Grinnell®

Grooved Fire Protection Installation Manual

IH-1000FP

tyco
Fire & Building Products

August 2007


FOUNDED 1850

Grinnell®

Fire Protection

Installation Handbook

AUGUST 2007

IH-1000FP
Rev. 1

tyco / Fire & Building Products

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Tyco Fire & Building 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 & Building Products is prepared to become the industry standard.

Tyco Fire & Building Products is a 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 & Building 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 from 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 their piping systems - the Global Technology Center ensures their demands are met each and every time.

Throughout this handbook, nominal pipe sizes are referred to in “ANSI Inches” and “DN”. “ANSI Inches” is a nominal pipe size designation derived from the older IPS (inside pipe diameter) 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 (e.g., 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.

WARNING

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. Always read and understand the installation instructions. Never remove any piping component nor correct or modify any piping deficiencies without first depressurizing and draining the system. Material and gasket selection should be verified to be compatible for the specific application.

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

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

1. *Read and understand all instructions before installing any Tyco Fire & Building 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.*

ISO 9001:2000 Certified

Tyco Fire & Building Products Products are manufactured according to ISO 9001:2000 quality assurance standards.

Loss Prevention Certification Board

LPCB

CERTIFICATE OF QUALITY SYSTEM REGISTRATION

This is to certify

TYCO FIRE & BUILDING PRODUCTS
RESEARCH & DEVELOPMENT CENTRE
1467 Elmwood Avenue, Cranston, RI 02910, USA

has complied with the requirements identified in

ISO 9001 : 2000

and is authorised to use the LPCB mark on stationery and publications related to the following products and/or services

Research, design, development and manufacturing support for the fire protection equipment manufacturers of Tyco Fire Products

further clarification regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

Certificate No. 570 Issue 3

Issued 16 August 2005

Valid Until 15 August 2008

Signed on behalf of the LPCB

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General Code Groups, Associations, Laboratories And Approval Bodies

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)

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

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)

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

NOTE

Bolt torque information for couplings is provided as required by UL 213, Section 17.

UL 213
Standard For Rubber Gasketed Fittings For Fire-Protection Service
Third Edition – July 12, 2001

INSTRUCTIONS

17 Installation Instructions

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

a) Assembly procedure for installation of fittings.

b) Pipe end specifications, when required, with which fitting is intended to be used.

c) Required torque for bolts (if bolts are used), when not marked on the fitting.

d) Maximum allowable deflection for flexible fittings.

Care and Maintenance

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in accordance with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions. Any impairment must be immediately corrected. It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service.

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

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 772		Figure 705	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)		Inches (mm)	
		Bolt Size	Socket Size	Bolt Size	Socket Size
1-1/4 DN32	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 DN40	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 DN50	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 DN65	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)
– DN65	3.000 (76,2)	- (M10 x 57)	- (16 mm)	- (M12 x 76)	- (18 mm)
3 DN80	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)
– DN100	4.250 (108,0)	–	–	- (M12 x 76)	- (18 mm)
4 DN100	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)
– DN125	5.250 (133,0)	–	–	- (M16 x 83)	- (24 mm)
– DN125	5.500 (139,7)	- (M16 x 83)	- (24 mm)	- (M16 x 83)	- (24 mm)
5 DN125	5.563 (141,3)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)
– DN150	6.250 (159,0)	–	–	- (M16 x 83)	- (24 mm)
– DN150	6.500 (165,1)	- (M16 x 83)	- (24 mm)	- (M16 x 83)	- (24 mm)
6 DN150	6.625 (168,3)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)
– DN200	8.500 (216,3)	–	–	- (M20 x 121)	- (30 mm)
8 DN200	8.625 (219,1)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)	3/4 x 4-3/4 (M20 x 121)	1-1/4 (30 mm)
10 DN250	10.750 (273,1)	1 x 6-1/2 (M24 x 165	1-5/8 (41 mm)	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)
12 DN300	12.750 (323,4)	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)	1 x 6-1/2 (M24 x 165)	1-5/8 (41 mm)

Coupling Nut / Bolt Specifications 2 of 3

Nominal Pipe Size		Figure 577		Figure 71*	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)		Inches (mm)	
		Bolt Size	Socket Size	Bolt Size	Socket Size
1-1/4 DN32	1.660 (42,4)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	–	–
1-1/2 DN40	1.900 (48,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	–	–
2 DN50	2.375 (60,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
2-1/2 DN65	2.875 (73,0)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
– DN65	3.000 (76,1)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	–	–
3 DN80	3.500 (88,9)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
4 DN100	4.500 (114,3)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)	5/8 x 3 (M16 x 76)	1-1/16 (24 mm)
– DN125	5.500 (139,7)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
5 DN125	5.563 (141,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
– DN150	6.500 (165,1)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	–	–
6 DN150	6.625 (168,3)	1/2 x 3 (M12 x 76)	7/8 (18 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
8 DN200	8.625 (219,1)	5/8 x 3-1/4 (M16 x 83)	1-1/16 (24 mm)	3/4 x 3-1/2 (M20 x 89)	1-1/4 (30 mm)
10 DN250	10.750 (273,1)	–	–	7/8 x 4 (M22 x 102)	1-7/16 (36 mm)
12 DN300	12.750 (323,4)	–	–	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 DN50	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 DN65	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)
– DN65	3.000 (76,1)	- (M12 x 76)	- (18 mm)	- (M10 x 57)	- (16 mm)
3 DN80	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)
– DN100	4.500 (114,3)	- (M16 x 83)	- (24 mm)	- (M12 x 76)	- (18 mm)
4 DN100	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)
– DN125	5.500 (139,7)	- (M20 x 121)	- (30 mm)	- (M16 x 121)	- (24 mm)
5 DN125	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)
– DN150	6.500 (165,1)	- (M20 x 121)	- (30 mm)	- (M16 x 121)	- (24 mm)
6 DN150	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)
– DN200	8.515 (216,3)	–	–	- (M20 x 121)	- (30 mm)
8 DN200	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)

Nominal Pipe Size		Figure 40-5	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)	
		Bolt Size	Socket Size
1-1/4 DN32	1.600 (42,4)	3/8 x 1-1/2 (M10 x 38)	11/16 (16 mm)
1-1/2 DN40	1.900 (48,3)	3/8 x 1-1/2 (M10 x 38)	11/16 (16 mm)
2 DN50	2.375 (60,3)	3/8 x 2 (M10 x 51)	11/16 (16 mm)
2-1/2 DN65	2.875 (73,0)	3/8 x 2-1/4 (M10 x 57)	11/16 (16 mm)

Grinnell Grooved Fittings - Pressure Loss

Friction Resistance* (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 DN32	1.600 (42,4)	1.9 (0,6)	1.0 (0,3)	4.8 (1,5)	1.9 (0,6)
1-1/2 DN40	1.900 (48,3)	2.3 (0,7)	1.2 (0,4)	5.8 (1,8)	2.3 (0,7)
2 DN50	2.375 (60,3)	3.2 (1,0)	1.6 (0,5)	8.0 (2,5)	3.2 (1,0)
2-1/2 DN65	2.875 (73,0)	3.9 (1,2)	2.0 (0,6)	9.8 (3,0)	3.9 (1,2)
– DN65	3.000 (76,1)	4.1 (1,2)	2.1 (0,6)	10.3 (3,1)	4.1 (1,2)
3 DN80	3.500 (88,9)	4.9 (1,5)	2.4 (0,7)	12.2 (3,7)	4.9 (1,5)
– DN100	4.250 (108,0)	6.5 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
4 DN100	4.500 (114,3)	6.5 (2,0)	3.3 (1,0)	16.3 (5,0)	6.5 (2,0)
– DN125	5.250 (133,0)	8.0 (2,4)	4.0 (1,2)	20.0 (6,1)	8.0 (2,4)
– DN125	5.500 (139,7)	8.0 (2,4)	4.1 (1,3)	20.0 (6,1)	8.0 (2,4)
5 DN125	5.563 (141,3)	8.2 (2,5)	4.1 (1,3)	20.5 (6,3)	8.2 (2,5)
– DN150	6.250 (159,0)	9.5 (2,9)	4.8 (1,4)	23.8 (7,2)	9.5 (2,9)
– DN150	6.500 (165,1)	9.5 (2,9)	4.8 (1,4)	23.8 (7,2)	9.5 (2,9)
6 DN150	6.625 (168,3)	9.9 (3,0)	5.0 (1,5)	24.8 (7,6)	9.9 (3,0)
– DN200	8.500 (216,3)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.1 (4,0)
8 DN200	8.625 (219,1)	13.1 (4,0)	6.6 (2,0)	32.8 (10,0)	13.1 (4,0)
10 DN250	10.750 (273,0)	16.5 (5,0)	8.3 (2,5)	41.3 (12,6)	16.5 (5,0)
12 DN300	12.750 (323,9)	19.9 (6,1)	9.9 (3,0)	49.7 (15,1)	19.9 (6,1)

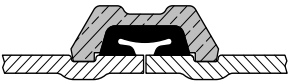
For reducing tees and branches, use the value that is corresponding to the branch size. Example: for 8" x 8" x 2" tee, the branch value 2" is 8.0 feet.

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

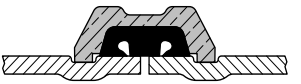
Gasket Specifications 1 of 2

Styles

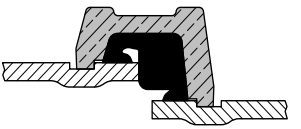
Standard: The standard style gasket, with a "C" shape configuration, is the most commonly used. It is provided as the standard in the Figure 705, 577, & 772 Grinnell Couplings. The gasket is available in Grade "A" Pre-Lubricated EPDMA and Grade "E" EPDM.



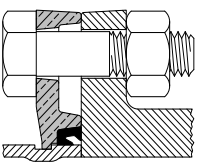
Tri-Seal: The Tri-Seal gasket is designed to close off the gap or gasket cavity. This is accomplished by positioning the center "rib" of the gasket over the gap between the pipes. The Tri-Seal gasket has two tapered sealing edges in addition to the center rib for additional strength and sealing. The Tri-Seal gasket can be used with the Figure 705, 577, & 772 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.



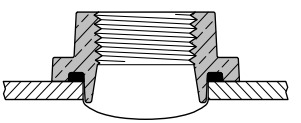
Reducing Coupling: The gasket is provided with ribs used to position the larger pipe so that the sealing lip is located on the sealing surface of the pipe. This gasket is used only with the Figure 716 Grinnell Reducing Coupling and is available in Grade "E" EPDM. Reducing couplings are not recommended 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 2

Grade	Temp. Range	Compound & Color Code	General Service Application
A Pre-Lubricated	Ambient to +150°F (+66°C)	EPDMA 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 Data Sheet TFP1895 for additional information

Pipe Support

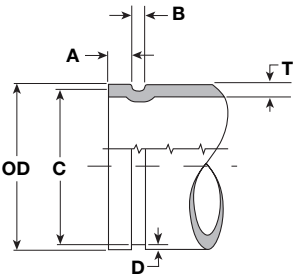
Hanging, bracing, and restraint of fire protection system piping must be performed in accordance with NFPA 13, and, as applicable, in accordance with the installation rules recognized by the applicable approval agency (e.g., VdS).

Paint Specifications

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

Groove Specifications

Roll Groove



1. The maximum allowable tolerances for IPS pipe from square cut ends is 0.030" (0.76 mm) for sizes 1" to 3" (DN32 to DN80); 0.045" (1.14 mm) for sizes 4" to 6" (DN100 to DN150); and 0.060" (1.52 mm) for sizes 8" (DN200) and above.
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. 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 only. The Groove Diameter "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.
6. Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

NOTE

For more information reference TFP1898.

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 DN25	1.315 (33,7)	0.013 (0,33)	0.013 (0,33)
1-1/4 DN32	1.660 (42,4)	0.016 (0,41)	0.016 (0,41)
1-1/2 DN40	1.900 (48,3)	0.019 (0,48)	0.019 (0,48)
2 DN50	2.375 (60,3)	0.024 (0,61)	0.024 (0,61)
2-1/2 DN65	2.875 (73,0)	0.029 (0,74)	0.029 (0,74)
- DN65	3.000 (76,1)	0.030 (0,76)	0.030 (0,76)
3 DN80	3.500 (88,9)	0.035 (0,89)	0.031 (0,79)
– DN100	4.250 (108,0)	0.043 (1,09)	0.031 (0,79
4 DN100	4.500 (114,3)	0.045 (1,14)	0.031 (0,79)
– DN125	5.250 (133,4)	0.053 (1,35)	0.031 (0,79)
– DN125	5.500 (139,7)	0.056 (1,42)	0.031 (0,79)
5 DN125	5.563 (141,3)	0.056 (1,42)	0.031 (0,79)
– DN150	6.250 (159,0)	0.063 (1,60)	0.031 (0,79)
– DN150	6.500 (165,1)	0.063 (1,60)	0.031 (0,79)
6 DN150	6.625 (168,3)	0.063 (1,60)	0.031 (0,79)

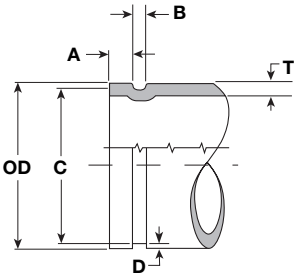
Groove Specifications 2 of 8

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030" ±0,76 mm Inches (mm)	B ±0.030" ±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 DN25	0.625 (15,88)	0.281 (7,14)	1.190 (30,23)	-0.015 (-0,38)	0.062 (1,60)	0.065 (1,65)	1.43 (36,32)
1-1/4 DN32	0.625 (15,88)	0.281 (7,14)	1.535 (38,99)	-0.015 (-0,38)	0.062 (1,60)	0.065 (1,65)	1.77 (44,96)
1-1/2 DN40	0.625 (15,88)	0.281 (7,14)	1.775 (45,09)	-0.015 (-0,38)	0.062 (1,60)	0.065 (1,65)	2.01 (51,05)
2 DN50	0.625 (15,88)	0.344 (8,74)	2.250 (57,15)	-0.015 (-0,38)	0.062 (1,60)	0.065 (1,65)	2.48 (62,99)
2-1/2 DN65	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)
– DN65	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 DN80	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)
– DN100	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 DN100	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)
– DN125	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)
– DN125	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 DN125	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)
– DN150	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)
– DN150	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 DN150	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 is 0.030" (0.76 mm) for sizes 1" to 3" (DN32 to DN80); 0.045" (1.14 mm) for sizes 4" to 6" (DN100 to DN150); and 0.060" (1.52 mm) for sizes 8" (DN200) and above.
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. 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 only. The Groove Diameter "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be roll grooved.
6. Maximum allowable pipe end flare diameter is measured at the pipe end diameter.

NOTE

For more information reference TFP1898.

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
– DN200	8.516 (216,3)	0.063 (1,60)	0.031 (0,79)
8 DN200	8.625 (219,1)	0.063 (1,60)	0.031 (0,79)
10 DN250	10.750 (273,1)	0.063 (1,60)	0.031 (0,79)
12 DN300	12.750 (323,9)	0.063 (1,60)	0.031 (0,79)

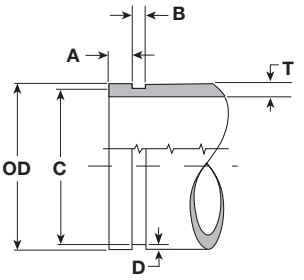
Groove Specifications 4 of 8

Roll Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030" ±0,76 mm Inches (mm)	B ±0.030" ±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			
– DN200	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 DN200	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 DN250	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 DN300	0.750 (19,05)	0.469 (11,91)	12.531 (318,19)	-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" (0.76 mm) for sizes 1" to 3" (DN32 to DN80); 0.045" (1.14 mm) for sizes 4" to 6" (DN100 to DN150); and 0.060 in. (1.52 mm) for sizes 8" (DN200) and above.
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. 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 only. The Groove Diameter "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

NOTE

For more information reference TFP1898.

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 DN25	1.315 (33,7)	0.013 (0,33)	0.013 (0,33)
1-1/4 DN32	1.660 (42,4)	0.016 (0,41)	0.016 (0,41)
1-1/2 DN40	1.900 (48,3)	0.019 (0,48)	0.019 (0,48)
2 DN50	2.375 (60,3)	0.024 (0,61)	0.024 (0,61)
2-1/2 DN65	2.875 (73,0)	0.029 (0,74)	0.029 (0,74)
– DN65	3.000 (76,1)	0.030 (0,76)	0.030 (0,76)
3 DN80	3.500 (88,9)	0.035 (0,89)	0.031 (0,79)
– DN100	4.250 (108,0)	0.043 (1,09)	0.031 (0,79)
4 DN100	4.500 (114,3)	0.045 (1,14)	0.031 (0,79)
– DN125	5.250 (133,4)	0.052 (1,35)	0.031 (0,79)
– DN125	5.500 (139,7)	0.056 (1,42)	0.031 (0,79)
5 DN125	5.563 (141,3)	0.056 (1,42)	0.031 (0,79)
– DN150	6.250 (159,0)	0.063 (1,60)	0.031 (0,79)
– DN150	6.500 (165,1)	0.063 (1,60)	0.031 (0,79)
6 DN150	6.625 (168,3)	0.063 (1,60)	0.031 (0,79)

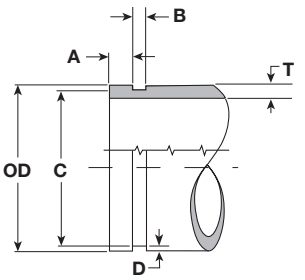
Groove Specifications 6 of 8

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Size ANSI Inches DN	A ±0.030" ±0,76 mm Inches (mm)	B ±0.030" ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)
			Actual	Tol.+0		
1 DN25	0.625 (15,88)	0.313 (7,95)	1.190 (30,23)	-0.015 (-0,38)	0.062 (1,57)	0.133 (3,38)
1-1/4 DN32	0.625 (15,88)	0.313 (7,95)	1.535 (38,99)	-0.015 (-0,38)	0.062 (1,57)	0.140 (3,56)
1-1/2 DN40	0.625 (15,88)	0.313 (7,95)	1.775 (45,09)	-0.015 (-0,38)	0.062 (1,57)	0.145 (3,68)
2 DN50	0.625 (15,88)	0.313 (7,95)	2.250 (57,15)	-0.015 (-0,38)	0.062 (1,57)	0.154 (3,91)
2-1/2 DN65	0.625 (15,88)	0.313 (7,95)	2.720 (69,09)	-0.018 (-0,46)	0.078 (1,98)	0.188 (4,78)
– DN65	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 DN80	0.625 (15,88)	0.313 (7,95))	3.344 (84,94)	-0.018 (-0,46)	0.078 (1,98)	0.188 (4,78)
– DN100	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 DN100	0.625 (15,88)	0.375 (9,53)	4.334 (110,08)	-0.020 (-0,51)	0.083 (2,11)	0.203 (5,16)
– DN125	0.625 (15,88)	0.375 (9,53)	5.084 (129,13)	-0.022 (-0,56)	0.083 (2,11)	0.203 (5,16)
– DN125	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 DN125	0.625 (15,88)	0.375 (9,53)	5.395 (137,03)	-0.022 (-0,56)	0.084 (2,13)	0.203 (5,16)
– DN150	0.625 (15,88)	0.375 (9,53)	6.084 (154,53)	-0.030 (-0,76)	0.083 (2,11)	0.219 (5,56)
– DN150	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 DN150	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" (0.76 mm) for sizes 1" to 3" (DN32 to DN80); 0.045" (1.14 mm) for sizes 4" to 6" (DN100 to DN150); and 0.060 in. (1.52 mm) for sizes 8" (DN200) and above.
2. Gasket Seating Surface "A" must be free from score marks, ridges, indentations, projections, loose paint, scale, dirt chips, grease, rust, etc. 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 only. The Groove Diameter "C" must be maintained.
5. Minimum Wall Thickness "T" is the minimum wall thickness that should be cut grooved.

