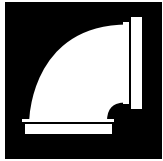


Grooved Fittings



Tyco Fire Products --- www.tyco-grooved.com
 451 North Cannon Avenue, Lansdale, Pennsylvania 19446 --- USA
 Customer Service/Sales: Tel: (215) 362-0700 / Fax: (215) 362-5385
 Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500



General Description



See Fire Protection Submittal Sheet for pressure rating and Listing and Approval information

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



Technical Data

Approvals: UL, FM, and ULC

Note: See Fire Protection Submittal Sheet for exact Listing/Approval information.

Maximum Working Pressure:

500 and 300 Series: 300 psi
 200 Series: see chart on page 3
 See specific data sheet for rating of coupling being used.

Manufacture Source:

Domestic or as noted.

Material:

Cast: Figures: 201,210, 219, 260, 501, 510, 510DE, and 519
 Ductile iron, conforming to ASTM A-536 Grade 65-45-12
 Fabricated Steel: Figures: 301, 302, 303, 312, 313, 321, 327, 341 and 350 Carbon Steel, (Sizes 1 1/4" - 6" are Schedule 40); (Sizes 8" - 12" are Schedule 30), conforming to ASTM A-53 Grade B

Protective Coatings:

- Non-lead orange paint
- Hot dipped galvanized conforming to ASTM A-153



Ordering Procedure

Ordering information: When placing an order, indicate the full product name. Please specify the quantity, figure number and size.

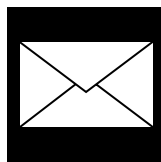
Availability and Service: Grooved Piping Products, valves, accessories and other products are available throughout the U.S., Canada, and internationally, though a network of distribution centers. You may write directly or call 215-362-0700 for the distributor nearest you.



Care and Maintenance

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in accordance 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. Any impairment must be immediately corrected.

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



Limited Warranty

Products manufactured by Tyco Fire Products 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 Tyco Fire Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire Products 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 (NFPA), and/or the standards of any other Authorities Having Jurisdiction. Materials found by Tyco Fire Products to be defective shall be either repaired or replaced, at Tyco Fire Products' sole option. Tyco Fire Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire Products 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 TYCO FIRE PRODUCTS 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 TYCO FIRE PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE PRODUCTS' 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.

Figures 501, 510, 519 and 510DE

500 Series:

Sizes: 1 1/4" - 8"

Maximum Working Pressure: 300 psi:

See specific data sheet for rating of coupling being used.

Approvals: UL, FM, and ULC

Note: See Fire Protection Submittal Sheet for exact Listing/Approval information.

Manufacture Source: Domestic

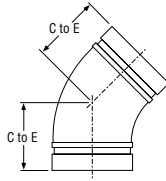


Figure 501

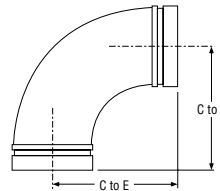


Figure 510

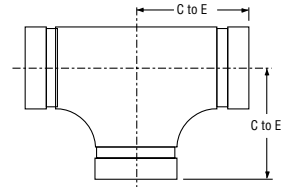


Figure 519

Friction Resistance 500 Series Fittings (Expressed as Equivalent Straight Pipe)				
Size Inches mm	Elbows		Tee	
	90°	45°	Branch	Run
	Feet Meters	Feet Meters	Feet Meters	Feet Meters
1 1/4 42.2	1.9 0.6	1.0 0.3	4.8 1.5	1.9 0.6
1 1/2 48.3	2.3 0.7	1.2 0.4	5.8 1.8	2.3 0.7
2 60.3	3.2 1.0	1.6 0.5	8.0 2.5	3.2 1.0
2 1/2 73.0	3.9 1.2	2.0 0.6	9.8 3.0	3.9 1.2
3 88.9	4.9 1.5	2.4 0.7	12.2 3.7	4.9 1.5
4 114.3	6.5 2.0	3.3 1.0	16.3 5.0	6.5 2.0
6 168.3	9.9 3.0	5.0 1.5	24.8 7.6	9.9 3.0
8 219.1	13.1 4.0	6.6 2.0	32.8 10.0	13.1 4.0

