B		C		D		E		F		Unit Weight Black	
NPS	*DN*	NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
2 1/2	*65*	1/2	*15*	2 1/2	*65*	1 13/16	*47*	1 13/16	*47*	1 13/16	*47*	2 11/16	*68*	2 1/4	*57*	2 11/16	*68*	5.20	*2.36*
		3/4	*20*	2 1/2	*65*	1 13/16	*47*	1 3/4	*44*	1 13/16	*47*	2 11/16	*68*	2 1/4	*57*	2 11/16	*68*	5.10	*2.31*
		1	*25*	2	*50*	1 9/16	*40*	1 9/16	*40*	1 7/8	*48*	2 7/16	*62*	2 1/8	*54*	2 9/16	*65*	5.03	*2.28*
				2 1/2	*65*	1 13/16	*47*	1 3/4	*44*	1 13/16	*47*	2 11/16	*68*	2 5/16	*59*	2 11/16	*68*	5.36	*2.43*
		1 1/4	*32*	2	*50*	1 9/16	*40*	1 1/2	*38*	1 7/8	*48*	2 7/16	*62*	2 1/8	*54*	2 9/16	*65*	4.96	*2.25*
				2 1/2	*65*	1 13/16	*47*	1 3/4	*44*	1 13/16	*47*	2 11/16	*68*	2 3/8	*60*	2 11/16	*68*	5.40	*2.45*
		1 1/2	*40*	1 1/2	*40*	15/16	*24*	15/16	*22*	1 13/16	*47*	2 3/16	*56*	1 15/16	*49*	2 7/16	*62*	4.23	*1.92*
				2	*50*	1 9/16	*40*	1 1/2	*38*	1 7/8	*48*	2 7/16	*62*	2 1/8	*54*	2 9/16	*65*	4.85	*2.20*
				2 1/2	*65*	1 13/16	*47*	1 13/16	*47*	1 13/16	*47*	2 11/16	*68*	2 7/16	*62*	2 11/16	*68*	4.85	*2.20*
		2	*50*	1/2	*15*	3/4	*19*	13/16	*22*	1 3/4	*44*	1 11/16	*43*	1 1/2	*38*	2 3/16	*56*	5.82	*2.64*
				3/4	*20*	7/8	*22*	7/8	*22*	1 3/4	*44*	1 3/4	*44*	1 9/16	*40*	2 1/4	*57*	3.62	*1.64*
				1	*25*	1	*25*	11/16	*17*	1 3/4	*44*	1 15/16	*49*	1 3/4	*44*	2 5/16	*59*	3.92	*1.78*
				1 1/4	*32*	13/16	*22*	13/16	*22*	1 3/4	*44*	2 1/16	*52*	1 7/8	*48*	2 3/8	*60*	4.26	*1.93*
				1 1/2	*40*	15/16	*24*	15/16	*24*	1 13/16	*47*	2 3/16	*56*	2	*51*	2 7/16	*62*	4.42	*2.00*
				2	*50*	1 9/16	*40*	1 9/16	*40*	1 7/8	*48*	2 7/16	*62*	2 1/4	*57*	2 9/16	*65*	5.17	*2.34*
				2 1/2	*65*	1 13/16	*47*	1 7/8	*48*	1 13/16	*47*	2 11/16	*68*	2 9/16	*65*	2 11/16	*68*	6.00	*2.72*
				3	*80*	2 1/16	*52*	2 1/8	*54*	1 7/8	*48*	3	*80*	2 7/8	*73*	2 13/16	*73*	7.35	*3.33*
		2 1/2	*65*	1/2	*15*	3/4	*19*	3/4	*19*	1 3/4	*44*	1 11/16	*43*	1 11/16	*43*	2 3/16	*56*	4.00	*1.81*
				3/4	*20*	7/8	*22*	7/8	*22*	1 3/4	*44*	1 3/4	*44*	1 3/4	*44*	2 1/4	*57*	4.29	*1.95*
				1	*25*	1	*25*	1	*25*	1 3/4	*44*	1 15/16	*49*	1 15/16	*49*	2 5/16	*59*	4.48	*2.03*
				1 1/4	*32*	13/16	*22*	13/16	*22*	1 3/4	*44*	2 1/16	*52*	2 1/16	*52*	2 3/8	*60*	4.83	*2.19*
				1 1/2	*40*	15/16	*24*	15/16	*24*	1 13/16	*47*	2 3/16	*56*	2 3/16	*56*	2 7/16	*62*	5.14	*2.33*
				2	*50*	1 9/16	*40*	1 9/16	*40*	1 7/8	*48*	2 7/16	*62*	2 7/16	*62*	2 9/16	*65*	5.88	*2.67*
				3	*80*	2 1/16	*52*	2 1/16	*52*	1 7/8	*48*	3	*80*	3	*80*	2 13/16	*73*	8.09	*3.67*
				4	*100*	2 3/4	*70*	2 13/16	*73*	2 7/16	*62*	3 11/16	*94*	3 11/16	*94*	3 1/2	*89*	14.03	*6.36*
3	*80*	3/4	*20*	3	*80*	2 1/8	*54*	2 1/8	*54*	2 1/8	*54*	3 1/8	*79*	2 11/16	*68*	3 1/8	*79*	8.25	*3.74*
		1	*25*	3	*80*	2 1/8	*54*	2 1/8	*54*	2 1/8	*54*	3 1/8	*79*	2 11/16	*68*	3 1/8	*79*	8.30	*3.76*
		1 1/4	*32*	3	*80*	2 1/8	*54*	2 1/8	*54*	2 1/8	*54*	3 1/8	*79*	2 13/16	*73*	3 1/8	*79*	8.46	*3.84*
		1 1/2	*40*	3	*80*	2 1/8	*54*	2 3/16	*56*	2 1/8	*54*	3 1/8	*79*	2 13/16	*73*	3 1/8	*79*	8.13	*3.69*
		2	*50*	1 1/2	*40*	1 3/8	*35*	1 1/2	*38*	2 3/16	*56*	2 5/16	*59*	2 3/16	*56*	2 13/16	*73*	6.83	*3.10*
				2	*50*	1 9/16	*40*	1 9/16	*40*	2 3/16	*56*	2 9/16	*65*	2 1/4	*57*	2 15/16	*75*	7.29	*3.31*
				2 1/2	*65*	1 7/8	*48*	1 15/16	*49*	2 1/8	*54*	2 13/16	*73*	2 9/16	*65*	3 1/16	*78*	7.10	*3.22*
				3	*80*	2 1/8	*54*	2 3/16	*56*	2 1/8	*54*	3 1/8	*79*	2 15/16	*75*	3 1/8	*79*	8.79	*3.99*
		2 1/2	*65*	1	*25*	1	*25*	15/16	*24*	2 1/8	*54*	2 1/16	*52*	1 15/16	*49*	2 11/16	*68*	5.51	*2.50*
				1 1/4	*32*	1 1/4	*32*	13/16	*22*	2 1/8	*54*	2 3/16	*56*	2 1/16	*52*	2 3/4	*70*	5.92	*2.68*
				1 1/2	*40*	1 3/8	*35*	15/16	*24*	2 3/16	*56*	2 5/16	*59*	2 3/16	*56*	2 13/16	*73*	6.23	*2.83*
				2	*50*	1 9/16	*40*	1 1/2	*38*	2 3/16	*56*	2 9/16	*65*	2 7/16	*62*	2 15/16	*75*	6.81	*3.09*
				2 1/2	*65*	1 7/8	*48*	1 13/16	*47*	2 1/8	*54*	2 13/16	*73*	2 11/16	*68*	3 1/16	*78*	7.66	*3.47*
				3	*80*	2 1/8	*54*	2 1/8	*54*	2 1/8	*54*	3 1/8	*79*	3 1/16	*78*	3 1/8	*79*	9.13	*4.14*
		3	*80*	1/2	*15*	15/16	*24*	15/16	*24*	2 3/16	*56*	1 7/8	*48*	1 7/8	*48*	2 5/8	*67*	6.08	*2.76*
				3/4	*20*	15/16	*24*	15/16	*24*	2 1/8	*54*	1 7/8	*48*	1 7/8	*48*	2 5/8	*67*	6.06	*2.75*
				1	*25*	1	*25*	1	*25*	2 1/8	*54*	2 1/16	*52*	2 1/16	*52*	2 11/16	*68*	6.27	*2.84*
				1 1/4	*32*	1 1/4	*32*	1 1/4	*32*	2 1/8	*54*	2 3/16	*56*	2 3/16	*56*	2 3/4	*70*	6.75	*3.06*
				1 1/2	*40*	1 3/8	*35*	1 3/8	*35*	2 3/16	*56*	2 5/16	*59*	2 5/16	*59*	2 15/16	*75*	7.10	*3.22*
				2	*50*	1 9/16	*40*	1 9/16	*40*	2 3/16	*56*	2 9/16	*65*	2 9/16	*65*	2 7/8	*73*	7.75	*3.51*
				2 1/2	*65*	1 7/8	*48*	1 7/8	*48*	2 1/8	*54*	2 13/16	*73*	2 13/16	*73*	3 1/16	*78*	8.92	*4.05*
				4	*100*	2 11/16	*68*	2 11/16	*68*	2 7/16	*62*	3 11/16	*94*	3 11/16	*94*	3 1/2	*89*	12.80	*5.80*

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 359
Tee Reducing



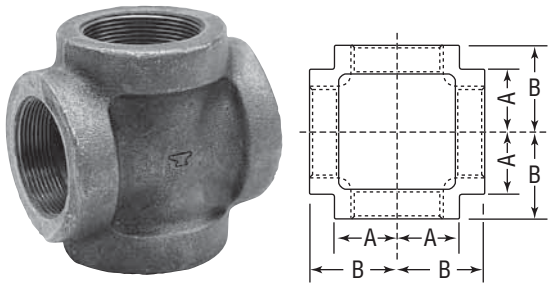
Size						A		B		C		D		E		F		Unit Weight Black	
NPS	*DN*	NPS	*DN*	NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
3 1/2	*90*	3 1/2	*90*	1 1/2	*40*	1 3/8	*35*	1 3/8	*35*	2 7/16	*62*	2 3/8	*60*	2 3/8	*60*	3 1/16	*78*	8.87	*4.02*
				2	*50*	1 5/8	*41*	1 5/8	*41*	2 7/16	*62*	2 5/8	*67*	2 5/8	*67*	3 3/16	*81*	9.94	*4.51*
4	*100*	1	*25*	4	*100*	2 3/4	*70*	2 15/16	*75*	2 3/4	*70*	3 3/4	*95*	3 1/2	*89*	3 3/4	*95*	13.52	*6.13*
		1 1/2	*40*	4	*100*	2 3/4	*70*	2 7/8	*73*	2 3/4	*70*	3 3/4	*95*	3 1/2	*89*	3 3/4	*95*	13.47	*6.11*
		2	*50*	2	*50*	1 11/16	*43*	1 7/8	*48*	2 3/4	*70*	2 11/16	*68*	2 9/16	*65*	3 1/2	*89*	11.34	*5.14*
				4	*100*	2 3/4	*70*	2 3/4	*70*	2 3/4	*70*	3 3/4	*95*	3 1/2	*89*	3 3/4	*95*	13.89	*6.30*
		2 1/2	*65*	2 1/2	*65*	1 7/8	*48*	1 13/16	*47*	2 5/8	*67*	2 15/16	*75*	2 13/16	*73*	3 9/16	*90*	11.78	*5.34*
				4	*100*	2 3/4	*70*	2 3/4	*70*	2 3/4	*70*	3 3/4	*95*	3 5/8	*92*	3 3/4	*95*	15.75	*7.14*
		3	*80*	2	*50*	1 11/16	*43*	1 9/16	*40*	2 3/4	*70*	2 11/16	*68*	2 9/16	*65*	3 1/2	*89*	10.21	*4.63*
				2 1/2	*65*	1 7/8	*48*	1 7/8	*48*	2 5/8	*67*	2 15/16	*75*	2 13/16	*73*	3 9/16	*90*	11.25	*5.10*
				3	*80*	2 1/4	*57*	2 1/8	*54*	2 11/16	*68*	3 1/4	*83*	3 1/8	*79*	3 5/8	*92*	12.50	*5.67*
				4	*100*	2 3/4	*70*	2 11/16	*68*	2 3/4	*70*	3 3/4	*95*	3 5/8	*92*	3 3/4	*95*	15.04	*6.82*
		4	*100*	1	*25*	13/16	*22*	13/16	*22*	2 3/4	*70*	2 5/16	*59*	2 5/16	*59*	3 5/16	*84*	10.40	*4.72*
				1 1/4	*32*	15/16	*24*	15/16	*24*	2 5/8	*67*	2 5/16	*59*	2 5/16	*59*	3 5/16	*84*	10.38	*4.71*
				1 1/2	*40*	1 7/16	*37*	1 7/16	*37*	2 11/16	*68*	2 7/16	*62*	2 7/16	*62*	3 5/16	*84*	10.75	*4.88*
				2	*50*	1 11/16	*43*	1 11/16	*43*	2 3/4	*70*	2 11/16	*68*	2 11/16	*68*	3 1/2	*89*	11.63	*5.27*
				2 1/2	*65*	2	*51*	2	*51*	2 5/8	*67*	2 15/16	*75*	2 15/16	*75*	3 9/16	*90*	12.85	*5.83*
				3	*80*	2 1/4	*57*	2 1/4	*57*	2 11/16	*68*	3 1/4	*83*	3 1/4	*83*	3 5/8	*92*	14.12	*6.40*
				5	*125*	3 3/8	*86*	3 3/8	*86*	2 13/16	*73*	4 3/8	*111*	4 3/8	*111*	4	*102*	20.88	*9.47*
				6	*150*	3 7/8	*98*	3 7/8	*98*	2 7/8	*73*	4 15/16	*125*	4 15/16	*125*	4 1/16	*103*	26.36	*11.95*
5	*125*	5	*125*	2	*50*	1 3/4	*44*	1 3/4	*44*	3 7/16	*87*	2 15/16	*75*	2 15/16	*75*	4 1/8	*105*	17.43	*7.90*
				3	*80*	2 5/16	*59*	2 5/16	*59*	3 1/4	*83*	3 1/2	*89*	3 1/2	*89*	4 1/4	*108*	20.00	*9.07*
				4	*100*	2 13/16	*71*	2 13/16	*71*	3 3/8	*86*	4	*102*	4	*102*	4 3/8	*111*	23.83	*10.81*
6	*150*	4		4	*100*	2 7/8	*73*	2 13/16	*71*	3 7/8	*98*	4 1/16	*103*	4	*102*	4 15/16	*125*	30.00	*13.61*
		6	*150*	2 1/2	*65*	2	*51*	2	*51*	3 13/16	*97*	3 1/4	*83*	3 1/4	*83*	4 3/4	*121*	25.67	*11.64*
				3	*80*	2 3/8	*60*	2 3/8	*60*	3 13/16	*97*	3 9/16	*90*	3 9/16	*90*	4 13/16	*122*	27.46	*12.45*
				4	*100*	2 7/8	*73*	2 7/8	*73*	3 7/8	*98*	4 1/16	*103*	4 1/16	*103*	4 15/16	*125*	32.44	*14.71*
				5	*125*	3 3/8	*86*	3 3/8	*86*	3 13/16	*97*	4 5/8	*117*	4 5/8	*117*	5	*127*	37.00	*16.78*

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

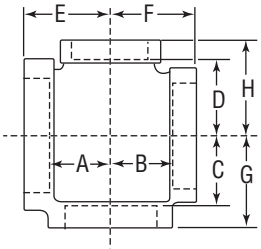
Class 125 (Standard)

FIGURE 360
Cross



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

FIGURE 361
Cross Reducing



2 NPS
3 NPS — 2½ NPS
1¼ NPS

Read as:
3 x 2½ x 2 x 1¼

50 DN
80 DN — 65 DN
32 DN

Read as:
80 x 65 x 50 x 32

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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 383
Hex Bushing

Size						Unit Weight			
						Black		Galv.	
NPS	*DN*	Hex	All Cast Iron	NPS	*DN*	lbs	*kg*	lbs	*kg*
1 1/2	*40*		C	1/4	*8*	0.47	*0.21*	0.47	*0.21*
		⬢	C	3/8	*10*	0.47	*0.21*	0.47	*0.21*
		⬢	C	1/2	*15*	0.42	*0.19*	0.42	*0.19*
		⬢	C	3/4	*20*	0.47	*0.21*	0.47	*0.21*
			C	1	*25*	0.50	*0.23*	0.50	*0.23*
2	*50*		C	1/4	*8*	0.75	*0.34*	0.75	*0.34*
			C	3/8	*10*	0.75	*0.34*	0.75	*0.34*
		⬢	C	1/2	*15*	0.70	*0.32*	0.70	*0.32*
		⬢	C	3/4	*20*	0.71	*0.32*	0.71	*0.32*
		⬢	C	1	*25*	0.73	*0.33*	0.73	*0.33*
		⬢	C	1 1/4	*32*	0.81	*0.37*	0.81	*0.37*
2 1/2	*65*	⬢	C	1/2	*15*	1.28	*0.58*	1.28	*0.58*
		⬢	C	3/4	*20*	1.25	*0.57*	1.25	*0.57*
		⬢	C	1	*25*	1.16	*0.53*	1.16	*0.53*
		⬢	C	1 1/4	*32*	1.24	*0.56*	1.24	*0.56*
		⬢	C	1 1/2	*40*	1.29	*0.59*	1.29	*0.59*
3	*80*	⬢	C	1/2	*15*	1.93	*0.88*	1.93	*0.88*
		⬢	C	3/4	*20*	1.92	*0.87*	1.92	*0.87*
		⬢	C	1	*25*	1.90	*0.86*	1.90	*0.86*
		⬢	C	1 1/4	*32*	1.77	*0.80*	1.77	*0.80*
		⬢	C	1 1/2	*40*	1.79	*0.81*	1.79	*0.81*
			C	2	*50*	1.90	*0.86*	1.90	*0.86*
			C	2 1/2	*65*	1.63	*0.74*	1.63	*0.74*
3 1/2	*80*	⬢	C	1	*25*	2.42	*1.10*	2.42	*1.10*
		⬢	C	1 1/4	*32*	2.56	*1.16*	2.56	*1.16*
		⬢	C	1 1/2	*40*	2.65	*1.20*	2.65	*1.20*
		⬢	C	2	*50*	2.54	*1.15*	2.54	*1.15*
			C	2 1/2	*65*	3.23	*1.46*	3.23	*1.46*
			C	3	*80*	1.96	*0.89*	1.96	*0.89*

⬢ Inside hex
See page 35 (Malleable Iron) for other available sizes.

Continued on next page.

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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

Continued from previous page.

FIGURE 383
Hex Bushing

⬢ Inside hex
See page 35 (Malleable Iron) for other available sizes.

Size						Unit Weight			
						Black		Galv.	
NPS	*DN*	Hex	All Cast Iron	NPS	*DN*	lbs	*kg*	lbs	*kg*
4	*100*	⬢	C	1	*25*	3.59	*1.63*	3.59	*1.63*
		⬢	C	1¼	*32*	3.54	*1.61*	3.54	*1.61*
		⬢	C	1½	*40*	3.44	*1.56*	3.44	*1.56*
		⬢	C	2	*50*	3.11	*1.41*	3.11	*1.41*
		⬢	C	2½	*65*	3.29	*1.49*	3.29	*1.49*
			C	3	*80*	3.15	*1.43*	3.15	*1.43*
			C	3½	*90*	2.50	*1.13*	2.50	*1.13*
5	*125*	⬢	C	2	*50*	5.12	*2.32*	5.12	*2.32*
		⬢	C	2½	*65*	4.87	*2.21*	4.87	*2.21*
		⬢	C	3	*80*	4.83	*2.19*	4.83	*2.19*
			C	3½	*90*	4.00	*1.81*	–	–
			C	4	*100*	3.94	*1.79*	3.94	*1.79*
6	*150*	⬢	C	2	*50*	8.00	*3.63*	8.00	*3.63*
		⬢	C	2½	*65*	7.72	*3.50*	–	–
		⬢	C	3	*80*	7.75	*3.51*	7.75	*3.51*
		⬢	C	4	*100*	6.83	*3.10*	6.83	*3.10*
			C	5	*125*	5.24	*2.38*	5.24	*2.38*
8	*200*	⬢	C	3	*80*	15.50	*7.03*	–	–
		⬢	C	4	*100*	13.93	*6.32*	–	–
		⬢	C	5	*125*	13.65	*6.19*	–	–
			C	6	*150*	13.19	*5.98*	13.19	*5.98*
10	*250*	⬢	C	6	*150*	24.50	*11.11*	–	–
			C	8	*200*	22.00	*9.98*	–	–

FIGURE 385
Face Bushing

See page 35 (Malleable Iron) for other available sizes.

Size				Unit Weight	
				Black	
NPS	*DN*	NPS	*DN*	lbs	*kg*
3	*80*	2	*50*	13.30	*6.03*
4	*100*	2½	*65*	2.55	*1.16*
		3	*80*	19.20	*8.71*

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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Threaded Fittings

Class 125 (Standard)

FIGURE 387 Square Head Plugs, Cored

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

FIGURE 388 Square Head Plugs, Solid

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

FIGURE 389 Bar Plugs, Cored

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

FIGURE 380 Bar Plugs, Solid

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

FIGURE 390 Countersunk Plugs

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

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

FIGURE 381 Cap

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

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

Note: See page 37 for pressure-temperature ratings.

Cast Iron Flanged Fittings

Class 125 (Standard)

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

Specifications

All standard or "Class 125" Cast Iron Flanged Fittings in sizes listed are made to ASME and are marked 125 for pipe sizes 12 NPS *(300 DN)* and smaller; and have plain faces. Unless otherwise specified, cast iron flanges and fittings are drilled and faced in accordance with ASME B 16.1.

Coatings

Flanged fittings are available in both black and galvanized. Consult an Anvil Representative for available sizes.

Sizes

Size of all fittings scheduled indicates nominal pipe diameter of ports. Standard reducing elbows carry the same dimensions center-to-face as regular elbows of largest straight size.

Ordering

To order reducing companion flanges, specify threaded or reduced size first, then the outside diameter of flange wanted. For instance, if a reducing flange is required to connect a 5-inch pipe to an 8-inch flanged valve or fitting having a 13 1/2-inch O.D. flange, order: 5 x 13 1/2-inch standard reducing flange.

Dimensions

Bolt holes, for bolts smaller than 1 3/4 inches *(44mm)* in diameter are drilled 1/8 inch larger than the bolt diameter; 1 3/4 inch *(44mm)* and larger, bolt holes are 1/4 inch *(6mm)* larger than bolt diameter. Bolt holes straddle the center line. Bolt holes are spot faced on order only.

Tolerances

An inspection limit of plus or minus 1/32 inch *(1mm)* shall be allowed on all center to contact surface dimensions for sizes up to and including 10 NPS *(250 DN)*; plus or minus 1/16 inch *(2mm)* on sizes larger than 10 NPS *(250 DN)*. Inspection limit of plus or minus 1/16 inch *(2mm)* shall be allowed on all contact surface to contact surface dimensions for sizes up to and including 10 NPS *(250 DN)*; plus or minus 1/8 inch *(3mm)* on sizes larger than 10 NPS *(250 DN)*. The largest opening in the fitting governs the tolerance to be applied to all openings.

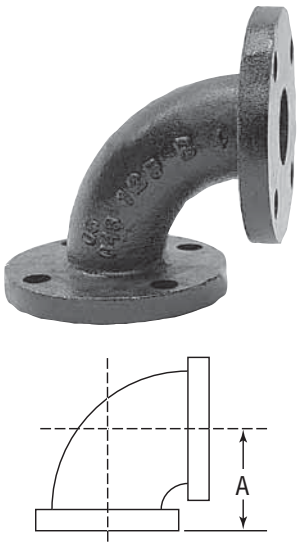
Cast Iron Flanged Fittings and Cast Iron Flanges

Temperature		Pressure									
		Class 125						Class 250			
		1"–12"		14"–24"		30"–48"		1"–12"		14"–24"	
(°F)	*(°C)*	psi	*bar*	psi	*bar*	psi	*bar*	psi	*bar*	psi	*bar*
-20° to 150°	*-28.9 to 65.6*	200	*13.8*	150	*10.3*	150	*10.3*	500	*34.5*	300	*20.7*
200°	*93.3*	190	*13.1*	135	*9.3*	115	*7.9*	460	*31.7*	280	*19.3*
225°	*107.2*	180	*12.4*	130	*9.0*	100	*6.9*	440	*30.3*	270	*18.6*
250°	*121.1*	175	*12.1*	125	*8.6*	85	*5.9*	415	*28.6*	260	*17.9*
275°	*135.0*	170	*11.7*	120	*8.3*	65	*4.5*	395	*27.2*	250	*17.2*
300°	*148.9*	165	*11.4*	110	*7.6*	50	*3.4*	375	*25.9*	240	*16.5*
325°	*162.8*	155	*10.7*	105	*7.2*	–	–	355	*24.5*	230	*15.9*
350°	*178.3*	150	*10.3*	100	*6.9*	–	–	335	*23.1*	220	*15.2*
375°	*190.6*	145	*10.0*	–	–	–	–	315	*21.7*	210	*14.5*
400°	*207.8*	140	*9.7*	–	–	–	–	290	*20.0*	200	*13.8*
425°	*218.3*	130	*9.0*	–	–	–	–	270	*18.6*	–	–
450°	*232.2*	125	*8.6*	–	–	–	–	250	*17.2*	–	–

Cast Iron Flanged Fittings

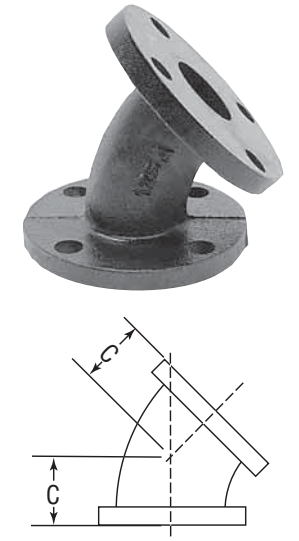
Class 125 (Standard)

FIGURE 801
90° Flanged Elbow



Size		A		Flange Dia.		Thickness				Unit Weight			
						Min. Flange		Wall		Black		Galv.	
NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*	lbs	*kg*
1 1/2	*40*	4	*102*	5	*127*	9/16	*14*	5/16	*8*	9.00	*4.08*	–	–
2	*50*	4 1/2	*114*	6	*152*	5/8	*16*	5/16	*8*	14.00	*6.35*	14.00	*6.35*
2 1/2	*65*	5	*127*	7	*178*	11/16	*17*	5/16	*8*	19.00	*8.62*	19.00	*8.62*
3	*80*	5 1/2	*140*	7 1/2	*191*	3/4	*19*	3/8	*10*	24.00	*10.88*	24.00	*10.88*
3 1/2	*90*	6	*152*	8 1/2	*216*	13/16	*22*	7/16	*11*	31.00	*14.06*	–	–
4	*100*	6 1/2	*165*	9	*229*	15/16	*24*	1/2	*13*	41.00	*18.59*	41.00	*18.59*
5	*125*	7 1/2	*191*	10	*254*	15/16	*24*	1/2	*13*	52.00	*23.58*	52.00	*23.58*
6	*150*	8	*203*	11	*279*	1	*25*	9/16	*14*	68.00	*30.84*	68.00	*30.84*
8	*200*	9	*229*	13 1/2	*343*	1 1/8	*29*	5/8	*16*	110.00	*49.89*	110.00	*49.89*
10	*250*	11	*279*	16	*406*	1 3/16	*30*	3/4	*19*	175.00	*79.37*	175.00	*79.37*
12	*300*	12	*305*	19	*483*	1 1/4	*32*	13/16	*23*	250.00	*113.38*	250.00	*113.38*

FIGURE 802
45° Flanged Elbow



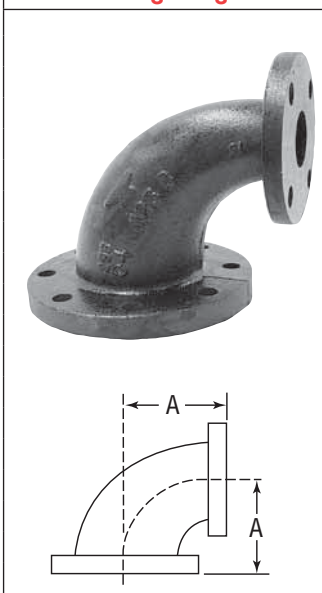
Size		A		Flange Dia.		Thickness				Unit Weight			
						Min. Flange		Wall		Black		Galv.	
NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*	lbs	*kg*
1 1/2	*40*	2 1/4	*57*	5	*127*	9/16	*14*	5/16	*8*	8.00	*3.63*	–	–
2	*50*	2 1/2	*64*	6	*152*	5/8	*16*	5/16	*8*	12.00	*5.44*	–	–
2 1/2	*65*	3	*76*	7	*178*	11/16	*17*	5/16	*8*	17.00	*7.71*	–	–
3	*80*	3	*76*	7 1/2	*191*	3/4	*19*	3/8	*10*	20.00	*9.07*	20.00	*9.07*
4	*100*	4	*102*	9	*229*	15/16	*24*	1/2	*13*	36.00	*16.33*	36.00	*16.33*
5	*125*	4 1/2	*114*	10	*254*	15/16	*24*	1/2	*13*	45.00	*20.41*	–	–
6	*150*	5	*127*	11	*279*	1	*25*	9/16	*14*	60.00	*27.21*	60.00	*27.21*
8	*200*	5 1/2	*140*	13 1/2	*343*	1 1/8	*29*	5/8	*16*	94.00	*42.63*	94.00	*42.63*
10	*250*	6 1/2	*165*	16	*406*	1 3/16	*30*	3/4	*19*	145.00	*65.76*	145.00	*65.76*
12	*300*	7 1/2	*191*	19	*483*	1 1/4	*32*	13/16	*23*	220.00	*99.77*	220.00	*99.77*

Note: See page 63 for pressure-temperature ratings.