NOTE

For more information reference TFP1898.

Cut Groove Standard Specification For Steel And Other IPS Pipe

Nominal Pipe Size ANSI Inches DN	Pipe O.D. Inches (mm)		
	O.D.	Tolerance	
		+	-
– DN200	8.516 (216,3)	0.063 (1,60)	0.031 (0,79)
8 DN200	8.625 (219,1)	0.063 (1,60)	0.031 (0,79)
10 DN250	10.750 (273,1)	0.063 (1,60)	0.031 (0,79)
12 DN300	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" ±0,76 mm Inches (mm)	B ±0.030" ±0,76 mm Inches (mm)	C Groove Dia. Inches (mm)		D Groove Depth Inches (mm)	T Min. Wall Inches (mm)
			Actual	Tol.+0		
– DN200	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 DN200	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 DN250	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 DN300	0.750 (19,05)	0.500 (12,70)	12.531 (318,29)	-0.030 (-0,76)	0.109 (2,77)	0.279 (7,09)

Figure 772 & 577 Rigid Coupling 1 of 2

NOTES

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

Step 1. Inspect exterior groove and ends of the pipe to verify all loose debris, dirt, chips, paint and any other foreign material such as grease are removed. 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 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 772 & 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, open the coupling housings in a clamshell effect and put 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. Alternate when tightening nuts until properly tightened.

NOTES

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Page 37 for Figure 772, and Page 39 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 7).

For more information refer to Tech Data Sheets TFP1850 (Figure 772), and TFP1854 (Figure 577).

The 1-1/4" - 12" 772 and 1-1/4" - 8" 577 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 Flexible Coupling 1 of 2

NOTES

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 Flexible Coupling. The installation is based on pipe grooved in accordance with Standard Cut Groove or Roll Groove Specifications. Refer to Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all loose debris, dirt, chips, paint and any other foreign material such as grease are removed. 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 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 Flexible 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 around" as shown. 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. Alternate when tightening nuts until properly tightened to bring housing in contact with bolt pads.

NOTE

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Pages 41 and 43. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 7).

For more information refer to Tech Data Sheets TFP1820 (Figure 705).

Figure 716 Flexible Reducing Coupling 1 of 2

NOTES

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 Data Sheet TFP1898 for more information.

Step 1. Inspect exterior groove and ends of the pipe to verify all loose debris, dirt, chips, paint and any other foreign material such as grease are removed. 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 TFP1895 for additional gasket information.

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 “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. Alternate when tightening nuts until properly tightened to bring housing in contact with the bolt pads.

NOTES

Uneven tightening can cause the gasket to pinch or bind. For proper bolt torques refer to Page 45. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 7).

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.

For more information refer to Tech Data Sheet TFP1830.

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 Data Sheet TFP1898 for more information.

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

Step 2. Verify that the gasket selection is correct for the application intended. Refer to 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 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 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 to bring the flange faces firmly together and check that the nuts are sufficiently torqued.

NOTES

For proper bolt torques refer to Pages 46 and 48. Bolt torque information has been provided in accordance with the UL 213 "Standard For Rubber Gasketed Fittings For Fire Protection Service" (Refer to Page 7).

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. For more information refer to Tech Data Sheet TFP1880.

Figure 730 Mechanical Outlet 1 of 4

NOTE

Always read and understand the instructions. Never remove any piping component without verifying that the system is depressurized and drained.
For more information refer to Tech Data Sheet TFP1860.

Pipe Preparation

Step 1. Verify hole size from the table on Page 31.

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.

Figure 730 Mechanical Outlet 2 of 4

Nominal Size Run x Branch ANSI Inches / DN	Hole Diameter *	
	Min. Inches (mm)	Max. Inches (mm)
2, 2-1/2, 3, 4 x 1/2, 3/4, 1 DN50, 65, 80, 100 x DN15, 20, 25	1.5 (38,1)	1.625 (41,3)
2 x 1-1/4, 1-1/2 DN50 x DN32, 40	1.75 (44,5)	1.875 (47,6)
2-1/2 x 1-1/4, 1-1/2 DN65 x DN32, 40	2 (50,8)	2.125 (54,0)
3, 4 x 1-1/4 DN80, 100 x DN32	1.75 (44,5)	1.875 (47,6)
3, 4, 5, 6 x 1-1/2 DN80, 100, 125, 150 x DN40	2 (50,8)	2.125 (54,0)
3, 4, 5, 6 x 2 DN80, 100, 125, 150 x DN50	2.5 (63,5)	2.625 (66,7)
4, 5, 6, 8 x 2-1/2, DN100, 125, 150, 200 x DN65, 150	2.75 (69,9)	2.875 (73,0)
4, 5, 6, 8 x 3 DN100, 125, 150, 200 x DN80	3.5 (88,9)	3.625 (92,1)
6, 8, x 4 DN150, 200 x DN100	4.5 (114,3)	4.625 (117,5)

***** 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 & Building Products.

Figure 730 Mechanical Outlet 3 of 4

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 Data Sheet TFP1895 for additional 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 around” 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 4 of 4

Step 4. Alternate when tightening nuts until properly torqued with even gaps between the bolt 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 7).

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 DN50 - DN65	3/8 (M10)	30 (40,7)
3 - 4 DN80 - DN100	1/2 (M12)	50 (67,8)
5 DN125	5/8 (M16)	50 (67,8)
6 DN150	5/8 (M16)	70 (94,9)
8 DN200	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.

For more information refer to Tech Data Sheet TFP1720.

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

The following instructions apply to Figure 40-5 Strap Outlet.

Verify that the gasket grade is correct for the application intended. Refer to 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 40°F (4°C). For assembly or application below 40°F (4°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 rotate the nuts clockwise until finger tight.

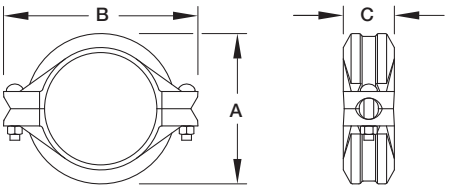
Step 4. Alternate between bolts when tightening nuts until properly torqued.

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 7).

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)

Figure 772 Rigid Coupling - Patented 1 of 2

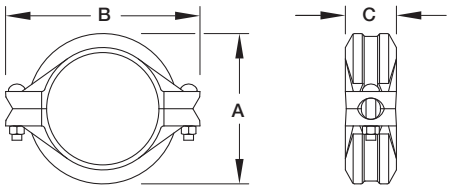


See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Max.* End Gap
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)
1-1/4 DN32	1.660 (42,4)	0.06 (1,5)
1-1/2 DN40	1.900 (48,3)	0.08 (2,0)
2 DN50	2.375 (60,3)	0.13 (3,3)
2-1/2 DN65	2.875 (73,0)	0.13 (3,3)
– DN65	3.000 (76,1)	0.13 (3,3)
3 DN80	3.500 (88,9)	0.13 (3,3)
4 DN100	4.500 (114,3)	0.19 (4,8)
– DN125	5.500 (139,7)	0.19 (4,8)
5 DN125	5.563 (141,3)	0.19 (4,8)
– DN150	6.500 (165,1)	0.19 (4,8)
6 DN150	6.625 (168,3)	0.19 (4,8)
8 DN200	8.625 (219,1)	0.19 (4,8)
10 DN250	10.750 (273,1)	0.13 (3,3)
12 DN300	12.750 (323,4)	0.13 (3,3)

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

Figure 772 Rigid Coupling - Patented 2 of 2

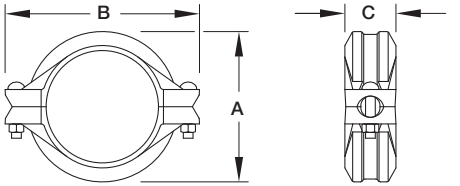


Nominal Pipe Size		Dimensions			Bolt** Size Inches/ (mm)	Bolt Torque Lbs. - ft. Nm	Net Weight Lbs. kg.
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
1-1/4 DN32	1.660 (42,4)	2.75 (69,9)	4.38 (111,3)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.0 (0,5)
1-1/2 DN40	1.900 (48,3)	3.00 (76,2)	4.62 (117,3)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.0 (0,5)
2 DN50	2.375 (60,3)	3.41 (86,6)	5.12 (130,0)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.5 (0,7)
2-1/2 DN65	2.875 (73,0)	3.91 (99,3)	5.63 (143,0)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.5 (1,1)
– DN65	3.000 (76,1)	4.19 (106,4)	5.72 (145,3)	2.00 (50,8)	- (M10 x 57)	30 (41)	2.6 (1,2)
3 DN80	3.500 (88,9)	4.63 (117,6)	6.25 (158,8)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.6 (1,2)
4 DN100	4.500 (114,3)	5.81 (147,6)	7.50 (190,5)	1.97 (50,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	3.5 (1,6)
– DN125	5.500 (139,7)	7.02 (178,3)	9.72 (246,9)	2.06 (52,3)	- (M16 x 83)	90 (122)	7.5 (3,4)
5 DN125	5.563 (141,3)	7.09 (180,1)	9.71 (246,6)	2.04 (51,8)	5/8 x 3-1/4 (M16 x 83)	90 (122)	7.5 (3,4)
– DN150	6.500 (165,1)	8.09 (205,5)	10.53 (267,5)	2.13 (54,1)	- (M16 x 83)	90 (122)	7.6 (3,4)
6 DN150	6.625 (168,3)	8.09 (205,5)	10.53 (267,5)	2.13 (54,1)	5/8 x 3-1/4 (M16 x 83)	90 (122)	7.6 (3,4)
8 DN200	8.625 (219,1)	10.56 (268,2)	13.56 (344,4)	2.62 (66,5)	3/4 x 4-3/4 (M20 x 121)	150 (203)	18.0 (8,2)
10 DN250	10.750 (273,1)	12.84 (326,1)	16.41 (416,8)	2.62 (66,5)	1 x 6-1/2 (M24 x 165)	200 (271)	24.6 (11,2)
12 DN300	12.750 (323,4)	15.41 (391,4)	18.84 (478,5)	2.62 (66,5)	1 x 6-1/2 (M24 x 165)	200 (271)	42.0 (19,1)

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

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 577 Rigid Coupling

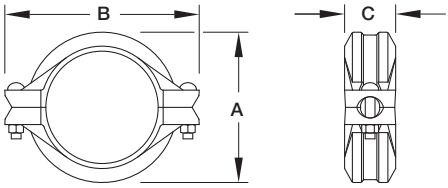


See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Max.* End Gap
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)
1-1/4 DN32	1.660 (42,4)	0.06 (1,5)
1-1/2 DN40	1.900 (48,3)	0.06 (1,5)
2 DN50	2.375 (60,3)	0.06 (1,5)
2-1/2 DN65	2.875 (73,0)	0.06 (1,5)
– DN65	3.000 (76,1)	0.06 (1,5)
3 DN80	3.500 (88,9)	0.06 (1,5)
4 DN100	4.500 (114,3)	0.19 (4,8)
– DN125	5.500 (139,7)	0.19 (4,8)
5 DN125	5.563 (141,3)	0.19 (4,8)
– DN150	6.500 (165,1)	0.19 (4,8)
6 DN150	6.625 (168,3)	0.19 (4,8)
8 DN200	8.625 (219,1)	0.19 (4,8)

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

Figure 577 Rigid Coupling 2 of 2

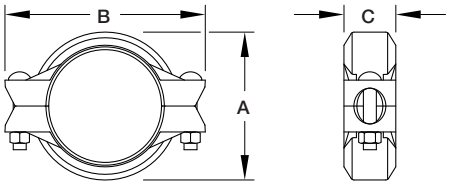


Nominal Pipe Size		Dimensions			Bolt** Size Inches/ (mm)	Bolt Torque Lbs. - ft. Nm	Net Weight Lbs. kg.
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
1-1/4 DN32	1.660 (42,4)	2.68 (68,1)	4.21 (107,0)	1.65 (42,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.3 (0,6)
1-1/2 DN40	1.900 (48,3)	2.91 (74,0)	4.45 (113,0)	1.65 (42,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.5 (0,7)
2 DN50	2.375 (60,3)	3.39 (86,1)	5.00 (127,0)	1.69 (43,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.8 (0,8)
2-1/2 DN65	2.875 (73,0)	3.90 (99,0)	5.43 (138,0)	1.77 (45,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.0 (0,9)
– DN65	3.000 (76,1)	3.98 (101,0)	5.59 (142,0)	1.77 (45,0)	- (M10 x 57)	30 (41)	2.0 (0,9)
3 DN80	3.500 (88,9)	4.49 (114,0)	6.14 (156,0)	1.77 (45,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	3.3 (1,5)
4 DN100	4.500 (114,3)	5.71 (145,0)	7.52 (191,0)	1.85 (47,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	3.3 (1,5)
– DN125	5.500 (139,7)	6.81 (173,0)	8.74 (222,0)	1.93 (49,0)	- (M12 x 76)	90 (122)	5.3 (2,4)
5 DN125	5.563 (141,3)	6.85 (174,0)	8.82 (224,0)	1.93 (49,0)	1/2 x 3 (M12 x 76)	90 (122)	5.3 (2,4)
– DN150	6.500 (165,1)	7.80 198,0)	9.76 (248,0)	1.93 (49,0)	- (M12 x 76)	90 (122)	5.7 (2,6)
6 DN150	6.625 (168,3)	7.91 (201,0)	9.88 (251,0)	1.93 (49,0)	1/2 x 3 (M12 x 76)	90 (122)	5.9 (2,7)
8 DN200	8.625 (219,1)	10.24 (26,0)	12.80 (325,0)	2.40 (61,0)	5/8 x 3-1/4 (M16 x 83)	150 (203)	11.7 (5,3)

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

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 705 Flexible Coupling 1 of 4



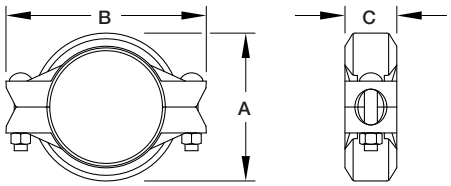
See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Max.* ‡ End Gap	Deflection‡	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)	°Per Coupling	Inches/ Foot (mm/m)
1-1/4 DN32	1.660 (42,4)	0.13 (3,3)	4° - 19’	0.90 (75,0)
1-1/2 DN40	1.900 (48,3)	0.13 (3,3)	3° - 46’	0.79 (65,8)
2 DN50	2.375 (60,3)	0.13 (3,3)	3° - 1’	0.63 (52,5)
2-1/2 DN65	2.875 (73,0)	0.13 (3,3)	2° - 29’	0.52 (43,3)
– DN65	3.000 (76,2)	0.13 (3,3)	2° - 23’	0.50 (41,7)
3 DN80	3.500 (88,9)	0.13 (3,3))	2° - 3’	0.43 (35,8)
– DN100	4.250 (108,0)	0.25 (6,4)	3° - 22’	0.70 (58,3)
4 DN100	4.500 (114,3)	0.25 (6,4)	3° - 11’	0.67 (55,8)
– DN125	5.250 (133,0)	0.25 (6,4)	2° - 44’	0.56 (46,7)
– DN125	5.500 (139,7)	0.25 (6,4)	2° - 36’	0.55 (45,5)

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

‡ Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.

Figure 705 Flexible Coupling 2 of 4

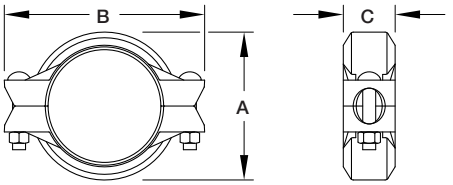


Nominal Pipe Size		Dimensions			Bolt** Size Inches/ (mm)	Bolt Torque Lbs. - ft. (Nm)	Net Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)			
1-1/4 DN32	1.660 (42,4)	2.56 (65,0)	4.19 (106,4)	1.81 (46,0)	3/8 x 2-1/4 (M10 x 57)	30 (41)	1.5 (0,7)
1-1/2 DN40	1.900 (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 DN50	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 DN65	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)
– DN65	3.000 (76,2)	4.00 (101,6)	5.75 (146,1)	1.88 (47,8)	- (M12 x 76)	50 (68)	3.1 (1,4)
3 DN80	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)
– DN100	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 DN100	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)
– DN125	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)
– DN125	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)

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

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency.
Approved pressure ratings start on page 84.

Figure 705 Flexible Coupling 3 of 4

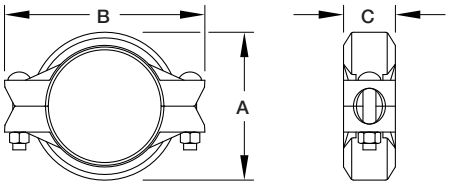


Nominal Pipe Size		Max.* ‡ End Gap Inches (mm)	Deflection ‡	
ANSI Inches DN	O.D. Inches (mm)		°Per Coupling	Inches/ Foot (mm/m)
5 DN125	5.563 (141,3)	0.25 (6,4)	2° - 35’	0.54 (45,0)
– DN150	6.250 (159,0)	0.25 (6,4)	2° - 17’	0.48 (40,0)
– DN150	6.500 (165,1)	0.25 (6,4)	2° - 12’	0.46 (38,3)
6 DN150	6.625 (168,3)	0.25 (6,4)	2° - 10’	0.45 (37,5)
– DN200	8.500 (216,3)	0.25 (6,4)	1° - 40’	0.35 (29,2)
8 DN200	8.625 (219,1)	0.25 (6,4)	1° - 40’	0.35 (29,2)
10 DN250	10.750 (273,1)	0.25 (6,4)	1° - 20’	0.28 (23,3)
12 DN300	12.750 (323,4)	0.25 (6,4)	1° - 7’	0.23 (19,2)

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

‡ Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.

