Grinnell

Grooved Fire Protection

Installation Handbook

tyco Fire Protection Products

October 2016

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tyco Fire Protection Products

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GENERAL INFORMATION

INSTALLATION INSTRUCTIONS

GROOVED COUPLINGS

FLANGE ADAPTERS

GROOVED FITTINGS

OUTLET FITTINGS

VALVES

APPROVED PRESSURE RATINGS

SYSTEM DESIGN

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TYCO Fire Protection Products is ISO 9001 Certified with products manufactured in our state of the art ductile iron foundry and manufacturing facilities. We are committed to maintaining our role in the fire protection industry through aggressive research and development. The products that will improve our industry are being designed today. With this level of investment and commitment, TYCO Fire Protection Products i prepared top become the industry standard.

TYCO Fire Protection Products is the world leader in the manufacture and distribution of fire protection products. Years of development, engineering, pattern and tooling manufacturing, and the acquisition of the necessary resources has provided the finest products available on the market today. TYCO Fire Protection Products manufactured domestically or world-wide are offered to scrutinizing quality standards as set forth by independent testing laboratories.

Our Global Technology Center located in Cranston, RI, directs product development form concept through design, testing and manufacturing, then forwards all aspects of application engineering and quality assurance. Owners, architects, consulting engineers, contractors, and tenants demand the most dependable quality mechanical products for the piping systems - the Global Technology Center enure their demands are met each and every time.

Disclaimer

The products and specifications published herein are for general evaluation and reference purposes only and are subject to change by TYCO Fire Protection Products without notice. For the most up-to-date information, visit www.tyco-fire.com. Information provided in this installation handbook should not be relied on as s substitute for professional advice concerning specific applications. ALTHOUGH TYCO FIRE PROTECTION PRODUCTS HAS ENDEAVORED TO ENSURE ITS ACCURACY, ALL INFORMATION HEREIN IS PROVIDED ON AN “AS IS” BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED. Without limiting the foregoing, TYCO Fire Protection Products does not warrant the accuracy, adequacy, or completeness of ay such information. All users of the information provided herein assume the risk of use or reliance on such information and TYCO Fire Protection Products shall not be liable for any damages for such use including, but not limited to, indirect, special, incidental, or consequential damages.

*As used in this Table of Contents and Installation handbook, the designation “domestic” identifies the last point of manufacture or assembly for a product. However, this designation does not represent compliance with any government regulatory standards or contract specification and should not be relied upon for such purposes. Contact TYCO Trade Compliance to request separate certifications or other representations concerning the specific regulatory standards or contract specifications which apply to and specific regulatory standards or contact specifications.

Standard Warnings

⚠WARNING

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

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

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

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

1. *Read and understand all instructions before installing any GRINNELL Mechanical Products.*
2. *Be sure to wear appropriate safety equipment.*
3. *Verify that the system is de-pressurized and drained before starting any installation, repair, or modification.*

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. Contact the installing contractor or product manufacturer with 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.

Pipe Support

Hanging, bracing, and restraint of fire protection system piping must be performed in accordance with NFPA 13, and, as applicable, in accordance with the installation rules recognized by the applicable approval agency (e.g., VdS).

Finishes

- Orange - non lead (standard)
- Fire Brigade Red - non lead (optional)
- Hot Dipped Galvanized conforming to ASTM A-153

Housing / Fitting Specifications

The applicable material specifications for ductile iron, galvanizing and rubber apply:

ASTM A-536 - (Cast Products)

Standard Specification for Ductile Iron Castings
Grade 65-45-12, Tensile Strength, minimum psi: 65,000
Yield Strength, minimum psi: 45,000
Elongated in 2" or 50 mm, minimum 12%

ASTM A53 -

Schedule 40 Steel Pipe - Series 300 fittings

ASTM A-153 -

Standard Specification for Hot Dip Galvanizing

Table Specifications Guidelines

Throughout this handbook, nominal pipe sizes are referred to in "ANSI Inches" and "DN". ANSI Inches is a nominal pipe size derived from the older IPS (Iron Pipe Size) in inches. Sizes offered in ANSI Inches directly correlate to nominal pipe sizes recognized in ANSI (American National Standard Institute) pipe standards.

DN refers to nominal pipe sizes in "diameter nominal" and is a dimensionless designator for nominal pipe sizes in metric. Certain DN sizes (for example, DN65, DN125, and DN150) are offered in multiple actual outside diameters. Consequently, when specifying by DN pipe size, the O.D. (outside diameter) must be specified as well.

Ordering Information

When placing an order, indicate the full product name. When applicable, specify the figure number and size, type of gasket, material, and quantity.

Availability and Service

GRINNELL Mechanical Products are available globally through a network of distribution centers. Visit www.grinnell.com or call 800-558-5236 for the nearest distributor.

Limited Warranty

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

Coupling Nut / Bolt Specifications 1 of 3

Bolts and Nuts: Coupling bolts and nuts are heat treated carbon steel, oval-neck track head bolts and heavy hex nuts, conforming to ASTM A-183 minimum tensile strength of 110,000 psi. Bolts and nuts are Zinc electroplated. Metric bolts are gold color coded.

Nominal Pipe Size		Figure 577		Figure 705	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)		Inches (mm)	
		Bolt Size	Socket Size	Bolt Size	Socket Size
1-1/4 32	1.660 (42,4)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
1-1/2 40	1.900 (48,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
2 50	2.375 (60,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
2-1/2 65	2.875 (73,0)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
— 65	3.000 (76,2)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	— (M12 x 76)	— (18 mm)
3 80	3.500 (88,9)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	1/2 x 3 (M12 x 76)	7/8 (18 mm)
— 100	4.250 (108,0)	—	—	— (M12 x 76)	— (18 mm)
4 100	4.500 (114,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	1/2 x 3 (M12 x 76)	7/8 (18 mm)
— 125	5.250 (133,0)	—	—	— (M16 x 83)	— (24 mm)
— 125	5.500 (139,7)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	— (M16 x 83)	— (24 mm)
5 125	5.563 (141,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)
— 150	6.250 (159,0)	—	—	— (M16 x 83)	— (24 mm)
— 150	6.500 (165,1)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	— (M16 x 83)	— (24 mm)
6 150	6.625 (168,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)
— 200	8.500 (216,3)	—	—	— (M20 x 121)	— (30 mm)
8 200	8.625 (219,1)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)
10 250	10.750 (273,1)	—	—	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)
12 300	12.750 (323,4)	—	—	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)

Coupling Nut / Bolt Specifications 2 of 3

Nominal Pipe Size		Figure 707		Figure 71*	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)		Inches (mm)	
		Bolt Size	Socket Size	Bolt Size	Socket Size
1-1/4 32	1.660 (42,4)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	—	—
1-1/2 40	1.900 (48,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	—	—
2 50	2.375 (60,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
2-1/2 65	2.875 (73,0)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
76,1mm 65	3.000 (76,1)	— (M12 x 76)	— (18 mm)	—	—
3 80	3.500 (88,9)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
4 100	4.500 (114,3)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
— 125	5.500 (139,7)	—	—	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
5 125	5.563 (141,3)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
165,1mm 150	6.500 (165,1)	— (M20 x 121)	— (30 mm)	—	—
6 150	6.625 (168,3)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
8 200	8.625 (219,1)	7/8 x 6-1/2 (M22 x 165)	1-7/16 (36 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
10 250	10.750 (273,1)	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)	7/8 x 4 (M22 x 102)	1-7/16 (36 mm)
12 300	12.750 (323,4)	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)	7/8 x 4 (M22 x 102)	1-7/16 (36 mm)

* ANSI Class 125/150 Flange Bolts and Nuts are not supplied.

Coupling Nut / Bolt Specifications 3 of 3

Nominal Pipe Size		Figure 716		Figure 730	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)		Inches (mm)	
		Bolt Size	Socket Size	Bolt Size	Socket Size
2 50	2.375 (60,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
2-1/2 65	2.875 (73,0)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)
— 65	3.000 (76,1)	— (M12 x 76)	— (18 mm)	— (M10 x 57)	— (16 mm)
3 80	3.500 (88,9)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	1/2 x 3 (M12 x 76)	7/8 (18 mm)
— 100	4.500 (114,3)	— (M16 x 83)	— (24 mm)	— (M12 x 76)	— (18 mm)
4 100	4.500 (114,3)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	1/2 x 3 (M12 x 76)	7/8 (18 mm)
— 125	5.500 (139,7)	— (M20 x 121)	— (30 mm)	— (M16 x 121)	— (24 mm)
5 125	5.563 (141,3)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)	5/8 x 4-3/4 (M16 x 121)	1-1/16 (24 mm)
— 150	6.500 (165,1)	— (M20 x 121)	— (30 mm)	— (M16 x 121)	— (24 mm)
6 150	6.625 (168,3)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)	5/8 x 4-3/4 (M16 x 121)	1-1/16 (24 mm)
— 200	8.515 (216,3)	—	—	— (M20 x 121)	— (30 mm)
8 200	8.625 (219,1)	7/8 x 6-1/2 (M22 x 165)	1-7/16 (36 mm)	3/4 x 4-3/4 (M20 x 121)	1-5/8 (41 mm)

Agencies Listings and Approvals

ACTIVFIRE: Active Fire Protection Product Certification

American Bureau of Shipping (ABS)

American National Standards Institute / American Water Works Association (ANSI / AWWA)

American Petroleum Institute (API) - API Std. 5L, Sect. 7.5

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

American Society of Mechanical Engineers (ASME)
Power Piping, B-31.1; Chemical Plant and Petroleum Refinery Piping, B-31.3; Refrigeration Piping, B-31.5; Building Services Piping, B-31.9.

Building Officials and Code Administrators (BOCA)

Bureau Veritas (BV)

CNBOP: Centrum Naukowo-Badawcze Ochrony Przeciwpozarowe

Factory Mutual Engineering Corp. (FM)
- Approved for Fire Protection Services

Federal Aviation Administration (FAA):
- HVAC, Plumbing and Fire Protection

International Association of Plumbing and Mechanical Officers (IAPMO)

Loss Prevention Certification Board (LPCB)
- Approved for Fire Protection Services

Material Equipment and Acceptance (MEA)

National Fire Protection Association (NFPA)

National Sanitation Foundation (NSF)
- The Public Health and Safety Company

New York Board of Standards and Appeals (NY-BSA)

Southern Building Code Congress International (SBCCI)
- Standard Plumbing

Underwriter's Laboratories, Inc. (UL)
- Listed for Fire Protection Services

Underwriters Laboratories of Canada (ULC)
- Listed for Fire Protection Services

Uniform Plumbing Code (UPC)

Verband der Sachversicherer e.V. (VdS)
Approved for Fire Protection Services

Government Agencies

Coast Guard - Approved each vessel individually

Corps of Engineers (COE) - GEGS 15000

Federal Aviation Administration (FAA) -

HVAC, Plumbing and Fire Protection

Federal Housing Administration (FHA)

General Services Administration (GSA) - 15000 Series

Military Specifications (MIL) - MILP - 10388 Fittings;

MIL - C - 10387 Couplings;
MIL - P - 11087A (CE) Steel Pipe,
Grooved MIL - I - 45208 Inspection Procedure

National Aeronautics and Space Administration (NASA)

Naval Facilities Engineering Command (NAVFAC)-

NFGS 15000 Series

National Institute of Health (NIH) - Dept. of Health - 15000 Series

Veterans Affairs (VA) - 15000 Series

UL 213

NOTICE

Bolt torque information for couplings is provided as required by UL 213, Section 18.

UL 213
Standard For Safety Rubber Gasketed Fittings For Fire-Protection Service Fourth Edition – April 27, 2015

INSTRUCTIONS

18 Installation Instructions

18.1 Installation and design instructions shall be provided with each shipment of fittings, and shall include at least the following items:

a) Assembly procedure for installation of fittings with pipe;

b) Pipe end specifications, when required, with which fitting is intended to be used including the groove designation as Standard Groove or Proprietary Groove;

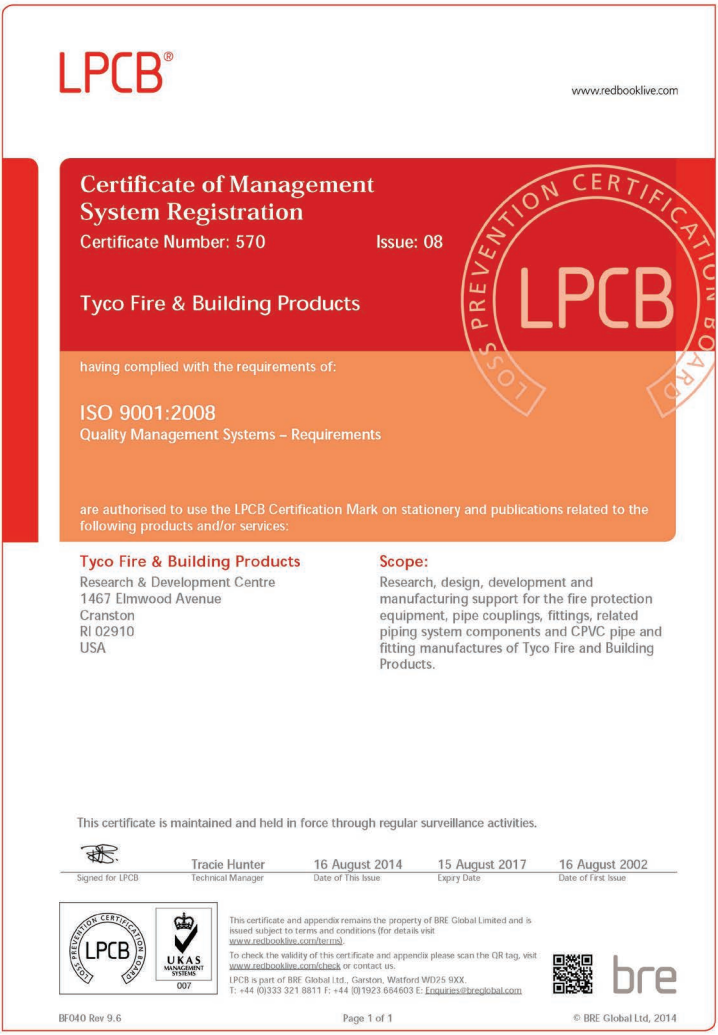
c) Required torque value or tightening specifications for bolts (if bolts are used), when not marked on the fitting;

d) Maximum allowable deflection for flexible fittings; and

e) Equivalent Length value, in feet of pipe, for fittings intended for connection to sprinkler pipe as described in UL 213 Section 16, Pipe Outlet Flow Characteristics Test, when not marked on the fitting.

ISO 9001:2000 Certified

Tyco Fire Protection Products are manufactured according to ISO 9001:2008 quality assurance standards.



LPCB®

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Certificate of Management System Registration

Certificate Number: 570 Issue: 08

Tyco Fire & Building Products

having complied with the requirements of:

ISO 9001:2008
Quality Management Systems – Requirements

are authorised to use the LPCB Certification Mark on stationery and publications related to the following products and/or services:

Tyco Fire & Building Products
Research & Development Centre
1467 Elmwood Avenue
Cranston
RI 02910
USA

Scope:
Research, design, development and manufacturing support for the fire protection equipment, pipe couplings, fittings, related piping system components and CPVC pipe and fitting manufactures of Tyco Fire and Building Products.

This certificate is maintained and held in force through regular surveillance activities.

Signed for LPCB	Tracie Hunter Technical Manager	16 August 2014 Date of This Issue	15 August 2017 Expiry Date	16 August 2002 Date of First Issue

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Grinnell Grooved Fittings - Pressure Loss

Friction Resistance[a] (Expressed as Equivalent Straight Pipe)					
Nominal Size ANSI Inches DN	O.D. Inches (mm)	Elbow		Tee	
		90° Feet (Meters)	45° Feet (Meters)	Branch Feet (Meters)	Run Feet (Meters)
1-1/4 32	1.60 (42,4)	1.9 (0,6)	1.0 (0,3)	4.8 (1,5)	1.9 (0,6)
1-1/2 40	1.90 (48,3)	2.3 (0,7)	1.2 (0,4)	5.8 (1,8)	2.3 (0,7)
2 50	2.38 (60,3)	3.2 (1,0)	1.6 (0,5)	8.0 (2,5)	3.2 (1,0)
2-1/2 65	2.88 (73,0)	3.9 (1,2)	2.0 (0,6)	9.8 (3,0)	3.9 (1,2)
— 65	3.00 (76,1)	4.1 (1,2)	2.1 (0,6)	10.3 (3,1)	4.1 (1,2)
3 80	3.50 (88,9)	4.9 (1,5)	2.4 (0,7)	12.2 (3,7)	4.9 (1,5)
— 100	4.25 (108,0)	6.5 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
4 100	4.50 (114,3)	6.5 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
— 125	5.25 (133,0)	8.0 (2,4)	4.0 (1,2)	20.0 (6,1)	8.0 (2,4)
— 125	5.50 (139,7)	8.0 (2,4)	4.1 (1,3)	20.0 (6,1)	8.0 (2,4)
5 125	5.56 (141,3)	8.2 (2,5)	4.1 (1,3)	20.5 (6,3)	8.2 (2,5)
— 150	6.25 (159,0)	9.5 (2,9)	4.8 (1,4)	23.8 (7,2)	9.5 (2,9)
— 150	6.50 (165,1)	9.5 (2,9)	4.8 (1,4)	23.8 (7,2)	9.5 (2,9)
6 150	6.63 (168,3)	9.9 (3,0)	5.0 (1,5)	24.8 (7,6)	9.9 (3,0)
— 200	8.50 (216,3)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.1 (4,0)
8 200	8.63 (219,1)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.1 (4,0)
10 250	10.75 (273,0)	16.5 (5,0)	8.3 (2,5)	41.3 (12,6)	16.5 (5,0)
12 300	12.75 (323,9)	19.9 (6,1)	9.9 (3,0)	49.7 (15,1)	19.9 (6,1)

a. Friction resistance for all elbows and tees except Figures 510S and 519S.

- For reducing tees and branches, use the value that is corresponding to the branch size. Example: for 8" x 8" x 2" tee, the branch value 2" is 8.0 feet.

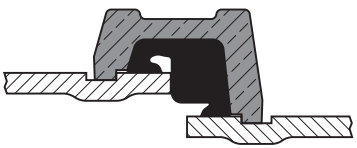
Gasket Specifications 1 of 2

Styles

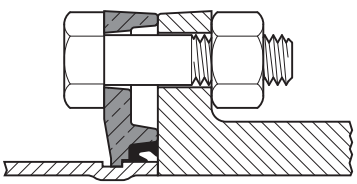
Standard: The standard style gasket, with a "C" shape configuration, is the most commonly used. It is provided as the standard in the Figure 705 and 577 Grinnell Couplings. The gasket is available in Grade "A" Pre-Lubricated EPDMA and Grade "E" EPDM.

Tri-Seal: The Tri-Seal gasket is designed to close off the gap or gasket cavity. This is accomplished by positioning the center "rib" of the gasket over the gap between the pipes. The Tri-Seal gasket has two tapered sealing edges in addition to the center rib for additional strength and sealing. The Tri-Seal gasket can be used with the Figure 705 and 577 Grinnell Couplings. It is recommended for use in low temperature and vacuum services (greater than 10" Hg) applications. The gasket is available in Grade "E" EPDM.

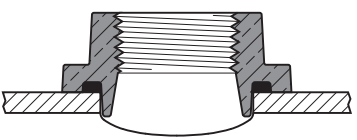
Reducing Coupling: The gasket is provided with ribs used to position the larger pipe so that the sealing lip is located on the sealing surface of the pipe. This gasket is used only with the Figure 716 Grinnell Reducing Coupling and is available in Grade "E" EPDM. Reducing couplings are not recommended for low temperature applications.



Flange Adapter: This gasket is specifically designed for use with the Figure 71 Flange Adapter. The gasket has an optimum amount of rubber to provide a dependable seal between both the pipe and mating surface, and to avoid overfilling of the gasket pocket, which causes assembly difficulties. The gaskets are available in Grade "E" EPDM.



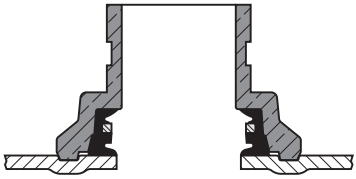
Mechanical Tee: The gasket provides a compression type seal, which is designed to conform to the exterior curve (O. D.) of the pipe. This design is unique to the Figure 730 Mechanical Tee (threaded and grooved) and the 40-5 Strap Outlet. The gaskets are available in Grade "E" EPDM.



Gasket Specifications 2 of 3

Plain End: This gasket is designed for use on Plain End fittings and used with the GRINNELL 909 Plain End Couplings.

Outlet: The Outlet Coupling gasket is designed to fit into the coupling housing and, once the outlet locating collar is in place, forms a protective seal around the cut opening of the pipe. This gasket is specifically used with Figure 522 Sprinkler Outlet coupling. The gasket is available in Grade "E" EPDM.



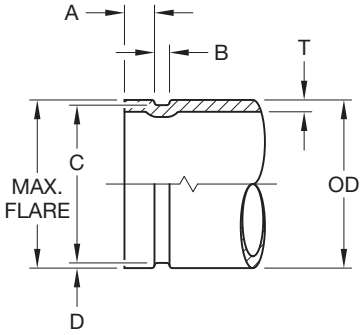
Gasket Specifications 3 of 3

Grade	Temp. Range	Compound & Color Code	General Service Application
A Pre-Lubricated	-30°F (-34°C) to +150°F (+66°C)	EPDM Violet	Fire protection systems. Not recommended for hot water systems. For dry pipe or freezer systems use Tri-Seal Grade E Gaskets.
E	-30°F (-34°C) to +230°F (+110°C)	EPDM Green	Fire protection systems. For dry pipe or freezer systems use Tri-Seal Grade E Gaskets.
E Tri- Seal	-30°F (-34°C) to +230°F (+110°C)	EPDM Green	Fire protection systems. For dry pipe or freezer systems.

NOTE
Refer to Technical Data Sheet TFP1895 for additional information

Groove Specifications 1 of 8

Roll Groove



1. The maximum allowable tolerances for IPS pipe from square cut ends are: 0.030 in. (0,76 mm) for sizes 1 to 3 inch (DN32 to DN80); 0.045 in. (1,14 mm) for sizes 4 to 6 inch (DN100 to DN150); and 0.060 in. (1,52 mm) for sizes 8 to 12 inch (DN200 to DN300).
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, and rust that would prevent a positive seal.
3. Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
4. Groove Depth "D" is a reference dimension of the distance form the pipe outer surface to the groove bottom, with regards to groove concentricity about the pipe. This dimension is a reference only. The actual dimension "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.
6. Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

NOTE
Refer to Technical Data Sheet TFP1898 for more information.

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
1 25	1.315 (33,7)	0.028 (0,71)	0.015 (0,38)
1-1/4 32	1.660 (42,4)	0.029 (0,74)	0.016 (0,41)
1-1/2 40	1.900 (48,3)	0.019 (0,48)	0.019 (0,48)
2 50	2.375 (60,3)	0.024 (0,61)	0.024 (0,61)
2-1/2 65	2.875 (73,0)	0.029 (0,74)	0.029 (0,74)
76,1mm 65	3.000 (76,1)	0.030 (0,76)	0.030 (0,76)
3 80	3.500 (88,9)	0.035 (0,89)	0.031 (0,79)
108,0mm 100	4.250 (108,0)	0.043 (1,09)	0.031 (0,79
4 100	4.500 (114,3)	0.045 (1,14)	0.031 (0,79)
133,4mm 125	5.250 (133,4)	0.053 (1,35)	0.031 (0,79)
139,7mm 125	5.500 (139,7)	0.056 (1,42)	0.031 (0,79)
5 125	5.563 (141,3)	0.056 (1,42)	0.031 (0,79)
159,0mm 150	6.250 (159,0)	0.063 (1,60)	0.031 (0,79)
165,1mm 150	6.500 (165,1)	0.063 (1,60)	0.031 (0,79)
6 150	6.625 (168,3)	0.063 (1,60)	0.031 (0,79)

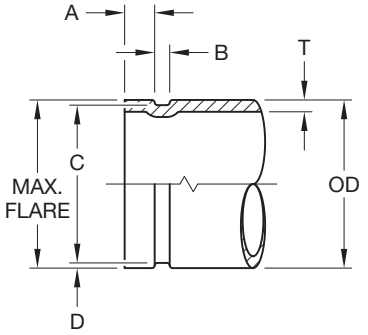
Groove Specifications 2 of 8

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030 in. ±0,76 mm Inches (mm)	B ±0.030 in. ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)	Max. Allow. Flare Diameter Inches (mm)
			Actual	Tol.+0			
1 25	0.625 (15,88)	0.281 (7,14)	1.190 (30,23)	-0.015 (-0,38)	0.063 (1,60)	0.065 (1,65)	1.43 (36,32)
1-1/4 32	0.625 (15,88)	0.281 (7,14)	1.535 (38,99)	-0.015 (-0,38)	0.063 (1,60)	0.065 (1,65)	1.77 (44,96)
1-1/2 40	0.625 (15,88)	0.281 (7,14)	1.775 (45,09)	-0.015 (-0,38)	0.063 (1,60)	0.065 (1,65)	2.01 (51,05)
2 50	0.625 (15,88)	0.344 (8,74)	2.250 (57,15)	-0.015 (-0,38)	0.063 (1,60)	0.065 (1,65)	2.48 (62,99)
2-1/2 65	0.625 (15,88)	0.344 (8,74)	2.720 (69,09)	-0.018 (-0,46)	0.078 (1,98)	0.083 (2,11)	2.98 (75,69)
76,1mm 65	0.625 (15,88)	0.344 (8,74)	2.845 (72,26)	-0.018 (-0,46)	0.076 (1,93)	0.083 (2,11)	3.10 (78,74)
3 80	0.625 (15,88)	0.344 (8,74)	3.344 (84,94)	-0.018 (-0,46)	0.078 (1,98)	0.083 (2,11)	3.60 (91,44)
108,0mm 100	0.625 (15,88)	0.344 (8,74)	4.084 (103,73)	-0.020 (-0,51)	0.083 (2,11)	0.083 (2,11)	4.35 (110,49)
4 100	0.625 (15,88)	0.344 (8,74)	4.334 (110,08)	-0.020 (-0,51)	0.083 (2,11)	0.083 (2,11)	4.60 (116,84)
133,4mm 125	0.625 (15,88)	0.344 (8,74)	5.084 (129,13)	-0.022 (-0,56)	0.083 (2,11)	0.109 (2,77)	5.35 (135,89)
139,7mm 125	0.625 (15,88)	0.344 (8,74)	5.334 (135,48)	-0.022 (-0,56)	0.083 (2,11)	0.109 (2,77)	5.60 (142,24)
5 125	0.625 (15,88)	0.344 (8,74)	5.395 (137,03)	-0.022 (-0,56)	0.084 (2,13)	0.109 (2,77)	5.66 (143,76)
159,0mm 150	0.625 (15,88)	0.344 (8,74)	6.084 (154,53)	-0.030 (-0,76)	0.083 (2,11)	0.109 (2,77)	6.35 (161,29)
165,1mm 150	0.625 (15,88)	0.344 (8,74)	6.330 (160,78)	-0.022 (-0,56)	0.085 (2,16)	0.109 (2,77)	6.60 (167,64)
6 150	0.625 (15,88)	0.344 (8,74)	6.455 (163,96)	-0.022 (-0,56)	0.085 (2,16)	0.109 (2,77)	6.73 (170,94)

Groove Specifications 3 of 8

Roll Groove



1. The maximum allowable tolerances for IPS pipe from square cut ends are: 0.030 in. (0,76 mm) for sizes 1 to 3 inch (DN32 to DN80); 0.045 in. (1,14 mm) for sizes 4 to 6 inch (DN100 to DN150); and 0.060 in. (1,52 mm) for sizes 8 to 12 inch (DN200 to DN300).
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, and rust that would prevent a positive seal.
3. Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
4. Groove Depth "D" is a reference dimension of the distance form the pipe outer surface to the groove bottom, with regards to groove concentricity about the pipe. This dimension is a reference only. The actual dimension "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.
6. Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

NOTE
Refer to Technical Data Sheet TFP1898 for more information.

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
216,3mm 200	8.516 (216,3)	0.063 (1,60)	0.031 (0,79)
8 200	8.625 (219,1)	0.063 (1,60)	0.031 (0,79)
10 250	10.750 (273,0)	0.063 (1,60)	0.031 (0,79)
12 300	12.750 (323,9)	0.063 (1,60)	0.031 (0,79)

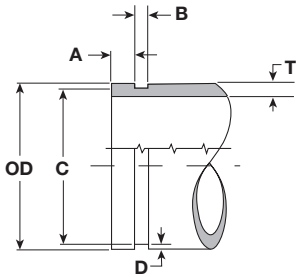
Groove Specifications 4 of 8

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030 in. ±0,76 mm Inches (mm)	B ±0.030 in. ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)	Max. Allow. Flare Diameter Inches (mm)
			Actual	Tol.+0			
216,3mm 200	0.750 (19,05)	0.469 (11,91)	8.331 (211,61)	-0.025 (-0,64)	0.092 (2,34)	0.109 (2,77)	8.69 (220,73)
8 200	0.750 (19,05)	0.469 (11,91)	8.441 (214,40)	-0.025 (-0,64)	0.092 (2,34)	0.109 (2,77)	8.80 (223,52)
10 250	0.750 (19,05)	0.469 (11,91)	10.562 (268,27)	-0.027 (-0,69)	0.094 (2,39)	0.134 (3,40)	10.92 (277,37)
12 300	0.750 (19,05)	0.469 (11,91)	12.531 (318,29)	-0.030 (-0,76)	0.109 (2,77)	0.156 (3,96)	12.92 (328,17)

Groove Specifications 5 of 8

Cut Groove



1. The maximum allowable tolerances for IPS pipe from square cut ends is 0.030 in. (0,76 mm) for sizes 1 to 3 inch (DN32 to DN80); 0.045 in. (1,14 mm) for sizes 4 to 6 inch (DN100 to DN150); and 0.060 in. (1,52 mm) for sizes 8 to 12 inch (DN200 to DN300).
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, and rust that would prevent a positive seal.
3. Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
4. Groove Depth "D" is a reference dimension of the distance form the pipe outer surface to the groove bottom, with regards to groove concentricity about the pipe. This dimension is a reference only. The actual dimension "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

NOTE
Refer to Technical Data Sheet TFP1898 for more information.

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
1 25	1.315 (33,7)	0.028 (0,71)	0.015 (0,38)
1-1/4 32	1.660 (42,4)	0.029 (0,74)	0.016 (0,41)
1-1/2 40	1.900 (48,3)	0.019 (0,48)	0.019 (0,48)
2 50	2.375 (60,3)	0.024 (0,61)	0.024 (0,61)
2-1/2 65	2.875 (73,0)	0.029 (0,74)	0.029 (0,74)
76,1mm 65	3.000 (76,1)	0.030 (0,76)	0.030 (0,76)
3 80	3.500 (88,9)	0.035 (0,89)	0.031 (0,79)
108,0mm 100	4.250 (108,0)	0.042 (1,07)	0.031 (0,79)
4 100	4.500 (114,3)	0.045 (1,14)	0.031 (0,79)
133,4mm 125	5.250 (133,4)	0.052 (1,35)	0.031 (0,79)
139,7mm 125	5.500 (139,7)	0.056 (1,42)	0.031 (0,79)
5 125	5.563 (141,3)	0.056 (1,42)	0.031 (0,79)
159,0mm 150	6.250 (159,0)	0.063 (1,60)	0.031 (0,79)
165,1mm 150	6.500 (165,1)	0.063 (1,60)	0.031 (0,79)
6 150	6.625 (168,3)	0.063 (1,60)	0.031 (0,79)

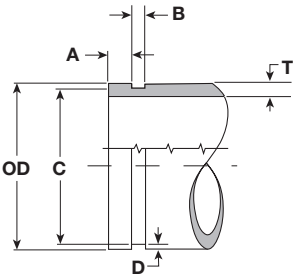
Groove Specifications 6 of 8

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030 in. ±0,76 mm Inches (mm)	B ±0.030 in. ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)
			Actual	Tol.+0		
1 25	0.625 (15,88)	0.313 (7,95)	1.190 (30,23)	-0.015 (-0,38)	0.063 (1,60)	0.133 (3,38)
1-1/4 32	0.625 (15,88)	0.313 (7,95)	1.535 (38,99)	-0.015 (-0,38)	0.063 (1,60)	0.140 (3,56)
1-1/2 40	0.625 (15,88)	0.313 (7,95)	1.775 (45,09)	-0.015 (-0,38)	0.063 (1,60)	0.145 (3,68)
2 50	0.625 (15,88)	0.313 (7,95)	2.250 (57,15)	-0.015 (-0,38)	0.063 (1,60)	0.154 (3,91)
2-1/2 65	0.625 (15,88)	0.313 (7,95)	2.720 (69,09)	-0.018 (-0,46)	0.078 (1,98)	0.188 (4,78)
76,1mm 65	0.625 (15,88)	0.313 (7,95)	2.845 (72,26)	-0.018 (-0,46)	0.076 (1,93)	0.188 (4,78)
3 80	0.625 (15,88)	0.313 (7,95))	3.344 (84,94)	-0.018 (-0,46)	0.078 (1,98)	0.188 (4,78)
108,0mm 100	0.625 (15,88)	0.375 (9,53)	4.084 (103,73)	-0.020 (-0,51)	0.083 (2,11)	0.203 (5,16)
4 100	0.625 (15,88)	0.375 (9,53)	4.334 (110,08)	-0.020 (-0,51)	0.083 (2,11)	0.203 (5,16)
133,4mm 125	0.625 (15,88)	0.375 (9,53)	5.084 (129,13)	-0.020 (-0,51)	0.083 (2,11)	0.203 (5,16)
139,7mm 125	0.625 (15,88)	0.375 (9,53)	5.334 (135,48)	-0.022 (-0,56)	0.083 (2,11)	0.203 (5,16)
5 125	0.625 (15,88)	0.375 (9,53)	5.395 (137,03)	-0.022 (-0,56)	0.084 (2,13)	0.203 (5,16)
159,0mm 150	0.625 (15,88)	0.375 (9,53)	6.084 (154,53)	-0.022 (-0,56)	0.083 (2,11)	0.219 (5,56)
165,1mm 150	0.625 (15,88)	0.375 (9,53)	6.330 (160,78)	-0.022 (-0,56)	0.085 (2,16)	0.219 (5,56)
6 150	0.625 (15,88)	0.375 (9,53)	6.455 (163,96)	-0.022 (-0,56)	0.085 (2,16)	0.219 (5,56)

Groove Specifications 7 of 8

Cut Groove



1. The maximum allowable tolerances for IPS pipe from square cut ends is 0.030 in. (0,76 mm) for sizes 1 to 3 inch (DN32 to DN80); 0.045 in. (1,14 mm) for sizes 4 to 6 inch (DN100 to DN150); and 0.060 in. (1,52 mm) for sizes 8 to 12 inch (DN200 to DN300).
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, and rust that would prevent a positive seal.
3. Groove Diameter "C" must be of uniform depth around the circumference of the pipe.
4. Groove Depth "D" is a reference dimension of the distance form the pipe outer surface to the groove bottom, with regards to groove concentricity about the pipe. This dimension is a reference only. The actual dimension "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

NOTE
Refer to Technical Data Sheet TFP1898 for more information.

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
216,3mm 200	8.516 (216,3)	0.063 (1,60)	0.031 (0,79)
8 200	8.625 (219,1)	0.063 (1,60)	0.031 (0,79)
10 250	10.750 (273,0)	0.063 (1,60)	0.031 (0,79)
12 300	12.750 (323,9)	0.063 (1,60)	0.031 (0,79)

Groove Specifications 8 of 8

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030 in. ±0,76 mm Inches (mm)	B ±0.030 in. ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)
			Actual	Tol.+0		
216,3mm 200	0.750 (19,05)	0.438 (11,13)	8.331 (211,61)	-0.025 (-0,64)	0.092 (2,34)	0.238 (6,05)
8 200	0.750 (19,05)	0.438 (11,13)	8.441 (214,40)	-0.025 (-0,64)	0.092 (2,34)	0.238 (6,05)
10 250	0.750 (19,05)	0.500 (12,70)	10.562 (268,27)	-0.027 (-0,69)	0.094 (2,39)	0.250 (6,35)
12 300	0.750 (19,05)	0.500 (12,70)	12.531 (318,29)	-0.030 (-0,76)	0.109 (2,77)	0.279 (7,09)

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Figure 577 Rigid Coupling 1 of 2

NOTICE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Rigid Couplings with Tri-Seal gaskets are recommended for applications below 40°F (4°C).

Installation / Assembly Instructions

The following instructions apply to Figure 577 Rigid Couplings. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Technical Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all burrs, loose debris, dirt, chips, paint and any other foreign material such as grease are removed. Pipe end sealing surfaces of the pipe ends must be free from sharp edges, projections, indentations, and/or other defects.

Step 2. Verify that the coupling and gasket grade are correct for the application intended. Refer to Technical Data Sheet TFP1895 for additional gasket information.

Grade “A” gaskets are supplied as standard with a pre-lubricant and do not require additional lubrication. Grade “E” Tri-Seal gaskets are recommended for freezer applications.

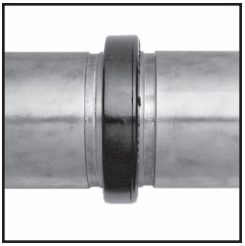
NOTE

Silicone lubricant must be used in dry pipe and freezer applications.

If the gasket does not have a pre-lubricant, the edges and outer surfaces of the gasket should be covered with a fine layer of petroleum-free lubricant or equivalent. To prevent deterioration of the gasket material a petroleum lubricant should not be used on Grade “A” “EPDM” or Grade “E” “EPDM” gaskets.

Step 3. Install the gasket by placing the gasket over the pipe, which is to be fastened by the rigid coupling, and ensure that the gasket lip does not extend beyond the end of the pipe.

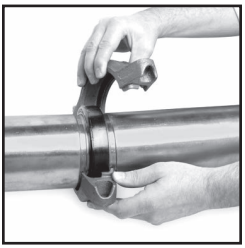
Figure 577 Rigid Coupling 2 of 2



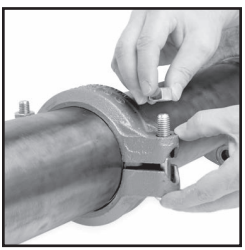
Step 4. Bring both pipe ends together, ensure proper alignment and slide the gasket into position, properly centering it between the grooved portions of each pipe.

NOTE

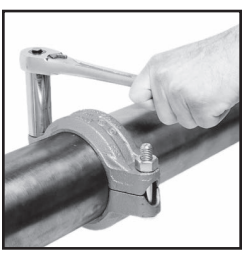
The gasket should not protrude into the grooves on either pipe segment or extend between the pipe ends.



Step 5. With one nut and bolt removed from the coupling housings, swing the coupling housing over the gasket. Verify that the housings are over the gasket and that the housing keys are fully engaged into the pipe grooves.



Step 6. Insert the other bolt and nut into the coupling and rotate both nuts until finger tight. Verify that the bolt heads are fully recessed in the housing.



Step 7. Tighten nuts uniformly to the recommended bolt torque.

NOTES

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Page 43 for Figure 577. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 12).

Refer to Technical Data Sheet TFP1854 for more information.

The 1-1/4" - 8" couplings have an intended gap of up to 1/16 inch at each pad to allow for positive rigid gripping onto the pipe.

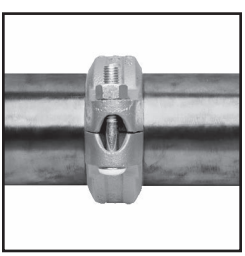


Figure 705 & 707 Flexible Coupling 1 of 2

NOTICE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Rigid Couplings with Tri-Seal gaskets are recommended for applications below 40°F (4°C).

Installation/Assembly Instructions

The following instructions apply to Figure 705 and 707 Flexible Couplings. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Technical Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all burrs, loose debris, dirt, chips, paint and any other foreign material such as grease are removed. Pipe end sealing surfaces of the pipe ends must be free from sharp edges, projections, indentations, and/or other defects.

Step 2. Verify that the coupling and gasket grade are correct for the application intended. Refer to Technical Data Sheet TFP1895 for additional gasket information.

Grade “A” gaskets are supplied as standard with a pre-lubricant and do not require additional lubrication. Grade “E” Tri-Seal gaskets are recommended for freezer applications.

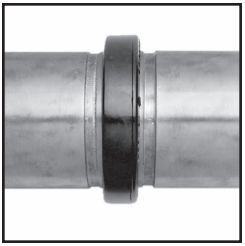
NOTE

Silicone lubricant must be used in dry pipe and freezer applications.

If the gasket does not have a pre-lubricant, the edges and outer surfaces of the gasket should be covered with a fine layer of petroleum-free lubricant or equivalent. To prevent deterioration of the gasket material a petroleum lubricant should not be used on Grade “A” “EPDM” or Grade “E” “EPDM” gaskets.

Step 3. Install the gasket by placing the gasket over the pipe, which is to be fastened by the flexible coupling and ensure that the gasket lip does not extend beyond the end of the pipe.