Cast Iron Flanged Fittings

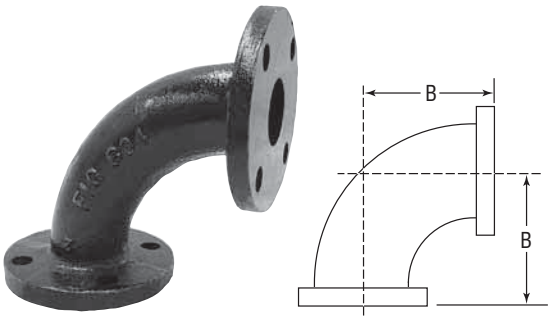
Class 125 (Standard)

FIGURE 803
90° Reducing Flanged Elbow



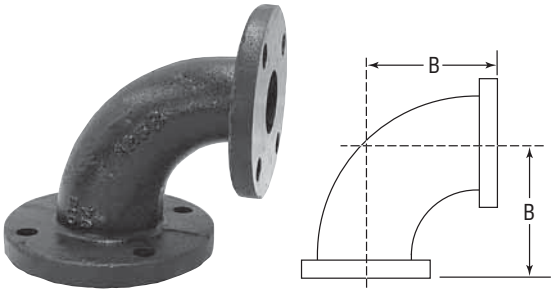
Size				A		Unit Weight Black	
NPS	*DN*	NPS	*DN*	in	*mm*	lbs	*kg*
2 1/2	*65*	2	*50*	5	*127*	18.00	*8.16*
3	*80*	2	*50*	5 1/2	*140*	19.00	*8.62*
		2 1/2	*65*			22.00	*9.98*
4	*100*	2	*50*	6 1/2	*165*	29.00	*13.15*
		2 1/2	*65*			31.00	*14.06*
		3	*80*			33.00	*14.97*
5	*125*	3	*80*	7 1/2	*191*	40.00	*18.14*
		4	*100*			48.00	*21.77*
6	*150*	3	*80*	8	*203*	47.00	*21.32*
		4	*100*			56.00	*25.40*
		5	*125*			60.00	*27.21*
8	*200*	4	*100*	9	*229*	77.00	*34.92*
		5	*125*			82.00	*37.19*
		6	*150*			90.00	*40.82*
10	*250*	6	*150*	11	*279*	125.00	*56.69*
		8	*200*			150.00	*68.03*
12	*300*	6	*150*	12	*305*	165.00	*74.83*
		8	*200*			190.00	*86.17*
		10	*250*			220.00	*99.77*

FIGURE 804
90° Long Radius Flanged Elbow



Size		B		Flange Diameter		Thickness Min. Flange		Thickness Wall		Unit Weight Black	
NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*
2	*50*	6 1/2	*165*	6	*152*	5/8	*16*	5/16	*8*	16.00	*7.26*
2 1/2	*65*	7	*178*	7	*178*	11/16	*17*	5/16	*8*	23.00	*10.43*
3	*80*	7 3/4	*197*	7 1/2	*191*	3/4	*19*	3/8	*10*	28.00	*12.70*
4	*100*	9	*229*	9	*229*	15/16	*24*	1/2	*13*	48.00	*21.77*
5	*125*	10 1/4	*260*	10	*254*	15/16	*24*	1/2	*13*	62.00	*28.12*
6	*150*	11 1/2	*292*	11	*279*	1	*25*	9/16	*14*	85.00	*38.55*
8	*200*	14	*356*	13 1/2	*343*	1 1/8	*29*	5/8	*16*	145.00	*65.76*
10	*250*	16 1/2	*419*	16	*406*	1 3/16	*30*	3/4	*19*	230.00	*104.31*
12	*300*	19	*483*	19	*483*	1 1/4	*32*	13/16	*22*	350.00	*158.73*

FIGURE 804R
90° Long Radius Reducing Flanged Elbow



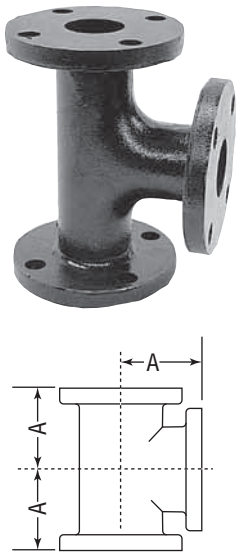
Reducing Size		B		Unit Weight Black	
NPS	*DN*	in	*mm*	lbs	*kg*
4 x 3	*100 x 80*	9	*229*	46.00	*20.86*
5 x 4	*125 x 100*	10 1/4	*260*	58.00	*26.30*
6 x 4	*150 x 100*	11 1/2	*292*	78.00	*35.37*
6 x 5	*150 x 125*	11 1/2	*292*	81.00	*36.73*
8 x 6	*200 x 150*	14	*356*	130.00	*58.96*
10 x 8	*250 x 200*	16 1/2	*419*	205.00	*92.97*

Note: See page 63 for pressure-temperature ratings.

Cast Iron Flanged Fittings

Class 125 (Standard)

FIGURE 811
Flanged Tee



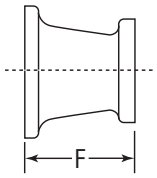
Size		A		AA		Flange Diameter		Thickness				Unit Weight			
								Flange		Wall		Black		Galv.	
NPS	*DN*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	in	*mm*	lbs	*kg*	lbs	*kg*
1 1/2	*40*	4	*102*	8	*203*	5	*127*	9/16	*14*	5/16	*8*	15.00	*6.80*	–	–
2	*50*	4 1/2	*114*	9	*229*	6	*152*	5/8	*16*	5/16	*8*	21.00	*9.52*	21.00	*9.52*
2 1/2	*65*	5	*127*	10	*254*	7	*178*	11/16	*17*	5/16	*8*	30.00	*13.61*	30.00	*13.61*
3	*80*	5 1/2	*140*	11	*279*	7 1/2	*191*	3/4	*19*	3/8	*10*	37.00	*16.78*	37.00	*16.78*
4	*100*	6 1/2	*165*	13	*330*	9	*229*	15/16	*24*	1/2	*13*	64.00	*29.02*	64.00	*29.02*
5	*125*	7 1/2	*191*	15	*381*	10	*254*	15/16	*24*	1/2	*13*	81.00	*36.73*	–	–
6	*150*	8	*203*	16	*406*	11	*279*	1	*25*	9/16	*14*	105.00	*47.62*	105.00	*47.62*
8	*200*	9	*229*	18	*457*	13 1/2	*343*	1 1/8	*29*	5/8	*16*	165.00	*74.83*	165.00	*74.83*
10	*250*	11	*279*	22	*559*	16	*406*	1 3/16	*30*	3/4	*19*	270.00	*122.45*	270.00	*122.45*
12	*300*	12	*305*	24	*610*	19	*483*	1 1/4	*32*	13/16	*22*	380.00	*172.34*	380.00	*172.34*

Note: See page 63 for pressure-temperature ratings.

Cast Iron Flanged Fittings

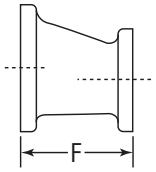
Class 125 (Standard)

FIGURE 825
Flanged Concentric Reducer



Size				F		Unit Weight			
						Black		Galv.	
NPS	*DN*	NPS	*DN*	in	*mm*	lbs	*kg*	lbs	*kg*
2	*50*	1 1/2	*40*	5	*127*	12.00	*5.44*	–	–
2 1/2	*65*	1 1/2	*40*	5	*127*	12.00	*5.44*	–	–
		2	*50*			14.00	*6.35*	–	–
3	*80*	1 1/2	*40*	6	*152*	14.00	*6.35*	–	–
		2	*50*			16.00	*7.26*	–	–
		2 1/2	*65*			19.00	*8.62*	19.00	*8.62*
4	*100*	2	*50*	7	*178*	24.00	*10.88*	24.00	*10.88*
		2 1/2	*65*			26.00	*11.79*	26.00	*11.79*
		3	*80*			28.00	*12.70*	28.00	*12.70*
5	*125*	2 1/2	*65*	8	*203*	31.00	*14.06*	–	–
		3	*80*			32.00	*14.51*	–	–
		4	*100*			39.00	*17.69*	–	–
6	*150*	2	*50*	9	*229*	34.00	*15.42*	–	–
		2 1/2	*65*			37.00	*16.78*	–	–
		3	*80*			39.00	*17.69*	–	–
		4	*100*			47.00	*21.32*	47.00	*21.32*
		5	*125*			50.00	*22.68*	–	–
8	*200*	4	*100*	11	*279*	66.00	*29.93*	–	–
		5	*125*			71.00	*32.20*	–	–
		6	*150*			77.00	*34.92*	77.00	*34.92*
10	*250*	4	*100*	12	*305*	85.00	*38.55*	–	–
		5	*125*			90.00	*40.82*	–	–
		6	*150*			100.00	*45.35*	–	–
		8	*200*			120.00	*54.42*	–	–
12	*300*	6	*150*	14	*356*	140.00	*63.49*	–	–
		8	*200*			155.00	*70.29*	–	–
		10	*250*			180.00	*81.63*	–	–

FIGURE 826
Flanged Eccentric Reducer



Size				F		Unit Weight			
						Black		Galv.	
NPS	*DN*	NPS	*DN*	in	*mm*	lbs	*kg*	lbs	*kg*
3	*80*	2	*50*	6	*152*	16.00	*7.26*	–	–
		2 1/2	*65*			22.00	*9.98*	–	–
4	*100*	2	*50*	7	*178*	28.00	*12.70*	–	–
		2 1/2	*65*			28.00	*12.70*	–	–
		3	*80*			28.00	*12.70*	–	–
5	*125*	4	*100*	8	*203*	39.00	*17.69*	–	–
6	*150*	3	*80*	9	*229*	47.00	*21.32*	–	–
		4	*100*			50.00	*22.68*	50.00	*22.68*
		5	*125*			51.00	*23.13*	–	–
8	*200*	4	*100*	11	*279*	71.00	*32.20*	–	–
		5	*125*			76.00	*34.47*	–	–
		6	*150*			77.00	*34.92*	–	–
10	*250*	6	*150*	12	*305*	107.00	*48.53*	–	–
		8	*200*			120.00	*54.42*	–	–
12	*300*	8	*200*	14	*356*	155.00	*70.29*	–	–
		10	*250*			180.00	*81.63*	–	–

Note: See page 63 for pressure-temperature ratings.

Specification

Unless otherwise specified welded nipples ASTM A 53 are furnished on orders for steel nipples in standard and extra strong sizes 1/8" – 8" NPS *(6 – 200 DN)*.

Welded steel nipples (A 53 Type F or Type E) are available in standard and extra strong sizes 1/8" – 8" NPS *(6 – 200 DN)*, right hand threads, black or galvanized.

Seamless nipples manufactured for the U.S. and International markets are *not* phosphate coated. Seamless nipples manufactured for Canada *are* phosphate coated.

Seamless steel pressure tube nipples (ASTM A 106 Grade B) are available in standard and extra strong sizes 1/8" – 8" NPS *(6 – 200 DN)* with right hand threads, black only.

Right and left steel nipples are available in standard and extra heavy weight sizes 1/8" – 4" NPS *(8 – 50 DN)*, in 4" *(102mm)* and 6" *(152mm)* lengths.

Nipples are available from stock in 1/8" – 8" NPS *(6 – 200 DN)* diameter, close to 12 NPS *(300 DN)* in length. Sizes 13" – 24" NPS *(325 – 600 DN)*. (Prices on application.)

Steel pipe nipples meet ASTM A733.

Identification

Where possible, each seamless pipe nipple is identified with the following:

- A trade mark
- Seamless designation "SMLS"
- Pipe schedule STD, XS/XH, SCH 160 and XXS/XXH
- Material designation A106 B
- Heat number for traceablity

Welded Pipe Nipples

Black & Galvanized, Std. Sch. 40, XH Sch. 80

FIG. 339: Standard Black Schedule 40

FIG. 338: Extra Heavy Black Schedule 80

FIG. 343: Standard Galv. Schedule 40

FIG. 342: Extra Heavy Galv. Schedule 80

Material

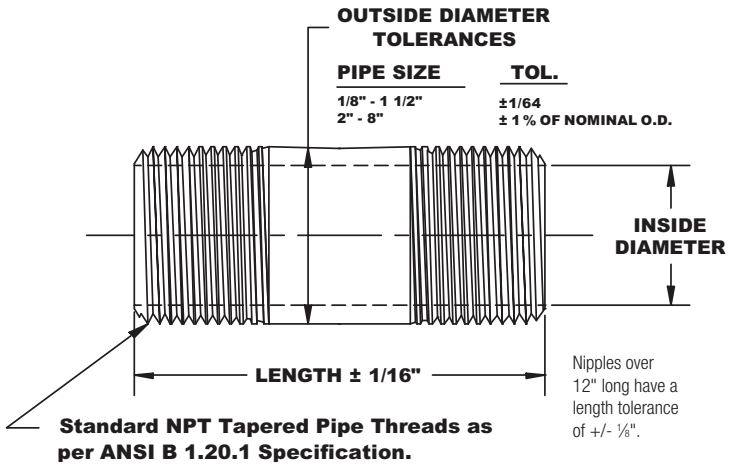
ASTM A53 Standard Specification for Pipe Steel, Black, Galvanized, Hot-Dipped, Zinc Coated, Welded.

Applicable specification

ASTM A733
(Refer to the chart below for specific pipe dimensions.)

Note: Minimum wall thickness at any point to be not more than +/- 10% nominal wall thickness specified for that size pipe.

Standard and Extra Heavy right and left nipples available in 1/8 – 4" diameter and 4" and 6" lengths.



Pipe Size	Pipe O.D.	Length Close	Pipe Nipple Lengths															
in	in	in																
1/8	0.405	3/4	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
1/4	0.540	7/8	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
3/8	0.675	1	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
½	0.840	1⅛	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
¾	1.050	1⅜	1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
1	1.315	1½		2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
1¼	1.660	1⅝		2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
1½	1.900	1¾		2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
2	2.375	2			2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
2½	2.875	2½				3	3½	4	4½	5	5½	6	7	8	9	10	11	12
3	3.500	2⅝				3	3½	4	4½	5	5½	6	7	8	9	10	11	12
4	4.500	2⅞						4	4½	5	5½	6	7	8	9	10	11	12
5	5.563	3							4½	5	5½	6	7	8	9	10	11	12
6	6.625	3⅛							4½	5	5½	6	7	8	9	10	11	12

Note: Other lengths available.
8" Pipe Size available as POA - contact your Anvil Representative for details.

Steel Pipe Nipples

Welded – Ready Cut Pipe Standard — Schedule 40

"A" ASSORTMENTS

Mixed Cartons (Black — Figure 339 & Galvanized — Figure 343)

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
½	4	3	3	3	2	2	2	1	2	1	2	25	5.00
½	20	10	15	10	10	5	10	5	5	5	5	100	18.00
¾	4	3	3	3	2	2	2	1	2	1	2	25	7.00
¾	20	10	15	10	10	5	10	5	5	5	5	100	24.00
1	15	-	15	10	12	5	5	4	3	3	3	75	24.00
1	5	-	5	3	2	2	2	1	2	1	2	25	10.00
1¼	5	-	5	3	2	2	2	1	2	1	2	25	12.00
1½	5	-	5	3	2	2	2	1	2	1	2	25	15.00
2	6	-	-	3	3	2	3	1	3	1	3	25	22.00

All items ship in bulk quantities.

"66" PACKS OR ASSORTED 6 CARTONS

Black — Figure 339 & Galvanized — Figure 343

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
⅛	6	6	6	6	6	6	6	6	6	6	6	66	6.00
¼	6	6	6	6	6	6	6	6	6	6	6	66	9.00
⅜	6	6	6	6	6	6	6	6	6	6	6	66	12.00
½	6	6	6	6	6	6	6	6	6	6	6	66	14.00
¾	6	6	6	6	6	6	6	6	6	6	6	66	19.00
1	6	-	6	6	6	6	6	6	6	6	6	60	26.00
1¼	6	-	6	6	6	6	6	6	6	6	6	60	33.00
1½	6	-	6	6	6	6	6	6	6	6	6	60	41.00
2	6	-	-	6	6	6	6	6	6	6	6	54	53.00

All items ship in bulk quantities.

HANDY PACK ASSORTMENTS

Mixed Cartons (Black — Figure 339 & Galvanized — Figure 343)

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
⅛	6	6	6	6	6	6	6	6	6	6	6	66	6.00
¼	6	6	6	6	6	6	6	6	6	6	6	66	9.00
⅜	6	6	6	6	6	6	6	6	6	6	6	66	12.00
½	6	6	6	6	6	6	6	6	6	6	6	66	14.00
¾	6	6	6	6	6	6	6	6	6	6	6	66	19.00
1	6	-	6	6	6	6	6	6	6	6	6	60	26.00
1¼	3	-	-	3	3	3	3	3	3	3	3	27	19.00
1½	3	-	-	3	3	3	3	3	3	3	3	27	23.00
2	3	-	-	3	3	3	3	3	3	3	3	27	30.00

All items ship in bulk quantities.

Steel Pipe Nipples

Welded – Ready Cut Pipe Standard — Schedule 40, XH Sch. 80

READY CUT PIPE

Black Extra Long— Figure 339 & Galvanized — Figure 343

Nom. Pipe Size	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"
⅛	5	5	5	5	5	5	5	5	5	5
¼	5	5	5	5	5	5	5	5	5	5
⅜	5	5	5	5	5	5	5	5	5	5
½	5	5	5	5	5	5	5	5	5	5
¾	5	5	5	5	5	5	5	5	5	5
1	3	3	3	3	3	3	3	3	3	3
1¼	3	3	3	3	3	3	3	3	3	3
1½	3	3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2	2	2	2

SINGLE RUN PACKS

Black — Figure 339 & Galvanized — Figure 343

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
⅛	1	1	1	1	1	1	1	1	1	1	1	11	1.00
¼	1	1	1	1	1	1	1	1	1	1	1	11	1.50
⅜	1	1	1	1	1	1	1	1	1	1	1	11	2.00
½	1	1	1	1	1	1	1	1	1	1	1	11	2.50
¾	1	1	1	1	1	1	1	1	1	1	1	11	3.50
1	1	-	1	1	1	1	1	1	1	1	1	10	5.00
1¼	1	-	1	1	1	1	1	1	1	1	1	10	7.00
1½	1	-	1	1	1	1	1	1	1	1	1	10	8.00
2	1	-	-	1	1	1	1	1	1	1	1	9	10.00
2½	1	-	-	-	1	1	1	1	1	1	1	8	13.30
3	1	-	-	-	1	1	1	1	1	1	1	8	15.80

All items ship in bulk quantities.

SINGLE RUN PACKS

Black Only Extra Heavy — Figure 338

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
½	1	1	1	1	1	1	1	1	1	1	1	11	3.20
¾	1	1	1	1	1	1	1	1	1	1	1	11	4.30
1	1	-	1	1	1	1	1	1	1	1	1	10	6.10
1¼	1	-	1	1	1	1	1	1	1	1	1	10	8.40
1½	1	-	1	1	1	1	1	1	1	1	1	10	10.30
2	1	-	-	1	1	1	1	1	1	1	1	9	13.90

All items ship in bulk quantities.

TRAVEL TRAYS (Black & Galvanized)

Nom. Pipe Size	Close	1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	No. of Pieces	Approx. Wt. Lbs.
½	6	6	6	6	6	6	6	6	6	6	6	66	15.00
¾	6	6	6	6	6	6	6	6	6	6	6	66	20.00
1	5	-	5	5	5	5	5	5	5	5	5	50	22.00

All items ship in bulk quantities.

Steel Pipe Nipples – Welded

TANK NIPPLES

Black — Figure 339 & Galvanized — Figure 343

Nom. Pipe Size	Length	Weight	Quantity
⅛	6	0.13	-
¼	6	0.20	-
⅜	6	0.28	-
½	6	0.40	-
¾	6	0.53	-
1	6	0.76	-
1¼	6	1.04	-
1½	6	1.28	-
2	6	1.56	-

Tank nipples are recommended for use as tank legs. One end has the standard tapered pipe thread and the other end has a straight running thread 4" long. All Tank Nipples ship in quantities of 25.

BUTT NIPPLES

Black — Figure. 339 & Galvanized — Fig. 343

Nom. Pipe Size	Weight	Quantity
⅛ x ½	0.02	-
¼ x ¾	0.03	-
⅜ x ¾	0.04	-
½ x ¾	0.04	-
¾ x 1	0.06	-
1 x 1	0.10	-
1¼ x 1	0.16	-
1½ x 1¼	0.17	-
2 x 1¼	0.28	-
2½ x 2	0.87	-
3 x 2	1.28	-
4 x 2¼	1.11	-

RIGHT & LEFT NIPPLES

Black — Figure 339 & Galvanized — Figure 343

Nom. Pipe Size	Length	Weight	Quantity
⅛	4" or 6"	0.09	-
¼	4" or 6"	0.13	-
⅜	4" or 6"	0.18	25
½	4" or 6"	0.25	25
¾	4" or 6"	0.35	25
1	4" or 6"	0.51	25
1¼	4" or 6"	0.68	25
1½	4" or 6"	0.80	25
2	4" or 6"	1.09	25
2½	4" or 6"	1.50	-
3	4" or 6"	2.00	-
3½	4" or 6"	2.80	-
4	4" or 6"	3.24	-

Approvals / Specifications

WARD FITTINGS
117 Gulick St., Blossburg, PA 16912

MALLEABLE IRON THREADED FITTINGS

Standard Class 150 Specifications:

ANSI B1.20.1, Threads, B 16.3, Dimensions, Pressure Rating
ASTM A197, Material. A153, Galvanizing
Federal Spec: WWP 521

MSDS Malleable

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:
150 psig - Saturated Steam
300 psig - At 150 Degrees W. O. G.

U.L.C. and U.L. listed where applicable, FM approved.

Extra Heavy Class 300 Specifications:

ANSI B1.20.1, Threads, B16.3, Dimensions, Pressure Rating
ASTM A197, Material A153, Galvanizing

MSDS Malleable

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:
300 psig - Saturated Steam
¼ - 1 - 2000 psig - At 150 Degrees W.O.G.
1-¼ - 2 - 1500 psig - At 150 Degrees W.O.G.
2-½ - 3 - 1000 psig - At 150 Degrees W.O.G.

U.L.C. and U.L. listed where applicable, FM approved

Union Specifications:

(Brass to Brass, Brass to Iron, Iron to Iron, Gasket Type, Dielectric Iron to Brass)
ANSI B1.20.1, Threads, B16.39, Dimensions, Pressure Rating
ASTM A197, Material. A153, Galvanizing
Federal Spec: WW-U-531

MSDS Malleable

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:
Class 150:
150 psig - Saturated Steam
300 psig - At 150 Degrees W.O.G.
Class 250:
250 psig - Saturated Steam
500 psig - At 150 Degrees W.O.G.
Class 300:
300 psig - Saturated Steam
600 psig - At 150 Degrees W.O.G.

U.L.C. and U.L. listed where applicable, FM approved

Top Beam & C-Clamp Specifications:

Malleable Iron
ASTM A197, Material. A153, Galvanizing
3/81/2 rod size
Supplied with set screw and lock nut

MSDS Malleable

Clamp Range:
Small mouth Beam Clamp & C-Clamp - ¾
Large mouth Beam Clamp & C-Clamp - 1 ¼

U.L.C. and U.L. listed where applicable, FM approved

CAST IRON THREADED FITTINGS

Standard Class 125 Specifications:

ANSI B1.20.1, Threads, B 16.4, Dimensions, Pressure Rating
ASTM A126, Material. A153, Galvanizing
Federal Spec: WWP 521

MSDS Gray Cast

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:

125 psig - Saturated Steam
175 psig - At 150 Degrees W. O. G.

Federal Spec: WW-P-501
U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

Plug and Bushing Specifications:

ANSI B1.20.1, Threads, B16.14, Dimensions, Pressure Rating
ASTM A197 (Malleable), A126 (Cast), Material A153, Galvanizing

MSDS Gray Cast

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:

Malleable:

150 psig - Saturated Steam
300 psig - At 150 Degrees W.O.G.

Cast:

125 psig - Saturated Steam
175 psig - At 150 Degrees W.O.G.

Federal Spec: WW-P-471
U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

Drainage Fitting Specifications:

ANSI B1.20.1, Threads, B16.12, Dimensions, Pressure Rating
ASTM A126, Material. A153, Galvanizing
Federal Spec: WW-P-471

MSDS Gray Cast

Cast Iron Flange Specifications:

ANSI B1.20.1, Threads, B16.1, Dimensions, Pressure Rating
ASTM A126, Material. A153, Galvanizing

MSDS Gray Cast

NSF Listing

NSF 61 Annex G Cert

Pressure Ratings:
125 psig - Saturated Steam
175 psig - At 150 Degrees W.O.G.

Federal Spec: WW-F-406

U.L.C. and U.L. Listed Where Applicable
FM Approved Where Applicable

WARDLOX PLAIN-END FITTING SPECIFICATIONS

Housing: Cast Iron to ASTM A126 Class A
Set Screws: Carbon Steel, Zinc Plated, Self-Locking
Gaskets: E.P.D.M. to ASTM D-2000 With Temperature Range of -30 to 230
Threaded Outlets: Conform to ANSI B-1.20.1 Specifications
Pressure Ratings: 175 psig

MSDS Gray Cast

U.L.C. **U.L.** Listed, FM Approved

TEE-LOX MECHANICAL BRANCH CONNECTOR SPECIFICATIONS

Housing: Cast Iron to A126 Class A, Ductile to A536
Gasket: E.P.D.M. to ASTM D-2000
Hole Size: 1 3/16"
U-Bolt: Plated High Tensile Steel
Threaded Outlet: Conform to ANSI/ASME B-1.20.1 Specifications
Run Sizes: 1 1/4", 1 1/2", 2", 2 1/2"
Outlet Sizes: 1/2", 3/4", 1"

MSDS Gray Cast

Pressure Ratings: 175 psig

U.L. Listed, FM Approved

STEEL COUPLINGS

Full Standard Merchant Coupling Specifications:

ANSI B1.20.1, Threads
ASTM A865, Material
Applications: General purpose, low pressure piping; i.e. water, air, gas and oil lines.
Thread Type:

- 1/2" - 2" Straight Tapped (NPSC)
- 2-1/2" - 4" Taper Tapped (NPT)

Half Standard Merchant Coupling Specifications:

ANSI B1.20.1, Threads
ASTM A865, Material
Thread Type:

- 1/2" - 2" Straight Tapped (NPSC)
- 2-1/2" - 4" Taper Tapped (NPT)

* Half couplings chamfered on one end only, other end is square.

Wheatland's

Schedule 10

Sprinkler Pipe

Wheatland's Schedule 10 Sprinkler Pipe is a high quality sprinkler pipe offering you the full range of assurances you require. Schedule 10 Sprinkler Pipe has passed some of the toughest lab tests ever created for sprinkler pipe.

Made in the U.S.A. by Wheatland Tube Company means made to the highest standards for consistant quality.

Wheatland's schedule 10 Sprinkler Pipe is made from the highest quality steel in one of the nation's most modern and most complete pipe manufacturing plants. Our proprietary mill coating offers you a clean, corrosion and heat resistant surface that outlasts and outperforms standard lacquer coatings. Plus, this coating can be quickly and easily painted without special preparation. Or it may be hot-dipped galvanized to meet FM requirements for dry systems in accordance with the zinc coating specification of ASTM A795 or A53.

Specifications and Approvals

Wheatland's Schedule 10 Lightwall Sprinkler Pipe meets or exceeds the following:

- UL Listed
- FM Approved
- ASTM A135, Grade A

Please refer to appropriate documentation for up-to-date listing and approval information. Specifications and descriptions are accurate as known at time of publication and are subject to change without notice.

Specifications

NPS	Nominal O.D		Nominal I.D		Nominal Wall		Nominal Weight		UL CRR*	Pieces Lift
	in.	mm	in.	mm	in.	mm	lbs./ft.	kg/m		
1 1/4	1.660	42.2	1.442	36.6	.109	2.77	1.81	2.69	7.3	61
1 1/2	1.900	48.3	1.682	42.7	.109	2.77	2.09	3.11	5.8	61
2	2.375	60.3	2.157	54.8	.109	2.77	2.64	3.93	4.7	37
2 1/2	2.875	73.0	2.635	66.9	.120	3.05	3.53	5.26	3.5	30
3	3.500	88.9	3.260	82.8	.120	3.05	4.34	6.46	2.6	19
4	4.500	114.3	4.260	108.2	.120	3.05	5.62	8.37	1.6	19
5	5.563	141.3	5.295	134.5	.134	3.40	7.78	11.58	1.5	13
6	6.625	168.3	6.357	161.5	.134	3.40	9.30	13.85	1.0	10

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

* The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Schedule 40 steel pipe is used as the benchmark (value of 1.0).

Wheatland Tube Company
1 Council Avenue, P.O. Box 608 Wheatland, PA 16161-0608
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www.wheatland.com

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Wheatland's

Schedule 40

Sprinkler Pipe

Wheatland's Schedule 40 Sprinkler Pipe is a high quality sprinkler pipe offering you the full range of assurances you require. Schedule 40 Sprinkler Pipe has passed some of the toughest lab tests ever created for sprinkler pipe.

Made in the U.S.A. by Wheatland Tube Company means made to the highest standards for consistant quality.

Wheatland's schedule 40 Sprinkler Pipe is made from the highest quality steel in one of the nation's most modern and most complete pipe manufacturing plants. Our proprietary mill coating offers you a clean, corrosion and heat resistant surface that outlasts and outperforms standard lacquer coatings. Plus, this coating can be quickly and easily painted without special preparation. Or it may be hot-dipped galvanized to meet FM requirements for dry systems in accordance with the zinc coating specification of ASTM A795. Schedule 40 is also available as ASTM A 53 Type F, Grade A in NPS 1 - 6 and is UL Listed and FM Approved.

Specifications and Approvals

Wheatland's Schedule 40 Standard Wall Sprinkler Pipe meets or exceeds the following:

- UL Listed
- FM Approved
- ASTM A795, Type E, Grade A

Please refer to appropriate documentation for up-to-date listing and approval information. Specifications and descriptions are accurate as known at time of publication and are subject to change without notice.

Specifications

NPS	Nominal O.D		Nominal I.D		Nominal Wall		Nominal Weight		UL CRR*	Pieces Lift
	in.	mm	in.	mm	in.	mm	lbs./ft.	kg/m		
1"	1.315	33.4	1.049	26.6	.133	3.38	1.68	2.50	1.00	70
1 1/4"	1.660	42.2	1.380	35.1	.140	3.56	2.27	3.39	1.00	51
1 1/2"	1.900	48.3	1.610	40.9	.145	3.68	2.72	4.05	1.00	44
2"	2.375	60.3	2.067	52.5	.154	3.91	3.66	5.45	1.00	30

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

* The CRR is a ratio value used to measure the ability of a pipe to withstand corrosion. Schedule 40 steel pipe is used as the benchmark (value of 1.0).

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STEEL FIRE SPRINKLER PIPE

Schedule 10 and Schedule 40

SUBMITTAL DATA SHEET

High Quality, High Performance, Long-Lasting

Wheatland's Schedule 10 and Schedule 40 steel fire sprinkler pipe have set the industry's standards for years. Both products are subjected to the toughest possible testing to assure the highest possible quality and reliable, long-lasting performance.

Each is coated with Wheatland's proprietary mill coating to assure a clean, corrosion-resistant surface that outperforms and outlasts standard lacquer coatings. The coating also allows the pipe to be easily painted, without special preparation.

You can order Schedule 10 or Schedule 40 in black, or with hot-dip galvanizing, to meet FM requirements for dry systems to meet the zinc coating specifications of ASTM A795 or A53.

Both Schedule 10 and 40 are UL, C-UL and FM listed and meet NFPA 13 standards. We coat all of our black products up to 6" with our patented MIC Shield™ coating, which helps protect against the onset of microbial corrosion (MIC). Our MIC Shield was the first factory applied coating to be approved by FM as compatible with hybrid sprinkler systems that include CPVC plastic pipe in mixed use occupancies. MIC Shield is also chemically compatible with Flow Guard Gold®, Blaze Master® and Corizan® CPVC.

Why Wheatland?