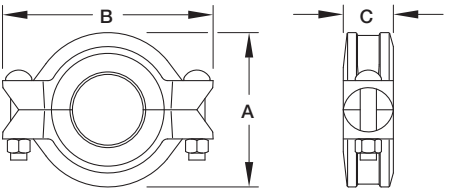
Figure 705 Flexible Coupling 4 of 4



Nominal Pipe Size		Dimensions			Bolt** 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)			
5 DN125	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)
– DN150	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)
– DN150	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 DN150	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)
– DN200	8.500 (216,3)	10.07 (255,8)	13.50 (342,9)	2.31 (58,7)	- (M20 x 121)	150 (203)	12.4 (5,6)
8 DN200	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 DN250	10.750 (273,1)	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 DN300	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)

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

Figure 716 Flexible Reducing Coupling 1 of 2



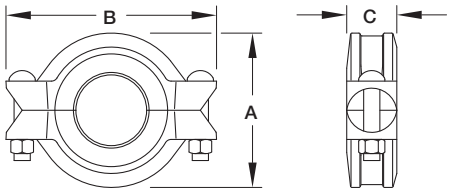
See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Max.* ‡ End Gap	Deflection	
ANSI Inches DN	O.D. Inches (mm)	Inches (mm)	°Per Coupling	Inches/ Foot (mm/m)
2 x 1-1/2 DN50 x DN40	2.375 x 1.900 (60,3 x 48,8)	0.13 (3,3)	1° - 53’	0.39 (32,5)
2-1/2 x 2 DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	0.13 (3,3)	1° - 33’	0.32 (26,7)
– DN65 x DN50	3.000 x 2.375 (76,1 x 60,3)	0.13 (3,3)	1° - 34’	0.32 (26,7)
3 x 2 DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	0.13 (3,3)	1° - 17’	0.27 (22,5)
3 x 2-1/2 DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	0.13 (3,3)	1° - 17’	0.27 (22,5)
– DN80 x DN65	3.500 x 3.000 (88,9 x 76,1)	0.13 (3,3)	1° - 17’	0.27 (22,5)
4 x 2 DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	0.19 (4,8)	2° - 38’	0.55 (45,8)
4 x 2-1/2 DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	0.19 (4,8)	2° - 38’	0.55 (45,8)
– DN100 x DN65	4.500 x 3.000 (114,3 x 76,1)	0.19 (4,8)	2° - 38’	0.55 (45,8)
4 x 3 DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	0.19 (4,8)	2° - 38’	0.55 (45,8)
– DN125 x DN100	5.500 x 4.500 (139,7 x 114,3)	0.25 (6,4)	2° - 38’	0.55 (45,8)
5 x 4 DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	0.25 (6,4)	2° - 5’	0.44 (36,4)
– DN150 x DN100	6.500 x 4.500 (165,1 x 114,3)	0.25 (6,4)	1° - 50’	0.38 (31,7)
6 x 4 DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	0.25 (6,4)	1° - 44’	0.36 (30,0)
6 x 5 DN150 x DN125	6.625 x 5.563 (168,3 x 141,3)	0.25 (6,4)	1° - 44’	0.36 (30,0)
8 x 6 DN200 x DN150	8.625 x 6.625 (219,1 x 168,3)	0.25 (6,4)	1° - 15’	0.26 (21,8)

***** Maximum available gap between pipe ends. Minimum gap = .06” with metal insert.

‡ Max end gap and deflection are for cut grooved standard weight pipe. Values for roll grooved pipe are reduced by 50%.

Figure 716 Flexible Reducing Coupling 2 of 2



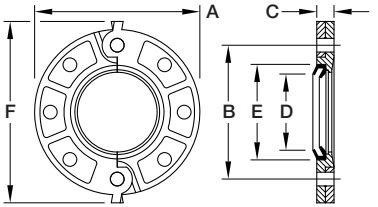
Nominal Size ANSI Inches DN	Dimensions			Bolt** Size Inches/ (mm)	Bolt Torque Lbs. - ft. (Nm)	Net Weight Lbs. (kg)
	A Inches (mm)	B Inches (mm)	C Inches (mm)			
2 x 1-1/2 DN50 x DN40	3.50 (88,9)	5.06 (128,5)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.0 (0,9)
2-1/2 x 2 DN65 x DN50	4.00 (101,6)	5.50 (139,7)	1.88 (47,8)	3/8 x 2-1/4 (M10 x 57)	30 (41)	2.5 (1,1)
– DN65 x DN50	4.19 (106,4)	5.88 (149,4)	1.88 (47,8)	- (M12 x 76)	50 (68)	3.1 (1.4)
3 x 2 DN80 x DN50	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	50 (68)	4.5 (2,0)
3 x 2-1/2 DN80 x DN65	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	1/2 x 3 (M12 x 76)	50 (68)	4.6 (2,1)
– DN80 x DN65	4.69 (119,1)	6.50 (165,1)	1.88 (47,8)	- (M12 x 76)	50 (68)	4.5 (2,0)
4 x 2 DN100 x DN50	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	5/8 x 3-1/4 (M16 x 83)	50 (68)	7.0 (3,2)
4 x 2-1/2 DN100 x DN65	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	5/8 x 3-1/4 (M16 x 83)	90 (122)	6.1 (2,8)
– DN100 x DN65	6.00 (152,4)	8.13 (206,5)	2.00 (50,8)	- (M16 x 83)	90 (122)	6.2 (2,8)
4 x 3 DN100 x DN80	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)
– DN125 x DN100	7.06 (179,3)	9.50 (241,3)	2.06 (52,3)	- (M20 x 121)	150 (203)	11.0 (5,0)
5 x 4 DN125 x DN100	7.13 (181,1)	9.56 (242,8)	2.06 (52,3)	3/4 x 4-3/4 (M20 x 121)	150 (203)	10.1 (4,6)
– DN150 x DN100	8.18 (207,8)	10.81 (274,4)	2.06 (52,3)	- (M20 x 121)	150 (203)	12.5 (5,7)
6 x 4 DN150 x DN100	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 DN150 x DN125	8.38 (212,9)	10.88 (276,4)	2.06 (52,3)	3/4 x 4-3/4 (M20 x 121)	150 (203)	11.7 (5,3)
8 x 6 DN200 x DN150	10.69 (271,5)	13.75 (349,3)	2.25 (57,2)	7/8 x 6-1/2 (M22 x 165)	200 (271)	23.5 (10,7)

** Gold color coded metric bolts available upon request

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 71 Flange Adapter

1 of 4



See Approved Pressure Ratings ‡ Starting On Page 84.

FIGURE 71 ANSI CLASS 125 AND 150

Nominal Pipe Size		Bolt			Net Weight. Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	Size Dia. x Lg.	Qty.	Torque Lbs.-ft. (Nm)	
2 DN50	2.375 (60,3)	5/8 x 3 (M16 x 76)	4	90 (122)	3.0 (1,4)
2-1/2 DN65	2.875 (73,0)	5/8 x 3 (M16 x 76)	4	90 (122)	5.0 (2,3)
3 DN80	3.500 (88,9)	5/8 x 3 (M16 x 76)	4	90 (122)	5.6 (2,5)
4 DN100	4.500 (114,3)	5/8 x 3 (M16 x 76)	8	90 (122)	7.0 (3,2)
5 DN125	5.563 (141,3)	3/4 x 3-1/2 (M20 x 89)	8	150 (203)	9.2 (4,2)
6 DN150	6.625 (168,3)	3/4 x 3-1/2 (M20 x 89)	8	150 (203)	10.0 (4,5)
8 DN200	8.625 (219,1)	3/4 x 3-1/2 (M20 x 89)	8	150 (203)	16.6 (7,5)
10 DN250	10.750 (273,0)	7/8 x 4 (M22 x 102)	12	200 (271)	21.8 (9,9)
12 DN300	12.750 (323,9)	7/8 x 4 (M22 x 102)	12	200 (271)	24.2 (11,0)

Note: Bolts and nuts are not supplied. Bolt lengths shown are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

Figure 71 Flange Adapter 2 of 4

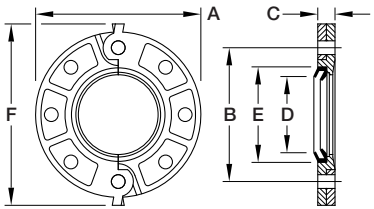


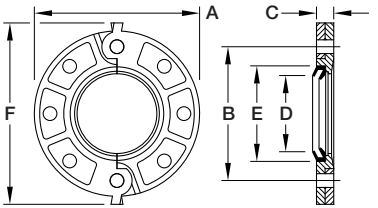
FIGURE 71 ANSI CLASS 125 AND 150

Nominal Pipe Size		Dimensions- Inches (mm)					
ANSI Inches DN	**O.D. Inches (mm)**	**A**	**B**	**C**	**D***	**E***	**F**
2 DN50	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 DN65	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 DN80	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 DN100	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 DN125	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 DN150	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 DN200	8.625 (219,1)	13.50 (342,9)	11.75 (298,5)	1.13 (28,7)	8.62 (218,9)	9.94 (252,5)	14.36 (365,3)
10 DN250	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 DN300	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)

***** 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 84.

Figure 71 Flange Adapter



See Approved Pressure Ratings ‡ Starting On Page 84.

FIGURE 71 PN16 (METRIC)

Nominal Pipe Size		Bolt			Net Weight. Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	Size Dia. x Lg.	Qty.	Torque Lbs.-ft. (Nm)	
2 DN50	– 60,3	- M16 x 76	4	90 (122)	3.0 (1,4)
2-1/2 DN65	– 76,1	- M16 x 76	4	90 (122)	5.0 (2,3)
3 DN80	– 88,9	- M16 x 76	8	90 (122)	5.6 (2,5)
4 DN100	– 114,3	- M16 x 76	8	90 (122)	7.0 (3,2)
5 DN125	– 139,7	- M16 x 89	8	150 (203)	9.2 (4,2)
– DN150	– 165,1	- M20 x 89	8	150 (203	10.0 (4,5)
6 DN150	– 168,3	- M20 x 89	8	150 (203)	16.6 (7,5)
8 DN200	– 219,1	- M20 x 89	12	150 (203)	21.8 (9,9)
10 DN250	– 273,0	- M22 x 102	12	200 (271)	24.2 (11,0)
12 DN300	– 323,9	- M24 x 102	12	200 (271)	28.0 (12,7)

Note: Bolts and nuts are not supplied. Bolt lengths shown are standard; it is the responsibility of the purchaser to verify correct length for the intended application.

Figure 71 Flange Adapter 4 of 4

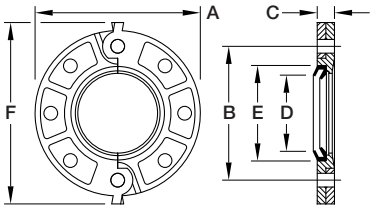


FIGURE 71 PN16 (METRIC)

Nominal Pipe Size		Dimensions- Inches (mm)					
ANSI Inches DN	**O.D. Inches (mm)**	**A**	**B**	**C**	**D***	**E***	**F**
2 DN50	– 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)
2-1/2 DN65	– 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 DN80	– 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 DN100	– 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)
5 DN125	– 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)
– DN150	– 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 DN150	– 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 DN200	– 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 DN250	– 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 DN300	– 323,9	18.12 (460,2)	16.41 (410,0)	1.25 (31,8)	12.75 (323,9)	14.31 (363,5)	19.19 (487,4)

***** 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 84.

Figure 730 Threaded Mechanical Tees & Crosses

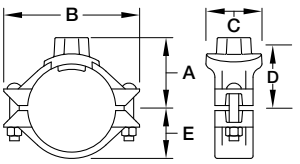


FIGURE 730 MECHANICAL TEE THREADED OUTLET

See Approved Pressure Ratings ‡ Starting On Page 84.

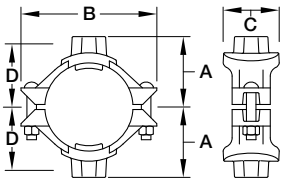


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
2 x 1/2 DN50 x DN15	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 DN50 x DN20	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 DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	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 DN50 x DN32	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 DN50 x DN40	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 DN65 x DN15	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 DN65 x DN20	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 1 DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	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 DN65 x DN32	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 DN65 x DN40	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 DN65 x DN50	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)
– DN65 x DN15	– (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)
– DN65 x DN20	– (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)
– DN65 x DN25	– (76,1 x 33,4)	2.94 (74,5)	5.62 (142,7)	3.07 (78,0)	2.44 (62,0)	1.87 (47,5)

** Gold color metric bolts are available upon request

Figure 730 Threaded Mechanical Tees & Crosses 2 of 8

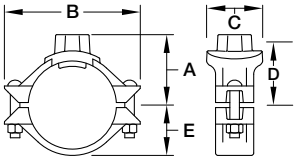


FIGURE 730 MECHANICAL TEE THREADED OUTLET

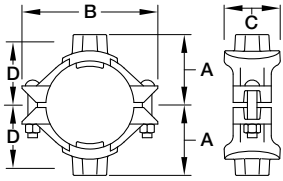


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches (mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
2 x 1/2 DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	3/8 x 2-1/4 (M10 x 57)	2.2 (1,0)	2.6 (1,2)
2 x 3/4 DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	3/8 x 2-1/4 (M10 x 57)	2.2 (1,0)	2.6 (1,2)
2 x 1 DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	3/8 x 2-1/4 (M10 x 57)	2.2 (1,0)	2.6 (1,2)
2 x 1-1/4 DN50 x DN32	2.375 x 1.660 (60,3 x 42,2)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.3 (1,5)
2 x 1-1/2 DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.7 (1,7)
2-1/2 x 1/2 DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	3/8 x 2-1/4 (M10 x 57)	2.7 (1,2)	3.1 (1,4)
2-1/2 x 3/4 DN65 x DN20	2.875 x 0.840 (73,0 x 21,3)	3/8 x 2-1/4 (M10 x 57)	2.7 (1,2)	3.1 (1,4)
2-1/2 x 1 DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	3/8 x 2-1/4 (M10 x 57)	2.7 (1,2)	3.1 (1,4)
2-1/2 x 1-1/4 DN65 x DN32	2.875 x 1.660 (73,0 x 42,2)	3/8 x 2-1/4 (M10 x 57)	3.1 (1,4)	3.9 (1,8)
2-1/2 x 1-1/2 DN65 x DN40	2.875 x 1.900 (73,0 x 48,3)	3/8 x 2-1/4 (M10 x 57)	3.3 (1,5)	4.3 (1,9)
2-1/2 x 2 DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	3/8 x 2-1/4 (M10 x 57)	3.5 (1,6)	4.4 (2,0)
– DN65 x DN15	– (76,1 x 21,3)	– (M10 x 57)	2.7 (1,2)	3.1 (1,4)
– DN65 x DN20	– (76,1 x 26,7)	– (M10 x 57)	2.7 (1,2)	3.1 (1,4)
– DN65 x DN25	– (76,1 x 33,4)	– (M10 x 57)	2.7 (1,2)	3.1 (1,4)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 730 Threaded Mechanical Tees & Crosses

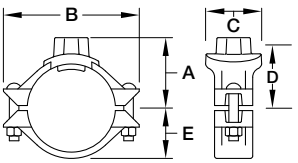


FIGURE 730 MECHANICAL TEE THREADED OUTLET

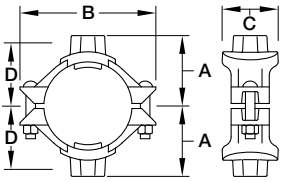


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
– DN65 x DN32	– (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)
– DN65 x DN40	– (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)
– DN65 x DN50	– (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 DN80 x DN15	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 DN80 x DN20	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 DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	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 DN80 x DN32	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 2 DN80 x DN50	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 DN100 x DN15	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 DN100 x DN20	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 DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	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 DN100 x DN32	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 DN100 x DN40	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)
4 x 2 DN100 x DN50	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)

** Gold color metric bolts are available upon request

Figure 730 Threaded Mechanical Tees & Crosses 4 of 8

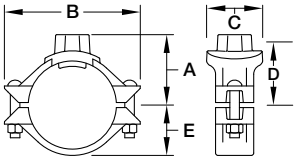


FIGURE 730 MECHANICAL TEE THREADED OUTLET

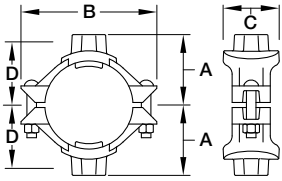


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
– DN65 x DN32	– (76,1 x 42,2)	– (M10 x 57)	3.1 (1,4)	3.9 (1,8)
– DN65 x DN40	– (76,1 x 48,3)	– (M10 x 57)	3.3 (1,5)	5.1 (2,3)
– DN65 x DN50	– (76,1 x 60,3)	– (M10 x 57)	4.1 (1,9)	5.9 (2,7)
3 x 1/2 DN80 x DN15	3.500 x 0.840 (88,9 x 21,3)	1/2 x 3 (M12 x 76)	3.7 (1,7)	4.5 (2,0)
3 x 3/4 DN80 x DN20	3.500 x 1.050 (88,9 x 26,7)	1/2 x 3 (M12 x 76)	3.7 (1,7)	4.5 (2,0)
3 x 1 DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	1/2 x 3 (M12 x 76)	3.7 (1,7)	4.5 (2,0)
3 x 1-1/4 DN80 x DN32	3.500 x 1.660 (88,9 x 42,2)	1/2 x 3 (M12 x 76)	3.9 (1,8)	4.9 (2,2)
3 x 2 DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	1/2 x 3 (M12 x 76)	4.7 (2,1)	6.5 (2,9)
4 x 1/2 DN100 x DN15	4.500 x 0.840 (114,3 x 21,3)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 3/4 DN100 x DN20	4.500 x 1.050 (114,3 x 26,7)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 1 DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 1-1/4 DN100 x DN32	4.500 x 1.660 (114,3 x 42,2)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 1-1/2 DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	1/2 x 3 (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 2 DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	1/2 x 3 (M12 x 76)	6.0 (2,7)	8.1 (3,7)

Figure 730 Threaded Mechanical Tees & Crosses

5 of 8

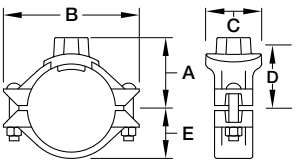


FIGURE 730 MECHANICAL TEE THREADED OUTLET

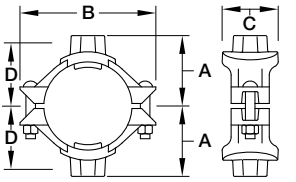


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
4 x 2-1/2 DN100 x DN65	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)
– DN100 x DN65	– (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 DN100 x DN80	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 DN125 x DN40	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 DN125 x DN50	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 DN125 x DN65	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)
– DN125 x DN65	– (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)
5 x 3 DN125 x DN80	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)
– DN150 x DN32	– (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)
– DN150 x DN40	– (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)
– DN150 x DN50	– (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)
– DN150 x DN65	– (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)
6 x 2-1/2 DN150 x DN65	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)
– DN150 x DN80	– (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)