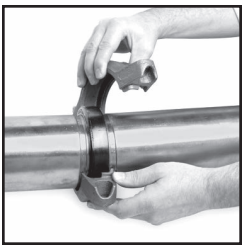
Figure 705 & 707 Flexible Coupling 2 of 2



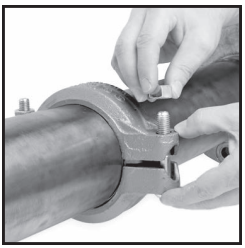
Step 4. Bring both pipe ends together, ensure proper vertical and horizontal alignment, and slide the gasket into position. Center gasket between the grooved portions of each pipe.

NOTE

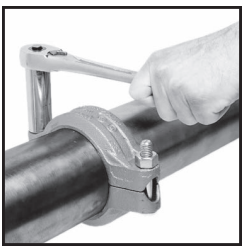
The gasket should not protrude into the grooves on either pipe segment or extend between the pipe ends.



Step 5. With one nut and bolt removed swing the coupling housing over the gasket. Verify that the housings are over the gasket and that the housing keys are fully engaged into the pipe grooves.



Step 6. Insert the other bolt into the coupling and rotate the nuts until finger tight. Verify that the bolt heads are fully recessed in the housing.



Step 7. Tighten nuts uniformly to the recommended bolt torque.

NOTE

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Pages 45 and 49. Bolt torque information has been provided in accordance with the UL 213 "Standard for Rubber Gasketed Fittings for Fire Protection Service" (Refer to Page 12).

Refer to Technical Data Sheets TFP1820 (Figure 705) or TFP1840 (Figure 707) for more information.

Figure 716 Flexible Reducing Coupling 1 of 2

NOTICE

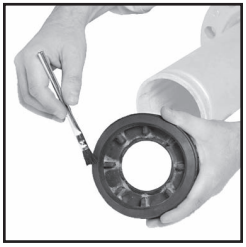
Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Reducing Couplings are not recommended for applications below 40°F (4°C).

Installation/Assembly Instructions

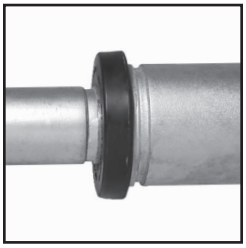
The following instructions apply to Figure 716 Flexible Reducing Couplings. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Technical Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all burrs, loose debris, dirt, chips, paint and any other foreign material such as grease are removed. Pipe end sealing surfaces of the pipe ends must be free from sharp edges, projections, indentations, and/or other defects.



Step 2. Verify that the coupling and gasket grade are correct for the application intended. Refer to Technical Data Sheet TFP1895 for additional gasket information.

The sealing edges and outer surfaces of the gasket should be covered with a fine layer of petroleum-free lubricant or equivalent. To prevent deterioration of the gasket material a petroleum lubricant should not be used on Grade “E” “EPDM” gaskets. For assembly below 40°F (4°C) a petroleum-free silicone lubricant must be used to prevent freezing of the lubricant.

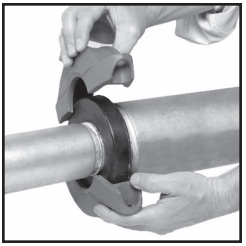


Step 3. Install the gasket by placing the gasket over the pipe which has the larger diameter. Bring the smaller pipe end into alignment and slide the pipe into position. Slide the gasket into position, properly centering it between the grooved portions of each pipe.

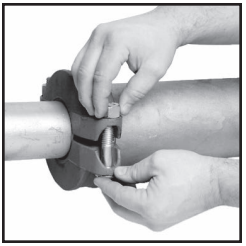
NOTE

The gasket should not protrude into the grooves on either pipe segment.

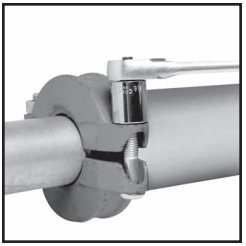
Figure 716 Flexible Reducing Couplings 2 of 2



Step 4. With both bolts removed, place the coupling housings over the gasket. Verify that the housings are over the gasket and that the housing keys are fully engaged into the pipe grooves.



Step 5. Insert the bolts into the coupling and rotate the nuts until finger tight. Verify that the bolt heads are fully recessed in the housing.



Step 6. Tighten nuts uniformly to the recommended bolt torque.

NOTES

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Page 51. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 12).

Figure 716 Coupling Housings bolt pads must be in metal to metal contact.

Use an optional Type 304 stainless steel metal insert to prevent pipe telescoping when installed in the vertical position. Place the insert inside the gasket, align the insert slots with the ribs on the gasket.

Refer to Technical Data Sheet TFP1830 for more information.

Figure 702 Mechanical Outlet Coupling 1 of 2

NOTICE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Reducing Couplings are not recommended for applications below 40°F (4°C).

Installation/Assembly Instructions

The following instructions apply to Figure 702 Mechanical Outlet Couplings. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Technical Data Sheet TFP1898 for more information.

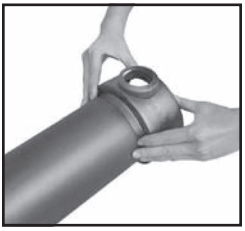
Step 1. Inspect exterior groove and ends of the pipe to verify all burrs, loose debris, dirt, chips, paint and any other foreign material such as grease are removed. The sealing surfaces of the pipe ends must be free from projections, indentations, or other markings.

Step 2. Verify that the coupling and gasket grade are correct for the application intended. Refer to data sheet G610 for additional gasket information.

Note:

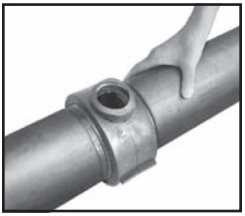
The Figure 702 gasket contains a plated steel ring inside the outlet neck to aid sealing. Do not remove this steel ring.

The sealing edges and outer surfaces of the gasket should be covered with a fine layer of petroleum-free lubricant or equivalent. To prevent deterioration of the gasket material a petroleum lubricant should not be used on Grade “E” “EPDM” gaskets. For assembly below 40°F (4°C) a petroleum-free silicone lubricant must be used to prevent freezing of the lubricant.

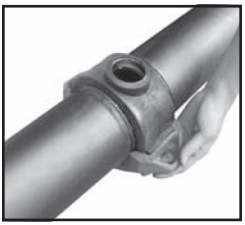


Step 3. Mount the gasket over one end of the pipe so that the gasket lip covers the area between the pipe end and the groove.

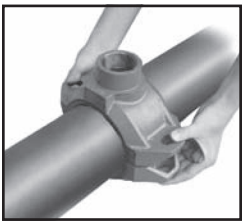
Figure 702 Mechanical Outlet Coupling 2 of 2



Step 4. Insert the mating pipe into the other end of the gasket. Install both pipes until their ends touch the built-in internal rib of the gasket, which works as a pipe stop. No part of the gasket should protrude into the groove of either pipe.

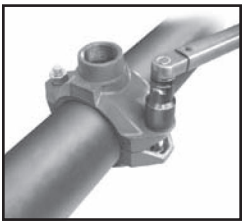


Step 5. Place lower coupling housing over the gasket around the bottom side of the gasket.



Step 6. Place upper coupling housing over the gasket so that the outlet opening of the housing properly fits on the gasket outlet opening. Make sure the housing keys engage the pipe grooves.

Step 7. Insert bolts and apply nuts hand tight. Make sure that the oval neck of the bolt engages into the bolt hole of the housing.



Step 8. Tighten nuts uniformly to the recommended bolt torque and bolt pads meet and make metal-to-metal contact.

NOTES

Uneven tightening may cause the gasket to pinch resulting in an immediate or delayed leak. Excessive tightening of nuts may cause a bolt or joint failure. The recommended bolt torque for 3/8 inch bolt is 30 to 40 ft.lbs, 1/2 inch bolts is 80 to 100 ft.lbs. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 12).

Figure 71 Flange Adapter 1 of 2

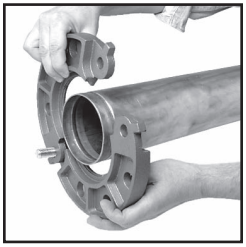
NOTE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Installation/Assembly Instructions

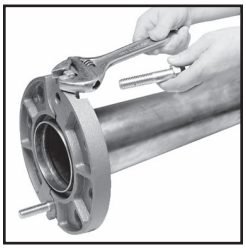
The following instructions apply to Figure 71 Flange Adapter. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Technical Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all burrs, loose debris, dirt, chips, paint and any other foreign material such as grease are removed. Pipe end sealing surfaces must be free from sharp edges, projections, indentations, or other markings.



Step 2. Verify that the gasket selection is correct for the application intended. Refer to Technical Data Sheet TFP1895 for additional gasket information.

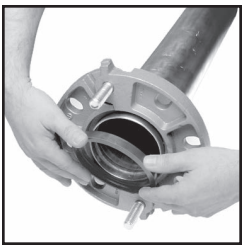
Insert one flange bolt (not supplied) in hinge section of the Flange Adapter. Place the hinged assembly into the groove on the pipe.



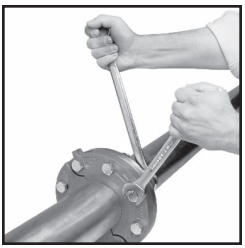
Step 3. Close the flange with another bolt. To ease in the closure of the flange, two tabs are provided. Take an adjustable wrench and place it over the two tabs as shown. Move the wrench parallel to the pipe until the holes align. Once the holes align, insert a bolt. Verify that the housing keys are fully engaged into the groove.

Figure 71 Flange Adapter 2 of 2

Step 4. The sealing edges and outer surfaces of the gasket should be covered with a fine layer of petroleum-free lubricant. To prevent deterioration of the gasket material a petroleum lubricant should not be used on Grade “E” “EPDM” gaskets. For assembly below 40°F (4°C) a petroleum-free silicone lubricant must be used to prevent freezing of the lubricant.



Step 5. Place the gasket into the gasket pocket with the gasket marking side in first.



Step 6. Bring both the Flange Adapter and the opposite Flange together. Ensure proper alignment and slide each of the remaining flange bolts (not supplied) in the remaining bolt holes. Tighten all nuts uniformly in an alternating pattern to bring the flange faces firmly together and check that the nuts are sufficiently torqued.

NOTES

For proper bolt torques refer to Pages 58 and 60. Bolt torque information has been provided in accordance with the UL 213 “Standard for Rubber Gasketed Fittings for Fire Protection Service” (Refer to Page 12).

Flange Washer Adapters are required when the Figure 71 Flange Adapter is used against surfaces such as:

1. *Rubber surfaces*
2. *Adapting to AWWA cast flanges*
3. *Rubber faced wafer valves*
4. *Serrated flange surfaces*

Figure 71 Flange Adapters are not recommended for applications that incorporate tie rods for anchoring, or on standard fittings within 90° of each other. Refer to Technical Data Sheet TFP1880 for more information.

Figure 730 Mechanical Outlet 1 of 3

NOTE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Refer to Technical Data Sheet TFP1860 for more information.

Pipe Preparation

Step 1. Verify hole size from the table below.

Step 2. Hole must be drilled on the pipe centerline. For crosses, ensure double outlet holes are aligned.

Step 3. Remove any sharp or rough edges from the hole or upper housing contact area. The gasket-seating surface on the pipe should be examined to verify all loose debris, dirt, chips, paint and any other foreign material such as grease are removed.

Nominal Size Run x Branch ANSI Inches DN	Hole Diameter [a]	
	Min. Inches (mm)	Max. Inches (mm)
2, 2-1/2, 3, 4 x 1/2, 3/4, 1 50, 65, 80, 100 x 15, 20, 25	1.5 (38,1)	1.625 (41,3)
2 x 1-1/4, 1-1/2 50 x 32, 40	1.75 (44,5)	1.875 (47,6)
2-1/2 x 1-1/4, 1-1/2 65 x 32, 40	2 (50,8)	2.125 (54,0)
3, 4 x 1-1/4 80, 100 x 32	1.75 (44,5)	1.875 (47,6)
3, 4, 5, 6 x 1-1/2 80, 100, 125, 150 x 40	2 (50,8)	2.125 (54,0)
3, 4, 5, 6 x 2 80, 100, 125, 150 x 50	2.5 (63,5)	2.625 (66,7)
4, 5, 6, 8 x 2-1/2, 100, 125, 150, 200 x 65, 150	2.75 (69,9)	2.875 (73,0)
4, 5, 6, 8 x 3 100, 125, 150, 200 x 80	3.5 (88,9)	3.625 (92,1)
6, 8, x 4 150, 200 x 100	4.5 (114,3)	4.625 (117,5)

a. Proper hole preparation is required for effective sealing and performance. Check the pipe seal surface within 5/8" of the hole to be certain it is free from conditions which would affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. Check gasket grade to be certain it is suitable for the service. For crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded products other than steel pipe, such as dry pendants, etc. may not be compatible with the female threaded outlet on the Mechanical Tee. Always confirm compatibility by contacting Tyco Fire Protection Products.

Figure 730 Mechanical Outlet 2 of 3

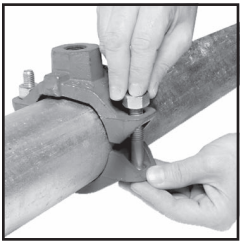
Installation/Assembly Instructions

The following instructions apply to Figure 730 Mechanical Outlet Tee and Cross with threaded or grooved outlets. If a cross configuration is desired, the lower housing is replaced with an upper outlet housing.

Verify that the gasket grade is correct for the application intended. Refer to Technical Data Sheet TFP1895 for more information.

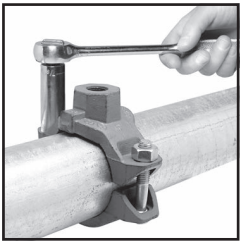
Step 1. Check for proper gasket positioning in housing. The alignment tabs on the gasket should fit into the recesses of the housing. Gasket lubrication is not required on this product for applications above 40°F (4°C). For assembly or application below 40°F (4°C) a petroleum-free lubricant is recommended.

Step 2. With one nut and bolt removed, swing the coupling around the pipe as shown.



Step 3. Verify that the housing outlet spike is positioned in the hole. Insert the other bolt into the housing and rotate the nuts clockwise until finger tight. Verify that the bolt heads are fully recessed in the housing.

Figure 730 Mechanical Outlet 3 of 3



Step 4. Tighten nuts uniformly to the recommended bolt torque with even gaps between the bolts pads.

NOTE

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to the table below. Bolt torque information has been provided in accordance with the UL 213 "Standard for Rubber Gasketed Fittings for Fire Protection Service" (Refer to Page 12).

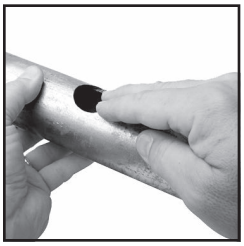
Figure 730 Outlet Bolt Torque Specifications		
Nominal Pipe Size ANSI Inches / DN	**Bolt Size Inches / (mm)**	**Bolt Torque Lbs. - ft. / (Nm)**
2 -2-1/2 50-65	3/8 (M10)	30 (40,7)
3 - 4 80 - 100	1/2 (M12)	50 (67,8)
5 125	5/8 (M16)	50 (67,8)
6 150	5/8 (M16)	70 (94,9)
8 200	3/4 (M20)	70 (94,9)

Figure 40-5 Strap Outlet 1 of 2

NOTE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.

Refer to Technical Data Sheet TFP1720 for more information.



Pipe Preparation

Step 1. The hole size for all Figure 40-5 Strap Outlets shall be 1-3/16 Inches (30,2 mm).

Step 2. Hole must be drilled on the pipe centerline.

Step 3. Remove any sharp or rough edges from the hole or upper housing contact area. The gasket-seating surface on the pipe should be examined to verify all loose debris, dirt, chips, paint and any other foreign material such as grease are removed.

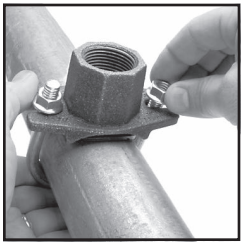
Installation/Assembly Instructions

Verify that the gasket grade is correct for the application intended. Refer to Technical Data Sheet TFP1895 for additional gasket information.

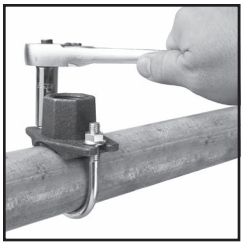
Step 1. Check for proper gasket positioning in housing. The alignment tabs on the gasket should fit into the recesses of the housing. Gasket lubrication is not required on this product for applications above 40º F (4º C). For assembly or applications below 40º F (4º C), a petroleum-free lubricant is recommended.

Step 2. To assemble the strap on the pipe, remove the “U” bolt. Place the outlet housing over the hole in the pipe. Verify that the housing spike is positioned in the hole.

Figure 40-5 Strap Outlet 2 of 2



Step 3. Insert the "U" bolt into the coupling and finger tighten the nuts.



Step 4. Tighten nuts uniformly to the recommended bolt torque. (See table below)

NOTE

Over-torqueing can damage thin wall pipe and will not increase sealing efficiency. For proper bolt torques refer to the table below. Bolt torque information has been provided in accordance with the UL 213 "Standard for Rubber Gasketed Fittings for Fire Protection Service" (Refer to Page 12).

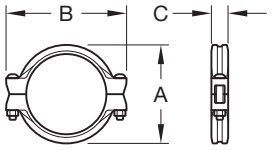
Figure 40-5 Strap Outlet Bolt Torque Specifications

Pipe Schedule	Bolt Torque Lbs. - ft. (Nm)
Schedule 10	15 (20)
Schedule 30	25 (34)
Schedule 40	25 (34)

NOTES

Grooved Couplings

Figure 577 Rigid Coupling 1 of 2

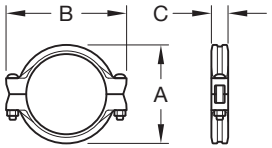


Nominal Pipe Size		Max[b] End Load psi (bar)	Max.[a, d] End Gap Inches (mm)
ANSI Inches DN	O.D. Inches (mm)		
1 DN5	1.315 (33,7)	475 (2,11)	0.06 (1,5)
1-1/4 DN32	1.660 (42,4)	757 (3,37)	0.06 (1,5)
1-1/2 DN40	1.900 (48,3)	992 (4,41)	0.06 (1,5)
2 DN50	2.375 (60,3)	1,551 (6,90)	0.06 (1,5)
2-1/2 DN65	2.875 (73,0)	2,272 (10,11)	0.06 (1,5)
— DN65	3.000 (76,1)	2,474 (11,01)	0.06 (1,5)
3 DN80	3.500 (88,9)	3,367 (14,98)	0.06 (1,5)
4 DN100	4.500 (114,3)	4,771 (21,22)	0.06 (1,5)
— DN125	5.500 (139,7)	7,127 (31,71)	0.125 (3,2)
5 DN125	5.563 (141,3)	7,290 (32,43)	0.125 (3,2)
— DN150	6.500 (165,1)	9,955 (44,28)	0.125 (3,2)
6 DN150	6.625 (168,3)	10,341 (46,00)	0.125 (3,2)
8 DN200	8.625 (219,1)	17,528 (77,97)	0.125 (3,2)
10[e] DN250	10.750 (273,0)	27,229 (121,0)	0.25 (6,4)
12[e] DN300	12.750 (323,9)	38,303 (170,0)	0.25 (6,4)

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

- See Approved Pressure Ratings starting on page 125.
- Refer to Technical Data Sheet TFP1854 for more information.

Figure 577 Rigid Coupling 2 of 2

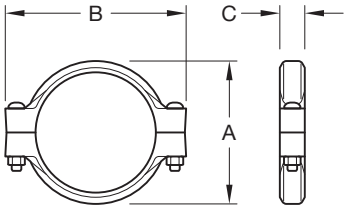


Nominal Pipe Size		Dimensions			Coupling Bolts		Bolt Torque Ft. - Lbs. (Nm)	Net Weight Lbs. kg.
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)	Qty.	Bolt[c] Size Inches/ (mm)		
1 DN5	1.315 (33,7)	1.63 (41)	3.92 (100)	1.65 (42)	2	3/8 x 2-1/4 M10 x 57		1.2 (0,55)
1-1/4 DN32	1.660 (42,4)	2.66 (68)	4.40 (112)	1.64 (42)	2	3/8 x 2-1/4 M10 x 57	30 (41)	1.3 (0,59)
1-1/2 DN40	1.900 (48,3)	2.90 (74)	4.66 (118)	1.66 (42)	2	3/8 x 2-1/4 M10 x 57	30 (41)	1.5 (0,68)
2 DN50	2.375 (60,3)	3.38 (86)	5.20 (132)	1.70 (43)	2	3/8 x 2-1/4 M10 x 57	30 (41)	1.8 (0,82)
2-1/2 DN65	2.875 (73,0)	3.88 (99)	5.64 (143)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	30 (41)	2.0 (0,91)
— DN65	3.000 (76,1)	4.00 (102)	5.78 (147)	1.75 (44)	2	— M10 x 57	30 (41)	2.0 (0,91)
3 DN80	3.500 (88,9)	4.50 (114)	6.33 (161)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	30 (41)	2.7 (1,22)
4 DN100	4.500 (114,3)	5.70 (145)	7.50 (191)	1.83 (46)	2	3/8 x 2-1/4 M10 x 57	30 (41)	3.3 (1,50)
— DN125	5.500 (139,7)	6.80 (173)	8.75 (222)	1.91 (49)	2	— M12 x 76	90 (122)	5.3 (2,41)
5 DN125	5.563 (141,3)	6.86 (174)	8.82 (224)	1.91 (49)	2	1/2 x 3 M12 x 76	90 (122)	5.3 (2,41)
— DN150	6.500 (165,1)	7.80 (198)	9.75 (248)	1.91 (49)	2	— M12 x 76	90 (122)	5.7 (2,59)
6 DN150	6.625 (168,3)	8.47 (215)	9.88 (251)	1.91 (49)	2	1/2 x 3 M12 x 76	90 (122)	5.9 (2,68)
8 DN200	8.625 (219,1)	10.25 (260)	12.78 (325)	2.40 (61)	2	5/8 x 3-1/4 M16 x 83	150 (203)	11.7 (5,32)
10[e] DN250	10.750 (273,0)	12.50 (318)	16.50 (419)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121		19.5 (8,86)
12[e] DN300	12.750 (323,9)	14.50 (368)	18.50 (470)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121		22.0 (10,00)

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

- See Approved Pressure Ratings starting on page 125.
- Refer to Technical Data Sheet TFP1854 for more information.

Figure 705 Flexible Coupling 1 of 4

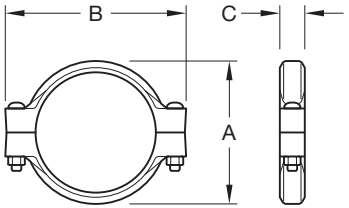


Nominal Pipe Size		Max End[d] Load Lbs (kN)	Max.[a,b] End Gap Inches (mm)	Deflection[b]	
ANSI Inches DN	O.D. Inches (mm)			°Per Coupling	Inches/ Foot (mm/m)
1 25	1.315 (33,7)	407 (1,81)	0.13 (3,3)	5°30'	1.16 (96,7)
1-1/4 32	1.660 (42,4)	649 (2,88)	0.13 (3,3))	4°19'	0.90 (75,0)
1-1/2 40	1.900 (48,3)	850 (3,78)	0.13 (3,3)	3°46'	0.79 (65,8)
2 50	2.375 (60,3)	1,328 (5,90)	0.13 (3,3)	3°1'	0.63 (52,5)
2-1/2 65	2.875 (73,0)	1,947 (8,66)	0.13 (3,3)	2°29'	0.52 (43,3)
76,1 65	3.000 (76,1)	2,120 (9,43)	0.13 (3,3)	2°23'	0.50 (41,7)
3 80	3.500 (88,9)	2,885 (12,83)	0.13 (3,3)	2°3'	0.43 (35,8)
108,0 100	4.250 (108,0)	4,256 (18,93)	0.25 (6,4)	3°22'	0.70 (58,3)
4 100	4.500 (114,3)	4,769 (21,21)	0.25 (6,4)	3°11'	0.67 (55,8)
133,0 125	5.250 (133,0)	6,494 (28,88)	0.25 (6,4)	2°44'	0.56 (46,7)
139,7 125	5.500 (139,7)	7,127 (31,70)	0.25 (6,4)	2°36'	0.55 (45,5)
5 125	5.563 (141,3)	7,288 (32,41)	0.25 (6,4)	2°35'	0.54 (45,0)
159,0 150	6.250 (159,0)	9,204 (40,93)	0.25 (6,4)	2°17'	0.48 (40,0)

a. Maximum available gap between pipe ends. Minimum gap = 0
b. Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.
c. Maximum end load are total from all loads based on standard weight steel pipe. End loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative for details.

- See Approved Pressure Ratings starting on page 128.
- Refer to Technical Data Sheet TFP1820 for more information.

Figure 705 Flexible Coupling 2 of 4

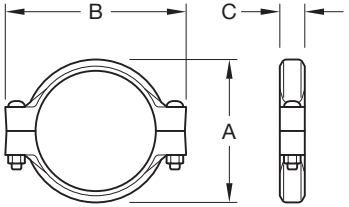


Nominal Pipe Size		Dimensions			Bolt[c] Size Inches/ (mm)	Bolt Torque Lbs. - ft. (Nm)	Net Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
1 25	1.315 (33,7)	2.24 (56,9)	3.94 (100,1)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)		1.3 (0,6)
1-1/4 32	1.660 (42,4)	2.56 (65,0)	4.19 (106,4)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.5 (0,7)
1-1/2 40	1.900 (48,3)	2.75 (69,9)	4.44 (112,8)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.6 (0,7)
2 50	2.375 (60,3)	3.25 (82,6)	4.88 (124,0)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.7 (0,8)
2-1/2 65	2.875 (73,0)	3.69 (93,7)	5.50 (139,7)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.0 (0,9)
76,1 65	3.000 (76,1)	4.00 (101,6)	5.75 (146,1)	1.88 (47,8)	- (M12 x 76)	50 (68)	3.1 (1,4)
3 80	3.500 (88,9)	4.38 (111,3)	6.50 (165,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	50 (68)	3.1 (1,4)
108,0 100	4.250 (108,0)	5.50 (139,7)	7.50 (190,5)	2.06 (52,3)	- (M12 x 76)	50 (68)	4.2 (1,9)
4 100	4.500 (114,3)	5.69 (144,5)	7.75 (196,9)	2.06 (52,3)	1/2 x 3 (M12 x 76)	50 (68)	4.0 (1,8)
133,0 125	5.250 (133,0)	6.56 (166,6)	9.50 (241,3)	2.06 (52,3)	- (M16 x 83)	90 (122)	7.2 (3,3)
139,7 125	5.500 (139,7)	6.81 (173,0)	9.75 (247,7)	2.06 (52,3)	- (M16 x 83)	90 (122)	7.2 (3,3)
5 125	5.563 (141,3)	6.88 (174,8)	9.75 (247,7)	2.06 (52,3)	5/8 x 3-1/4 (M16 x 83)	90 (122)	7.1 (3,2)
159,0 150	6.250 (159,0)	7.56 (192,0)	10.31 (261,9)	2.06 (52,3)	— (M16 x 83)	90 (122)	7.4 (3,4)

c. Gold color coded metric bolts sizes available upon request.

- See Approved Pressure Ratings starting on page 128.
- Refer to Technical Data Sheet TFP1820 for more information.

Figure 705 Flexible Coupling 3 of 4

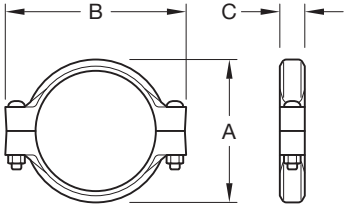


Nominal Pipe Size		Max End[d] Load Lbs kN	Max.[a, b] End Gap Inches (mm)	Deflection[b]	
ANSI Inches DN	O.D. Inches (mm)			°Per Coupling	Inches/ Foot (mm/m)
165,1 150	6.500 (165,1)	9,950 (44,25)	0.25 (6,4)	2°12'	0.46 (38,3)
6 150	6.625 (168,3)	10,336 (45,97)	0.25 (6,4)	2°10'	0.45 (37,5)
8 200	8.625 (219,1)	17,519 (77,92)	0.25 (6,4)	1°40'	0.35 (29,2)
10[e] 250	10.750 (273,0)	22,679 (100,8)	0.25 (6,4)	1°20'	0.28 (23,3)
12[e] 300	12.750 (323,9)	31,903 (141,9)	0.25 (6,4)	1°7'	0.23 (19,2)

a. Maximum available gap between pipe ends. Minimum gap = 0
b. Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.
d. Maximum end load are total from all loads based on standard weight steel pipe. End loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative for details.
e. For 10 and 12 inch sizes where VdS Approval or LPCB Certification is required, refer to Figure 707, Technical data Sheet TFP1840.

• See Approved Pressure Ratings starting on page 128.
• Refer to Technical Data Sheet TFP1820 for more information.

Figure 705 Flexible Coupling 4 of 4

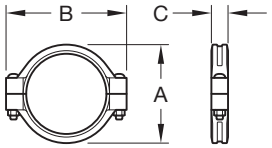


Nominal Pipe Size		Dimensions			Bolt[c] Size Inches/ (mm)	Bolt Torque Lbs. - ft. (Nm)	Net Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
165,1 150	6.500 (165,1)	7.75 (196,9)	10.69 (271,5)	2.06 (52,3)	— (M16 x 83)	90 (122)	7.1 (3,2)
6 150	6.625 (168,3)	7.94 (201,7)	10.69 (271,5)	2.06 (52,3)	5/8 x 3-1/4 (M16 x 83)	90 (122)	7.1 (3,2)
8 200	8.625 (219,1)	10.19 (258,8)	13.56 (344,4)	2.50 (63,5)	3/4 x 4-3/4 (M20 x 121)	150 (203)	14.5 (6,6)
10[e] 250	10.750 (273,0)	12.69 (322,3)	16.38 (416,1)	2.63 (66,8)	1 x 6-1/2 (M24 x 165)	200 (271)	28.0 (12,7)
12[e] 300	12.750 (323,4)	14.94 (379,5)	18.88 (479,6)	2.63 (66,8)	1 x 6-1/2 (M24 x 165)	200 (271)	36.5 (16,6)

c. Gold color coded metric bolts sizes available upon request.

- See Approved Pressure Ratings starting on page 128.
- Refer to Technical Data Sheet TFP1820 for more information.

Figure 707 Heavy-Duty Flexible Coupling 1 of 2

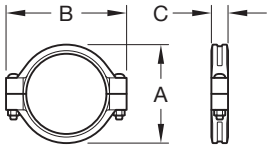


Nominal Pipe Size		Max End [d] Load Lbs (kN)	Max.[a,b] End Gap Inches (mm)	Deflection[b]	
ANSI Inches DN	O.D. Inches (mm)			°Per Coupling	Inches/ Foot (mm/m)
1-1/4 32	1.660 (42,4)	649 (2,88)	0.13 (3,3)	4°19'	0.90 (75,0)
1-1/2 40	1.900 (48,3)	1,418 (6,31)	0.13 (3,3)	3°46'	0.79 (65,8)
2 50	2.375 (60,3)	2,215 (9,85)	0.13 (3,3)	3°1'	0.63 (52,5)
2-1/2 65	2.875 (73,0)	3,246 (14,4)	0.13 (3,3)	2°29'	0.52 (43,3)
76,1mm 65	3.000 (76,1)	2,121 (9,44)	0.13 (3,3)	2°23'	0.50 (41,7)
3 80	3.500 (88,9)	4,811 (21,4)	0.13 (3,3)	2°3'	0.43 (35,8)
4 100	4.500 (114,3)	7,952 (35,4)	0.25 (6,4)	3°11'	0.67 (55,8)
5 125	5.563 (141,3)	12,153 (54,1)	0.25 (6,4)	2°35'	0.54 (45,0)
165,1mm 150	6.500 (165,1)	9,955 (44,3)	0.25 (6,4)	2°12'	0.46 (38,3)
6 150	6.625 (168,3)	17,236 (76,7)	0.25 (6,4)	2°10'	0.45 (37,5)
8 200	8.625 (219,1)	29,213 (130,0)	0.25 (6,4)	1°40'	0.35 (29,2)
10 250	10.750 (273,0)	45,381 (202,0)	0.25 (6,4)	1°20'	0.28 (23,3)
12 300	12.750 (323,9)	63,838 (284,0)	0.25 (6,4)	1°7'	0.23 (19,2)

a. Maximum available gap between pipe ends. Minimum gap = 0
b. Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.
d Maximum end load are total from all loads based on standard weight steel pipe. End loads may differ for other pipe materials and/or wall thickness. Contact your TYCO Representative for details.

- See Approved Pressure Ratings starting on page 131.
- Refer to Technical Data Sheet TFP1840 for more information.

Figure 707 Heavy-Duty Flexible Coupling 2 of 2

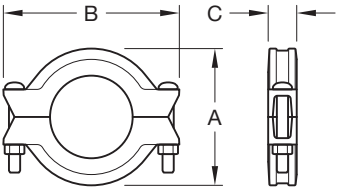


Nominal Pipe Size		Dimensions			Bolt[c] Size Inches/ (mm)	Bolt Torque ft.-lbs. (Nm)	Net Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
1-1/4 32	1.660 (42,4)	2.76 (70,0)	4.37 (111,0)	1.81 (46,0)	1/2 x 3 (M12 x 76)	90 - 110 (120 - 150)	2.2 (1,0)
1-1/2 40	1.900 (48,3)	2.97 (75,4)	4.63 (117,6)	1.81 (46,0)	1/2 x 3 (M12 x 76)	90 - 110 (120 - 150)	2.5 (1,1)
2 50	2.375 (60,3)	3.54 (89,9)	5.25 (133,4)	1.88 (47,8)	1/2 x 3 (M12 x 76)	90 - 110 (120 - 150)	3.0 (1,4)
2-1/2 65	2.875 (73,0)	4.06 (103,1)	5.75 (146,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	90 - 110 (120 - 150)	3.5 (1,6)
76,1mm 65	3.000 (76,1)	4.19 (106,4)	5.75 (146,1)	1.88 (47,8)	— (M12 x 76)	90 - 110 (120 - 150)	4.0 (1,8)
3 80	3.500 (88,9)	4.69 (119,1)	6.38 (162,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	90 - 110 (120 - 150)	4.0 (1,8)
4 100	4.500 (114,3)	5.95 (151,1)	8.25 (209,6)	2.06 (52,3)	5/8 x 3-1/4 (M16 x 83)	100 - 130 (135 - 175)	7.0 (3,2)
5 125	5.563 (141,3)	7.08 (179,8)	10.00 (254,0)	2.06 (52,3)	3/4 x 4-3/4 M20 x 121)	150 - 200 (200 - 270)	10.0 (4,5)
165,1mm 150	6.500 (165,1)	8.19 (208,0)	11.25 (285,8)	2.06 (52,3)	— (M20 x 121)	150 - 200 (200 - 270)	12.0 (5,0)
6 150	6.625 (168,3)	8.30 (210,8)	11.25 (285,8)	2.06 (52,3)	3/4 x 4-3/4 M20 x 121)	150 - 200 (200 - 270)	11.1 (5,0)
8 200	8.625 (219,1)	10.68 (271,3)	14.00 (355,6)	2.47 (62,7)	7/8 x 6-1/2 M22 x 165)	180 - 200 (245 - 300)	21.4 (9,7)
10 250	10.750 (273,0)	13.06 (331,7)	16.44 (417,6)	2.63 (66,8)	1 X 6-1/2 M24 X 165	200 - 250 (270 - 340)	29.0 (13,2)
12 300	12.750 (323,9)	15.39 (390,9)	18.84 (478,5)	2.63 (66,8)	1 x 6-1/2 M24 x 165)	200 - 250 (270 - 340)	37.0 (16,8)

c. Gold color coded metric bolts sizes available upon request.

- See Approved Pressure Ratings starting on page 131.
- Refer to Technical Data Sheet TFP1840 for more information.

Figure 716 Flexible Reducing Coupling 1 of 2



Nominal Pipe Size		Max.[b] End Load Lbs. (kN)	Max.[a, c] End Gap Inches (mm)	Deflection[c]	
ANSI Inches DN	O.D. Inches (mm)			°Per Coupling	Inches/ Foot (mm/m)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,8)	992 (4,412)	0.13 (3,3)	1°53’	0.39 (32,5)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	1,550 (6,894)	0.13 (3,3)	1°33’	0.32 (26,7)
76.1mm x 2 65 x 50	3.000 x 2.375 (76,1 x 60,3)	1,550 (6,894)	0.13 (3,3)	1°34’	0.32 (26,7)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	1,550 (6,894)	0.13 (3,3)	1°17’	0.27 (22,5)
3 x 2-1/2 80 x 65	3.500 x 2.875 (88,9 x 73,0)	2,272 (10,106)	0.13 (3,3)	1°17’	0.27 (22,5)
3 x 76.1mm 80 x 65	3.500 x 3.000 (88,9 x 76,1)	2,474 (11,004)	0.13 (3,3)	1°17’	0.27 (22,5)
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	1,550 (6,894)	0.19 (4,8)	2°38’	0.55 (45,8)
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	2.271 (10,101)	0.19 (4,8)	2°38’	0.55 (45,8)
4 x 76.1mm 100 x 65	4.500 x 3.000 (114,3 x 76,1)	2,474 (11,004)	0.19 (4,8)	2°38’	0.55 (45,8)
4 x 3 100 x 80	4.500 x 3.500 (114,3 x 88,9)	3,367 (14,977)	0.19 (4,8)	2°38’	0.55 (45,8)
139.7mm x 4 125 x 100	5.500 x 4.500 (139,7 x 114,3)	5,564 (24,749)	0.25 (6,4)	2°38’	0.55 (45,8)
5 x 4 125 x 100	5.563 x 4.500 (141,3 x 114,3)	5,566 (24,759)	0.25 (6,4)	2°5’	0.44 (36,7)
165.1mm x 4 150 x 100	6.500 x 4.500 (165,1 x 114,3)	4,771 (21,222)	0.25 (6,4)	1°50’	0.38 (31,7)
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	4,771 (21,222)	0.25 (6,4)	1°44’	0.36 (30,0)
6 x 5 150 x 125	6.625 x 5.563 (168,3 x 141,3)	7,292 (32,436)	0.25 (6,4)	1°44’	0.36 (30,0)
8 x 6 200 x 150	8.625 x 6.625 (219,1 x 168,3)	10,341 (45,999)	0.25 (6,4)	1°15’	0.26 (21,7)

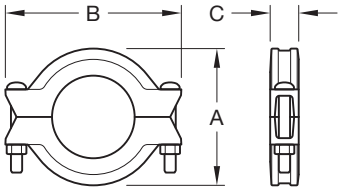
a. Maximum available gap between pipe ends. Minimum gap = 0

b. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact your Tyco representative for details.

c. Max end gap and deflection is for cut grooved standard weight pipe.

- See Approved Pressure Ratings starting on page 134.
- Refer to Technical Data Sheet TFP1820 for more information.

Figure 716 Flexible Reducing Coupling 2 of 2



Nominal Size ANSI Inches DN	Dimensions			Bolt[d] Size Inches/ (mm)	Bolt Torque Lbs. - ft. (Nm)	Net Weight Lbs. (kg)
	A Inches (mm)	B Inches (mm)	C Inches (mm)			
2 x 1-1/2 50 x 40	3.50 (88,9)	5.06 (128,5)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.0 (0,9)
2-1/2 x 2 65 x 50	4.00 (101,6)	5.50 (139,7)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.5 (1,1)
76.1mm x 2 65 x 50	4.19 (106,4)	5.88 (149,4)	1.88 (47,8)	— (M12 x 76)	50 (68)	3.1 (1.4)
3 x 2 80 x 50	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	50 (68)	4.1 (1,9)
3 x 2-1/2 80 x 65	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	50 (68)	4.3 (2,0)
3 x 76.1mm 80 x 65	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	— (M12 x 76)	50 (68)	4.2 (1,9)
4 x 2 100 x 50	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	5/8 x 3-1/4 (M16 x 83)	50 (68)	5.5 (2,5)
4 x 2-1/2 100 x 65	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	5/8 x 3-1/4 (M16 x 83)	90 (122)	6.4 (2,9)
4 x 76.1mm 100 x 65	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	— (M16 x 83)	90 (122)	6.3 (2,9)
4 x 3 100 x 80	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	5/8 x 3-1/4 (M16 x 83)	90 (122)	6.2 (2,8)
139.7mm x 4 125 x 100	7.06 (179,3)	9.50 (241,3)	2.06 (52,3)	— (M20 x 121)	150 (203)	9.6 (4,3)
5 x 4 125 x 100	7.13 (181,1)	9.56 (242,8)	2.06 (52,3)	3/4 x 4-3/4 (M20 x 121)	150 (203)	9.8 (4,4)
165.1mm x 4 150 x 100	8.18 (207,8)	10.81 (274,4)	2.06 (52,3)	— (M20 x 121)	150 (203)	12.5 (5,7)
6 x 4 150 x 100	8.38 (212,9)	10.88 (276,4)	2.06 (52,3)	3/4 x 4-3/4 (M20 x 121)	150 (203)	12.5 (5,7)
6 x 5 150 x 125	8.38 (212,9)	10.88 (276,4)	2.06 (52,3)	3/4 x 4-3/4 (M20 x 121)	150 (203)	11.5 (5,2)
8 x 6 200 x 150	10.69 (271,5)	13.75 (349,3)	2.25 (57,2)	7/8 x 6-1/2 (M22 x 165)	200 (271)	20.7 (9,4)

d. Gold color coded metric bolts available upon request.

e. Pressure ratings are based on pipe schedule, size and approval agency. Refer to page for pressure ratings.