- Experience: We've manufactured fire sprinkler pipe since 1931
- We produce the most complete line of products in the industry
- We offer a number of proprietary products and unique benefits
- We provide a complete line of coatings:
  - in-house, hot dip galvanizing
  - black sprinkler pipe
  - MIC shield™, the first FM global approved factory applied, anti-microbial coating for use with CPVC plastic pipe systems
  - proprietary mill coatings that provide corrosion resistant properties
  - proprietary mill coatings that extend shelf life

Schedule 10 and 40 Meet or Exceed These Standards

- UL, C-UL and FM Listed
- FM Approved
- ASTM A135, , Type E, Grade A (Schedule 10)
- ASTM A795, Type E, Grade A (Schedule 40)

Green: The steel used to produce Wheatland's sprinkler pipe contains recycled steel and is virtually totally recyclable.

Seismic/Sway Bracing: Wheatland sprinkler pipe data tables are available for determining the forces for piping used as a sway brace component or in Seismic applications.

Technical Data Chart

PRODUCT NPS	NOM I.D	WT/FT	WT/FT H_2O FILLED	PCS/ LIFT	WT/LIFT 21'	WT/LIFT 24'	WT/LIFT 25'
Schedule 10							
1 1/4"	1.442	1.807	2.514	61	2,315	2,645	2,756
1 1/2"	1.682	2.087	3.049	61	2,673	3,055	3,183
2"	2.157	2.640	4.222	37	2,051	2,344	2,442
2 1/2"	2.635	3.534	5.895	30	2,226	2,544	2,651
3"	3.260	4.336	7.949	19	1,730	1,977	2,060
4"	4.260	5.619	11.789	19	2,242	2,562	2,669
5"	5.295	7.780	17.309	13	2,124	2,427	2,529
6"	6.357	9.298	23.038	10	1,953	2,232	2,325
8"	8.625	219.1	8.249	209.5	0.188	4.78	16.96
Schedule 40							
1"	1.049	1.681	2.055	70	2,471	2,824	2,942
1 1/4"	1.380	2.275	2.922	51	2,437	2,785	2,901
1 1/2"	1.610	2.720	3.602	44	2,513	2,872	2,992
2"	2.067	3.656	5.109	30	2,303	2,632	2,742

Project: _____ Contractor: _____ Date: _____

Engineer: _____ Specification Reference: _____ System Type: _____

Locations: _____ Comments: _____

Wheatland Tube
JMC STEEL GROUP
700 South Dock Street, Sharon, PA 16146
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info@wheatland.com • www.wheatland.com

Made in U.S.A.

Rev. 6/16/11

STEEL FIRE SPRINKLER PIPE

ASTM A53 Type E Grade B Pipe

SUBMITTAL DATA SHEET

Scope
Covers black and hot-dipped galvanized electric-resistance welded Grade B pipe. Pipe is intended for mechanical and pressure applications and is acceptable for ordinary uses in steam, water, gas and air lines. Wheatland ASTM A53 is UL, C-UL and FM Listed, sizes 2″ through 6″ nominal (only), for use in Fire Sprinkler Pipe Applications. Pipe is suitable for welding, threading and grooving. Produced to the latest revision of ASTM A 53/ 53M, Federal Specification WW-P404 and ASME B36.10M.

Manufacturer
The weld seam shall be heat treated after welding to a minimum of 1400 0F or be otherwise processed in such a manner that no untempered martensite remains.

Seismic Design Aids
We are the only fire sprinkler pipe manufacturer that provides seismic data to use in the design of your structure. And our pipe meets or exceeds the NFPA's seismic requirements. To download the design tables please visit our website.

Hot-Dipped Galvanizied
The average weight of zinc coating shall be not less than 1.8 oz. per sq. ft. of surface (inside and outside).

When galvanized pipe is bent or otherwise fabricated to a degree which causes zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.

Hydrostatic and Nondestructive Electric Testing
Hydrostatic inspection test pressures for plain-end pipe are listed in Table X 2.2 of the A53/A 53M specification. Test pressures shall be maintained for a minimum of five seconds.
Nondestructive electric testing of the weld seam is required on each length of ERW pipe NPS 2 and larger.

Chemical Requirements
Composition, max. %

Carbon	Manganese	Phosphorus	Sulfur
.30	1.20	.05	.045

*Copper	*Nickel	*Chromium	*Molybdenum	*Vanadium
.40	.40	.40	.15	.08

*The combination of these five elements shall not exceed 1.00%.

Tensile Requirements
Tensile Strength, min. 60 000 psi
Yield Strength, min. 35 000 psi
Elongation in 2″ Refer to A53 Table x 4.1

End Finish
Plain End: NPS 2 and larger, STD and XS weights: ends beveled to angle of 300, +50, -00 with a root face of 1/16″ + 1/32″

Threaded: To ANSI Standard B 1.20.1
Couplings: To ASTM Standard A 865

Technical Data Chart

PRODUCT NPS	NOMINAL I.D.	WT/FT LBS	WT/F H_2O FILLED	PCS per 1 Ton Lift 21′	PCS per 1 Ton Lift 25′
2"	2.067	3.656	5.109	28	25
2 1/2"	2.469	5.798	7.871	18	n/a
3"	3.068	7.583	10.783	14	n/a
4"	4.026	10.80	16.311	10	n/a
5"	5.047	14.631	23.262	7	n/a
6"	6.065	18.992	31.498	5	n/a

Product Marketing
Each length of pipe is continuously stenciled to show the manufacturer, the grade of pipe (ASTM A 53), the kind of pipe E for Electric Resistance Welded, B for Grade B, the size, XS for extra strong, and length. Stencil markings indicate UL, C-UL and FM Listed for sizes 2″ through 6″ nominal for use in Fire Sprinkler Pipe Applications. Bar coding is acceptable as a supplementary identification method.

Project: _____ Contractor: _____ Date: _____

Engineer: _____ Specification Reference: _____ System Type: _____

Locations: _____ Comments: _____

Wheatland Tube
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Made in U.S.A.

Rev. 10/1/11

Fig. B3031-3/8 - Light Duty Malleable C-Clamp

Material: Malleable Iron

Function: Designed for attaching a 3/8"-16 hanger rod to the top or bottom flange of a beam or bar joist when setscrew is in the down position as shown.

Approvals: Underwriters Laboratories Listed for up to 4" pipe. Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 19 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 19.

Finish: Plain or Electro-Galvanized

Order By: Figure number and finish. When retaining strap is required, order Fig. 69 separately. See Page 35.

Weight: Approx. Wt./100 25 Lbs. (11.3kg)

Design Load: 350 Lbs. (1.55kN)

Note: See page 26 for recommended setscrew torque.

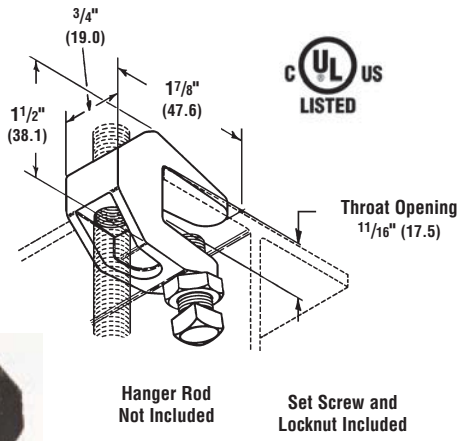


Fig. B3033 - Wide Jaw Reversible C-Clamp (TOLCO Fig. 68 & Fig. 68W)

Size Range: 3/8"-16 thru 3/4"-10 rod
Material: Cast Malleable Steel with hardened cup point set screw and jam nut

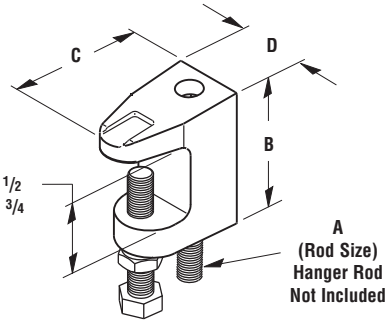
Function: For attachment to structural shapes requiring wider throat especially under roof with bar joist construction.
This clamp may be used with the set screw in the up or down position.

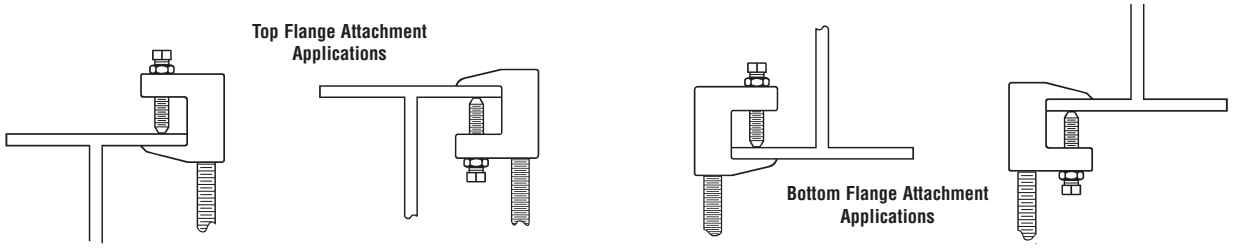
Approvals: Underwriters Laboratories Listed **(cULus)** and Factory Mutual Engineering Approved **(FM)** for 3/8"-16 and 1/2"-13 rod sizes. Conforms to Federal Specification WW-H-171E Type 19 & A-A-1192A, Type 19 & 23 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 19 & 23. Factory Mutual Engineering Approved only with the setscrew in the down position.

Finish: Plain. Contact Cooper B-Line for alternative finishes and materials.

Order By: Figure number, rod size and finish

Note: Do not over tighten set screw.





Part No.	Rod Size A	B in.	B (mm)	C in.	C (mm)	D in.	D (mm)	Design Load with Setscrew Up Lbs.	Up (kN)	Down Lbs.	Down (kN)	Maximum Iron Pipe Size Per UL in.	Maximum Iron Pipe Size Per UL (mm)	Approx. Wt./100 Lbs.	Approx. Wt./100 (kg)
B3033-3/8	3/8"-16	2 1/4"	(57.1)	2"	(50.8)	1 1/8"	(28.6)	610	(2.71)	610	(2.71)	4"	(100)	54	(24.5)
B3033-1/2	1/2"-13	2 5/16"	(58.7)	2 3/16"	(55.6)	1 1/4"	(31.7)	750	(3.33)	1130	(5.02)	8"	(200)	51	(23.1)
B3033-5/8	5/8"-11	2 5/8"	(66.7)	2 1/2"	(63.5)	1 3/8"	(34.9)	750	(3.33)	1130	(5.02)	8"	(200)	70	(31.7)
B3033-3/4	3/4"-10	2 11/16"	(68.3)	2 1/2"	(63.5)	1 7/16"	(36.5)	750	(3.33)	1130	(5.02)	10"	(250)	98	(44.4)

Note: See page 26 for recommended setscrew torque.

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

B3170 - Adjustable Band Hanger (TOLCO Fig. 2)
B3170F - Adjustable Band Hanger Felt Lined (TOLCO Fig. 2F)

Size Range: 2 1/2" (65mm) thru 8" (200mm) pipe

Material: Steel
Available in stainless steel

Function: Recommended for the suspension of non-insulated pipe or insulated pipe with B3151 shield.

Approvals: Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 10 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 10.

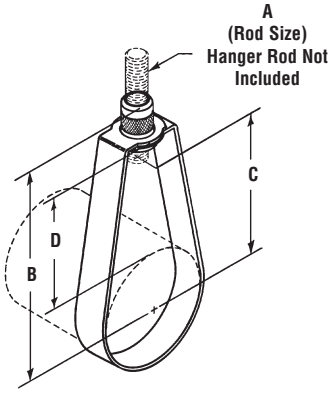
Standard Finish: Pre-Galvanized

Order By: Figure number and finish.

B
Center of pipe to top of knurled hanger rod nut.

C
Rod Take-Out
Center of pipe to bottom of hanger rod.

D
Top of pipe to bottom of hanger rod nut.



B3170F

B3170

Part No.	Nominal Pipe Size		Rod Size A	B in.	B (mm)	C in.	C (mm)	D in.	D (mm)
B3170-2 1/2	2 1/2"	(65)	1/2"-13	4"	(101.6)	2 5/8"	(66.7)	1 9/16"	(39.7)
B3170-3	3"	(75)	1/2"-13	4 1/2"	(114.3)	3 1/8"	(79.4)	1 5/8"	(41.3)
B3170-3 1/2	3 1/2"	(90)	1/2"-13	4 15/16"	(125.4)	3 9/16"	(90.5)	1 13/16"	(46.0)
B3170-4	4"	(100)	5/8"-11	5 3/16"	(131.8)	3 5/8"	(92.1)	1 5/8"	(41.3)
B3170-5	5"	(125)	5/8"-11	5 25/32"	(146.8)	4 1/8"	(104.8)	1 5/8"	(41.3)
B3170-6	6"	(150)	3/4"-10	7"	(177.8)	5 1/16"	(128.6)	2"	(50.8)
B3170-8	8"	(200)	3/4"-10	8"	(203.2)	6 5/16"	(160.3)	2 1/2"	(63.5)

Part No.	Max. Rec. Load lbs.	(kN)	Approx. Wt./100 lbs.	(kg)
B3170-2 1/2	300	(1.33)	29	(13.1)
B3170-3	300	(1.33)	34	(15.4)
B3170-3 1/2	300	(1.33)	42	(19.0)
B3170-4	475	(2.11)	54	(24.5)
B3170-5	475	(2.11)	97	(44.0)
B3170-6	950	(4.22)	113	(51.2)
B3170-6	950	(4.22)	140	(63.5)

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

Fig. B3198HCT - Hinged Extension Split Pipe Clamp (TOLCO Fig. 301CT)

Size Range: 1/2" (15mm) to 2" (50mm) copper tubing

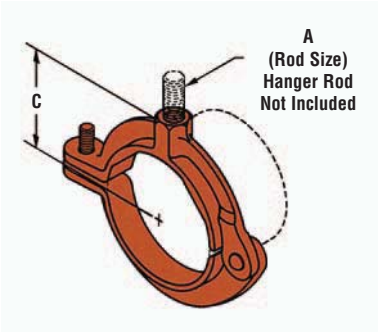
Material: Malleable Iron

Function: A rigid support to suspend tubing horizontally or vertically.

Approvals: Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 25 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 12.

Standard Finish: DURA-COPPER™

Order By: Figure number and finish.



Part No.	Tubing Size in.	(mm)	Rod Size A	C in.	(mm)	Design Load Lbs.	(kN)	Approx. Wt./100 Lbs.	(kg)
B3198HCT-1/2	1/2"	(15)	3/8"-16	5/8"	(15.9)	180	(.80)	8	(3.6)
B3198HCT-3/4	3/4"	(20)	3/8"-16	13/16"	(20.6)	180	(.80)	10	(4.5)
B3198HCT-1	1"	(25)	3/8"-16	15/16"	(23.8)	180	(.80)	10	(4.5)
B3198HCT-1 1/4	1 1/4"	(32)	3/8"-16	1 1/8"	(28.6)	180	(.80)	14	(6.3)
B3198HCT-1 1/2	1 1/2"	(40)	3/8"-16	1 9/16"	(39.7)	180	(.80)	18	(8.1)
B3198HCT-2	2"	(50)	3/8"-16	1 7/8"	(47.6)	180	(.80)	23	(10.4)

Fig. B3198RCT - Extension Split Pipe Clamp

Size Range: 1/2" (15mm) to 2" (50mm) copper tubing

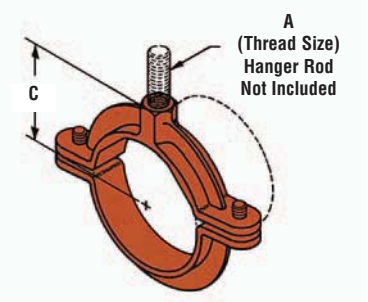
Material: Malleable Iron

Function: A rigid support to suspend tubing horizontally or vertically.

Approvals: Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 25 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 12.

Standard Finish: DURA-COPPER™

Order By: Figure number and finish.



Part No.	Tubing Size in.	(mm)	Rod Size A	C in.	(mm)	Design Load Lbs.	(kN)	Approx. Wt./100 Lbs.	(kg)
B3198RCT-3/8	3/8"	(10)	3/8"-16	11/16"	(17.5)	180	(.80)	12	(5.4)
B3198RCT-1/2	1/2"	(15)	3/8"-16	1 11/16"	(17.5)	180	(.80)	12	(5.4)
B3198RCT-3/4	3/4"	(20)	3/8"-16	7/8"	(22.2)	180	(.80)	14	(6.3)
B3198RCT-1	1"	(25)	3/8"-16	1 1/16"	(27.0)	180	(.80)	17	(7.7)
B3198RCT-1 1/4	1 1/4"	(32)	3/8"-16	1 1/8"	(28.6)	180	(.80)	17	(7.7)
B3198RCT-1 1/2	1 1/2"	(40)	3/8"-16	1 5/16"	(33.3)	180	(.80)	22	(10.0)
B3198RCT-2	2"	(50)	3/8"-16	1 1/2"	(38.1)	180	(.80)	26	(11.8)

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

Fig. B3373 - Standard Riser Clamp (TOLCO Fig. 6)
Fig. B3373F - Felt Lined Standard Riser Clamp (TOLCO Fig. 6F)
Fig. B3373C - PVC Coated Standard Riser Clamp (TOLCO Fig. 6PVC)

Size Range: (B3373) 1/2" (15mm) thru 30" (760mm) pipe
(B3373F) 1/2" (15mm) thru 2 1/2" (65mm) copper tubing
(B3373C) 1/2" (15mm) thru 6" (150mm) pipe

Material: Steel

Insulation Material: (Fig. 6F) 3/16" (4.8mm) felt.

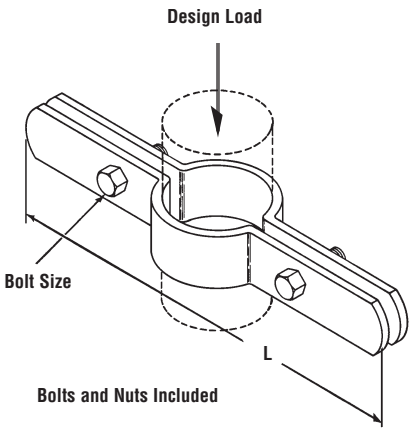
Function: Used for supporting vertical piping.

Approvals: Underwriters Laboratories Listed in the USA **(UL)**, Canada **(cUL)** 3/4" (20mm) - 8" (200mm). Factory Mutual Engineering Approved, 3/4" (20mm) thru 8" (200mm). Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 8, and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 8.

Maximum Temperature: 650°F (343°C)

Finish: Plain. Contact Cooper B-Line for alternative finishes and materials.

Order By:
(B3373 and B3373C) pipe size and finish.
(B3373F) copper tube size and finish.
B3373F is available for Iron Pipe Size, consult factory.



B3373C

B3373F

Part No.	Pipe Size in.	(mm)	L in.	(mm)	Bolt Size	Design Load Lbs.	(kN)	Approx. Wt./100 Lbs.	(kg)
B3373-1/2	1/2"	(15)	9"	(228.6)	3/8"-16 x 1 1/4"	255	(1.13)	101	(45.9)
B3373-3/4	3/4"	(20)	9 1/4"	(234.9)	3/8"-16 x 1 1/4"	255	(1.13)	105	(47.7)
B3373-1	1"	(25)	9 9/16"	(242.9)	3/8"-16 x 1 1/4"	255	(1.13)	109	(49.4)
B3373-1 1/4	1 1/4"	(32)	10"	(254.0)	3/8"-16 x 1 1/4"	255	(1.13)	112	(50.9)
B3373-1 1/2	1 1/2"	(40)	10 1/4"	(260.3)	3/8"-16 x 1 1/2"	255	(1.13)	113	(51.1)
B3373-2	2"	(50)	10 3/4"	(273.0)	3/8"-16 x 1 1/2"	255	(1.13)	165	(75.0)
B3373-2 1/2	2 1/2"	(65)	11 1/4"	(285.7)	3/8"-16 x 1 1/2"	390	(1.73)	180	(81.6)
B3373-3	3"	(80)	11 15/16"	(303.2)	3/8"-16 x 1 1/2"	530	(2.35)	195	(88.4)
B3373-3 1/2	3 1/2"	(90)	12 3/8"	(314.3)	1/2"-13 x 1 3/4"	670	(2.98)	217	(98.5)
B3373-4	4"	(100)	12 7/8"	(327.0)	1/2"-13 x 1 3/4"	810	(3.60)	228	(103.5)
B3373-5	5"	(125)	14"	(355.6)	1/2"-13 x 1 3/4"	1160	(5.16)	480	(217.7)
B3373-6	6"	(150)	15 3/16"	(385.8)	1/2"-13 x 2"	1570	(6.98)	526	(238.6)
B3373-8	8"	(200)	17 3/4"	(450.8)	5/8"-11 x 2 1/2"	2500	(11.12)	957	(434.1)
B3373-10	10"	(250)	19 7/16"	(493.7)	5/8"-11 x 2 1/2"	2500	(11.12)	1101	(499.4)
B3373-12	12"	(300)	21 11/16"	(550.9)	5/8"-11 x 3"	2700	(12.01)	1622	(735.7)
B3373-14	14"	(350)	23 9/16"	(598.5)	5/8"-11 x 3"	2700	(12.01)	1732	(785.6)
B3373-16	16"	(400)	26 3/8"	(669.9)	3/4"-10 x 3 1/4"	2900	(12.90)	2959	(1342.2)
B3373-18	18"	(450)	28 7/8"	(733.4)	3/4"-10 x 3 1/4"	2900	(12.90)	3235	(1467.4)
B3373-20	20"	(500)	30 7/8"	(784.2)	3/4"-10 x 3 1/2"	2900	(12.90)	3568	(1618.4)
B3373-24	24"	(600)	34 7/8"	(885.8)	3/4"-10 x 3 1/2"	2900	(12.90)	4064	(1843.3)
B3373-30	30"	(750)	40 3/4"	(1035.0)	7/8"-9 x 3 1/2"	2900	(12.90)	6016	(2728.8)

Notes: For ductile iron (D.I.) pipe use part number B3373CI-pipe size. Contact B-Line Engineering for more information.

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

Fig. B2400 - Standard Pipe Strap (TOLCO Fig. 2STR)

Size Range: 1/2" (15mm) thru 24" (600mm) pipe

Material: Steel

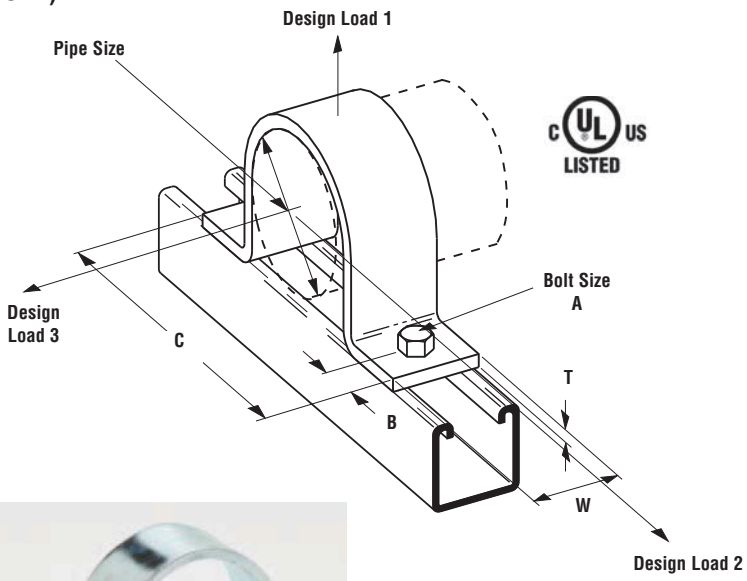
Function: Designed for supporting pipe runs from strut supports.

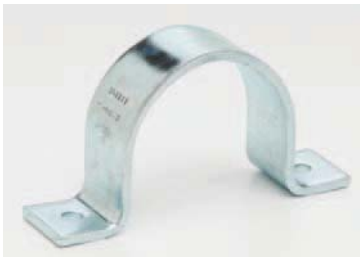
Approvals: Underwriters Laboratories Listed for B2400-3/4" thru B2400-8". Conforms to Federal Specification WW-H-171E & A-A-1192A, Type 26 and Manufacturers Standardization Society ANSI/MSS SP-69 & SP-58, Type 26.

Finish: Electro-Galvanized. Contact Cooper B-Line for alternative finishes and materials.

Order By: Figure number, pipe size and finish

Note: Ductile iron sizes available.
Special "B" dimensions available on request, consult factory.

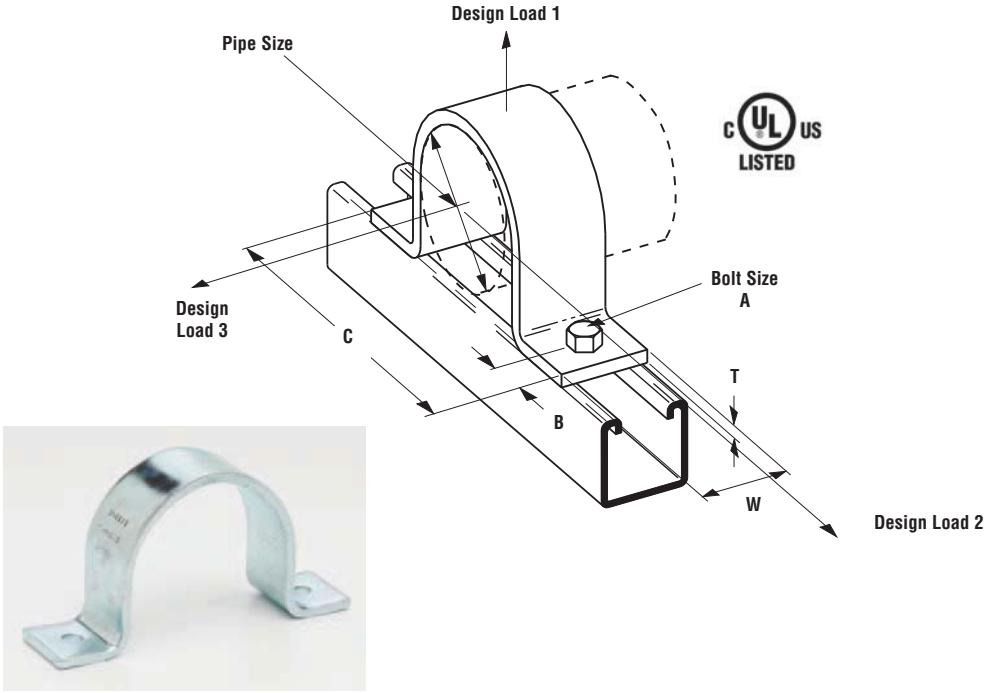




Part No.	Pipe Size		A		B		C		T		W	
	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
B2400-1/2	1/2"	(15)	5/16"	(7.9)	7/16"	(11.1)	2 13/16"	(71.4)	10 Ga.	(3.4)	1 5/8"	(41.3)
B2400-3/4	3/4"	(20)	5/16"	(7.9)	7/16"	(11.1)	3"	(76.2)	10 Ga.	(3.4)	1 5/8"	(41.3)
B2400-1	1"	(25)	5/16"	(7.9)	7/16"	(11.1)	3 17/32"	(89.7)	10 Ga.	(3.4)	1 5/8"	(41.3)
B2400-1 1/4	1 1/4"	(32)	5/16"	(7.9)	7/16"	(11.1)	3 3/4"	(95.2)	10 Ga.	(3.4)	1 5/8"	(41.3)
B2400-1 1/2	1 1/2"	(40)	5/16"	(7.9)	7/16"	(11.1)	4 1/16"	(103.2)	10 Ga.	(3.4)	1 5/8"	(41.3)
B2400-2	2"	(50)	7/16"	(11.1)	11/16"	(17.4)	5 21/32"	(143.6)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-2 1/2	2 1/2"	(65)	7/16"	(11.1)	11/16"	(17.4)	6 5/32"	(156.3)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-3	3"	(80)	7/16"	(11.1)	11/16"	(17.4)	6 25/32"	(172.2)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-3 1/2	3 1/2"	(90)	7/16"	(11.1)	11/16"	(17.4)	7 9/32"	(184.9)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-4	4"	(100)	9/16"	(14.3)	11/16"	(17.4)	7 25/32"	(197.6)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-5	5"	(125)	9/16"	(14.3)	11/16"	(17.4)	8 7/8"	(225.4)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-6	6"	(150)	9/16"	(14.3)	11/16"	(17.4)	9 15/16"	(252.4)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-8	8"	(200)	9/16"	(14.3)	11/16"	(17.4)	11 31/32"	(304.0)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-10	10"	(250)	9/16"	(14.3)	11/16"	(17.4)	14"	(355.6)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-12	12"	(300)	9/16"	(14.3)	11/16"	(17.4)	16"	(406.4)	1/4"	(6.3)	1 5/8"	(41.3)
B2400-14	14"	(350)	15/16"	(23.8)	1 5/16"	(33.3)	20 3/8"	(517.5)	3/8"	(9.5)	1 3/4"	(44.4)
B2400-16	16"	(400)	15/16"	(23.8)	1 5/16"	(33.3)	22 3/8"	(568.3)	3/8"	(9.5)	1 3/4"	(44.4)
B2400-18	18"	(450)	15/16"	(23.8)	1 5/16"	(33.3)	26 1/8"	(663.6)	1/2"	(12.7)	1 3/4"	(44.4)
B2400-20	20"	(500)	15/16"	(23.8)	1 5/16"	(33.3)	28 1/8"	(714.4)	1/2"	(12.7)	1 3/4"	(44.4)
B2400-24	24"	(600)	15/16"	(23.8)	1 5/16"	(33.3)	32 1/8"	(816.0)	1/2"	(12.7)	1 3/4"	(44.4)

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

Fig. B2400 - Standard Pipe Strap (TOLCO Fig. 2STR) Cont.