** Gold color metric bolts are available upon request

Figure 730 Threaded Mechanical Tees & Crosses 6 of 8

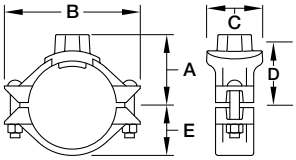


FIGURE 730 MECHANICAL TEE THREADED OUTLET

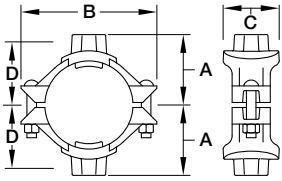


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
4 x 2-1/2 DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	1/2 x 3 (M12 x 76)	6.0 (2,7)	8.1 (3,7)
– DN100 x DN65	– (114,3 x 76,1)	– (M12 x 76)	6.0 (2,7)	8.1 (3,7)
4 x 3 DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	1/2 x 3 (M12 x 76)	7.0 (3,2)	13.5 (6,1)
5 x 1-1/2 DN125 x DN40	5.563 x 1.900 (141,3 x 48,3)	5/8 x 4-3/4 (M16 x 121)	6.5 (2,9)	7.7 (3,5)
5 x 2 DN125 x DN50	5.563 x 2.375 (141,3 x 60,3)	5/8 x 4-3/4 (M16 x 121)	7.1 (3,2)	8.1 (3,7)
5 x 2-1/2 DN125 x DN65	5.563 x 2.875 (141,3 x 73,0)	5/8 x 4-3/4 (M16 x 121)	7.3 (3,3)	8.7 (3,9)
– DN125 x DN65	– (139,7 x 76,1)	– (M16 x 121)	7.3 (3,3)	8.7 (3,9)
5 x 3 DN125 x DN80	5.563 x 3.500 (141,3 x 88,9)	5/8 x 4-3/4 (M16 x 121)	7.6 (3,4)	14.7 (6,7)
– DN150 x DN32	– (165,1 x 42,2)	– (M16 x 121)	6.9 (3,1)	7.9 (3,6)
– DN150 x DN40	– (165,1 x 48,3)	– (M16 x 121)	7.4 (3,4)	8.9 (4,0)
– DN150 x DN50	– (165,1 x 60 ,3)	– (M16 x 121)	7.5 (3,4)	8.9 (4,0)
– DN150 x DN65	– (165,1 x 76,1)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
6 x 2-1/2 DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
– DN150 x DN80	– (165,1 x 88,9)	– (M16 x 121)	9.5 (4,3)	14.1 (6,4)

Figure 730 Threaded Mechanical Tees & Crosses

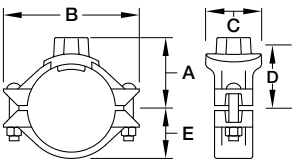


FIGURE 730 MECHANICAL TEE THREADED OUTLET

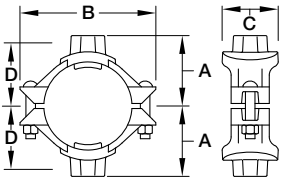


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)				
		A	B	C	D	E
– DN150 x DN100	– (165,1 x 114,3)	5.38 (136,7)	9.25 (235,0)	6.13 (155,7)	4.56 (115,8)	3.90 (99,1)
6 x 1-1/4 DN150 x DN32	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 DN150 x DN40	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 DN150 x DN50	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 DN150 x DN65	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)
– DN150 x DN65	– (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)
6 x 3 DN150 x DN80	– (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 DN150 x DN100	– (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)
8 x 2-1/2 DN200 x DN65	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)
– DN200 x DN65	– (216,3 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 DN200 x DN80	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 DN200 x DN100	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)

** Gold color metric bolts are available upon request

Figure 730 Threaded Mechanical Tees & Crosses 8 of 8

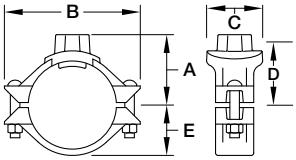


FIGURE 730 MECHANICAL TEE THREADED OUTLET

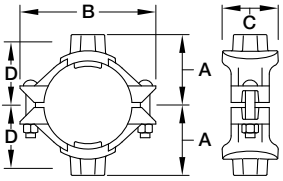


FIGURE 730 MECHANICAL CROSS THREADED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
– DN150 x DN100	– (165,1 x 114,3)	– (M16 x 121)	10.0 (4,5)	20.1 (9,1)
6 x 1-1/4 DN150 x DN32	6.625 x 1.660 (168,3 x 42,2)	5/8 x 4-3/4 (M16 x 121)	6.9 (3,1)	7.9 (3,6)
6 x 1-1/2 DN150 x DN40	6.625 x 1.900 (168,3 x 48,3)	5/8 x 4-3/4 (M16 x 121)	7.4 (3,4)	8.9 (4,0)
6 x 2 DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	8.9 (4,0)
6 x 2-1/2 DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	11.1 (5,0)
– DN150 x DN65	– (165,1 x 76,1)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
6 x 3 DN150 x DN80	– (168,3 x 88,9)	5/8 x 4-3/4 (M16 x 121)	9.5 (4,3)	14.1 (6,4)
6 x 4 DN150 x DN100	– (168,3 x 114,3)	5/8 x 4-3/4 (M16 x 121)	10.0 (4,5)	20.1 (9,1)
8 x 2-1/2 DN200 x DN65	8.625 x 2.875 (219,1 x 73,0)	3/4 x 4-3/4 (M20 x 121)	10.2 (4,6)	12.1 (5,5)
– DN200 x DN65	– (216,3 x 76,1)	– (M20 x 121)	10.2 (4,6)	12.1 (5,5)
8 x 3 DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	3/4 x 4-3/4 (M20 x 121)	12.5 (5,7)	15.1 (6,8)
8 x 4 DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	3/4 x 4-3/4 (M20 x 121)	12.5 (5,7)	21.1 (9,6)

Figure 730 Grooved Mechanical Tees & Crosses

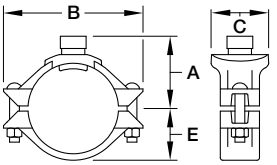


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

See Approved Pressure Ratings ‡ Starting On Page 84.

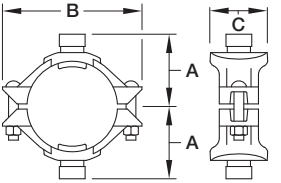


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	D
2 x 1-1/4 DN50 x DN32	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 DN50 x DN40	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 DN65 x DN32	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 DN65 x DN40	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 DN65 x DN50	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)
– DN65 x DN32	– (76,1 x 42,2)	3.06 (77,7)	5.62 (142,7)	3.56 (90,4)	1.87 (47,5)
– DN65 x DN40	– (76,1 x 48,3)	3.13 (79,5)	5.62 (142,7)	3.56 (90,4)	1.87 (47,5)
– DN65 x DN50	– (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 DN80 x DN32	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 DN80 x DN40	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 DN80 x DN50	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 DN100 x DN32	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 DN100 x DN40	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)
4 x 2 DN100 x DN50	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)

** Gold color metric bolts are available upon request

Figure 730 Grooved Mechanical Tees & Crosses 2 of 6

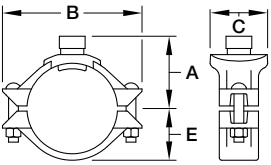


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

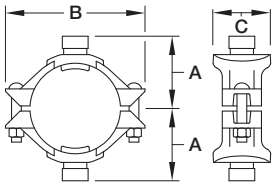


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
2 x 1-1/4 DN50 x DN32	2.375 x 1.660 (60,3 x 42,2)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.3 (1,5)
2 x 1-1/2 DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	3/8 x 2-1/4 (M10 x 57)	2.5 (1,1)	3.7 (1,7)
2-1/2 x 1-1/4 DN65 x DN32	2.875 x 1.660 (73,0 x 42,2)	3/8 x 2-1/4 (M10 x 57)	3.1 (1,4)	3.9 (1,8)
2-1/2 x 1-1/2 DN65 x DN40	2.875 x 1.900 (73,0 x 48,3)	3/8 x 2-1/4 (M10 x 57)	3.3 (1,5)	4.3 (1,9)
2-1/2 x 2 DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	3/8 x 2-1/4 (M10 x 57)	3.5 (1,6)	4.4 (2,0)
– DN65 x DN32	– (76,1 x 42,2)	– (M10 x 57)	3.1 (1,4)	3.9 (1,8)
– DN65 x DN40	– (76,1 x 48,3)	– (M10 x 57)	3.3 (1,5)	5.1 (2,3)
– DN65 x DN50	– (76,1 x 60,3)	– (M10 x 57)	4.1 (1,9)	5.9 (2,7)
3 x 1-1/4 DN80 x DN32	3.500 x 1.660 (88,9 x 42,2)	1/2 x 3 (M12 x 76)	3.9 (1,8)	4.9 (2,2)
3 x 1-1/2 DN80 x DN40	3.500 x 1.900 (88,9 x 48,3)	1/2 x 3 (M12 x 76)	4.2 (1,9)	5.5 (2,5)
3 x 2 DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	1/2 x 3 (M12 x 76)	4.7 (2,1)	6.5 (2,9)
4 x 1-1/4 DN100 x DN32	4.500 x 1.660 (114,3 x 42,2)	1/2" x 3" (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 1-1/2 DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	1/2" x 3" (M12 x 76)	5.5 (2,5)	7.1 (3,2)
4 x 2 DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	1/2" x 3" (M12 x 76)	6.0 (2,7)	8.1 (3,7)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 730 Grooved Mechanical Tees & Crosses

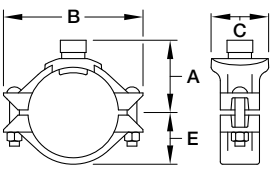


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

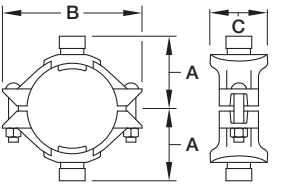


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	D
4 x 2-1/2 DN100 x DN65	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)
– DN100 x DN65	– (114,3 x 76,1)	4.00 (101,6)	7.13 (181,1)	4.38 (111,3)	2.78 (70,6)
4 x 3 DN100 x DN80	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 DN125 x DN40	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 DN125 x DN50	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 DN125 x DN65	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)
– DN125 x DN65	– (139,7 x 76,1)	4.75 (120,7)	8.13 (206,5)	4.38 (111,3)	3.37 (85,6)
5 x 3 DN125 x DN80	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)
– DN150 x DN32	– (165,1 x 42,2)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	3.90 (99,1)
– DN150 x DN40	– (165,1 x 48,3)	5.13 (130,3)	9.25 (235,0)	3.56 (90,4)	3.90 (99,1)
– DN150 x DN50	– (165,1 x 60,3)	5.13 (130,3)	9.25 (235,0)	4.06 (103,1)	3.90 (99,1)
– DN150 x DN65	– (165,1 x 70,3)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
– DN150 x DN65	– (165,1 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
– DN150 x DN80	– (165,1 x 88,9	5.50 (139,7)	9.25 (235,0)	5.13 (130,3)	3.90 (99,1)

** Gold color metric bolts are available upon request

Figure 730 Grooved Mechanical Tees & Crosses

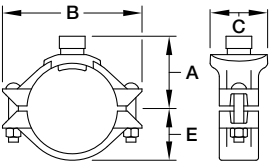


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

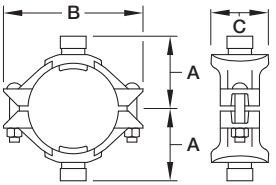


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
4 x 2-1/2 DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	1/2" x 3" (M12 x 76)	6.0 (2,7)	8.1 (3,7)
– DN100 x DN65	– (114,3 x 76,1)	– (M12 x 76)	6.0 (2,7)	8.1 (3,7)
4 x 3 DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	1/2 x 3 (M12 x 76)	7.0 (3,2)	13.5 (6,1)
5 x 1-1/2 DN125 x DN40	5.563 x 1.900 (141,3 x 48,3)	5/8 x 4-3/4 (M16 x 121)	6.5 (2,9)	7.7 (3,5)
5 x 2 DN125 x DN50	5.563 x 2.375 (141,3 x 60,3)	5/8 x 4-3/4 (M16 x 121)	7.1 (3,2)	8.1 (3,7)
5 x 2-1/2 DN125 x DN65	5.563 x 2.875 (141,3 x 73,0)	5/8 x 4-3/4 (M16 x 121)	7.3 (3,3)	8.7 (3,9)
– DN125 x DN65	– (139,7 x 76,1)	– (M16 x 121)	7.3 (3,3)	8.7 (3,9)
5 x 3 DN125 x DN80	5.563 x 3.500 (141,3 x 88,9)	5/8 x 4-3/4 (M16 x 121)	7.6 (3,4)	14.7 (6,7)
– DN150 x DN32	– (165,1 x 42,2)	– (M16 x 121)	6.9 (3,1)	7.9 (3,6)
– DN150 x DN40	– (165,1 x 48,3)	– (M16 x 121)	7.4 (3,4)	8.9 (4,0)
– DN150 x DN50	– (165,1 x 60,3)	– (M16 x 121)	7.5 (3,4)	8.9 (4,0)
– DN150 x DN65	– (165,1 x 70,3)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
– DN150 x DN65	– (165,1 x 76,1)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
– DN150 x DN80	– (165,1 x 88,9	– (M16 x 121)	9.5 (4,3)	14.1 (6,4)

Figure 730 Grooved Mechanical Tees & Crosses 5 of 6

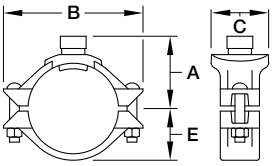


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

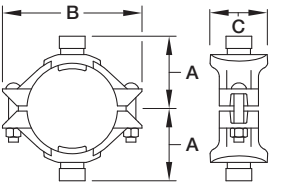


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Nominal Dimensions- Inches (mm)			
		A	B	C	D
– DN150 x DN100	– (165,1 x 114,3)	5.38 (136,7)	9.25 (235,0)	6.13 (155,7)	3.90 (99,1)
6 x 1-1/4 DN150 x DN32	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 DN150 x DN40	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 DN150 x DN50	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 DN150 x DN65	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)
– DN150 x DN65	– (168,3 x 76,1)	5.13 (130,3)	9.25 (235,0)	4.38 (111,3)	3.90 (99,1)
6 x 3 DN150 x DN80	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 DN150 x DN100	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)
8 x 2-1/2 DN200 x DN65	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)
– DN200 x DN65	– (219,1 x 76,1)	6.25 (158,8)	12.50 (317,5)	4.38 (111,3)	4.90 (124,5)
8 x 3 DN200 x DN80	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 DN200 x DN100	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)

Figure 730 Grooved Mechanical Tees & Crosses 6 of 6

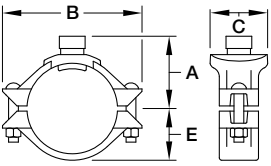


FIGURE 730 MECHANICAL TEE GROOVED OUTLET

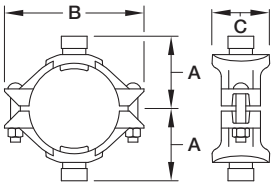


FIGURE 730 MECHANICAL CROSS GROOVED OUTLET

Nominal Run x Branch ANSI Inches / DN	O.D. Inches (mm)	Bolt** Size Inches/(mm)	Approx. Wt. Lbs. (kg)	
			Tee	Cross
– DN150 x DN100	– (165,1 x 114,3)	– (M16 x 121)	10.0 (4,5)	20.1 (9,1)
6 x 1-1/4 DN150 x DN32	6.625 x 1.660 (168,3 x 42,2)	5/8 x 4-3/4 (M16 x 121)	6.9 (3,1)	7.9 (3,6)
6 x 1-1/2 DN150 x DN40	6.625 x 1.900 (168,3 x 48,3)	5/8 x 4-3/4 (M16 x 121)	7.4 (3,4)	8.9 (4,0)
6 x 2 DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	8.9 (4,0)
6 x 2-1/2 DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	5/8 x 4-3/4 (M16 x 121)	7.5 (3,4)	11.1 (5,0)
– DN150 x DN65	– (168,3 x 76,1)	– (M16 x 121)	7.5 (3,4)	11.1 (5,0)
6 x 3 DN150 x DN80	6.625 x 3.500 (168,3 x 88,9)	5/8 x 4-3/4 (M16 x 121)	9.5 (4,3)	14.1 (6,4)
6 x 4 DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	5/8 x 4-3/4 (M16 x 121)	10.0 (4,5)	20.1 (9,1)
8 x 2-1/2 DN200 x DN65	8.625 x 2.875 (219,1 x 73,0)	3/4 x 4-3/4 (M20 x 121)	10.2 (4,6)	12.1 (5,5)
– DN200 x DN65	– (219,1 x 76,1)	– (M20 x 121)	10.2 (4,6)	12.1 (5,5)
8 x 3 DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	3/4 x 4-3/4 (M20 x 121)	12.5 (5,7)	15.1 (6,8)
8 x 4 DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	3/4 x 4-3/4 (M20 x 121)	12.5 (5,7)	21.1 (9,6)

Figure 40-5 - Strap

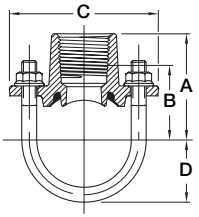


FIGURE 40-5
STRAP OUTLET

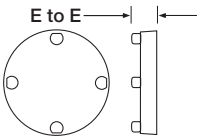
See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Run x Branch ANSI Inches / DN	O.D. Inches / (mm)	Nominal Dimensions- Inches (mm)				Approx. Weight Lbs. (kg)
		A	B	C	D	
1-1/4 x 1/2 DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	2.00 (50,8)	1.50 (38,1)	3.50 (88,90)	1.20 (30,5)	0.84 (0,4)
1-1/4 x 3/4 DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	2.00 (50,8)	1.50 (38,1)	3.50 (88,90)	1.20 (30,5)	0.88 (0,4)
1-1/4 x 1 DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	2.31 (58,7)	1.68 (42,7)	3.50 (88,90)	1.20 (30,5)	1.13 (0,5)
1-1/2 x 1/2 DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	2.12 (53,8)	1.62 (41,1)	3.50 (88,90)	1.32 (33,5)	0.84 (0,4)
1-1/2 x 3/4 DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	2.12 (53,8)	1.62 (41,1)	3.50 (88,90)	1.32 (33,5)	0.88 (0,4)
1-1/2 x 1 DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	2.43 (61,7)	1.80 (45,7)	3.50 (88,90)	1.32 (33,5)	1.13 (0,5)
2 x 1/2 DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	2.36 (59,9)	1.86 (47,2)	3.74 (95,0)	1.55 (39,4)	0.88 (0,4)
2 x 3/4 DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	2.36 (59,9)	1.86 (47,2)	3.74 (95,0)	1.55 (39,4)	0.95 (0,4)
2 x 1 DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	2.67 (67,8)	2.04 (51,8)	3.74 (95,0)	1.55 (39,4)	1.16 (0,5)
2-1/2 x 1/2 DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	2.61 (66,3)	2.11 (53,6)	4.25 (108,0)	1.80 (45,7)	0.90 (0,4)
2-1/2 x 3/4 DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	2.61 (66,3)	2.11 (53,6)	4.25 (108,0)	1.80 (45,7)	0.99 (0,5)
2-1/2 x 1 DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	2.92 (74,2)	2.29 (58,2)	4.25 (108,0)	1.80 (45,7)	1.21 (0,5)

Outlet Hole Size- 1-3/16 inch (30,2 mm)

Outlet threads conforming to ISO 7-1 are available, contact Tyco Fire & Building Products.