- See Approved Pressure Ratings starting on page 134.
- Refer to Technical Data Sheet TFP1820 for more information.

Figure 702 Outlet Coupling 1 of 4

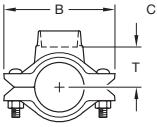


FIGURE 702
OUTLET COUPLING WITH
FEMALE NPT OUTLET

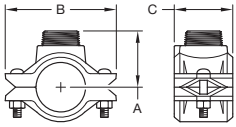


FIGURE 702
OUTLET COUPLING WITH
MALE NPT OUTLET

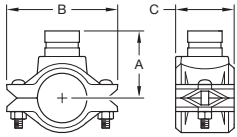


FIGURE 702
OUTLET COUPLING WITH
GROOVED OUTLET

Nominal Run Size		Nominal Branch Size				End Gap Range Inches (mm)	Max. Run End Load LBS. (kN)
				Grooved			
ANSI Inches DN	O.D. Inches (mm)	Female NPT Inches (mm)	Male NPT Inches (mm)	ANSI Inches (DN)	O.D. Inches (mm)		
1-1/2 40	1.900 (48,3)	1/2 (21,3)	—	—	—	0.81 - 0.88 (20 - 22)	1418 (6,3)
		3/4 (26,7)	—	—	—	0.81 - 0.88 (20 - 22)	
		1 (33,7)	—	—	—	0.81 - 0.88 (20 - 22)	
2 50	2.375 (60,3)	1/2 (21,3)	—	—	—	0.81 - 0.88 (20 - 22)	2215 (9,9)
		3/4 (26,7)	—	—	—	0.81 - 0.88 (20 - 22)	
		1 (33,7)	1 (33,7)	1 (25)	1.315 (33,7)	0.81 - 0.88 (20 - 22)	
2-1/2 65	2.875 (73,0)	1/2 (21,3)	—	—	—	1.25 - 1.50 (32 - 38)	3246 (14,4)
		3/4 (26,7)	—	—	—	1.25 - 1.50 (32 - 38)	
		1 (33,7)	—	—	—	1.25 - 1.50 (32 - 38)	
		—	1-1/4 (42,4)	1-1/4 (32)	1.660 (42,4)	1.25 - 1.50 (32 - 38)	
		—	1-1/2 (48,3)	1-1/2 (40)	1.900 (48,3)	1.25 - 1.50 (32 - 38)	
3 80	3.500 (88,9)	3/4 (26,7)	—	—	—	1.25 - 1.50 (32 - 38)	4811 (21,4)
		1 (33,7)	1 (33,4)	1 (25)	1.315 (33,7)	1.25 - 1.50 (32 - 38)	
		—	1-1/2 (48,3)	1-1/2 (40)	1.900 (48,3)	1.25 - 1.50 (32 - 38)	

- See Approved Pressure Ratings starting on page 139.
- Refer to Technical Data Sheet G220 for more information.

Figure 702 Outlet Coupling 2 of 4

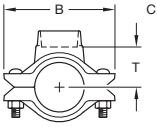


FIGURE 702
OUTLET COUPLING WITH
FEMALE NPT OUTLET

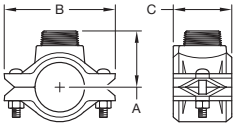


FIGURE 702
OUTLET COUPLING WITH
MALE NPT OUTLET

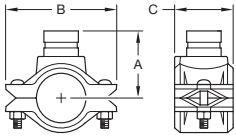


FIGURE 702
OUTLET COUPLING WITH
GROOVED OUTLET

Nominal Run Size		Nominal Branch Size				Coupling Bolt Size Inches	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	T[a]		
1-1/2 40	1.900 (48,3)	—	4.50 (114,3)	2.75 (70,0)	2.06 (52,0)	3/8 x 2-1/8	2.6 (1,2)
		—	4.50 (114,3)	2.75 (70,0)	2.06 (52,0)		2.6 (1,2)
		—	4.50 (114,3)	2.75 (70,0)	1.94 (49,0)		2.9 (1,3)
2 50	2.375 (60,3)	—	5.00 (127,0)	2.75 (70,0)	2.32 (59,0)	3/8 x 2-1/8	3.1 (1,4)
		—	5.00 (127,0)	2.75 (70,0)	2.32 (59,0)		3.1 (1,4)
		3.50 (89,0)	5.00 (127,0)	2.75 (70,0)	2.20 (56,0)		3.3 (1,5)
2-1/2 65	2.875 (73,0)	—	6.33 (161,0)	3.25 (83,0)	2.20 (56,0)	1/2 x 2-3/8	4.8 (2,2)
		—	6.33 (161,0)	3.25 (83,0)	2.56 (65,0)		4.6 (2,1)
		—	6.33 (161,0)	3.25 (83,0)	2.44 (62,0)		2.2 (4,4)
		3.70 (94,0)	6.33 (161,0)	3.25 (83,0)	—		5.1 (2,3)
		3.70 (94,0)	6.33 (161,0)	3.25 (83,0)	—		2.4 (5,9)
3 80	3.500 (88,9)	—	6.87 (175,0)	3.25 (83,0)	2.83 (72,0)	1/2 x 3	5.9 (2,7)
		4.00 (102,0)	6.87 (175,0)	3.25 (83,0)	2.75 (70,0)		6.2 (2,8)
		4.00 (102,0)	6.87 (175,0)	3.25 (83,0)	—		6.4 (2,9)

a. Center of run pipe to end of outlet pipe (dimensions approximate). Female threaded outlet only.

- See Approved Pressure Ratings starting on page 139.
- Refer to Technical Data Sheet G220 for more information.

Figure 702 Outlet Coupling 3 of 4

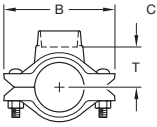


FIGURE 702
OUTLET COUPLING WITH
FEMALE NPT OUTLET

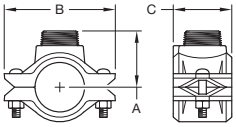


FIGURE 702
OUTLET COUPLING WITH
MALE NPT OUTLET

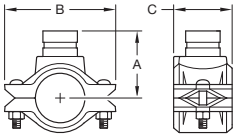


FIGURE 702
OUTLET COUPLING WITH
GROOVED OUTLET

Nominal Run Size		Nominal Branch size				End Gap Range Inches (mm)	Max. Run End Load LBS. (kN)
				Grooved			
ANSI Inches DN	O.D. Inches (mm)	Female NPT Inches (mm)	Male NPT Inches (mm)	ANSI Inches (DN)	O.D. Inches (mm)		
4 100	4.500 (114,3)	3/4 (26,7)	—	—	—	1.63 - 1.81 (41 - 46)	7952 (35,4)
		1 (33,7)	1 (33,4)	—	—	1.63 - 1.81 (41 - 46)	
		—	1-1/2 (48,3)	1-1/2 (40)	1.900 (48,3)	1.63 - 1.81 (41 - 46)	
		—	2 (60,3)	2 (50)	2.375 (60,3)	1.63 - 1.81 (41 - 46)	
6 150	6.625 (168,3)	—	—	—	—	1.63 - 1.81 (41 - 46)	17,235 (76,7)
		1 (33,7)	—	—	—	1.63 - 1.81 (41 - 46)	
		1-1/2 (48,3)	1-1/2 (48,3)	1-1/2 (40)	1.900 (48,3)	1.63 - 1.81 (41 - 46)	
		—	2 (60,3)	2 (50)	2.375 (60,3)	1.63 - 1.81 (41 - 46)	

- See Approved Pressure Ratings starting on page 139.
- Refer to Technical Data Sheet G220 for more information.

Figure 702 Outlet Coupling 4 of 4

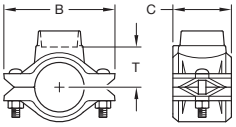


FIGURE 702
OUTLET COUPLING WITH
FEMALE NPT OUTLET

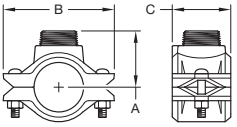


FIGURE 702
OUTLET COUPLING WITH
MALE NPT OUTLET

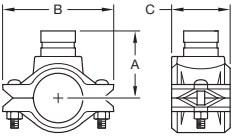


FIGURE 702
OUTLET COUPLING WITH
GROOVED OUTLET

Nominal Run Size		Nominal Branch size				Coupling Bolt Size Inches	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	T[a]		
4 100	4.500 (114,3)	—	8.31 (211,0)	3.66 (93,0)	3.70 (94,0)	5/8 x 3-1/2	9.2 (4,2)
		—	8.31 (211,0)	3.66 (93,0)	3.58 (91,0)		9.5 (4,3)
		4.88 (124,0)	8.31 (211,0)	3.66 (93,0)	3.31 (84,0)		9.5 (4,3)
		4.88 (124,0)	8.31 (211,0)	3.66 (93,0)	—		9.9 (4,5)
6 150	6.625 (168,3)	—	10.86 (276,0)	3.70 (94,0)	—	5/8 x 3-1/2	13.2 (6,0)
		—	10.86 (276,0)	3.70 (94,0)	4.76 (121,0)		13.2 (6,0)
		6.06 (154,0)	10.86 (276,0)	3.70 (94,0)	4.76 (121,0)		13.6 (6,2)
		6.06 (154,0)	10.86 (276,0)	3.70 (94,0)	—		14.3 (6,5)

a. Center of run pipe to end of outlet pipe (dimensions approximate). Female threaded outlet only.

• See Approved Pressure Ratings starting on page 139.Refer to Technical Data Sheet G220 for more information.

NOTES

Flange Adapters

Figure 71 Flange Adapter 1 of 4

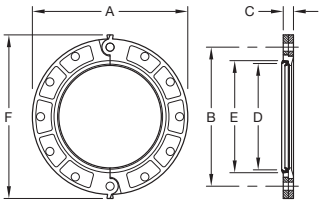


FIGURE 71 ANSI CLASS 125 AND 150

Nominal Pipe Size		Max End Load[a] Lbs. (kN)	Bolt[b]			Net Weight. Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		Size Dia. x Lg.	Qty.	Torque Lbs.-ft. (Nm)	
2 50	2.375 (60,3)	1108 (4,93)	5/8 x 3 (M16 x 76)	4	110 - 140 (149 - 190)	3.0 (1,4)
2-1/2 65	2.875 (73,0)	1623 (7,22)	5/8 x 3 (M16 x 76)	4	110 - 140 (149 - 190)	5.0 (2,3)
3 80	3.500 (88,9)	2405 (10,70)	5/8 x 3 (M16 x 76)	4	110 - 140 (149 - 190)	5.6 (2,5)
4 100	4.500 (114,3)	3976 (17,69)	5/8 x 3 (M16 x 76)	8	110 - 140 (149 - 190)	7.0 (3,2)
5 125	5.563 (141,3)	6076 (27,03)	3/4 x 3-1/2 (M20 x 89)	8	220 - 250 (298 - 339)	9.2 (4,2)
6 150	6.625 (168,3)	8618 (38,33)	3/4 x 3-1/2 (M20 x 89)	8	220 - 250 (298 - 339)	10.0 (4,5)
8 200	8.625 (219,1)	14,607 (64,97)	3/4 x 3-1/2 (M20 x 89)	8	220 - 250 (298 - 339)	16.6 (7,5)
10 250	10.750 (273,0)	22,691 (100,93)	7/8 x 4 (M22 x 102)	12	320 - 400 (434 - 542)	21.8 (9,9)
12 300	12.750 (323,9)	31,919 (141,98)	7/8 x 4 (M22 x 102)	12	320 - 400 (434 - 542)	24.2 (11,0)

a. Maximum end load are total form all loads based on standard weight steel pipe. End loads may differ on other pipe materials and/or wall thickness. Contact your TYCO Representative for details.

b. Bolts and nuts are not supplied. Flange Mating Bolts must be at least SAE J429 Grade 5 or stronger. Bolt lengths are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 137.
- Refer to Technical Data Sheet TFP1880 for more information.

Figure 71 Flange Adapter 2 of 4

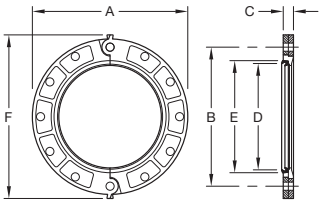


FIGURE 71 ANSI CLASS 125 AND 150

Nominal Pipe Size		Dimensions- Inches (mm)					
ANSI Inches DN	**O.D. Inches (mm)**	**A**	**B**	**C**	**D[c]**	**E[c]**	**F**
2 50	2.375 (60,3)	6.38 (162,1)	4.75 (120,7)	0.75 (19,1)	2.38 (60,5)	3.41 (86,6)	7.25 (184,2)
2-1/2 65	2.875 (73,0)	7.00 (178,0)	5.50 (140,0)	0.88 (22,0)	2.88 (73,0)	3.91 (99,0)	7.88 (200,0)
3 80	3.500 (88,9)	7.50 (190,5)	6.00 (152,4)	0.94 (23,9)	3.50 (88,9)	4.53 (115,1)	9.88 (251,0)
4 100	4.500 (114,3)	9.00 (228,6)	7.50 (190,5)	0.94 (23,9)	4.50 (114,3)	5.53 (140,5)	9.90 (251,5)
5 125	5.563 (141,3)	10.00 (254,0)	8.50 (215,9)	1.00 (25,4)	5.56 (141,2)	6.72 (170,7)	11.38 (289,1)
6 150	6.625 (168,3)	11.00 (279,4)	9.50 (241,3)	1.00 (25,4)	6.62 (168,1)	7.78 (197,6)	11.88 (301,8)
8 200	8.625 (219,1)	13.50 (342,9)	11.75 (298,5)	1.13 (28,7)	8.62 (218,9)	9.94 (252,5)	14.38 (365,3)
10 250	10.750 (273,0)	16.00 (406,4)	14.25 (362,0)	1.19 (30,2)	10.75 (273,1)	12.31 (312,7)	16.88 (428,8)
12 300	12.750 (323,9)	19.00 (482,6)	17.00 (431,8)	1.25 (31,8)	12.75 (323,9)	14.31 (363,5)	20.00 (508,0)

c. Dimensions D and E represent minimum and maximum sealing surfaces.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 137.
- Refer to Technical Data Sheet TFP1880 for more information.

Figure 71 Flange Adapter 3 of 4

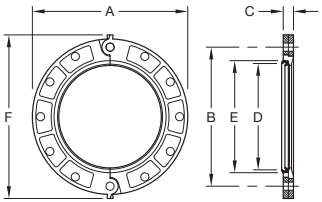


FIGURE 71 PN10 AND PN16 (METRIC)

Nominal Pipe Size		Flange Bolt Pattern	Max End Load[b] Lbs. (kN)	Bolt[c]			Net Weight. Lbs. (kg)
ANSI Inches DN	O.D. (mm)			Size Dia. x Lg.	Qty.	Torque Nm	
2 50	60,3	PN10/ PN16	1108 (4,93)	M16 x 76	4	149-190	3.0 (1,4)
— 65	76,1	PN10/ PN16	1767 (7,86)	M16 x 76	4	149-190	5.0 (2,3)
3[a] 80	88,9	PN10	2405 (10,70)	M16 x 76	4	149-190	5.6 (2,5)
3 80	88,9	PN16	2405 (10,70)	M16 x 76	8	149-190	5.6 (2,5)
4 100	114,3	PN10/ PN16	3976 (17,69)	M16 x 76	8	149-190	7.0 (3,2)
— 125	139,7	PN10/ PN16	5940 (26,42)	M16 x 89	8	149-190	9.2 (4,2)
— 150	165,1	PN10/ PN16	8296 (36,90)	M20 x 89	8	298-339	10.0 (4,5)
6 150	168,3	PN10/ PN16	8618 (38,33)	M20 x 89	8	298-339	16.6 (7,5)
8[a] 200	219,1	PN10	14607 (64,97)	M20 x 89	8	298-339	21.8 (9,9)
8 200	219,1	PN16	14607 (64,97)	M20 x 89	12	298-339	21.8 (9,9)
10[a] 250	273,0	PN10	22691 (100,93)	M22 x 102	12	298-339	22.5 (10,2)
10 250	273,0	PN16	22691 (100,93)	M22 x 102	12	434-542	24.2 (11,0)
12[a] 300	323,9	PN10	31919 (141,98)	M20 x 102	12	298-339	27.5 (12,5)
12 300	323,9	PN16	31919 (141,98)	M22 x 102	12	434-542	28.0 (12,7)

a. For noted sizes, PN10 and PN16 dimensional values differ.
b. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Contact your TYCO representative for details.
c. Mating Bolts and Nuts are not supplied. Flange Mating Bolts must be at least SAE J429 Grade 5 or stronger. Bolt lengths are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 137.
- Refer to Technical data Sheet TFP1880 for more information.

Figure 71 Flange Adapter 4 of 4

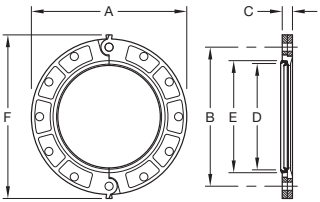


FIGURE 71 PN10 AND PN16 (METRIC)

Nominal Pipe Size		Dimensions- Inches (mm)					
ANSI Inches DN	O.D. (mm)	A	B	C	D[d]	E[d]	F
2 50	60,3	6.38 (162,1)	4.92 (125,0)	0.75 (19,1)	2.38 (60,5)	3.41 (86,6)	7.25 (184,2)
— 65	76,1	7.28 (184,9)	5.71 (145,0)	0.88 (22,4)	3.00 (76,1)	4.03 (102,4)	8.09 (205,5)
3[b] 80	88,9	7.88 (200,2)	6.30 (160,0)	0.94 (23,9)	3.50 (88,9)	4.53 (115,1)	8.75 (222,3)
3 80	88,9	7.88 (200,2)	6.30 (160,0)	0.94 (23,9)	3.50 (88,9)	4.53 (115,1)	8.75 (222,3)
4 100	114,3	9.00 (228,6)	7.09 (180,1)	0.94 (23,9)	4.50 (114,3)	5.53 (140,5)	9.90 (251,5)
— 125	139,7	9.84 (249,9)	8.27 (210,1)	1.00 (25,4)	5.50 (139,7)	6.53 (165,9)	10.69 (271,5)
— 150	165,1	11.25 (285,8)	9.45 (240,0)	1.00 (25,4)	6.50 (165,1)	7.53 (191,3)	12.12 (307,8)
6 150	168,3	11.00 (279,4)	9.49 (241,1)	1.00 (25,4)	6.62 (168,1)	7.78 (197,6)	11.88 (301,8)
8[a] 200	219,1	13.38 (339,9)	11.61 (294,9)	1.13 (28,7)	8.62 (218,9)	9.94 (252,5)	14.31 (363,5)
8 200	219,1	13.38 (339,9)	11.61 (294,9)	1.13 (28,7)	8.62 (218,9)	9.94 (252,5)	14.31 (363,5)
10[a] 250	273,0	15.56 (395,2)	13.78 (350,0)	1.19 (30,2)	10.75 (273,1)	12.31 (312,7)	16.50 (419,1)
10 250	273,0	16.00 (406,4)	13.98 (355,1)	1.19 (30,2)	10.75 (273,1)	12.31 (312,7)	16.88 (428,8)
12[a] 300	323,9	17.52 (445,0)	17.52 (445,0)	1.25 (31,8)	12.75 (323,9)	14.31 (363,9)	16.56 (420,6)
12 300	323,9	18.12 (460,2)	18.12 (460,2)	1.25 (31,8)	12.75 (323,9)	14.31 (363,9)	19.14 (486,2)

a. Dimensions D and E represent minimum and maximum sealing surfaces.

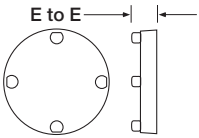
d. For noted sizes, PN10 and PN16 dimensional values differ.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 137.
- Refer to Technical data Sheet TFP1880 for more information.

NOTES

Grooved Fittings

Figure 260 - End Cap

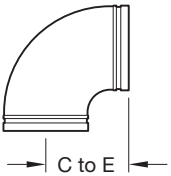


Nominal Pipe Size		Figure 260[a]	
ANSI Inches DN	**O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 25	1.315 (33.4)	0.8 (21,1)	0.2 (0,1)
1-1/4 32	1.900 (48,3)	0.8 (21,1)	0.3 (0,1)
1-1/2 40	2.375 (60,3)	0.8 (21,1)	0.4 (0,2)
2 50	2.875 (73,0)	0.9 (22,9)	0.7 (0,3)
2-1/2 65	3.000 (76,1)	0.9 (22,9)	1.0 (0,5)
76,1mm 65	3.500 (88,9)	0.9 (22,9)	1.3 (0,6)
3 80	4.500 (114,3)	0.9 (22,9)	1.4 (0,6)
4 100	5.500 (139,7)	1.0 (25,4)	2.6 (1,2)
139,1mm 125	5.563 (141,3)	0.9 (22,9)	4.7 (2,1)
5 125	6.500 (165,1)	1.0 (25,4)	5.0 (2,3)
165,1mm 150	6.625 (168,3)	0.9 (23,4)	6.4 (2,9)
6 150	8.625 (219,1)	1.0 (25,4)	6.2 (2,8)
8 200	10.750 (273,0)	1.1 (27,0)	7.1 (3,2)
10 250	12.750 (323,9)	1.0 (25,4)	24.5 (11,1)
12 300	12.8 (323,9)	1.0 (25,4)	31.0 (14,1)

a. Available with tapped plugs, contact Tyco Fire Protection Products.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 161.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 510 - 90° Elbow

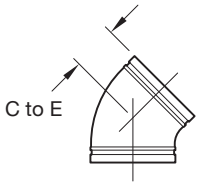


Nominal Pipe Size		Figure 510	
ANSI Inches DN	**O.D. Inches (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 25	1.0 (33,7)	2.25 (57,2)	0.8 (0,4)
1-1/4 32	1.7 (42,4)	2.8 (69,9)	1.1 (0,5)
1-1/2 40	1.9 (48,3)	2.8 (69,9)	1.4 (0,6)
2 50	2.4 (60,3)	3.3 (82,6)	2.0 (0,9)
2-1/2 65	2.9 (73,0)	3.8 (95,3)	2.8 (1,3)
76,1mm 65	3.0 (76,1)	3.8 (95,3)	3.0 (1,3)
3 80	3.5 (88,9)	4.3 (108,0)	4.1 (1,9)
4 100	4.5 (114,3)	5.0 127,0	7.0 (3,2)
139,1mm 125	5.5 (139,7)	5.5 (139,7)	10.3 (4,7)
165,1mm 150	6.5 (165,1)	6.5 (165,1)	13.9 (6,3)
6 150	6.6 (168,3)	6.5 (165,1)	15.2 (6,9)
8 200	8.6 (219,1)	7.8 (196,9)	29.6 (13,4)
10* 250	10.750 (273,0)	9.00 (228,6)	52.0 (23,6)
12* 300	12.750 (323,9)	10.00 (254,0)	66.4 (30,1)

* Cast product is a Figure 210

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 165.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 501 - 45° Elbow



Nominal Pipe Size		Figure 501	
ANSI Inches DN	**O.D. Inches (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 25	1.0 (33,7)	1.7 (43,2)	0.6 (0,3)
1-1/4 32	1.7 (42,4)	1.8 (44,5)	0.8 (0,4)
1-1/2 40	1.9 (48,3)	1.8 (44,5)	1.0 (0,5)
2 50	2.4 (60,3)	2.0 (50,8)	1.3 (0,6)
2-1/2 65	2.9 (73,0)	2.3 (57,2)	2.1 (1,0)
76,1mm 65	3.0 (76,1)	2.3 (57,2)	2.2 (1,0)
3 80	3.5 (88,9)	2.5 (63,5)	3.4 (1,5)
4 100	4.5 (114,3)	3.0 (76,2)	5.5 (2,5)
139,1mm 125	5.5 (139,7)	3.3 (82,6)	7.2 (3,3)
165,1mm 150	6.5 (165,1)	3.5 (88,9)	9.2 (4,2)
6 150	6.6 (168,3)	3.5 (88,9)	11.2 (5,1)
8 200	8.6 (219,1)	4.5 (108,0)	20.6 (9,3)
10* 250	10.750 (273,0)	4.75 (120,7)	30.1 (13,7)
12* 300	12.750 (323,9)	5.25 (133,4)	48.0 (22,0)

* Cast product is a Figure 201

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 164.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 510S 90° Elbow & 519S Tee

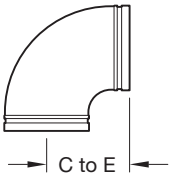


FIGURE 510S
90° ELBOW

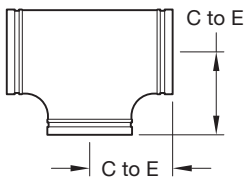
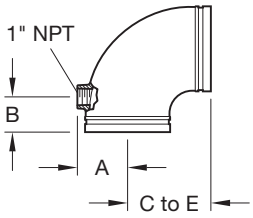


FIGURE 519S
TEE

Nominal Pipe Size		Figure 510S		Figure 519S	
ANSI Inches DN	**O.D. Inches (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
2 50	2.4 (60,3)	2.8 (69,9)	1.5 (0,7)	2.8 (69,9)	2.6 (1,2)
2-1/2 65	2.9 (73,0)	3.0 (76,2)	2.1 (1,0)	3.0 (76,2)	4.4 (2,0)
76,1mm 65	3.0 (76,1)	3.0 (76,2)	2.3 (1,0)	3.0 (76,2)	3.1 (1,4)
3 80	3.5 (88,9)	3.4 (85,9)	3.0 (1,4)	3.4 (85,9)	6.5 (3,0)
4 100	4.5 (114,3)	4.0 101,60	5.0 (2,3)	4.0 (101,6)	10.7 (4,9)
139.7mm 125	5.5 (139,7)	4.9 (124,0)	8.7 (3,9)	4.9 (124,0)	10.9 (5,0)
5 125	5.6 (141,3)	4.8 (124,0)	9.4 (4,3)	4.9 (124,0)	11.6 (5,3)
165,1mm 150	6.5 (165,1)	5.5 (139,7)	11.4 (5,2)	5.5 (139,7)	14.8 (6,7)
6 150	6.6 (168,3)	5.5 (139,7)	12.1 (5,5)	5.5 (139,7)	15.0 (6,8)
8 200	8.6 (219,1)	6.9 (174,8)	22.2 (10,1)	6.9 (174,8)	39.8 (18,1)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 167.
- Refer to Technical Data Sheet TFP1815 for more information.

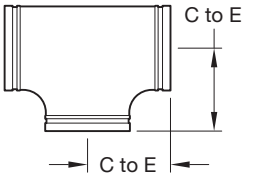
Figure 510DE 90° Drain Elbow



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

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 167.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 519 - Cast Tee



Nominal Size ANSI DN	Pipe O.D. Inches (mm)	Figure 519	
		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
1 25	1.315 (33.4)	2.25 (57,2)	1.1 (0,5)
1-1/4 32	1.900 (48,3)	2.8 (69,9)	1.7 (0,8)
1-1/2 40	2.375 (60,3)	2.8 (69,9)	2.1 (1,0)
2 50	2.875 (73,0)	3.3 (82,6)	2.8 (1,3)
2-1/2 65	3.000 (76,1)	3.8 (95,3)	4.4 (2,0)
76,1mm 65	3.500 (88,9)	3.8 (95,3)	4.5 (2,0)
3 80	4.500 (114,3)	4.3 (108,0)	6.5 (3,0)
4 100	5.500 (139,7)	5.0 (127,0)	9.5 (4,3)
139,1mm 125	5.563 (141,3)	5.5 (139,7)	13.9 (6,3)
5 125	6.500 (165,1)	5.0 (127,0)	14.2 (6,4)
165,1mm 150	6.625 (168,3)	6.5 (165,1)	19.7 (8,9)
6 150	8.625 (219,1)	6.5 (165,1)	22.4 (10,2)
8 200	10.750 (273,0)	7.8 (196,9)	39.8 (18,1)
10 250	12.750 (323,9)	9.00 (228,6)	64.2 (29,1)
12 300	12.8 (323,9)	10.00 (254,0)	110.0 (49,9)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 166.
- Refer to Technical Data Sheet TFP1815 for more information.

Figures 211, 311, & 511 - 11-1/4° Elbow
Figures 212, 312, & 512 - 22-1/2° Elbow

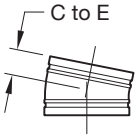
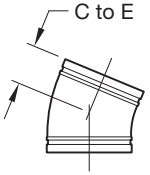


FIGURE 211, 311, & 511
FABRICATED
11-1/4° ELBOW
(SEGMENT WELDED)

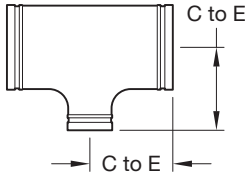


FIGURES 212, 312, & 512
FABRICATED
22-1/2° ELBOW
(SEGMENT WELDED)

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

- Refer to Technical Data Sheet TFP1815 for more information.

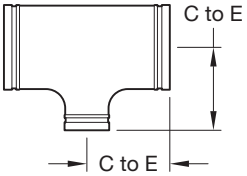
Figure 221 Cast Reducing Tee - Grooved 1 of 2



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
2 x 2 x 1-1/2 50 x 50 x 40	2.37 x 2.37 x 1.90 (60,3 x 60,3 x 48,3)	3.25 (82,6)	2.7 (1,2)
2-1/2 x 2-1/2 x 2 65 x 65 x 50	2.87 x 2.87 x 2.37 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.2 (1,9)
76,1mm x 76,1mm x 1-1/2 65 x 65 x 40	3.00 x 3.00 x 1.90 (76,1 x 76,1 x 48,3)	3.75 (95,3)	4.5 (2,0)
76,1mm x 76,1mm x 2 65 x 65 x 50	3.00 x 3.00 x 2.37 (76,1 x 76,1 x 60,3)	3.75 (95,3)	4.3 (2,0)
3 x 3 x 1 80 x 80 x 25	3.50 x 3.50 x 1.31 (88,9 x 88,9 x 33,4)	4.25 (108,0)	65.6 (2,5)
3 x 3 x 1-1/2 80 x 80 x 40	3.50 x 3.50 x 1.90 (88,9 x 88,9 x 48,3)	4.25 (108,0)	5.9 (2,7)
3 x 3 x 2 80 x 80 x 50	3.50 x 3.50 x 2.37 (88,9 x 88,9 x 60,3)	4.25 (108,0)	6.40 (2,7)
3 x 3 x 2-1/2 80 x 80 x 65	3.50 x 3.50 x 2.87 (88,9 x 88,9 x 73,0)	4.25 (108,0)	6.2 (2,8)
3 x 3 x 76,1mm 80 x 80 x 65	3.50 x 3.50 x 3.00 (88,9 x 88,9 x 76,1)	4.25 (108,0)	6.0 (2,7)
4 x 4 x 2 100 x 100 x 50	4.50 x 4.50 x 2.37 (114,3 x 114,3 x 60,3)	5.00 (127,0)	9.1 (4,1)
4 x 4 x 2-1/2 100 x 100 x 65	4.50 x 4.50 x 2.87 (114,3 x 114,3 x 73,0)	5.00 (127,0)	9.5 (4,3)
4 x 4 x 76,1mm 100 x 100 x 65	4.50 x 4.50 x 3.00 (114,3 x 114,3 x 76,1)	5.00 (127,0)	9.5 (4,3)
4 x 4 x 3 100 x 100 x 80	4.50 x 4.50 x 3.50 (114,3 x 114,3 x 88,9)	5.00 (127,0)	9.7 (4,4)
139,7mm x 139,7mm x 3 125 x 125 x 80	5.50 x 5.50 x 3.50 (139,7 x 139,7 x 88,9)	5.50 (139,7)	12.7 (5,8)
139,7mm x 139,7mm x 4 125 x 125 x 100	5.50 x 5.50 x 4.50 (139,7 x 139,7 x 114,3)	5.50 (139,7)	13.4 (6,1)
5 x 5 x 2-1/2 125 x 125 x 65	5.56 x 5.56 x 2.87 (141,3 x 141,3 x 73,0)	5.50 (139,7)	18.0 (8,2)

- Refer to Technical Data Sheet TFP1815 for more information.

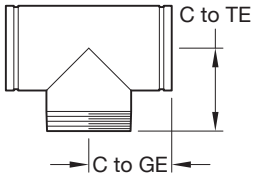
Figure 221 Cast Reducing Tee - Grooved 2 of 2



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	**O.D. Inches (mm)**		
5 x 5 x 3 125 x 125 x 80	5.56 x 5.56 x 3.50 (141,3 x 141,3 x 88,9)	5.50 (139,7)	14.0 (6,4)
5 x 5 x 4 125 x 125 x 100	5.56 x 5.56 x 4.50 (141,3 x 141,3 x 114,3)	5.50 (139,7)	13.9 (6,3)
165,1mm x 165,1mm x 3 150 x 150 x 80	6.50 x 6.50 x 3.50 (165,1 x 165,1 x 88,9)	6.50 (165,1)	18.0 (8,2)
165,1mm x 165,1mm x 4 150 x 150 x 100	6.50 x 6.50 x 4.50 (165,1 x 165,1 x 114,3)	6.50 (165,1)	19.5 (8,9)
6 x 6 x 2 150 x 150 x 50	6.63 x 6.63 x 2.37 (168,3 x 168,3 x 60,3)	6.50 (165,1)	19.4 (8,8)
6 x 6 x 2-1/2 150 x 150 x 65	6.63 x 6.63 x 2.87 (168,3 x 168,3 x 73,0)	6.50 (165,1)	21.2 (9,8)
6 x 6 x 76,1mm 150 x 150 x 65	6.63 x 6.63 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	21.2 (9,8)
6 x 6 x 3 150 x 150 x 80	6.63 x 6.63 x 3.50 (168,3 x 168,3 x 88,9)	6.50 (165,1)	21.0 (9,5)
6 x 6 x 4 150 x 150 x 100	6.63 x 6.63 x 4.50 (168,3 x 168,3 x 114,3)	6.50 (165,1)	21.8 (9,9)
6 x 6 x 139,7mm 150 x 150 x 125	6.63 x 6.63 x 5.50 (168,3 x 168,3 x 139,7)	6.50 (165,1)	23.0 (10,4)
8 x 8 x 4 200 x 200 x 100	8.63 x 8.63 x 4.50 (219,1 x 219,1 x 114,1)	7.75 (196,9)	37.2 (16,9)
8 x 8 x 139,7mm 200 x 200 x 125	8.63 x 8.63 x 5.50 (219,1 x 219,1 x 141,3)	7.75 (196,9)	37.7 (17,1)
8 x 8 x 165,1mm 200 x 200 x 150	8.63 x 8.63 x 6.50 (219,1 x 219,1 x 165,1)	7.75 (196,9)	37.7 (17,1)

- Refer to Technical Data Sheet TFP1815 for more information.

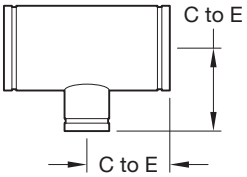
Figure 320 Fabricated Thread Tees Groove x Grooved x Male Thread



Nominal Size ANSI DN	Pipe O.D. Inches (mm)	Figure 519		
		Nominal C to GE Inches (mm)	Nominal C to TE Inches (mm)	Approx. Weight Lbs. (kg)
1 25	1.31 (33.4)	2.25 (57,2)	2.25 (57,2)	1.3 (0,6)
1-1/4 32	1.66 (42,4)	2.75 (69,9)	2.75 (69,9)	1.5 (0,7)
1-1/2 40	1.90 (48,3)	2.75 (69,9)	2.75 (69,9)	1.9 (0,9)
2 50	2.37 (60,3)	3.25 (82,6)	4.25 (108,0)	3.2 (1,5)
2-1/2 65	2.87 (73,0)	3.75 (95,3)	3.75 (95,3)	4.0 (1,8)
76,1mm 65	3.00 (76,1)	3.75 (95,3)	3.75 (95,3)	4.5 (2,0)
3 80	3.50 (88,9)	4.25 (108,0)	6.00 (152,4)	6.0 (2,7)
4 100	4.50 (114,3)	5.00 (127,0)	7.25 (184,2)	11.0 (5,0)
139,1mm 125	5.50 (139,7)	5.50 (139,7)	5.50 (139,7)	21.0 (9,5)
5 125	5.56 (141,3)	5.50 (127,0)	5.50 (139,7)	23.0 (10,5)
165,1mm 150	6.50 (165,1)	6.50 (165,1)	6.50 (165,1)	25.0 (11,3)
6 150	6.63 (168,3)	6.50 (165,1)	6.50 (165,1)	28.0 (12,7)
8 200	8.63 (219,1)	7.75 (196,9)	7.75 (196,9)	38.7 (17,6)
10 250	10.75 (273,0)	9.00 (228,6)	9.00 (228,6)	72.1 (32,8)
12 300	12.75 (323,9)	10.00 (254,0)	10.00 (254,0)	92.5 (42,0)

- Refer to Technical Data Sheet TFP1815 for more information.