Nominal Size Inches	Figure 501 45° Elbow		Figure 510 90° Elbow		Figure 519 Tee	
	C to E Inches mm	Appx. Wt. Lbs. Kg.	C to E Inches mm	Appx. Wt. Lbs. Kg.	C to E Inches mm	Appx. Wt. Lbs. Kg.
1 1/4	1.75 44.5	0.8 0.4	2.75 69.9	1.0 0.5	2.75 69.9	1.4 0.6
1 1/2	1.75 44.5	1.0 0.5	2.75 69.9	1.4 0.6	2.75 69.9	1.8 0.8
2	2.00 50.8	1.3 0.6	3.25 82.6	1.8 0.8	3.25 82.6	2.6 1.2
2 1/2	2.25 57.2	1.9 0.9	3.75 95.3	2.7 1.2	3.75 95.3	3.9 1.8
3	2.50 63.5	2.6 1.2	4.25 108	3.7 1.7	4.25 108.0	5.4 2.4
4	3.00 76.2	5.0 2.3	5.00 127	7.0 3.2	5.00 127.0	10.1 4.6
6	3.50 88.9	8.6 3.9	6.50 165.1	13.4 6.1	6.5 165.1	18.8 8.5
8	4.25 108.0	17.2 7.8	7.75 196.9	26.3 11.9	7.75 196.9	36.3 16.5

Nominal Size Inches	Figure 510DE 90° Drain Elbow			
	C to E Inches mm	A Inches mm	B Inches mm	Appx. Wt. Lbs. Kg.
2 1/2	3.75 95.3	2.00 50.8	2.75 69.9	2.7 1.2
3	4.25 108.0	2.34 59.4	2.75 69.9	3.7 1.7
4	5.00 127.0	2.85 72.4	2.75 69.9	7.0 3.2
5	5.50 139.7	3.38 85.9	2.75 69.9	13.0 5.9
6	6.50 165.1	3.92 99.6	2.75 69.9	13.4 6.1
8	7.75 196.9	4.95 125.7	2.75 69.9	26.3 11.9

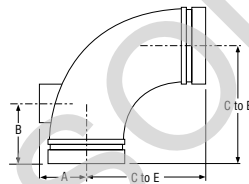


Figure 510DE

300 Series:

Sizes: 1 1/4" - 12"

Maximum Working Pressure: 300 psi:

See specific data sheet for rating of coupling being used.

Approvals: UL, FM, and ULC

Note: See Fire Protection Submittal Sheet for exact Listing/Approval information.

Manufacture Source: Domestic

Figure 350
1 1/2" - 6"

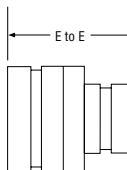


Figure 350
8" - 12"

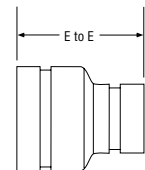


Figure 350

Figure 350 Concentric Reducer - Groove x Groove											
Nominal Size Inches	E to E Inches mm	Appx. Wt. Lbs. Kg.	Nominal Size Inches	E to E Inches mm	Appx. Wt. Lbs. Kg.	Nominal Size Inches	E to E Inches mm	Appx. Wt. Lbs. Kg.	Nominal Size Inches	E to E Inches mm	Appx. Wt. Lbs. Kg.
2 1/2 x 1 1/4	2.50 63.5	1.0 0.5	4 x 2*	3.00 76.2	2.3 1.0	6 x 2 1/2	4.00 101.6	6.0 2.7	8 x 6*	5.00 127.0	10.8 4.9
2 1/2 x 1 1/2	2.50 63.5	1.3 0.6	4 x 2 1/2*	3.00 76.2	2.3 1.0	6 x 3*	4.00 101.6	6.0 2.7	10 x 4	6.00 152.4	21.9 10.0
2 1/2 x 2*	2.50 63.5	1.2 0.5	4 x 3*	3.00 76.2	2.6 1.2	6 x 4*	4.00 101.6	5.9 2.7	10 x 5	6.00 152.4	21.6 9.8
3 x 1 1/4	2.50 63.5	1.3 0.6	5 x 1 1/2	3.50 88.9	4.6 2.1	6 x 5*	4.00 101.6	5.8 2.6	10 x 6*	6.00 152.4	21.1 9.6
3 x 1 1/2	2.50 63.5	1.3 0.6	5 x 2	3.50 88.9	4.6 2.1	8 x 2	5.00 127.0	12.2 5.5	10 x 8*	6.00 152.4	19.5 8.9
3 x 2*	2.50 63.5	1.3 0.6	5 x 2 1/2	3.50 88.9	4.5 2.0	8 x 2 1/2	5.00 127.0	12.1 5.5	12 x 4	7.00 177.8	28.0 12.7
3 x 2 1/2*	2.50 63.5	1.5 0.7	5 x 3	3.50 88.9	4.4 2.0	8 x 3	5.00 127.0	12.0 5.5	12 x 6	7.00 177.8	30.0 13.6
4 x 1 1/4	3.00 76.2	2.2 1.0	5 x 4*	3.50 88.9	4.5 2.0	8 x 4*	5.00 127.0	11.9 5.4	12 x 8*	7.00 177.8	28.0 12.7
4 x 1 1/2	3.00 76.2	2.3 1.0	6 x 2*	4.00 101.6	6.0 2.7	8 x 5	5.00 127.0	11.3 5.1	12 x 10*	7.00 177.8	33.0 15.0