Figure 260 - End Cap



See Approved Pressure Ratings ‡ Starting On Page 84.

FIGURE 260
CAST END CAP

Nominal Pipe Size		Figure 260*	
ANSI Inches DN	**O.D. Inches (mm)**	**E to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1 DN25	1.315 (33.4)	0.88 (22,4)	0.3 (0,1)
1-1/4 DN32	1.660 (42,4)	0.88 (22,4)	0.4 (0,2)
1-1/2 DN40	1.900 (48,3)	0.88 (22,4)	0.6 (0,3)
2 DN50	2.375 (60,3)	0.88 (22,4)	0.9 (0,4)
2-1/2 DN65	2.875 (73,0)	0.88 (22,4)	0.9 (0,4)
– DN65	3.000 (76,1)	0.94 (23,9)	1.1 (0,5)
3 DN80	3.500 (88,9)	0.88 (22,4)	1.1 (0,5)
4 DN100	4.500 (114,3)	1.00 (25,4)	2.6 (1,2)
– DN125	5.500 (139,7)	0.92 (23,4)	4.7 (2,1)
5 DN125	5.563 (141,3)	1.00 (25,4)	5.0 (2,3)
– DN150	6.500 (165,1)	1.00 (25,4)	7.5 (3,4)
6 DN150	6.625 (168,3)	1.00 (25,4)	7.5 (3,4)
8 DN200	8.625 (219,1)	1.19 (30,2)	12.8 (5,8)
10 DN250	10.750 (273,1)	1.25 (31,8)	20.0 (9,1)
12 DN300	12.750 (323,4)	1.25 (31,8)	36.0 (16,3)

* Available with tapped plugs, contact Tyco Fire & Building Products.

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 510 & 310 - 90° Elbow

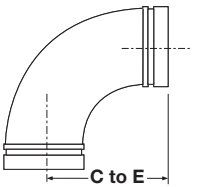


FIGURE 510
CAST 90° ELBOW

See Approved Pressure Ratings ‡ Starting On Page 84.

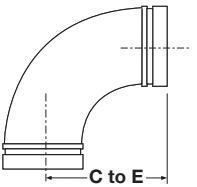


FIGURE 310
FABRICATED 90° ELBOW
LONG RADIUS

Nominal Pipe Size		Figure 510		Figure 310	
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 DN32	1.660 (42,4)	2.75 (69,9)	1.0 (0,5)	3.88 (98,6)	1.4 (0,6)
1-1/2 DN40	1.900 (48,3)	2.75 (69,9)	1.2 (0,5)	4.25 (108,0)	1.8 (0,8)
2 DN50	2.375 (60,3)	3.25 (82,6)	2.0 (0,9)	4.38 (111,3)	2.5 (1,1)
2-1/2 DN65	2.875 (73,0)	3.75 (95,3)	3.0 (1,4)	5.75 (146,1)	5.0 (2,3)
3 DN80	3.500 (88,9)	4.25 (108,0)	4.5 (2,0)	5.88 (149,4)	6.5 (2,9)
4 DN100	4.500 (114,3)	5.00 127,0	8.5 (3,9)	7.50 (190,5)	11.7 (5,3)
5 DN125	5.563 (141,3)	5.50 (139,7)	13.5 (6,1)	9.50 (241,3)	21.0 (9,5)
6 DN150	6.625 (168,3)	6.50 (165,1)	18.5 (8,4)	10.75 (273,1)	30.0 (13,6)
8 DN200	8.625 (219,1)	7.75 (196,9	36.5 (16,6)	15.00 (381,0)	60.0 (27,2)
***10** DN250	10.750 (273,1)	9.00 (228,6)	60.0 (27,2)	18.00 (457,2)	100.0 (45,4)
***12** DN300	12.750 (323,4)	10.00 (254,0)	67.0 (30,4)	21.00 (533,4)	140.0 (63,5)

* Cast product is a Figure 210

Figure 501 & 301 - 45° Elbow

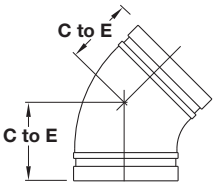


FIGURE 501
CAST 45° ELBOW

See Approved Pressure Ratings ‡ Starting On Page 84.

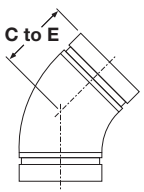


FIGURE 301
FABRICATED 45° ELBOW
LONG RADIUS

Nominal Pipe Size		Figure 501		Figure 301	
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 DN32	1.660 (42,4)	1.75 (44,5)	0.9 (0,4)	2.50 (63,5)	1.1 (0,5)
1-1/2 DN40	1.900 (48,3)	1.75 (44,5)	1.1 (0,5)	2.50 (63,5)	1.3 (0,6)
2 DN50	2.375 (60,3)	2.00 (50,8)	1.8 (0,8)	2.75 (69,9)	1.8 (0,8)
2-1/2 DN65	2.875 (73,0)	2.25 (57,2)	2.2 (1,0)	3.00 (76,2)	2.9 (1,3)
3 DN80	3.500 (88,9)	2.50 (63,5)	3.5 (1,6)	3.38 (85,9)	4.6 (2,1)
4 DN100	4.500 (114,3)	3.00 (76,2)	5.2 (2,4)	4.00 (101,6)	7.5 (3,4)
5 DN125	5.563 (141,3)	3.25 (82,6)	8.5 (3,9)	5.00 (127,0)	12.5 (5,7)
6 DN150	6.625 (168,3)	3.50 (88,9)	12.0 (5,4)	5.50 (139,7)	12.0 (5,4)
8 DN200	8.625 (219,1)	4.25 (108,0)	23.0 (10,4)	7.25 (184,2)	34.0 (15,4)
***10** DN250	10.750 (273,1)	4.75 (120,7)	31.0 (14,1)	8.50 (215,9)	56.0 (25,4)
***12** DN300	12.750 (323,4)	5.25 (133,4)	40.0 (18,1)	10.00 (254,0)	98.0 (44,5)

* Cast product is a Figure 201

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 510S 90° Elbow & 519S Tee - Short Pattern

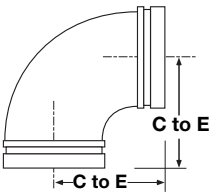


FIGURE 510S
SHORT PATTERN
90° ELBOW

See Approved Pressure Ratings ‡ Starting On Page 84.

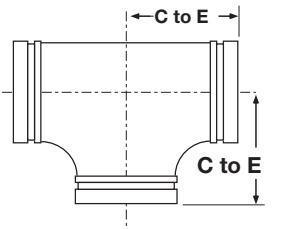


FIGURE 519S
SHORT PATTERN
TEE

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 DN50	2.375 (60,3)	2.75 (69,9)	1.5 (0,7)	2.75 (69,9)	2.1 (1,0)
2-1/2 DN65	2.875 (73,0)	3.00 (76,2)	2.2 (1,0)	3.00 (76,2)	3.0 (1,4)
– DN65	– (76,1)	3.00 (76,2)	2.3 (1,0)	3.00 (76,2)	3.1 (1,4)
3 DN80	3.500 (88,9)	3.38 (85,9)	3.0 (1,3)	3.38 (85,9)	4.1 (1,9)
4 DN100	4.500 (114,3)	4.00 101,60	5.6 (2,6)	4.00 101,60	7.7 (3,5)
– DN125	– (139,7)	4.88 (124,0)	8.6 (3,9)	4.88 (124,0)	12.0 (5,4)
5 DN125	5.563 (141,3)	4.88 (124,0)	8.8 (3,9)	4.88 (124,0)	12.0 (5,4)
– DN150	– (165,1)	5.50 (139,7)	11.0 (5,0)	5.50 (139,7)	15.0 (6,8)
6 DN150	6.625 (168,3)	5.50 (139,7)	11.2 (5,1)	5.50 (139,7)	15.2 (6,9)
8 DN200	8.625 (219,1)	6.88 (174,8	23.4 (10,6)	6.88 (174,8	31.2 (14,2)

Figure 510DE 90° Elbow

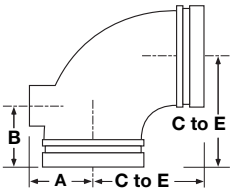


FIGURE 510DE
90° DRAIN ELBOW

See Approved Pressure Ratings ‡ Starting On Page 84.

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)
2-1/2 DN65	2.875 (73,0)	2.00 (50,8)	2.75 (69,9)	3.75 (95,3)	2.7 (1,2)
3 DN80	3.500 (88,9)	2.34 (59,4)	2.75 (69,9)	4.25 (108,0)	3.7 (1,7)
4 DN100	4.500 (114,3)	2.85 (72,4)	2.75 (69,9)	5.00 (127,0)	7.0 (3,2)
5 DN125	5.563 (141,3)	3.38 (85,9)	2.75 (69,9)	5.50 (139,7)	13.0 (5,9)
6 DN150	6.625 (168,3)	3.92 (99,6)	2.75 (69,9)	6.50 (165,1)	13.4 (6,1)
8 DN200	8.625 (219,1)	4.95 (125,7)	2.75 (69,9)	7.75 (196,9)	26.3 (11,9)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 519 - Tee

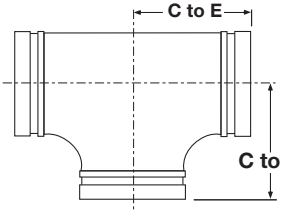


FIGURE 519
CAST TEE

See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Size ANSI DN	Pipe O.D. Inches (mm)	Figure 519	
		Nominal C to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 DN32	1.660 (42,4)	2.75 (69,9)	1.4 (0,6)
1-1/2 DN40	1.900 (48,3)	2.75 (69,9)	1.8 (0,8)
2 DN50	2.375 (60,3)	3.25 (82,6)	2.7 (1,2)
2-1/2 DN65	2.875 (73,0)	3.75 (95,3)	5.8 (2,6)
– DN65	3.000 (76,1)	3.75 (95,3)	5.8 (2,6)
3 DN80	3.500 (88,9)	4.25 (108,0)	7.0 (3,2)
– DN100	4.250 (108,0)	4.75 (120,7)	11.5 (5,2)
4 DN100	4.500 (114,3)	5.00 (127,0)	11.8 (5,4)
– DN125	5.250 (133,0)	5.25 (133,4)	10.6 (4,8)
– DN125	5.500 (139,7)	5.50 (139,7)	15.2 (6,9)
5 DN125	5.563 (141,3)	5.50 (139,7)	17.0 (7,7)
– DN150	6.250 (159,0)	6.00 (152,4)	13.9 (6,3)
– DN150	6.500 (165,1)	6.50 (165,1)	26.0 (11,8)
6 DN150	6.625 (168,3)	6.50 (165,1)	26.0 (11,8)
– DN200	8.500 (216,3)	7.75 (196,9)	45.0 (20,4)
8 DN200	8.625 (219,1)	7.75 (196,9)	45.0 (20,4)
10 DN250	10.750 (273,0)	9.00 (228,6)	72.1 (32,7)
12 DN300	12.750 (323,9)	10.00 (254,0)	92.5 (42,0)

Figures 312 - 22-1/2° & 313 - 11-1/4° Elbow

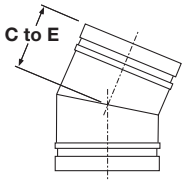


FIGURE 312
FABRICATED
22-1/2° ELBOW
(SEGMENT WELDED)

See Approved Pressure Ratings ‡ Starting On Page 84.

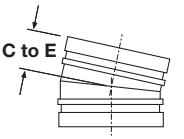


FIGURE 313
FABRICATED
11-1/4° ELBOW
(SEGMENT WELDED)

Nominal Pipe Size		Figure 312		Figure 313	
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 DN32	1.660 (42,4)	1.75 (44,5)	0.4 (0,2)	1.38 (35,1)	0.4 (0,2)
1-1/2 DN40	1.900 (48,3)	1.75 (44,5)	0.5 (0,2)	1.38 (35,1)	0.5 (0,2)
2 DN50	2.375 (60,3)	1.88 (47,8)	0.6 (0,3)	1.38 (35,1)	0.6 (0,3)
2-1/2 DN65	2.875 (73,0)	2.00 (50,8)	0.7 (0.3)	1.50 (38,1)	1.1 (0,5)
3 DN80	3.500 (88,9)	2.25 (57,2)	1.4 (0,6)	1.50 (38,1)	1.2 (0,5)
4 DN100	4.500 (114,3)	2.63 (66,8)	2.4 (1,1)	1.75 (44,5)	2.2 (1,0)
5 DN125	5.563 (141,3)	2.88 (73,2)	4.1 (1,9)	2.00 (50,8)	3.3 (1,5)
6 DN150	6.625 (168,3)	3.13 (79,5)	5.6 (2,5)	2.00 (50.8)	4.6 (2,1)
8 DN200	8.625 (219,1)	3.88 (98,6)	11.1 (5,0)	2.00 (50,8)	8.7 (3,9)
10 DN250	10.750 (273,0)	4.38 (111,3)	14.0 (6,4)	2.13 (54,1)	9.1 (4,1)
12 DN300	12.750 (323,9)	4.88 (124,0)	22.0 (10,0)	2.25 (57,2)	16.7 (7,6)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 321 Reducing Tee

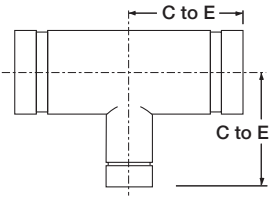


FIGURE 321 FABRICATED REDUCING TEE

See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Figure 321	
ANSI Inches / DN	**O.D. Inches / (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
1-1/2 x 1-1/2 x 1-1/4 DN40 x DN40 x DN32	1.900 x 1.900 x 1.660 (48,3 x 48,3 x 42,4)	3.25 (82,6)	2.0 (0,9)
2 x 2 x 1-1/2 DN50 x DN50 x DN40	2.375 x 2.375 x 1.900 (60,3 x 60,3 x 48,3)	3.25 (82,6)	2.7 (1,2)
2-1/2 x 2-1/2 x 1-1/4 DN65 x DN65 x DN32	2.875 x 2.875 x 1.660 (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 DN65 x DN65 x DN40	2.875 x 2.875 x 1.900 (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 DN65 x DN65 x DN50	2.875 x 2.875 x 2.375 (73,0 x 73,0 x 60,3)	3.75 (95,3)	4.3 (2,0)
3 x 3 x 1-1/2 DN80 x DN80 x DN40	3.500 x 3.500 x 1.900 (88,9 x 88,9 x 48,3)	4.25 (108,0)	5.3 (2,4)
3 x 3 x 2 DN80 x DN80 x DN50	3.500 x 3.500 x 2.375 (88,9 x 88,9 x 60,3)	4.25 (108,0)	5.5 (2,5)
3 x 3 x 2-1/2 DN80 x DN80 x DN65	3.500 x 3.500 x 2.875 (88,9 x 88,9 x 73,0)	4.25 (108,0)	5.8 (2,6)
4 x 4 x 1-1/4 DN100 x DN100 x DN32	4.500 x 4.500 x 1.660 (114,3 x 114,3 x 42,4)	5.00 (127,0)	9.8 (4,4)
4 x 4 x 1-1/2 DN100 x DN100 x DN40	4.500 x 4.500 x 1.900 (114,3 x 114,3 x 48,3)	5.00 (127,0)	9.9 (4,5)
4 x 4 x 2 DN100 x DN100 x DN50	4.500 x 4.500 x 2.375 (114,3 x 114,3 x 60,3)	5.00 (127,0)	10.1 (4,6)
4 x 4 x 2-1/2 DN100 x DN100 x DN65	4.500 x 4.500 x 2.875 (114,3 x 114,3 x 73,0)	5.00 (127,0)	10.3 (4,7)
4 x 4 x 3 DN100 x DN100 x DN80	4.500 x 4.500 x 3.500 (114,3 x 114,3 x 88,9)	5.00 (127,0)	10.5 (4,8)
5 x 5 x 2 DN125 x DN125 x DN50	5.563 x 5.563 x 2.375 (141,3 x 141,3 x 60,3)	5.50 (139,7)	14.5 (6,6)
5 x 5 x 2-1/2 DN125 x DN125 x DN65	5.563 x 5.563 x 2.875 (141,3 x 141,3 x 73,0)	5.50 (139,7)	14.8 (6,7)

Figure 321 Reducing Tee 2 of 2

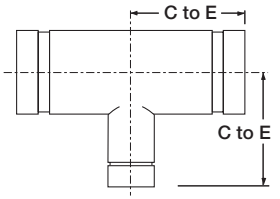


FIGURE 321 FABRICATED REDUCING TEE

Nominal Pipe Size		Figure 321	
ANSI Inches / DN	**O.D. Inches / (mm)**	**C to E Inches (mm)**	**Approx. Weight Lbs. (kg)**
5 x 5 x 3 DN125 x DN125 x DN80	5.563 x 5.563 x 3.500 (141,3 x 141,3 x 88,9)	5.50 (139,7)	15.2 (6,9)
5 x 5 x 4 DN125 x DN125 x DN100	5.563 x 5.563 x 4.500 (141,3 x 141,3 x 114,3)	5.50 (139,7)	15.8 (7,2)
6 x 6 x 2 DN150 x DN150 x DN50	6.625 x 6.625 x 2.375 (168,3 x 168,3 x 60,3)	6.50 (165,1)	26.5 (11,9)
6 x 6 x 2-1/2 DN150 x DN150 x DN65	6.625 x 6.625 x 2.875 (168,3 x 168,3 x 73,0)	6.50 (165,1)	26.5 (12,0)
6 x 6 x 3 DN150 x DN150 x DN80	6.625 x 6.625 x 3.500 (168,3 x 168,3 x 88,9)	6.50 (165,1)	26.5 (12,0)
6 x 6 x 4 DN150 x DN150 x DN100	6.625 x 6.625 x 4.500 (168,3 x 168,3 x 114,3)	6.50 (165,1)	26.6 (12,1)
6 x 6 x 5 DN150 x DN150 x DN125	6.625 x 6.625 x 5.563 (168,3 x 168,3 x 141,3)	6.50 (165,1)	27.0 12,2
8 x 8 x 2 DN200 x DN200 x DN50	8.625 x 8.625 x 2.375 (219,1 x 219,1 x 60,3)	7.75 (196,9)	36.2 (16,4)
8 x 8 x 3 DN200 x DN200 x DN80	8.625 x 8.625 x 3.500 (219,1 x 219,1 x 88,9)	7.75 (196,9)	36.5 (16,6)
8 x 8 x 4 DN200 x DN200 x DN100	8.625 x 8.625 x 4.500 (219,1 x 219,1 x 114,1)	7.75 (196,9)	36.6 (16,6)
8 x 8 x 5 DN200 x DN200 x DN125	8.625 x 8.625 x 5.563 (219,1 x 219,1 x 141,3)	7.75 (196,9)	36.8 (16,7)
8 x 8 x 6 DN200 x DN200 x DN150	8.625 x 8.625 x 6.625 (219,1 x 219,1 x 168,3)	7.75 (196,9)	37.0 (16,8)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency.
Approved pressure ratings start on page 84.