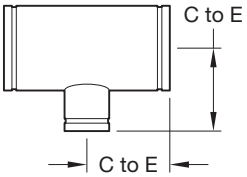
Figure 321 Fabricated Reducing Tee - Grooved 1 of 5



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
1-1/4 x 1-1/4 x 1 32 x 32 x 25	1.66 x 1.66 x 1.31 (42,4 x 42,4 x 33,4)	2.75 (69,9)	1.3 (0,6)
1-1/2 x 1-1/2 x 1 40 x 40 x 25	1.90 x 1.90 x 1.31 (48,3 x 48,3 x 33,4)	2.75 (69,9)	1.4 (0,6)
1-1/2 x 1-1/2 x 1-1/4 40 x 40 x 32	1.90 x 1.90 x 1.66 (48,3 x 48,3 x 42,4)	2.75 (69,9)	1.5 (0,7)
2 x 2 x 1 50 x 50 x 25	2.37 x 2.37 x 1.31 (60,3 x 60,3 x 33,4)	3.25 (82,6)	1.6 (0,7)
2 x 2 x 1-1/2 50 x 50 x 40	2.37 x 2.37 x 1.90 (60,3 x 60,3 x 48,3)	3.25 (82,6)	2.0 (0.9)
2-1/2 x 2-1/2 x 1 65 x 65 x 25	2.87 x 2.87 x 1.31 (73,0 x 73,0 x 33,4)	3.75 (95,3)	2.3 (1,1)
2-1/2 x 2-1/2 x 1-1/4 65 x 65 x 32	2.87 x 2.87 x 1.66 (73,0 x 73,0 x 42,4)	3.75 (95,3)	4.2 (1,9)
2-1/2 x 2-1/2 x 1-1/2 65 x 65 x 40	2.87 x 2.87 x 1.90 (73,0 x 73,0 x 48,3)	3.75 (95,3)	4.2 (1,9)
2-1/2 x 2-1/2 x 2 65 x 65 x 50	2.87 x 2.87 x 2.37 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.5 (2,0)
76,1mm x 76,1mm x 1 65 x 65 x 25	3.00 x 3.00 x 1.31 (76,1 x 76,1 x 33,4)	3.75 (95,3)	2.4 (1,1)
76,1mm x 76,1mm x 1-1/4 65 x 65 x 32	3.00 x 3.00 x 1.66 (76,1 x 76,1 x 42,4)	3.75 (95,3)	4.3 (2,0)
76,1mm x 76,1mm x 1-1/2 65 x 65 x 40	3.00 x 3.00 x 1.90 (76,1 x 76,1 x 48,3)	3.75 (95,3)	4.2 (1,9)
76,1mm x 76,1mm x 2 65 x 65 x 50	3.00 x 3.00 x 2.37 (76,1 x 76,1 x 60,3)	3.75 (95,3)	4.6 (2,1)
3 x 3 x 1 80 x 80 x 25	3.50 x 3.50 x 1.31 (88,9 x 88,9 x 33,4)	4.25 (108,0)	6.0 (2,7)
3 x 3 x 1-1/4 80 x 80 x 32	3.50 x 3.50 x 1.66 (88,9 x 88,9 x 42,4)	4.25 (108,0)	6.1 (2,8)
3 x 3 x 1-1/2 80 x 80 x 40	3.50 x 3.50 x 1.90 (88,9 x 88,9 x 48,3)	4.25 (108,0)	6.2 (2,8)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

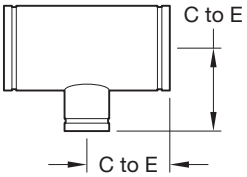
Figure 321 Fabricated Reducing Tee - Grooved 2 of 5



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
3 x 3 x 2 80 x 80 x 50	3.50 x 3.50 x 2.37 (88,9 x 88,9 x 60,3)	4.25 (108,0)	6.4 (2,9)
3 x 3 x 2-1/2 80 x 80 x 65	3.50 x 3.50 x 2.87 (88,9 x 88,9 x 73,0)	4.25 (108,0)	6.5 (2,9)
3 x 3 x 76,1mm 80 x 80 x 65	3.50 x 3.50 x 3.00 (88,9 x 88,9 x 76,1)	4.25 (108,0)	6.7 (3,0)
4 x 4 x 1 100 x 100 x 25	4.50 x 4.50 x 1.31 (114,3 x 114,3 x 33,4)	5.00 (127,0)	8.0 (3,7)
4 x 4 x 1-1/4 100 x 100 x 32	4.50 x 4.50 x 1.66 (114,3 x 114,3 x 42,4)	5.00 (127,0)	9.8 (4,4)
4 x 4 x 1-1/2 100 x 100 x 40	4.50 x 4.50 x 1.90 (114,3 x 114,3 x 48,3)	5.00 (127,0)	9.9 (4,5)
4 x 4 x 2 100 x 100 x 50	4.50 x 4.50 x 2.37 (114,3 x 114,3 x 60,3)	5.00 (127,0)	11.0 (5,0)
4 x 4 x 2-1/2 100 x 100 x 65	4.50 x 4.50 x 2.87 (114,3 x 114,3 x 73,0)	5.00 (127,0)	11.2 (5,1)
4 x 4 x 76,1mm 100 x 100 x 65	4.50 x 4.50 x 3.00 (114,3 x 114,3 x 76,1)	5.00 (127,0)	11.4 (5,2)
4 x 4 x 3 100 x 100 x 80	4.50 x 4.50 x 3.50 (114,3 x 114,3 x 88,9)	5.00 (127,0)	11.6 (5,3)
139,7mm x 139,7mm x 3 125 x 125 x 80	5.50 x 5.50 x 3.50 (139,7 x 139,7 x 88,9)	5.50 (139,7)	12.2 (5,5)
139,7mm x 139,7mm x 4 125 x 125 x 100	5.50 x 5.50 x 4.50 (139,7 x 139,7 x 114,3)	5.50 (139,7)	12.5 (5,7)
5 x 5 x 1 125 x 125 x 25	5.56 x 5.56 x 1.31 (141,3 x 141,3 x 33,4)	5.50 (139,7)	13.0 (5,9)
5 x 5 x 1-1/2 125 x 125 x 40	5.56 x 5.56 x 1.90 (141,3 x 141,3 x 48,3)	5.50 (139,7)	13.4 (6,1)
5 x 5 x 2 125 x 125 x 50	5.56 x 5.56 x 2.37 (141,3 x 141,3 x 60,3)	5.50 (139,7)	14.1 (6,4)
5 x 5 x 2-1/2 125 x 125 x 65	5.56 x 5.56 x 2.87 (141,3 x 141,3 x 73,0)	5.50 (139,7)	15.3 (6,9)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

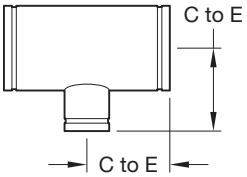
Figure 321 Fabricated Reducing Tee - Grooved 3 of 5



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
5 x 5 x 76,1mm 125 x 125 x 65	5.56 x 5.56 x 3.00 (141,3 x 141,3 x 76,1)	5.50 (139,7)	15.3 (6,9)
5 x 5 x 3 125 x 125 x 80	5.56 x 5.56 x 3.50 (141,3 x 141,3 x 88,9)	5.50 (139,7)	16.0 (7,3)
5 x 5 x 4 125 x 125 x 100	5.56 x 5.56 x 4.50 (141,3 x 141,3 x 114,3)	5.50 (139,7)	16.4 (7,4)
165,1mm x 165,1mm x 3 150 x 150 x 80	6.50 x 6.50 x 3.50 (165,1 x 165,1 x 88,9)	6.50 (165,1)	22.0 (10,0)
165,1mm x 165,1mm x 4 150 x 150 x 100	6.50 x 6.50 x 4.50 (165,1 x 165,1 x 114,3)	6.50 (165,1)	22.6 (10,3)
165,1mm x 165,1mm x 5 150 x 150 x 125	6.50 x 6.50 x 5.56 (165,1 x 165,1 x 139,7)	6.50 (165,1)	23.2 (10,5)
165,1mm x 165,1mm x 139,7mm 150 x 150 x 125	6.50 x 6.50 x 5.50 (165,1 x 165,1 x 141,3)	6.50 (165,1)	22.9 (10,4)
6 x 6 x 1 150 x 150 x 25	6.63 x 6.63 x 1.31 (168,3 x 168,3 x 33,4)	6.50 (165,1)	22.8 (10,3)
6 x 6 x 1-1/2 150 x 150 x 40	6.63 x 6.63 x 1.90 (168,3 x 168,3 x 48,3)	6.50 (165,1)	22.9 (10,4)
6 x 6 x 2 150 x 150 x 50	6.63 x 6.63 x 2.37 (168,3 x 168,3 x 60,3)	6.50 (165,1)	23.0 (10,4)
6 x 6 x 2-1/2 150 x 150 x 65	6.63 x 6.63 x 2.87 (168,3 x 168,3 x 73,0)	6.50 (165,1)	23.4 (10,6)
6 x 6 x 76,1mm 150 x 150 x 65	6.63 x 6.63 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	23.5 (10,7)
6 x 6 x 3 150 x 150 x 80	6.63 x 6.63 x 3.50 (168,3 x 168,3 x 88,9)	6.50 (165,1)	23.7 (10,7)
6 x 6 x 4 150 x 150 x 100	6.63 x 6.63 x 4.50 (168,3 x 168,3 x 114,3)	6.50 (165,1)	23.9 (10,8)
6 x 6 x 139,7mm 150 x 150 x 125	6.63 x 6.63 x 5.50 (168,3 x 168,3 x 139,7)	6.50 (165,1)	24.0 (10,9)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

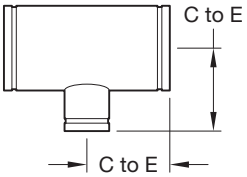
Figure 321 Fabricated Reducing Tee - Grooved 4 of 5



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
6 x 6 x 5 150 x 150 x 125	6.63 x 6.63 x 5.56 (168,3 x 168,3 x 141,3)	6.50 (165,1)	27.0 12,2
8 x 8 x 1-1/2 200 x 200 x 40	8.63 x 8.63 x 1.9 (219,1 x 219,1 x 48,3)	7.75 (196,9)	36.0 (16,3)
8 x 8 x 2 200 x 200 x 50	8.63 x 8.63 x 2.37 (219,1 x 219,1 x 60,3)	7.75 (196,9)	36.2 (16,4)
8 x 8 x 2-1/2 200 x 200 x 65	8.63 x 8.63 x 2.88 (219,1 x 219,1 x 73,0)	7.75 (196,9)	36.4 (16,5)
8 x 8 x 76,1mm 200 x 200 x 65	8.63 x 8.63 x 23.00 (219,1 x 219,1 x 76,1)	7.75 (196,9)	36.4 (16,5)
8 x 8 x 3 200 x 200 x 80	8.63 x 8.63 x 3.50 (219,1 x 219,1 x 88,9)	7.75 (196,9)	36.5 (16,6)
8 x 8 x 4 200 x 200 x 100	8.63 x 8.63 x 4.50 (219,1 x 219,1 x 114,1)	7.75 (196,9)	36.4 (16,5)
8 x 8 x 139,7mm 200 x 200 x 125	8.63 x 8.63 x 5.50 (219,1 x 219,1 x 141,3)	7.75 (196,9)	36.7 (16,6)
8 x 8 x 5 200 x 200 x 125	8.63 x 8.63 x 5.56 (219,1 x 219,1 x 141,3)	7.75 (196,9)	36.8 (16,7)
216,3mm x 216,3mm x 165,1mm 200 x 200 x 150	8.52 x 8.52 x 6.50 (216,3 x 216,3 x 165,1)	7.75 (196,9)	37.9 (17,2)
8 x 8 x 165,1mm 200 x 200 x 150	8.63 x 8.63 x 6.50 (219,1 x 219,1 x 165,1)	7.75 (196,9)	39.0 (17,7)
10 x 10 x 1-1/2 250 x 250 x 40	10.75 x 10.75 x 1.90 (273,0 x 273,0 x 48,3)	9.00 (228,6)	57.0 (25,8)
10 x 10 x 2 250 x 250 x 50	10.75 x 10.75 x 2.37 (273,0 x 273,0 x 60,3)	9.00 (228,6)	57.1 (25,9)
10 x 10 x 2-1/2 250 x 250 x 65	10.75 x 10.75 x 2.87 (273,0 x 273,0 x 73,0)	9.00 (228,6)	57.3 (26,0)
10 x 10 x 3 250 x 250 x 80	10.75 x 10.75 x 3.50 (273,0 x 273,0 x 88,9)	9.00 (228,6)	57.4 (26,0)
10 x 10 x 4 250 x 250 x 100	10.75 x 10.75 x 4.50 (273,0 x 273,0 x 114,3)	9.00 (228,6)	57.8 (26,2)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

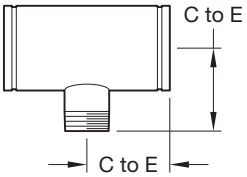
Figure 321 Fabricated Reducing Tee - Grooved 5 of 5



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
10 x 10 x 5 250 x 250 x 125	10.75 x 10.75 x 5.56 (273,0 x 273,0 x 141,3)	9.00 (228,6)	58.0 (26,3)
10 x 10 x 6 250 x 250 x 150	10.75 x 10.75 x 6.63 (273,0 x 273,0 x 168,3)	9.00 (228,6)	62.0 (28,1)
10 x 10 x 8 250 x 250 x 200	10.75 x 10.75 x 8.63 (273,0 x 273,0 x 219,1)	9.00 (228,6)	63.0 (28,6)
12 x 12 x 1 300 x 300 x 25	12.75 x 12.75 x 1.31 (323,9 x 323,9 x 33,4)	10.00 (254,0)	64.0 (29,0)
12 x 12 x 2 300 x 300 x 50	12.75 x 12.75 x 2.37 (323,9 x 323,9 x 60,3)	10.00 (254,0)	69.5 (31,5)
12 x 12 x 2-1/2 300 x 300 x 65	12.75 x 12.75 x 2.87 (323,9 x 323,9 x 73,0)	10.00 (254,0)	75.6 (34,3)
12 x 12 x 3 300 x 300 x 80	12.75 x 12.75 x 3.50 (323,9 x 323,9 x 88,9)	10.00 (254,0)	80.2 (36,4)
12 x 12 x 4 300 x 300 x 100	12.75 x 12.75 x 4.50 (323,9 x 323,9 x 114,3)	10.00 (254,0)	80.5 (36,5)
12 x 12 x 5 300 x 300 x 125	12.75 x 12.75 x 5.56 (323,9 x 323,9 x 141,3)	10.00 (254,0)	80.7 (36,6)
12 x 12 x 6 300 x 300 x 150	12.75 x 12.75 x 6.63 (323,9 x 323,9 x 168,3)	10.00 (254,0)	80.9 (36,7)
12 x 12 x 165,1mm 300 x 300 x 150	12.75 x 12.75 x 6.50 (323,9 x 323,9 x 165,1)	10.00 (254,0)	79.9 (36,2)
12 x 12 x 8 300 x 300 x 200	12.75 x 12.75 x 8.63 (323,9 x 323,9 x 219,1)	10.00 (254,0)	76.3 (34,6)
12 x 12 x 10 300 x 300 x 250	12.75 x 12.75 x 10.75 (323,9 x 323,9 x 273,0)	10.00 (254,0)	77.6 (35,2)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

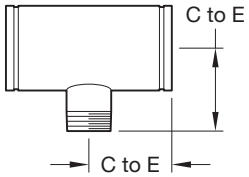
Figure 323 Fabricated Reducing Tee - Grooved x Grooved x Male Thread 1 of 4



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
2 x 2 x 3/4 50 x 50 x 20	2.37 x 2.37 x 1.05 (60,3 x 60,3 x 26,7)	3.25 (82,6)	2.0 (0,9)
2 x 2 x 1 50 x 50 x 25	2.37 x 2.37 x 1.31 (60,3 x 60,3 x 33,4)	3.25 (82,6)	2.2 (1,0)
2 x 2 x 1-1/4 50 x 50 x 32	2.37 x 2.37 x 1.66 (60,3 x 60,3 x 42,4)	3.25 (82,6)	2.3 (1,0)
2 x 2 x 1-1/2 50 x 50 x 40	2.37 x 2.37 x 1.90 (60,3 x 60,3 x 48,3)	3.25 (82,6)	2.4 (1,1)
2-1/2 x 2-1/2 x 1 65 x 65 x 25	2.87 x 2.87 x 1.31 (73,0 x 73,0 x 33,4)	3.75 (95,3)	3.6 (1,6)
2-1/2 x 2-1/2 x 1-1/4 65 x 65 x 32	2.87 x 2.87 x 1.66 (73,0 x 73,0 x 42,4)	3.75 (95,3)	3.8 (1,7)
2-1/2 x 2-1/2 x 1-1/2 65 x 65 x 40	2.87 x 2.87 x 1.90 (73,0 x 73,0 x 48,3)	3.75 (95,3)	4.0 (1,8)
2-1/2 x 2-1/2 x 2 65 x 65 x 50	2.87 x 2.87 x 2.37 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.2 (1,9)
76,1mm x 76,1mm x 1 65 x 65 x 25	3.00 x 3.00 x 1.31 (76,1 x 76,1 x 33,4)	3.75 (95,3)	3.8 (1,7)
76,1mm x 76,1mm x 1-1/4 65 x 65 x 32	3.00 x 3.00 x 1.66 (76,1 x 76,1 x 42,4)	3.75 (95,3)	4.0 (1,8)
76,1mm x 76,1mm x 1-1/2 65 x 65 x 40	3.00 x 3.00 x 1.90 (76,1 x 76,1 x 48,3)	3.75 (95,3)	4.2 (1,9)
3 x 3 x 3/4 80 x 80 x 20	3.50 x 3.50 x 1.05 (88,9 x 88,9 x 26,7)	4.25 (108,0)	5.2 (2,4)
3 x 3 x 1 80 x 80 x 25	3.50 x 3.50 x 1.31 (88,9 x 88,9 x 33,4)	4.25 (108,0)	5.7 (2,6)
3 x 3 x 1-1/2 80 x 80 x 40	3.50 x 3.50 x 1.90 (88,9 x 88,9 x 48,3)	4.25 (108,0)	5.8 (2,6)
3 x 3 x 2 80 x 80 x 50	3.50 x 3.50 x 2.37 (88,9 x 88,9 x 60,3)	4.25 (108,0)	5.9 (2,7)
3 x 3 x 2-1/2 80 x 80 x 65	3.50 x 3.50 x 2.87 (88,9 x 88,9 x 73,0)	4.25 (108,0)	6.3 (2,9)
3 x 3 x 76,1mm 80 x 80 x 65	3.50 x 3.50 x 3.00 (88,9 x 88,9 x 76,1)	4.25 (108,0)	6.5 (2,9)

- Figure 323 not available for the EMEA market.
- Refer to Technical Data Sheet TFP1815 for more information.

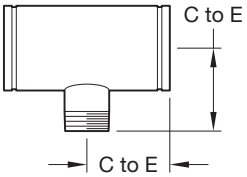
Figure 323 Fabricated Reducing Tee - Grooved x Grooved x Male Thread 2 of 4



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
4 x 4 x 3/4 100 x 100 x 20	4.50 x 4.50 x 1.05 (114,3 x 114,3 x 26,7)	3.75 (95,3)	6.4 (2,9)
4 x 4 x 1 100 x 100 x 25	4.50 x 4.50 x 1.31 (114,3 x 114,3 x 33,4)	5.00 (127,0)	6.9 (3,1)
4 x 4 x 1-1/4 100 x 100 x 32	4.50 x 4.50 x 1.66 (114,3 x 114,3 x 42,4)	5.00 (127,0)	7.6 (3,4)
4 x 4 x 1-1/2 100 x 100 x 40	4.50 x 4.50 x 1.90 (114,3 x 114,3 x 48,3)	5.00 (127,0)	8.3 (3,8)
4 x 4 x 2 100 x 100 x 50	4.50 x 4.50 x 2.37 (114,3 x 114,3 x 60,3)	5.00 (127,0)	9.6 (4,4)
4 x 4 x 2-1/2 100 x 100 x 65	4.50 x 4.50 x 2.87 (114,3 x 114,3 x 73,0)	5.00 (127,0)	10.0 (4,5)
4 x 4 x 76,1mm 100 x 100 x 65	4.50 x 4.50 x 3.00 (114,3 x 114,3 x 76,1)	5.00 (127,0)	10.5 (4,8)
4 x 4 x 3 100 x 100 x 80	4.50 x 4.50 x 3.50 (114,3 x 114,3 x 88,9)	5.00 (127,0)	10.3 (4,7)
5 x 5 x 2 125 x 125 x 50	5.56 x 5.56 x 2.37 (141,3 x 141,3 x 60,3)	5.50 (139,7)	14.0 (6,4)
5 x 5 x 2-1/2 125 x 125 x 65	5.56 x 5.56 x 2.87 (141,3 x 141,3 x 73,0)	5.50 (139,7)	14.3 (6,5)
5 x 5 x 76,1mm 125 x 125 x 65	5.56 x 5.56 x 3.00 (141,3 x 141,3 x 76,1)	5.50 (139,7)	14.3 (6,5)
5 x 5 x 3 125 x 125 x 80	5.56 x 5.56 x 3.50 (141,3 x 141,3 x 88,9)	5.50 (139,7)	14.6 (6,6)
5 x 5 x 4 125 x 125 x 100	5.56 x 5.56 x 4.50 (141,3 x 141,3 x 114,3)	5.50 (139,7)	15.1 (6,8)
165,1mm x 165,1mm x 2 150 x 150 x 50	6.50 x 6.50 x 2.37 (165,1 x 165,1 x 60,3)	6.50 (165,1)	9.5 (4,3)
165,1mm x 165,1mm x 2-1/2 150 x 150 x 65	6.50 x 6.50 x 2.87 (165,1 x 165,1 x 73,0)	6.50 (165,1)	9.7 (4,4)
165,1mm x 165,1mm x 76,1mm 150 x 150 x 65	6.50 x 6.50 x 3.00 (165,1 x 165,1 x 76,1)	6.50 (165,1)	9.7 (4,4)

- Figure 323 not available for the EMEA market.
- Refer to Technical Data Sheet TFP1815 for more information.

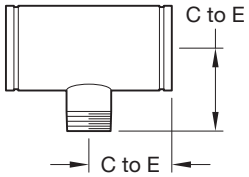
Figure 323 Fabricated Reducing Tee - Grooved x Grooved x Male Thread 3 of 4



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
165,1mm x 165,1mm x 3 150 x 150 x 80	6.50 x 6.50 x 3.50 (165,1 x 165,1 x 88,9)	6.50 (165,1)	9.8 (4,4)
165,1mm x 165,1mm x 4 150 x 150 x 100	6.50 x 6.50 x 4.50 (165,1 x 165,1 x 114,3)	6.50 (165,1)	10.0 (4,5)
165,1mm x 165,1mm x 5 150 x 150 x 125	6.50 x 6.50 x 5.56 (165,1 x 165,1 x 141,3)	6.50 (165,1)	23.2 (10,5)
6 x 6 x 1-1/2 150 x 150 x 40	6.63 x 6.63 x 1.90 (168,3 x 168,3 x 48,3)	6.50 (165,1)	19.0 (8,6)
6 x 6 x 2 150 x 150 x 50	6.63 x 6.63 x 2.37 (168,3 x 168,3 x 60,3)	6.50 (165,1)	21.3 (9,7)
6 x 6 x 2-1/2 150 x 150 x 65	6.63 x 6.63 x 2.87 (168,3 x 168,3 x 73,0)	6.50 (165,1)	21.7 (9,8)
6 x 6 x 76,1mm 150 x 150 x 65	6.63 x 6.63 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	23.5 (10,7)
6 x 6 x 3 150 x 150 x 80	6.63 x 6.63 x 3.50 (168,3 x 168,3 x 88,9)	6.50 (165,1)	23.7 (10,7)
6 x 6 x 4 150 x 150 x 100	6.63 x 6.63 x 4.50 (168,3 x 168,3 x 114,3)	6.50 (165,1)	23.9 (10,8)
6 x 6 x 76,1mm 150 x 150 x 65	6.63 x 6.63 x 3.00 (168,3 x 168,3 x 76,1)	6.50 (165,1)	14.5 (6,6)
6 x 6 x 3 150 x 150 x 80	6.63 x 6.63 x 3.50 (168,3 x 168,3 x 88,9)	6.50 (165,1)	22.0 (10,0)
6 x 6 x 4 150 x 150 x 100	6.63 x 6.63 x 4.50 (168,3 x 168,3 x 114,3)	6.50 (165,1)	22.5 (10,2)
6 x 6 x 5 150 x 150 x 125	6.63 x 6.63 x 5.56 (168,3 x 168,3 x 141,3)	6.50 (165,1)	23.1 10,5
8 x 8 x 2 200 x 200 x 50	8.63 x 8.63 x 2.37 (219,1 x 219,1 x 60,3)	7.75 (196,9)	32.7 (14,8)
8 x 8 x 3 200 x 200 x 80	8.63 x 8.63 x 3.50 (219,1 x 219,1 x 88,9)	7.75 (196,9)	33.5 (15,2)
8 x 8 x 4 200 x 200 x 100	8.63 x 8.63 x 4.50 (219,1 x 219,1 x 114,1)	7.75 (196,9)	34.5 (15,6)

- Figure 323 not available for the EMEA market.
- Refer to Technical Data Sheet TFP1815 for more information.

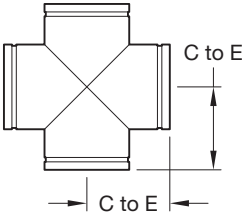
Figure 323 Fabricated Reducing Tee - Grooved x Grooved x Male Thread 4 of 4



Nominal Pipe Size		C to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)		
8 x 8 x 5 200 x 200 x 125	8.63 x 8.63 x 5.56 (219,1 x 219,1 x 141,3)	7.75 (196,9)	34.7 (15,7)
8 x 8 x 165,1mm 200 x 200 x 150	8.63 x 8.63 x 6.50 (219,1 x 219,1 x 165,1)	7.75 (196,9)	35.0 (15,9)
8 x 8 x 6 200 x 200 x 150	8.63 x 8.63 x 6.63 (219,1 x 219,1 x 168,3)	7.75 (196,9)	35.6 (16,1)
10 x 10 x 2 250 x 250 x 50	10.75 x 10.75 x 2.37 (273,0 x 273,0 x 60,3)	9.00 (228,6)	52.2 (23,7)
10 x 10 x 3 250 x 250 x 80	10.75 x 10.75 x 3.50 (273,0 x 273,0 x 88,9)	9.00 (228,6)	53.0 (24,0)
10 x 10 x 4 250 x 250 x 100	10.75 x 10.75 x 4.50 (273,0 x 273,0 x 114,3)	9.00 (228,6)	53.6 (24,3)
10 x 10 x 5 250 x 250 x 125	10.75 x 10.75 x 5.56 (273,0 x 273,0 x 141,3)	9.00 (228,6)	54.2 (24,6)
10 x 10 x 165,1mm 250 x 250 x 150	10.75 x 10.75 x 6.50 (273,0 x 273,0 x 165,1)	9.00 (228,6)	55.5 (25,2)
10 x 10 x 6 250 x 250 x 150	10.75 x 10.75 x 6.63 (273,0 x 273,0 x 168,3)	9.00 (228,6)	54.9 (24,9)
10 x 10 x 8 250 x 250 x 200	10.75 x 10.75 x 8.63 (273,0 x 273,0 x 219,1)	9.00 (228,6)	55.3 (25,1)
12 x 12 x 3 300 x 300 x 80	12.75 x 12.75 x 3.50 (323,9 x 323,9 x 88,9)	10.00 (254,0)	74.6 (33,8)
12 x 12 x 4 300 x 300 x 100	12.75 x 12.75 x 4.50 (323,9 x 323,9 x 114,3)	10.00 (254,0)	75.1 (34,1)
12 x 12 x 5 300 x 300 x 125	12.75 x 12.75 x 5.56 (323,9 x 323,9 x 141,3)	10.00 (254,0)	75.6 (34,3)
12 x 12 x 165,1mm 300 x 300 x 150	12.75 x 12.75 x 6.50 (323,9 x 323,9 x 165,1)	10.00 (254,0)	76.2 (34,6)
12 x 12 x 6 300 x 300 x 150	12.75 x 12.75 x 6.63 (323,9 x 323,9 x 168,3)	10.00 (254,0)	76.2 (34,6)
12 x 12 x 8 300 x 300 x 200	12.75 x 12.75 x 8.63 (323,9 x 323,9 x 219,1)	10.00 (254,0)	76.3 (34,6)
12 x 12 x 10 300 x 300 x 250	12.75 x 12.75 x 10.75 (323,9 x 323,9 x 273,0)	10.00 (254,0)	77.6 (35,2)

- Figure 323 not available for the EMEA market.
- Refer to Technical Data Sheet TFP1815 for more information.

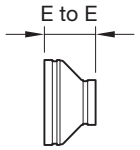
Figure 327 Fabricated Cross (Segment Welded)



Nominal Pipe Size		Figure 327[a]	
ANSI Inches DN	**O.D. Inches (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 25	1.31 (33,4)	2.25 (57,2)	2.2 (1,0)
1-1/4 32	1.66 (42,4)	2.75 (69,9)	2.2 (1,0)
1-1/2 40	1.90 (48,3)	2.75 (69,9)	2.5 (1,1)
2 50	2.37 (60,3)	3.25 (82,6)	3.7 (1,7)
2-1/2 65	2.87 (73,0)	3.75 (95,3)	5.8 (2,6)
76,1mm 65	3.00 (76,1)	3.75 (95,3)	6.0 (2,7)
3 80	3.50 (88,9)	4.25 (108,0)	8.6 (3,9)
4 100	4.500 (114,3)	5.00 (127,0)	20.7 (9,4)
139,7mm 125	5.50 (139,7)	5.50 (139,7)	18.3 (8,3)
5 125	5.56 (141,3)	5.50 (139,7)	18.5 (8,4)
165,1mm 150	6.50 (165,1)	6.50 (165,1)	26.2 (11,9)
6 150	6.63 (168,3)	6.50 (165,1)	27.3 (12,4)
216,3mm 200	8.52 (216,3)	7.75 (196,9)	44.0 (20,0)
8 200	8.63 (219,1)	7.75 (196,9)	48.0 (21,7)
10 250	10.75 (273,0)	9.00 (228,6)	75.0 (34,0)
12 300	12.75 (323,9)	10.00 (254,0)	95.8 (43,4)

- Figure 323 not available for the EMEA market.
- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 168.
- Refer to Technical Data Sheet TFP1815 for more information.

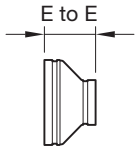
Figure 250 Cast Concentric Reducers 1 of 3



Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg).
ANSI Inches DN	Pipe O.D. Inches (mm)		
1-1/4 x 1 32 x 25	1.66 x 1.31 (42,4 x 33,4)	2.50 (63,5)	0.7 (0,3)
1-1/2 x 1-1/4 40 x 32	1.90 x 1.66 (48,3 x 42,4)	2.50 (63,5)	0.8 (0,3)
2-1/2 x 1-1/4 65 x 32	2.87 x 1.66 (73,0 x 42,4)	2.50 (63,5)	1.4 (0,6)
2-1/2 x 1-1/2 65 x 40	2.87 x 1.90 (73,0 x 48,3)	2.50 (63,5)	1.4 (0,6)
2-1/2 x 2 65 x 50	2.87 x 2.37 (73,0 x 60,3)	2.50 (63,5)	1.3 (0,6)
76,1mm x 1-1/4 65 x 32	3.00 x 1.66 (76,1 x 42,4)	2.50 (63,5)	1.4 (0,6)
76,1mm x 1-1/2 65 x 40	3.00 x 1.90 (76,1 x 48,3)	2.50 (63,5)	1.4 (0,6)
76,1mm x 2 65 x 50	3.00 x 2.37 (76,1 x 60,3)	2.50 (63,5)	1.5 (0,7)
3 x 1-1/2 80 x 40	3.50 x 1.90 (88,9 x 48,3)	2.50 (63,5)	1.8 (0,8)
3 x 2 80 x 50	3.50 x 2.37 (88,9 x 60,3)	2.50 (63,5)	1.7 (0,8)
3 x 2-1/2 80 x 65	3.50 x 2.87 (88,9 x 73,0)	2.50 (63,5)	1.7 (0,8)
3 x 76,1mm 80 x 65	3.50 x 3.00 (88,9 x 76,1)	2.50 (63,5)	2.0 (0,9)
4 x 2 100 x 50	4.50 x 2.37 (114,3 x 60,3)	3.00 (76,2)	2.4 (1,1)
4 x 2-1/2 100 x 65	4.50 x 2.87 (114,3 x 73,0)	3.00 (76,2)	2.7 (1,2)
4 x 76,1mm 100 x 65	4.50 x 3.00 (114,3 x 76,1)	3.00 (76,2)	3.2 (1,5)
4 x 3 100 x 80	4.50 x 3.50 (114,3 x 88,9)	3.00 (76,2)	2.8 (1,3)

- Refer to Technical Data Sheet TFP1815 for more information.

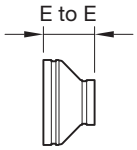
Figure 250 Cast Concentric Reducers 2 of 3



Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg).
ANSI Inches DN	Pipe O.D. Inches (mm)		
139,7mm x 3 125 x 80	5.50 x 3.50 (139,7 x 88,9)	3.50 (88,9)	4.2 (1,9)
139,7mm x 4 125 x 100	5.50 x 4.50 (139,7 x 114,3)	3.50 (88,9)	4.4 (2,0)
5 x 3 125 x 80	5.56 x 3.50 (141,3 x 88,9)	3.50 (88,9)	4.2 (1,9)
5 x 4 125 x 100	5.56 x 4.50 (141,3 x 114,3)	3.50 (88,9)	4.4 (2,0)
165,1mm x 3 150 x 80	6.50 x 3.50 (165,1 x 88,9)	4.00 (101,6)	5.5 (2,5)
165,1mm x 4 150 x 100	6.50 x 4.50 (165,1 x 114,3)	4.00 (101,6)	6.0 (2,7)
165,1mm x 139,7mm 150 x 125	6.50 x 5.50 (165,1 x 139,7)	4.00 (101,6)	5.6 (2,5)
6 x 1 150 x 25	6.63 x 1.31 (168,3 x 33,7)	4.00 (101,6)	4.7 (2,1)
6 x 1-1/2 150 x 40	6.63 x 1.90 (168,3 x48,3)	4.00 (101,6)	5.0 (2,3)
6 x 2 150 x 50	6.63 x 2.37 (168,3 x 60,3)	4.00 (101,6)	5.3 (2,4)
6 x 2-1/2 150 x 65	6.63 x 2.87 (168,3 x 73,0)	4.00 (101,6)	5.7 (2,6)
6 x 76,1mm 150 x 65	6.63 x 3.00 (168,3 x 76,1)	4.00 (101,6)	6.1 (2,7)
6 x 3 150 x 80	6.63 x 3.50 (168,3 x 88,9)	4.00 (101,6)	5.8 (2,6)
6 x 4 150 x 100	6.63 x 4.50 (168,3 x 114,3)	4.00 (101,6)	6.0 (2,7)
6 x 139,7mm 150 x 100	6.63 x 5.50 (168,3 x 139,7)	4.00 (101,6)	6.3 (2,9)
6 x 5 150 x 125	6.63 x 5.56 (168,3 x 141,3)	4.00 (101,6)	6.2 (2,8)

- Refer to Technical Data Sheet TFP1815 for more information.

Figure 250 Cast Concentric Reducers 3 of 3



Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg).
ANSI Inches DN	Pipe O.D. Inches (mm)		
8 x 3 200 x 80	8.63 x 3.50 (219,1 x 88,9)	5.00 (127,0)	11.5 (5,2)
8 x 4 200 x 100	8.63 x 4.50 (219,1 x 114,3)	5.00 (127,0)	10.7 (4,9)
8 x 139,7mm 200 x 125	8.63 x 5.50 (219,1 x 139,7)	5.00 (127,0)	10.0 (4,5)
8 x 5 200 x 125	8.63 x 5.56 (219,1 x 141,3)	5.00 (127,0)	10.8 (4,9)
8 x 165,1mm 200 x 150	8.63 x 6.50 (219,1 x 165,1)	5.00 (127,0)	11.0 (5,0)
8 x 6 200 x 150	8.63 x 6.63 (219,1 x 168,3)	5.00 (127,0)	11.3 (5,1)
10 x 165,1mm 250 x 150	10.75 x 6.50 (273,0 x 165,1)	6.00 (152,4)	17.8 (8,0)
10 x 6 250 x 150	10.75 x 6.63 (273,0 x 168,3)	6.00 (152,4)	16.3 (7,4)
10 x 8 250 x 200	10.75 x 8.63 (273,0 x 219,1)	6.00 (152,4)	18.3 (8,3)
12 x 4 300 x 100	12.75 x 4.50 (323,9 x 114,3)	7.00 (177,8)	22.7 (10,3)
12 x 6 300 x 150	12.75 x 6.63 (323,9 x 168,3)	7.00 (177,8)	23.6 (10,7)
12 x 8 300 x 200	12.75 x 8.63 (323,9 x 219,1)	7.00 (177,8)	25.2 (11,4)
12 x 10 300 x 250	12.75 x 10.75 (323,9 x 273,0)	7.00 (177,8)	28.2 (12,8)

- Refer to Technical Data Sheet TFP1815 for more information.

Figure 350 & 550 Concentric Reducers 1 of 5

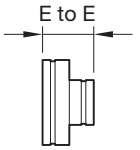


FIGURE 350
FABRICATED CONCENTRIC REDUCER

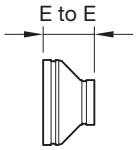


FIGURE 550
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 350 Fabricated		Figure 550 Cast	
ANSI Inches DN	**Pipe O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**
1-1/4 x 1 32 x 25	1.66 x 1.31 (42,4 x 33,4)	—	—	2.50 (63,5)	0.7 (0,3)
1-1/2 x 1 (40 x 25)	1.90 x 1.31 (48,3 x 33,4)	2.50 (63,5)	0.7 (0,3)	—	—
1-1/2 x 1-1/4 40 x 32	1.90 x 1.66 (48,3 x 42,4)	—	—	2.50 (63,5)	0.8 (0,3)
2 x 1 50 x 25	2.37 x 1.31 (60,3 x 33,4)	2.50 (63,5)	0.9 (0,4)	—	—
2 x 1-1/4 50 x 32	2.37 x 1.66 (60,3 x 42,4)	2.50 (63,5)	0.9 (0,4)	—	—
2 x 1-1/2 50 x 40	2.37 x 1.90 (60,3 x 48,3)	2.50 (63,5)	1.0 (0,5)	—	—
2-1/2 x 1 65 x 25	2.87 x 1.31 (73,0 x 33,4)	2.50 (63,5)	1.2 (0,5)	—	—
2-1/2 x 1-1/4 65 x 32	2.87 x 1.66 (73,0 x 42,4)	—	—	2.50 (63,5)	1.4 (0,6)
2-1/2 x 1-1/2 65 x 40	2.87 x 1.90 (73,0 x 48,3)	—	—	2.50 (63,5)	1.4 (0,6)
2-1/2 x 2 65 x 50	2.87 x 2.37 (73,0 x 60,3)	—	—	2.50 (63,5)	1.3 (0,6)
76,1mm x 1-1/4 65 x 32	3.00 x 1.66 (76,1 x 42,4)	—	—	2.50 (63,5)	1.4 (0,6)
76,1mm x 1-1/2 65 x 40	3.00 x 1.90 (76,1 x 48,3)	—	—	2.50 (63,5)	1.4 (0,6)
76,1mm x 2 65 x 50	3.00 x 2.37 (76,1 x 60,3)	—	—	2.50 (63,5)	1.5 (0,7)
3 x 1 80 x 32	3.50 x 1.31 (88,9 x 33,4)	2.50 (63,5)	1.3 (0,6)	—	—

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings for Figure 350 start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 350 & 550 Concentric Reducers 2 of 5

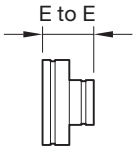


FIGURE 350
FABRICATED CONCENTRIC REDUCER

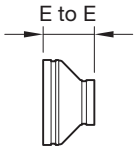


FIGURE 550
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 350 Fabricated		Figure 550 Cast	
ANSI Inches DN	**Pipe O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**
3 x 1-1/4 80 x 32	3.50 x 1.66 (88,9 x 42,4)	2.50 (63,5)	1.3 (0,6)	—	—
3 x 1-1/2 80 x 40	3.50 x 1.90 (88,9 x 48,3)	—	—	2.50 (63,5)	1.8 (0,8)
3 x 2 80 x 50	3.50 x 2.37 (88,9 x 60,3)	—	—	2.50 (63,5)	1.7 (0,8)
3 x 2-1/2 80 x 65	3.50 x 2.87 (88,9 x 73,0)	—	—	2.50 (63,5)	1.7 (0,8)
3 x 76,1mm 80 x 65	3.50 x 3.00 (88,9 x 76,1)	—	—	2.50 (63,5)	2.0 (0,9)
4 x 1 100 x 25	4.50 x 1.31 (114,3 x 33,4)	3.00 (76,2)	2.9 (1,1)	—	—
4 x 1-1/4 100 x 32	4.50 x 1.66 (114,3 x 42,4)	3.00 (76,2)	2.2 (1,0)	—	—
4 x 1-1/2 100 x 40	4.50 x 1.90 (114,3 x 48,3)	3.00 (76,2)	2.3 (1,0)	—	—
4 x 2 100 x 50	4.50 x 2.37 (114,3 x 60,3)	—	—	3.00 (76,2)	2.4 (1,1)
4 x 2-1/2 100 x 65	4.50 x 2.87 (114,3 x 73,0)	—	—	3.00 (76,2)	2.7 (1,2)
4 x 76,1mm 100 x 65	4.50 x 3.00 (114,3 x 76,1)	—	—	3.00 (76,2)	3.2 (1,5)
4 x 3 100 x 80	4.50 x 3.50 (114,3 x 88,9)	—	—	3.00 (76,2)	2.8 (1,3)
139,7mm x 3 (125 x 80)	5.50 x 3.50 (139,7 x 88,9)	—	—	3.50 (88,9)	4.2 (1,9)
139,7mm x 4 (125 x 100)	5.50 x 4.50 (139,7 x 114,3)	—	—	3.50 (88,9)	4.4 (2,0)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings for Figure 350 start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 350 & 550 Concentric Reducers 3 of 5

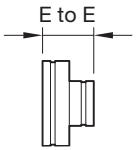


FIGURE 350
FABRICATED CONCENTRIC REDUCER

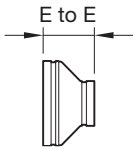


FIGURE 550
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 350 Fabricated		Figure 550 Cast	
ANSI Inches DN	**Pipe O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**
5 x 2 125 x50	5.56 x 2.37 (141,3 x 60,3)	3.50 (88,9)	4.6 (2,1)	—	—
5 x 2-1/2 125 x 65	5.56 x 2.87 (141,3 x 73,0)	3.50 (88,9)	4.5 (2,0)	—	—
5 x 3 125 x 80	5.56 x 3.50 (141,3 x 88,9)	—	—	3.50 (88,9)	4.2 (1,9)
5 x 4 125 x 100	5.56 x 4.50 (141,3 x 114,3)	—	—	3.50 (88,9)	4.4 (2,0)
165,1mm x 3 150 x 80	6.50 x 3.50 (165,1 x 88,9)	—	—	4.00 (101,6)	5.5 (2,5)
165,1mm x 4 150 x 100	6.50 x 4.50 (165,1 x 114,3)	—	—	4.00 (101,6)	6.0 (2,7)
165,1mm x 139,7mm 150 x 125	6.50 x 5.50 (165,1 x 139,7)	—	—	4.00 (101,6)	5.6 (2,5)
6 x 1 150 x 25	6.63 x 1.31 (168,3 x 33,7)	—	—	4.00 (101,6)	4.7 (2,1)
6 x 1-1/2 150 x 40	6.63 x 1.90 (168,3 x48,3)	—	—	4.00 (101,6)	5.0 (2,3)
6 x 2 150 x 50	6.63 x 2.37 (168,3 x 60,3)	—	—	4.00 (101,6)	5.3 (2,4)
6 x 2-1/2 150 x 65	6.63 x 2.87 (168,3 x 73,0)	—	—	4.00 (101,6)	5.7 (2,6)
6 x 76,1mm 150 x 65	6.63 x 3.00 (168,3 x 76,1)	—	—	4.00 (101,6)	6.1 (2,7)
6 x 3 150 x 80	6.63 x 3.50 (168,3 x 88,9)	—	—	4.00 (101,6)	5.8 (2,6)
6 x 108mm 150 x 100	6.63 x 4.25 (168,3 x 108,0)	4.00 (101,6)	6.0 (2,7)	—	—

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings for Figure 350 start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 350 & 550 Concentric Reducers 4 of 5

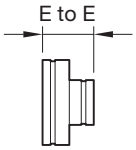


FIGURE 350
FABRICATED CONCENTRIC REDUCER

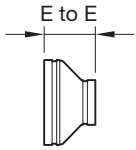


FIGURE 550
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 350 Fabricated		Figure 550 Cast	
ANSI Inches DN	**Pipe O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**
6 x 4 150 x 100	6.63 x 4.50 (168,3 x 114,3)	—	—	4.00 (101,6)	6.0 (2,7)
6 x 139,7mm 150 x 100	6.63 x 5.50 (168,3 x 139,7)	—	—	4.00 (101,6)	6.3 (2,3)
6 x 5 150 x 125	6.63 x 5.56 (168,3 x 141,3)	—	—	4.00 (101,6)	6.2 (2,8)
216,3mm x 2-1/2 200 x 65	8.52 x 2.87 (216,3 x 73,0)	5.00 (127,0)	12.1 (5,5)	—	—
8 x 3 200 x 80	8.63 x 3.50 (219,1 x 88,9)	—	—	5.00 (127,0)	11.5 (5,2)
8 x 4 200 x 100	8.63 x 4.50 (219,1 x 114,3)	—	—	5.00 (127,0)	10.7 (4,9)
8 x 139,7mm 200 x 125	8.63 x 5.50 (219,1 x 139,7)	—	—	5.00 (127,0)	10.0 (4,5)
8 x 5 200 x 125	8.63 x 5.56 (219,1 x 141,3)	—	—	5.00 (127,0)	10.8 (4,9)
8 x 165,1mm 200 x 150	8.63 x 6.50 (219,1 x 165,1)	—	—	5.00 (127,0)	11.0 (5,0)
8 x 6 200 x 150	8.63 x 6.63 (219,1 x 168,3)	—	—	5.00 (127,0)	11.3 (5,1)
10 x 4 250 x 100	10.75 x 4.50 (273,0 x 114,3)	6.00 (152,4)	20.5 (9,3)	—	—
10 x 5 250 x 125	10.75 x 5.56 (273,0 x 141,3)	6.00 (152,4)	20.1 (9,1)	—	—
10 x 165,1mm 250 x 150	10.75 x 6.50 (273,0 x 165,1)	—	—	6.00 (152,4)	17.8 (8,0)
10 x 6 250 x 150	10.75 x 6.63 (273,0 x 168,3)	—	—	6.00 (152,4)	16.3 (7,4)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings for Figure 350 start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 350 & 550 Concentric Reducers 5 of 5

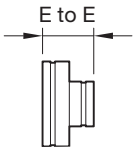


FIGURE 350
FABRICATED CONCENTRIC REDUCER

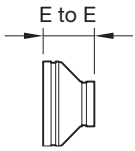
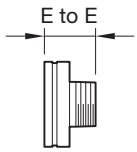


FIGURE 550
CAST CONCENTRIC REDUCER

Nominal Pipe Size		Figure 350 Fabricated		Figure 550 Cast	
ANSI Inches DN	**Pipe O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg).**
10 x 8 250 x 200	10.75 x 8.63 (273,0 x 219,1)	—	—	6.00 (152,4)	18.3 (8,3)
12 x 4 300 x 100	12.75 x 4.50 (323,9 x 114,3)	—	—	7.00 (177,8)	22.7 (10,3)
12 x 6 300 x 150	12.75 x 6.63 (323,9 x 168,3)	—	—	7.00 (177,8)	24.2 (11,0)
12 x 8 300 x 200	12.75 x 8.63 (323,9 x 219,1)	—	—	7.00 (177,8)	25.8 (11,7)
12 x 10 300 x 250	12.75 x 10.75 (323,9 x 273,0)	7.00 (177,8)	28.2 (12,8)	7.00 (177,8)	28.2 (12,8)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings for Figure 350 start on page 169.
- Refer to Technical Data Sheet TFP1815 for more information.