Part No.	Design Load 1		Design Load 2		Design Load 3		Approx. Wt./100	
	Lbs.	(kN)	Lbs.	(kN)	Lbs.	(kN)	Lbs.	(kg)
B2400-1/2	600	(2.67)	150	(.67)	105	(.47)	23	(10.4)
B2400-3/4	600	(2.67)	150	(.67)	105	(.47)	26	(11.8)
B2400-1	600	(2.67)	150	(.67)	120	(.53)	31	(14.0)
B2400-1 1/4	600	(2.67)	150	(.67)	120	(.53)	36	(16.3)
B2400-1 1/2	600	(2.67)	150	(.67)	120	(.53)	39	(17.7)
B2400-2	1200	(5.34)	480	(2.14)	180	(.80)	93	(42.2)
B2400-2 1/2	1200	(5.34)	480	(2.14)	180	(.80)	106	(48.1)
B2400-3	1200	(5.34)	480	(2.14)	300	(1.33)	132	(59.9)
B2400-3 1/2	1200	(5.34)	480	(2.14)	300	(1.33)	151	(68.5)
B2400-4	1500	(6.67)	600	(2.67)	450	(2.00)	160	(72.6)
B2400-5	1500	(6.67)	600	(2.67)	450	(2.00)	192	(87.1)
B2400-6	1500	(6.67)	600	(2.67)	450	(2.00)	219	(99.3)
B2400-8	2000	(8.90)	800	(3.56)	600	(2.67)	297	(134.7)
B2400-10	2000	(8.90)	800	(3.56)	600	(2.67)	465	(210.9)
B2400-12	2000	(8.90)	800	(3.56)	600	(2.67)	560	(254.0)
B2400-14	2000	(8.90)	800	(3.56)	600	(2.67)	761	(345.2)
B2400-16	2000	(8.90)	800	(3.56)	600	(2.67)	861	(390.5)
B2400-18	2000	(8.90)	800	(3.56)	600	(2.67)	1297	(588.3)
B2400-20	2000	(8.90)	800	(3.56)	600	(2.67)	1426	(646.8)
B2400-24	2000	(8.90)	800	(3.56)	600	(2.67)	1682	(762.9)

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

Fig. B3199R - Ceiling Flange
Fig. B3199RCT - Ceiling Flange Dura-Copper Coated

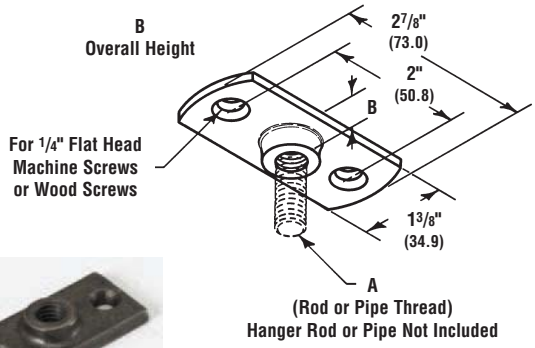
Size Range: 3/8"-16 & 1/2"-13 rod

Material: Malleable Iron (Stainless Steel Type 304 available)

Standard Finish: Plain or Electro-Galvanized
B3199RCT is DURA-COPPER™ coated

Function: Designed for attaching a hanger or support rod to beams, ceilings, or walls.

Order By: Figure number and finish.



B3199RCT

B3199R

Part No.		Thread Size A	B in.	B (mm)	Design Load Lbs.	Design Load (kN)	Approx. Wt./100 Lbs.	Approx. Wt./100 (kg)
B3199R-3/8	B3199RCT-3/8	3/8"-16	7/16"	(11.1)	180	(.80)	13	(5.9)
B3199R-1/2	B3199RCT-1/2	1/2"-13	1/2"	(12.7)	180	(.80)	17	(7.7)

Fig. 78 - All Steel Ceiling Plate

Size Range: 3/8"-16 rod

Material: Pre-Galvanized Steel

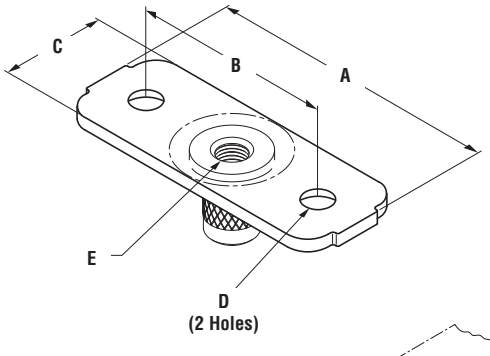
Function: Attachment to wood beams, ceilings, metal decks or walls. Can also be welded to steel beams.

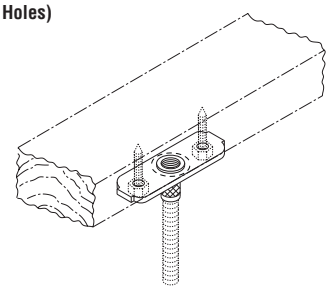
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)**. Additionally, UL has listed the Fig. 78 with fasteners as shown in the table below.

Finish: Plain. Contact Cooper B-Line for alternative finishes and materials.

Order By: Figure number, rod size and finish

Patent #5,702,077





UL Listed Fastener Table			
Pipe Size	Qty	Fastener Type	Material
1/2" - 2"	2	#14 x 1 1/4" A-point hex-washer-head sheet metal screw	Wood
2 1/2" - 4"	2	1/4" x 1 1/2" wood screws*	Wood
1/2" - 2"	2	1/4" x 1" tek screws	Metal (18 gauge)
1/2" - 2"	2	#14 x 1 1/4" A-point hex-washer-head sheet metal screw	Wood
1/2" - 2"	2	#14 x 2" A-point-hex-washer-head sheet metal screw	Wood thru 5/8" gyp board
* No pre-drilling			

Part No.	Pipe Size in.	Pipe Size (mm)	A in.	A (mm)	B in.	B (mm)	C in.	C (mm)	Hole Dia. D in.	Hole Dia. D (mm)	Thread Size E	Design Load Lbs.	Design Load (kN)	Approx. Wt./100 Lbs.	Approx. Wt./100 (kg)
78-3/8	1/2" - 2"	(15 - 60)	3"	(76.2)	2 1/8"	(54.0)	1 1/8"	(28.6)	5/16"	(7.9)	3/8"-16	150*	(0.67)	15	(6.8)
--	Consult Factory For Data														

*With Safety Factor of 5. All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

WILKINS
a ZURN company

Model 350AST
Double Check Valve Assembly
SPECIFICATION SUBMITTAL SHEET

Certified to NSF/ANSI 61-G

FEATURES

Sizes: ❑2 1/2" ❑3" ❑4" ❑6" ❑8" ❑10"

Maximum working water pressure	175 PSI
Maximum working water temperature	140˚F
Hydrostatic test pressure	350 PSI
End connections	
(Grooved for steel pipe)	AWWA C606
(Flanged)	ANSI B16.1 Class 125

OPTIONS

(Suffixes can be combined)

- ❑ - with flanged end NRS gate valves (standard)
- ❑ FSC - with epoxy coated wye type strainer (flanged only)
- ❑ G - with grooved end NRS gate valves
- ❑ GF - with grooved inlet gate connection and flanged outlet gate connection
- ❑ FG - with flanged inlet gate connection and grooved outlet gate connection
- ❑ OSY - with flanged end OS&Y gate valves
- ❑OSYG - with grooved end OS&Y gate valves
- ❑ PI - with Post Indicator Gate Valves (3"-12")
- ❑BGVIC - with grooved end butterfly valves with integral supervisory switches

ACCESSORIES

- ❑ Repair kit (rubber only)
- ❑ Thermal expansion tank (Model XT)
- ❑ OS & Y Gate valve tamper switch (OSY-40)
- ❑ Test Cock Lock (Model TCL24)

DIMENSIONS & WEIGHTS (do not include pkg.)

MODEL 350AST SIZE		WEIGHT											
		WITHOUT GATES		WITH NRS GATES (GXF)		WITH OS&Y GATES (GXF)		WITH NRS GATES (GXG)		WITH OS&Y GATES (GXG)		WITH BUTTERFLY VALVES (GXG)	
in.	mm	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
2 1/2	65	33	15	94	43	112	51	86	39	104	47	56	25
3	80	34	15.4	112	51	130	60	102	46	120	54	59	27
4	100	35	15.8	168	76	204	93	142	64	184	83	71	32
6	150	63	29	280	127	338	153	250	114	308	140	128	58
8	200	177	80	565	256	647	293	525	238	593	269	294	133
10	250	177	80	769	349	865	392	717	325	807	366	399	181

APPLICATION

Designed for installation on potable water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. The Model 350AST shall provide protection where a potential health hazard does not exist. Ideal for use where lead-free* valves are required.

STANDARDS COMPLIANCE (Horizontal & Vertical)

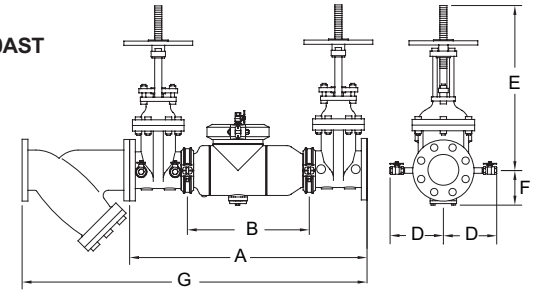
- ASSE® Listed 1015
- AWWA Compliant C510 (with gates only) (2-1/2" to 6")
- UL® Classified
- C-UL® Classified
- FM® Approved
- CSA® Certified (2-1/2" to 6")
- IAPMO® Listed (2-1/2" to 6")
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (2 1/2" - 6" Horizontal)
- NSF® Listed-Standard 61, Annex G*

*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

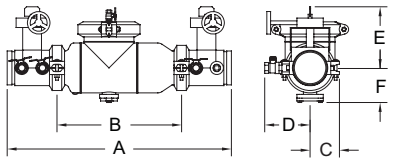
MATERIALS

Main valve body	304L Stainless steel
Access covers	304L Stainless steel
Internals	Stainless steel, 300 Series NORYL™, NSF Listed
Fasteners & springs	Stainless Steel, 300 Series
Seal ring	EPDM (FDA approved)
O-ring	Buna Nitrile (FDA approved)

MODEL 350AST with OSY & FSC option



MODEL 350AST with BGVIC option



MODEL 350AST SIZE		DIMENSION (approximate)																					
		A		A WITH BUTTERFLY		B LESS GATE VALVES		C		D		E NRS GATE		E OS&Y OPEN		E OS&Y CLOSED		E WITH BUTTERFLY VALVES		F		G	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2 1/2	65	31 7/8	810	28 3/4	730	16 5/8	422	4 1/2	114	7 1/4	184	11 1/2	292	17 3/4	451	15 3/8	391	8	203	5	127	42	1067
3	80	32 7/8	835	29 3/8	746	16 5/8	422	4 1/2	114	7 1/4	184	12 3/4	324	20 1/4	514	17	432	8	203	5	127	43 1/2	1105
4	100	34 7/8	886	30 1/4	768	16 5/8	422	4 1/2	114	8	203	14 1/2	368	22 1/2	572	18 1/4	464	9 1/8	232	5	127	50	1270
6	150	43 1/2	1105	36 1/2	927	22 1/4	565	5 1/2	140	10	254	18	457	30 1/2	775	24 1/4	616	10 1/8	257	6	152	61 5/8	1565
8	200	52 3/4	1340	45 3/4	1162	29 1/2	749	9 1/4	235	11	279	21 1/8	537	37	940	28 1/2	724	18 1/2	470	8 3/8	213	77 1/8	1959
10	250	55 3/4	1416	49 3/4	1264	29 1/2	749	9 1/4	235	12	305	24 3/4	629	45 5/8	1159	34 3/4	883	18 1/2	470	8 3/8	213	85 3/8	2169

For Commercial and Industrial Applications

Job Name _____ Contractor _____

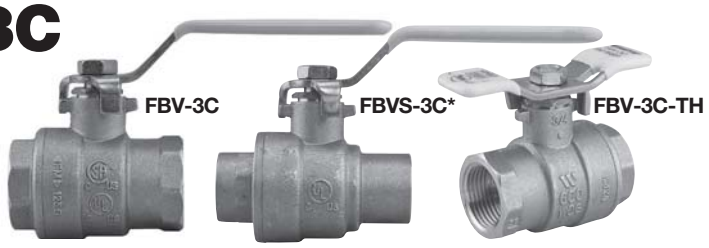
Job Location _____ Approval _____

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

Approval _____ Representative _____

Series FBV-3C, FBVS-3C

2-Piece, Full Port, Brass Ball Valves



Sizes: 1/4" – 4" (8 – 100mm)

Series FBV-3C 2-piece, full port, brass ball valves are used in commercial and industrial applications for a full range of liquids and gases. They feature a bottom-loaded blowout proof stem, virgin PTFE seats, thrust washer, and adjustable stem packing gland, stem packing nut, chrome plated brass ball, brass adapter, and steel handle.

Features

- Certified to NSF/ANSI standard 61/8
- CSA approved threaded valves only 1/4" – 3" (15 – 80mm)
- UL/FM approved threaded valves 1/2" – 2" (15 – 50mm)
- UL Listed solder valves 1/2" – 2" (15 – 50mm)
- Fluorocarbon elastomer stem O-ring prevents stem leaks
- Adjustable stem packing gland
- PTFE stem packing seal, thrust washer, and seats
- Bottom loaded blowout proof stem
- Machined chrome plated brass ball
- Valves comply to MSS-SP-110 standard

Models

FBV-3C: 1/4" – 4" (8 – 100mm) with threaded connections

FBVS-3C: 1/2" – 3" (15 – 80mm) with solder connections

FBV-3C-TH: 1/2" – 1" (15 – 25mm) tee handle with threaded connections

FBVS-3C-TH: 1/2" – 1" (15 – 25mm) tee handle with solder connections

Pressure – Temperature

Temperature Range: -40ºF to 400ºF (-40ºC to 204ºC)

Pressure Ratings

FBV-3C : 1/4" – 2" (8 – 50mm)
600psi (41 bar) WOG, non-shock
150psi (10.3 bar) WSP

2 1/2" – 4" (65 – 100mm)
400psi (27.5 bar) WOG, non-shock
125psi (8.6 bar) WSP

FBVS-3C : 1/2" – 2" (15 – 50mm)
600psi (41 bar) WOG, non-shock
150psi (10.3 bar) WSP

2 1/2" – 3" (65 – 80mm)
400psi (27.5 bar) WOG, non-shock
125psi (8.6 bar) WSP

*This valve is designed to be soft soldered into lines without disassembly, using a low temperature solder to 420°F (216°C). Higher temperature solders may damage the seat material.

NOTE: Apply heat with the flame directed **AWAY** from the center of the valve body. Excessive heat can harm the seats. After soldering, the packing nut may have to be tightened.

Approvals

1/4" – 3" (8 - 80mm) FBV-3C
1/2" – 1" (15 - 25mm) FBV-3C-TH
Certified to NSF/ANSI standard 61/8*

1/2" – 3" (15 – 80mm) FBVS-3C
1/2" – 1" (15 – 25mm) FBVS-3C-TH
Certified to NSF/ANSI standard 61/8*
*Domestic cold water at 73ºF (23ºC)

1/2" – 2" (15 – 50mm) FBV-3C UL/FM approved
1/2" – 1" (15 – 25mm) FBVL-3C-TH

1/2" – 2" (15 – 50mm) FBVS-3C UL Listed
1/2" – 1" (15 – 25mm) FBVS-3C-TH

Gas Approvals (Threaded Valves Only)

1/4" – 3/8" (8 – 10mm)
ASME B16.33, CSA
1/2 psig, 5psig, (14, 34 kPa)
@ -40ºF to 125ºF (-40ºC to 52ºC)

1/2" – 2" (15 – 50mm) ASME B16.33, CSA
1/2 psig, 5psig, and 125psig (14, 34 and 862 kPa)
@ -40ºF to 125ºF (-40ºC to 52ºC)

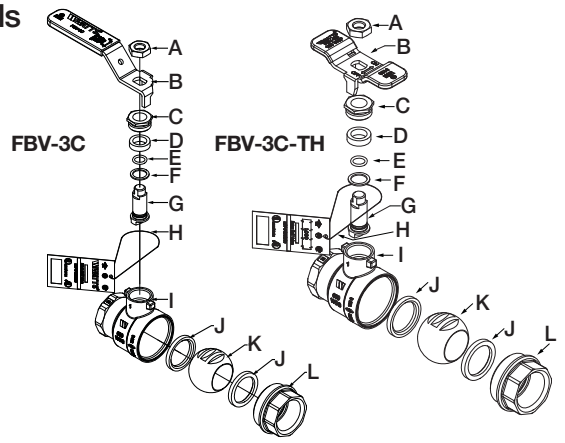
2 1/2" – 3" (65 – 80mm)
ASME B16.38, CSA
1/2 psig, 5psig, and 125psig (14, 34 and 862 kPa)
@ -40ºF to 125ºF (-40ºC to 52ºC)

Specifications

Approved valves shall be 2-piece full port design constructed of a forged brass body and end adapter. Seats and stem packing shall be virgin PTFE. Stem shall be bottom loaded, blowout proof design with fluorocarbon elastomer O-ring to prevent stem leaks. Valve shall have chrome plated brass ball and adjustable packing gland. Threaded valves 1/2" – 3" (shall be CSA approved to 1/2, 5, and 125psig (14, 34 and 862 kPa), UL/FM approved and certified to NSF/ANSI standard 61/8. Solder valves to be UL listed and certified to NSF/ANSI standard 61/8. Valve sizes 1/4" – 2" (8 – 80mm) shall be rated to 600psi (41 bar) WOG non-shock and 150psi (10.3 bar) WSP. Valve sizes 2 1/2" – 4" (65 – 100mm) threaded, shall be rated to 400psi (27.5 bar) WOG non-shock and 125psi (8.6 bar) WSP. Valve sizes 2 1/2" – 3" (65 – 88mm) solder shall be rated to 400psi (27.5 bar) WOG non-shock and 125psi (8.6 bar) WSP. Valve shall be a Watts Regulator Company Series FBV-3C (threaded) or FBVS-3C (solder).

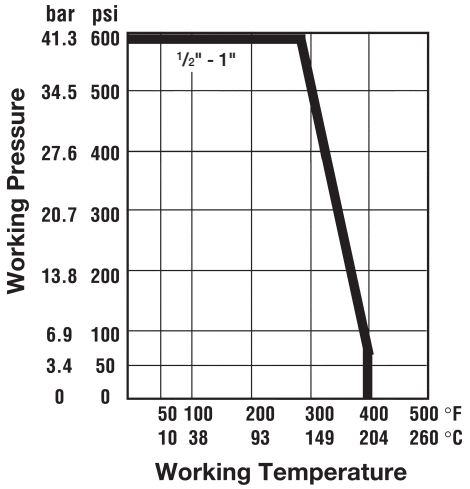
WATTS®

Materials



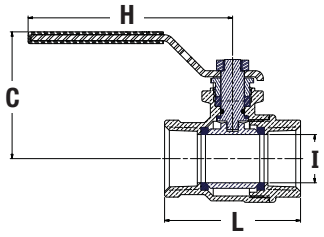
A.	Handle Nut	Zinc plated carbon steel
B.	Handle Assembly	Zinc plated carbon steel with vinyl insulator
C.	Packing Nut	Brass
D.	Stem Packing	Virgin PTFE
E.	O-ring	Fluorocarbon elastomer (FKM)
F.	Thrust Washer	Virgin PTFE
G.	Stem	Machined Brass
H.	Tag	Cardboard, Mylar coated both sides
I.	Body	Forged Brass
J.	Seats	Virgin PTFE
K.	Ball	Chrome plated brass
L.	Adapter	Forged Brass

Temperature – Pressure

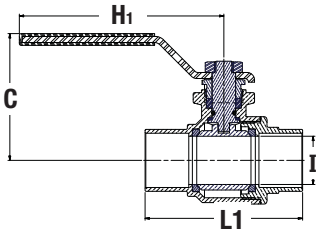


***See applicable note on reverse side for solder end valves with regards to pressure/ temperature rating.**

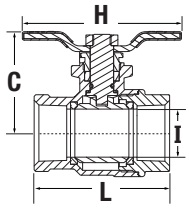
Dimensions – Weights



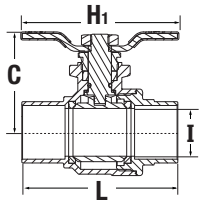
FBV-3C



FBVS-3C



FBV-3C-TH



FBVS-3C-TH

SIZE (DN)		DIMENSIONS												WEIGHT	
		C		H		H1		I		L		L1			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kg.*
¼	8	1 13/16	46	3 7/16	87	-	-	½	12.9	1¾	45	-	-	0.4	0.2
⅜	10	1 13/16	46	3 7/16	87	-	-	½	12.9	1¾	45	-	-	0.4	0.2
½	15	1 13/16	46	3 7/16	87	3 7/16	87	½	12.9	1 15/16	50	2 1/16	52	0.4	0.2
¾	20	2¼	57	4	101	4	101	¾	19.2	2 5/16	59	2 11/16	68	0.8	0.3
1	25	2⅝	67	4¼	108	4¼	108	1	25.5	2 13/16	72	3¼	83	1.2	0.5
1¼	32	2 13/16	71	4¼	108	4¼	108	1¼	31.9	3 3/16	81	3 11/16	94	1.8	0.8
1½	40	3 3/16	80	5¼	134	5 5/16	135	1¼	38.0	3½	88	4¼	108	2.6	1.2
2	50	3½	89	6	153	6	153	2	50.9	4⅛	105	5 5/16	135	3.7	1.7
2½	65	4 1/16	104	7⅜	187	7⅜	188	2½	63.6	5 5/16	134	6¼	158	7.1	3.2
3	80	4½	114	7¾	197	7¾	197	3	76.3	6 1/16	154	7⅜	185	11.3	4.7
4	100	5⅜	136	9⅝	245	-	-	4	101.6	7 7/16	189	-	-	17.7	8.0

FBV-3C-TH and FBVS-3C-TH

SIZE (DN)		DIMENSIONS												WEIGHT	
		C		H		H1		I		L		L1			
in.	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kg.*
½	15	1 9/16	39.6	3⅛	79.3	3⅛	79.3	½	12.9	1 15/16	50	2 1/16	52	0.4	0.2
¾	20	2	50.9	3⅜	85.7	3⅜	85.7	¾	19.2	2 5/16	59	2 11/16	68	0.8	0.3
1	25	2⅛	53.9	3⅜	85.7	3⅜	85.7	1	25.5	2 13/16	72	3¼	83	1.2	0.5

WATTS®

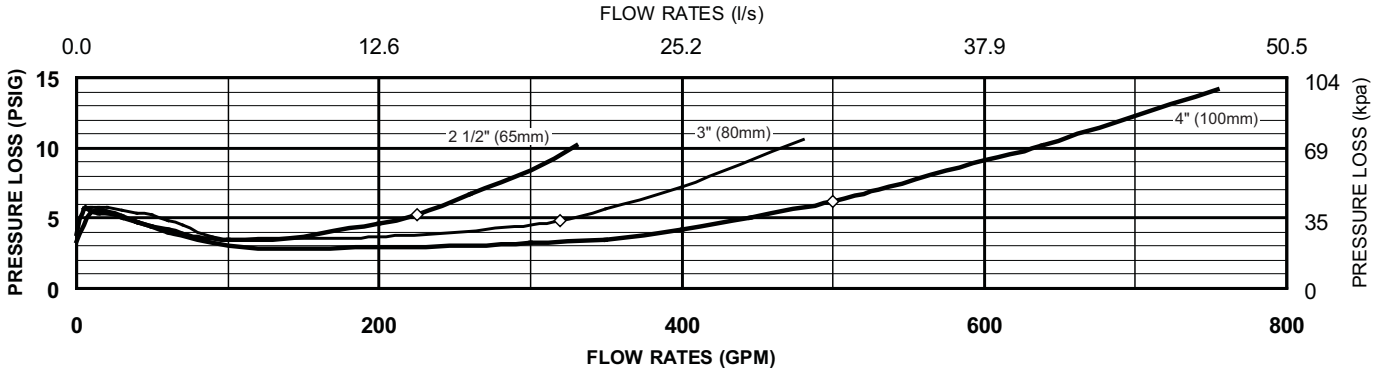
A Watts Water Technologies Company

USA: 815 Chestnut St., No. Andover, MA 01845-6098; www.watts.com

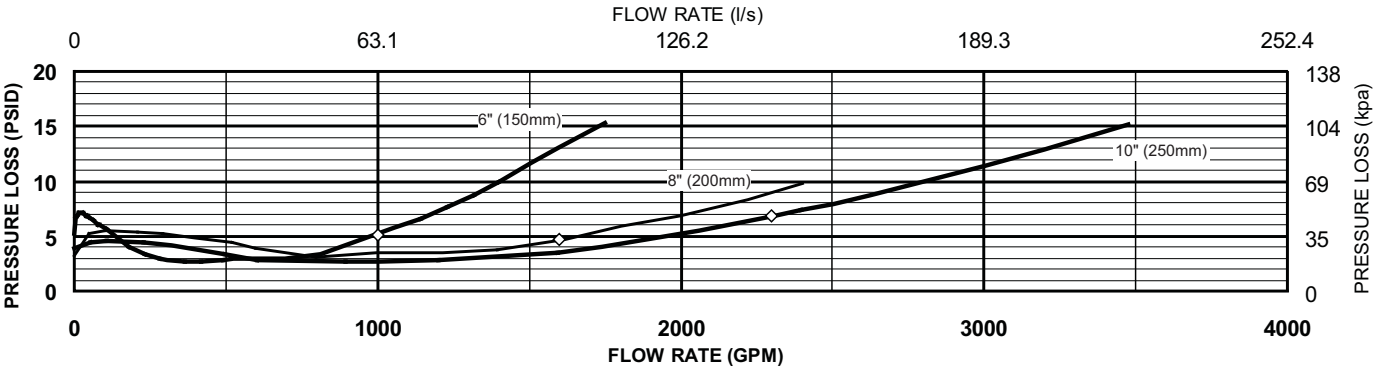
Canada: 5435 North Service Rd., Burlington, ONT. L7L 5H7; www.wattscanada.ca

FLOW CHARACTERISTICS

MODEL 350AST 2 1/2", 3" & 4" (STANDARD & METRIC)



MODEL 350AST 6", 8" & 10" (STANDARDS AND METRIC)

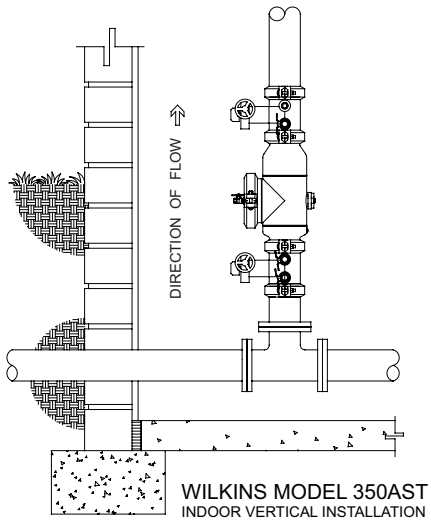


◇ Rated Flow (established by approval agencies)

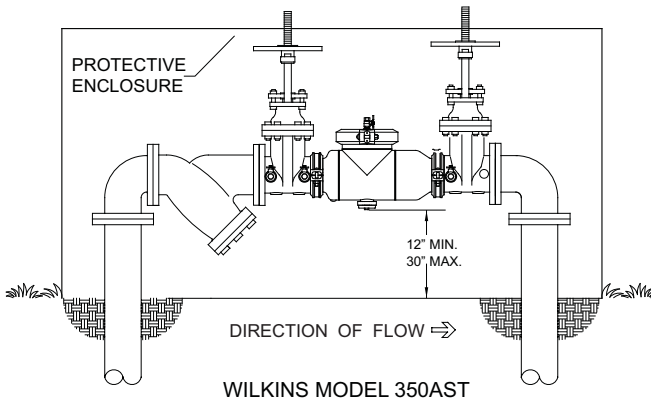
TYPICAL INSTALLATION

Local codes shall govern installation requirements. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe (GPM)				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
2 1/2"	75	112	149	224
3"	115	173	230	346
4"	198	298	397	595
6"	450	675	900	1351
8"	780	1169	1559	2339
10"	1229	1843	2458	3687
12"	1763	2644	3525	5288



WILKINS MODEL 350AST
INDOOR VERTICAL INSTALLATION



WILKINS MODEL 350AST
OUTDOOR HORIZONTAL INSTALLATION

SPECIFICATIONS

The Double Check Backflow Prevention Assembly shall be ASSE® Listed 1015, and supplied with full port gate valves. The main body and access cover shall be 304L Stainless Steel, the seat ring and check valve shall be NORYL™, the stem shall be stainless steel (ASTM A 276) and the seat disc elastomers shall be EPDM. The checks shall be accessible for maintenance without removing the device from the line. The Double Check Backflow Prevention Assembly shall be a WILKINS Model 350AST.

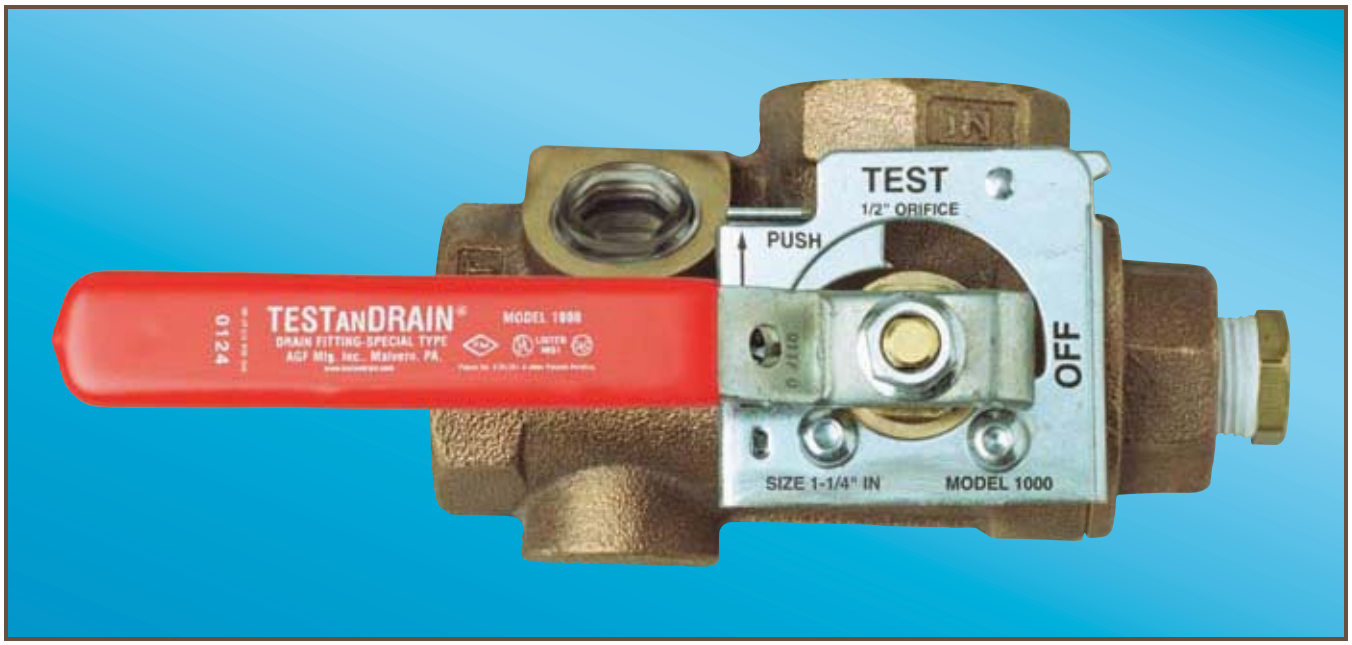
Model 1000

TESTANDRAIN®

Sectional Floor Control Test and Drain Valve

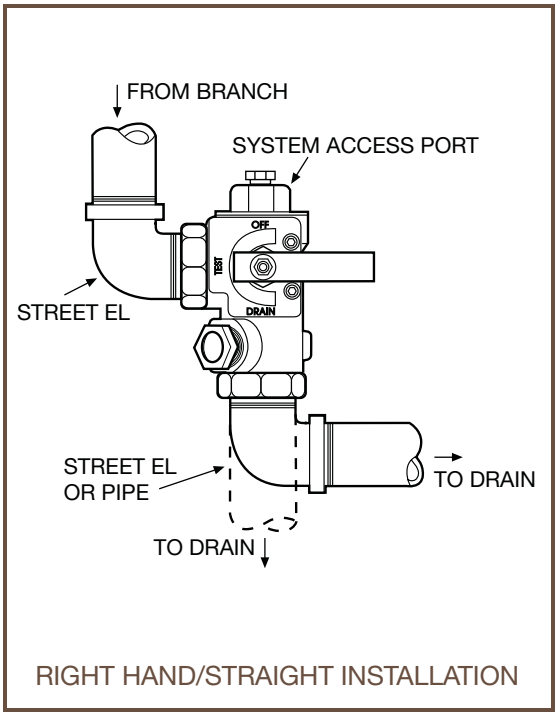
c UL us FM APPROVED

¾" 1" 1¼" 1½" 2"



- The AGF Manufacturing Inc. **Model 1000 TESTANDRAIN®** provides both the test function and the express drain function for a wet fire sprinkler system.
- The **Model 1000** complies with the requirements of NFPA-13, NFPA-13R, and NFPA-13D.
- The **Model 1000 TESTANDRAIN®** is a compact single handle ball valve which includes a tamper resistant test orifice and integral tamper resistant sight glasses, and is 300 PSI rated.
- Available in a full range of sizes from ¾" to 2" NPT and BSPT, with all specifiable orifice sizes ⅜" (2.8K), 7⁄16" (4.2K), ½" (5.6K), 17⁄32" (8.0K), ⅝" (11.2K, ELO), ¾" (14.0K, ESFR), and K25 as required by NFPA 13, 2007 Edition (see reverse).
- The orifice size is noted on the indicator plate and the valve features a tapped and plugged port for system access.
- A locking kit is available and can be ordered with the valve to provide vandal resistance or prevent unintentional alarm activation.
- Repair kits including (1) adapter gasket, (1) ball, (2) valve seats, (1) stem packing, and (1) stem washer are available for all **TESTANDRAIN®** valves. Valve and orifice size must be specified when ordering.