Figure 327 Cross

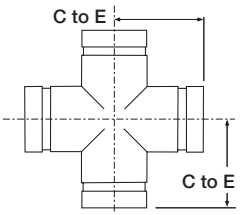


FIGURE 327
FABRICATED CROSS
(SEGMENT WELDED)

See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Figure 327	
ANSI Inches / DN	O.D. Inches (mm)	C to E Inches (mm)	Approx. Weight Lbs. (kg)
1-1/4 DN32	1.660 (42,4)	2.75 (69,9)	2.0 (0,9)
1-1/2 DN40	1.900 (48,3)	2.75 (69,9)	2.2 (1,0)
2 DN50	2.375 (60,3)	3.25 (82,6)	2.7 (1,2)
2-1/2 DN65	2.875 (73,0)	3.75 (95,3)	5.0 (2,3)
3 DN80	3.500 (88,9)	4.25 (108,0)	7.1 (3,2)
4 DN100	4.500 (114,3)	5.00 (127,0)	11.9 (5,4)
5 DN125	5.563 (141,3)	5.50 (139,7)	17.1 (7,8)
6 DN150	6.625 (168,3)	6.50 (165,1)	27.5 (12,5)
8 DN200	8.625 (219,1)	7.75 (196,9)	47.0 (21,3)
10 DN250	10.750 (273,0)	9.00 (228,6)	68.0 (30,8)
12 DN300	12.750 (323,9)	10.00 (254,0)	107.0 (48,5)

Figure 341 Flange Adapter

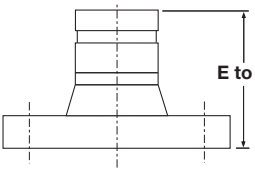


FIGURE 341 FABRICATED FLANGE ADAPTER ANSI CLASS 150 LBS.

See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Figure 341		
ANSI Inches / DN	**O.D. Inches (mm)**	**E to E Inches (mm)**	**Mating Flange Bolt Qty.**	**Approx. Weight Lbs. (kg)**
1-1/4 DN32	1.660 (42,4)	4.00 (101,6)	4	2.8 (1,3)
1-1/2 DN40	1.900 (48,3)	4.00 (101,6)	4	3.2 (1,5)
2 DN50	2.375 (60,3)	4.00 (101,6)	4	5.2 (2,4)
2-1/2 DN65	2.875 (73,0)	4.00 (101,6)	4	8.0 (3,6)
3 DN80	3.500 (88,9)	4.00 (101,6)	4	10.2 (4,6)
4 DN100	4.500 (114,3)	6.00 (152,4)	8	17.2 (7,8)
5 DN125	5.563 (141,3)	6.00 (152,4)	8	21.4 (9,7)
6 DN150	6.625 (168,3)	6.00 (152,4)	8	26.0 (11,8)
8 DN200	8.625 (219,1)	6.00 (152,4)	8	38.4 (17,4)
10 DN250	10.750 (273,0)	8.00 (203,2)	12	65.0 (29,5)
12 DN300	12.750 (323,9)	8.00 (203,2)	12	91.0 (41,3)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Figure 550 & 350 Concentric Reducers 1 of 2

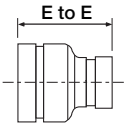


FIGURE 550
CAST
CONCENTRIC
REDUCER

See Approved Pressure Ratings ‡ Starting On Page 84.

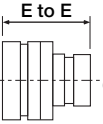


FIGURE 350
FABRICATED
CONCENTRIC
REDUCER

Nominal Pipe Size		Figure 550 Cast		Figure 350 Fabricated	
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).
1-1/2 x 1-1/4 DN40 x DN32	1.900 x 1.660 (48,3 x 42,4)	–	–	2.50 (63,5)	0.6 (0,3)
2 x 1-1/4 DN50 x DN32	2.375 x 1.660 (60,3 x 42,4)	–	–	2.50 (63,5)	0.8 (0,4)
2 x 1-1/2 DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	–	–	2.50 (63,5)	0.8 (0,4)
2-1/2 x 1-1/4 DN65 x DN32	2.875 x 1.660 (73,0 x 42,4)	2.50 (63,5)	1.5 (0,7)	–	–
2-1/2 x 1-1/2 DN65 x DN40	2.875 x 1.900 (73,0 x 48,3)	2.50 (63,5)	1.5 (0,7)	–	–
2-1/2 x 2 DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	2.50 (63,5)	1.2 (0,5)	–	–
3 x 1-1/4 DN80 x DN32	3.500 x 1.660 (88,9 x 42,4)	–	–	2.50 (63,5)	1.3 (0,6)
3 x 1-1/2 DN80 x DN40	3.500 x 1.900 (88,9 x 48,3)	2.50 (63,5)	2.0 (0,9)	–	–
3 x 2 DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	2.50 (63,5)	1.6 (0,7)	–	–
3 x 2-1/2 DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	2.50 (63,5)	1.8 (0,8)	–	–
4 x 1-1/4 DN100 x DN32	4.500 x 1.660 (114,3 x 42,4)	–	–	3.00 (76,2)	2.2 (1,0)
4 x 1-1/2 DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	–	–	3.00 (76,2)	2.3 (1,0)
4 x 2 DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	3.00 (76,2)	2.7 (1,2)	–	–
4 x 2-1/2 DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	3.00 (76,2)	2.8 (1,3)	–	–
4 x 3 DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	3.00 (76,2)	3.0 (1,4)	–	–
5 x 1-1/2 DN125 x DN40	5.563 x 1.900 (141,3 x 48,3)	–	–	3.50 (88,9)	4.6 (2,1)
5 x 2 DN125 x DN50	5.563 x 2.375 (141,3 x 60,3)	–	–	3.50 (88,9)	4.6 (2,1)
5 x 2-1/2 DN125 x DN65	5.563 x 2.875 (141,3 x 73,0)	–	–	3.50 (88,9)	4.5 (2,0)
5 x 3 DN125 x DN80	5.563 x 3.500 (141,3 x 88,9)	3.50 (88,9)	4.4 (2,0)	–	–

Figure 550 & 350 Concentric Reducers 2 of 2

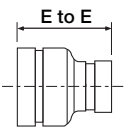


FIGURE 550 CAST CONCENTRIC REDUCER

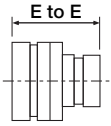


FIGURE 350 FABRICATED CONCENTRIC REDUCER

Nominal Pipe Size		Figure 550 Cast		Figure 350 Fabricated	
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 4 DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	3.50 (88,9)	4.6 (2,1)	–	–
6 x 2 DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	4.00 (101,6)	5.4 (2,5)	–	–
6 x 2-1/2 DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	4.00 (101,6)	5.4 (2,5)	–	–
6 x 3 DN150 x DN80	6.625 x 3.500 (168,3 x 88,9)	4.00 (101,6)	5.8 (2,6)	–	–
6 x 4 DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	4.00 (101,6)	5.9 (2,7)	–	–
6 x 5 DN150 x DN125	6.625 x 5.563 (168,3 x 141,3)	4.00 (101,6)	6.3 (2,9)	–	–
8 x 2 DN200 x DN50	8.625 x 2.375 (219,1 x 60,3)	–	–	5.00 (127,0)	12.2 (5,5)
8 x 2-1/2 DN200 x DN65	8.625 x 2.875 (219,1 x 73,0)	–	–	5.00 (127,0)	12.1 (5,5)
8 x 3 DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	5.00 (127,0)	11.7 (5,3)	–	–
8 x 4 DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	5.00 (127,0)	11.1 (5,0)	–	–
8 x 5 DN200 x DN125	8.625 x 5.563 (219,1 x 141,3)	5.00 (127,0)	11.7 (5,3)	–	–
8 x 6 DN200 x DN150	8.625 x 6.625 (219,1 x 168,3)	5.00 (127,0)	11.8 (5,4)	–	–
10 x 4 DN250 x DN100	10.750 x 4.500 (273,0 x 114,3)	–	–	6.00 (152,4)	21.9 (10,0)
10 x 5 DN250 x DN125	10.750 x 5.563 (273,0 x 141,3)	–	–	6.00 (152,4)	21.6 (9,8)
10 x 6 DN250 x DN150	10.750 x 6.625 (273,0 x 168,3)	–	–	6.00 (152,4)	21.1 (9,6)
10 x 8 DN250 x DN200	10.750 x 8.625 (273,0 x 219,1)	–	–	6.00 (152,4)	19.5 (8,9)
12 x 4 DN300 x DN100	12.750 x 4.500 (323,9 x 114,3)	–	–	7.00 (177,8)	28.0 (12,7)
12 x 6 DN300 x DN150	12.750 x 6.625 (323,9 x 168,3)	–	–	7.00 (177,8)	30.0 (13,6)
12 x 8 DN300 x DN200	12.750 x 8.625 (323,9 x 219,1)	–	–	7.00 (177,8)	28.0 (12,7)

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency.
Approved pressure ratings start on page 84.

Figure 391, 392 & 393
Adapter Nipples

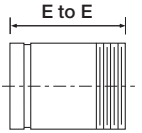


FIGURE 391
FABRICATED
GROOVE X
MALE THREAD

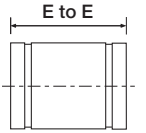


FIGURE 392
FABRICATED
GROOVE X
GROOVE

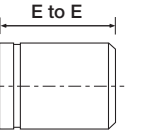
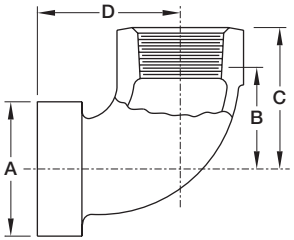


FIGURE 393
FABRICATED
GROOVE X
PLAIN

See Approved Pressure Ratings ‡ Starting On Page 84.

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 DN32	1.600 (42,4)	4.00 (101,6)	0.8 (0.4)
1-1/2 DN40	1.900 (48,3)	4.00 (101,6)	0.9 (0.4)
2 DN50	2.375 (60,3)	4.00 (101,6)	1.2 (0,5)
2-1/2 DN65	2.875 (73,0)	4.00 (101,6)	1.9 (0,9)
3 DN80	3.500 (88,9)	4.00 (101,6)	2.5 (1,1)
4 DN100	4.500 (114,3)	6.00 (152,4)	5.5 (2,5)
5 DN125	5.563 (141,3)	6.00 (152,4)	7.4 (3,4)
6 DN150	6.625 (168,3)	6.00 (152,4)	9.5 (4,3)
8 DN200	8.625 (219,1)	6.00 (152,4)	14.2 (6,4)
10 DN250	10.750 (273,0)	8.00 (203,2)	27.0 (12,2)
12 DN300	12.750 (323,9)	8.00 (203,2)	33.0 (15,0)

ADACAP®



ADACAP - Patented

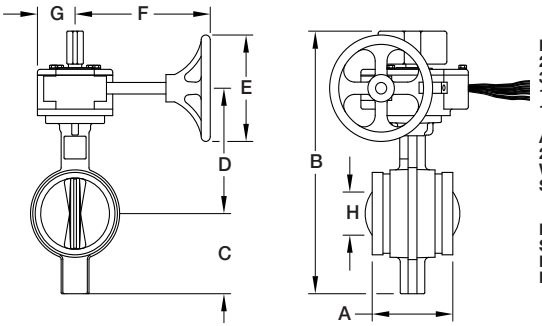
See Approved Pressure Ratings ‡ Starting On Page 84.

Nominal Pipe Size		Dimensions- Inches (mm)				Approx. Weight Lbs. (kg)
ANSI Inches DN	Outlet NPT*	A O.D.	B Takeout	C	D	
1-1/2 DN40	1/2	1.900 (48,3)	1.25 (31,8)	1.75 (44,5)	1.89 (48,0)	0.77 (0,3)
	3/4		1.25 (31,8)	1.75 (44,5)	1.89 (48,0)	0.77 (0,3)
	1		1.37 (34,8)	2.00 (50,8)	2.02 (51,3))	0.88 (0,4)
2 DN50	1/2	2.375 (60,3)	1.25 (31,8)	1.75 (44,5)	1.89 (48,0)	9.2 (0,4)
	3/4		1.25 (31,8)	1.75 (44,5)	1.89 (48,0)	9.2 (0,4)
	1		1.37 (34,8)	2.00 (50,8)	2.02 (51,3)	1.06 (0,5)
2-1/2 DN65	1/2	2.875 (73,0)	1.47 (37,3)	1.97 (50,0)	1.89 (48,0)	1.28 (0,6)
	3/4		1.47 (37,3)	1.97 (50,0)	1.89 (48,0)	1.28 (0,6)
	1		1.37 (34,8)	2.00 (50,8)	2.02 (51,3)	1.50 (0,7)

* ISO threaded outlets are available upon request.

‡ Pressure ratings are based on pipe schedule, pipe size, and approval agency. Approved pressure ratings start on page 84.

Model BFV-N Grooved End Butterfly Valve 1 of 2



PRESSURE RATING:
2-1/2 -8 INCH-
300 PSI (20,7 BAR)
10 INCH-
175 PSI (12,0 BAR)

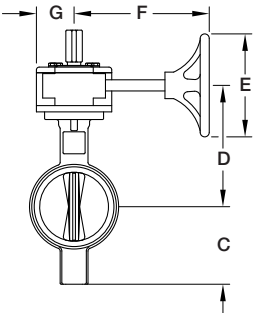
ALSO AVAILABLE IN
2 - 12 INCH
WAFER AND LUG
STYLE CONNECTIONS

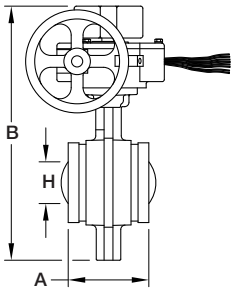
REFER TO DATA SHEET TFP1510 FOR ADDITIONAL INFORMATION

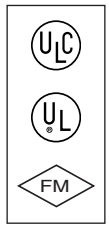
Nominal Pipe Size		Nominal Dimensions- Inches (mm)			
ANSI Inches DN	**O.D. Inches (mm)**	**A**	**B**	**C**	**D**
2-1/2 DN65	2.875 (73,0)	3.85 (98,0)	11.71 (297,4)	3.25 (83,0)	5.43 (137,9)
3 DN80	3.500 (88,9)	3.85 (98,0)	12.25 (311,1)	3.54 (90,0)	5.68 (144,2)
4 DN100	4.500 (114,3)	4.56 (116,0)	13.95 (354,3)	4.35 (110,0)	6.58 (167,1)
5 DN125	5.563 (141,3)	5.86 (149,0)	14.93 (379,2)	4.84 (123,0)	7.07 (179,6)
6 DN150	6.625 (168,3)	5.86 (149,0)	17.31 (439,7)	5.93 (151,0)	8.35 (212,0)
8 DN200	8.625 (219,1)	5.26 (134,0)	19.20 (487,7)	6.87 (174,0)	9.29 (236,0)
10 DN250	10.750 (273,1)	6.29 (160,0)	25.11 (637,8)	9.17 (233,0)	11.50 (292,1)

***** End of disc does not extend beyond valve body

Model BFV-N Grooved End Butterfly Valve 2 of 2

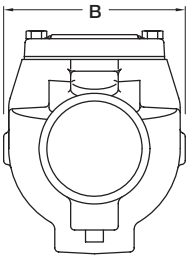


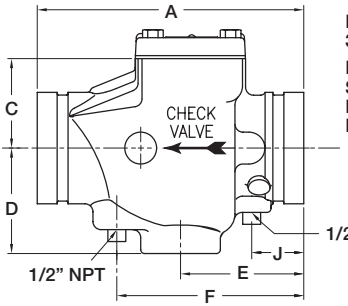




Nominal Pipe Size		Nominal Dimensions- Inches (mm)				Approx. Weight Lbs. / (kg)
ANSI Inches DN	O.D. Inches (mm)	E	F	G	H	
2-1/2 DN65	2.875 (73,0)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	N/A*	22 (10,0)
3 DN80	3.500 (88,9)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	N/A*	23 (10,4)
4 DN100	4.500 (114,3)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	N/A*	28 (12,7)
5 DN125	5.563 (141,3)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	N/A*	31 (14,1)
6 DN150	6.625 (168,3)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	0.67 (17,0)	41 (18,6)
8 DN200	8.625 (219,1)	6.00 (152,4)	7.81 (198,4)	2.50 (63,5)	5.86 (148,8)	53 (24,1)
10 DN250	10.750 (273,1)	9.00 (228,6)	7.68 (195,1)	3.00 (76,2)	7.41 (188,2)	88 (40,0)

Model CV-1F Check Valve



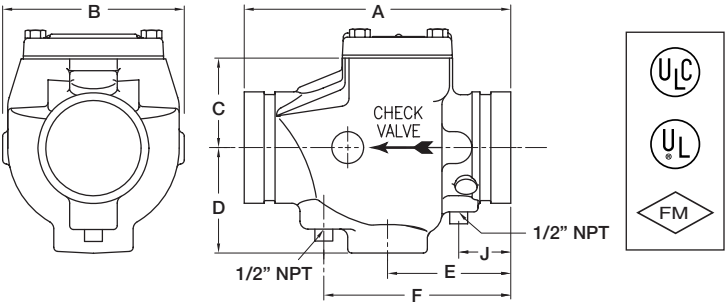


PRESSURE RATING: 300 PSI (20,7 BAR)

REFER TO DATA SHEET TFP1550 FOR ADDITIONAL INFORMATION

Nominal Pipe Size		Nominal Dimensions- Inches (mm)				
ANSI Inches DN	**O.D. Inches (mm)**	**A**	**B**	**C**	**D**	**E**
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	5.80 (147,3)	3.41 (86,6)	3.40 (86,4)	3.88 (98,6)
– DN65	3.000 (76,1)	8.00 (203,2)	5.80 (147,3)	3.41 (86,6)	3.40 (86,4)	3.88 (98,6)
3 DN80	3.500 (88,9)	8.37 (212,6)	5.76 (146,3)	3.60 (91,4)	3.40 (86,4)	3.88 (98,6)
4 DN100	4.500 (114,3)	9.63 (245,6)	6.74 (171,2)	4.61 (117,1)	3.63 (92,2)	4.56 (115,1)
– DN125	5.500 (139,7)	10.50 (266,7)	7.50 (190,5)	5.29 (134,4)	4.20 (106,7)	4.90 (124,5)
5 DN125	5.563 (141,3)	10.50 (266,7)	7.50 (190,5)	5.29 (134,4)	4.20 (106,7)	4.90 (124,5)
– DN150	6.500 (165,1)	11.50 (292,1)	8.05 (204,4)	5.75 (146,1)	4.50 (114,3)	5.00 (127,0)
6 DN150	6.625 (168,3)	11.50 (292,1)	8.05 (204,4)	5.75 (146,1)	4.50 (114,3)	5.00 (127,0)
8 DN200	8.625 (219,1)	14.00 (355,6)	10.25 (260,4)	7.75 (196,9)	5.62 (142,7)	5.45 (138,4)
10 DN250	10.750 (273,0)	18.00 (457,2)	13.00 (330,2)	10.21 (259,3)	6.38 (162,1)	7.50 (190,5)