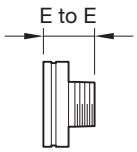
Figure 372 Concentric Reducers Groove X Male Thread (MPT) 1 of 3



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

- Refer to Technical Data Sheet TFP1815 for more information.

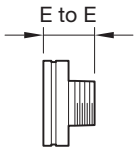
Figure 372 Concentric Reducers Groove X Male Thread (MPT) 2 of 3



Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	Pipe O.D. Inches (mm)		
3 x 2-1/2 80 x 65	3.50 x 2.87 (88,9 x 73,0)	2.50 (63.5)	1.5 (0,7)
3 x 76,1mm 80 x 65	3.50 x 3.00 (88,9 x 76,1)	2.50 (63.5)	1.5 (0,7)
4 x 1 100 x 25	4.50 x 1.31 (114,3 x 33,4)	3.00 (76,2)	1.8 (0,8)
4 x 1-1/4 100 x 32	4.50 x 1.66 (114,3 x 42,4)	3.00 (76,2)	2.0 (0,9)
4 x 1-1/2 100 x 40	4.50 x 1.90 (114,3 x 48,3)	3.00 (76,2)	2.3 (1,0)
4 x 2 100 x 50	4.50 x 2.37 (114,3 x 60,3)	3.00 (76,2)	2.3 (1,0)
4 x 2-1/2 100 x 65	4.50 x 2.87 (114,3 x 73,0)	3.00 (76,2)	2.3 (1,0)
4 x 3 100 x 80	4.50 x 3.50 (114,3 x 88,9)	3.00 (76,2)	2.6 (1,2)
5 x 4 125 x 100	5.56 x 4.50 (141,3 x 114,3)	3.50 (88,9)	4.5 (2,0)
165,1mm x 1 150 x 25	6.50 x 1.31 (165,1 x 33,4)	4.00 (101,6)	1.2 (0,5)
165,1mm x 2 150 x 50	6.50 x 2.37 (165,1 x 60,3)	4.00 (101,6)	5.5 (2,5)
165,1mm x 76,1mm 150 x 65	6.50 x 3.00 (165,1 x 76,1)	4.00 (101,6)	5.7 (2,6)
165,1mm x 3 150 x 50	6.50 x 3.50 (165,1 x 88,9)	4.00 (101,6)	5.8 (2,6)
165,1mm x 4 150 x 50	6.50 x 4.50 (165,1 x 114,3)	4.00 (101,6)	5.8 (2,6)
165,1mm x 5 150 x 50	6.50 x 5.563 (165,1 x 141,3)	4.00 (101,6)	5.8 (2,6)
6 x 1 150 x 25	6.63 x 1.31 (168,3 x 33,4)	4.00 (101,6)	5.2 (2,4)
6 x 2 150 x 50	6.63 x 2.37 (168,3 x 60,3)	4.00 (101,6)	5.4 (2,4)

- Refer to Technical Data Sheet TFP1815 for more information.

Figure 372 Concentric Reducers Groove X Male Thread (MPT) 3 of 3



Nominal Pipe Size		E to E Inches (mm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	Pipe O.D. Inches (mm)		
6 x 2-1/2 150 x 65	6.63 x 2.87 (168,3 x 73,0)	4.00 (101,6)	5.6 (2,5)
6 x 76,1mm 150 x 65	6.63 x 3.00 (168,3 x 76,1)	4.00 (101,6)	5.8 (2,6)
6 x 3 150 x 80	6.63 x 3.50 (168,3 x 88,9)	4.00 (101,6)	6.0 (2,7)
6 x 4 150 x 100	6.63 x 4.50 (168,3 x 114,3)	4.00 (101,6)	6.2 (2,8)
6 x 5 150 x 125	6.63 x 5.56 (168,3 x 141,3)	4.00 (101,6)	6.7 (3,0)

- Refer to Technical Data Sheet TFP1815 for more information.

Figure 391, 392 & 393
Adapter Nipples

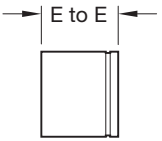


FIGURE 393
FABRICATED
GROOVE X PLAIN

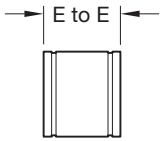


FIGURE 392
FABRICATED
GROOVE X GROOVE

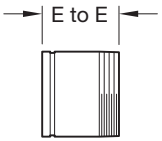
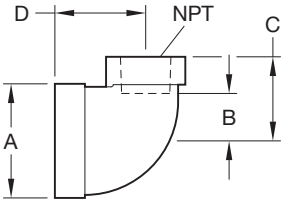


FIGURE 391
FABRICATED
GROOVE X MALE THREAD

Nominal Pipe Size		Figure 391, 392 & 393	
ANSI Inches DN	**O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1-1/4 32	1.60 (42,4)	4.00 (101,6)	0.8 (0.4)
1-1/2 40	1.90 (48,3)	4.00 (101,6)	0.9 (0.4)
2 50	2.37 (60,3)	4.00 (101,6)	1.2 (0,5)
2-1/2 65	2.87 (73,0)	4.00 (101,6)	1.9 (0,9)
76,1mm 65	3.00 (76,1)	4.00 (101,6)	1.9 (0,9)
3 80	3.50 (88,9)	4.00 (101,6)	2.5 (1,1)
4 100	4.50 (114,3)	6.00 (152,4)	5.5 (2,5)
139,7mm (125)	5.50 (139,7)	6.00 (152,4)	5.6 (2,5)
5 125	5.56 (141,3)	6.00 (152,4)	7.4 (3,4)
165,1mm 150	6.50 (165,1)	6.00 (152,4)	7.6 (3,4)
6 150	6.63 (168,3)	6.00 (152,4)	9.5 (4,3)
8 200	8.63 (219,1)	6.00 (152,4)	14.2 (6,4)
10 250	10.75 (273,0)	8.00 (203,2)	27.0 (12,2)
12 300	12.75 (323,9)	8.00 (203,2)	33.0 (15,0)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved Pressure ratings start on page 168.
- Refer to Technical Data Sheet TFP1815 for more information.

ADACAP

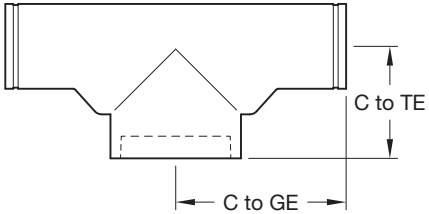


Nominal Pipe Size		Dimensions- Inches (mm)				Approx. Weight Lbs. (kg)
ANSI Inches DN	Outlet NPT[a]	A O.D.	B Takeout	C	D	
1-1/2 40	1/2	1.9 (48,3)	1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.8 (0,4)
	3/4		1.3 (31,8)	1.8 (44,5)	1.9 (48,0)	0.8 (0,4)
	1		1.4 (34,8)	2.0 (50,8)	2.0 (51,3)	0.9 (0,4)
2 50	1/2	2.4 (60,3)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

a. ISO threaded outlets are available upon request.
b. ADACAP is not available for the EMEA market.

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 160.
- Refer to Technical Data Sheet TFP1815 for more information.

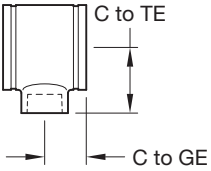
Figure 507/50L Bullhead Tee



ANSI Inches DN	O.D. Inches (mm)	Nominal C to GE Inches (mm)	Nominal C to TE Inches (mm)	Approx. Weight Lbs. (kg
5 x 5 x 8 125 X 125 X 200	5.563 x 5.563 x 8.63 (141,3 x 141,3 x 219,1)	13.313 (388,14)	9.313 (236,55)	27.8 (12,6)
6 x 6 x 8 150 X 150 X 200	6.625 x 6.625 x 8.63 (168,3 x 168,3 x 219,1)	13.313 (388,14)	8.750 (222,25)	36.7 (16,4)

- Figure 507/50L not available for the EMEA market.
- Refer to Technical Data Sheet TFP1815 for more information.

Figure 328 Standpipe Tee



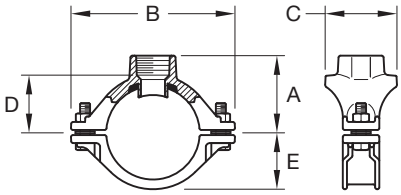
ANSI Inches DN	O.D. Inches (mm)	Nominal C to GE Inches (mm)	Nominal C to TE Inches (mm)	Approx. Weight Lbs. (kg)
4 x 4 x 2-1/2 100 X 100 X 65	5.563 x 5.563 x 8.63 (141,3 x 141,3 x 219,1)	13.313 (388,14)	9.313 (236,55)	8.7 (3,9)
6 x 6 x 2-1/2 150 X 50 X 65	6.625 x 6.625 x 8.63 (168,3 x 168,3 x 219,1)	13.313 (388,14)	8.750 (222,25)	13.7 (6,2)

- Figure 328 not available for the EMEA and APAC market.
- Refer to Technical Data Sheet TFP1815 for more information.

NOTES

Outlet Fittings

Figure 522 Sprinkler Outlet 1 of 2

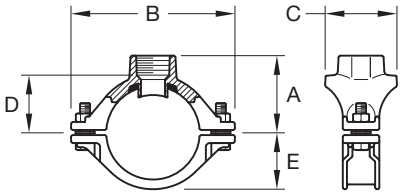


Nominal Pipe Size		Outlet Size NPT or ISO 7-1 Pipe Threads	Max.[a] Outlet End Load Lbs. (kN)	Nominal Dimensions Inches (mm)					Approx. Wgt. Lbs (kg)
Nominal Run Size ANSI Inches DN	O.D. Inches (mm)			A	B	C	D	E	
1 25	1.315 (33,7)	1/2	165.9 (0,738)	1.00 (25,4)	3.40 (86,4)	1.94 (49,3)	0.56 (14,3)	1.00 (25,4)	0.9 (0,4)
		3/4	259.9 (1,156)	1.64 (41,7)	3.40 (86,4)	1.94 (49,3)	1.14 (29,0)	1.00 (25.4)	1.1 (0,5)
		1	259.9 (1,156)	1.83 (46,5)	3.40 (86,4)	2.25 (57,2)	1.26 (32,0)	1.00 (25,4)	1.1 (0,5)
1-1/4 32	1.660 (42,4)	3/8	165.9 (0,738)	1.22 (31,0)	3.78 (96,0)	2.25 (57,2)	0.91 (23,1)	1.06 (26,9)	0.9 (0,4)
		1/2	165.9 (0,738)	1.22 (31,0)	3.78 (96,0)	2.25 (57,2)	0.78 (19,8)	1.06 (26,9)	0.9 (0,4)
		3/4	259.9 (1,156)	1.83 (46,5)	3.78 (96,0)	2.25 (57,2)	1.33 (33,8)	1.06 (26,9)	1.1 (0,5)
		1	406.9 (1,81)	2.00 (50,8)	3.78 (96,0)	2.25 (57,2)	1.44 (36,6)	1.06 (26,9)	1.3 (0,6)
1-1/2 40	1.900 (48,3)	1/2	165.9 (0,738)	1.32 (33,5)	4.00 (101,6)	2.25 (57,2)	0.88 (22,4)	1.25 (31,8)	1.1 (0,5)
		3/4	259.9 (1,156)	1.93 (49,0)	4.00 (101,6)	2.25 (57,2)	1.43 (36,3	1.25 (31,8)	3.1 (0,5)
		1	406.9 (1,81)	2.11 (53,6)	4.00 (101,6)	2.25 (57,2)	1.55 (39,4)	1.25 (31,8)	1.3 (0,6)
2 50	2.375 (60,3)	1/2	165.9 (0,738)	1.56 (39,6)	4.46 (113,3)	2.25 (57,2)	1.12 (28,4)	1.50 (38,1)	1.3 (0,6)
		3/4	259.9 (1,156)	2.17 (55,1)	4.46 (113,3)	2.25 (57,2)	1.67 (42,4)	1.50 (38,1)	1.5 (0,7)
		1	406.9 (1,81)	2.35 (60,0)	4.46 (113,3)	2.50 (63,5)	1.79 (45,5)	1.50 (38,1)	1.5 (0,7)

a. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Always confirm compatibility by contacting TYCO Fire Protection Products for details.

- Refer to Technical Data Sheet TFP1865 for more information.

Figure 522 Sprinkler Outlet 2 of 2



Nominal Pipe Size		Outlet Size NPT or ISO 7-1 Pipe Threads	Max.[a] Outlet End Load Lbs. (kN)	Nominal Dimensions Inches (mm)					Approx. Wgt. Lbs (kg)
Nominal Run Size ANSI Inches (DN)	O.D. Inches (mm)			A	B	C	D	E	
2-1/2 65	2.875 (73,0)	1/2	165.9 (0,738)	2.00 (50,8)	5.12 (130,0)	2.25 (57,2)	1.56 (39,6)	1.69 (42,9)	1.5 (0,7)
		3/4	259.9 (1,156)	2.50 (63,5)	5.12 (130,0)	2.25 (57,2)	2.00 (50,8)	1.69 (42,9)	1.8 (0,8)
		1	406.9 (1,81)	2.70 (68,6)	5.12 (130,0)	2.50 (63,5)	2.14 (54,4)	1.69 (42,9)	1.8 (0,8)
76.1mm 65	3.000 (76,1)	1/2	165.9 (0,738)	2.00 (50,8)	5.12 (130,0)	2.25 (57,2)	1.56 (39,6)	1.82 (46,2)	1.5 (0,7)
		3/4	259.9 (1,156)	2.50 (63,5)	5.12 (130,0)	2.25 (57,2)	2.00 (50,8)	1.82 (46,2)	1.8 (0,8)
		1	406.9 (1,81)	2.75 (69,9)	5.12 (130,0)	2.50 (63,5)	2.19 (55,6)	1.82 (46,2)	1.8 (0,8)

a. Maximum pressure and end load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ on other pipe materials and/or wall thickness. Always confirm compatibility by contacting TYCO Fire Protection Products for details.

- Refer to Technical Data Sheet TFP1865 for more information.

Figure 730 Threaded Mechanical Tees & Crosses

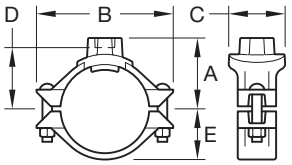


FIGURE 730
TEE THREADED OUTLET

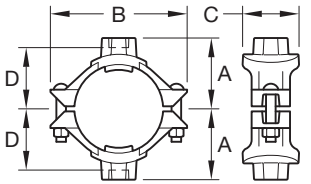


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
2 x 1/2 50 x 15	2.375 x 0.840 (60,3 x 21,3)	2.62 (66,5)	4.88 (124,0)	3.07 (78,0)	2.12 (53,8)	1.59 (40,4)
2 x 3/4 50 x 20	2.375 x 1.050 (60,3 x 26,7)	2.62 (66,5)	4.88 (124,0)	3.07 (78,0)	2.12 (53,8)	1.59 (40,4)
2 x 1 50 x 25	2.375 x 1.315 (60,3 x 33,7)	2.62 (66,5)	4.88 (124,0)	3.07 (78,0)	2.12 (53,8)	1.59 (40,4)
2 x 1-1/4 50 x 32	2.375 x 1.660 (60,3 x 42,2)	2.78 (70,6)	4.88 (124,0)	3.32 (84,3)	1.93 (49,0)	1.59 (40,4)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,3)	2.75 (69,9)	4.88 (124,0)	3.32 (84,3)	1.93 (49,0)	1.59 (40,4)
2-1/2 x 1/2 65 x 15	2.875 x 0.840 (73,0 x 21,3)	2.88 (73,2)	5.25 (133,4)	3.07 (78,0)	2.38 (60,5)	1.81 (46,0)
2-1/2 x 3/4 65 x 20	2.875 x 1.050 (73,0 x 26,7)	2.88 (73,2)	5.25 (133,4)	3.07 (78,0)	2.38 (60,5)	1.81 (46,0)
2-1/2 x 1 65 x 25	2.875 x 1.315 (73,0 x 33,7)	2.88 (73,2)	5.25 (133,4)	3.07 (78,0)	2.38 (60,5)	1.81 (46,0)
2-1/2 x 1-1/4 65 x 32	2.875 x 1.660 (73,0 x 42,2)	3.00 (76,2)	5.25 (133,4)	3.56 (90,4)	2.19 (55,6)	1.81 (46,0)
2-1/2 x 1-1/2 65 x 40	2.875 x 1.900 (73,0 x 48,3)	3.07 (78,0)	5.25 (133,4)	3.59 (91,2)	2.17 (55,1)	1.81 (46,0)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	3.19 (81,0)	5.25 (133,4)	4.00 (101,6)	2.44 (62,0)	1.81 (46,0)
76,1mm x 1/2 65 x 15	3.000 x 0.840 (76,1 x 21,3)	2.94 (74,5)	5.62 (142,7)	3.07 (78,0)	2.44 (62,0)	1.87 (47,5)
76,1mm x 3/4 65 x 20	3.000 x 1.050 (76,1 x 26,7)	2.94 (74,5)	5.62 (142,7)	3.07 (78,0)	2.44 (62,0)	1.87 (47,5)
76,1mm x 1 65 x 25	3.000 x 1.315 (76,1 x 33,7)	2.94 (74,5)	5.62 (142,7)	3.07 (78,0)	2.44 (62,0)	1.87 (47,5)

a. Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 142.

- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Threaded Mechanical Tees & Crosses

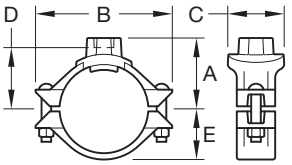


FIGURE 730
TEE THREADED OUTLET

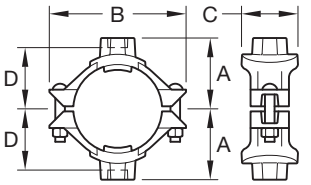


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[b]		Bolt[c] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
2 x 1/2 50 x 15	2.375 x 0.840 (60,3 x 21,3)	1.75 (44,5)	1.88 (47,6)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.4 (1,5)
2 x 3/4 50 x 20	2.375 x 1.050 (60,3 x 26,7)	1.50 (38,1)	1.63 (41,3)	3/8 x 2-1/4 (M10 x 57)	2.3 (1,0)	3.0 (1,4)
2 x 1 50 x 25	2.375 x 1.315 (60,3 x 33,7)	1.50 (38,1)	1.63 (41,3)	3/8 x 2-1/4 (M10 x 57)	2.2 (1,0)	3.2 (1,5)
2 x 1-1/4 50 x 32	2.375 x 1.660 (60,3 x 42,2)	1.75 (44,5)	1.88 (47,6)	3/8 x 2-1/4 (M10 x 57)	2.4 (1,1)	3.4 (1,5)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,3)	1.75 (44,5)	1.88 (47,6)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.9 (1,8)
2-1/2 x 1/2 65 x 15	2.875 x 0.840 (73,0 x 21,3)	1.50 (38,1)	1.63 (41,3)	3/8 x 2-1/4 (M10 x 57)	2.4 (1,1)	3.4 (1,5)
2-1/2 x 3/4 65 x 20	2.875 x 1.050 (73,0 x 26,7)	1.50 (38,1)	1.63 (41,3)	3/8 x 2-1/4 (M10 x 57)	2.4 (1,1)	3.4 (1,5)
2-1/2 x 1 65 x 25	2.875 x 1.315 (73,0 x 33,7)	1.50 (38,1)	1.63 (41,3)	3/8 x 2-1/4 (M10 x 57)	2.4 (1,1)	3.4 (1,5)
2-1/2 x 1-1/4 65 x 32	2.875 x 1.660 (73,0 x 42,2)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.8 (1,7)
2-1/2 x 1-1/2 65 x 40	2.875 x 1.900 (73,0 x 48,3)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.6 (1,2)	4.1 (1,9)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.7 (1,2)	4.1 (1,9)
76,1mm x 1/2 65 x 15	3.000 x 0.840 (76,1 x 21,3)	1.50 (38,1)	1.63 (41,3)	— (M10 x 57)	2.5 (1,1)	3.5 (1,6)
76,1mm x 3/4 65 x 20	3.000 x 1.050 (76,1 x 26,7)	1.50 (38,1)	1.63 (41,3)	— (M10 x 57)	2.5 (1,1)	3.5 (1,6)
76,1mm x 1 65 x 25	3.000 x 1.315 (76,1 x 33,7)	1.50 (38,1)	1.63 (41,3)	— (M10 x 57)	2.5 (1,1)	3.5 (1,6)

b. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded components other than steel pipe, such as dry type sprinklers, etc., may not be compatible with the female threaded outlets of Mechanical Tees and Crosses. Always confirm compatibility by contacting your TYCO Fire Protection Products Technical Services representative.

c. Gold color coded metric bolt sizes are available upon request.

Figure 730 Threaded Mechanical Tees & Crosses

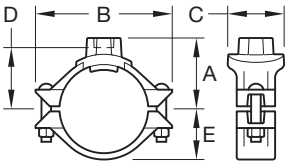


FIGURE 730
TEE THREADED OUTLET

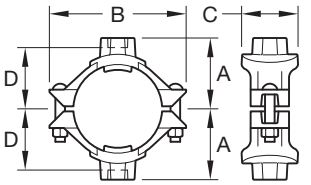


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
76,1mm x 1-1/4 65 x 32	3.000 x 1.660 (76,1 x 42,2)	3.06 (77,7)	5.62 (142,7)	3.56 (90,4)	2.25 (57,2)	1.87 (47,5)
76,1mm x 1-1/2 65 x 40	3.000 x 1.900 (76,1 x 48,3)	3.13 (79,5)	5.62 (142,7)	3.56 (90,4)	2.25 (57,2)	1.87 (47,5)
76,1mm x 2 65 x 50	3.000 x 2.375 (76,1 x 60,3)	3.25 (82,6)	5.62 (142,7)	4.00 (101,6)	2.50 (63,5)	1.87 (47,5)
3 x 1/2 80 x 15	3.500 x 0.840 (88,9 x 21,3)	3.19 (81,0)	6.13 (155,7)	3.07 (78,0)	2.56 (65,0)	2.21 (56,1)
3 x 3/4 80 x 20	3.500 x 1.050 (88,9 x 26,7)	3.19 (81,0)	6.13 (155,7)	3.07 (78,0)	2.56 (65,0)	2.21 (56,1)
3 x 1 80 x 25	3.500 x 1.315 (88,9 x 33,7)	3.19 (81,0)	6.13 (155,7)	3.07 (78,0)	2.56 (65,0)	2.21 (56,1)
3 x 1-1/4 80 x 32	3.500 x 1.660 (88,9 x 42,2)	3.34 (84,8)	6.13 (155,7)	3.32 (84,3)	2.50 (63,5)	2.21 (56,1)
3 x 1-1/2 80 x 40	3.500 x 1.900 (88,9 x 48,3)	3.38 (85.9)	6.13 (155,7)	3.56 (90,4)	2.48 (63,0)	2.21 (56,1)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	3.50 (88,9)	6.13 (155,7)	4.09 (103,9)	2.75 (69,9)	2.21 (56,1)
4 x 1/2 100 x 15	4.500 x 0.840 (114,3 x 21,3)	3.69 (93,7)	7.13 (181,1)	3.07 (78,0)	3.06 (77,7)	2.78 (70,6)
4 x 3/4 100 x 20	4.500 x 1.050 (114,3 x 26,7)	3.69 (93,7)	7.13 (181,1)	3.07 (78,0)	3.06 (77,7)	2.78 (70,6)
4 x 1 100 x 25	4.500 x 1.315 (114,3 x 33,7)	3.69 (93,7)	7.13 (181,1)	3.07 (78,0)	3.06 (77,7)	2.78 (70,6)
4 x 1-1/4 100 x 32	4.500 x 1.660 (114,3 x 42,2)	3.92 (99,6)	7.13 (181,1)	3.32 (84,3)	3.00 (76,2)	2.78 (70,6)
4 x 1-1/2 100 x 40	4.500 x 1.900 (114,3 x 48,3)	4.00 (101,6)	7.13 (181,1)	3.56 (90,4)	2.98 (75,7)	2.78 (70,6)

a. Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 142.

- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Threaded Mechanical Tees & Crosses

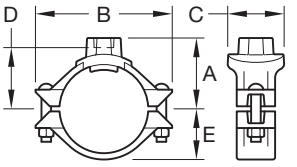


FIGURE 730
TEE THREADED OUTLET

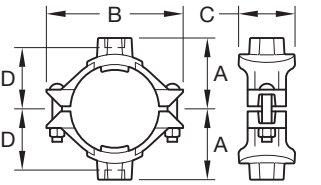


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[b]		Bolt[c] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
76,1mm x 1-1/4 65 x 32	3.000 x 1.660 (76,1 x 42,2)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	3.3 (1,5)	5.1 (2,3)
76,1mm x 1-1/2 65 x 40	3.000 x 1.900 (76,1 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	3.6 (1,6)	5.7 (2,6)
76,1mm x 2 65 x 50	3.000 x 2.375 (76,1 x 60,3)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	3.7 (1,7)	5.8 (2,6)
3 x 1/2 80 x 15	3.500 x 0.840 (88,9 x 21,3)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	3.7 (1,7)	5.2 (2,4)
3 x 3/4 80 x 20	3.500 x 1.050 (88,9 x 26,7)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	3.7 (1,7)	5.2 (2,4)
3 x 1 80 x 25	3.500 x 1.315 (88,9 x 33,7)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	3.7 (1,7)	5.2 (2,4)
3 x 1-1/4 80 x 32	3.500 x 1.660 (88,9 x 42,2)	1.75 (44,5)	1.88 (47,6)	1/2 x 3 (M12 x 76)	3.5 (1,6)	4.6 (2,1)
3 x 1-1/2 80 x 40	3.500 x 1.900 (88,9 x 48,3)	2.00 (50,8)	2.13 (54,0)	1/2 x 3 (M12 x 76)	3.7 (1,7)	5.2 (2,4)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	1.75 (44,5)	1.88 (47,6)	1/2 x 3 (M12 x 76)	4.7 (2,1)	6.8 (3,1)
4 x 1/2 100 x 15	4.500 x 0.840 (114,3 x 21,3)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	4.8 (2,2)	5.6 (2,5)
4 x 3/4 100 x 20	4.500 x 1.050 (114,3 x 26,7)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	4.8 (2,2)	5.6 (2,5)
4 x 1 100 x 25	4.500 x 1.315 (114,3 x 33,7)	1.50 (38,1)	1.63 (41,3)	1/2 x 3 (M12 x 76)	4.8 (2,2)	5.6 (2,5)
4 x 1-1/4 100 x 32	4.500 x 1.660 (114,3 x 42,2)	1.75 (44,5)	1.88 (47,6)	1/2 x 3 (M12 x 76)	4.8 (2,2)	5.6 (2,5)
4 x 1-1/2 100 x 40	4.500 x 1.900 (114,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	1/2 x 3 (M12 x 76)	5.1 (2,3)	6.4 (2,5)

b. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded components other than steel pipe, such as dry type sprinklers, etc., may not be compatible with the female threaded outlets of Mechanical Tees and Crosses. Always confirm compatibility by contacting your TYCO Fire Protection Products Technical Services representative.

c. Gold color coded metric bolt sizes are available upon request.

Figure 730 Threaded Mechanical Tees & Crosses

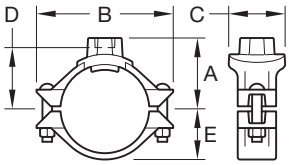


FIGURE 730
TEE THREADED OUTLET

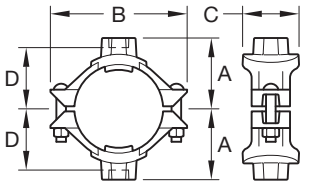


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	4.00 (101,6)	7.13 (181,1)	4.06 (103,1)	3.25 (82,6)	2.78 (70,6)
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	4.00 (101,6)	7.13 (181,1)	4.38 (111,3)	3.12 (79,2)	2.78 (70,6)
4 x 76,1mm 100 x 65	4.500 x 3.000 (114,3 x 76,1)	4.00 (101,6)	7.13 (181,1)	4.38 (111,3)	3.12 (79,2)	2.78 (70,6)
4 x 3 100 x 80	4.500 x 3.500 (114,3 x 88,9)	4.13 (104,9)	7.13 (181,1)	5.13 (130,3)	3.31 (84,1)	2.78 (70,6)
5 x 1-1/2 125 x 40	5.563 x 1.900 (141,3 x 48,3)	4.63 (117,6)	8.13 (206,5)	3.56 (90,4)	4.00 (101,6)	3.37 (85,6)
5 x 2 125 x 50	5.563 x 2.375 (141,3 x 60,3)	4.63 (117,6)	8.13 (206,5)	4.06 (103,1)	3.88 (98,6)	3.37 (85,6)
5 x 2-1/2 125 x 65	5.563 x 2.875 (141,3 x 73,0)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.88 (98,6)	3.37 (85,6)
5 x 76,1mm 125 x 65	5.563 x 3.000 (141,3 x 76,1)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.88 (98,6)	3.37 (85,6)
5 x 3 125 x 80	5.563 x 3.500 (141,3 x 88,9)	5.00 (127,0)	8.13 (206,5)	5.13 (130,3)	4.06 (103,1)	3.37 (85,6)
139,7mm x 1-1/2 125 x 40	5.500 x 1.900 (139,7 x 48,3)	4.63 (117,6)	8.13 (206,5)	3.56 (90,4)	4.00 (101,6)	3.37 (85,6)
139,7mm x 2 125 x 50	5.500 x 2.375 (139,7 x 60,3)	4.63 (117,6)	8.13 (206,5)	4.06 (103,1)	3.88 (98,6)	3.37 (85,6)
139,7mm x 2-1/2 125 x 65	5.500 x 2.875 (139,7 x 73,0)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.88 (98,6)	3.37 (85,6)
139,7mm x 76,1mm 125 x 65	5.500 x 3.000 (139,7 x 76,1)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.88 (98,6)	3.37 (85,6)
139,7mm x 3 125 x 80	5.500 x 3.500 (139,7 x 88,9)	5.00 (127,0)	8.13 (206,5)	5.13 (130,3)	4.06 (103,1)	3.37 (85,6)

a. Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 142.

- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Threaded Mechanical Tees & Crosses

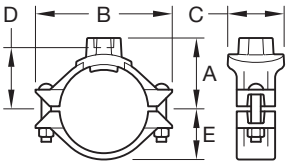


FIGURE 730
TEE THREADED OUTLET

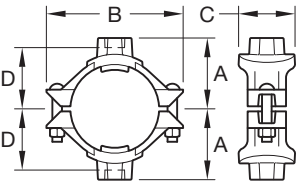


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[b]		Bolt[c] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.3 (3,3)
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	1/2 x 3 (M12 x 76)	6.2 (2,8)	8.7 (3,9)
4 x 76,1mm 100 x 65	4.500 x 3.000 (114,3 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M12 x 76)	6.2 (2,8)	8.7 (3,9)
4 x 3 100 x 80	4.500 x 3.500 (114,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	1/2 x 3 (M12 x 76)	7.8 (3,5)	11.9 (5,4)
5 x 1-1/2 125 x 40	5.563 x 1.900 (141,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.8 (3,5)	9.4 (4,3)
5 x 2 125 x 50	5.563 x 2.375 (141,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	5/8 x 4-3/4 (M16 x 121)	7.8 (3,5)	9.4 (4,3)
5 x 2-1/2 125 x 65	5.563 x 2.875 (141,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.9 (4,0)	11.5 (5,2)
5 x 76,1mm 125 x 65	5.563 x 3.000 (139,7 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.9 (4,0)	11.5 (5,2)
5 x 3 125 x 80	5.563 x 3.500 (141,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	5/8 x 4-3/4 (M16 x 121)	12.7 (5,8)	13.3 (6,0)
139,7mm x 1-1/2 125 x 40	5.500 x 1.900 (139,7 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.8 (3,5)	9.4 (4,3)
139,7mm x 2 125 x 50	5.500 x 2.375 (139,7 x 60,3)	2.50 (63,5)	2.63 (66,7)	— (M16 x 121)	7.8 (3,5)	9.4 (4,3)
139,7mm x 2-1/2 125 x 65	5.500 x 2.875 (139,7 x 73,0)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.9 (4,0)	11.5 (5,2)
139,7mm x 76,1mm 125 x 65	5.500 x 3.000 (139,7 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.9 (4,0)	11.5 (5,2)
139,7mm x 3 125 x 80	5.500 x 3.500 (139,7 x 88,9)	3.50 (88,9)	3.63 (92,1)	— (M16 x 121)	12.7 (5,8)	13.3 (6,0)

b. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded components other than steel pipe, such as dry type sprinklers, etc., may not be compatible with the female threaded outlets of Mechanical Tees and Crosses. Always confirm compatibility by contacting your TYCO Fire Protection Products Technical Services representative.

c. Gold color coded metric bolt sizes are available upon request.

Figure 730 Threaded Mechanical Tees & Crosses

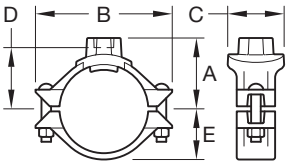


FIGURE 730
TEE THREADED OUTLET

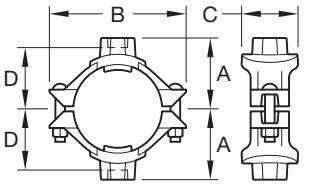


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
6 x 1-1/4 150 x 32	6.625 x 1.660 (168,3 x 42,2)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	4.25 (108,0)	3.90 (99,1)
6 x 1-1/2 150 x 40	6.625 x 1.900 (168,3 x 48,3)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	4.04 (102,6)	3.90 (99,1)
6 x 2 150 x 50	6.625 x 2.375 (168,3 x 60,3)	5.13 (130,3)	9.25 (235,0)	4.06 (103,1)	4.31 (109,5)	3.90 (99,1)
6 x 2-1/2 150 x 65	6.625 x 2.875 (168,3 x 73,0)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	4.18 (106,2)	3.90 (99,1)
6 x 76,1mm 150 x 65	6.625 x 3.000 (168,3 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	4.18 (106,2)	3.90 (99,1)
6 x 3 150 x 80	6.625 x 3.500 (168,3 x 88,9)	5.50 (139,7)	9.25 (235,0)	5.13 (130,3)	4.37 (111,0)	3.90 (99,1)
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	5.38 (136,7)	9.25 (235,0)	6.13 (155,7)	4.56 (115,8)	3.90 (99,1)
165,1mm x 1-1/4 150 x 32	6.500 x 1.660 (165,1 x 42,2)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	4.25 (108,0)	3.90 (99,1)
165,1mm x 1-1/2 150 x 40	6.500 x 1.900 (165,1 x 48,3)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	4.04 (102,6)	3.90 (99,1)
165,1mm x 2 150 x 50	6.500 x 2.375 (165,1 x 60,3)	5.13 (130,3)	9.25 (235,0)	4.06 (103,1)	4.31 (109,5)	3.90 (99,1)
165,1mm x 2-1/2 150 x 65	6.500 x 2.875 (165,1 x 73,0)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	4.18 (106,2)	3.90 (99,1)
165,1mm x 76,1mm 150 x 65	6.500 x 3.000 (165,1 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	4.18 (106,2)	3.90 (99,1)
165,1mm x 3 150 x 80	6.500 x 3.500 (165,1 x 88,9)	5.50 (139,7)	9.25 (235,0)	5.13 (130,3)	4.37 (111,0)	3.90 (99,1)
8 x 2 200 x 50	8.625 x 2.375 (219,1 x 60,3)	6.25 (158,8)	12.50 (317,5)	4.06 (103,1)	5.50 (139,7)	4.90 (124,5)

a. Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 142.

- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Threaded Mechanical Tees & Crosses

8 of 10

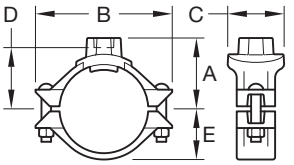


FIGURE 730
TEE THREADED OUTLET

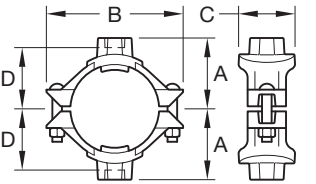


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[b]		Bolt[c] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
6 x 1-1/4 150 x 32	6.625 x 1.660 (168,3 x 42,2)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	8.7 (3,9)
6 x 1-1/2 150 x 40	6.625 x 1.900 (168,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	8.7 (3,9)
6 x 2 150 x 50	6.625 x 2.375 (168,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	5/8 x 4-3/4 (M16 x 121)	7.7 (3,5)	9.5 (4,3)
6 x 2-1/2 150 x 65	6.625 x 2.875 (168,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.9 (4,0)	11.3 (5,1)
6 x 76,1mm 150 x 65	6.625 x 3.000 (168,3 x 76,1)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.9 (4,0)	11.3 (5,1)
6 x 3 150 x 80	6.625 x 3.500 (168,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	5/8 x 4-3/4 (M16 x 121)	10.3 (4,7)	14.1 (6,4)
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	4.50 (114,3)	4.63 (117,5)	5/8 x 4-3/4 (M16 x 121)	11.9 (5,4)	17.3 (9,1)
165,1 mmx 1-1/4 150 x 32	6.500 x 1.660 (165,1 x 42,2)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.7 (3,5)	9.5 (4,3)
165,1 mmx 1-1/2 150 x 40	6.500 x 1.900 (165,1 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.7 (3,5)	9.5 (4,3)
165,1mm x 2 150 x 50	6.500 x 2.375 (165,1 x 60,3)	2.50 (63,5)	2.63 (66,7)	— (M16 x 121)	8.2 (3,7)	9.5 (4,3)
165,1mm x 2-1/2 150 x 65	6.500 x 2.875 (165,1 x 73,0)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	9.0 (4,1)	11.3 (5,1)
165,1mm x 76,1 150 x 65	6.500 x 3.000 (165,1 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	9.0 (4,1)	11.3 (5,1)
165,1mm x 3 150 x 80	6.500 x 3.500 (165,1 x 88,9)	3.50 (88,9)	3.63 (92,1)	— (M16 x 121)	10.5 (4,8)	14.1 (6,4)
8 x 2 200 x 50	8.625 x 2.375 (219,1 x 60,3)	2.50 (63,5)	2.63 (66,7)	3/4 x 4-3/4 (M20 x 121)	12.1 (5,5)	14.1 (6,4)

b. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded components other than steel pipe, such as dry type sprinklers, etc., may not be compatible with the female threaded outlets of Mechanical Tees and Crosses. Always confirm compatibility by contacting your TYCO Fire Protection Products Technical Services representative.

c. Gold color coded metric bolt sizes are available upon request.