Model 1000 - Front View, Vertical Installation



RIGHT HAND/STRAIGHT INSTALLATION

Reliability, Versatility, Code Compatibility

Model 1000

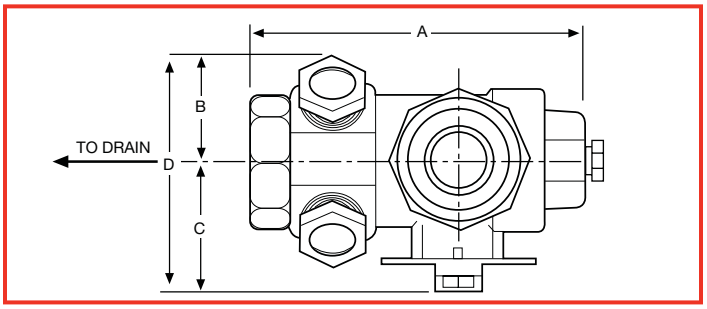
TEST AN DRAIN®

300 PSI Bronze Ball Valve

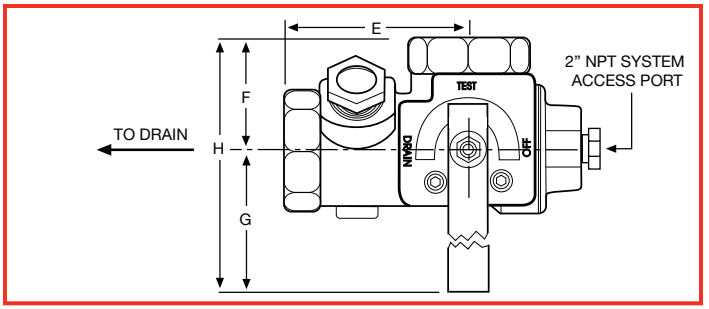
c UL us

FM APPROVED

Model 1000 - Plan View



Front View - Horizontal Install



Dimensions

Orifice Size Available: 3/8", 7/16", 1/2", 17/32", ELO (5/8")*, ESFR (3/4")*, & K25**

SIZE	A	B	C	D	E	F	G	H
3/4"	5 1/16" (128 mm)	1 1/2" (37.5 mm)	2 3/16" (57 mm)	3 5/8" (93 mm)	3 3/8" (86 mm)	1 13/16" (46 mm)	4 9/16" (117 mm)	6 3/8" (162.5 mm)
1"	5 1/16" (128 mm)	1 1/2" (37.5 mm)	2 3/16" (57 mm)	3 5/8" (93 mm)	3 3/8" (86 mm)	1 13/16" (46 mm)	4 9/16" (117 mm)	6 3/8" (162.5 mm)
1 1/4"	5 7/16" (163 mm)	1 11/16" (43 mm)	2 9/16" (65 mm)	4 1/4" (108 mm)	3 5/16" (83 mm)	1 15/16" (51 mm)	5 9/16" (141 mm)	5 1/2" (192 mm)
1 1/2"	6 7/16" (163 mm)	1 13/16" (45 mm)	3 1/4" (81.5 mm)	5 1/16" (127 mm)	3 7/8" (99 mm)	2 5/8" (67 mm)	8 1/4" (207 mm)	10 7/8" (274 mm)
2"	6 7/16" (163 mm)	1 13/16" (45 mm)	3 1/4" (81.5 mm)	5 1/16" (127 mm)	3 7/8" (99 mm)	2 5/8" (67 mm)	8 1/4" (207 mm)	10 7/8" (274 mm)

* Available on 1 1/4" to 2" size units only

** Available on 1 1/2" and 2" size units only

Materials

Handle: Steel
Stem: Rod Brass
Ball: C.P. Brass
Body: Bronze
Valve Seat: Impregnated Teflon®
Indicator Plate: Steel
Handle Stop: Steel

Approvals

UL and ULC Listed (EX4019)
FM Approved
NYC-BSA No. 720-87-SM

MADE IN U.S.A.

The Model 1000 provides all of the following...

From the 2007 Edition of NFPA 13

Chapter 8.16.2.4.1*	Provisions shall be made to properly drain all parts of the system.
Chapter 8.16.2.4.2 & 8.16.2.4.3	Drain connections, interior sectional or floor control valve(s) – shall be provided with a drain connection having a minimum size as shown in Table 8.16.2.4.2.
Chapter 8.16.2.4.4	Drains shall discharge outside or to a drain capable of handling the flow of the drain.
Chapter A.8.17.4.2	(Wet Pipe System) test connection is permitted to terminate into a drain capable of accepting full flow… using an approved sight test connection containing a smooth bore corrosion-resistant orifice giving a flow equivalent to one sprinkler…
Chapter 8.17.4.2.2	The test connection valve shall be readily accessible.
Chapter 8.17.4.2.4	shall be permitted to be installed in any location… downstream of the waterflow alarm.
Chapter 8.17.4.3.1	(Dry Pipe System) a trip test connection not less than 1" in diameter, terminating in a smooth bore corrosion-resistant orifice, to provide a flow equivalent to one sprinkler…
Chapter 8.17.4.3.2	The trip test connection… with a shutoff valve and plug not less than 1", at least one of which shall be brass.

USA Patent # 4741361 and Other Patents Pending

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355

Phone: 610-240-4900
Fax: 610-240-4906

www.testandrain.com

Job Name:_____

Architect:_____

Engineer:_____

Contractor:_____

Model 7500
Model 7600
Pressure Gauge & Globe Valve
For Fire Sprinkler Systems
¼" Connection

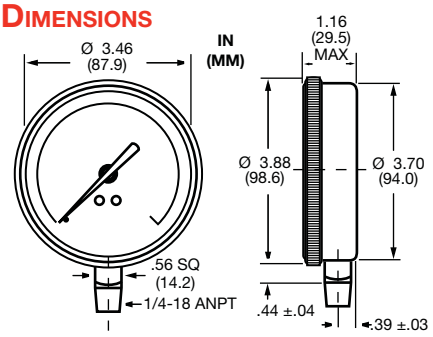
c UL us FM APPROVED

The AGF Manufacturing, Inc. **Model 7500 Pressure Gauge** is an FM Approved/UL Listed 3½" gauge designed for use on "wet" sprinkler systems. The AGF **Model 7500** has been designed to meet the requirements specified in NFPA 13, 2007 Edition Chapters 7.1.1.1 – 7.1.1.2, 7.2.1 – 7.3.1.3, 7.8.7, 8.16.1.2.2, and 8.17.3

Specifications

Range: 0-300 PSI (Inside)
0-2000 Kpa (Outside)
Accuracy: ±3-2-3%
Burdon Tube: Phosphor Bronze
Window: Polycarbonate one-piece ring and crystal
Dial: Galvalume
Pointer: Aluminum, painted black
Case: PGE Xenoy® DX2735
Connection: Brass, ¼" ANPT LM

Dimensions



The AGF Manufacturing, Inc. **Model 7600 ¼" 3-Way Globe Valve** is an FM Approved/UL Listed valve designed to connect the pressure gauge to the sprinkler systems. The AGF **Model 7600** has been designed to meet NFPA 13 System Attachments stating, "…each gauge shall be equipped with a shutoff valve and provision for drainage."

Model 7500 Pressure Gauge with Model 7600 Globe Valve

USA Patent and Other Patents Pending

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355

Phone: 610-240-4900
Fax: 610-240-4906

www.testandrain.com

MADE IN U.S.A.

Job Name:_____

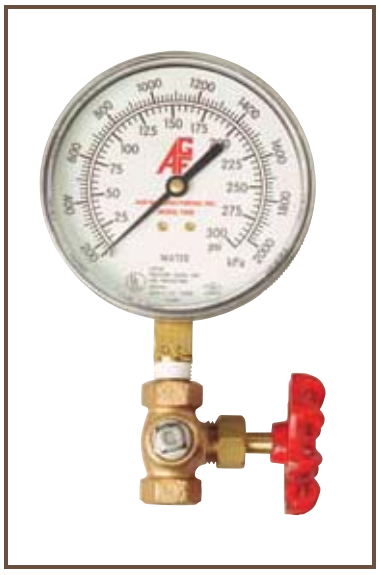
Architect:_____

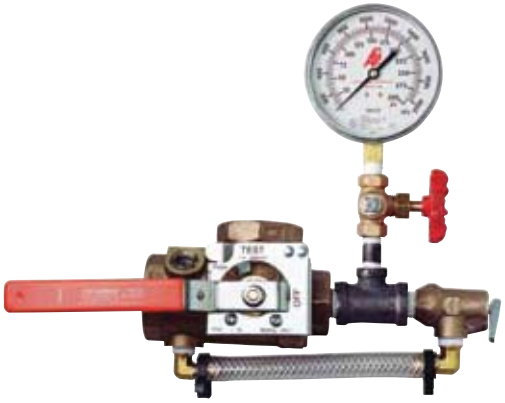
Engineer:_____

Contractor:_____

Reliability, Versatility, Code Compatibility

The Model 7500 Pressure Gauge and Model 7600 3-Way Globe Valve are also used on the following AGF products:





M1011T **TESTANDRAIN®**

M2511T
TESTANDRAIN®

M8000 **COMMERCIAL RISERPACK®**

M8011 **COMMERCIAL RISERPACK®**

M8000 **RESIDENTIAL RISERPACK®**

M8011 **RESIDENTIAL RISERPACK®**

Model 5100 / 5200

COLLECTANDRAIN™

Auxiliary Drain and Condensation Collecting Assembly for Dry Pipe and Preaction Sprinkler Systems

The COLLECTANDRAIN™ series of products are auxiliary "low point" drain and/or condensate collecting assemblies available in several configurations to meet and exceed the sections of NFPA 13 and NFPA 25 addressing drainage in dry and preaction sprinkler systems.

The Model 5100 COLLECTANDRAIN™

- The **Model 5100ALBV** is a unique ball valve with integral water detector to notify you that the collector requires attention. The unit is powered by a 9 volt battery to operate a red LED visual indicator and a 103 dB beeping alarm which are activated when water is present in the **COLLECTANDRAIN™**. This battery operated system is designed to provide multiple years of service for intermittent alarming or can operate continuously for 72 hours. The unit features a test button to easily confirm operational integrity, offers left or right side installation, and can be isolated for service or battery replacement.
- The patent pending **Anti-Trip Plate (ATP)** prevents the opening of either the upper or lower drain valve unless the opposite valve is in the correct closed position, ensuring that the **COLLECTANDRAIN™** is always operated according to NFPA 25 guidelines, preventing an accidental/malicious tripping of the alarm valve and filling of the sprinkler system. The **ATP** is powder coated safety red for corrosion resistance and silk-screened with both "AUXILIARY DRAIN" to fulfill NFPA signage requirements and operating instructions. The **Anti-Trip Plate** can be locked to prevent tampering.
- The **Model 5100ALBV** is also available separately.
- 1" MIPT x FIPT brass quarter turn ball valves with chrome plated brass balls
- Fully assembled units have galvanized piping components and plug.

The **Model 5100** is offered in three versions:

- **Model 5100A** Fully Assembled
- **Model 5100K** Field Assembly Kit (includes ball valves, water detection alarm, and Anti-Trip Plate with mounting hardware)
- **Model 5100ALBV** 1" MIPT x FIPT ball valve with integral water detector

Model 5100A

Model 5100ALBV

Model 5200A

The Model 5200 COLLECTANDRAIN™

- The patent pending **Anti-Trip Plate (ATP)** prevents the opening of either the upper or lower drain valve unless the opposite valve is in the correct closed position, ensuring that the **COLLECTANDRAIN™** is always operated according to NFPA 25 guidelines, preventing an accidental/malicious tripping of the alarm valve and filling of the sprinkler system. The **ATP** is powder coated safety red for corrosion resistance and silk-screened with both "AUXILIARY DRAIN" to fulfill NFPA signage requirements and operating instructions. The **Anti-Trip Plate** can be locked to prevent tampering.
- 1" MIPT x FIPT brass quarter turn ball valves with chrome plated brass balls
- Fully assembled units have galvanized piping components and plug.

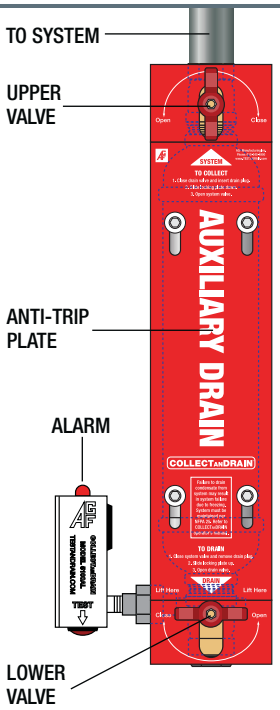
The **Model 5200** is offered in two versions:

- **Model 5200A** Fully Assembled
- **Model 5200K** Field Assembly Kit (includes ball valves and Anti-Trip Plate with mounting hardware)

Reliability, Versatility, Code Compatibility

Model 5100 / 5200

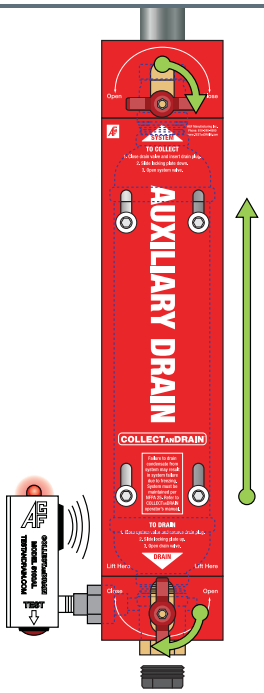
COLLECTANDRAIN™



MODEL 5100
COLLECTANDRAIN™

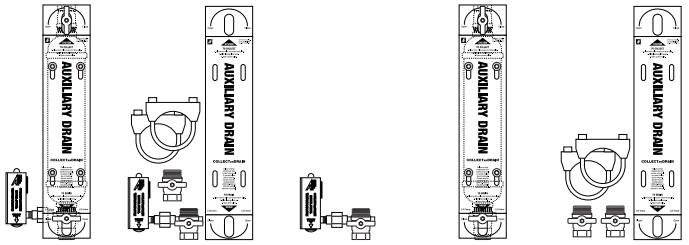
COLLECT

COLLECTANDRAIN™ provides a method to drain water from isolated sections of dry pipe and preaction sprinkler systems that prevents accidental discharge of the system. When in the "COLLECT" position, the upper valve is open and the Anti-Trip Plate is in its lower position, preventing the lower ball valve from being completely opened. While in this position, water in the system collects in the condensate nipple.



DRAIN

The alarm will blink and sound when water has collected and draining is required (Model 5200 only). To drain the collected water, the upper valve must be completely closed and the Anti-Trip Plate slid to its upper position, allowing the lower valve to be opened. To return the COLLECTANDRAIN™ to the "COLLECT" position after draining, the lower valve must be completely closed and the Anti-Trip Plate slid to its lower position for the upper valve to be opened. This prevents both valves from being completely open at the same time, which could accidentally release the air in the system.



Components	5100A	5100K	5100ALBV	5200A	5200K
1" MIPT x FIPT Ball Valve	1	1		2	2
Model 5100BV-SP 1" MIPT x FIPT Ball Valve with Side Ports	1	1	1		
Model 5100AL Water Detection Alarm with Union and Nipple	1	1	1		
Anti-Trip Plate (Powder Coated with Required Signage)	1	1		1	1
Anti-Trip Plate Mounting Hardware Set	1	1		1	1
1" x 2" Galvanized Bell Reducer	2			2	
2" x 12" Condensate Nipple	1			1	
1" Galvanized Square Head Plug	1			1	

Patent Pending

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355

Phone: 610-240-4900
Fax: 610-240-4906

www.testandrain.com

Job Name:_____

Architect:_____

Engineer:_____

Contractor:_____

POTTER
The Symbol of Protection

BELLS

PBA-AC & MBA-DC

UL, ULC, and FM Approved
Sizes Available: 6" (150mm), 8" (200mm) and 10" (250mm)
Voltages Available: 24VAC
120VAC
12VDC (10.2 to 15.6) Polarized
24VDC (20.4 to 31.2) Polarized
Service Use: Fire Alarm
General Signaling
Burglar Alarm
Environment: Indoor or outdoor use (See Note 1)
-40° to 150°F (-40° to 66°C)
(Outdoor use requires weatherproof backbox.)
Termination: AC Bells - 4 No. 18 AWG stranded wires
DC Bells - Terminal strip
Finish: Red powder coating
Optional: Model BBK-1 weatherproof backbox
Model BBX-1 deep weatherproof backbox

These vibrating type bells are designed for use as fire, burglar or general signaling devices. They have low power consumption and high decibel ratings. The unit mounts on a standard 4" (101mm) square electrical box for indoor use or on a model BBK-1 weatherproof backbox or BBX-1 deep weatherproof backbox for outdoor applications. Weatherproof backbox model BBK-1, Stock No. 1500001.

Notes:
1. Minimum dB ratings are calculated from integrated sound pressure measurements made at Underwriters Laboratories as specified in UL Standard 464. UL temperature range is -30° to 150°F (-34° to 66°C).
2. Typical dB ratings are calculated from measurements made with a conventional sound level meter and are indicative of output levels in an actual installation.
3. ULC only applies to MBA DC bells.

Size inches (mm)	Voltage	Model Number	Stock Number	Current (Max.)	Typical dB at 10 ft. (3m) (2)	Minimum dB at 10 ft. (3m) (1)
6 (150)	12VDC	MBA126	1750070	.12A	85	76
8 (200)	12VDC	MBA128	1750080	.12A	90	77
10 (250)	12VDC	MBA1210	1750060	.12A	92	78
6 (150)	24VDC	MBA246	1750100	.06A	87	77
8 (200)	24VDC	MBA248	1750110	.06A	91	79
10 (250)	24VDC	MBA2410	1750090	.06A	94	80
6 (150)	24VAC	PBA246	1806024*	.17A	91	78
8 (200)	24VAC	PBA248	1808024*	.17A	94	77
10 (250)	24VAC	PBA2410	1810024*	.17A	94	78
6 (150)	120VAC	PBA1206	1806120*	.05A	92	83
8 (200)	120VAC	PBA1208	1808120*	.05A	99	84
10 (250)	120VAC	PBA12010	1810120*	.05A	99	86

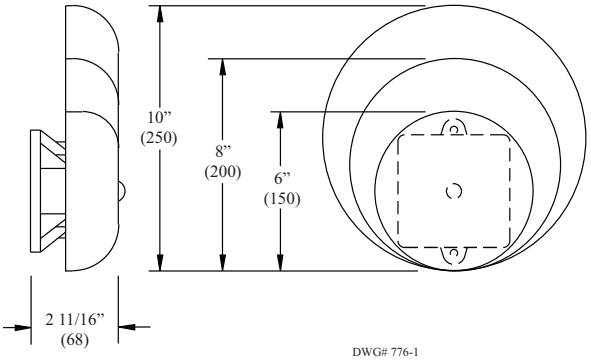
All DC bells are polarized and have built-in transient protection.
* Does not have ULC listing.

⚠ WARNING

In outdoor or wet installations, bell must be mounted with weatherproof backbox, BBK-1 or BBX-1. Standard electrical boxes will not provide a weatherproof enclosure. If the bell and/or assembly is exposed to moisture, it may fail or create an electrical hazard.

Potter Electric Signal Company, LLC • 2081 Craig Road, St. Louis, MO, 63146-4161 • Phone: 800-325-3936/Canada 888-882-1833 • www.pottersignal.com

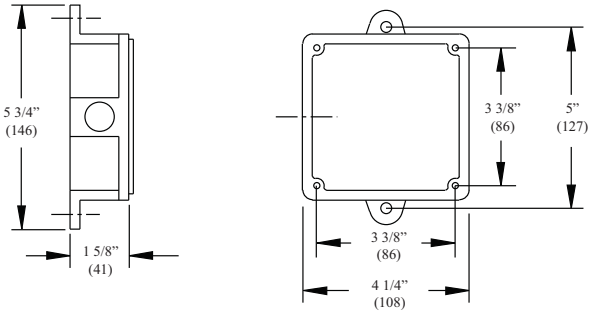
Bells Dimensions Inches (mm)
Fig. 1



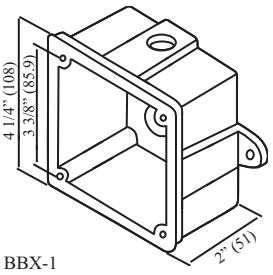
DWG# 776-1

Weatherproof Backbox Dimensions Inches (mm)
Fig. 2

Box has one threaded 1/2" conduit entrance

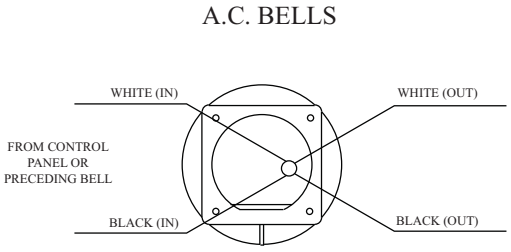


DWG# 776-2



BBX-1

Wiring (rear view)
Fig. 3

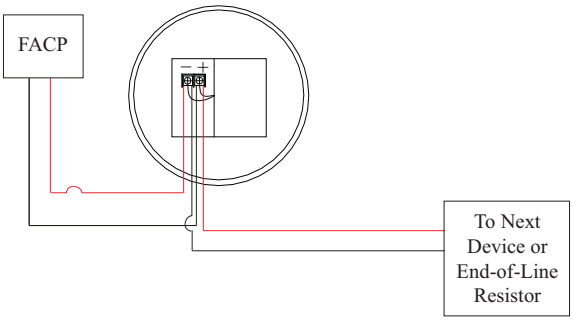


CAUTION:
WHEN ELECTRICAL SUPERVISION IS REQUIRED USE IN AND OUT LEADS AS SHOWN.

NOTES:

1. WHEN USING AC BELLS, TERMINATE EACH EXTRA WIRE SEPARATELY AFTER LAST BELL.
2. END-OF-LINE RESISTOR IS NOT REQUIRED ON AC BELLS.

DWG# 776-3



Installation

1. The bell shall be installed in accordance with NFPA 13, 72, or local AHJ. The top of the device shall be no less than 90" AFF and not less than 6" below the ceiling.
2. Remove the gong.
3. Connect wiring (see Fig. 3).
4. Mount bell mechanism to backbox (bell mechanism must be mounted with the striker pointing down).
5. Reinstall the gong (be sure that the gong positioning pin, in the mechanism housing, is in the hole in the gong).
6. Test all bells for proper operation and observe that they can be heard where required (bells must be heard in all areas as designated by the authority having jurisdiction).

⚠ WARNING

Failure to install striker down will prevent bell from operating.

PS10 SERIES
PRESSURE SWITCH

Patent Pending

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.

(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

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).

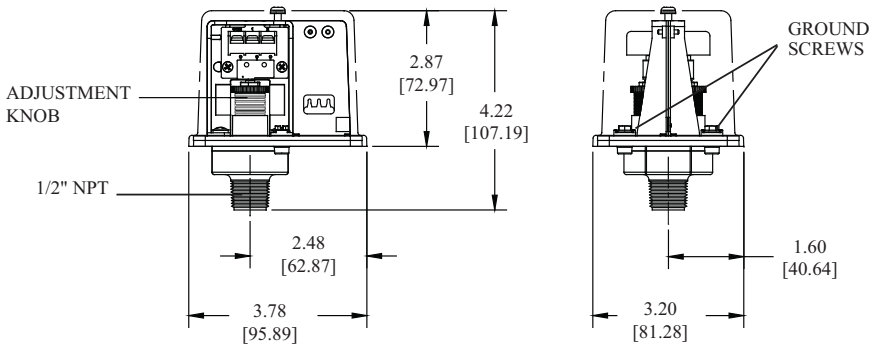
Wet System
Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the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

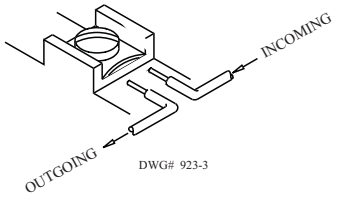


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2

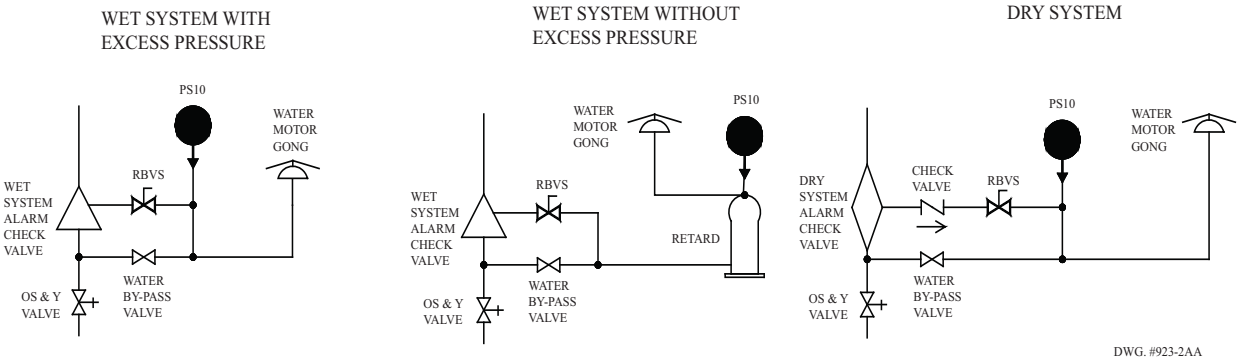


⚠ WARNING

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

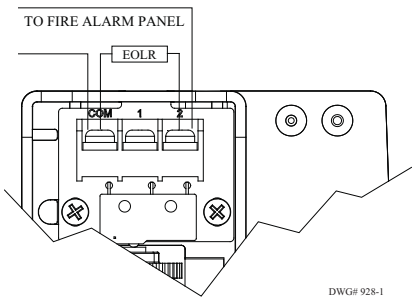


⚠ CAUTION

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.

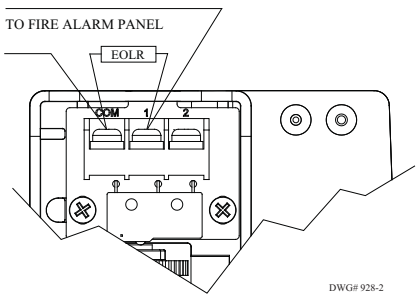
Low Pressure Signal Connection

Fig. 4



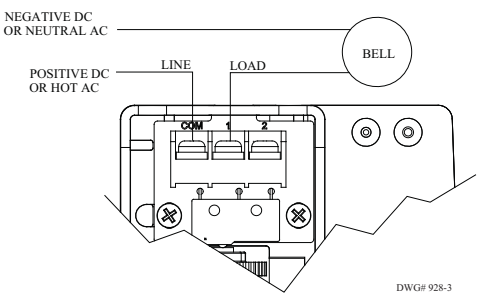
Waterflow Signal Connection

Fig. 5



Local Bell For Waterflow Connection

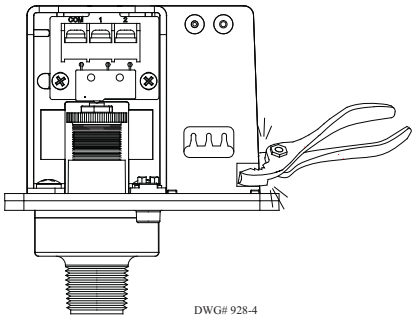
Fig. 6



One Conduit Wiring

Fig. 7

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



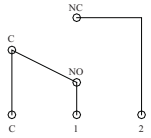
DWG# 928-4

Switch Operation

Fig. 8

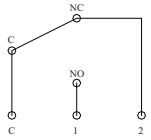
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

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.