Model CV-1F Check Valve 2 of 2



Nominal Pipe Size		Nominal Dimensions		Cover Bolt Torque Lb.-ft. (Nm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	F Inches (mm)	J Inches (mm)		
2-1/2 DN65	2.875 (73,0)	6.00 (152,4)	1.70 (43,2)	39 (54)	10.0 (4,5)
– DN65	3.000 (76,1)	6.00 (152,4)	1.70 (43,2)	39 (54)	10.0 (4,5)
3 DN80	3.500 (88,9)	6.00 (152,4)	1.70 (43,2)	39 (54)	11.0 (5,0)
4 DN100	4.500 (114,3)	7.13 (181,1)	1.84 (46,7)	39 (54)	25.0 (11,3)
– DN125	5.500 (139,7)	7.60 (193,0)	1.90 (48,3)	39 (54)	29.0 (13,2)
5 DN125	5.563 (141,3)	7.60 (193,0)	1.90 (48,3)	39 (54)	29.0 (13,2)
– DN150	6.500 (165,1)	7.60 (193,0)	1.48 (37,6)	60 (82)	47.0 (21,3)
6 DN150	6.625 (168,3)	7.60 (193,0)	1.48 (37,6)	60 (82)	47.0 (21,3)
8 DN200	8.625 (219,1)	8.40 (213,4)	2.20 (58,9)	120 (164)	66.0 (30,0)
10 DN250	10.750 (273,0)	10.50 (266,7)	3.00 (76,2)	120 (164)	109.7 (49,4)

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 - lListed/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 772 Rigid Coupling 1 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5, ID, UE, WST	**1-1/4** DN32	1.660 (42,4)	175	175	175	-	-
Schedule 5, ID, UE, WST	**1-1/2** DN40	1.900 (48,3)	175	175	175	-	-
Schedule 5, ID, UE, WST	**2** DN50	2.375 (60,3)	175	175	175	-	-
Schedule 10, 40	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
Schedule 10, 40	**1-1/2** DN40	1.900 (48,3)	500	500	500	-	-
Schedule 10, 40	**2** DN50	2.375 (60,3)	500	500	500	-	-
Schedule 10, 40	**2-1/2** DN65	2.875 (73,0)	500	500	500	-	-
Schedule 10, 40	**3** DN80	3.500 (88,9)	500	500	500	-	-
Schedule 10, 40	**4** DN100	4.500 (114,3)	500	500	500	-	-
Schedule 10, 40	**5** DN125	5.563 (141,3)	300	300	300	-	-
Schedule 10	**6** DN150	6.625 (168,3)	300	300	300	-	-
Schedule 40	**6** DN150	6.625 (168,3)	400	400	400	-	-
Schedule 10	**8** DN200	8.625 (219,1)	400	400	400	-	-
Schedule 40	**8** DN200	8.625 (219,1)	450	450	450	-	-
Schedule 10, 40	**10** DN250	10.750 (273,1)	250	250	250	-	-
Schedule 10, 40	**12** DN300	12.750 (323,4)	250	250	250	-	-

Figure 772 Rigid Coupling 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
DF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
BLT, DT, DF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
BLT, DT, DF	**2** DN50	2.375 (60,3)	300	300	300	-	-
DF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
DF	**3** DN80	3.500 (88,9)	300	300	300	-	-
DF	**4** DN100	4.500 (114,3)	300	300	300	-	-
XF, TL	**1-1/2** DN40	1.900 (48,3)	300	300	-	-	-
XF, TL	**2** DN50	2.375 (60,3)	300	300	-	-	-
Gal-Flo, Gal-7	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
Gal-Flo, Gal-7	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
Gal-Flo, Gal-7	**2** DN50	2.375 (60,3)	300	300	300	-	-
MF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
MF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
MF	**2** DN50	2.375 (60,3)	300	300	300	-	-
MF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-

* See Pipe Schedule Key on Pages 84-85

Figure 772 Rigid Coupling 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
MF, EZ	**3** DN80	3.500 (88,9)	300	300	300	-	-
MF, EZ	**4** DN100	4.500 (114,3)	250	250	300	-	-
EZ	**6** DN150	6.625 (168,3)	250	250	300	-	-
FLF	**1-1/4** DN32	1.660 (42,4)	300	300	-	-	-
FLF	**1-1/2** DN40	1.900 (48,3)	300	300	-	-	-
FLF	**2** DN50	2.375 (60,3)	300	300	-	-	-
FLF	**2-1/2** DN65	2.875 (73,0)	300	300	-	-	-
FLF	**3** DN80	3.500 (88,9)	300	300	-	-	-
FLF	**4** DN100	4.500 (114,3)	250	250	-	-	-
GL, MT, MLT, WLS	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
GL, MT, MLT, WLS	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
GL, MT, MLT, WLS	**2** DN50	2.375 (60,3)	300	300	300	-	-
EZT, FF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
EZT, FF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
EZT, FF	**2** DN50	2.375 (60,3)	300	300	300	-	-
FF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-

Figure 772 Rigid Coupling 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
FF	**3** DN80	3.500 (88,9)	300	300	300	-	-
FF	**4** DN100	4.500 (114,3)	250	250	300	-	-
BS1387M, ISO4200	– DN32	1.660 (42,4)	-	-	-	16	20
BS1387M, ISO4200	– DN40	1.900 (48,3)	-	-	-	16	20
BS1387M, ISO4200	– DN50	2.375 (60,3)	-	-	-	16	20
BS1387M, ISO4200	– DN65	3.00 (76,1)	-	-	-	16	20
BS1387M	– DN65	3.00 (76,1)	300	300	300	-	-
BS1387M, ISO4200	– DN80	3.500 (88,9)	-	-	-	16	20
BS1387M, ISO4200	– DN100	4.500 (114,3)	-	-	-	16	20
BS1387M, ISO4200	– DN125	5.563 (139,7)	-	-	-	16	-
BS1387M	– DN150	6.500 (165,1)	300	300	300	-	-
ISO4200	– DN150	6.500 (165,1)	-	-	-	-	20
ISO4200	– DN150	6.625 (168,3)	-	-	-	16	20
ISO4200	– DN200	8.625 (219,1)	-	-	-	16	20
ISO4200	– DN250	10.750 (273,1)	-	-	-	16	20
ISO4200	– DN300	12.750 (323,4)	-	-	-	16	20

***** See Pipe Schedule Key on Pages 84-85

Figure 577 Rigid Coupling 1 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5	**1** DN25	1.315 (33,7)	175	175	175	-	-
Schedule 5	**1-1/4** DN32	1.660 (42,4)	175	175	175	-	-
Schedule 5	**1-1/2** DN40	1.900 (48,3)	175	175	175	-	-
Schedule 5	**2** DN50	2.375 (60,3)	175	175	175	-	-
Schedule 10, 40	**1** DN25	1.315 (33,7)	300	300	300	-	-
Schedule 10, 40	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
Schedule 10, 40	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
Schedule 10, 40	**2** DN50	2.375 (60,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
Schedule 10, 40	**3** DN80	3.500 (88,9)	300	300	300	-	-
Schedule 10, 40	**4** DN100	4.500 (114,3)	300	300	300	-	-
Schedule 10, 40	**5** DN125	5.563 (141,3)	300	300	300	-	-
Schedule 10, 40	**6** DN150	6.625 (168,3)	300	300	300		
Schedule 10, 40	**8** DN200	8.625 (219,1)	300	300	300		
BLT, DF, DT, XL	**1** DN25	1.315 (33,7)	300	300	300	-	-
DF, XL	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
DF, XL	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-

Figure 577 Rigid Coupling 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
DF, XL	**2** DN50	2.375 (60,3)	300	300	300	-	-
DF, XL	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
DF, XL	**3** DN80	3.500 (88,9)	300	300	300	-	-
DF	**4** DN100	4.500 (114,3)	300	300	300	-	-
STF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
STF	**2** DN50	2.375 (60,3)	300	300	300	-	-
STF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
STF	**3** DN80	3.500 (88,9)	300	300	300	-	-
STF	**4** DN100	4.500 (114,3)	250	250	250	-	-
TL	**1** DN25	1.315 (33,7)	300	300	300	-	-
TL	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
TL	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
TL	**2** DN50	2.375 (60,3)	300	300	300	-	-
FLF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
FLF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
FLF	**2** DN50	2.375 (60,3)	300	300	300	-	-
FLF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-

* See Pipe Schedule Key on Pages 84-85

Figure 577 Rigid Coupling 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
FLF	**3** DN80	3.500 (88,9)	300	300	300	-	-
FLF	**4** DN100	4.500 (114,3)	300	300	300	-	-
GL, MLT, MT, WSL, WST	**1** DN25	1.315 (33,7)	300	300	300	-	-
GL, MF, MLT, MT, WLS	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
GL, MF, MLT, MT, WLS	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
GL, MF, MLT, MT, WLS	**2** DN50	2.375 (60,3)	300	300	300	-	-
MF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
MF	**3** DN80	3.500 (88,9)	300	300	300	-	-
MF	**4** DN100	4.500 (114,3)	300	300	300	-	-
EZT	**1** DN25	1.315 (33,7)	300	300	300	-	-
EZT	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
EZT, FF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
EZT, FF	**2** DN50	2.375 (60,3)	300	300	300	-	-
FF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
FF	**3** DN80	3.500 (88,9)	300	300	300	-	-
ISO4200	**1** DN25	1.315 (33,7)	300	300	300	16	20
ISO4200	**1-1/4** DN32	1.660 (42,4)	-	-	-	16	20

Figure 577 Rigid Coupling 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
ISO4200	**1-1/2** DN40	1.900 (48,3)	-	-	-	16	20
ISO4200	**2** DN50	2.375 (60,3)	-	-	-	16	20
ISO4200	**–** DN65	3.00 (76,1)	300	-	300	16	20
ISO4200	**3** DN80	3.500 (88,9)	-	-	-	16	20
ISO4200	**4** DN100	4.500 (114,3)	-	-	-	16	20
ISO4200	**–** DN125	5.563 (139,7)	300		300	16	
ISO4200	**–** DN150	6.500 (165,1)	300		300		20
ISO4200	**6** DN150	6.625 (168,3)	-	-	-	16	20
ISO4200	**8** DN200	8.625 (219,1)	-	-	-	16	20
BS1387M	**1** DN25	1.315 (33,7)	300	300	300	-	20
BS1387M,	**1-1/4** DN32	1.660 (42,4)	-	-	-	-	20
BS1387M,	**1-1/2** DN40	1.900 (48,3)	-	-	-	-	20
BS1387M,	**2** DN50	2.375 (60,3)	-	-	-	-	20
BS1387M	**–** DN65	3.00 (76,1)	300	-	300	-	20
BS1387M	**3** DN80	3.500 (88,9)	-	-	-	-	20
BS1387M	**4** DN100	4.500 (114,3)	-	-	-	-	20
BS1387M	**–** DN150	6.500 (165,1)	300		300		20

***** See Pipe Schedule Key on Pages 84-85

Figure 705 Flexible Coupling 1 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5, WST	**1-1/4** DN32	1.660 (42,4)	175	175	175	-	-
Schedule 5, WST	**1-1/2** DN40	1.900 (48,3)	175	175	175	-	-
Schedule 5, WST	**2** DN50	2.375 (60,3)	175	175	175	-	-
Schedule 10, 40	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
Schedule 10, 40	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
Schedule 10, 40	**2** DN50	2.375 (60,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
Schedule 10, 40	**3** DN80	3.500 (88,9)	300	300	300	-	-
Schedule 10, 40	**4** DN100	4.500 (114,3)	300	300	300	-	-
Schedule 10, 40	**5** DN125	5.563 (141,3)	300	300	300	-	-
Schedule 10, 40	**6** DN150	6.625 (168,3)	300	300	300	-	-
Schedule 10, 40	**8** DN200	8.625 (219,1)	300	300	300	-	-
Schedule 10, 40	**10** DN250	10.750 (273,1)	250	250	250	-	-
Schedule 10, 40	**12** DN300	12.750 (323,4)	250	250	250	-	-
BLT, DT, DF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
BLT, DT, DF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
BLT, DT, DF	**2** DN50	2.375 (60,3)	300	300	300	-	-
DF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
DF	**3** DN80	3.500 (88,9)	300	300	300	-	-
DF	**4** DN100	4.500 (114,3)	300	300	300	-	-

Figure 705 Flexible Coupling 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
UE	**1-1/4** DN32	1.660 (42,4)	-	-	175	-	-
UE	**1-1/2** DN40	1.900 (48,3)	-	-	175	-	-
UE	**2** DN50	2.375 (60,3)	-	-	175	-	-
TL	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
TL	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
TL	**2** DN50	2.375 (60,3)	300	300	300	-	-
Gal-Flo, Gal-7	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
Gal-Flo, Gal-7	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
Gal-Flo, Gal-7	**2** DN50	2.375 (60,3)	300	300	300	-	-
ID	**1-1/4** DN32	1.660 (42,4)	175	175	175	-	-
ID	**1-1/2** DN40	1.900 (48,3)	175	175	175	-	-
ID	**2** DN50	2.375 (60,3)	175	175	175	-	-
EZ	**3** DN80	3.500 (88,9)	300	300	300	-	-
EZ	**4** DN100	4.500 (114,3)	250	250	300	-	-
EZ	**6** DN150	6.625 (168,3)	250	250	175	-	-
FLF	**1-1/4** DN32	1.660 (42,4)	300	300	-	-	-
FLF	**1-1/2** DN40	1.900 (48,3)	300	300	-	-	-
FLF	**2** DN50	2.375 (60,3)	300	300	-	-	-
FLF	**2-1/2** DN65	2.875 (73,0)	300	300	-	-	-
FLF	**3** DN80	3.500 (88,9)	300	300	-	-	-

***** See Pipe Schedule Key on Pages 84-85

Figure 705 Flexible Coupling 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
FLF	**4** DN100	4.500 (114,3)	300	300	-	-	-
GL	**1-1/4** DN32	1.660 (42,4)	300	300	-	-	-
GL	**1-1/2** DN40	1.900 (48,3)	300	300	-	-	-
GL	**2** DN50	2.375 (60,3)	300	300	-	-	-
MF	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
MF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
MF	**2** DN50	2.375 (60,3)	300	300	300	-	-
MF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
MF	**3** DN80	3.500 (88,9)	300	300	300	-	-
MF	**4** DN100	4.500 (114,3)	-	-	300	-	-
MLT,	**1** DN25	1.315 (33,7)	300	300	300	-	-
MLT,	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
MLT	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-
MLT	**2** DN50	2.375 (60,3)	300	300	300	-	-
MT, SL, WLS	**1-1/4** DN32	1.660 (42,4)	300	300	-	-	-
MT, SL, WLS	**1-1/2** DN40	1.900 (48,3)	300	300	-	-	-
MT, SL, WLS	**2** DN50	2.375 (60,3)	300	300	-	-	-
EZT	**1** DN25	1.315 (33,7)	300	300	300	-	-
EZT	**1-1/4** DN32	1.660 (42,4)	300	300	300	-	-
EZT, FF	**1-1/2** DN40	1.900 (48,3)	300	300	300	-	-

Figure 705 Flexible Coupling 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
EZT, FF	**2** DN50	2.375 (60,3)	300	300	300	-	-
FF	**2-1/2** DN65	2.875 (73,0)	300	300	300	-	-
FF	**3** DN80	3.500 (88,9)	300	300	300	-	-
FF	**4** DN100	4.500 (114,3)	300	300	300	-	-
BS1387, ISO4200	**1-1/4** DN32	1.660 (42,4)	-	-	-	16	20
BS1387, ISO4200	**1-1/2** DN40	1.900 (48,3)	-	-	-	16	20
BS1387, ISO4200	**2** DN50	2.375 (60,3)	-	-	-	16	20
BS1387	**–** DN65	3.00 (76,1)	300	300	300	16	20
BS1387, ISO4200	**3** DN80	3.500 (88,9)	-	-	-	16	20
BS1387, ISO4200	**4** DN100	4.500 (114,3)	-	-	-	16	20
BS1387, ISO4200	**–** DN125	5.563 (139,7)	-	-	-	16	-
BS1387	**–** DN150	6.500 (165,1)	300	300	300	-	20
ISO4200	**–** DN65	3.00 (76,1)	-	-	-	16	20
ISO4200	**-** DN100	4.250 (108,0)	300	-	300	-	-
ISO4200	**–** DN125	5.250 (133.0)	300	-	300	-	-
ISO4200	**–** DN150	6.250 (159.0)	300	-	300	-	-
ISO4200	**–** DN150	6.500 (165,1)	-	-	-	-	20
ISO4200	**6** DN150	6.625 (168,3)	-	-	-	16	20
ISO4200	**8** DN200	8.625 (219,1)	-	-	-	16	20

***** See Pipe Schedule Key on Pages 84-85

Figure 716 Flexible Reducing Coupling 1 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	175	175	175	-	-
Schedule 5	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	175	175	175	-	-
Schedule 5	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	175	175	175	-	-
Schedule 5	**3 x 2-1/2** DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	175	175	175	-	-
Schedule 5	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	175	175	175	-	-
Schedule 5	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	175	175	175	-	-
Schedule 10, 40	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	350	350	350	-	-
Schedule 10, 40	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	350	350	350	-	-
Schedule 10, 40	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	350	350	350	-	-
Schedule 10, 40	**3 x 2-1/2** DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	350	350	300	-	-
Schedule 10, 40	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	350	350	300	-	-
Schedule 10, 40	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	350	350	300	-	-
Schedule 10, 40	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	350	350	300	-	-
Schedule 10, 40	**5 x 4** DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	350	350	300	-	-
Schedule 10, 40	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	350	350	300	-	-
Schedule 10, 40	**6 x 5** DN150 x DN125	6.625 x 5.563 (168,3 x 141,3)	350	350	300	-	-

Figure 716 Flexible Reducing Coupling 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 40	**8 x 6** DN200 x DN150	8.625 x 6.625 (219,1 x 168,3)	350	350	300	-	-
DF, SF	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
DF, SF	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	300	300	-	-
DF, SF	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
DF, SF	**3 x 2-1/2** DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	300	300	300	-	-
DF, SF	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
DF, SF	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
DF, SF	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
DF, SF	**5 x 4** DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	300	300	300	-	-
DF, SF	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	300	300	300	-	-
STF, TL	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
STF, TL	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	300	300	-	-
STF, TL	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
STF, TL	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
STF, TL	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
STF, TL	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-