Figure 730 Threaded Mechanical Tees & Crosses

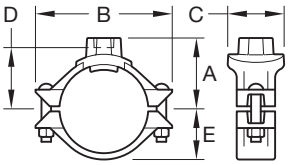


FIGURE 730
TEE THREADED OUTLET

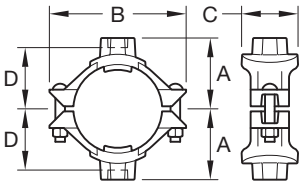


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
8 x 2-1/2 200 x 65	8.625 x 2.875 (219,1 x 73,0)	6.25 (158,8)	12.50 (317,5)	4.38 (111,3)	5.12 (130,0)	4.90 (124,5)
8 x 76,1mm 200 x 65	8.625 x 3.000 (219,1 x 76,1)	6.25 (158,8)	12.50 (317,5)	4.38 (111,3)	5.12 (130,0)	4.90 (124,5)
8 x 3 200 x 80	8.625 x 3.500 (219,1 x 88,9)	6.50 (165,1)	12.50 (317,5)	5.13 (130,3)	5.37 (136,4)	4.90 (124,5)
8 x 4 200 x 100	8.625 x 4.500 (219,1 x 114,3)	6.38 (162,1)	12.50 (317,5)	6.13 (155,7)	5.56 (141,2)	4.90 (124,5)

a. Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 142.

- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Threaded Mechanical Tees & Crosses 10 of 10

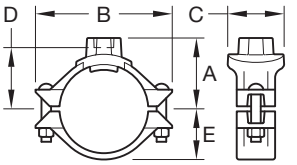


FIGURE 730
TEE THREADED OUTLET

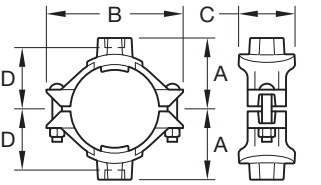


FIGURE 730
CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[b]		Bolt[c] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
8 x 2-1/2 200 x 65	8.625 x 2.875 (219,1 x 73,0)	2.75 (69,9)	2.88 (73,0)	3/4 x 4-3/4 (M20 x 121)	12.6 (5,7)	15.0 (6,8)
8 x 76,1mm 200 x 65	8.625 x 3.000 (219,1 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M20 x 121)	12.6 (5,7)	15.0 (6,8)
8 x 3 200 x 80	8.625 x 3.500 (219,1 x 88,9)	3.50 (88,9)	3.63 (92,1)	3/4 x 4-3/4 (M20 x 121)	13.6 (6,1)	16.9 (7,7)
8 x 4 200 x 100	8.625 x 4.500 (219,1 x 114,3)	4.50 (114,3)	4.63 (117,5)	3/4 x 4-3/4 (M20 x 121)	15.2 (6,9)	20.0 (9,1)

b. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe. The use of threaded components other than steel pipe, such as dry type sprinklers, etc., may not be compatible with the female threaded outlets of Mechanical Tees and Crosses. Always confirm compatibility by contacting your TYCO Fire Protection Products Technical Services representative.
c. Gold color coded metric bolt sizes are available upon request.

Figure 730 Grooved Mechanical Tees & Crosses

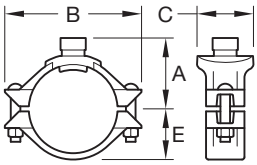


FIGURE 730
TEE GROOVED OUTLET

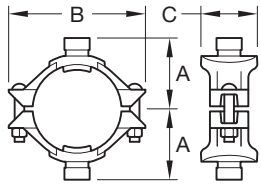


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	E
2 x 1-1/4 50 x 32	2.375 x 1.660 (60,3 x 42,2)	2.78 (70,6)	4.88 (124,0)	3.32 (84,3)	1.59 (40,4)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,3)	2.62 (66,5)	4.88 (124,0)	3.32 (84,3)	1.59 (40,4)
2-1/2 x 1-1/4 65 x 32	2.875 x 1.660 (73,0 x 42,2)	3.00 (76,2)	5.25 (133,4)	3.56 (90,4)	1.81 (46,0)
2-1/2 x 1-1/2 65 x 40	2.875 x 1.900 (73,0 x 48,3)	3.07 (78,0)	5.25 (133,4)	3.59 (91,2)	1.81 (46,0)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	3.19 (81,0)	5.25 (133,4)	4.00 (101,6)	1.81 (46,0)
76,1mm x 1 65 x 32	3.000 x 1.315 (76,1 x 33,7)	2.94 (74,5)	5.62 (142,7)	3.07 (78,0)	1.87 (47,5)
76,1mm x 1-1/4 65 x 32	3.000 x 1.660 (76,1 x 42,4)	3.06 (77,7)	5.62 (142,7)	3.56 (90,4)	1.87 (47,5)
76,1mm x 1-1/2 65 x 40	3.000 x 1.900 (76,1 x 48,3)	3.13 (79,5)	5.62 (142,7)	3.56 (90,4)	1.87 (47,5)
76,1mm x 2 65 x 50	3.000 x 2.375 (76,1 x 60,3)	3.25 (82,6)	5.62 (142,7)	4.00 (101,6)	1.87 (47,5)
3 x 1-1/4 80 x 32	3.500 x 1.660 (88,9 x 42,2)	3.34 (84,8)	6.13 (155,7)	3.32 (84,3)	2.21 (56,1)
3 x 1-1/2 80 x 40	3.500 x 1.900 (88,9 x 48,3)	3.38 (85,9)	6.13 (155,7)	3.56 (90,4)	2.21 (56,1)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	3.50 (88,9)	6.13 (155,7)	4.09 (103,9)	2.21 (56,1)
4 x 1-1/4 100 x 32	4.500 x 1.660 (114,3 x 42,2)	3.92 (99,6)	7.13 (181,1)	3.32 (84,3)	2.78 (70,6)
4 x 1-1/2 100 x 40	4.500 x 1.900 (114,3 x 48,3)	4.00 (101,6)	7.13 (181,1)	3.56 (90,4)	2.78 (70,6)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 152.
- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Grooved Mechanical Tees & Crosses

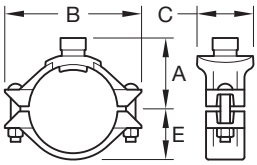


FIGURE 730
TEE GROOVED OUTLET

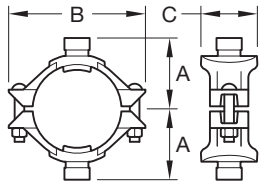


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[a]		Bolt[b] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
2 x 1-1/4 50 x 32	2.375 x 1.660 (60,3 x 42,2)	1.75 (44,5)	1.88 (47,6)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.3 (1,5)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,3)	1.75 (44,5)	1.88 (47,6)	3/8 x 2-1/4 (M10 x 57)	2.4 (1,1)	3.7 (1,7)
2-1/2 x 1-1/4 65 x 32	2.875 x 1.660 (73,0 x 42,2)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.8 (1,7)
2-1/2 x 1-1/2 65 x 40	2.875 x 1.900 (73,0 x 48,3)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.9 (1,8)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	2.00 (50,8)	2.13 (54,0)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.8 (1,7)
76,1mm x 1 65 x 32	3.000 x 1.315 (76,1 x 33,7)	1.50 (38,1)	1.63 (41,3)	— (M10 x 57)	2.5 (1,1)	3.5 (1,6)
76,1mm x 1-1/4 65 x 32	3.000 x 1.660 (76,1 x 42,4)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	2.5 (1,1)	3.8 (1,7)
76,1mm x 1-1/2 65 x 40	3.000 x 1.900 (76,1 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	2.5 (1,1)	3.9 (1,8)
76,1mm x 2 65 x 50	3.000 x 2.375 (76,1 x 60,3)	2.00 (50,8)	2.13 (54,0)	— (M10 x 57)	2.5 (1,1)	3.8 (1,7)
3 x 1-1/4 80 x 32	3.500 x 1.660 (88,9 x 42,2)	1.75 (44,5)	1.88 (47,6)	1/2 x 3 (M12 x 76)	3.5 (1,6)	4.6 (2,1)
3 x 1-1/2 80 x 40	3.500 x 1.900 (88,9 x 48,3)	2.00 (50,8)	2.13 (54,0)	1/2 x 3 (M12 x 76)	3.6 (1,6)	5.0 (2,3)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	2.50 (63,5)	2.63 (66,7)	1/2 x 3 (M12 x 76)	4.5 (2,0)	6.4 (2,9)
4 x 1-1/4 100 x 32	4.500 x 1.660 (114,3 x 42,2)	1.75 (44,5)	1.88 (47,6)	1/2 x 3 (M12 x 76)	4.8 (2,2)	5.6 (2,5)
4 x 1-1/2 100 x 40	4.500 x 1.900 (114,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	1/2 x 3 (M12 x 76)	5.0 (2,3)	6.2 (2,8)

a. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe.

b. Gold color coded metric bolt sizes are available upon request.

Figure 730 Grooved Mechanical Tees & Crosses

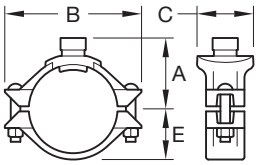


FIGURE 730
TEE GROOVED OUTLET

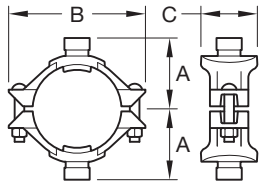


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	E
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	4.00 (101,6)	7.13 (181,1)	4.06 (103,1)	2.78 (70,6)
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	4.00 (101,6)	7.13 (181,1)	4.38 (111,3)	2.78 (70,6)
4 x 76,1mm 100 x 65	4.500 x 3.000 (114,3 x 76,1)	4.00 (101,6)	7.13 (181,1)	4.38 (111,3)	2.78 (70,6)
4 x 3 100 x 80	4.500 x 3.500 (114,3 x 88,9)	4.13 (104,9)	7.13 (181,1)	5.13 (130,3)	2.78 (70,6)
5 x 1-1/2 125 x 40	5.563 x 1.900 (141,3 x 48,3)	4.63 (117,6)	8.13 (206,5)	3.56 (90,4)	3.37 (85,6)
5 x 2 125 x 50	5.563 x 2.375 (141,3 x 60,3)	4.63 (117,6)	8.13 (206,5)	4.06 (103,1)	3.37 (85,6)
5 x 2-1/2 125 x 65	5.563 x 2.875 (141,3 x 73,0)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.37 (85,6)
5 x 76,1mm 125 x 65	5.563 x 3.000 (141,3 x 76,1)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.37 (85,6)
5 x 3 125 x 80	5.563 x 3.500 (141,3 x 88,9)	5.00 (127,0)	8.13 (206,5)	5.13 (130,3)	3.37 (85,6)
139,7mm x 1-1/2 125 x 40	5.500 x 1.900 (139,7 x 48,3)	4.63 (117,6)	8.13 (206,5)	3.56 (90,4)	3.37 (85,6)
139,7mm x 2 125 x 50	5.500 x 2.375 (139,7 x 60,3)	4.63 (117,6)	8.13 (206,5)	4.06 (103,1)	3.37 (85,6)
139,7mm x 2-1/2 125 x 65	5.500 x 2.875 (139,7 x 73,0)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.37 (85,6)
139,7mm x 76,1mm 125 x 65	5.500 x 3.000 (139,7 x 76,1)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.37 (85,6)
139,7mm x 3 125 x 80	5.500 x 3.500 (139,7 x 88,9)	5.00 (127,0)	8.13 (206,5)	5.13 (130,3)	3.37 (85,6)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 152.
- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Grooved Mechanical Tees & Crosses

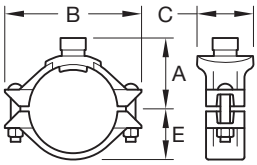


FIGURE 730
TEE GROOVED OUTLET

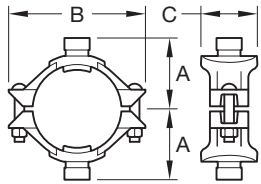


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[a]		Bolt[b] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	1/2 x 3 (M12 x 76)	5.3 (2,4)	6.9 (3,1)
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	1/2 x 3 (M12 x 76)	5.9 (2,7)	8.2 (3,7)
4 x 76,1mm 100 x 65	4.500 x 3.000 (114,3 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M12 x 76)	5.9 (2,7)	8.2 (3,7)
4 x 3 100 x 80	4.500 x 3.500 (114,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	1/2 x 3 (M12 x 76)	7.4 (3,4)	11.1 (5,0)
5 x 1-1/2 125 x 40	5.563 x 1.900 (141,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.7 (3,5)	9.2 (4,2)
5 x 2 125 x 50	5.563 x 2.375 (141,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	5/8 x 4-3/4 (M16 x 121)	7.6 (3,4)	9.0 (4,1)
5 x 2-1/2 125 x 65	5.563 x 2.875 (141,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.6 (3,9)	11.0 (5,0)
5 x 76,1mm 125 x 65	5.563 x 3.000 (141,3 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.6 (3,9)	11.0 (5,0)
5 x 3 125 x 80	5.563 x 3.500 (141,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	5/8 x 4-3/4 (M16 x 121)	12.3 (5,6)	12.5 (5,7)
139,7mm x 1-1/2 125 x 40	5.500 x 1.900 (139,7 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.7 (3,5)	9.2 (4,2)
139,7mm x 2 125 x 50	5.500 x 2.375 (139,7 x 60,3)	2.50 (63,5)	2.63 (66,7)	— (M16 x 121)	7.6 (3,4)	9.0 (4,1)
139,7mm x 2-1/2 125 x 65	5.500 x 2.875 (139,7 x 73,0)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.6 (3,9)	11.0 (5,0)
139,7mm x 76,1mm 125 x 65	5.500 x 3.000 (139,7 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.6 (3,9)	11.0 (5,0)
139,7mm x 3 125 x 80	5.500 x 3.500 (139,7 x 88,9)	3.50 (88,9)	3.63 (92,1)	— (M16 x 121)	12.3 (5,6)	12.5 (5,7)

a. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe.

b. Gold color coded metric bolt sizes are available upon request.

Figure 730 Grooved Mechanical Tees & Crosses

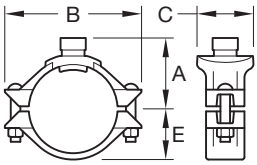


FIGURE 730
TEE GROOVED OUTLET

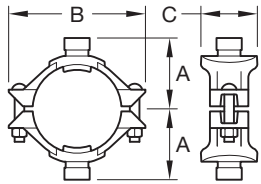


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	E
6 x 1-1/4 150 x 32	6.625 x 1.660 (168,3 x 42,2)	5.13 (130,3)	9.25 (235,0)	3.56 (90.4)	3.90 (99,1)
6 x 1-1/2 150 x 40	6.625 x 1.900 (168,3 x 48,3)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	3.90 (99,1)
6 x 2 150 x 50	6.625 x 2.375 (168,3 x 60,3)	5.13 (130,3)	9.25 (235,0)	4.06 (103,1)	3.90 (99,1)
6 x 2-1/2 150 x 65	6.625 x 2.875 (168,3 x 73,0)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
6 x 76,1mm 150 x 65	6.625 x 3.000 (168,3 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
6 x 3 150 x 80	6.625 x 3.500 (168,3 x 88,9)	5.50 (139,7)	9.25 (235,0)	5.13 (130,3)	3.90 (99,1)
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	5.38 (136,7)	9.25 (235,0)	6.13 (155,7)	3.90 (99,1)
165,1mm x 1-1/4 150 x 32	6.500 x 1.660 (165,1 x 42,2)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	3.90 (99,1)
165,1mm x 1-1/2 150 x 40	6.500 x 1.900 (165,1 x 48,3)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	3.90 (99,1)
165,1mm x 2 150 x 50	6.500 x 2.375 (165,1 x 60,3)	5.13 (130,3)	9.25 (235,0)	4.06 (103,1)	3.90 (99,1)
165,1mm x 2-1/2 150 x 65	6.500 x 2.875 (165,1 x 73,0)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
165,1mm x 76,1mm 150 x 65	6.500 x 3.000 (165,1 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
165,1mm x 3 150 x 80	6.500 x 3.500 (165,1 x 88,9)	5.50 (139,7)	9.25 (235,0)	5.13 (130,3)	3.90 (99,1)
165,mm x 4 150 x 100	6.500 x 4.500 (165,1 x 114,1)	5.38 (136,7)	9.25 (235,0)	6.13 (155,7)	3.90 (99,1)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 152.
- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Grooved Mechanical Tees & Crosses

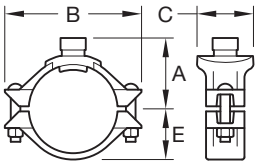


FIGURE 730
TEE GROOVED OUTLET

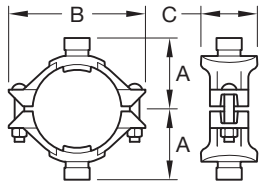


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[a]		Bolt[b] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
6 x 1-1/4 150 x 32	6.625 x 1.660 (168,3 x 42,2)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.7 (3,5)	9.5 (4,3)
6 x 1-1/2 150 x 40	6.625 x 1.900 (168,3 x 48,3)	2.00 (50,8)	2.13 (54,0)	5/8 x 4-3/4 (M16 x 121)	7.6 (3,4)	9.3 (4,2)
6 x 2 150 x 50	6.625 x 2.375 (168,3 x 60,3)	2.50 (63,5)	2.63 (66,7)	5/8 x 4-3/4 (M16 x 121)	8.0 (3,6)	9.1 (4,1)
6 x 2-1/2 150 x 65	6.625 x 2.875 (168,3 x 73,0)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.8 (4,0)	10.8 (4,9)
6 x 76,1mm 150 x 65	6.625 x 3.000 (168,3 x 76,1)	2.75 (69,9)	2.88 (73,0)	5/8 x 4-3/4 (M16 x 121)	8.8 (4,0)	10.8 (4,9)
6 x 3 150 x 80	6.625 x 3.500 (168,3 x 88,9)	3.50 (88,9)	3.63 (92,1)	5/8 x 4-3/4 (M16 x 121)	10.1 (4,6)	13.3 (6,0)
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	4.50 (114,3)	4.63 (117,5)	5/8 x 4-3/4 (M16 x 121)	11.6 (5,3)	16.3 (7,4)
165,1mm x 1-1/4 150 x 32	6.500 x 1.660 (165,1 x 42,2)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.7 (3,5)	9.5 (4,3)
165,1mm x 1-1/2 150 x 40	6.500 x 1.900 (165,1 x 48,3)	2.00 (50,8)	2.13 (54,0)	— (M16 x 121)	7.6 (3,4)	9.3 (4,2)
165,1mm x 2 150 x 50	6.500 x 2.375 (165,1 x 60,3)	2.50 (63,5)	2.63 (66,7)	— (M16 x 121)	8.0 (3,6)	9.1 (4,1)
165,1mm x 2-1/2 150 x 65	6.500 x 2.875 (165,1 x 73,0)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.8 (4,0)	10.8 (4,9)
165,1mm x 76,1mm 150 x 65	6.500 x 3.000 (165,1 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M16 x 121)	8.8 (4,0)	10.8 (4,9)
165,1mm x 3 150 x 80	6.500 x 3.500 (165,1 x 88,9)	3.50 (88,9)	3.63 (92,1)	— (M16 x 121)	10.1 (4,6)	13.3 (6,0)
165,1mm x 4 150 x 100	6.500 x 4.500 (165,1 x 114,1)	4.50 (114,3)	4.63 (117,5)	— (M16 x 121)	11.6 (5,3)	16.3 (7,4)

a. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe.

b. Gold color coded metric bolt sizes are available upon request.

Figure 730 Grooved Mechanical Tees & Crosses

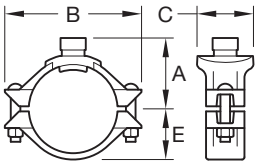


FIGURE 730
TEE GROOVED OUTLET

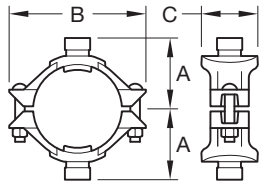


FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	E
8 x 2 200 x 50	8.625 x 2.375 (219,1 x 60,3)	6.25 (158,8)	12.50 (317,5)	4.06 (103,1)	4.90 (124,5)
8 x 2-1/2 200 x 65	8.625 x 2.875 (219,1 x 73,0)	6.25 (158,8)	12.50 (317,5)	4.38 (111,3)	4.90 (124,5)
8 x 76,1mm 200 x 65	8.625 x 3.000 (219,1 x 76,1)	6.25 (158,8)	12.50 (317,5)	4.38 (111,3)	4.90 (124,5)
8 x 3 200 x 80	8.625 x 3.500 (219,1 x 88,9)	6.50 (165,1)	12.50 (317,5)	5.13 (130,3)	4.90 (124,5)
8 x 4 200 x 100	8.625 x 4.500 (219,1 x 114,3)	6.38 (162,1)	12.50 (317,5)	6.13 (155,7)	4.90 (124,5)

- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 152.
- Refer to Technical Data Sheet TFP1860 for more information.

Figure 730 Grooved Mechanical Tees & Crosses

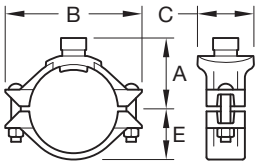


FIGURE 730
TEE GROOVED OUTLET

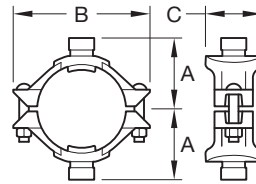


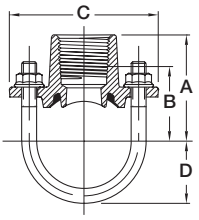
FIGURE 730
CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches DN	O.D. Inches (mm)	Hole Diameter[a]		Bolt[b] Size Inches (mm)	Approx. Weight Lbs. (kg)	
		Min. Inches (mm)	Max. Inches (mm)		Tee	Cross
8 x 2 200 x 50	8.625 x 2.375 (219,1 x 60,3)	2.50 (63,5)	2.63 (66,7)	3/4 x 4-3/4 (M20 x 121)	12.1 (5,5)	14.1 (6,4)
8 x 2-1/2 200 x 65	8.625 x 2.875 (219,1 x 73,0)	2.75 (69,9)	2.88 (73,0)	3/4 x 4-3/4 (M20 x 121)	12.3 (5,6)	14.5 (6,6)
8 x 76,1 200 x 65	8.625 x 3.000 (219,1 x 76,1)	2.75 (69,9)	2.88 (73,0)	— (M20 x 121)	12.3 (5,6)	14.5 (6,6)
8 x 3 200 x 80	8.625 x 3.500 (219,1 x 88,9)	3.50 (88,9)	3.63 (92,1)	3/4 x 4-3/4 (M20 x 121)	13.2 (6,0)	16.1 (7,3)
8 x 4 200 x 100	8.625 x 4.500 (219,1 x 114,3)	4.50 (114,3)	4.63 (117,5)	3/4 x 4-3/4 (M20 x 121)	14.7 (6,7)	19.0 (8,6)

a. Proper outlet hole preparation is required for effective sealing and performance. Inspect the pipe seal surface within 5/8 inch (15,9 mm) of the hole to ensure it is free from conditions that would adversely affect proper gasket sealing. Remove any sharp or rough edges from the hole or upper housing contact area that might affect assembly, proper seating of the locating collar or flow from the outlet. For Mechanical Crosses, ensure double outlet holes are aligned on opposite sides of the pipe.

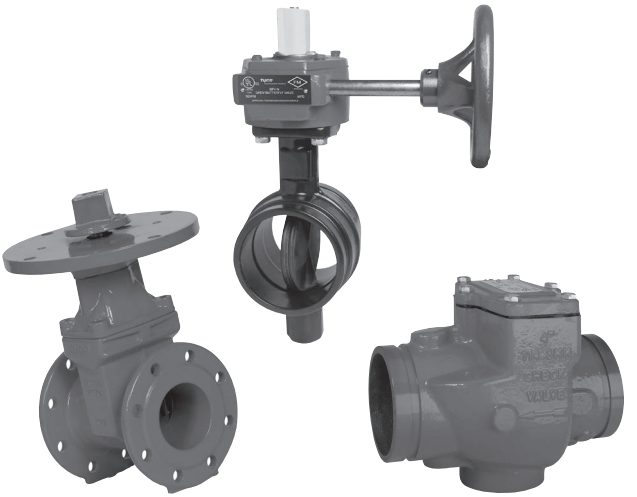
b. Gold color coded metric bolt sizes are available upon request.

Figure 40-5 Strap (Pipe Outlet)



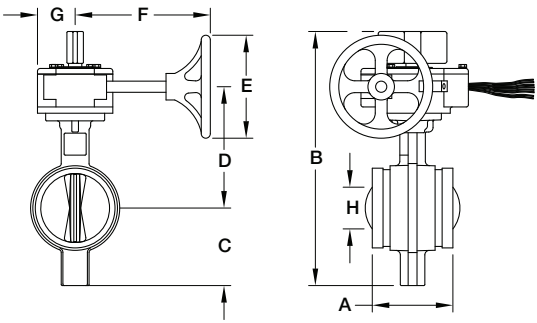
Nominal Run Size ANSI Inches DN	O.D. Inches (mm)	Outlet Size NPT	Nominal Dimensions Inches (mm)				Approx. Weight Lbs. (kg)
			A	B	C	D	
1-1/4 32	1.660 (42,4)	1/2	2.00 (50,8)	1.50 (38,1)	3.50 (88,9)	1.20 (30,5)	0.84 (0,4)
		3/4	2.00 (50,8)	1.50 (38,1)	3.50 (88,9)	1.20 (30,5)	0.88 (0,4)
		1	2.31 (58,7)	1.68 (42,7)	3.50 (88,9)	1.20 (30,5)	1.13 (0,5)
1-1/2 40	1.900 (48,3)	1/2	2.12 (53,8)	1.62 (41,1)	3.50 (88,9)	1.32 (33,5)	0.84 (0,4)
		3/4	2.12 (53,8)	1.62 (41,1)	3.50 (88,9)	1.32 (33,5)	0.88 (0,4)
		1	2.43 (61,7)	1.80 (45,7)	3.50 (88,9)	1.32 (33,5)	1.13 (0,5)
2 50	2.375 (60,3)	1/2	2.36 (59,9)	1.86 (47,2)	3.74 (95,0)	1.55 (39,4)	0.88 (0,4)
		3/4	2.36 (59,9)	1.86 (47,2)	3.74 (95,0)	1.55 (39,4)	0.95 (0,4)
		1	2.67 (67,8)	2.04 (51,8)	3.74 (95,0)	1.55 (39,4)	1.16 (0,5)
2-1/2 65	2.875 (73,0)	1/2	2.61 (66,3)	2.11 (53,6)	4.25 (108,0)	1.80 (45,7)	0.90 (0,4)
		3/4	2.61 (66,3)	2.11 (53,6)	4.25 (108,0)	1.80 (45,7)	0.99 (0,5)
		1	2.92 (74,2)	2.29 (58,2)	4.25 (108,0)	1.80 (45,7)	1.21 (0,5)

- Outlet hole size in pipe is 1-3/16 inch (30,2 mm) diameter.
- Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 159.
- Refer to Technical Data Sheet TFP1720 for more information.



Valves

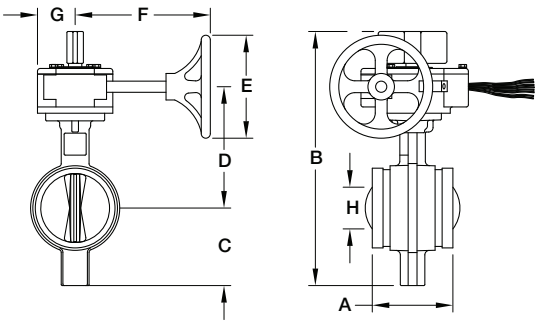
Model BFV-N Grooved End Butterfly Valve 1 of 2



Nominal Pipe Size		Max. Working Pressure psi (bar)	Nominal Dimensions- Inches (mm)			
ANSI Inches DN	O.D. Inches (mm)		A	B	C	D
2-1/2 65	2.88 (73,0)	300 (20,7)	3.85 (98,0)	11.94 (303,3)	3.25 (83,0)	5.67 (144,0)
76,1mm 65	3.00 (76,1)	300 (20,7)	3.85 (98,0)	11.94 (303,3)	3.25 (83,0)	5.67 (144,0)
3 80	3.50 (88,9)	300 (20,7)	3.85 (98,0)	12.48 (317,0)	3.54 (90,0)	5.94 (150,9)
4 100	4.50 (114,3)	300 (20,7)	4.56 (116,0)	14.18 (360,2)	4.35 (110,0)	6.31 (160,3)
5 125	5.56 (141,3)	300 (20,7)	5.86 (149,0)	145.17 (385,3)	4.84 (123,0)	7.32 (185,9)
165,1mm 150	— (165,1)	300 (20,7)	5.86 (149,0)	17.54 (445,5)	5.93 (151,0)	8.62 (218,9)
6 150	6.63 (168,3)	300 (20,7)	5.86 (149,0)	17.54 (445,5)	5.93 (151,0)	8.62 (218,9)
8 200	8.63 (219,1)	300 (20,7)	5.26 (134,0)	19.42 (493,3)	6.87 (174,0)	9.80 (248,9)
10 250	10.75 (273,1)	175 (12,0)	6.29 (160,0)	24.03 (610,4)	9.17 (233,0)	11.61 (294,9)

- Refer to Technical Data Sheet TFP1510 for more information.

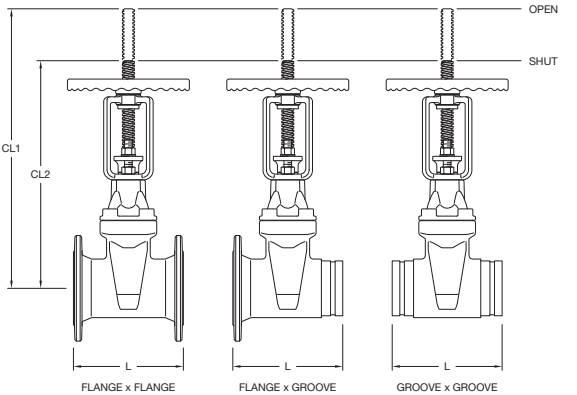
Model BFV-N Grooved End Butterfly Valve 2 of 2



Nominal Pipe Size		Nominal Dimensions- Inches (mm)				Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	E	F	G	H	
2-1/2 65	2.88 (73,0)	5.90 (149,9)	5.82 (147,8)	2.13 (54,1)	0[a]	22 (10,0)
76,1mm 65	3.00 (76,1)	5.90 (149,9)	5.82 (147,8)	2.13 (54,1)	0[a]	22 (10,0)
3 80	3.50 (88,9)	5.90 (149,9)	5.82 (147,8)	2.13 (54,1)	0[a]	23 (10,4)
4 100	4.50 (114,3)	5.90 (149,9)	7.64 (194,1)	2.13 (54,1)	0[a]	28 (12,7)
5 125	5.56 (141,3)	5.90 (149,9)	7.64 (194,1)	2.13 (54,1)	0[a]	31 (14,1)
165,1mm 150	— (165,1)	5.90 (149,9)	7.64 (194,1)	2.13 (54,1)	0.67 (17,0)	41 (18,6)
6 150	6.63 (168,3)	5.90 (149,9)	7.64 (194,1)	2.13 (54,1)	0.67 (17,0)	41 (18,6)
8 200	8.63 (219,1)	9.80 (248,9)	7.91 (200,9)	2.13 (54,1)	5.86 (148,8)	53 (24,1)
10 250	10.75 (273,1)	18.00 (457,2)	9.49 (241,0)	3.03 (77,0)	7.41 (188,2)	88 (40,0)

a. End of disc does not extend beyond valve body

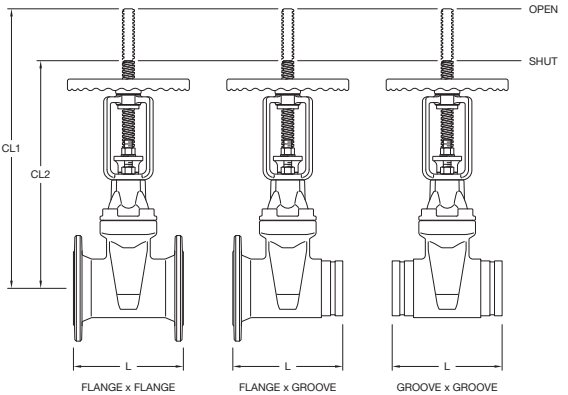
Resilient-Seated Gate Valve Outside Screw and Yoke



Nominal Valve Size	Nominal Pipe Size	Nominal Dimensions Inches (mm)		
ANSI Inches DN	O.D. Inches (mm)	L	CL1	CL2
2 50	2.38 (60,3)	7.00 (178)	15.55 (395)	13.07 (332)
2-1/2 65	2.88 (73,0)	7.50 (190)	16.14 (410)	13.31 (338)
— 65	3.00 (76,1)	7.50 (190)	16.14 (410)	13.31 (338)
3 80	3.50 (88,9)	8.00 (203)	18.9 (480)	14.96 (380)
4 100	4.50 (114,3)	900 (229)	22.56 (573)	17.72 (450)
— 150	6.50 (165,1)	10.50 (267)	29.53 (750)	23.31 (592)
6 150	6.63 (168,3)	10.50 (267)	29.53 (750)	23.31 (592)
8 200	8.63 (219,1)	11.50 (292)	37.64 (956)	29.45 (748)
10 250	10.75 (273,1)	13.00 (330)	46.26 (1175)	34.96 (888)
12 300	12.75 (323,9)	14.00 (356)	51.89 (1318)	39.57 (1005)

- Refer to Technical Data Sheet TFP1540 for more information.

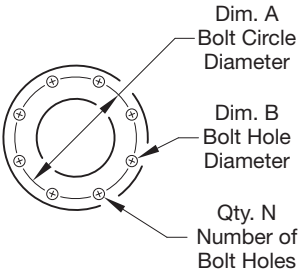
Resilient-Seated Gate Valve Outside Screw and Yoke



Nominal Valve Size ANSI Inches DN	Nominal Pipe Size O.D. Inches (mm)	Nominal Hand-wheel Turns to Fully Operate (Open to Shut)	Approx. Weight F x F Lbs. (kg)	Approx. Weight F x G Lbs. (kg)	Approx. Weight G x G Lbs. (kg)
2 50	2.38 (60,3)	13	29.8 (13,5)	27.6 (12,5)	25.4 (11,5)
2-1/2 65	2.88 (73,0)	16	35.3 (16)	30.9 (14)	26.5 (12)
— 65	3.00 (76,1)	16	—	30.9 (14)	26.5 (12)
3 80	3.50 (88,9)	20	41.9 (19)	36.4 (16,5)	30.9 (14)
4 100	4.50 (114,3)	20	57.3 (26)	50.7 (23)	44.1 (20)
— 150	6.50 (165,1)	25	—	88.2 (40)	79.4 (36)
6 150	6.63 (168,3)	25	97.0 (44)	88.2 (40)	79.4 (36)
8 200	8.63 (219,1)	34	154.4 (70)	143.3 (65)	110.3 (50)
10 250	10.75 (273,1)	42	264.6 (120)	242.6 (110)	220.5 (100)
12 300	12.75 (323,9)	50	330.8 (150)	297.7 (135)	275.6 (125)

- Refer to Technical Data Sheet TFP1540 for more information.

Resilient-Seated Gate Valve Outside Screw and Yoke

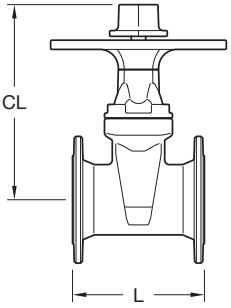


GATE VALVE FLANGE

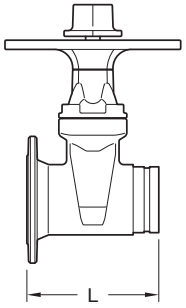
Nominal Valve Size	Nominal Dimensions Inches (mm)								
ANSI Inches DN	ANSI Class 150			ISO 7005-2 PN16			AS 2129 (Table E)		
	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N	Dim. A	Dim. B	Qty. N
2 50	4.75 (120,5)	0.75 (19)	4	4.92 (125,0)	0.75 (19)	4	4.48 (114,0)	0.71 (18)	4
2-1/2 65	5.50 (139,5)	0.75 (19)	4	5.71 (145,0)	0.75 (19)	4	5.00 (127,0)	0.71 (18)	4
3 80	6.00 (152,5)	0.75 (19)	4	6.30 (160,0)	0.75 (19)	8	5.74 (146,0)	0.71 (18)	4
4 100	7.50 (190,5)	0.75 (19)	8	7.09 (180,0)	0.75 (19)	8	7.00 (178,0)	0.71 (18)	8
6 150	9.50 (241,5)	0.88 (22)	8	9.45 (240,0)	0.88 (22)	8	9.25 (235,0)	0.87 (22)	8
8 200	11.75 (298,5)	0.88 (22)	8	11.61 (295,0)	0.88 (22)	12	111.49 (292,0)	0.87 (22)	8
10 250	14.25 (362,0)	1.00 (25)	12	13.98 (355,0)	1.13 (28)	12	14.02 (356,0)	0.87 (22)	12
12 300	17.00 (432,0)	1.00 (25)	12	16.14 (410,0)	1.13 (28)	12	15.98 (406,0)	1.02 (26)	12

- Refer to Technical Data Sheet TFP1540 for more information.

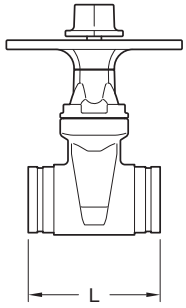
Resilient-Seated Post Indicator Gate Valve



FLANGE x FLANGE



FLANGE x GROOVE

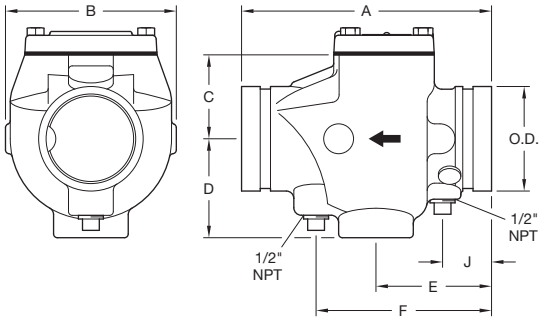


GROOVE x GROOVE

Nominal Valve Size	Nominal Pipe Size	Nominal Dimensions Inches (mm)		Approx. Weight F x F Lbs. (kg)	Approx. Weight F x G Lbs. (kg)	Approx. Weight G x G Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	L	CL			
4 100	4.50 (114,3)	9.00 (229)	13.07 (332)	70.5 (32)	55.1 (25)	48.5 (22)
— 150	6.50 (165,1)	10.50 (267)	17.17 (436)	**—**	83.8 (38)	75.0 (34)
6 150	6.63 (168,3)	10.50 (267)	17.17 (436)	103.6 (47)	83.8 (38)	75.0 (34)
8 200	8.63 (219,1)	11.50 (292)	20.47 (520)	169.7 (77)	134.5 (61)	123.5 (56)
10 250	10.75 (273,1)	13.00 (330)	24.41 (620)	240.3 (109)	202.8 (92)	180.8 (82)
12 300	12.75 (323,9)	14.00 (356)	26.38 (670)	295.4 (134)	262.4 (119)	235.9 (107)

- Refer to Technical Data Sheet TFP1545 for more information.

Model CV-1F Check Valve 1 of 2

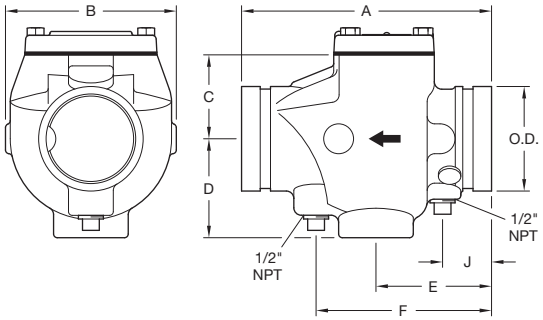


Nominal Pipe Size		Max. Working Pressure[a] psi (bar)	Nominal Dimensions Inches (mm)			
ANSI Inches DN	O.D. Inches (mm)		A	B	C	D
2 50	2.37 (60,3)	300 (20,7)	6.75 (171,5)	1.96 (49,8)	1.96 (49,8)	2.57 (65,3)
2-1/2 65	2.88 (73,0)	300 (20,7)	8.00 (203,2)	5.38 (136,7)	2.63 (66,7)	3.09 (78,5)
76,1mm 65	3.00 (76,1)	300 (20,7)	8.00 (203,2)	5.38 (136,7)	2.63 (66,7)	3.09 (78,5)
3 80	3.50 (88,9)	300 (20,7)	8.37 (212,6)	5.72 (145,3)	2.81 (71,4)	3.31 (84,1)
4 100	4.50 (114,3)	300 (20,7)	9.63 (244,6)	6.68 (169,7)	3.80 (96,5)	3.63 (92,2)
139,7mm 125	5.50 (139,7)	300 (20,7)	10.50 (266,7)	7.40 (188,0)	4.46 (113,3)	4.13 (104,9)
5 125	5.56 (141,3)	300 (20,7)	10.50 (266,7)	7.40 (188,0)	4.46 (113,3)	4.13 (104,9)
165,1mm 150	6.50 (165,1)	300 (20,7)	11.50 (292,1)	8.00 (203,2)	4.62 (117,3)	4.50 (114,3)
6 150	6.63 (168,3)	300 (20,7)	11.50 (292,1)	8.00 (203,2)	4.62 (117,3)	4.50 (114,3)
8 200	8.63 (219,1)	300 (20,7)	14.00 (355,6)	10.14 (257,8)	6.67 (169,4)	5.52 (140,2)
10 250	10.75 (273,1)	300 (20,7)	18.00 (457,2)	12.38 (314,5)	8.62 (218,9)	6.41 (162,8)
12 (300)	12.75 (323,9)	300 (20,7)	21.00 (533,4)	14.28 (362,7)	9.93 (252,2)	7.27 (184,7)

a. Maximum working pressure for VdS is 16 bar.