* - These sizes can also be ordered in the Figure 150 Grooved Concentric Reducer which is cast ductile iron purchased from a foreign supplier.

Figures 201, 210, 219 and 260

200 Series:

Sizes: 1 1/4" - 12"

Maximum Working Pressure:

See chart and specific data sheet for rating of coupling being used.

Approvals: UL, FM, and ULC

Note: See Fire Protection Submittal Sheet for exact Listing/Approval information.

Manufacture Source: Domestic or as noted.

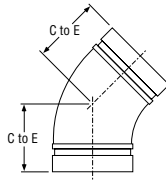


Figure 201

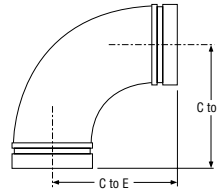


Figure 210

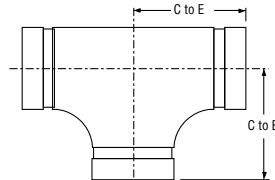


Figure 219

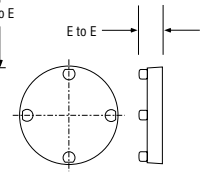


Figure 260

Figure	Nominal Size Inches	Rated Pressure (psi)		
		ULC	UL	FM
201	1 1/4 - 3	500	500	500
	76.1mm	300	-	300
	4	500	400	500
210	5	500	500	500
219	165.1mm	300	-	300
	6	400	400	400
	8 - 12	450	450	450
260	1 1/4 - 4	500	500	500
	76.1mm	300	-	300
	5 - 6	400	400	400
	165.1mm	300	-	300
	8 - 10	450	450	450
	12	250	250	250

Nominal Size Inches	Figure 201 45° Elbow		Figure 210 90° Elbow		Figure 219 Tee		Figure 260 [†] End Cap	
	C to E Inches	Appx. Wt. Lbs.	C to E Inches	Appx. Wt. Lbs.	C to E Inches	Appx. Wt. Lbs.	E to E Inches	Appx. Wt. Lbs.
1 1/4	1.75 ^d 44.5	0.9 0.4	2.75 ^d 69.9	1.0 0.5	2.75 ^d 69.9	1.4 0.6	0.88 ^d 22.4	0.4 0.2
1 1/2	1.75 ^d 44.5	1.1 0.5	2.75 ^d 69.9	1.2 0.5	2.75 ^d 69.9	1.8 0.8	0.88 ^d 22.4	0.6 0.3
2	2.00 ^d 50.8	1.8 0.8	3.25 ^d 82.6	2.0 0.9	3.25 ^d 82.6	2.7 1.2	0.88 ^d 22.4	0.9 0.4
2 1/2	2.25 ^d 57.2	2.2 1.0	3.75 ^d 95.3	3.0 1.4	3.75 ^d 95.3	5.8 2.6	0.88 ^d 22.4	0.9 0.4
	76.1mm	2.25 ^d 57.2	2.2 1.0	3.75 ^d 95.3	3.0 1.4	3.75 ^d 95.3	5.8 2.6	0.94 ^d 23.9
3	2.50 ^d 63.5	3.5 1.6	4.25 ^d 108.0	4.5 2.0	4.25 ^d 108.0	7.0 3.2	0.88 ^d 22.4	1.1 0.5
	4	3.00 ^d 76.2	5.2 2.4	5.00 ^d 127.0	8.5 3.9	5.00 ^d 127.0	11.8 5.4	1.00 ^d 25.4
5	3.25 ^d 82.6	8.5 3.9	5.50 ^d 139.7	13.5 6.1	5.50 ^d 139.7	17.0 7.7	1.00 ^d 25.4	5.0 2.3
	165.1mm	3.50 ^d 88.9	12.0 5.4	6.50 ^d 165.1	18.5 8.4	6.50 ^d 165.1	26.0 11.8	1.00 ^d 25.4
6	3.50 ^d 88.9	12.0 5.4	6.50 ^d 165.1	18.5 8.4	6.50 ^d 165.1	26.0 11.8	1.00 ^d 25.4	7.5 3.4
	8	4.25 ^d 108.0	23.0 10.4	7.75 ^d 196.9	36.5 16.6	7.75 ^d 196.9	45.0 20.4	1.19 ^d 30.2
10	4.75 ^{d†} 120.7	31.0 14.1	9.00 ^{d**} 228.6	60.0 27.2	9.00 ^{d**} 228.6	72.1 32.7	1.25 ^d 31.8	20.0 9.1
	12	5.25 ^{d†} 133.4	40.0 18.1	10.00 ^{d**} 254.0	67.0 30.4	10.00 ^{d**} 254.0	92.5 42.0	1.25 ^d 31.8