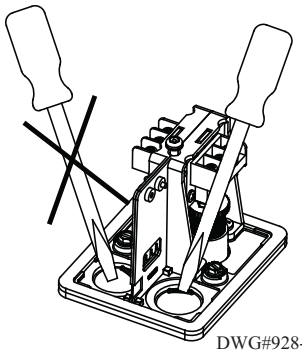
W/O PRESSURE APPLIED



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

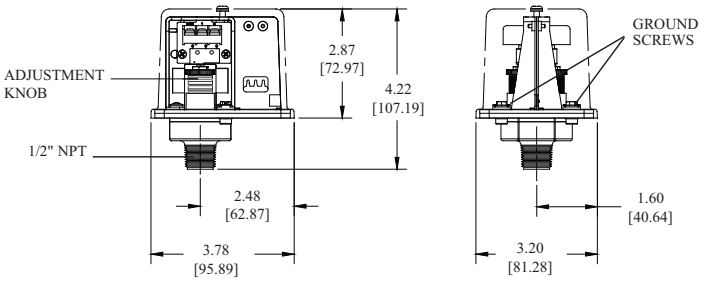
1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig. 9
3. Run wires through an approved conduit connector and affix the connector to the device. A NEMA-4 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

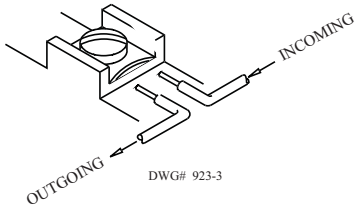


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2



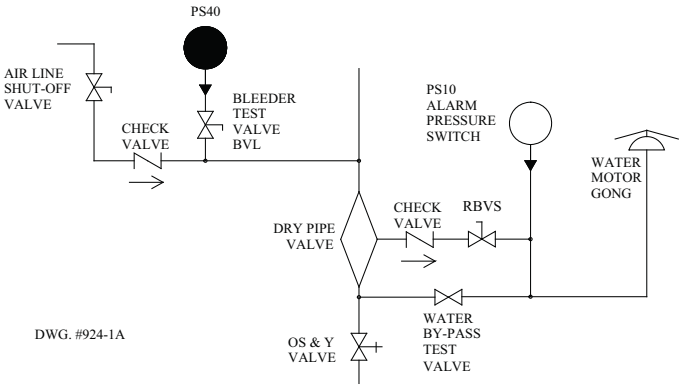
DWG# 923-3

⚠ 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

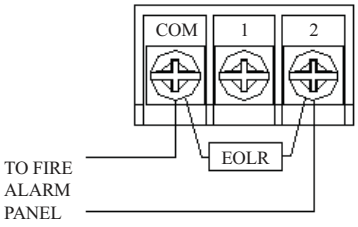
Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Typical Connections

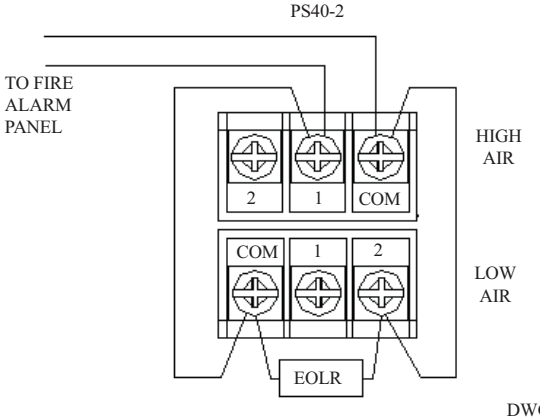
Fig. 4

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

PS40-1



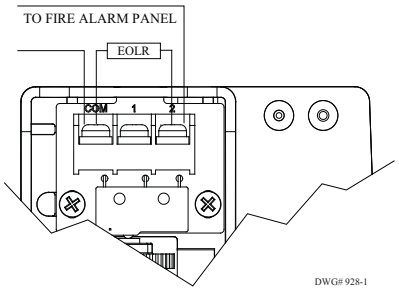
PS40-2



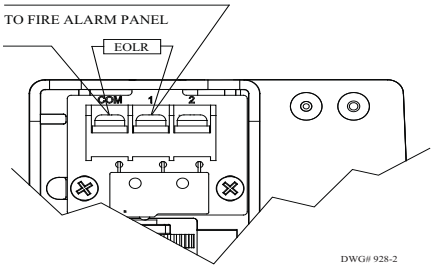
WITH NORMAL SYSTEM PRESSURE APPLIED HIGH - TERMINAL 1 WILL CLOSE ON PRESSURE INCREASE.

DWG# 930-2

Low Pressure Signal Connection
Fig. 5

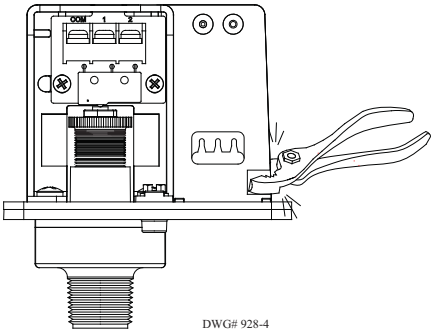


High Pressure Signal Connection
Fig. 6



One Conduit Wiring
Fig. 7

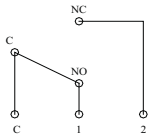
Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



Changing Pressure
(With normal system pressure)
Fig. 8

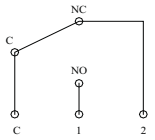
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low air signal.

LOW PRESSURE SWITCH



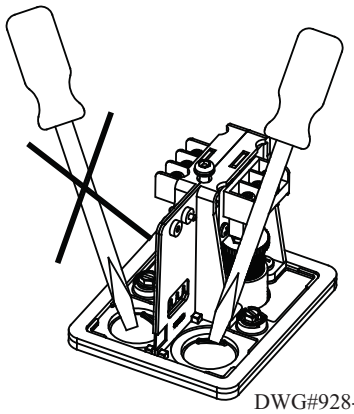
Terminal
1: Open when installed under normal system pressure. Closes on increase in pressure. Use for high air signal.
2: Closed under normal system pressure.

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.

OSYSU-1,-2

OUTSIDE SCREW AND YOKE VALVE SUPERVISORY SWITCH

UL, ULC and CSFM Listed, FM Approved, NYMEA Accepted, CE Marked

Dimensions: 6.19"L X 2.25"W X 5.88"H
15,7cm L X 5,7cm W X 14,6cm H

Weight: 2 lbs (0,9 kg)

Enclosure: Cover - Die-Cast
Finish - Red Spatter Enamel
Base - Die Cast Zinc
All parts have corrosion resistant finishes

Cover Tamper: Tamper Resistant Screws
Optional Cover Tamper Switch Available

Contact Ratings:
OSYSU-1: One set of SPDT (Form C)
OSYSU-2: Two sets of SPDT (Form C)
15 Amps at 125/250VAC
2.5 Amps at 30VDC resistive

Environmental Limitations:
-40°F to 140°F (-40°C to 60°C)
NEMA 4 and NEMA 6P Enclosure (IP67)
Indoor or outdoor use (Not for use in hazardous locations. See Bulletin No. 5400705 OSYS-U-EX for hazardous locations).

Conduit Entrances:
2 knockouts for 1/2" conduit provided

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

General Information

The OSYSU is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS&Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as ½" (12,5mm).

The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device and should be left with the building owner or responsible party. Replacement or additional cover screws and hex keys are available. See Ordering Information.

Optional Cover Tamper Switch

A field installable cover tamper switch is available as an option which may be used to indicate removal of the cover. See Ordering Information.

Testing

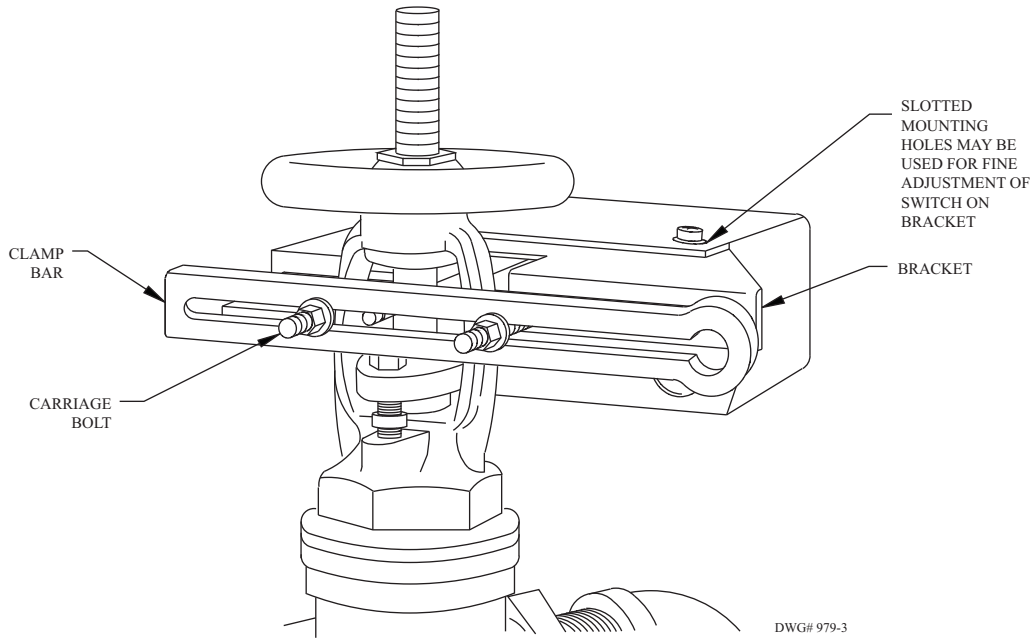
The OSYSU and its associated protective monitoring system should be inspected and tested in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

Ordering Information

Model	Description	Stock No.
OSYSU-1	Outside Screw & Yoke Supervisory Switch (Single switch)	1010106
OSYSU-2	Outside Screw & Yoke Supervisory Switch (Double switch)	1010206
	Cover Screw	5490424
	Hex Key for Cover Screws and Installation Adjustments	5250062
	Optional Cover Tamper Switch Kit	0090131

FIG. 1 **SMALL VALVE INSTALLATION - 1/2" THRU 2 1/2" SIZES**

These switches mount conveniently to most 2" to 12" OS&Y valves. They will mount on some valves as small as 1/2". J-hooks may be required on valves with limited clearance.



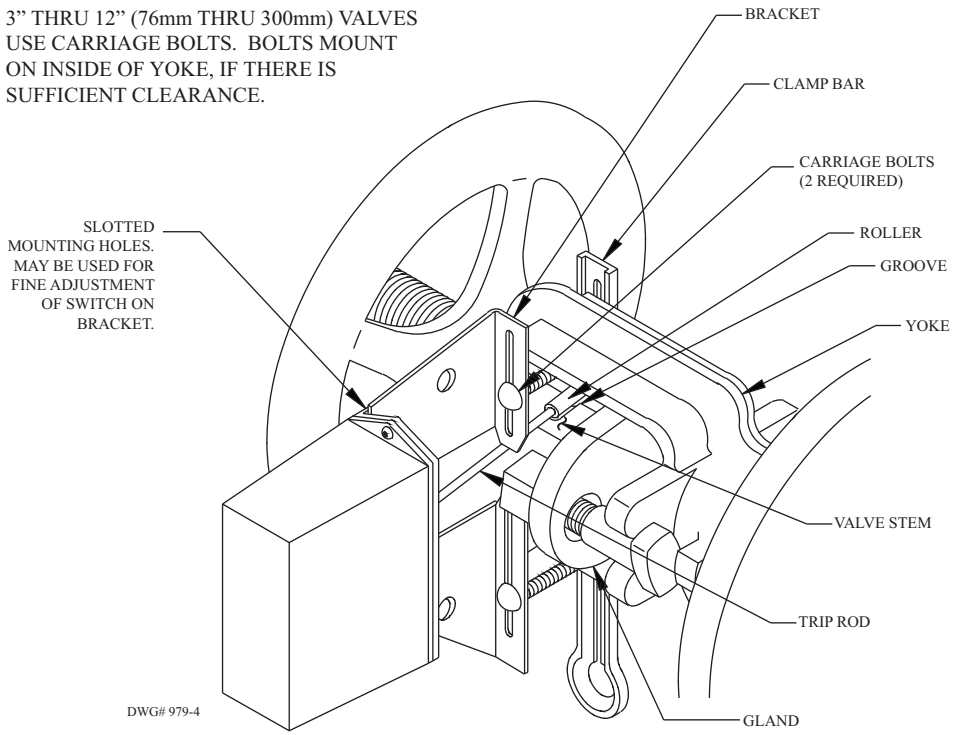
SMALL VALVE INSTALLATION

1. Remove and discard "C" washer and roller from the trip rod.
2. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.
4. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied. On valves with limited clearance use J-hooks supplied instead of the carriage bolts and clamp bar to mount the OSYSU.
5. Mark the valve stem at the center of the trip rod.
6. Remove the OSYSU. File a 1/8" deep groove centered on the mark on the valve stem utilizing a 3/16" diameter straight file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.
7. Mount the OSYSU with the trip rod centered in groove.
8. Final adjustment is made by loosening 2 screws (see Fig. 1) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate when the trip rod moves out of the groove.
9. Tighten the adjustment screws and all mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A ***FALSE VALVE OPEN*** INDICATION.

FIG. 2 LARGE VALVE INSTALLATION - 3" THRU 12" SIZES



LARGE VALVE INSTALLATION

1. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland, so that the trip rod lays against the non-threaded portion of the valve stem.
2. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 4). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to hold the trip rod in place.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 5). Reinstall trip rod and repeat Step 3 procedure.
4. Mark the valve stem at the center of the trip rod.
5. Remove the OSYSU. File a 1/8" deep groove centered on the mark of the valve stem utilizing a 3/8" diameter straight file. Round and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.
6. Mount the OSYSU loosely with the trip rod centered in groove.
7. Final adjustment is made by loosening 2 screws (see Fig. 2) and sliding the OSYSU on the bracket. Adjustment is correct when switches are not activated with the trip rod seated in the valve stem groove and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.
8. Tighten the adjustment screws and mounting hardware. Check to insure that the rod moves out of the groove easily and that the switches activate within one turn when the valve is operated from the FULL OPEN towards the CLOSED position.

NOTE: CLOSE THE VALVE FULLY TO DETERMINE THAT THE STEM THREADS DO NOT ACTIVATE THE SWITCH. THE SWITCH BEING ACTIVATED BY THE STEM THREADS COULD RESULT IN A ***FALSE VALVE OPEN*** INDICATION.

OSYSU-1,-2
OUTSIDE SCREW AND YOKE VALVE SUPERVISORY SWITCH

FIG. 3 **DIMENSIONS**

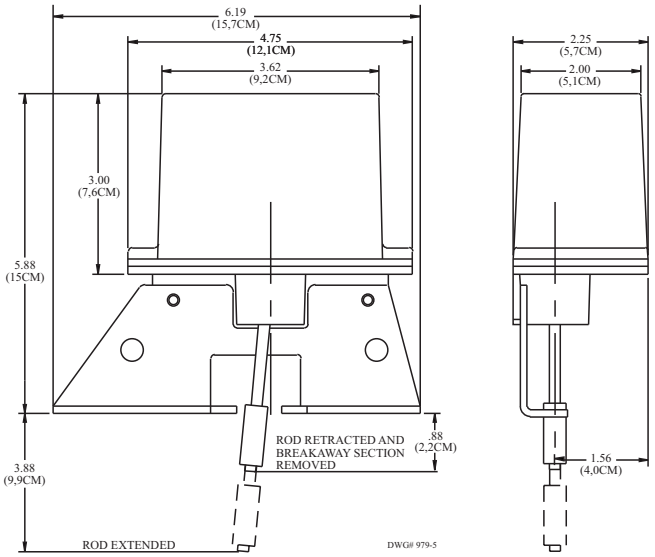
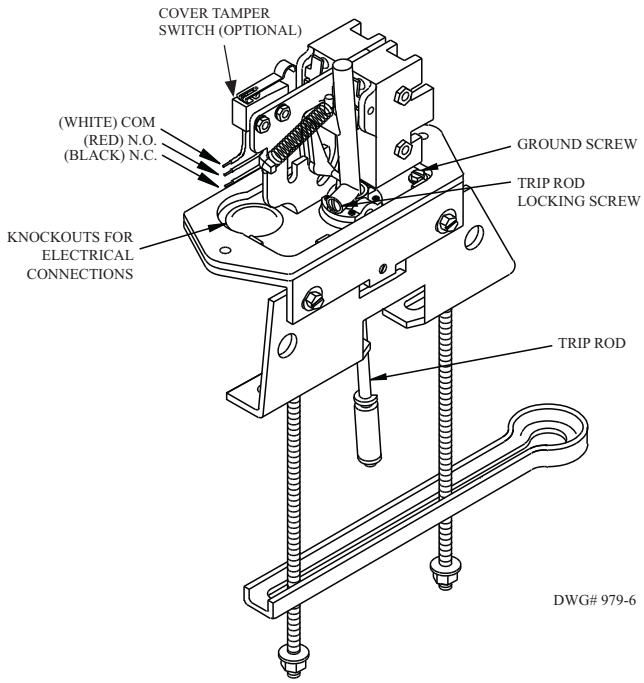
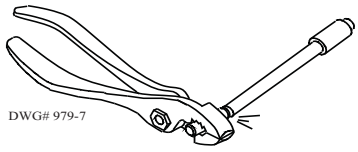


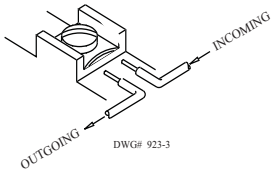
FIG. 4 **PARTS**



BREAKING EXCESSIVE ROD LENGTH

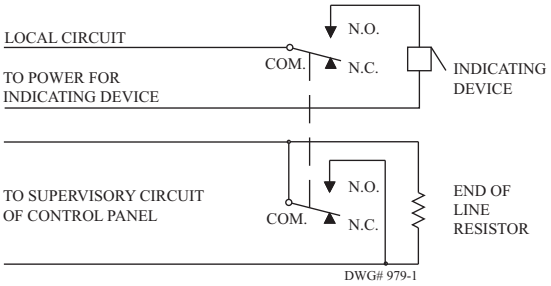


SWITCH TERMINAL CONNECTIONS CLAMPING PLATE TERMINAL



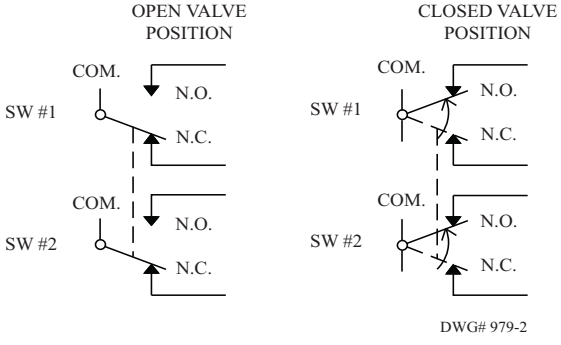
CAUTION:
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

TYPICAL ELECTRICAL CONNECTIONS



Contacts shown in normal (valve open) condition.

TYPICAL SWITCH ACTION



VSR

VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

Specifications subject to change without notice.

Ordering Information			
Nominal Pipe Size		Model	Part Number
2"	DN50	VSR-2	1144402
2 1/2"	DN65	VSR-2 1/2	1144425
3"	DN80	VSR-3	1144403
3 1/2"	-	VSR-3 1/2	1144435
4"	DN100	VSR-4	1144404
5"	-	VSR-5	1144405
6"	DN150	VSR-6	1144406
8"	DN200	VSR-8	1144408

Optional: Cover Tamper Switch Kit, stock no. 0090148
Replaceable Components: Retard/Switch Assembly, stock no. 1029030

UL, CUL and CSFM Listed, FM Approved, LPCB Approved, For CE Marked (EN12259-5) / VdS Approved model use VSR-EU
Service Pressure: 450 PSI (31 BAR) - UL
Flow Sensitivity Range for Signal:
4-10 GPM (15-38 LPM) - UL
Maximum Surge: 18 FPS (5.5 m/s)
Contact Ratings: Two sets of SPDT (Form C)
10.0 Amps at 125/250VAC
2.0 Amps at 30VDC Resistive
10 mAmps min. at 24VDC
Conduit Entrances: Two knockouts provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages.
Environmental Specifications:

- NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket and die-cast housing when used with appropriate conduit fitting.
- Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL
- Non-corrosive sleeve factory installed in saddle.

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

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.

General Information

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

POTTER
The Symbol of Protection

VSR
VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD

Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

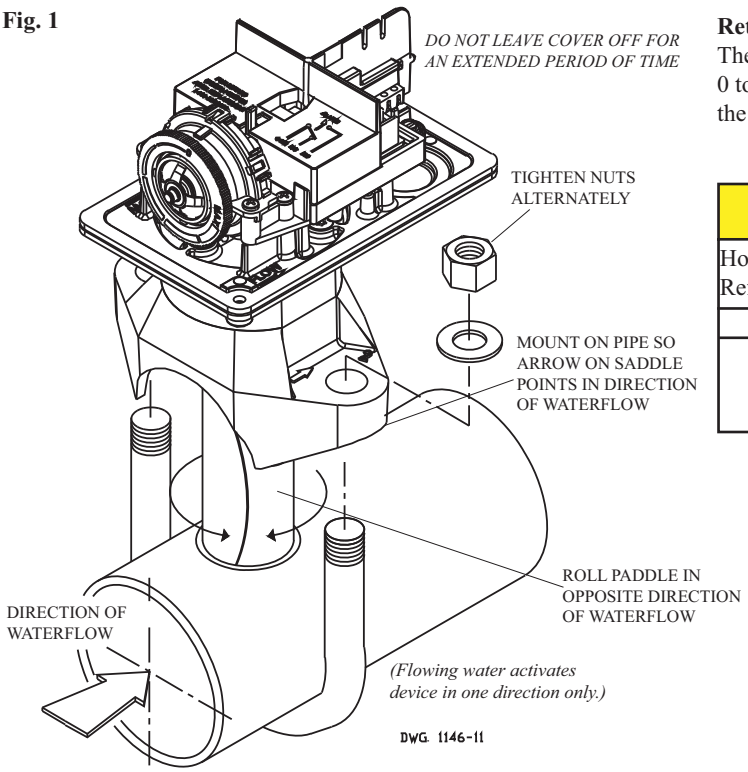
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

⚠ CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty.

Fig. 1

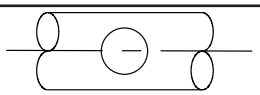
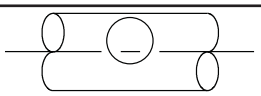


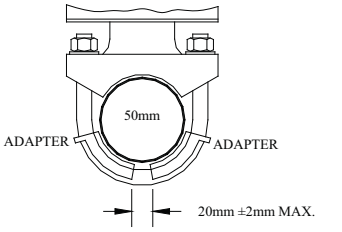
Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered. Refer to the Compatible Pipe/Installation Requirements chart for size.

Correct	Incorrect
	



DN50 ONLY

USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

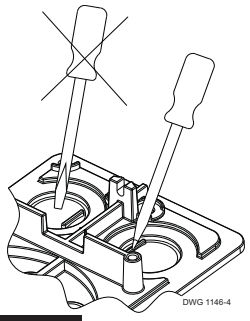
DWG# 1146-1F

Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness								Hole Size		U-Bolt Nuts Torque	
					Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-.062	33.0 ± 2.0	20	27
VSR-2 1/2	2.5	-	2.875	73.0	0.120	3.05	0.203	5.16	-	-	-	-				
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	0.142	3.6	0.102	2.6				
VSR-3	3	DN80	3.500	88.9	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3.5	-	4.000	101.6	0.120	3.05	0.226	5.74	-	-	-	-				
VSR-4	4	DN100	4.500	114.3	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2				
VSR-5	5	-	5.563	141.3	0.134	3.40	0.258	6.55	-	-	-	-				
VSR-6	6	DN150	6.625	168.3	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0				
VSR-8	8	DN200	8.625	219.1	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5				

NOTE: For copper or plastic pipe use Model VSR-CF.

Fig. 2
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTICE
Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Fig. 3
Break out thin section of cover when wiring both switches from one conduit entrance.

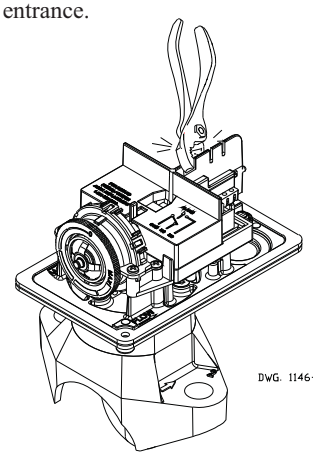
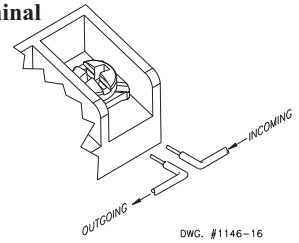


Fig. 4 Switch Terminal Connections Clamping Plate Terminal

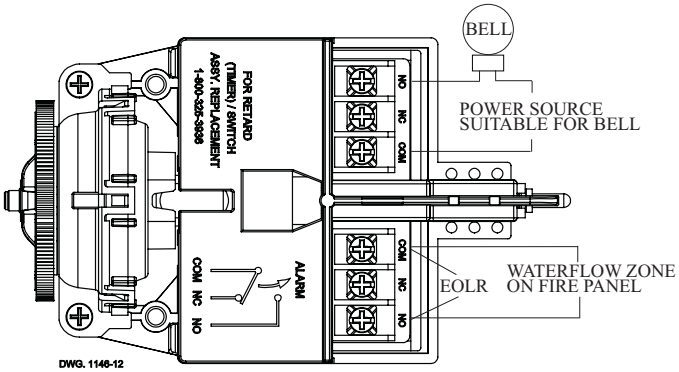


WARNING
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Fig. 5 Typical Electrical Connections

Notes:
1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).

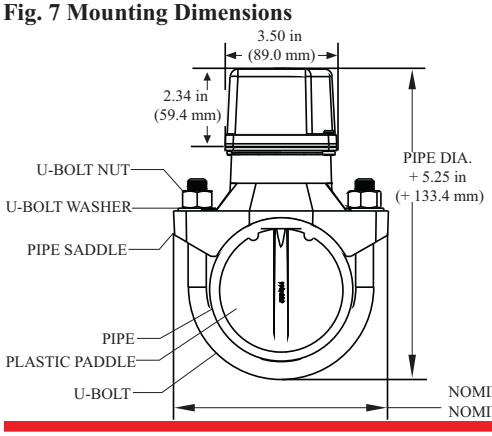


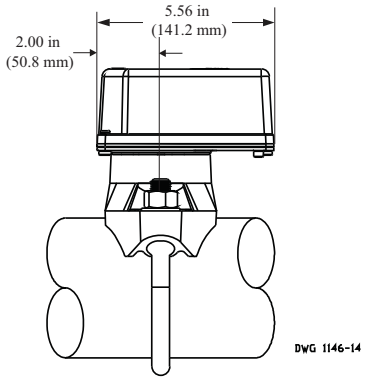
Testing
The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.
A minimum flow of 10 GPM (38 LPM) is required to activate this device.

NOTICE Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

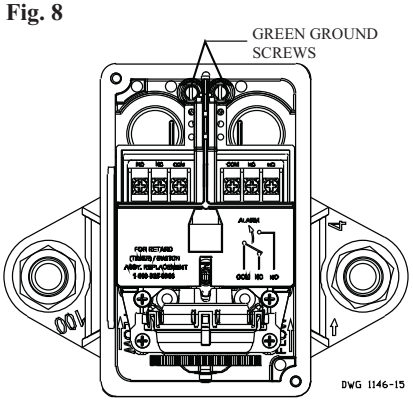
Fig. 7 Mounting Dimensions





NOMINAL PIPE DIA. +1.75 in (+44.5 MM) FOR DN 50 – DN 65 2–2.5 in
NOMINAL PIPE DIA. +2.125 in (+54.0 MM) FOR DN 80 – DN 200 3–8 in

Fig. 8



Maintenance

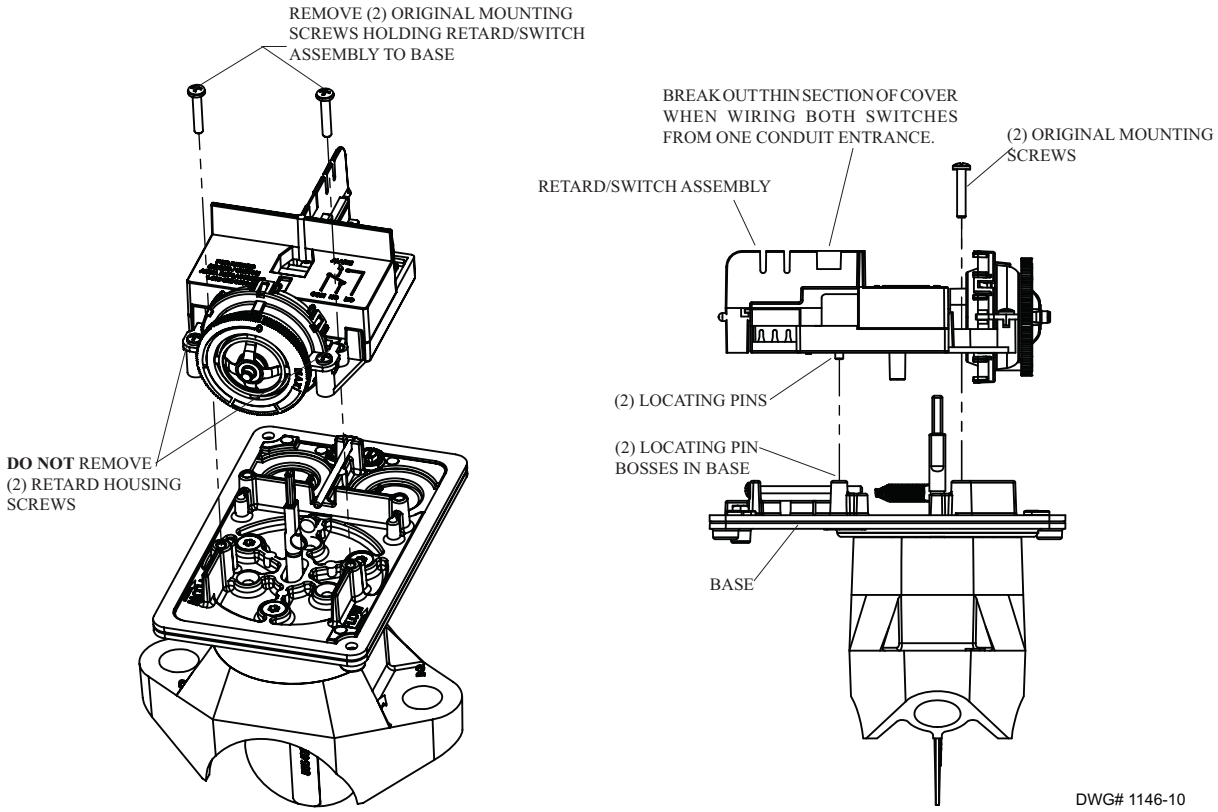
Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 6). There is no maintenance required, only periodic testing and inspection.

Retard/Switch Assembly Replacement (See Fig. 6)

NOTICE The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

Fig. 6



Removal of Waterflow Switch

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

PCVS-1, -2
CONTROL VALVE SUPERVISORY SWITCH

UL, ULC, and CSFM Listed, FM Approved, NYMEA Accepted, CE Marked

Dimensions: 4.75"L x 2.25"W x 8.2"H (stem extended)
12,1cm L x 5,7cm W x 18,3cm H

Weight: 1.35 lb. (0,61 kg.)

Enclosure: Cover - Die-cast
Finish - Red Spatter Enamel
Base - Die Cast Zinc
All parts have corrosion resistant finishes.

Cover Tamper: Tamper Resistant Screws,
Optional cover tamper kit available

Mounting: 1/2" NPT

Contact Rating: PCVS-1: One set of SPDT (Form C)
PCVS-2: Two sets of SPDT (Form C)
15.00 Amps at 125/250VAC
2.50 Amps at 30VDC resistive

Environmental Limitations: -40°F to +140°F (-40°C to 60°C)
NEMA 4 and NEMA 6P Enclosure (IP67) when used with appropriate watertight conduit fittings.
Indoor or Outdoor Use (Not for use in hazardous locations. See bulletin no. 5400694 PIVS-U-EX for hazardous locations.)

Conduit Entrances: Two knockouts for 1/2" conduit provided.