- Refer to Technical Data Sheet TFP1550 Model CV-1F Grooved end Swing Check Valves

Model CV-1F Check Valve 2 of 2



Nominal Pipe Size		Nominal Dimensions Inches (mm)			Cover Bolt Torque Lb.-ft. (Nm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	E	F	J		
2 50	2.37 (60,3)	3.25 (82,3)	4.75 (120,7)	1.62 (41,5)	18 (25)	9.0 (4,5)
2-1/2 65	2.88 (73,0)	3.87 (98,3)	5.87 (149,1)	1.63 (41,7)	39 (54)	10.0 (4,5)
76,1mm 65	3.00 (76,1)	3.87 (98,3)	5.87 (149,1)	1.63 (41,7)	39 (54)	10.0 (4,5)
3 80	3.50 (88,9)	3.87 (98,3)	5.87 (149,1)	1.63 (41,7)	39 (54)	11.0 (5,0)
4 100	4.50 (114,3)	4.53 (115,1)	7.13 (181,1)	1.84 (46,7)	50 (69)	25.0 (11,3)
139,7mm 125	5.50 (139,7)	4.90 (124,5)	7.50 (190,5)	1.75 (44,5)	39 (54)	29.0 (13,2)
5 125	5.56 (141,3)	4.90 (124,5)	7.50 (190,5)	1.75 (44,5)	39 (54)	29.0 (13,2)
165,1mm 150	6.50 (165,1)	5.00 (127,0)	7.60 (193,0)	1.85 (47,0)	60 (82)	47.0 (21,3)
6 150	6.63 (168,3)	5.00 (127,0)	7.60 (193,0)	1.85 (47,0)	60 (82)	47.0 (21,3)
8 200	8.63 (219,1)	5.46 (138,7)	8.46 (214,9)	2.13 (54,1)	120 (164)	66.0 (30,0)
10 250	10.75 (273,1)	7.50 (190,5)	10.50 (266,7)	3.00 (76,2)	130 (178)	109.7 (49,4)
12 (300)	12.75 (323,9)	7.62 (193,5)	10.62 (269,7)	2.75 (69,9)	130 (178)	151.0 (68,0)

- Refer to Technical Data Sheet TFP1550 Model CV-1F Grooved end Swing Check Valves

NOTES

Pipe Schedule Key

Schedule 5 - steel sprinkler pipe

Schedule 10 - steel sprinkler pipe

Schedule 20 - steel sprinkler pipe

Schedule 30 - steel sprinkler pipe

Schedule 40 - steel sprinkler pipe

BS1387M - British Standard Medium Listed/Approved steel sprinkler tube.

ISO4200 - ISO Standard Listed/Approved steel sprinkler tube.

JIS G3452 - Japanese International Standard

BLT - Black Light Wall Threadable Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

DF - Dyna-Flow Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

DT - Dyna-Thread Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

XL - Extra Light Weight Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

SF - Super-Flow Listed/Approved steel sprinkler pipe manufactured by Allied Tube and Conduit.

STF - Steady Flow Listed/Approved steel sprinkler pipe manufactured by AMS Tube Corp.

UE - Ultra-Eddy Listed/Approved steel sprinkler pipe manufactured by Bull Moose Tube Company.

TL - TL Listed/Approved steel sprinkler pipe manufactured by Central Grooved Piping Products.

LS - Listed/Approved steel sprinkler pipe manufactured by Century Tube Corporation.

GAL-FLO - |Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

GAL-7 - Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

ID - IDOD Listed/Approved steel sprinkler pipe manufactured by IDOD Systems.

Pipe Schedule Key

EZ - EZ-Flow Listed/Approved steel sprinkler pipe manufactured by Northwest Pipe and Casting Company.

FLF - Fire Line Flow Listed/Approved steel sprinkler pipe manufactured by Western International Forest Products.

GL - GL Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

MF - Mega Flow Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

MLT - Mega Light Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

MT - Mega Thread Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

SL - Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

WLS - WLS Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

WST - WST Listed/Approved steel sprinkler pipe manufactured by Wheatland Tube Company.

EZT - EZ Thread Listed/Approved steel sprinkler pipe manufactured by Youngstown Tube Company.

FF - Fire-Flo Listed/Approved steel sprinkler pipe manufactured by Youngstown Tube Company.

NOTE:

Cut and roll grooved references are for pipe runs and also grooved outlets.

Grinnell products are UL and ULC Listed and FM, LPCB and VdS Approved, as specified in the following charts, for the pressure ratings shown for use in Fire Protection Systems (automatic sprinkler, open sprinkler and standpipe) and connections to such systems. The charts were developed from the latest Listings and Approval data available at the time of publication. Listings are subject to changes and additions by the approval bodies.

For Dry Pipe systems or Freezer Systems, use Tri-Seal Gaskets and petroleum free silicone lubricant.

Figure 577 Rigid Coupling 1 of 3

Pipe[3, 4], Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10	**1** 25	1.315 (33,7)	300 (20,7)	300 (20,7)	350 (24,1)	—	—
Schedule 40	**1** 25	1.315 (33,7)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 10, 40	**1-1/4** 32	1.660 (42,4)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 10, 40	**1-1/2** 40	1.900 (48,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 10, 40	**2** 50	2.375 (60,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 10, 40	**2-1/2** 65	2.875 (73,0)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 10, 40	**3** 80	3.500 (88,9)	300 (20,7)	300 (20,7)	350 (24,1)	—	—
Schedule 10, 40	**4** 100	4.500 (114,3)	300 (20,7)	300 (20,7)	350 (24,1)	—	—
Schedule 10, 40	**5** 125	5.563 (141,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6** 150	6.625 (168,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**8**[1] 200	8.625 (219,1)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**10**[1] 250	10.750 (273,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**12**[2] 300	12.750 (323,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
ISO 4200 Type F	**—** 65	3.00 (76,1)	300 (20,7)	—	350 (24,1)	—	—
ISO 4200 Type D and E	**—** 65	3.00 (76,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	**—** 65	3.00 (76,1)	300 (20,7)	—	300 (20,7)	—	—

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

* See Pipe Schedule Key on pages 127-128.

Figure 577 Rigid Coupling 2 of 3

Pipe[3, 4], Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Heavy	— 65	3.00 (76,1)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	— 125	5.563 (139,7)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Heavy	— 125	5.563 (139,7)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	— 125	5.563 (139,7)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Heavy	— 150	6.500 (165,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	— 150	6.500 (165,1)	300 (20,7)	—	300 (20,7)	—	—
ISO 65 Medium	**1** 25	1.315 (33,7)	—	—	—	—	290 (20)
ISO 65 Medium	**1-1/4** 32	1.660 (42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**1-1/2** 40	1.900 (48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**2** 50	2.375 (60,3)	—	—	—	—	290 (20)
ISO 65 Medium	— 65	3.000 (76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**3** 80	3.500 (88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**4** 100	4.500 (114,3)	—	—	—	—	290 (20)
ISO 65 Medium	— 150	6.500 (165,1)	—	—	—	—	290 (20)
ISO4200 Wall Thickness 5,4 mm	**6** 150	6.625 (168,3)	—	—	—	—	290 (20)
ISO4200 Wall Thickness 5,4 mm	**8** 200	8.625 (219,1)	—	—	—	—	290 (20)

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

* See Pipe Schedule Key on pages 127-128.

Figure 577 Rigid Coupling 3 of 3

Pipe[3, 4], Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO4200 Wall Thickness 5,4 mm	**10** 250	10.750 (273,0)	—	—	—	—	290 (20)
ISO4200 Wall Thickness 5,4 mm	**12** 300	12.750 (323,9)	—	—	—	—	290 (20)
DIN 2448 or 2548	**1** 25	1.315 (33,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**1-1/4** 32	1.660 (42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**1-1/2** 40	1.900 (48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**2** 50	2.375 (60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**—** 65	3.000 (76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**3** 80	3.500 (88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**4** 100	4.500 (114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**—** 125	5.563 (139,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**6** 150	6.625 (168,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**8** 200	8.625 (219,1)	—	—	—	232 (16)	—

1. For 8 and 10 inch sizes, minimum allowed pipe wall thickness is 0.188 inches
2. For 12 Inch,Schedule 30 is minimum allowed pipe wall thickness by UL and ULC. 0.250 inch wall thickness is the minimum allowed by FM
3. See Agency website for Listing/Approvals of other pipe specifications:
   UL website see Online Certificate Directory, www.ul.com
   FM Global website - www.approvalguide.com
4. See Agency website for Listing/Approvals of other pipe specifications:
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   VdS website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 705 Flexible Coupling 1 of 3

Pipe [3, 4] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**1** 25	1.315 (33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**1-1/4** 32	1.660 (42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**1-1/2** 40	1.900 (48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2** 50	2.375 (60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2** 65	2.875 (73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3** 80	3.500 (88,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**4** 100	4.500 (114,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**5** 125	5.563 (141,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6** 150	6.625 (168,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**8**[1] 200	8.625 (219,1)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**10**[1] 250	10.750 (273,0)	250 (17,2)	250 (17,2)	300 (20,7)	—	—
Schedule 10, 40	**12**[2] 300	12.750 (323,9)	250 (17,2)	250 (17,2)	250 (17,2)	—	—
ISO 4200 Type D and E	**—** 65	3.000 (76,1)	300 (20,7)	—	—	—	—
EN 10255 Heavy	**—** 65	3.000 (76,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	**—** 65	3.000 (76,1)	—	—	300 (20,7)	—	—
ISO 4200 Type E	**—** 100	4.250 (108,0)	300 (20,7)	—	—	—	—

1. For 8 and 10 inch sizes, minimum allowed pipe wall thickness is 0.188 inches.
2. For 12 inch, Schedule 30 is minimum allowed pipe wall thickness by UP and ULC. 0.250 inch wall thickness is the minimum allowed by FM
3. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certification Directory, ww.ul.com
   FM Global Website - www.approvalguide.com
4. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge System, www.redbooklive.com.
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 705 Flexible Coupling 2 of 3

Pipe [3, 4] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Heavy	— 100	4.250 (108,0)	—	—	300 (20,7)	—	—
EN 10255 Medium	— 100	4.250 (108,0)	—	—	300 (20,7)	—	—
ISO 4200 Type E	— 125	5.250 (133,0)	300 (20,7)	—	—	—	—
EN 10255 Heavy	— 125	5.250 (133,0)	—	—	300 (20,7)	—	—
EN 10255 Medium	— 125	5.250 (133,0)	—	—	300 (20,7)	—	—
ISO 4200 Type E	— 125	5.500 (139,7)	300 (20,7)	—	—	—	—
EN 10255 Heavy	— 125	5.500 (139,7)	—	—	300 (20,7)	—	—
EN 10255 Medium	— 125	5.500 (139,7)	—	—	300 (20,7)	—	—
ISO 4200 Type E,	— 150	6.250 (159,0)	300 (20,7)	—	—	—	—
EN 10255 Heavy	— 150	6.250 (159,0)	—	—	300 (20,7)	—	—
EN 10255 Medium	— 150	6.250 (159,0)	—	—	300 (20,7)	—	—
2.5 mm Wall Thickness	— 150	6.500 (165,1)	300 (20,7)	—	—	—	—
EN 10255 Heavy	— 150	6.500 (165,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	— 150	6.500 (165,1)	—	—	300 (20,7)	—	—
ISO 65 Medium	**1-1/4** 32	1.660 (42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**1-1/2** 40	1.900 (48,3)	—	—	—	—	290 (20)

1. For 8 and 10 inch sizes, minimum allowed pipe wall thickness is 0.188 inches.
2. For 12 inch, Schedule 30 is minimum allowed pipe wall thickness by UP and ULC. 0.250 inch wall thickness is the minimum allowed by FM
3. See Agency website for Listing/Approvals of other pipe specifications:
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   FM Global Website - www.approvalguide.com
4. See Agency website for Listing/Approvals of other pipe specifications:
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 705 Flexible Coupling 3 of 3

Pipe [3, 4] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 65 Medium	**2** 50	2.375 (60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**—** 65	3.000 (76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**3** 80	3.500 (88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**4** 100	4.500 (114,3)	—	—	—	—	290 (20)
ISO 65 Medium	**—** 150	6.500 (165,1)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	**6** 150	6.625 (168,3)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	**8** 200	8.625 (219,1)	—	—	—	—	290 (20)
DIN 2448 or 2548	**1-1/4** 32	1.660 (42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**1-1/2** 40	1.900 (48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**2** 50	2.375 (60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**—** 65	3.000 (76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**3** 80	3.500 (88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**4** 100	4.500 (114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**—** 125	5.500 (139,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**6** 150	6.625 (168,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**8** 200	8.625 (219,1)	—	—	—	232 (16)	—

1. For 8 and 10 inch sizes, minimum allowed pipe wall thickness is 0.188 inches.
2. For 12 inch, Schedule 30 is minimum allowed pipe wall thickness by UP and ULC. 0.250 inch wall thickness is the minimum allowed by FM
3. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certification Directory, ww.ul.com
   FM Global Website - www.approvalguide.com
4. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge System, www.redbooklive.com.
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 707 Heavy-Duty Flexible Coupling 1 of 3

Pipe[1, 2] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**1-1/4** 32	1.660 (42,4)	300 (20,7)	300 (20,7)	—	—	—
Schedule 10	**1-1/2** 40	1.900 (48,3)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**2** 50	2.375 (60,3)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**2-1/2** 65	2.875 (73,0)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**3** 80	3.500 (88,9)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**4** 100	4.500 (114,3)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**5** 125	5.563 (141,3)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**6** 150	6.625 (168,3)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**8** 200	8.625 (219,1)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**10** 250	10.750 (273,0)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 10	**12** 300	12.750 (323,9)	450 (31,0)	450 (31,0)	450 (31,0)	—	—
Schedule 40	**1-1/2** 40	1.900 (48,3)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**2** 50	2.375 (60,3)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**2-1/2** 65	2.875 (73,0)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**3** 80	3.500 (88,9)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**4** 100	4.500 (114,3)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**5** 125	5.563 (141,3)	500 (34,5)	500 (34,5)	500 (34,5)	—	—

1. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certification Directory, ww.ul.com
   FM Global Website - www.approvalguide.com
2. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge System, www.redbooklive.com.
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 707 Heavy-Duty Flexible Coupling 2 of 3

Pipe[1, 2] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 40	**6** 150	6.625 (168,3)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**8** 200	8.625 (219,1)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**10** 250	10.750 (273,0)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
Schedule 40	**12** 300	12.750 (323,9)	500 (34,5)	500 (34,5)	500 (34,5)	—	—
2.5 mm Wall Thickness	**—** 65	3.000 (76,1)	300 (20,7)	—	—	—	—
EN 10255 Heavy	**—** 65	3.000 (76,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	**—** 65	3.000 (76,1)	—	—	300 (20,7)	—	—
5.0 mm Wall Thickness	**—** 150	6.500 (165,1)	300 (20,7)	—	—	—	—
EN 10255 Heavy	**—** 150	6.500 (165,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	**—** 150	6.500 (165,1)	—	—	300 (20,7)	—	—
ISO 65 Medium	**1-1/2** 40	1.900 (48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**2** 50	2.375 (60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**—** 65	3.000 (76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**3** 80	3.500 (88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**4** 100	4.500 (114,3)	—	—	—	—	290 (20)
ISO 65 Medium	**—** 150	6.500 (165,1)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	**6** 150	6.625 (168,3)	—	—	—	—	290 (20)

1. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certification Directory, ww.ul.com
   FM Global Website - www.approvalguide.com
2. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge System, www.redbooklive.com.
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 707 Heavy-Duty Flexible Coupling 3 of 3

Pipe[1, 2] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 4200 Wall Thickness 5,4 mm	**8** 200	8.625 (219,1)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	**10** 250	10.750 (273,0)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	**12** 300	12.750 (323,9)	—	—	—	—	290 (20)
DIN 2448 or 2548	**8** 200	8.625 (219,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**10** 250	10.750 (273,0)	—	—	—	232 (16)	—
DIN 2448 or 2548	**12** 300	12.750 (323,9)	—	—	—	232 (16)	—

1. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certification Directory, ww.ul.com
   FM Global Website - www.approvalguide.com
2. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge System, www.redbooklive.com.
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 716 Flexible Reducing Coupling 1 of 3

Pipe* Sch.[2, 3]	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10	**2 x 1-1/2** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**2-1/2 x 2** 65 x 50	2.875 x 2.375 (73,0 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**3 x 2** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**3 x 2-1/2** 80 x 65	3.500 x 2.875 (88,9 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**4 x 2-1/2** 100 x 65	4.500 x 2.875 (114,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**4 x 3** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**5 x 4** 125 x 100	5.563 x 4.500 (141,3 x 114,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**6 x 4** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**6 x 5** 150 x 125	6.625 x 5.563 (168,3 x 141,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10	**8[1] x 6** 200 x 150	8.625 x 6.625 (219,1 x 168,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 40	**2 x 1-1/2** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**2-1/2 x 2** 65 x 50	2.875 x 2.375 (73,0 x 60,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**3 x 2** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**3 x 2-1/2** 80 x 65	3.500 x 2.875 (88,9 x 73,0)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**4 x 2-1/2** 100 x 65	4.500 x 2.875 (114,3 x 73,0)	350 (24,1)	350 (24,1)	350 (24,1)	—	—

1. For 8 inch size, minimum allowed pipe wall thickness is 0.188 inches.
2. See Agency website for Listing/Approvals of other pipe specifications:
   UL website - see Online Certificate Directory, www.ul.com
   FM Global website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 716 Flexible Reducing Coupling 2 of 3

Pipe* Sch.[2, 3]	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 40	**4 x 3** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**5 x 4** 125 x 100	5.563 x 4.500 (141,3 x 114,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**6 x 4** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**6 x 5** 150 x 125	6.625 x 5.563 (168,3 x 141,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
Schedule 40	**8[1] x 6** 200 x 150	8.625 x 6.625 (219,1 x 168,3)	350 (24,1)	350 (24,1)	350 (24,1)	—	—
ISO 4200 Type D and E	**76.1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**3 x 76.1mm** 80 x 65	3.500 x 3.000 (88,9 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**4 x 76.1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**139.7mm x 4** 125 x 100	5.500 x 4.500 (139,7 x 114,3)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**165.1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Heavy	**76.1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**3 x 76.1mm** 80 x 65	3.500 x 3.000 (88,9 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**4 x 76.1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139.7mm x 4** 125 x 100	5.500 x 4.500 (139,7 x 114,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165.1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76.1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—

1. For 8 inch size, minimum allowed pipe wall thickness is 0.188 inches.
2. See Agency website for Listing/Approvals of other pipe specifications:
   UL website - see Online Certificate Directory, www.ul.com
   FM Global website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 716 Flexible Reducing Coupling 3 of 3

Pipe* Sch.[2, 3]	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Medium	**3 x 76.1mm** 80 x 65	3.500 x 3.000 (88,9 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	**4 x 76.1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Medium	**139.7mm x 4** 125 x 100	5.500 x 4.500 (139,7 x 114,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165.1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
ISO 65 Medium	**76.1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**3 x 76.1mm** 80 x 65	3.500 x 3.000 (88,9 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**4 x 76.1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**165.1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	—	—	290 (20)
DIN 2448 or 2548	**2 x 1-1/2** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76.1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**3 x 2** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**4 x 76.1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**4 x 3** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**139.7mm x 4** 125 x 100	5.500 x 4.500 (139,7 x 114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**6 x 4** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**8 x 6** 200 x 150	8.625 x 6.625 (219,1 x 168,3)	—	—	—	232 (16)	—

1. For 8 inch size, minimum allowed pipe wall thickness is 0.188 inches.
2. See Agency website for Listing/Approvals of other pipe specifications:
   UL website - see Online Certificate Directory, www.ul.com
   FM Global website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB website - see Search Our Listings - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 71 Flange Adapter 1 of 2

Pipe[3, 4] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**2** 50	2.375 (60,3)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**2-1/2** 65	2.875 (73,0)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**3** 80	3.500 (88,9)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**4** 100	4.500 (114,3)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**5** 125	5.563 (141,3)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**6** 150	6.625 (168,3)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**8**[1] 200	8.625 (219,1)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**10**[1] 250	10.750 (273,0)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
Schedule 10, 40	**12**[2] 300	12.750 (323,9)	250 (17,24)	250 (17,24)	250 (17,24)	—	—
ISO 4200	**—** 65	3.00 (76,1)	250 (17,24)	—	250 (17,24)	—	—
ISO 4200	**—** 125	5.500 (139,7)	250 (17,24)	—	250 (17,24)	—	—
ISO 4200	**—** 150	6.500 (165,1)	250 (17,24)	—	250 (17,24)	—	—
EN 10255 Heavy	**—** 65	3.00 (76,1)	250 (17,24)	—	250 (17,24)	—	—
EN 10255 Heavy	**—** 125	5.500 (139,7)	—	—	250 (17,24)	—	—
EN 10255 Heavy	**—** 150	6.500 (165,1)	250 (17,24)	—	250 (17,24)	—	—
EN 10255 Medium	**—** 65	3.00 (76,1)	250 (17,24)	—	250 (17,24)	—	—

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

* See Pipe Schedule Key on pages 127-128.

Figure 71 Flange Adapter 2 of 2

Pipe[3, 4] Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Medium	— 125	5.500 (139,7)	—	—	250 (17,24)	—	—
EN 10255 Medium	— 150	6.500 (165,1)	250 (17,24)	—	250 (17,24)	—	—
ISO 65 Medium	2 50	2.375 (60,3)	—	—	—	—	290 (20)
ISO 65 Medium	— 65	3.000 (76,1)	—	—	—	—	290 (20)
ISO 65 Medium	3 80	3.500 (88,9)	—	—	—	—	290 (20)
ISO 65 Medium	4 100	4.500 (114,3)	—	—	—	—	290 (20)
ISO 65 Medium	— 150	6.500 (165,1)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	6 150	6.625 (168,3)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	8 200	8.625 (219,1)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	10 250	10.750 (273,0)	—	—	—	—	290 (20)
ISO 4200 Wall Thickness 5,4 mm	12 300	12.750 (323,9)	—	—	—	—	232 (16)
DIN 2448 or 2548	2 50	2.375 (60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	— 65	3.000 (76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	3 80	3.500 (88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	4 100	4.500 (114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	— 125	5.500 (139,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	6 150	6.625 (168,3)	—	—	—	232 (16)	—

3. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certificate Directory, www.ul.com
   FM Global Website - www.approvalguide.com
4. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website see Search Our Listings - Automatic Sprinklers, water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 702 Male Threaded Outlet Coupling

Pipe[1] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**2 x 1** 50 x 25	2.375 x 1.315 (60,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1-1/4** 65 x 32	2.875 x 1.660 (73,0 x 42,4)	—	—	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1-1/2** 65 x 40	2.875 x 1.900 (73,0 x 48,3)	—	—	300 (20,7)	—	—
Schedule 10, 40	**3 x 1** 80 x 25	3.500 x 1.315 (88,9 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3 x 1-1/2** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	—	—	300 (20,7)	—	—
Schedule 10, 40	**4 x 1** 100 x 25	4.500 x 1.315 (114,3 x 33,7)	300 (20,7)	300 (20,7)	—	—	—
Schedule 10, 40	**4 x 1-1/2** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	—	—	300 (20,7)	—	—
Schedule 10, 40	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	300 (20,7)	—	—
Schedule 10, 40	**6 x 1-1/2** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6 x 2** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	—	—	300 (20,7)	—	—

1. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certificate Directory, www.ul.com
   FM Global Website - ww.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 702 Female Threaded Outlet Coupling

Pipe[1] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**1-1/2 x 1/2** 40 x 15	1.900 x 0.840 (48,3 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**1-1/2 x 3/4** 40 x 20	1.900 x 1.050 (48,3 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**1-1/2 x 1** 40 x 25	1.900 x 1.315 (48,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2 x 1/2** 50 x 15	2.375 x 0.840 (60,3 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2 x 3/4** 50 x 20	2.375 x 1.050 (60,3 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2 x 1** 50 x 25	2.375 x 1.315 (60,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1/2** 65 x 15	2.875 x 0.840 (73,0 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 3/4** 65 x 20	2.875 x 1.050 (73,0 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1** 65 x 25	2.875 x 1.315 (73,0 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3 x 3/4** 80 x 20	3.500 x 1.050 (88,9 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3 x 1** 80 x 25	3.500 x 1.315 (88,9 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**4 x 3/4** 100 x 20	4.500 x 1.050 (114,3 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**4 x 1** 100 x 25	4.500 x 1.315 (114,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6 x 1** 150 x 25	6.625 x 1.315 (168,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6 x 1-1/2** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—

1. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certificate Directory, www.ul.com
   FM Global Website - ww.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 702 Grooved Outlet Coupling

Pipe[1] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**2 x 1** 50 x 25	2.375 x 1.315 (60,3 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1-1/4** 65 x 32	2.875 x 1.660 (73,0 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**2-1/2 x 1-1/2** 65 x 40	2.875 x 1.900 (73,0 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3 x 1** 80 x 25	3.500 x 1.315 (88,9 x 33,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**3 x 1-1/2** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**4 x 1-1/2** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6 x 1-1/2** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Schedule 10, 40	**6 x 2** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—

1. See Agency website for Listing/Approvals of other pipe specifications:
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   FM Global Website - ww.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Sch. 10, 40	**2 x 1/2** 50 x 15	2.375 x 0.840 (60,3 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2 x 3/4** 50 x 20	2.375 x 1.050 (60,3 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2 x 1** 50 x 25	2.375 x 1.315 (60,3 x 33,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2 x 1-1/4** 50 x 32	2.375 x 1.600 (60,3 x 42,2)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2 x 1-1/2** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 1/2** 65 x 15	2.875 x 0.840 (73,0 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 3/4** 50 x 20	2.875 x 1.050 (73,0 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 1** 50 x 25	2.875 x 1.315 (73,0 x 33,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 1-1/4** 50 x 32	2.875 x 1.600 (73,0 x 42,2)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 1-1/2** 50 x 40	2.875 x 1.900 (73,0 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**2-1/2 x 2** 65 x 50	2.875 x 2.375 (73,0 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 1/2** 80 x 15	3.500 x 0.840 (88,9 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 3/4** 80 x 20	3.500 x 1.050 (88,9 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 1** 80 x 25	3.500 x 1.315 (88,9 x 33,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 1-1/4** 80 x 32	3.500 x 1.660 (88,9 x 42,2)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 1-1/2** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**3 x 2** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   LPCB Website - see Search Our Listing - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 2 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Sch. 10, 40	**4 x 1/2** 100 x 15	4.500 x 0.840 (114,3 x 21,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 3/4** 100 x 20	4.500 x 1.050 (114,3 x 26,7)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 1** 100 x 2	4.500 x 1.315 (114,3 x 33,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 1-1/4** 100 x 32	4.500 x 1.660 (114,3 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 1-1/2** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 2-1/2** 100 x 65	4.500 x 2.875 (114,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 76,1** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**4 x 3** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**5 x 1-1/2** 125 x 40	5.563 x 1.900 (114,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**5 x 2** 125 x 50	5.563 x 2.375 (114,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**5 x 2-1/2** 125 x 65	5.563 x 2.875 (114,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**5 x 3** 125 x 80	5.563 x 3.500 (114,3 x 88,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**6 x 1-1/4** 150 x 40	6.625 x 1.660 (168,3 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**6 x 1-1/2** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**6 x 2** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**6 x 2-1/2** 150 x 65	6.625 x 2.875 (168,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 3 of 10

Pipe[2,3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Sch. 10, 40	**6 x 3** 150 x 80	6.625 x 3.500 (168,3 x 88,9)	250 (17,2)	250 (17,2)	250 (17,2)	—	—
Sch. 10, 40	**6 x 4** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	250 (17,2)	250 (17,2)	250 (17,2)	—	—
Sch. 10, 40	**8[1] x 2** 200 x 50	8.625 x 2.375 (219,1 x 60,3)	300 (20,7)	300 (20,7)	300	—	—
Sch. 10, 40	**8[1] x 2-1/2** 200 x 65	8.625 x 2.875 (219,1 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**8[1] x 3** 200 x 8	8.625 x 3.500 (219,1 x 88,9)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch. 10, 40	**8[1] x 4** 200 x 100	8.625 x 4.500 (219,1 x 114,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1/2** 65 x 15	3.000 x 0.840 (76,1 x 21,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 3/4** 65 x 20	3.000 x 1.050 (76,1 x 26,7)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1** 65 x 25	3.000 x 1.315 (76,1 x 33,7)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**139,7mm x 2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**139,7mm x 76,1** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	—	—	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   FM Global Website - www.approvalguide.com
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 4 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 4200 Type D, E, and F	**165,1mm x 1-1/2** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 3** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D and E	**139,7mm x 1-1/2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type F	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type F	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1/2** 65 x 15	3.000 x 0.840 (76,1 x 21,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 3/4** 65 x 20	3.000 x 1.050 (76,1 x 26,7)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1** 65 x 25	3.000 x 1.315 (76,1 x 33,7)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	—	—	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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3. See Agency website for Listing/Approvals of other pipe specifications:
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 5 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Heavy	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 76,1** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 3** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1/2** 65 x 15	3.000 x 0.840 (76,1 x 21,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 3/4** 65 x 20	3.000 x 1.050 (76,1 x 26,7)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1** 65 x 25	3.000 x 1.315 (76,1 x 33,7)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 2** 125 x 40	5.500 x 2.375 (139,7 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 76,1mm** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	—	—	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 6 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Medium	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 1-1/2** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
ISO 65 Medium	**60,3mm x 21,3mm** 50 x 15	2.375 x 0.840 (60,3 x 21,3)	—	—	—	—	290 (20)
ISO 65 Medium	**60,3mm x 26,7mm** 50 x 20	2.375 x 1.050 (60,3 x 26,7)	—	—	—	—	290 (20)
ISO 65 Medium	**60,3mm x 33,7mm** 50 x 25	2.375 x 1.315 (60,3 x 33,7)	—	—	—	—	290 (20)
ISO 65 Medium	**60,3mm x 42,4mm** 50 x 32	2.375 x 1.660 (60,3 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**60,3mm x 48,3mm** 65 x 40	2.375 x 1.900 (60,3 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 21,3mm** 65 x 15	3.000 x 0.840 (76,1 x 21,3)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 26,7mm** 65 x 20	3.000 x 1.050 (76,1 x 26,7)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 33,7mm** 65 x 25	3.000 x 1.315 (76,1 x 33,7)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 42,4mm** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 48,3mm** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 60,3mm** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 21,3mm** 80 x 15	3.500 x 0.840 (88,9 x 21,3)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 26,7mm** 80 x 20	3.500 x 1.050 (88,9 x 26,7)	—	—	—	—	290 (20)

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 7 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 65 Medium	**88,9mm x 33,7mm** 80 x 25	3.500 x 1.315 (88,9 x 33,7)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 42,4mm** 80 x 32	3.500 x 1.660 (88,9 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 48,3mm** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 60,3mm** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 21,3mm** 100 x 15	4.500 x 0.840 (114,3 x 21,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 26,7mm** 100 x 20	4.500 x 1.050 (114,3 x 26,7)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 33,7mm** 100 x 25	4.500 x 1.315 (114,3 x 33,7)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 42,4mm** 100 x 32	4.500 x 1.660 (114,3 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 48,3mm** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 60,3mm** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 76,1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 88.9mm** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 42,4mm** 150 x 32	5.500 x 1.660 (165,1 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 48,3mm** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 60,3mm** 150 x 50	6.500 x 2.375 (165,1 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 88.9mm** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	—	—	290 (20)

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certificate Directory, www.ul.com
   FM Global Website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listing - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 8 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 65 Medium	**165,1mm x 114,3mm** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 42,4mm** 150 x 32	6.625 x 1.660 (168,3 x 42,4)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 48,3mm** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 60,3mm** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 76,1mm** 150 x 65	6.625 x 3.000 (168,3 x 76,1)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 88.9mm** 150 x 80	6.625 x 3.500 (168,3 x 88,9)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**168,3mm x 114,3mm** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**219,1mm x 76,1mm** 200 x 65	8.625 x 3.000 (219,1 x 76,1)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**219,1mm x 88.9mm** 200 x 80	8.625 x 3.500 (219,1 x 88,9)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4mm	**219,1mm x 114,3mm** 200 x 100	8.625 x 4.500 (219,1 x 114,3)	—	—	—	—	290 (20)
DIN 2448 or 2548	**60,3mm x 21,3mm** 50 x 15	2.375 x 0.840 (60,3 x 21,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**60,3mm x 26,7mm** 50 x 20	2.375 x 1.050 (60,3 x 26,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**60,3mm x 33,7mm** 50 x 25	2.375 x 1.315 (60,3 x 33,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**60,3mm x 42,4mm** 50 x 32	2.375 x 1.660 (60,3 x 42,4)	—	—	—	232 (16)	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approvals of other pipe specifications:
   UL Website - see Online Certificate Directory, www.ul.com
   FM Global Website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listing - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 9 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
DIN 2448 or 2548	**60,3mm x 48,3mm** 65 x 40	2.375 x 1.900 (60,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 21,3mm** 65 x 15	3.000 x 0.840 (73,0 x 21,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 26,7mm** 65 x 20	3.000 x 1.050 (73,0 x 26,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 33,7mm** 65 x 25	3.000 x 1.315 (73,0 x 33,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 42,4mm** 65 x 32	3.000 x 1.660 (73,0 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 48,3mm** 65 x 40	3.000 x 1.900 (73,0 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 60,3mm** 65 x 50	3.000 x 2.375 (73,0 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 21,3mm** 80 x 15	3.500 x 0.840 (88,9 x 21,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 26,7mm** 80 x 20	3.500 x 1.050 (88,9 x 26,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 33,7mm** 80 x 25	3.500 x 1.315 (88,9 x 33,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 42,4mm** 80 x 32	3.500 x 1.660 (88,9 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 48,3mm** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 60,3mm** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 21,3mm** 100 x 15	4.500 x 0.840 (114,3 x 21,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 26,7mm** 100 x 20	4.500 x 1.050 (114,3 x 26,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 33,7mm** 100 x 25	4.500 x 1.315 (114,3 x 33,7)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 42,4mm** 100 x 32	4.500 x 1.660 (114,3 x 42,4)	—	—	—	232 (16)	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approvals of other pipe specifications:
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   FM Global Website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listing - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Threaded Outlet 10 of 10

Pipe[2, 3] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
DIN 2448 or 2548	**114,3mm x 48,3mm** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 60,3mm** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 76,1mm** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 88.9mm** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 42,4mm** 150 x 32	6.625 x 1.660 (168,3 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 48,3mm** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 60,3mm** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 76,1mm** 150 x 65	6.625 x 3.000 (168,3 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 60,3mm** 200 x 50	8.625 x 2.375 (219,1 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 76,1mm** 200 x 65	8.625 x 3.000 (219,1 x 76,1)	—	—	—	232 (16)	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approvals of other pipe specifications:
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   FM Global Website - www.approvalguide.com
3. See Agency website for Listing/Approvals of other pipe specifications:
   LPCB Website - see Search Our Listing - Automatic Sprinklers, Water Spray and Deluge Systems, www.redbooklive.com
   VdS Website - see certifications, www.vds.de

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 1 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Sch 10, 40	**2 x 1-1/4** 50 x 32	2.375 x 1.660 (60,3 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**2 x 1-1/2** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**2-1/2 x 1-1/4** 65 x 32	2.875 x 1.660 (73,0 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**2-1/2 x 1-1/2** 65 x 40	2.875 x 1.900 (73,0 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**2-1/2 x 2** 65 x 50	2.875 x 2.375 (73,0 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**3 x 1-1/4** 80 x 32	3.500 x 1.660 (88,9 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**3 x 1-1/2** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**3 x 2** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 1-1/4** 100 x 32	4.500 x 1.660 (114,3 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 1-1/2** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 2** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 2-1/2** 100 x 65	4.500 x 2.875 (114,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 76,1** 100 x 65	4.500 x 3.000 (114,3 x 76,1)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**4 x 3** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	175 (12,1)	175 (12,1)	300 (20,7)	—	—
Sch 10, 40	**5 x 1-1/2** 125 x 40	5.563 x 1.900 (141,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**5 x 2** 125 x 50	5.563 x 2.375 (141,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**5 x 2-1/2** 125 x 65	5.563 x 2.875 (141,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**5 x 3** 125 x 80	3.500 x 2.375 (88,9 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**6 x 1-1/4** 150 x 32	6.625 x 1.660 (168,3 x 42,4)	300 (20,7)	300 (20,7)	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approval of other pipe specifications:
   UL Website - see Online Certification Directory, www.ul.com
   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 2 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Sch 10, 40	**6 x 1-1/2** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**6 x 2** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**6 x 2-1/2** 150 x 65	8.625 x 2.875 (219,1 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**6 x 3** 150 x 80	8.625 x 3.500 (219,1 x 88,9)	250 (17,2)	250 (17,2)	300 (20,7	—	—
Sch 10, 40	**6 x 4** 150 x 100	8.625 x 4.500 (219,1 x 114,3)	250 (17,2)	250 (17,2)	300 (20,7	—	—
Sch 10, 40	**8[1] x 2** 200 x 50	6.625 x 2.375 (168,3 x 60,3)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**8[1] x 2-1/2** 200 x 65	6.625 x 2.875 (168,3 x 73,0)	300 (20,7)	300 (20,7)	300 (20,7)	—	—
Sch 10, 40	**8[1] x 3** 200 x 80	6.625 x 3.500 (168,3 x 88,9)	250 (17,2)	250 (17,2)	300 (20,7)	—	—
Sch 10, 40	**8[1] x 4** 200 x 100	6.625 x 4.500 (168,3 x 114,3)	250 (17,2)	250 (17,2)	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**139,7mm x 2** 125 x 50	5.500 x 2.375 (139,7 x 60,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**139,7mm x 76,1mm** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 1-1/2** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60.3)	—	—	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 3 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 4200 Type D, E, and F	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 3** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	300 (20,7)	—	—
ISO 4200 Type D, E, and F	**165,1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
ISO 4200 Type D and E	**139,7mm x 1-1/2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type D and E	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	300 (20,7)	—	300 (20,7)	—	—
ISO 4200 Type F	**139,7mm x 1-1/2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	—	—	300 (20,7)	—	—
ISO 4200 Type F	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	—	—	300 (20,7)	—	—
ISO 4200 Type F	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Heavy	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 1-1/2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 2** 125 x 50	5.500 x 2.375 (139,7 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 76,1mm** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	250 (17,2)	—	300 (20,7)	—	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approval of other pipe specifications:
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 4 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
EN 10255 Heavy	**165,1mm x 1-1/2** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60.3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 3** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Heavy	**165,1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1-1/4** 65 x 32	3.000 x 1.660 (76,1 x 42,4)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 1-1/2** 65 x 40	3.000 x 1.900 (76,1 x 48,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**76,1mm x 2** 65 x 50	3.000 x 2.375 (76,1 x 60,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 1-1/2** 125 x 40	5.500 x 1.900 (139,7 x 48,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 2** 125 x 50	5.500 x 2.375 (139,7 x 60,3)	—	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 76,1mm** 125 x 65	5.500 x 3.000 (139,7 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	**139,7mm x 3** 125 x 80	5.500 x 3.500 (139,7 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 1-1/4** 150 x 32	6.500 x 1.660 (165,1 x 42,4)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 1-1/2** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 2** 150 x 50	6.500 x 2.375 (165,1 x 60.3)	250 (17,2)	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 76,1mm** 150 x 65	6.500 x 3.000 (165,1 x 76,1)	300 (20,7)	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 3** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	300 (20,7)	—	—
EN 10255 Medium	**165,1mm x 4** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	300 (20,7)	—	—
ISO 65 Medium	**60,3mm x 42,4mm** 50 x 32	2.375 x 1.600 (60,3 x 42,4)	—	—	—	—	290 (20)

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
2. See Agency website for Listing/Approval of other pipe specifications:
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 5 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 65 Medium	**60,3mm x 48,3mm** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 42,4mm** 65 x 32	2.875 x 1.600 (76,1 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 48,3mm** 65 x 40	2.875 x 1.900 (76,1 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**76,1mm x 60,3mm** 65 x 50	2.875 x 2.375 (76,1 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 42,4mm** 80 x 32	3.500 x 1.600 (88,9 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 48,3mm** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**88,9mm x 60,3mm** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 42,4mm** 100 x 32	4.500 x 1.600 (114,3 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 48,3mm** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 60,3mm** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 76,1mm** 100 x 65	4.500 x 2.875 (114,3 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**114,3mm x 88,9mm** 100 x 80	4.500 x 3.500 (114,3 x 88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 42,4mm** 150 x 32	6.500 x 1.600 (165,1 x 42,4)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 48,3mm** 150 x 40	6.500 x 1.900 (165,1 x 48,3)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 60,3mm** 150 x 50	6.500 x 2.375 (165,1 x 60,3)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 76,1mm** 150 x 65	6.500 x 2.875 (165,1 x 76,1)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 88,9mm** 150 x 80	6.500 x 3.500 (165,1 x 88,9)	—	—	—	—	290 (20)
ISO 65 Medium	**165,1mm x 114,3mm** 150 x 100	6.500 x 4.500 (165,1 x 114,3)	—	—	—	—	290 (20)

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 6 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
ISO 4200 Wall THK 5,4	**168,3mm x 42,4mm** 150 x 32	6.625 x 1.600 (168,3 x 42,4)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**168,3mm x 48,3mm** 150 x 40	6.625 x 1.900 (168,3 x 48,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**168,3mm x 60,3mm** 150 x 50	6.625 x 2.375 (168,3 x 60,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**168,3mm x 76,1mm** 150 x 65	6.625 x 2.875 (168,3 x 76,1)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**168,3mm x 88,9mm** 150 x 80	6.625 x 3.500 (168,3 x 88,9)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**168,3mm x 114,3mm** 150 x 100	6.625 x 4.500 (168,3 x 114,3)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**219,1mm x 76,1mm** 200 x 65	8.625 x 2.875 (219,1 x 76,1)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**219,1mm x 88,9mm** 200 x 80	8.625 x 3.500 (219,1 x 88,9)	—	—	—	—	290 (20)
ISO 4200 Wall THK 5,4	**219,1mm x 114,3mm** 200 x 100	8.625 x 4.500 (219,1 x 114,3)	—	—	—	—	290 (20)
DIN 2448 or 2548	**60,3mm x 42,4mm** 50 x 32	2.375 x 1.600 (60,3 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**60,3mm x 48,3mm** 50 x 40	2.375 x 1.900 (60,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 42,4mm** 65 x 32	2.875 x 1.600 (76,1 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 48,3mm** 65 x 40	2.875 x 1.900 (76,1 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**76,1mm x 60,3mm** 65 x 50	2.875 x 2.375 (76,1 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 42,4mm** 80 x 32	3.500 x 1.600 (88,9 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**88,9mm x 48,3mm** 80 x 40	3.500 x 1.900 (88,9 x 48,3)	—	—	—	232 (16)	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 730 Grooved Outlet 7 of 7

Pipe[2] Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
DIN 2448 or 2548	**88,9mm x 60,3mm** 80 x 50	3.500 x 2.375 (88,9 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 42,4mm** 100 x 32	4.500 x 1.600 (114,3 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 48,3mm** 100 x 40	4.500 x 1.900 (114,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 60,3mm** 100 x 50	4.500 x 2.375 (114,3 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 73,0mm** 100 x 65	4.500 x 2.875 (114,3 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**114,3mm x 88,9mm** (100 x 80)	4.500 x 3.500 (114,3 x 88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 42,4mm** (150 x 32)	6.625 x 1.600 (168,3 x 42,4)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 48,3mm** (150 x 40)	6.625 x 1.900 (168,3 x 48,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 60,3mm** (150 x 50)	6.625 x 2.375 (168,3 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 76,1mm** (150 x 65)	6.625 x 2.875 (168,3 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 88,9mm** (150 x 80)	6.625 x 3.500 (168,3 x 88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**168,3mm x 114,3mm** (150 x 100)	6.625 x 4.500 (168,3 x 114,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 60,3mm** (200 x 50)	8.625 x 2.375 (219,1 x 60,3)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 76,1mm** (200 x 65)	8.625 x 2.875 (219,1 x 76,1)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 88,9mm** (200 x 80)	8.625 x 3.500 (219,1 x 88,9)	—	—	—	232 (16)	—
DIN 2448 or 2548	**219,1mm x 114,3mm** (200 x 100)	8.625 x 4.500 (219,1 x 114,3)	—	—	—	232 (16)	—

1. For 8 inch sizes, minimum allowed pipe wall thickness is 0.188.
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   FM Global Website - www.approvalguide.com

* See Pipe Schedule Key on pages 127-128.