^d - These fittings are available in domestic ductile iron.

* - These sizes can also be ordered in the Figure 110 which is cast ductile iron purchased from a foreign supplier.

† - These sizes can also be ordered in the Figure 111 which is cast ductile iron purchased from a foreign supplier.

** - These sizes can also be ordered in the Figure 120 which is cast ductile iron purchased from a foreign supplier.

‡ - Sizes 1 1/4" thru 12" Figure 260 End Caps are available with 1/2" and 1" tap plug.

Friction Resistance 200 Series Fittings (Expressed as Equivalent Straight Pipe)				
Size Inches mm	Elbows		Tee	
	90°	45°	Branch	Run
	Feet Meters	Feet Meters	Feet Meters	Feet Meters
1 1/4	1.9	1.0	4.8	1.9
42.2	0.6	0.3	1.5	0.6
1 1/2	2.3	1.2	5.8	2.3
48.3	0.7	0.4	1.8	0.7
2	3.2	1.6	8.0	3.2
60.3	1.0	0.5	2.5	1.0
2 1/2	3.9	2.0	9.8	3.9
73.0	1.2	0.6	3.0	1.2
76.1mm	4.1	2.1	10.3	4.1
	1.2	0.6	3.1	1.2
3	4.9	2.4	12.2	4.9
88.9	1.5	0.7	3.7	1.5
4	6.5	3.3	16.3	6.5
114.3	2.0	1.0	5.0	2.0
5	8.2	4.1	20.5	8.2
141.3	2.5	1.3	6.3	2.5
165.1mm	9.5	4.8	23.8	9.5
	2.9	1.4	7.2	2.9
6	9.9	5.0	24.8	9.9
168.3	3.0	1.5	7.6	3.0
8	13.1	6.6	32.8	13.1
219.1	4.0	2.0	10.0	4.0
10	16.5	8.3	41.3	16.5
273.0	5.0	2.5	12.6	5.0
12	19.9	9.9	49.7	19.9
323.4	6.1	3.0	15.1	6.1

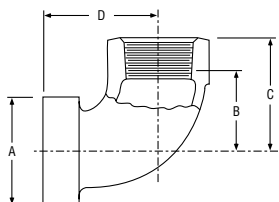
ADACAP[®] Patented

Sizes: 1 1/2", 2" and 2 1/2"
Maximum Working Pressure: 300 psi

Approvals: UL, FM, and ULC

Note: See Fire Protection Submittal Sheet for exact Listing/Approval information.