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

The Model PCVS is a weather proof and tamper resistant switch for monitoring the open position of fire sprinkler control valves of the post indicator, butterfly and other types. Depending on the model, one or two SPDT (Form C) contacts are provided which will operate when the valve position is altered from an open state.

The unit mounts in a 1/2" NPT tapped hole in the post indicator or butterfly valve housing. The device is engaged by the indicating assembly of the post indicator or the operating mechanism of the butterfly valve, actuating switch(es) when the valve is fully open. The unit should be installed where it is accessible for service.

The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device and should be left with the building owner or responsible party. Replacement or additional cover screws and hex keys are available. See ordering information.

Optional Cover Tamper Switch

A field installable cover tamper switch is available as an option which may be used to indicate removal of the cover. See ordering information.

Testing

The PCVS and its associated protective monitoring system should be tested in accordance with applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

Ordering Information

Model	Description	Stock No.
PCVS-1	Potter Control Valve Switch (single switch)	1010107
PCVS-2	Potter Control Valve Switch (double switch)	1010207
--	Cover Screw	5490344
--	Hex Key for Cover Screws and Installation Adjustments	5250062
PBK-S	Pratt Butterfly Valve Kit - Up to 12" (300mm)	0090133
PBK-L	Pratt Butterfly Valve Kit - 14" (355mm) and Up	0090132
PVK	Pratt Valve Kit	1000060
--	Optional Cover Tamper Switch Kit	0090131
KBK	Kennedy Butterfly Valve Kit	0090143

For pressure reducer type valve installation kits (if required) contact valve manufacturer.

PCVS-1, -2
CONTROL VALVE SUPERVISORY SWITCH

Fig. 1 Dimensions

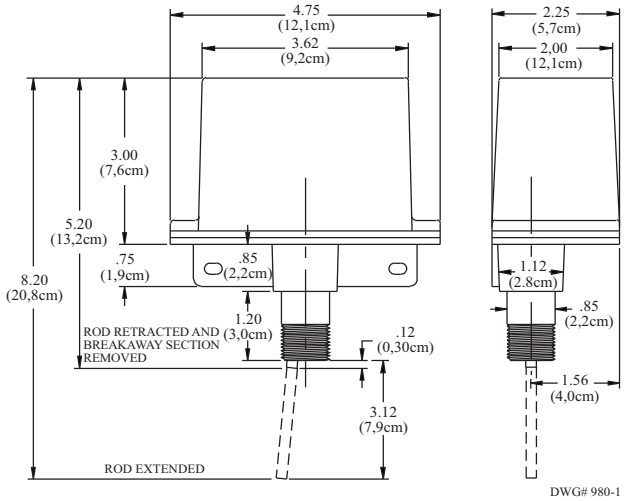
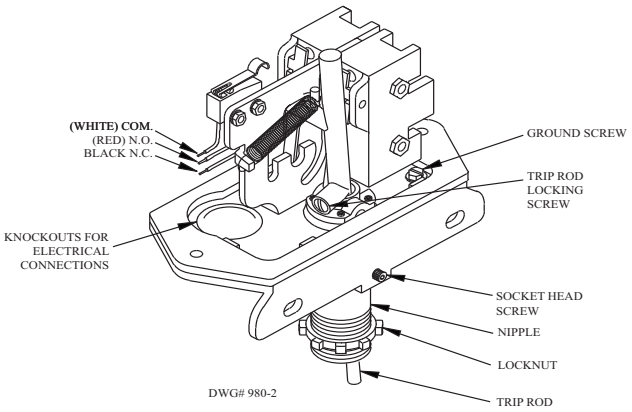


Fig. 2 Parts



Typical Installations On Post Indicator Valve Housings (See Figs. 3 Thru 6)

Refer to Fig. 2 for the location of parts described in the following instructions.

Note: If the sprinkler system is in service the owner or authorized representative should be notified, before any work is done on the system, that the valve controlling the water supply to the system may be closed for periods of time during the installation and testing of this device, resulting in all or portions of the system being inoperative during these periods.

If the system is not in service and valve is closed, be sure that opening the valve will not allow any unwanted water flow due to openings in the system, such as heads off, broken or incomplete piping, etc.

1. Position the valve to fully open ("OPEN" should appear in the window of the housing). Partially close the valve while observing the direction that the target assembly moves. Reopen the valve.

   If the valve housing is predrilled with a 1/2" NPT for installation of a monitoring switch, remove the 1/2" plug and fully open the valve. Make sure that "OPEN" appears in the window of the housing. GO TO STEP NO. 6.
2. Remove the head and target assembly (consultation with valve manufacturer is recommended).
3. If the target assembly moved up as the valve was closed, measure the distance from the bottom of the head to the lower part of the target assembly that will contact the trip rod of the PCVS (see Fig. 3). This is usually a plate or bar on the target assembly, on a side adjacent to the "OPEN/SHUT" plates. Subtract 1/8" from the measurement.

   If the target moved down as the valve was closed, measure the distance from the bottom of the head to the upper portion of the target assembly that will contact the trip rod of the PCVS (see Fig. 4). Add 1/8" (3,2mm) to this measurement.
4. Mark the housing at the proper location. Using a 23/32" (18,2mm) drill bit, drill and then tap a 1/2" NPT in the housing on the side that coincides with the portion of the target assembly that will engage the trip rod of the PCVS.
5. Replace the head and target assembly.
6. Loosen the socket head screw that holds the nipple in the PCVS and remove the nipple.
7. Screw the locknut that is provided onto the nipple.
8. Screw the nipple into the 1/2" NPT hole in the valve housing - hand tighten. Tighten the locknut against the valve housing to secure the nipple firmly in place.
9. Insert a scale or probe thru the nipple to measure the distance from the open end of the nipple to the target assembly. Subtract 1/2" (12,5mm) from this measurement.

   NOTE: In some cases, it may be necessary to attach an angle bracket to the target assembly to engage the PCVS trip rod.
10. Using the special tool provided, loosen the two cover screws and remove the cover from the PCVS.
11. Loosen the locking screw that holds the trip rod in place and adjust the rod length, from the end of the collar to the end of the rod, using the dimension determined in Step 9. Tighten the locking screw to hold the rod in place.

    NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 7). Reinstall trip rod and repeat Step 11 procedure.
12. Partially close the valve (3 to 4 revolutions of the handle/hand wheel).
13. Slide the PCVS unit as far as possible onto the nipple, observing which direction the rod will move when the valve is closed. Orient the device to actuate the switches when the valve is open. Tighten the socket head screw in the collar.
14. Carefully open the valve to the fully open position. As the target moves to the open position it should engage the trip rod and actuate the switch(es). There should be a minimum overtravel of 1/2 revolution of the handle/hand wheel after the switch(es) actuate (a continuity meter connected to each set of contacts is one method that could be used to determine this).
15. Slowly close the valve. The switch must operate during the first two revolutions of the handle/hand wheel or during 1/5 of the travel distance of the valve control apparatus from its normal condition.

    NOTE: Small adjustments of the target position may be necessary (consultation with valve manufacturer is recommended).
16. Complete the required electrical wiring, connections and tests. The valve should be operated through the entire cycle of fully closed and fully open to determine the integrity of the PCVS installation and the signaling system. Check that all electrical and mechanical connections are secure.
17. When the installation and testing are complete, return valve to its proper position.
18. Alternative installation for other post indicator valve housing shown in Fig. 5 and 6.

Fig. 3

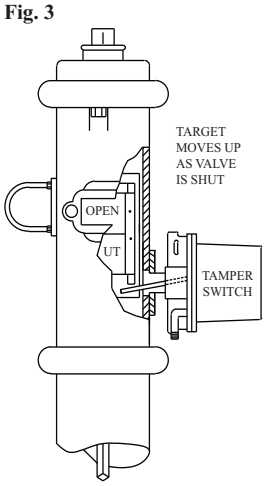


Fig. 4

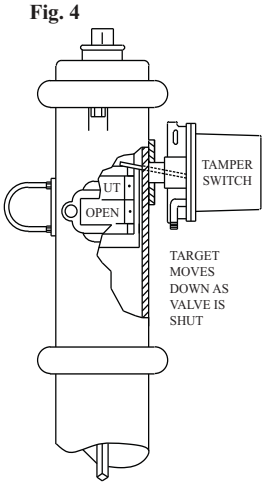


Fig. 5

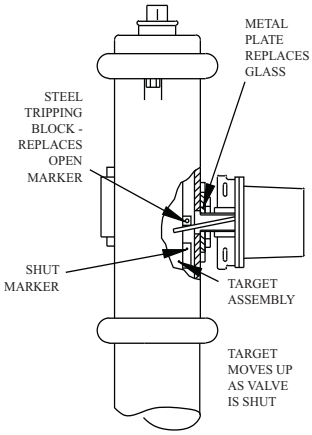
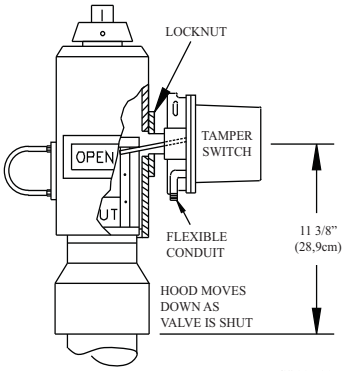


Fig. 6



Notes:

1. Subject to the approval of the "authority having jurisdiction" the alternate method of installation shown in Fig. 5 may be used. In this method, one of the glass windows of the housing is replaced with a 1/4" thick metal plate that is cut to fit in place of the glass and drilled and tapped to receive the 1/2" NPT pipe nipple. In some cases it may be necessary to attach an angle bracket to the target assembly to engage the PCVS trip rod.
2. If the target is stationary and a hood arrangement is used, such as is shown in Fig. 6, the hood must be drilled with a 23/32" drill and tapped with a 1/2" NPT. The center line of this hole should be 1/8" below the portion of target assembly that strikes the PCVS trip rod. The 11 3/8" dimension shown is for a Clow Valve. Flexible conduit must be used for this type of installation.

Typical Installation On A Butterfly Valve (See Figs. 9 And 10)

Refer to Fig. 2 for location of parts described in the following instructions:

B1. Remove the 1/2" NPT plug from the gear operator case.

B2. Loosen the set screw that holds the nipple in the PCVS and remove the nipple.

B3. Screw the locknut that is provided onto the nipple.

B4. Screw the nipple into the 1/2" NPT hole in the gear operator - hand tighten. Tighten the locknut against the case, to secure the nipple firmly in place.

B5. Partially close the valve (3 or 4 revolutions of the hand wheel or crank).

B6. Using the special tool provided, loosen the two cover screws and remove the cover from the PCVS.

B7. Loosen the locking screw that holds the trip rod in place. Estimate trip rod length required and extend slightly past that point. Slide the PCVS unit as far as possible onto the nipple, observing which direction the rod will move when the valve is closed. Orient the device to actuate switches when valve is open.

Note: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 7). Reinstall trip rod and repeat Step B7 procedure.

B8. Remove device from nipple and withdraw trip rod 1/32" (0,80mm) (this dimension is important). Tighten the locking screw to hold the rod in place. Re-install the device on the nipple. Tighten the screw in the collar against the nipple.

Note: In some cases it may be necessary to remove the gear box cover to ensure correct operation (consultation with the valve manufacturer is recommended).

B9. Carefully open the valve to its full open position, as the boss on the gear hub moves to the open position it must engage the PCVS trip rod and actuate the switch(es). There should be a minimum overtravel or revolution of the crank or hand wheel after the switch(es) actuate (a continuity meter connected to each set of contacts is one method that could be used to determine this).

Note: Slight adjustment of gear stops may be necessary to prevent overtravel of the trip rod (consultation with valve manufacture is recommended).

B10. Carefully close the valve. The switch(es) must operate during the first two revolutions of the crank or hand wheel or during 1/5 of the travel distance of the valve control apparatus from its normal condition.

B11. Complete the required electrical wiring, connections and tests. The valve should be operated through the entire cycle of fully closed and fully open to determine the integrity of the PCVS installation

Fig. 7 Breaking Excessive Rod Length

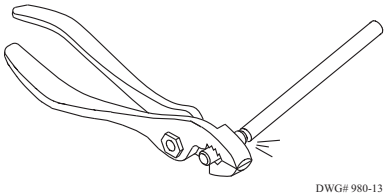
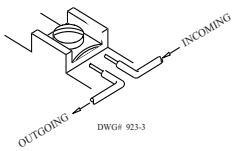


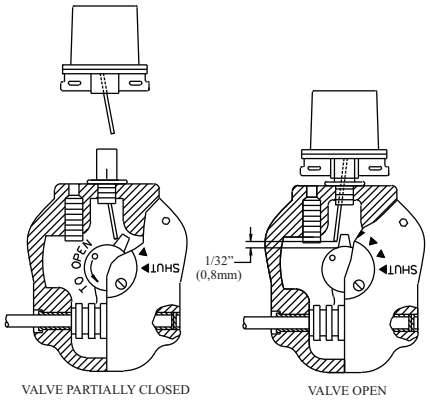
Fig. 8 Switch Terminal Connections Clamping Plate Terminal



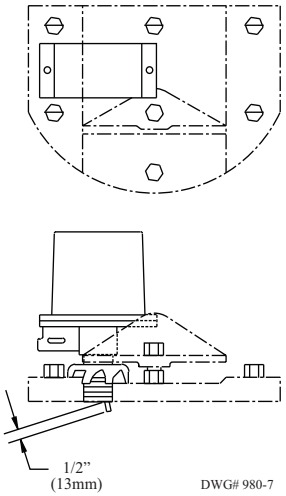
⚠ CAUTION

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.

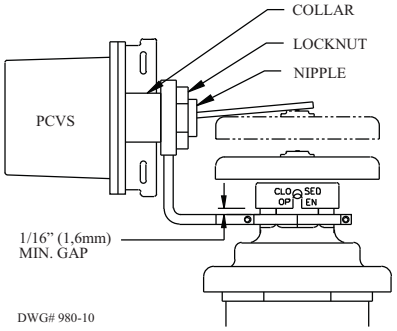
ITT Grinnell/Kennedy Indicating Butterfly Valve
Fig. 9



Dresser Indicating Butterfly Valve
Fig. 10



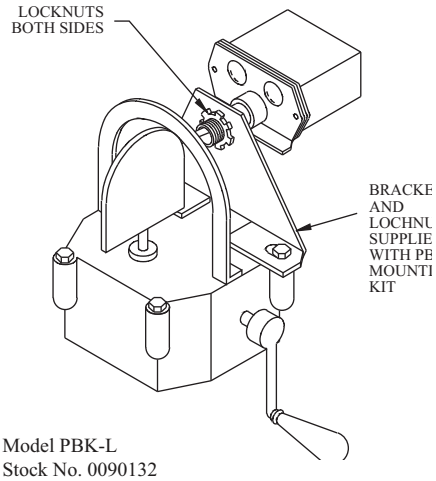
Typical Pressure Reducer Type Valve Installation
Fig. 11



This figure shows the Model PCVS mounted on the valve yoke, with a bracket supplied by the valve manufacturer, to supervise a pressure reducer type valve.

Note: This application is subject to the approval of the authority having jurisdiction.

PBK - Pratt IBV Butterfly Valve Kit
Fig. 12



Model PBK-L
Stock No. 0090132
(MDT-4S Actuator)

Model PBK-M
Stock No. 0090146
(MDT-3S Actuator)

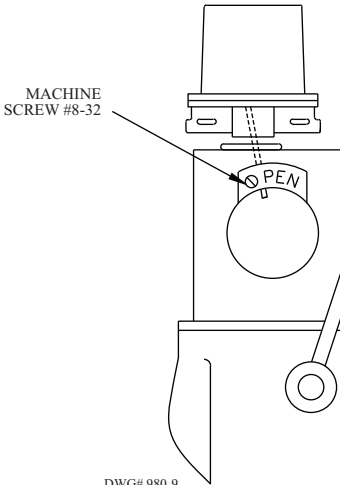
Model PBK-S
Stock No. 0090133
(MDT-2S Actuator)

Pratt Butterfly Valve Kit as used to mount a PCVS on a Pratt Model IBV Valve.

Kits contain: Bracket, nuts and instructions

Note: This application is subject to the approval of the authority having jurisdiction.

PVK - Pratt PIVA Post Indicator Valve Kit (Stock No. 1000060)
Fig. 13



Pratt Valve Kit as used to mount a PCVS on a Pratt Model PIVA Valve.

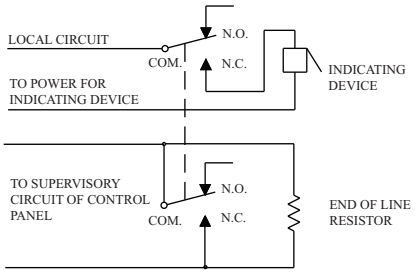
Kit contains: Instructions, template, screw and nut.

Note: This application is subject to the approval of the authority having jurisdiction.

Typical Electrical Connections

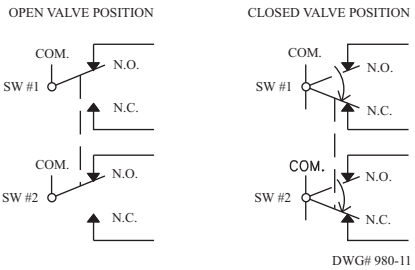
Please Note: This device should be wired in accordance with the applicable parts of the National Electrical Code, all state and local codes, applicable NFPA Standards and the requirements of the authority having jurisdiction.

Fig. 14



Contacts shown in normal (valve open) condition.

Typical Switch Action



Switches Shown in Valve Open Position

Fire Sprinkler Stationay Compressors

Base Plate Mounted

Standard Features

- Heavy-duty single stage cast iron compressor pump Made in Somerset, PA USA
- Splash lubricated
- Belt driven with a large flywheel for extra cooling and easier start-up
- Each unit is filled with Jenny Ultimate Blue Compressor Pump Oil
- Directional air shroud for reduced pump temperatures
- Totally enclosed heavy-duty belt guard
- Powder coated, extra heavy steel base plate
- Large canister intake filter with replaceable filter elements
- Magnetic starter is included on all 5HP and larger units
- Industrial/Commercial grade UL Listed electric motor
- Thermal overload motor protection

F12S-30S

GC5S-30S

K15S-30S

Base Mounted

System Size: Maximum Gallons in system to be pumped to 40 PSI in 30 Minutes	Model	Pump	HP	Power Supply	Pump RPM	CFM del'd @ 40 PSI	Optional Auto Control Group
220	F13S-BS	F	1/3	115 Volt (through 2 HP) or 230 Volt 1 Phase	670	2.9	ACGF
290	F12S-BS		1/2		950	3.8	
350	F34S-BS		3/4		1200	4.4	
425	K34S-BS	K			520	5.3	ACGK
480	F1S-BS	F	1		1430	6.0	ACGF
600	K1S-BS	K			790	7.4	ACGK
885	K15S-BS		1-1/2	208, 230, 460 or 575 Volt 3 Phase	1140	10.9	
985	K2S-BS		2		1280	12.4	
1215	G2S-BS	G			630	15.1	ACGD
1775	G3S-BS		3		950	21.8	
1950	GC5S-BS		5		1030	24.2	ACGJ
2115	J5S-BS	J			830	26.0	

Tank Mounted/30 Gallon

220	F13S-30UMS	F	1/3	115 Volt (through 2 HP) 230 Volt 1 Phase	670	2.9	
290	F12S-30UMS		1/2		950	3.8	
350	F34S-30UMS		3/4		1200	4.4	
425	K34S-30UMS	K			520	5.3	
480	F1S-30UMS	F	1		1430	6.0	
600	K1S-30UMS	K			790	7.4	
885	K15S-30UMS		1-1/2	208, 230, 460 or 575 Volt 3 Phase	1140	10.9	
985	K2S-30UMS		2		1280	12.4	
1215	G2S-30UMS	G			630	15.1	
1775	G3S-30UMS		3		950	21.8	
1950	GC5S-30UMS	GC	5		1030	24.2	
2115	J5S-30UMS	J			830	26.0	

Tank Mounted

Additional Standard Features

- Tanks are powder coated and ASME certified
- Protectively mounted fittings
- Manual tank drain(s)
- Large canister intake filter with replaceable filter elements
- Special unloading valves to assist in motor starting
- Tank gauge
- Pressure relief safety valve
- Auto Start/Stop control with pressure unloader set at 25-40 PSI

Options

ASME National Board tank
Magnetic starter
17 gallon tank ■ Vertical tank
Low oil level switch ■ Oil sight glass
Automatic tank drain ■ Air line filter
Aftercooler ■ Dryer
Control Group

Air Maintenance Device

For Dry Pipe Sprinkler Systems, Air Supervised Preaction Systems, & Dry Pilot Actuated Deluge Systems

UL Listed and FM Approved

Manufactured by: General Air Products, Inc.
118 Summit Drive, Exton, PA 19341

Call

1-800-345-8207

for assistance

or visit our website for information on these and all of our products

www.GENERALAIRPRODUCTS.com

Product Description

The enclosed Automatic Air Maintenance Device is a UL Listed and FM Approved assembly of valves, nipples, fittings, and actuators to automatically control the air pressure in the piping of dry pipe sprinkler systems, preaction sprinkler systems, or dry pilot actuated deluge systems.

The Air Maintenance Device is designed to automatically feed air into the system piping at the required volume and pressure from an air source such as:

1. An air compressor
2. An air receiver tank
3. A plant air system (owner's air)

When an air receiver tank or plant air is utilized as the air supply source, the pressure regulator in the Air Maintenance Device AMD-1 and AMD-1ALT automatically regulates the air pressure to the designated level. The outlet pressure of the regulator is field adjustable.

When an electrically-driven air compressor is utilized as the air supply source, the pressure switch in the Air Maintenance Device AMD-2, AMD-2ALT and AMD-3 automatically causes the air compressor to cut-in or cut-out at the minimum and maximum air pressures desired, respectively. The cut-in and cut-out pressures are field adjustable.

The automatic air supply is directed through a restricted orifice in the air maintenance device so that upon activation of a sprinkler, the air supply will not interfere with the operation of the dry pipe valve, by continuing to supply high volumes of pressurized air to the piping system.

It is a recommended safeguard that a low pressure switch and alarm be installed on dry pipe systems or other air supervised piping systems. This will cause an alarm to sound if the pressure falls below a predetermined level.

Operation

The Air Maintenance Device provides a continuous but restricted air supply to the piping system.

The activation of only one sprinkler in a dry pipe system, will cause the system pressure to diminish to the point where the dry pipe valve will “trip”, thereby filling the system piping with water.

Small piping system air leaks will be compensated for by the automatic air feed provided the air leaks do not exceed the restricted air supply.

Technical Data

Model: AMD-1, AMD-1ALT; AMD-2, AMD-2ALT; AMD-3
Style: With Air Regulator (AMD-1, AMD-1ALT)
With Air Pressure Switch (AMD-2, AMD-2ALT, AMD3)
Approvals: UL, FM
Factory Operation Test:
100% at 35 psi air (AMD-1, AMD-1ALT)
100% at 35 & 40 psi air (AMD-2, AMD-2ALT, AMD-3)

Ordering Information

Mfgr. Source: General Air Products, Inc.
Weight: 7 lbs. (AMD-1, AMD-1ALT)
11 lbs. (AMD-2, AMD-2ALT, AMD-3)
When placing an order, indicate the full product name. Please specify the quantity, model and style.

Guarantee

General Air Products, Inc. will repair and/or replace any products found to be defective in material or workmanship within a period of one year from the date of shipment. Please refer to the current price list for further details of the warranty.

UL Listed and FM Approved

GENERAL AIR PRODUCTS

Manufactured by: General Air Products, Inc.
118 Summit Drive, Exton, PA 19341

Design Data

An Air Maintenance Device should be permanently connected to all dry pipe sprinkler systems to avoid the possibility of false valve "trips" which may result from small piping leaks gradually lowering system air pressure.

An Air Maintenance Device may also be utilized to automatically control the air supply to the piping system of an air supervised preaction system or to the pilot lines of a dry pilot actuated deluge valve.

There are several methods of providing a constant and controlled supply of air to a sprinkler system as follows:

Air Compressor and Air Maintenance Device Model (AMD-2)

The air compressor is connected electrically and mechanically to the trim of the dry pipe valve, through an Air Maintenance Device equipped with a pressure switch. The air pressure switch continuously senses the air pressure in the piping system and turns the compressor on if the pressure drops below the cut-in setting and turns the compressor off if the pressure rises above the cut-out setting. The cut-in pressure is usually set at the design air pressure for maintaining the dry pipe valve in the closed position. The cut-out pressure should be set approximately 10 psi above the cut-in pressure.

Note: If the dry pipe valve is equipped with an accelerator, this method of air maintenance is not recommended. The accelerator is sensitive to a 3 to 5 psi air pressure drop at a rate of approximately 1 psi in 10 seconds - see AMD-1.

Air Compressor with Air Receiver Tank and Air Maintenance Device (Model AMD-1)

The compressor-tank unit is equipped with an integral pressure switch that controls the pressure in the tank, maintaining the tank pressure at a level 10 to 15 psi above the designed air pressure demand of any dry pipe system supplied by the air compressor tank unit. The compressor-tank unit is mechanically connected to the trim of the dry pipe valve, through an Air Maintenance Device equipped with an air pressure regulator. The pressure regulator continuously regulates the incoming air (from the air receiver tank) and maintains the outgoing air pressure at the pressure setting of the regulator, usually within an accuracy of 1 psi. The outgoing air pressure setting is field adjustable from 5 to 75 psi. If the dry pipe valve is equipped with an accelerator, this method of air-maintenance is recommended.

Plant Air Supply and Air Maintenance Device (AMD-1)

The plant air supply is mechanically connected to the trim of the dry pipe valve through an Air Maintenance Device equipped with an air pressure regulator. The pressure regulator continuously regulates the incoming air and maintains the outgoing air pressure at the pressure setting of the regulator, usually within and accuracy of 1 psi. The outgoing air pressure setting is field adjustable from 5 to 75 psi. The minimum pressure in the plant air supply must be greater than the design air pressure required by the dry pipe system since the air pressure regulator will only regulate pressure downward.

Installation

General

The Air Maintenance Device must be installed in the air supply line leading to the dry pipe valve trim, preaction system piping or dry pilot system piping. The air flow through the Device must be in the direction shown by the arrows on the units.

Note: The minimum pipe size is 1/2" diameter, although 3/4" diameter piping will provide a more rapid initial system fill.

Note: In particularly humid environments, a *DRYSTAR* ™ desiccant air dryer should be properly installed between the compressor and the dry pipe valve to remove moisture from the compressed air supply. Condensed moisture that is allowed to back up into the compressor cylinder may cause compressor damage. Cold room / freezer room installations must have a pre-packaged *Dry Air Pac* ™ which includes an AMD-1. Consult factory for correct installation procedures.

Model AMD-1 (Pressure Regulator)

Step 1. Close the 1/4" ball valves (#8) and open the bypass valve (#7) in the Air Maintenance Device and open the air supply valve in the dry pipe valve trim.

Step 2. Open the air supply control valve from the plant air system or air receiver tank to pressurize the system.

Step 3. When the system is pressurized, check the air pressure gauge to verify the the pressure is at the design pressure requirement for the system.

(Continued)

UL Listed and FM Approved

GENERAL AIR PRODUCTS

Manufactured by: General Air Products, Inc.
118 Summit Drive, Exton, PA 19341

Installation (continued)

Model AMD-1 (Pressure Regulator)

Caution: Care must be taken NOT to overpressure the system above the regulator setting when using the quick load line.

Note: If necessary to adjust the system pressure, move the locking nut away from the body of the regulator and turn the adjusting screw clockwise to increase the system pressure and counter clockwise to reduce system pressure.

When reducing from a higher to a lower setting, first reduce to some pressure less than desired, then bring up to the desired point.

After achieving the desired pressure setting, lock the pressure setting.

Step 4. Close the bypass valve (#7) and open the two 1/4" ball valves (#8). The Air Maintenance Device is now in service.

Model AMD-2 (Pressure Switch)

Step 1. An electrical power circuit should be installed using the pressure switch to control the compressor motor in accordance with the National Electric Code and/or the requirements of the local Authority Having Jurisdiction. Consult factory for specific recommendations.

Step 2. Close the 1/4" ball valves (#18) and open the bypass valve (#17) in the Air Maintenance Device and open the air supply valve in the dry pipe valve trim.

Step 3. Energize the branch circuit to the pressure switch to start the compressor and pressurize the system.

Step 4. When the system is pressurized, the pressure switch will cut-out and stop the compressor. Note the cut-out pressure.

Step 5. Open any valve connected to the piping system (such as the three-way valve for the air gauge on the dry pipe valve trim) just enough to slowly reduce the air pressure. Close it immediately when the pressure switch cuts-in and note the cut-in pressure. Verify the the cut-in and cut out pressures meet the minimum design requirements for the system air pressures.

Note: If necessary, adjust the cut-in or the cut-out pressure. Loosen the hex-nut on the cover of the pressure switch and remove the cover. Adjust the cut-in pressure by turning the Pressure Adjustment Screw in the proper direction. Adjust the pressure differential (difference between cut-in and cut-out pressure) by turning the Pressure Differential Screw. Consult Factory if in any doubt.

Step 6. Close the bypass valve (#17) and open the two 1/4" ball valves (#18). The Air Maintenance Device is now in service.

Care and Maintenance

The Air Maintenance Device does not require any regularly scheduled maintenance. However, it is recommended that proper operation and condition be periodically verified as follows:

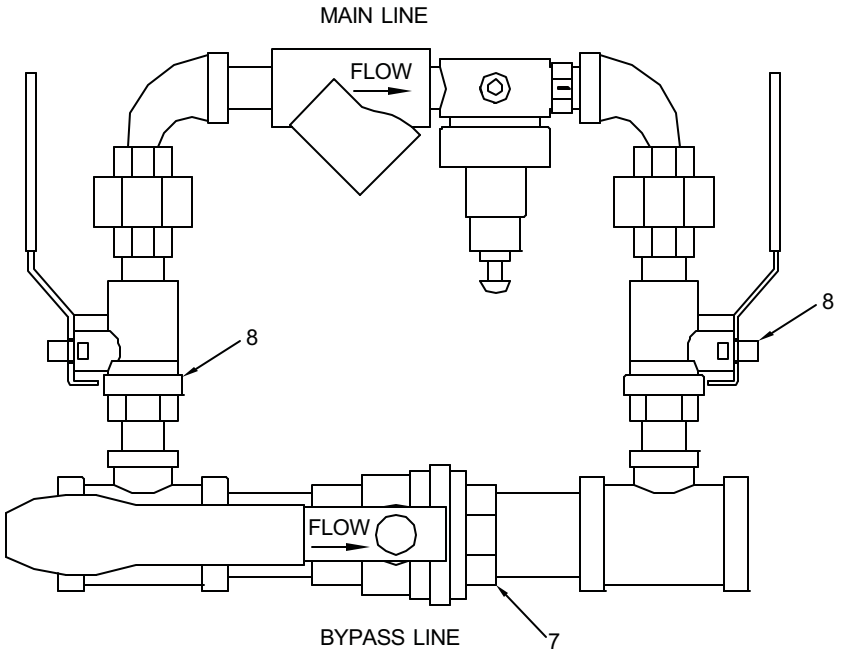
1. Verify that the 3/4" bypass valve is closed, the two 1/4" ball valves are open and the air supply control valve in the dry pipe valve trim is open.