Figure 40-5 Strap Outlet

Pipe Sch.*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi (bar)				
Schedule 10, 40	**1-1/4 x 1/2** 32 x 15	1.660 x 0.840 (42,2 x 21,3)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**1-1/4 x 3/4** 32 x 20	1.660 x 1.050 (42,2 x 26,7)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**1-1/4 x 1** 32 x 25	1.660 x 1.315 (42,2 x 33,4)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**1-1/2 x 1/2** 40 x 15	1.900 x 0.840 (48,3 x 21,3)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**1-1/2 x 3/4** 40 x 20	1.900 x 1.050 (48,3 x 26,7)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**1-1/2 x 1** 40 x 25	1.900 x 1.315 (48,3 x 33,4)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2 x 1/2** 50 x 15	2.375 x 0.840 (60,3 x 21,3)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2 x 3/4** 50 x 20	2.375 x 1.050 (60,3 x 26,7)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2 x 1** 50 x 25	2.375 x 1.315 (60,3 x 33,4)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2-1/2 x 1/2** 65 x 15	2.875 x 0.840 (73,0 x 21,3)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2-1/2 x 3/4** 65 x 20	2.875 x 1.050 (73,0 x 26,7)	175 (12,1)	175 (12,1)	175 (12,1)	—	—
Schedule 10, 40	**2-1/2 x 1** 65 x 25	2.875 x 1.315 (73,0 x 33,4)	175 (12,1)	175 (12,1)	175 (12,1)	—	—

* See Pipe Schedule Key on pages 127-128.

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Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	**O.D. Inches (mm)**	**UL**	**ULC**	**FM**	**VdS**	**LPCB**
		psi bar				
1-1/2 x 1/2 40 x 15	1.900 x 0.840 (48,3 x 21,3)	300 (20,7)	—	300 (20,7)	—	—
1-1/2 x 3/4 40 x 20	1.900 x 1.050 (48,3 x 26,7)	300 (20,7)	—	300 (20,7)	—	—
1-1/2 x 1 40 x 25	1.900 x 1.315 (48,3 x 33,4)	300 (20,7)	—	300 (20,7)	—	—
2 x 1/2 50 x 15	2.375 x 0.840 (60,3 x 21,3)	300 (20,7)	—	300 (20,7)	—	—
2 x 3/4 50 x 20	2.375 x 1.050 (60,3 x 26,7)	300 (20,7)	—	300 (20,7)	—	—
2 x 1 50 x 25	2.375 x 1.315 (60,3 x 33,4)	300 (20,7)	—	300 (20,7)	—	—
2-1/2 x 1/2 65 x 15	2.875 x 0.840 (73,0 x 21,3)	300 (20,7)	—	300 (20,7)	—	—
2-1/2 x 3/4 65 x 20	2.875 x 1.050 (73,0 x 26,7)	300 (20,7)	—	300 (20,7)	—	—
2-1/2 x 1 65 x 25	2.875 x 1.315 (73,0 x 33,4)	300 (20,7)	—	300 (20,7)	—	—

Figure 260 End Cap

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi bar				
1 25	1.315 (33,4)	500 (34,5)	—	—	—	—
1-1/4 32	1.660 (42,4)	500 (34,5)	—	500 (34,5)	—	—
1-1/2 40	1.900 (48,3)	500 (34,5)	—	500 (34,5)	—	—
2 50	2.375 (60,3)	500 (34,5)	—	500 (34,5)	—	—
2-1/2 65	2.875 (73,0)	500 (34,5)	—	500 (34,5)	—	—
76,1mm 65	3.00 (76,1)	500 (34,5)	—	500 (34,5)	—	—
3 80	3.500 (88,9)	500 (34,5)	—	500 (34,5)	—	—
4 100	4.500 (114,3)	500 (34,5)	—	500 (34,5)	—	—
139,1mm 125	5.563 (139,7)	500 (34,5)	—	500 (34,5)	—	—
5 125	5.563 (141,3)	500 (34,5)	—	500 (34,5)	—	—
165,1mm 150	6.500 (165,1)	500 (34,5)	—	500 (34,5)	—	—
6 150	6.625 (168,3)	500 (34,5)	—	500 (34,5)	—	—
8 200	8.625 (219,1)	500 (34,5)	—	500 (34,5)	—	—
10 250	10.750 (273,0)	500 (34,5)	—	500 (34,5)	—	—
12 300	12.750 (323,9)	500 (34,5)	—	500 (34,5)	—	—

Figure 550 Reducer 1 of 2

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi (bar)				
1-1/2 x 1 40 x 25	1.900 x 1.315 (48,3 x 33,4)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
2 x 1 50 x 25	2.375 x 1.315 (60,3 x 33,4)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
2 x 1-1/4 50 x 32	2.375 x 1.660 (60,3 x 42,2)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
2 x 1-1/2 50 x 40	2.375 x 1.900 (60,3 x 48,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
2-1/2 x 2 65 x 50	2.875 x 2.375 (73,0 x 60,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
3 x 2 80 x 50	3.500 x 2.375 (88,9 x 60,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
3 x 2-1/2 80 x 65	3.500 x 2.875 (88,9 x 73,0)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
4 x 2 100 x 50	4.500 x 2.375 (114,3 x 60,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
4 x 2-1/2 100 x 65	4.500 x 2.875 (114,3 x 73,0)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
5 x 4 125 x 100	5.563 x 4.500 (141,3 x 114,3)	500 (34.5)	500 (34.5)	500 (34.5)	—	—
6 x 2 150 x 50	6.625 x 2.375 (168,3 x 60,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
6 x 4 150 x 100	6.625 x 4.500 (168,3 x 114,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
6 x 5 150 x 125	6.625 x 5.563 (168,3 x 141,3)	500 (34.5)	500 (34.5)	500 (34.5)	—	—
— 65 x 40	3.000 x 1.900 (76,1 x 48,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
— 65 x 50	3.000 x 2.375 (76,1 x 60,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
— 80 x 65	3.500 x 2.875 (88,9 x 76,1)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	2 300 (20)
— 100 x 65	4.500 x 2.875 (114,3 x 76,1)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	300 (20)
— 125 x 80	5.500 x 3.500 (139,7 x 88,9)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
— 125 x 100	5.500 x 4.500 (139,7 x 114,3)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—

Figure 550 Reducer 2 of 2

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi (bar)				
— 150 x 80	6.500 x 3.500 (165,1 x 88,9)	500 (34.5)	—	500 (34.5)	—	—
— 150 x 100	6.500 x 4.500 (165,1 x 114,3)	500 (34.5)	500 (34.5)	500 (34.5)	—	300 (20)
— 150 x 125	6.500 x 5.500 (165,1 x 139,7)	500 (34.5)	—	500 (34.5)	—	—
— 150 x 65	6.625 x 3.000 (168,3 x 76,1)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—
— 150 x 125	6.625 x 5.500 (168,3 x 139,7)	500 (34.5)	500 (34.5)	500 (34.5)	232 (16)	—

Figure 501 45° Elbow

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi bar				
2 50	2.375 (60,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 65	2.875 (73,0)	365 (25,2)	—	365 (25,2)	—	—
76,1mm 65	3.00 (76,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
3 80	3.500 (88,9)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
4 100	4.500 (114,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
139,1mm 125	5.500 (139,7)	365 (25,2)	—	365 (25,2)	232 (16,0)	—
5 125	5.563 (141,3)	—	—	365 (25,2)	—	—
165,1mm 150	6.500 (165,1)	365 (25,2)	—	365 (25,2)	—	290 (20,0)
6 150	6.625 (168,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
8 200	8.625 (219,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)

Figure 510 90° Elbow

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi bar				
1-1/4 32	1.660 (42,4)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
1-1/2 40	1.900 (48,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
2 50	2.375 (60,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 65	2.875 (73,0)	365 (25,2)	—	365 (25,2)	—	—
76,1mm 65	3.00 (76,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
3 80	3.500 (88,9)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
4 100	4.500 (114,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
139,1mm 125	5.500 (139,7)	365 (25,2)	—	365 (25,2)	232 (16,0)	—
5 125	5.563 (141,3)	—	—	365 (25,2)	—	—
165,1mm 150	6.500 (165,1)	365 (25,2)	—	365 (25,2)	—	290 (20,0)
6 150	6.625 (168,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
8 200	8.625 (219,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)

Figure 519 Tee

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi bar				
1-1/4 32	1.660 (42,4)	—	—	365 (25,2)	232 (16,0)	290 (20,0)
1-1/2 40	1.900 (48,3)	—	—	365 (25,2)	232 (16,0)	290 (20,0)
2 50	2.375 (60,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 65	2.875 (73,0)	365 (25,2)	—	365 (25,2)	—	—
76,1mm 65	3.00 (76,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
3 80	3.500 (88,9)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
4 100	4.500 (114,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
139,1mm 125	5.500 (139,7)	365 (25,2)	—	365 (25,2)	232 (16,0)	—
5 125	5.563 (141,3)	—	—	365 (25,2)	—	—
165,1mm 150	6.500 (165,1)	365 (25,2)	—	365 (25,2)	—	290 (20,0)
6 150	6.625 (168,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
8 200	8.625 (219,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)

Figure 510S 90° Elbow
Figure 519S Tee

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS[a]	LPCB
		psi bar				
2 50	2.375 (60,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
2-1/2 65	2.875 (73,0)	365 (25,2)	—	365 (25,2)	—	—
76,1mm 65	3.00 (76,1)	365 (25,2)	—	365 (25,2)	232[1] (16,0)	290 (20,0)
3 80	3.500 (88,9)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
4 100	4.500 (114,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
139,1mm 125	5.500 (139,7)	365 (25,2)	—	365 (25,2)	232 (16,0)	—
5 125	5.563 (141,3)	—	—	365 (25,2)	—	—
165,1mm 150	6.500 (165,1)	365 (25,2)	—	365 (25,2)	—	—
6 150	6.625 (168,3)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)
8 200	8.625 (219,1)	365 (25,2)	—	365 (25,2)	232 (16,0)	290 (20,0)

a. VdS approval is for Figure 510S 90˚ Elbow only

Figure 510DE Drain Elbow

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi (bar)				
2-1/2 65	2.875 (73,0)	300 (20)	300 (20)	300 (20)	—	—
3 80	3.500 (88,9)	300 (20)	300 (20)	300 (20)	—	—
4 100	4.500 (114,3)	300 (20)	300 (20)	300 (20)	—	—
5 125	5.563 (141,3)	300 (20)	300 (20)	300 (20)	—	—
6 150	6.625 (168,3)	300 (20)	300 (20)	300 (20)	—	—
8 200	8.625 (219,1)	300 (20)	300 (20)	300 (20)	—	—

Figure 391 GRV x Male Thread Adapter Nipples
Figure 392 GRV x GRV Adapter Nipples
Figure 393 GRV x Bevel Adapter Nipples
Figure 341 GRV x Flange Adapter 150 Lbs.
Figure 327 Cross

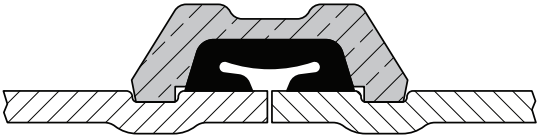
Nominal Pipe Size		Rated Pressure	
ANSI Inches DN	O.D. Inches (mm)	UL	FM
		psi (bar)	
1 25	1.315 (33,7)	300 (20)	300 (20)
1-1/4 32	1.660 (42,4)	300 (20)	300 (20)
1-1/2 40	1.900 (48,3)	300 (20)	300 (20)
2 50	2.375 (60,3)	300 (20)	300 (20)
2-1/2 65	2.875 (73,0)	300 (20)	300 (20)
3 80	3.500 (88,9)	300 (20)	300 (20)
4 100	4.500 (114,3)	300 (20)	300 (20)
5 125	5.563 (141,3)	300 (20)	300 (20)
6 150	6.625 (168,3)	300 (20)	300 (20)
8 200	8.625 (219,1)	300 (20)	300 (20)
10 250	10.750 (273,1)	300 (20)	300 (20)
12 300	12.750 (323,4)	300 (20)	300 (20)

Figure 312 22-1/2° Elbow
Figure 321 Reducing Tee
Figure 350 Fabricated GRV x GRV Reducer

Nominal Pipe Size		Rated Pressure	
ANSI Inches DN	O.D. Inches (mm)	UL	FM
		psi (bar)	
1-1/4 32	1.660 (42,4)	300 (20)	300 (20)
1-1/2 40	1.900 (48,3)	300 (20)	300 (20)
2 50	2.375 (60,3)	300 (20)	300 (20)
2-1/2 65	2.875 (73,0)	300 (20)	300 (20)
3 80	3.500 (88,9)	300 (20)	300 (20)
4 100	4.500 (114,3)	300 (20)	300 (20)
5 125	5.563 (141,3)	300 (20)	300 (20)
6 150	6.625 (168,3)	300 (20)	300 (20)
8 200	8.625 (219,1)	300 (20)	300 (20)
10 250	10.750 (273,1)	300 (20)	300 (20)
12 300	12.750 (323,4)	300 (20)	300 (20)

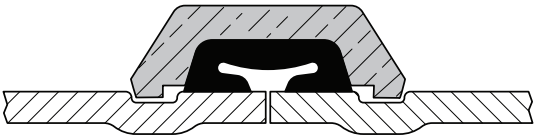
Grinnell Grooved Piping Products provide the versatility required in piping systems through the use of rigid and flexible piping products. Figure 772 and Figure 577 Couplings incorporate rotation resistant gripping teeth that provide the installer and designer with increased benefits.

Rigid Couplings



Rigid Couplings provide rigid gripping of the pipe. They are designed to bring the pipe ends closely together and the coupling clamps firmly onto the pipe OD and also into the bottom of the grooves. Because Rigid Couplings clamp around the entire pipe surface, they provide resistance to flexural loads and therefore permit longer spacing to ASME/ANSI B31.1 (Power Piping) and ASME/ANSI B39.1 (Building Services) requirements.

Flexible Couplings

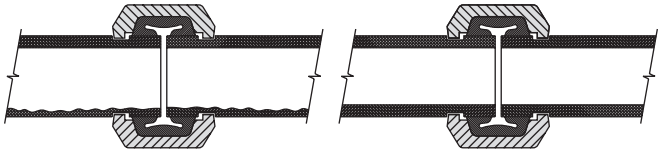


Flexible Couplings act as an “expansion joint”, allowing linear and angular movement of the pipe. They are designed with the coupling keys engaging the pipe without gripping on the bottom of the grooves, while still providing for a restrained mechanical joint. This is particularly useful to allow for pipe expansion or contraction and piping misalignment.

Rotational Movement

Grinnell Flexible Couplings are suitable for use in seismic as well as other applications. The inherent capability of the flexible coupling to allow for linear movement, angular deflection, and rotational movement, make it an excellent choice for reducing stresses in a piping system.

For mining applications where pipe needs to be rotated, the system should be depressurized. The pipe couplings bolts/nuts can be loosened, pipe rotated and the bolts/nuts re-tightened and the system restored to service.



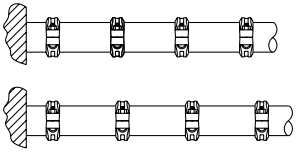
Even distribution of pipe wear can be achieved with this method on inner surface of the pipe.

NOTE

Precautions are necessary to monitor pipe wall thickness to evaluate pressure capability of the pipe with reduced wall density.

Linear Movement

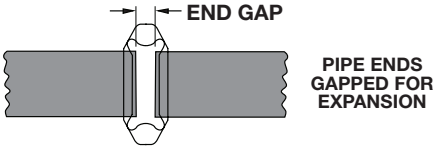
The inherent flexibility of the coupling must be consider when deciding on support arrangements for the pipe system as movement can occur in more than one plane (linear movement, angular deflection, and rotational movement.



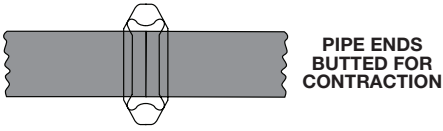
Upon system pressurization, each pipe end within the flexible couplings will expand to the maximum published value. The coupling keys make contact with the face of the groove and restrain the joint. In piping systems, this movement will be accumulative.

Linear Movement (Flexible Couplings)

For thermal expansion with flexible couplings, the pipe ends at each joint should be fully gapped to the maximum end gap. This can be accomplished by pressurizing the system and then anchoring the system.



For thermal contraction with flexible couplings, the pipe ends at each joint should be fully butted. The system can then be anchored in place to prevent the pipe ends from opening up to the maximum end gap when pressurized.



For design purposes, the maximum pipe end gap should be reduced to account for field practices as follows:

End Gap Reduction	
Nominal Pipe Size ANSI Inches DN	**Maximum Pipe End Gap Reduction**
1-1/4 - 3 32 - 80	50%
4-24 100 - 600	25%

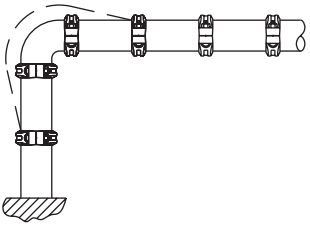
Therefore the following values should be used as available pipe end movements for Grinnell Figure 705 and 716 Flexible Couplings:

Pipe End Movements		
Nominal Pipe Size ANSI Inches DN	**Cut Grooved Inches (mm)**	**Roll Grooved* Inches (mm)**
1-1/4 - 3 32 - 80	0 - 0.063 (0 - 1,6)	0 - 0.031 (0 - 0,8)
4 - 24 100 - 600	0 - 0.188 (0 - 4,8)	0 - 0.094 (0 - 2,4)

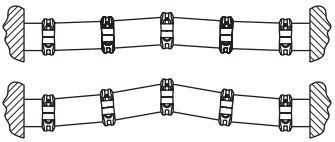
* Roll grooved joints provide 1/2 the available movement of cut grooved joints.

Angular Movement

System movement can be accommodated by providing for sufficient offset lengths. Temperature increases/decreases can further increase this movement.



When systems are anchored with partially deflected joints, the system can move to the fully deflected condition upon pressurization resulting in the “snaking” of the piping system. Light weight hangers may not be suitable to prevent the lateral motion.

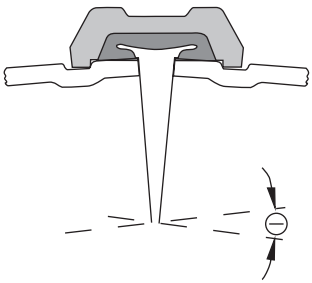


Angular Deflection

Grinnell Flexible Couplings are capable of accommodating angular deflection.

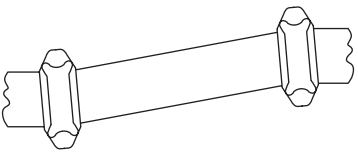
The deflection published is a maximum value. For design purposes the maximum deflection should be reduced to account for field practices as shown:

Deflection	
Nominal Pipe Size ANSI Inches DN	**Maximum Pipe Deflection Reduction**
1-1/4 - 3 32 - 80	50%
4 - 24 100 - 600	25%

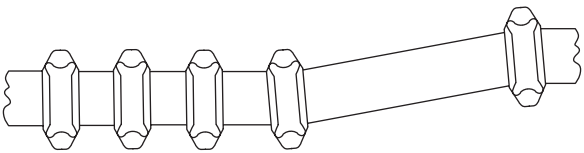


Expansion / Contraction

Grinnell Flexible Couplings are capable of accommodating pipe movements provided they are properly gapped and a sufficient quantity of flexible couplings are used. Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.



If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.



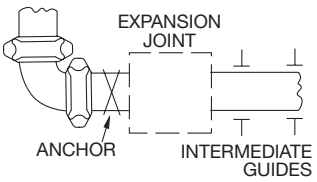
Thermal Movement 1 of 4

The following guidelines are similar to any expansion joint: It is recommended that anchors be installed at changes of direction on the pipelines to control the pipe movement. The thermal expansion / contraction in the piping system can be accommodated utilizing Grinnell Flexible Couplings. In designing anchoring systems, it is suggested that the following be taken into consideration as a minimum:

- Pressure thrusts
- Frictional resistance of any guides or supports
- Centrifugal thrust due to velocity at changes of direction
- Activation force required to compress or expand a flexible coupling

Three methods are available as examples to accommodate thermal expansion/contraction:

1. Design the system with rigid couplings and place expansion joints at the proper locations. Expansion joints may be a series of flexible grooved couplings of a sufficient quantity to accommodate the movement.



Thermal Movement 2 of 4

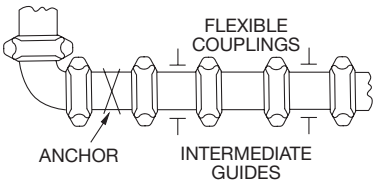
Nominal Pipe Size ANSI Inches DN	Activation Force Lbs. (N)
1-1/4 32	35 (156)
1-1/2 50	45 (200)
2 50	70 (311)
2-1/2 65	100 (645)
— 65	110 (489)
3 80	145 (645)
4 100	240 (1068)

Nominal Pipe Size ANSI Inches DN	Activation Force Lbs. (N)
5 125	375 (1668)
– 150	500 (2224)
6 150	520 (2313)
8 200	880 (3914)
10 250	1365 (6072)
12 300	1915 (8518)

2) Design the system with flexible and/or rigid couplings and allow the pipe to move in directions desired, with the use of anchors and guides if so required. With this method, it is important to ensure that movement at branch connections, changes of direction, equipment hookup, etc., will not cause damage or harmful stresses.

3) Design the system with flexible couplings utilizing the expansion/contraction capabilities of these products. The following example illustrates this method:

- 6 inch Schedule 40 Steel Pipe, Roll Grooved, 150 foot long, anchored at each end.
- Maximum Temperature = 200°F
- Minimum Temperature = 40°F
- Install Temperature = 80°F



Thermal Movement 3 of 4

To calculate the number of couplings required in this example to compensate for the Thermal Expansion and Contraction of the pipe:

1) Thermal Contraction: Utilize the Thermal Expansion Table. Allowance for installation temperature to the minimum temperature, in this case 80°F to 40°F is calculated as:

80°F = 0.61 inches per 100 feet
40°F = 0.30 inches per 100 feet
Difference = 0.31 inch per 100 feet

For 150 feet of pipe = 0.31 inch x 1.5 = 0.47 inch per 150 feet)

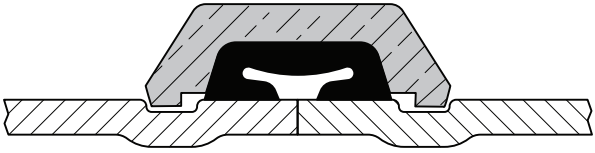
2) Thermal Expansion: Utilize the Thermal Expansion Table. Allowance for installation temperature to the minimum temperature, in this case 80°F to 200°F is calculated as:

200°F = 1.52 inches per 100 feet
80°F = 0.61 inch per 100 feet
Difference = 0.91 inch per 100 feet

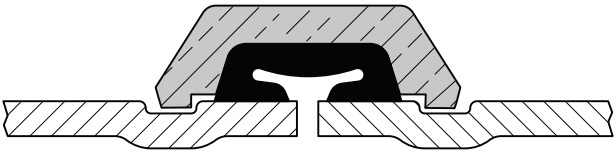
For 150 feet of pipe = 0.91 inch x 1.5 = 1.36 inches per 150 feet

3) Couplings Required: Available linear movement for a 6 inch Figure 705 Flexible Coupling on roll grooved pipe = 0.094 inch per coupling.

a) Fully Butted Together for Contraction Only
Therefore the number of flexible Figure 705 Couplings required:
0.47 inch / 0.094 inch per coupling = 5.0
Use 5 Figure 705 Couplings for pipe contraction.



b) Fully Gapped Apart for Expansion Only
Therefore the number of Figure 705 Flexible Couplings required:
1.36 inches / 0.094 inch per coupling = 14.47
Use 15 Figure 705 Couplings for pipe expansion.



Thermal Movement 4 of 4

**Thermal Expansion of Carbon Steel
In Inches/100 Feet (Millimeters/30.5 Meters)
Between 0°F (-18°C) & Indicated Temperature**

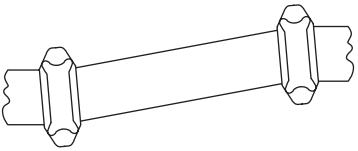
Temperature F° (C°)	Inches/100 ft. (mm/30.5 m)	Temperature F° (C°)	Inches/100 ft. (mm/30.5 m)
-40 (-40)	-0.30 (-7,62)	100 (37.8)	0.76 (19,30)
-30 (-34.4)	-0.23 (-5,84)	110 (43.3)	0.84 (21,34)
-20 (-28.9)	-0.15 (-3,81)	120 (48.9)	0.91 (23,11)
-10 (-23.3)	-0.08 (-2,03)	130 (54.4)	0.99 (25,15)
0 (-17.8)	0.00 (0,00)	140 (60.0)	1.06 (26,92)
10 (-12.2)	0.08 (2,03)	150 (65.6)	1.14 (28,96)
20 (-6.7)	0.15 (3,81)	160 (71.1)	1.22 (30,99)
30 (-1.1)	0.23 (5,84)	170 (76.7)	1.29 (32,77)
40 (4.4)	0.30 (7,62)	180 (82.2)	1.37 (34,80)
50 (10.0)	0.38 (9,65)	190 (87.8)	1.44 (36,58)
60 (15.6)	0.46 (11,68)	200 (93.3)	1.52 (38,61)
70 (21.1)	0.53 (13,46)	210 (98.9)	1.60 (40,64)
80 (26.7)	0.61 (15,50)	220 (104.4)	1.67 (42,42)
90 (32.2)	0.68 (17,27)	230 (110.0)	1.75 (44,45)

Mean Coefficient of thermal expansion = 0.00000633 in/in/°F
Source: ASME B31.9

Misalignment and Deflection 1 of 2

Grinnell Flexible Couplings provide for restrained joints and allow for deflection to aid where the pipe or equipment is misaligned.

Note that flexible couplings will not accommodate both full maximum linear movement and the maximum available angular deflection concurrently at the same joint.

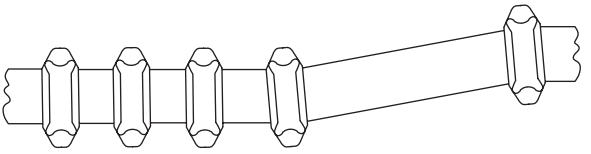


Design Deflection for Roll Grooved Pipe[1]			
Nominal Pipe Size			Figure 705
ANSI Inches	DN	O. D. Inches / (mm)	
1-1/4	32	1.660 (42,4)	1.08°
1-1/2	40	1.900 (48,3)	0.94°
2	50	2.375 (60,3)	0.75°
2-1/2	65	2.875 (73,0)	0.62°
—	65	3.000 (76,1)	0.60°
3	80	3.500 (88,9)	0.51°
4	100	4.500 (114,3)	1.19°
5	125	5.563 (141,3)	0.97°
—	150	6.500 (165,1)	0.83°
6	150	6.625 (168,3)	0.81°
8	200	8.625 (219,1)	0.63°
10	250	10.750 (273,1)	0.50
12	300	12.750 (323,4)	0.42°

1. Deflection values are for roll grooved pipe and incorporate design reductions as shown on page 127.

Misalignment and Deflection 2 of 2

If it is desired to have both deflection and linear movement available, then the system should have sufficient flexible joints to accommodate the requirement.

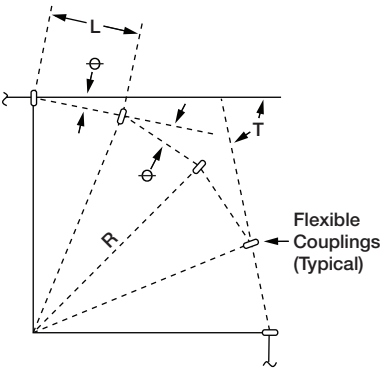


Flexible couplings are also useful in laying out curved piping systems.

$$\mathbf{R} = \frac{L}{(2)\,(\sin\frac{\Theta}{2})}$$

$$\mathbf{L} = (2)\,(R)\,(\sin\frac{\Theta}{2})$$

$$\mathbf{N} = \frac{T}{\Theta}$$



R = Radius of curve

L = Pipe length

Θ = Deflection from centerline, in degrees, for each coupling (see table)

N = Number of flexible couplings needed

T = Total deflection, in degrees, required

Decimal Equivalents of Fractions

1/16	0.0625
1/8	0.1250
3/16	0.1875
1/4	0.2500
5/16	0.3125
3/8	0.3750
7/16	0.4375
1/2	0.5000
9/16	0.5625
5/8	0.6250
11/16	0.6875
3/4	0.7500
13/16	0.8125
7/8	0.8750
15/16	0.9375
1	1.0000

Standard Conversion Factors

TO CHANGE	TO	MULTIPLY BY
Inches	Feet	0.0833
Inches	Millimeters	25.4
Feet	Inches	12
Feet	Yards	0.3333
Yards	Feet	3
Square Inches	Square Feet	0.00694
Square Feet	Square Inches	144
Square Feet	Square Yards	0.11111
Square Yards	Square Feet	9
Cubic Inches	Cubic Feet	0.00058
Cubic Feet	Cubic Inches	1728
Cubic Feet	Cubic Yards	0.03703
Cubic Yards	Cubic Feet	27
Cubic Inches	Gallons	0.00433
Cubic Feet	Gallons	7.48
Gallons	Cubic Inches	231
Gallons	Cubic Feet	0.1337
Gallons	Pounds Of Water	8.33
Pounds Of Water	Gallons	0.12004
Ounces	Pounds	0.0625
Pounds	Ounces	16
Inches Of Water	Pounds Per Square Inch	0.0361
Inches Of Water	Inches Of Mercury	0.0735
Inches Of Water	Ounces Per Square Inch	0.578
Inches Of Water	Pounds Per Square Foot	5.2
Inches Of Mercury	Inches Of Water	13.6
Inches Of Mercury	Feet Of Water	1.1333
Inches Of Mercury	Pounds Per Square Inch	0.4914
Ounces Per Square Inch	Inches Of Mercury	0.127
Ounces Per Square Inch	Inches Of Water	1.733
Pounds Per Square Inch	Inches Of Water	27.72
Pounds Per Square Inch	Feet Of Water	2.31
Pounds Per Square Inch	Inches Of Mercury	2.04
Pounds Per Square Inch	Atmospheres	0.0681
Feet Of Water	Pounds Per Square Inch	0.434
Feet Of Water	Pounds Per Square Foot	62.5
Feet Of Water	Inches Of Mercury	0.8824
Atmospheres	Pounds Per Square Inch	14.696
Atmospheres	Inches Of Mercury	29.92
Atmospheres	Feet Of Water	34
Long Tons	Pounds	2240
Short Tons	Pounds	2000
Short Tons	Long Tons	0.89285

Minutes Converted To Decimals Of A Degree

1	0.0166	31	0.5166
2	0.0333	32	0.5333
3	0.0500	33	0.5500
4	0.0666	34	0.5666
5	0.0833	35	0.5833
6	0.1000	36	0.6000
7	0.1166	37	0.6166
8	0.1333	38	0.6333
9	0.1500	39	0.6500
10	0.1666	40	0.6666
11	0.1833	41	0.6833
12	0.2000	42	0.7000
13	0.2166	43	0.7166
14	0.2333	44	0.7333
15	0.2500	45	0.7500
16	0.2666	46	0.7666
17	0.2833	47	0.7833
18	0.3000	48	0.8000
19	0.3166	49	0.8166
20	0.3333	50	0.8333
21	0.3500	51	0.8500
22	0.3666	52	0.8666
23	0.3833	53	0.8833
24	0.4000	54	0.9000
25	0.4166	55	0.9166
26	0.4333	56	0.9333
27	0.4500	57	0.9500
28	0.4666	58	0.9666
29	0.4833	59	0.9833
30	0.5000	60	1.0000

Water Feet Head Conversion

Water Pressure to Feet Head			
Pounds Per Square Inch	Feet Head	Pounds Per Square Inch	Feet Head
1	2.31	100	230.90
2	4.62	110	253.93
3	6.93	120	277.07
4	9.24	130	300.16
5	11.54	140	323.25
6	13.85	150	346.34
7	16.16	160	369.43
8	18.47	170	392.52
9	20.78	180	415.61
10	23.09	200	461.78
15	34.63	250	577.24
20	46.18	300	692.69
25	57.72	350	808.13
30	69.27	400	922.58
40	92.36	500	1154.48
50	115.45	600	1385.39
60	138.54	700	1616.30
70	161.63	800	1847.20
80	184.72	900	2078.10
90	207.81	1000	2309.00

Note:
One pound of pressure per square inch of water equals 2.309 feet of water at 62°F. Therefore to find the Feet Head of of water for any pressure not given in the table above, multiply the PSI by 2.309

Feet Head of Water to PSI			
Feet Head	Pounds Per Square Inch	Feet Head	Pounds Per Square Inch
1	0.43	100	43.31
2	0.87	110	47.64
3	1.30	120	51.97
4	1.73	130	56.30
5	2.17	140	60.63
6	2.60	150	64.96
7	3.03	160	69.29
8	3.46	170	73.63
9	3.90	180	77.96
10	4.33	200	86.62
15	6.50	250	108.27
20	8.66	300	129.93
25	10.83	350	151.58
30	12.99	400	173.24
40	17.32	500	216.55
50	21.65	600	259.85
60	25.99	700	303.16
70	30.32	800	346.47
80	34.65	900	389.78
90	38.98	1000	433.00

Note:
One foot of water at 62°F equals 0.433 PSI. To find the PSI for any Feet Head not given in the table above, multiply the Feet Head by 0.433

Pipe Thickness And Weight Per Line Foot 1 of 2

Nominal Size ANSI Inches DN	OD ANSI Inches (mm)	Schedule 5		Schedule 10	
		Inside Wall Thickness Inches (mm)	Approx. Wt. Lbs./ft.- (kg/M)	Inside Wall Thickness Inches (mm)	Approx. Wt. Lbs./ft.- (kg/M)
1/2 15	0.840 (21,3)	0.065 (1,65)	0.54 (0,80)	0.083 (2,11)	0.67 (0,99)
3/4 20	1.050 (26,7)	0.065 (1,65)	0.68 (1,02)	0.083 (2,11)	0.86 (1,27)
1 25	1.315 (33,7)	0.065 (1,65)	0.87 (1,29)	0.109 (2,77)	1.41 (2,09)
1-1/4 32	1.660 (42,4)	0.065 (1,65)	1.11 (1,65)	0.109 (2,77)	1.81 (2,69)
1-1/2 40	1.900 (48,3)	0.065 (1,65)	1.27 (1,89)	0.109 (2,77)	2.09 (3,11)
2 50	2.375 (60,3)	0.065 (1,65)	1.60 (2,39)	0.109 (2,77)	2.64 (3,93)
2-1/2 65	2.875 (73,0)	0.083 (2,11)	2.47 (3,68)	0.120 (3,05)	3.53 (5,25)
3 80	3.500 (88,9)	0.083 (2,11)	3.03 (4,51)	0.120 (3,05)	4.34 (6,46)
4 100	4.500 (114,3)	0.083 (2,11)	3.91 (5,82)	0.120 (3,05)	5.62 (8,37)
5 125	5.563 (141,3)	0.109 (2,77)	6.35 (9,45)	0.134 (3,40)	7.78 (11,58)
6 150	6.625 (168,3)	0.109 (2,77)	7.58 (11,29)	0.134 (3,40)	9.30 (13,85)
8 200	8.625 (219,1)	0.109 (2,77)	9.91 (14,75)	0.148 (3,76)	13.40 (19,94)
10 250	10.750 (273,1)	0.134 (3,40)	15.19 (22,61)	0.165 (4,19)	18.65 (27,76)
12 300	12.750 (323,9)	0.165 (4,19)	22.18 (33,01)	0.180 (4,57)	24.16 (35,96)

Pipe Thickness And Weight Per Line Foot 2 of 2

Nominal Size ANSI Inches DN	OD ANSI Inches DN	Schedule 40	
		Inside Wall Thickness Inches (mm)	Approx. Wt. Lbs./ft.- (kg/M)
1/2 15	0.840 (21,3)	0.11 (2,77)	0.85 (1,26)
3/4 20	1.050 (26,7)	1.13 (2,87)	1.13 (1,68)
1 25	1.315 (33,7)	0.13 (3,38)	1.68 (2,50)
1-1/4 32	1.660 (42,4)	0.14 (3,56)	2.27 (3,39)
1-1/2 40	1.900 (48,3)	0.14 (3,68)	2.72 (4,05)
2 50	2.375 (60,3)	0.15 (3,91)	3.66 (5,45)
2-1/2 65	2.875 (73,0)	0.20 (5,16)	5.80 (8,64)
3 80	3.500 (88,9)	0.22 (5,49)	7.58 (11,29)
4 100	4.500 (114,3)	0.24 (6,02)	10.80 (16,09)
5 125	5.563 (141,3)	0.25 (6,55)	14.63 (21,79)
6 150	6.625 (168,3)	0.28 (7,11)	18.99 (28,29)
8 200	8.625 (219,1)	0.32 (8,18)	28.55 (42,50)
10 250	10.750 (273,1)	0.36 (9,27)	40.48 (60,25)
12 300	12.750 (323,9)	0.41 (10,30)	53.52 (79,66)

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