Manufacture Source: Domestic



Pipe Size Inches	Outlet NPT* Inches	Dimensions				Net Wt. Lbs. Kg.
		O.D. Inches mm	Takeout B Inches mm	Center to End C Inches mm	D Inches mm	
1 1/2	1/2	1.900 48.3	1.25 31.8	1.75 44.5	1.89 48.0	0.77 0.3
	3/4		1.25 31.8	1.75 44.5	1.89 48.0	0.77 0.3
	1		1.37 34.8	2.00 50.8	2.02 51.3	0.88 0.4
2	1/2	2.375 60.3	1.25 31.8	1.75 44.5	1.89 48.0	0.92 0.4
	3/4		1.25 31.8	1.75 44.5	1.89 48.0	0.92 0.4
	1		1.37 34.8	2.00 50.8	2.02 51.3	1.06 0.5
2 1/2	1/2	2.875 73.0	1.47 37.3	1.97 50.0	1.89 48.0	1.28 0.6
	3/4		1.47 37.3	1.97 50.0	1.89 48.0	1.28 0.6
	1		1.37 34.8	2.00 50.8	2.02 51.3	1.50 0.7

* - BSP threaded outlets are available upon request.

Figure 301, 302, 303, 312, 313, 327 and 327

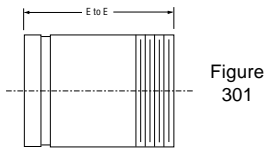


Figure 301

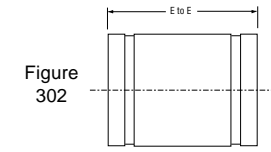


Figure 302

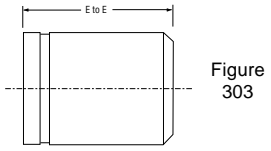


Figure 303

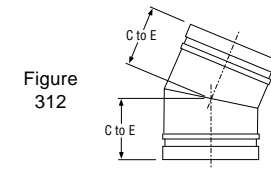


Figure 312

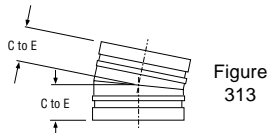


Figure 313

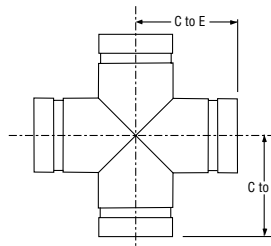


Figure 327

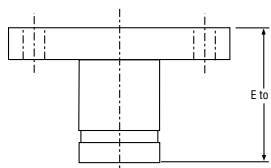


Figure 341

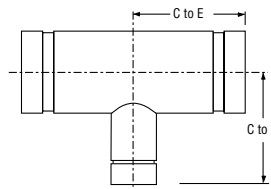


Figure 321

	Figures 301, 302, and 303 Adapter Nipples			Figure 312 22 1/2° Elbow		Figure 313 11 1/4° Elbow		Figure 327 Cross		Figure 341 150 Lbs. Flange Adapter	
Nominal Size Inches	E to E Inches mm	Appx. Wt. Lbs. Kg.	C to E Inches mm	Appx. Wt. Lbs. Kg.	C to E Inches mm	Appx. Wt. Lbs. Kg.	C to E Inches mm	Appx. Wt. Lbs. Kg.	E to E Inches mm	Appx. Wt. Lbs. Kg.	
1 1/4	4.00 101.6	0.8 0.4	1.75 44.5	0.4 0.2	1.38 35.1	0.4 0.2	2.75 69.9	2.0 0.9	4.00 101.6	2.8 1.3	
1 1/2	4.00 101.6	0.9 0.4	1.75 44.5	0.5 0.2	1.38 35.1	0.5 0.2	2.75 69.9	2.2 2.0	4.00 101.6	3.2 1.5	
2	4.00 101.6	1.2 0.5	1.88 47.8	0.6 0.3	1.38 35.1	0.6 0.3	3.25 82.6	2.7 1.2	4.00 101.6	5.2 2.4	
2 1/2	4.00 101.6	1.9 0.9	2.00 50.8	0.7 0.3	1.50 38.1	1.1 0.5	3.75 95.3	5.0 2.3	4.00 101.6	8.0 3.6	
3	4.00 101.6	2.5 1.1	2.25 57.2	1.4 0.6	1.50 38.1	1.2 0.5	4.25 108.0	7.1 3.2	4.00 101.6	10.2 4.6	
4	6.00 152.4	5.5 2.5	2.63 66.8	2.4 1.1	1.75 44.5	2.2 1.0	5.00 127.0	11.9 5.4	6.00 152.4	17.2 7.8	
5	6.00 152.4	7.4 3.4	2.88 73.2	4.1 1.9	2.00 50.8	3.3 1.5	5.50 139.7	17.1 7.8	6.00 152.4	21.4 9.7	
6	6.00 152.4	9.5 4.3	3.13 79.5	5.6 2.5	2.00 50.8	4.6 2.1	6.50 165.1	27.5 12.5	6.00 152.4	26.0 11.8	
8	6.00 152.4	14.2 6.4	3.88 98.6	11.1 5.0	2.00 50.8	8.7 3.9	7.75 196.9	47.0 21.3	6.00 152.4	38.4 17.4	
10	8.00 203.2	27.0 12.2	4.38 11.3	14.0 6.4	2.13 54.1	9.1 4.1	9.00 228.6	68.0 30.8	8.00 203.2	65.0 29.5	
12	8.00 203.2	33.0 15.0	4.88 124.0	22.0 10.0	2.25 57.2	16.7 7.6	10.00 254.0	107.0 48.5	8.00 203.2	91.0 41.3	