2. Verify that the cut-in and cut-out pressures are at the proper setting, if applicable.

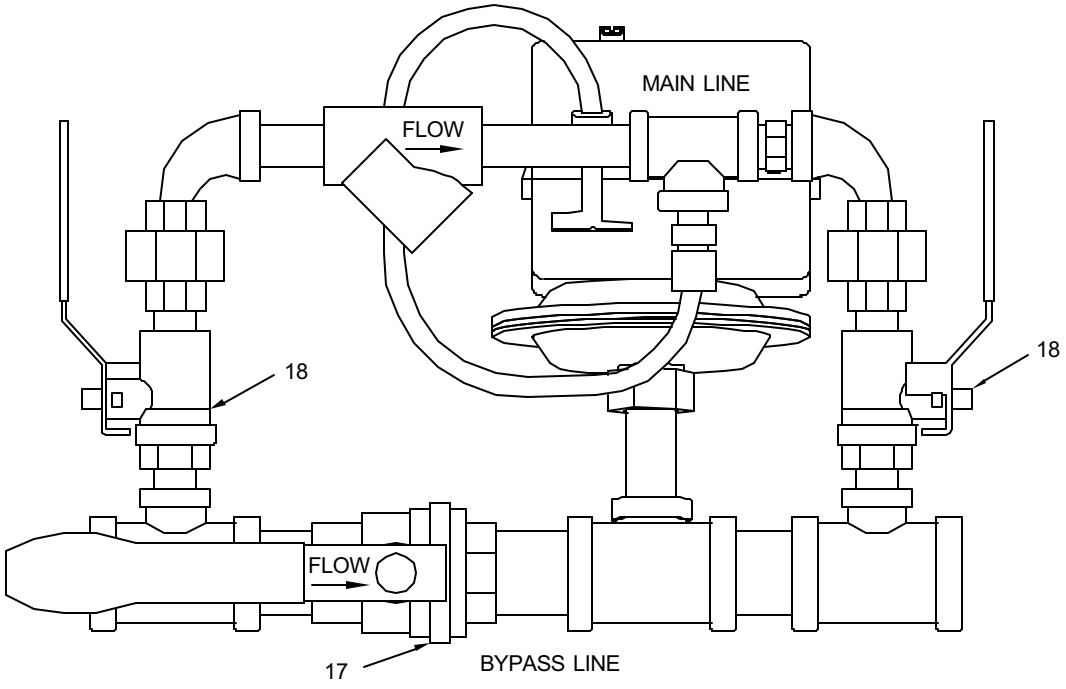
3. Verify that the regulated pressure is at the proper setting, if applicable.

4. Accumulated moisture should be removed from the drip leg on the air supply line and the desiccant in the air dryer should be replaced, if applicable.

5. The strainer should be cleaned.


MAIN LINE
FLOW
8
8
FLOW
BYPASS LINE
7

AMD1


MAIN LINE
FLOW
18
18
FLOW
17
BYPASS LINE

AMD2

Spare Sprinkler Head Storage Cabinet

Description

Fire Protection Products, Inc. Spare Sprinkler Head Cabinets are designed to allow for spare sprinkler head storage as required by NFPA guidelines. The Spare Sprinkler Head Cabinets are available in six configurations. Three head, six head, six head ESFR, twelve head, twenty-four head and thirty-six head. All six styles are manufactured with "knockouts" to accommodate the most common size sprinklers. The shelf is located to allow for the storage of a typical sprinkler head wrench. Each cabinet is finished with a red enamel fi nish. Each spare head cabinet comes with a hinged door which remains closed to protect the spare sprinklers from the elements and features two holes on the back panel to allow for attachment to most surfaces utilizing the appropriate fasteners. Not intended for exposed or harsh environments.

Specifications

Material:
Painted plain steel

Finish:
Red enamel

Styles:
3 Spare sprinklers, 1/2 or 3/4

6 Spare sprinklers, 1/2 or 3/4

6 Spare, ESFR, 1/2 , 3/4 or 1"

12 Spare sprinklers 1/2 or 3/4

24 Spare sprinklers

36 Spare sprinklers

Installation

Select the correct Spare Sprinkler Head Cabinet in accordance with the Automatic Sprinkler Systems Handbook. As per the 1989 Edition the correct number of spare sprinkler is as follows:

“0-300 sprinklers, not less than 6
300-1000, not less than 12
1000 or more, not less than 24.
Stock of spare sprinklers shall include all types and ratings installed.”*

Once the correct Spare Sprinkler Head Cabinet has been select-ed, installation is accomplished by inserting the correct fastener in each of the two holes inside the cabinet, securing the cabinet securely to the wall. The insert the correct number and type of sprinklers in accordance with the “handbook”.

*Final determination is subject to approval by the AHJ.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

1-pc and 2-pc Sprinkler Head Guards

Description

Both the 1-pc and 2-pc head guards are designed to provide protection against low level impacts to the sprinkler head. The 1-pc design features a dual hook attaching system to allow for installation on most 1/2" and 3/4" IPS sprinkler heads. The 1-pc also can be provided with a water shield for in-rack sprinkler systems. The 2-pc designed features a cage and clamping base plate. This design can provide additional protection for sprinklers that may experience greater opportunity for repeated abuse. Both types of head guards are available in either red or chrome finish. **Caution: Head guards will not protect sprinkler heads from severe abuse or impact.**

Installation

1-pc Head Guard installation can be accomplished without tools and can be installed in the pendent* or upright position. Disengage both hooks on either side of the guard. Spread the cage open just enough to clear the sprinkler frame and deflector being careful not to damage the sprinkler. Engage the open end of the cage at the base of the sprinkler between the frame and the threads. Reengage both hooks on either side of the sprinkler. **2-pc Head Guard** installation requires the use of a common screw driver. Place the base plate around the top thread of the sprinkler head closest to the frame. Close the base plate around the thread. At the same time, hold the cage to the base plate until the base plate engages the cage with its four tangs. Adjust the set screw until base plate is firmly attached to the sprinkler.

Specifications

Type:
Formed wire cage

Sizes:
1-pc
1/2" or 3/4" IPS
2-pc
1/2" IPS

Material:
.12" steel wire

Finishes:
Red enamel
Chrome

* The 1-pc head guard with shield will not function properly when installed in the pendent position. For this application use a 1-pc head guard without the shield and a water shield that will thread onto the sprinkler base according the sprinkler head manufacturers specifications.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Storz Type

Fire Department Connections

Description

Storz type Fire Department Connections are typically used for large diameter hose connections. Each connection features two to three lugs for "quick" connection of the fitting depending on hose diameter. Storz type fittings are genderless. Manufactured of forged aluminum alloy for increased service life and corrosion resistance. Each fitting also features a nitrile seal which is impervious to most chemicals and also features a lever type lock to prevent fittings from twisting apart during use. See specifications for additional information and available configurations. Meets NFPA1963 requirements

Installation

Installation of a Storz fitting is accomplished with normal installation methods* used in the fire sprinkler industry. Make sure the female threads of the Storz fitting and the male pipe end are free of contaminants and debris. Apply a suitable thread sealant to the threads of the male pipe end such as PipeFit® or PipeFit® AS. Thread the Storz fitting on to the male pipe end until hand tight.

*Tighten the Storz type fitting one additional turn using a specially designed spanner wrench to prevent damage to the outer surfaces of the fitting. Engage set screw (if equipped) of the Storz fitting into the male pipe end. The set screw prevents unintentional removal of the fitting.

Specifications

Material:
- Forged Aluminum Alloy

Seal: Nitrile

Approvals:
- Meets NFPA 1963 edition 1998 Standard for fire hose connections

Available sizes:*
- 4" Storz x 4" FNPT
- 4" Storz w/ 30° Elbow
- 5" Storz x 4" FNPT
- 5" Storz w/ 30° Elbow

Accessories:
- 4" Blind cap w/ tether
- 5" Blind cap w/ tether
- Spanner Wrench for 4-6”

*Also available as kits. Each kit contains one STORZ connection, blind cap and an identification sign.

Fire Protection Products, Inc
3198 Lionshead Avenue, Carlsbad, CA 92010-4701
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Check Valves

UL, ULC and FM

Description

Check valves feature cast brass* bodies with a spring loaded clapper assembly making this valve suitable for vertical or horizontal installations. Features metal faced clapper with O-ring seat. Rated to 300 psi. Valve bodies are tapped and plugged 1/2” IPS for additional equipment such as a ball drip valve when used in conjunction with a Fire Department Connection or a pressure gauge when used in a supply line.

Installation

Install in accordance with approved installation practices. Use an approved thread sealant such as PipeFit Thread Sealing Paste with PTFE on all threaded connections. Make sure that proper lubrication has been applied to groove coupling gaskets for groove end valves.

DO NOT OVER TIGHTEN THREADED CONNECTIONS. OVERTIGHTENING MAY CAUSE DISTORTION OF THE BODY AND THREADS OF THE VALVE LEADING TO IMPPROPER PERFORMANCE AND PRODUCT FAILURE.

Specifications

Material:
Cast Brass*

Pressure Rated:
300psi

Size:
2” IPS
2 1/2” IPS
3” IPS
4” IPS

Configurations:
(Inlet x Outlet)
MNPT x FNPT
MNPT x GRV
GRV x GRV

*Contains lead. Not for use in water systems intended for human consumption.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

STORZ FDC Kits

Description

FPPI STORZ Kits contain all the pieces need for a complete installation of a STORZ Type Fire Department Connection. STORZ connections have been used in the fire service for decades for large diameter connections at the fire truck. Only recently has the fire service in several jurisdictions requested a STORZ Type connection to automatice fire sprinkler and standpipe systems. Use of STORZ connections eliminates the need for the fire service to use adapters to make their final connection to the building. FPPI STORZ Fire Department Connection Kits are complete the STORZ Connection FDC, STORZ Cap and 4” IPS identification sign. Additional information on each individual component may be found at www.fppi.com.

Specifications

Size:

4” Storz Kit Auto Sprinkler
4 x 5” Storz Kit Auto Sprinkler
4” Storz Kit w/ 30 Auto Sprinkler
4 x 5” Storz Kit w/ 30 Auto Sprinkler
Storz Wrench, 4-6”

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Full Port Ball Valve

Forged Brass UL/ULc Listed 2R97 FM Approved

Description

FPPI's complete line of TrimFit Forged Brass*, Full Port Ball Valves feature forged components machined to exacting specifications. Listed for fire sprinkler systems for trim, test or drain applications, our Full Port Ball Valves are rated 600 PSI for sizes 1/2" - 1 1/2" IPS and 300 PSI for the 2" size. Each valve is complete with plastic coated valve handle marked as required by UL Blow out proof stem. UL Listed. FM Approved

Installation

Installation practices consistent with those of the fire sprinkler industry are appropriate for the installation of this product. Always make sure to properly "hold back" the valve and each component being installed to the valve to prevent over tightening or stressing of the valve body. It is also necessary to make sure all components are in proper alignment in the assembly where the ball valve is present. Improper alignment of attached components may create stress on the valve leading to valve failure. Use a suitable thread sealant such as PTFE tape or PipeFit Thread Sealant Paste with PTFE. Never use tape and paste together. We do not recommend the use of anaerobic sealants with this product. The materials used in this sealant type are highly caustic and may cause failure of the synthetic components present in this product. **DO NOT USE MORE THAN ONE SEALANT TYPE PER THREADED CONNECTION. DO NOT OVER TIGHTEN THREADS. OVER TIGHTENING WILL CAUSE LEAKS IN THIS AND OTHER THREADED COMPONENTS.**

Specifications

Nomenclature and Material:

Part:	Material:
Nut	Steel
Handle	Steel
Stem Gland	Brass*
Stem Packing	PTFE
Stem	Brass*
Body	Forged Brass*
Ball Disc Pack	PTFE
Ball Disc	Brass or Forged Brass*
End Plug	Forged Brass*

Part No.	Size*
06-838	1/4" IPS
06-840	1/2"
06-842	3/4"
06-844	1"
06-845	1 1/4"
06-846	1 1/2"
06-848	2"

*Full port valves have slightly larger "take out" dimensions than standard port valves. You may need to adjust trim components accordingly.

*Contains lead. Not for use in water systems intended for human consumption.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Open Snoot Assembly

FNPT x FNST* Connection

Description

The single outlet open snoot is constructed of cast brass. The single swivel is complete with gasket and comes standard with pin lugs. Outlet is 2 1/2" NPT female thread. Comes standard with 2 1/2" NST female swivel. Kit includes: open snoot, 2 ½" brass plug with chain, and 2 ½" FDC Brass Wall Plate.

Installation

Installation can be achieved with tools readily available in the field using common installation practices. Make sure male threads of pipe to which the snoot is being attached are liberally coated with a pipe thread sealant such as PipeFit Thread Sealant with PTFE or PTFE Thread Sealant Tape. Tighten the snoot until hand tight. Tighten one additional turn past hand tight to achieve a water tight seal of the threads. **DO NOT OVER TIGHTEN! Over Tightening may cause thread failure as well as cracking of the snoot body.**

Specifications

Material:
Cast brass

Size:
2 1/2 FNPT x F Swivel*

*Available Swivels:

NST	3.0686" x 7.5TPI
BCT	3.000" x 8TPI
ONT	3.125" x 5TPI
QST	3.031" x 7TPI
PHX	3.062" x 6TPI
TEM	3.075" x 6TPI
CLV	3.078" x 8TPI
DET	3.125" x 7.5TPI

Check thread dimensions for other 2 1/2" applications.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Sprinkler Gauge

Applications

- Fire sprinkler systems
- Suitable for all media that will not obstruct the pressure system or attack copper alloy parts

Special Features

- UL-listed (UL-393), United States and Canada
- Factory Mutual (FM) approved
- Reliable and economical

Standard Features

Design
EN 837-1 & ASME B40.100

Sizes
4” (100 mm)

Accuracy class
± 3/2/3% of span
(ASME B40.100 Grade B)

Ranges
0/80 psi, retard to 250 psi (air)
0/300 psi (water)

Working Pressure
Steady: 3/4 of full scale value
Fluctuating: 2/3 of full scale value
Short time: full scale value

Operating Temperature
Ambient: -40°F to 140°F
(-40°C to 60°C)
Media: 140°F (+60°C) maximum

Temperature Error
Additional error when temperature changes from reference temperature of 68°F (20°C) +0.4% for every 18°F (10°C) rising or falling. Percentage of span.

Manufactured by Wlka Instrument

Specifications

Bourdon Tube
Material: copper alloy C-type

Pressure Connection
Material: copper alloy
1/4“ NPT lower mount (LM)

Movement
Copper alloy

Dial
White aluminum with stop pin; black and red lettering

Pointer
Black aluminum

Case
Black polycarbonate

Window
Snap-in clear polycarbonate

FM APPROVED

c UL us LISTED

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Identification Signs

Description

Manufactured from .020" white coated aluminum. All sign types are screen printed with a fade resistant red ink. Each sign is shipped with a clear protective plastic coating which can be removed at time of installation. Each sign type meets or exceeds NFPA13 requirements. All signs (except 7" round) are drilled in four corners to allow for easy installation. All signs (except 7" round) may be installed with sign chain or with any fastener that is suitable for the material that the sign is being attached. The 7" round bell signs are center drilled to allow for installation directly to the bell gong assembly. Type “A” 9" x 7" Control valve signs are drilled with the same four hole pattern as Type "B" 6" x 2" signs to allow for attachment of Type “B” to Type "A".

Installation

Installation of aluminum signs is accomplished by several methods. The most common installation procedure is to use #16 Single Jack chain to hang the sign on the area being identified. Since all of the above mentioned signs are predrilled at all four corners, the last link of the chain can be opened and hooked through the top holes on the signs and hung on the appropriate valve or piping. The signs may also be fastened to a flat surface with fasteners appropriate to the base material. (The 9" x 7" Fire Alarm Bell sign must be drilled if it is to be attached directly to the bell gong.)

Specifications

Material:

- .020" aluminum with removable plastic coating

Sizes:

- 6" x 2"
- 4" x 6"
- 5" x 7"
- 9" x 7"
- 12" x 10"
- 8.5" x 11"

See current catalog for a full listing of all available signs.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Sprinkler Identification Signs

FPPI's Sprinkler Identification Signs are manufactured of aluminum, painted white then printed with "fade resistant" red ink. Each sign is drilled for easy installation and is plastic coated to prevent scratching of finish during shipment and final installation. Designed in accordance with NFPA requirements.

Part No.	Description	Box Qty.
02-002-00	Blank Sign w/border 6" x 2"	1000
02-006-00	Air Control, 6" x 2"	1000
02-010-00	Air Line, 6" x 2"	1000
02-014-00	Alarm Line, 6" x 2"	1000
02-018-00	Alarm Test, 6" x 2"	1000
02-022-00	Anti-Freeze System 6" x 2"	1000
02-023-00	Anti-Freeze System 5" x 7"	1000
02-024-00	Auto Sprinkler Shut-Off 12" x 10"	1000
02-026-00	Auxiliary Drain, 6" x 2"	1000
02-034-00	Control Valve, 6" x 2"	1000
02-036-00	Control Valve, 4" x 6"	1000
02-037-00	Control Valve, 5" x 7"	1000
02-038-00	Control Valve, 9" x 7"	500
02-042-00	Drain, 6" x 2"	1000
02-046-00	Drain Valve, 6" x 2"	1000
02-050-00	Dry Standpipe 6" x 2"	1000
02-051-00	Fire Dept. Connection 6" x 2"	1000
02-053-00	Excess Pressure Pump, 6" x 2"	1000
02-054-00	Entire System, 6" x 2"	1000
02-055-00	Fire Alarm Bell, 9" x 7"	500
02-056-00	Fire Alarm Bell, 7" Round	500
02-057-00	911 Fire Alarm Bell, 7" Round	500
02-058-00	F.S. Valve Do Not Close, 6" x 2"	1000
02-060-00	Fire Sprinkler Riser Inside, 6" x 2"	1000
02-062-00	From City Main, 6" x 2"	1000
02-066-00	In This Building, 6" x 2"	1000
02-070-00	In This Section, 6" x 2"	1000
02-074-00	Inspectors Test, 6" x 2"	1000
02-077-00	Hydraulic System, 5" x 7"	1000
02-081-00	Hydraulic System, 8-1/2" x 11"	1000
02-082-00	Main Control, 6" x 2"	1000
02-086-00	Main Drain, 6" x 2"	1000
02-091-00	Multi-use System, Warning, 5" x 7"	1000
02-092-00	Normally Closed, 6" x 2"	1000
02-096-00	Normally Open, 6" x 2"	1000
02-098-00	Open Sprinkler, 6" x 2"	1000

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TrimFit® Globe

Valve with PTFE Seat, UL/ULC Listed 300 psi

Description

FPPI® TrimFit® Bronze* Globe Valves are precision cast then machined using state of the art facilities. Each valve features a full floating seat holder for reduced seat wear when closing the valve. Seat is made of pure virgin PTFE for longer seat life and reduced maintenance as compared to rubber seat valves. Trim-Fit trim valves are suitable for use in regular (175psi) and high pressure (300psi) sprinkler systems. Standard configuration is FNPT x FNPT and is available in 1/4" IPS through 2" IPS sizes. Each valve carries the UL Listing and is rated for use to 300psi. UL/ULC Listed 2R97

Installation

Install in accordance with usual and customary installation techniques for fire sprinkler systems. Use a suitable thread sealant on the male threads of the pipe being threaded into the valve body. We recommend either FPPI PTFE Thread Sealing Tape or PipeFit® Thread Sealing Paste with PTFE. NEVER USE BOTH. DO NOT OVERTIGHTEN. OVERTIGHTENING MAY CAUSE CRACKS OR LEAKS.

Specifications

Material:
- Brass* or bronze*
- Seat-PTFE
- Hand wheel-JIS FC 20 painted red.

Sizes:
- 06-798 1/4" IPS FNPT
- 06-800 1/2"
- 06-802 3/4"
- 06-804 1"
- 06-806 1 1/4"
- 06-808 1 1/2"
- 06-810 2"

*Contains lead. Not for use in water systems intended for human consumption.

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Brass Ball Drip Valve

Description

The solid brass* ball drip is a “ball” type check valve. When properly installed, the internal ball rests in the lower most area of the valve body allowing for proper drainage of moisture accumulation. Upon system pressurization, the internal ball is “pushed” into the small end of the ball drip body closing the opening. When system pressure is removed, the ball returns to its original position. One of the most common uses is on the dry side of the Fire Department Connection valve. This use helps keep moisture from accumulating inside the Fire Department Connection. Designed for horizontal installation only.

Specifications

Type:
Straight Pattern

Material:
Body: Brass*
Ball: Brass*

Standard Finishes:
Rough Brass*

Adjustment Range:
¼” x ½” MNPT
½” x ½” MNPT
¾” x ¾” MNPT

Installation

Proper installation of the brass ball drip can be accomplished with standard piping installation tools. Make sure the threads are clean and free from burs and debris. Apply a thread sealant suitable for the materials being joined such as PipeFit, PipeFit AS or PTFE tape. When using a paste type sealant, make sure to brush the sealant deep into the root of the threads. Thread the ball drip into female threads hand tight. Finish tightening with a pipe wrench up to one full turn. **Do not over tighten. Over tightening may damage threads and ball drip.** Finish piping to allow for proper drainage. **Valve opens by force of gravity only. Do not use with more than 1 ft. column of water (water pressure) on the ball check. Use only in the horizontal position.**

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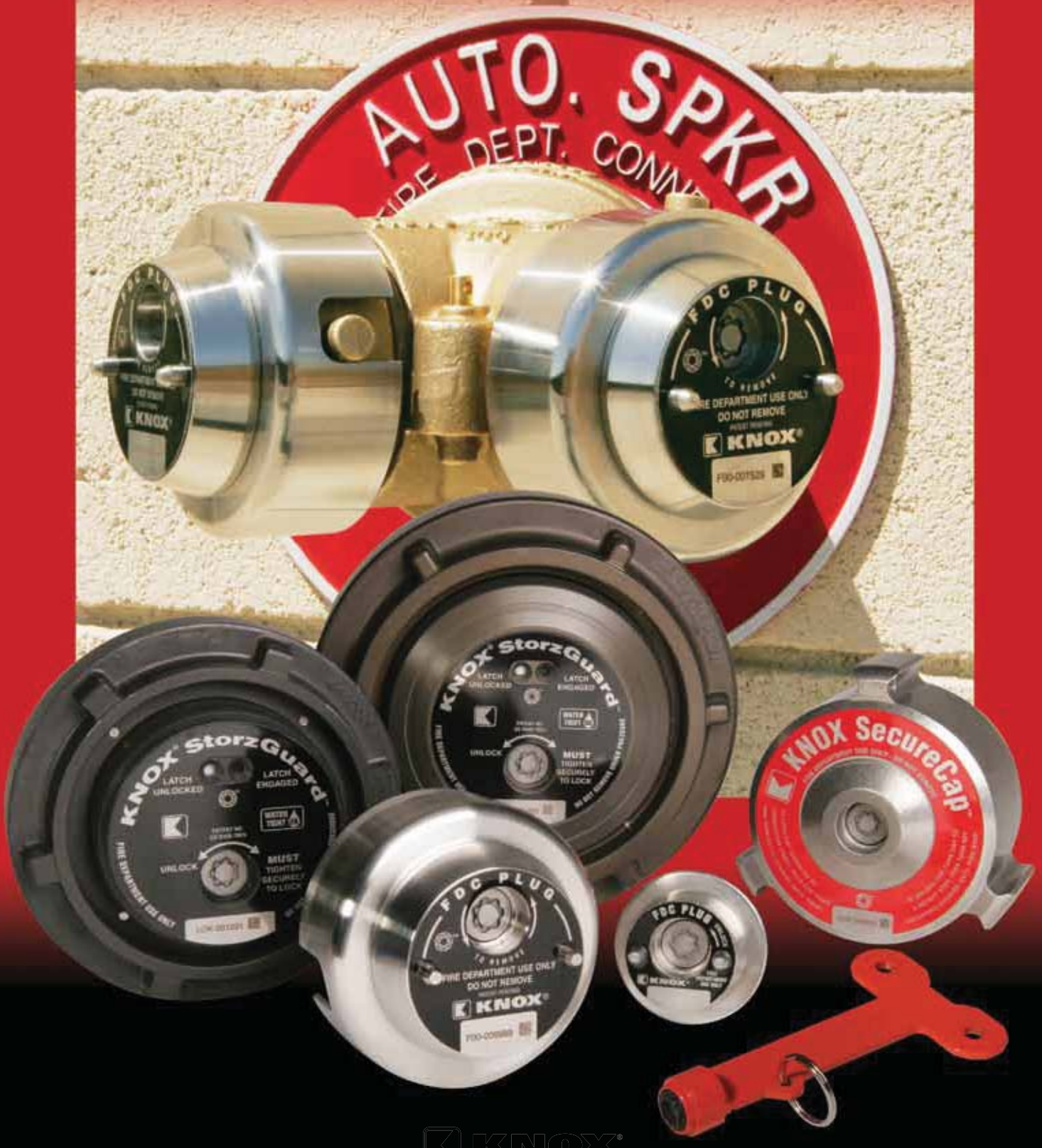
KNOX®
FDC Protection Program



KNOX®
Serving Fire Departments Since 1975

Knox® FDC Protection Program

The Knox® FDC Protection Program is a complete system that provides protection for both the intake and discharge sides of water based fire protection systems. This high quality system provides fire department control over FDC equipment at no cost to your department.

When you register for the FDC Program, Knox Keywrenches are provided to your department at no charge. Building owners in your jurisdiction will be able to purchase Knox FDC plugs along with the new SecureCap® and StorzGuard™ products. The first shipment of product will be sent after an authorized fire department member has received the Knox Keywrenches.

Enforce FDC Protection

Language in the 2009 International Fire Code, 2009 International Building Code and 2009 NFPA 1, Fire Code all authorize the installation of locking caps in your jurisdiction.
The codes read as follows:

2009 International Fire Code Chapter 912.3.1

2009 International Building Code Chapter 912.3.1

"Locking Fire Department Connection Caps: The fire code official is authorized to require locking caps on fire department connections for water-based fire protection systems where the responding fire department carries appropriate keywrenches for removal."

2009 NFPA 1, Fire Code Chapter 13.1.12

"The AHD shall have the authority to require locking fire department connection (FDC) plugs or caps on all water-based fire protection systems."

Protect Sprinkler System Performance

A fire sprinkler system is subject to malfunction and malicious attack when foreign matter enters the system through an unprotected FDC connection. Knox's locking SecureCap and FDC plugs deliver clean FDC lines and undamaged connection threads.

Actual Attack Nozzle

A bird nest, 3 birds and a tennis ball entered an unprotected FDC clogging the backup fire line and endangering the lives of primary fire attack crew fighting a large fire inside an apartment building.

Prevent Random Cap Removal

Repetitive FDC cap replacement is aggravating for fire department inspectors and expensive for building owners. Controlling FDC access with long-term Knox caps and plugs addresses both issues. Locking cap and plug removal is quickly and easily accomplished with a Knox Keywrench.

Reduce Theft of Brass Connections

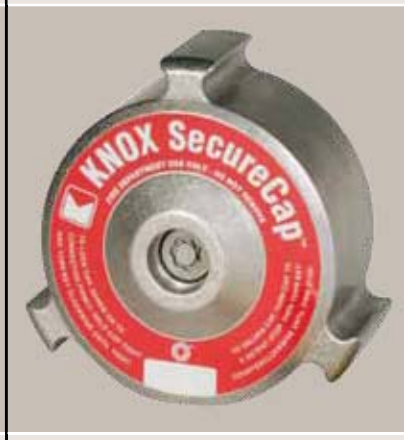
In recent years, communities have seen an increase in stolen copper and brass including siamese brass FDC swivel connections. A stolen FDC connection places a building, its occupants and responders at risk. To combat the theft of FDC swivel connections, Knox has developed the new FDC plug with Swivel-Guard™ that covers the entire swivel connection and minimizes the potential of the connection being stolen. With Swivel-Guard™, the set screw is inaccessible making it difficult to remove the brass connection.

Knox 2-1/2 inch FDC Plug with Swivel-Guard™

Protect Water Source Against Theft

Water is a precious commodity. The new Knox SecureCap and StorzGuard devices lock the connection to non-approved users providing protection against water theft and the potential introduction of harmful substances into the water system. Since both products hold water pressure, they can safely be installed on hydrants.

Secure Fire Department Connections

	FDC Plugs	StorzGuard™	SecureCap®
			
Construction	Solid Stainless Steel Construction	Aluminum	Stainless Steel exterior with solid brass connection
Weight	2-1/2" = 3 lbs; 1-1/2"= 2lbs	6 lbs	7 lbs
Size	2-1/2" & 1-1/2" NH	4" and 5" sizes	2-1/2" NH
Finish/ Options	Bright stainless steel, standard; Polished chrome-like stainless steel and/or Swivel-Guard™, optional	Dark, hard anodized aluminum; Kits available with straight or 30° elbow adapters and StorzGuard™ cap	Stainless steel
			
	FDC plug with Swivel-Guard™ locked onto siamese connection	**StorzGuard™ securing a hydrant connection**	**SecureCap® on a parking garage standpipe**

Sizes and Threads

In addition to National Hose Thread (NH), the Knox Company manufactures additional thread types as requested by fire departments. If your jurisdiction does not use NH (formerly referred to as NST) and you would like to confirm that Knox has your thread pattern in stock, just give your Knox representative a call. For StorzGuard and SecureCap, if additional sizes are required, contact your Knox Representative for availability.

Knox® Keywrenches

Keywrenches are delivered to your department after the FDC registration form has been completed and submitted to Knox. The keywrenches are provided free of charge for your use but they remain the property of the Knox Company. All registered FDC departments are encouraged to request additional Keywrenches for their mutual aid departments. A special Contractor registration form is also available if your department wishes to authorize local contractors to obtain Knox Keywrenches.

KNOX®
Serving Fire Departments Since 1975

The Knox® FDC Protection Program is:

- Authorized by 2006 International Fire and Building Codes
- Supplies long-term FDC protection against vandalism
- Prevents foreign matter from entering sprinkler systems
- Provides secure protection at no cost to your department
- Authorized by 2009 NFPA 1

Depend on Knox® Quality

Knox FDC caps and plugs are part of the Knox Rapid Entry System manufactured by the Knox Company. The highest quality materials and workmanship are used in the manufacturing process. For over thirty years, Knox has consistently proven that their products are built to last.

About the Knox Company

Knox has been manufacturing high security key boxes, key vaults, armored cabinets, key switches, padlocks, master key retention devices and locking FDC plugs and caps since 1975. This proven rapid entry system reduces response time, property damages and the liability for lost keys. More than 10,000 first responders and the communities they serve depend on Knox products and services.

Locking 2½" Plug with Knox Keywrench

Loosening 2½" Plug with Knox Keywrench

Locking 1½" FDC Plug with Knox Keywrench

KNOX®
Serving Fire Departments Since 1975

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