Figure 321

Figure 321 Reducing Tee								
Nominal Size Inches	C to E Inches mm	Appx. Wt. Lbs. Kg.	Nominal Size Inches	C to E Inches mm	Appx. Wt. Lbs. Kg.	Nominal Size Inches	C to E Inches mm	Appx. Wt. Lbs. Kg.
1 1/2 x 1 1/2 x 1 1/4	3.25 82.6	2.0 0.9	5 x 5 x 2	5.50 139.7	14.5 6.6	8 x 8 x 6	7.75 196.9	37.0 16.8
2 x 2 x 1 1/2*	3.25 82.6	2.7 1.2	5 x 5 x 2 1/2	5.50 139.7	14.8 6.7	10 x 10 x 2	9.00 228.6	57.1 25.9
2 1/2 x 2 1/2 x 1 1/4	3.75 95.3	4.2 1.9	5 x 5 x 3	5.50 139.7	15.2 6.9	10 x 10 x 3	9.00 228.6	57.4 26.0
2 1/2 x 2 1/2 x 1 1/2	3.75 95.3	4.2 1.9	5 x 5 x 4	5.50 139.7	15.8 7.2	10 x 10 x 4	9.00 228.6	57.6 26.1
2 1/2 x 2 1/2 x 2*	3.75 95.3	4.3 2.0	6 x 6 x 2	6.50 165.1	26.5 11.9	10 x 10 x 5	9.00 228.6	57.8 26.2
3 x 3 x 1 1/2	4.25 108.0	5.3 2.4	6 x 6 x 2 1/2	6.50 165.1	26.5 12.0	10 x 10 x 6	9.00 228.6	58.0 26.3
3 x 3 x 2*	4.25 108.0	5.5 2.5	6 x 6 x 3*	6.50 165.1	26.5 12.0	10 x 10 x 8	9.00 228.6	58.4 26.5
3 x 3 x 2 1/2	4.25 108.0	5.8 2.6	6 x 6 x 4*	6.50 165.1	26.6 12.1	12 x 12 x 3	10.00 254.0	80.2 36.4
4 x 4 x 1 1/4	5.00 127.0	9.8 4.4	6 x 6 x 5	6.50 165.1	27.0 12.2	12 x 12 x 4	10.00 254.0	80.5 36.5
4 x 4 x 1 1/2	5.00 127.0	9.9 4.5	8 x 8 x 2	7.75 196.9	36.2 16.4	12 x 12 x 5	10.00 254.0	80.7 36.6
4 x 4 x 2*	5.00 127.0	10.1 4.6	8 x 8 x 3	7.75 196.9	36.5 16.6	12 x 12 x 6	10.00 254.0	80.9 36.7
4 x 4 x 2 1/2*	5.00 127.0	10.3 4.7	8 x 8 x 4	7.75 196.9	36.6 16.6	12 x 12 x 8	10.00 254.0	91.4 41.5
4 x 4 x 3*	5.00 127.0	10.5 4.8	8 x 8 x 5	7.75 196.9	36.8 16.7	12 x 12 x 10	10.00 254.0	91.8 41.6

* - These sizes can also be ordered in the Figure 121 which is cast ductile iron purchased from a foreign supplier.

General Notes: It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Always read and understand the Installation Instructions (IH-1000). Never remove any piping component nor correct or modify any piping deficiencies without first depressurizing and draining the system. Material and gasket selection should be verified to be compatible for the specific application.