***** See Pipe Schedule Key on Pages 84-85

Figure 716 Flexible Reducing Coupling 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
STF, TL	**5 x 4** DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	300	300	300	-	-
STF, TL	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
EZ	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
EZ	**3 x 2-1/2** DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	300	300	300	-	-
GL, MF, MLT, MT	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
GL, MF, MLT, MT	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	300	300	-	-
GL, MF, MLT, MT	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
MF	**3 x 2-1/2** DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	300	300	300	-	-
GL, MF, MLT, MT	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
MF	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
MF	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
EZT, FF	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
EZT, FF	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	300	300	-	-
EZT, FF	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
EZT, FF	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-

Figure 716 Flexible Reducing Coupling 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
FF	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
FF	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
FF	**5 x 4** DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	300	300	300	-	-
FF	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	300	300	300	-	-
BS1387, ISO4200	– DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	-	300	16	20
BS1387, ISO4200	– DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	-	300	16	20
BS1387, ISO4200	– DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	-	300	16	20
BS1387, ISO4200	– DN80 x DN65	3.500 x 3.000 (88,9 x 76,1)	300	-	300	16	20
BS1387, ISO4200	– DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	-	300	16	20
BS1387, ISO4200	– DN100 x DN65	4.500 x 3.000 (114,3 x 76,1	300	-	300	16	20
BS1387, ISO4200	– DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	-	300	16	20
ISO4200	– DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	300	-	300	16	20
ISO4200	– DN200 x DN150	8.625 x 6.625 (219,1 x 168,3)	300	-	300	16	20
BS1387, ISO4200	– DN125 x DN100	5.000 x 4.500 (139,7 x 114,3)	300	-	300	16	-
BS1387, ISO4200	– DN150 x DN100	6.500 x 4.500 (165,1 x 114,3)	300	-	300	-	20

* See Pipe Schedule Key on Pages 84-85

Figure 71 Flange Adapter 1 of 2

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Sch. 5, ID, UE, WST	**2** DN50	2.375 (60,3)	175	175	175	-	-
Schedule 10, 40	**2** DN50	2.375 (60,3)	250	250	250	-	-
Schedule 10, 40	**2-1/2** DN65	2.875 (73,0)	250	250	250	-	-
Schedule 10, 40	**3** DN80	3.500 (88,9)	250	250	250	-	-
Schedule 10, 40	**4** DN100	4.500 (114,3)	250	250	250	-	-
Schedule 10, 40	**5** DN125	5.563 (141,3)	250	250	250	-	-
Schedule 10, 40	**6** DN150	6.625 (168,3)	250	250	250	-	-
Schedule 10, 40	**8** DN200	8.625 (219,1)	250	250	250	-	-
Schedule 40	**10** DN250	10.750 (273,1)	250	250	250	-	-
Schedule 40	**12** DN300	12.750 (323,4)	250	250	250	-	-
BLT, DF, DT, XL, SF	**2** DN50	2.375 (60,3)	250	250	250	-	-
DF, SF, XL	**2-1/2** DN65	2.875 (73,0)	250	250	250	-	-
DF, SF, XL, EZ	**3** DN80	3.500 (88,9)	250	250	250	-	-
DF, SF, EZ	**4** DN100	4.500 (114,3)	250	250	250	-	-
EZ	**6** DN150	6.625 (168,3)	250	250	175	-	-
STF, TL, LS	**2** DN50	2.375 (60,3)	250	250	250	-	-
STF	**3** DN80	3.500 (88,9)	250	250	250	-	-
STF	**4** DN100	4.500 (114,3)	250	250	250	-	-

Figure 71 Flange Adapter 2 of 2

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Gal-7, Ga-Flo	**2** DN50	2.375 (60,3)	250	250	250	-	-
GL, MF, MLT, WLS	**2** DN50	2.375 (60,3)	250	250	250	-	-
MF, FF	**2** DN50	2.375 (60,3)	-	-	250	-	-
MF, FF	**2-1/2** DN65	2.875 (73,0)	250	250	250	-	-
MF, FF	**3** DN80	3.500 (88,9)	250	250	250	-	-
MF, FF	**4** DN100	4.500 (114,3)	250	250	250	-	-
PN16							
BS1387, ISO4200	**–** DN50	2.375 (60,3)	250	-	250	16	20
BS1387, ISO4200	**–** DN65	3.000 (76,1)	250	-	250	16	20
BS1387, ISO4200	**–** DN80	3.500 (88,9)	250	-	250	16	20
BS1387, ISO4200	**–** DN100	4.500 (114,3)	250	-	250	16	20
BS1387, ISO4200	**–** DN125	4.500 (139,7)	250	-	250	16	-
BS1387, ISO4200	**–** DN150	6.500 (165,1)	250	-	250	-	20
BS1387, ISO4200	**–** DN150	6.625 (168,3)	250	-	250	16	20
ISO4200	**–** DN200	8.625 (219,1)	250	-	250	-	20
ISO4200	**–** DN250	10.750 (273,1)	250	-	250	-	20
ISO4200	**–** DN300	12.750 (323,4)	250	-	250	-	16

* See Pipe Schedule Key on Pages 84-85

Figure 730 Threaded Outlet 1 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
Schedule 5	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
Schedule 5	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
Schedule 5	**2 x 1-1/4** DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	175	175	175	-	-
Schedule 5	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	175	175	175	-	-
Schedule 10, 40	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	300	300	300	-	-
Schedule 10, 40	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	300	300	300	-	-
Schedule 10, 40	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	300	300	300	-	-
Schedule 10, 40	**2 x 1-1/4** DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	300	300	300	-	-
Schedule 10, 40	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 3/4** DN50 x DN20	2.875 x 1.050 (73,0 x 26,7)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 1** DN50 x DN25	2.875 x 1.315 (73,0 x 33,4)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 1-1/4** DN50 x DN32	2.875 x 1.600 (73,0 x 42,2)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 1-1/2** DN50 x DN40	2.875 x 1.900 (73,0 x 48,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 2** DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	300	300	300	-	-
Schedule 10, 40	**3 x 1/2** DN80 x DN15	3.500 x 0.840 (88,9 x 21,3)	300	300	300	-	-
Schedule 10, 40	**3 x 3/4** DN80 x DN20	3.500 x 1.050 (88,9 x 26,7)	300	300	300	-	-
Schedule 10, 40	**3 x 1** DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	300	300	300	-	-
Schedule 10, 40	**4 x 1/2** DN100 x DN15	4.500 x 0.840 (114,3 x 21,3)	300	300	300	-	-

Figure 730 Threaded Outlet 2 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 10, 40	**4 x 3/4** DN100 x DN20	4.500 x 1.050 (114,3 x 26,7)	300	300	300	-	-
Schedule 10, 40	**4 x 1** DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	300	300	300	-	-
Schedule 10, 40	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
Schedule 10, 40	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
Schedule 10, 40	**5 x 2** DN125 x DN50	5.563 x 2.375 (114,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**5 x 2-1/2** DN125 x DN65	5.563 x 2.875 (114,3 x 73,0)	300	300	300	-	-
Schedule 10, 40	**6 x 1-1/2** DN150 x DN40	6.625 x 1.900 (168,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**6 x 2** DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**6 x 2-1/2** DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	300	300	300	-	-
Schedule 10, 40	**6 x 3** DN150 x DN80	6.625 x 3.500 (168,3 x 88,9)	300	300	300	-	-
Schedule 10, 40	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	300	300	300	-	-
BLT, DT, DF, STF, TL	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	300	300	300	-	-
BLT, DT, DF, STF, TL	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	300	300	300	-	-
BLT, DT, DF, STF, TL	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	300	300	300	-	-
BLT, DT, DF, STF, TL	**2 x 1-1/4** DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	300	300	300	-	-
BLT, DT, DF, STF, TL	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
DF, STF	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	300	300	300	-	-
DF, STF	**2-1/2 x 3/4** DN65x DN20	2.875 x 1.050 (73,0 x 26,7)	300	300	300	-	-
DF, STF	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	300	300	300	-	-

***** See Pipe Schedule Key on Pages 84-85

Figure 730 Threaded Outlet 3 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
DF, STF	**3 x 1/2** DN80 x DN15	3.500 x 0.840 (88,9 x 21,3)	300	300	300	-	-
DF, STF	**3 x 3/4** DN80 x DN20	3.500 x 1.050 (88,9 x 26,7)	300	300	300	-	-
DF, STF	**3 x 1** DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	300	300	300	-	-
DF, STF	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
DF, STF	**4 x 1/2** DN100 x DN15	4.500 x 0.840 (114,3x 21,3)	300	300	300	-	-
DF, STF	**4 x 3/4** DN100 x DN20	4.500 x 1.050 (114,3 x 26,7)	300	300	300	-	-
DF, STF	**4 x 1** DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	300	300	300	-	-
DF, STF	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
DF, STF	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
STF	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 1-1/4** DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	300	300	300	-	-
Gal-7, Gal-Flo	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
GL, MF, MT, MLT, WLS	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	300	300	300	-	-
GL, MF, MT, MLT, WLS	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	300	300	300	-	-
GL, MF, MT, MLT, WLS	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	300	300	300	-	-
GL, MF, MT, MLT, WLS	**2 x 1-1/4** DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	300	300	300	-	-
GL, MF, MT, MLT, WLS	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-

Figure 730 Threaded Outlet 4 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
MF, FF	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	300	300	300	-	-
MF, FF	**2-1/2 x 3/4** DN65x DN20	2.875 x 1.050 (73,0 x 26,7)	300	300	300	-	-
MF, FF	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	300	300	300	-	-
MF, FF	**3 x 1/2** DN80 x DN15	3.500 x 0.840 (88,9 x 21,3)	300	300	300	-	-
MF, FF	**3 x 3/4** DN80 x DN20	3.500 x 1.050 (88,9 x 26,7)	300	300	300	-	-
MF, FF	**3 x 1** DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	300	300	300	-	-
MF, FF	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
MF, FF	**4 x 1/2** DN100 x DN15	4.500 x 0.840 (114,3x 21,3)	300	300	300	-	-
MF, FF	**4 x 3/4** DN100 x DN20	4.500 x 1.050 (114,3 x 26,7)	300	300	300	-	-
MF, FF	**4 x 1** DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	300	300	300	-	-
MF, FF	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
MF, FF	**4 x 2-1/2** DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	300	300	300	-	-
MF, FF	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
BS1387, ISO4200	**–** DN65 x DN15	2.375 x 0.840 (76,1 x 21,3)	300	-	300	16	20
BS1387, ISO4200	**–** DN65 x DN20	2.375 x 1.050 (76,1 x 26,7)	300	-	300	16	20
BS1387, ISO4200	**–** DN65 x DN25	2.375 x 1.315 (76,1 x 33,4)	300	-	300	16	20
BS1387, ISO4200	**-** DN125 x DN40	5.563 x 1.900 (139,7 x 48,3)	300	-	300	16	20
BS1387, ISO4200	**-** DN125 x DN80	5.563 x 3.500 (139,7 x 88,9)	300	-	300	16	20
BS1387, ISO4200	**-** DN150x DN32	6.625 x 1.660 (165,1 x 42,2)	300	-	300	16	20

***** See Pipe Schedule Key on Pages 84-85

Figure 730 Threaded Outlet 5 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
BS1387, ISO4200	– DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN32	2.375 x 1.600 (60,3 x 42,2)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN32	3.000 x 1.600 (76,1 x 42,2)	-	-	-	16	20
BS1387, ISO4200	– DN50 x DN40	3.000 x 1.900 (76,1 x 48,3)	-	-	-	16	20
BS1387, ISO4200	– DN65 x DN50	3.000 x 2.375 (76,1 x 60,3)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN15	3.500 x 0.840 (88,9 x 21,3)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN20	3.500 x 1.050 (88,9 x 26,7)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN25	3.500 x 1.315 (88,9 x 33,4)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN50	3.500 x 1.660 (88,9 x 42,2)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN25	3.500 x 1.900 (88,9 x 48,3)	-	-	-	16	20
BS1387, ISO4200	– DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN15	4.500 x 0.840 (114,3 x 21,3)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN20	4.500 x 1.050 (114,3 x 26,7)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN25	4.500 x 1.315 (114,3 x 33,4)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN32	4.500 x 1.660 (114,3 x 42,4)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	-	-	-	16	20
BS1387, ISO4200	– DN100 x DN65	4.500 x 2.875 (114,3 x 76,1)	-	-	-	16	20

Figure 730 Threaded Outlet 6 of 6

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
BS1387, ISO4200	– DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	-	-	-	16	20
BS1387, ISO4200	– DN150 x DN40	6.500 x 1.900 (165,1 x 48,3)	-	-	-	-	20
BS1387, ISO4200	– DN150 x DN50	6.500 x 2.375 (165,1 x 60,3)	-	-	-	-	20
BS1387, ISO4200	– DN150 x DN65	6.500 x 3.000 (165,1 x 76,1)	-	-	-	-	20
BS1387, ISO4200	– DN150 x DN80	6.500 x 3.500 (165,1 x 88,9)	-	-	-	-	20
BS1387, ISO4200	– DN150 x DN100	6.500 x 4.500 (165,1 x 114,3)	-	-	-	-	20
BS1387, ISO4200	– DN125 x DN50	5.500 x 2.375 (139,7 x 60,3)	-	-	-	16	-
BS1387, ISO4200	– DN125 x DN65	5.500 x 3.000 (139,7 x 76,1)	-	-	-	16	-
ISO4200	– DN150 x DN40	6.500 x 1.900 (168,3 x 48,3)	-	-	-	16	20
ISO4200	– DN150 x DN50	6.500 x 2.375 (168,3 x 60,3)	-	-	-	16	20
ISO4200	– DN150 x DN65	6.500 x 2.875 (168,3 x 73,0)	-	-	-	16	20
ISO4200	– DN150 x DN65	6.500 x 3.000 (168,3 x 76,1)	-	-	-	16	20
ISO4200	– DN150 x DN80	6.500 x 3.500 (168,3 x 88,9)	-	-	-	16	20
ISO4200	– DN150 x DN100	6.500 x 4.500 (168,3 x 114,3)	-	-	-	16	20
ISO4200	– DN200 x DN65	8.625 x 3.000 (219,1 x 76,1)	-	-	-	16	20
ISO4200	– DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	-	-	-	16	20
ISO4200	– DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	-	-	-	16	20

* See Pipe Schedule Key on Pages 84-85

Figure 730 Grooved Outlet 1 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	175	175	175	-	-
Schedule 10, 40	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**2-1/2 x 1-1/2** DN65 x DN40	2.875 x 1.900 (73,0 x 48,3)	300	300	300	-	-
Schedule 10, 40	**3 x 1-1/2** DN80 x DN40	3.500 x 1.900 (88,9 x 48,3)	300	300	300	-	-
Schedule 10, 40	**4 x 1-1/2** DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**5 x 1-1/2** DN125 x DN40	5.563 x 1.900 (141,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**6 x 1-1/2** DN150 x DN40	6.625 x 1.900 (168,3 x 48,3)	300	300	300	-	-
Schedule 10, 40	**3 x 2** DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
Schedule 10, 40	**3 x 2-1/2** DN80 x DN65	3.500 x 2.375 (88,9 x 60,3)	300	300	300	-	-
Schedule 10, 40	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**4 x 2-1/2** DN100 x DN65	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**5 x 2** DN125 x DN50	5.653 x 2.375 (141,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**5 x 2-1/2** DN125 x DN65	5.563 x 2.375 (141,3 x 60,3)	300	300	300	-	-
Schedule 10, 40	**4 x 3** DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	300	300	300	-	-
Schedule 10, 40	**5 x 3** DN125 x DN80	5.653 x 3.500 (141,3 x 88,9)	300	300	300	-	-

Figure 730 Grooved Outlet 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 10, 40	**6 x 2-1/2** DN150 x DN65	6.625 x 2.875 (168,3 x 73,0)	250	250	250	-	-
Schedule 10, 40	**6 x 3** DN150 x DN80	6.625 x 3.500 (168,3 x 88,9)	250	250	250	-	-
Schedule 10, 40	**6 x 4** DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	250	250	250	-	-
Schedule 10, 40	**8 x 2-1/2** DN200 x DN65	8.625 x 2.875 (219,1 x 73,0)	300	300	300	-	-
Schedule 10, 40	**8 x 3** DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	300	300	300	-	-
Schedule 10, 40	**8 x 4** DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	300	300	300	-	-
BLT, DF, TL	**2 x 1-1/2** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	300	300	300	-	-
DF	**2-1/2 x 1-1/2** DN65 x DN40	2.875 x 1.900 (73,0 x 48,3)	300	300	300	-	-
DF, EZ	**3 x 1-1/2** DN80 x DN40	3.500 x 1.900 (88,9 x 48,3)	300	300	300	-	-
DF	**4 x 1-1/2** DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	300	300	300	-	-
DF	**3 x 2** DN80 x DN50	3.500 x 2.500 (88,9 x 60,3)	300	300	300	-	-
DF	**4 x 2** DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	300	300	300	-	-
BS1387 ISO4200	**–** DN50 x DN32	2.375 x 1.660 (60,3 x 42,4)	-	-	-	16	20
BS1387 ISO4200	**–** DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	-	-	-	16	20
BS1387 ISO4200	**–** DN65 x DN32	3.000 x 1.660 (76,1 x 42,4)	-	-	-	16	20

***** See Pipe Schedule Key on Pages 84-85

Figure 730 Grooved Outlet 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
BS1387 ISO4200	– DN65 x DN40	3.000 x 1.900 (76,1 x 48,3)	-	-	-	16	20
BS1387 ISO4200	– DN65 x DN50	3.000 x 2.375 (76,1 x 60,3)	-	-	-	16	20
BS1387 ISO4200	– DN80 x DN32	3.500 x 1.660 (88,9 x 42,4)	-	-	-	16	20
BS1387 ISO4200	– DN80 x DN40	3.500 x 1.900 (88,9 x 48,3)	-	-	-	16	20
BS1387 ISO4200	– DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	-	-	-	16	20
BS1387 ISO4200	– DN100 x DN32	4.500 x 1.660 (114,3 x 42,4)	-	-	-	16	20
BS1387 ISO4200	– DN100 x DN40	4.500 x 1.900 (114,3 x 48,3)	-	-	-	16	20
BS1387 ISO4200	– DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	-	-	-	16	20
BS1387 ISO4200	– DN100 x DN65	4.500 x 3.000 (114,3 x 76,1)	-	-	-	16	20
BS1387 ISO4200	– DN100 x DN80	4.500 x 3.500 (114,3 x 88,9)	-	-	-	16	20
BS1387 ISO4200	– DN125 x DN40	5.500 x 1.900 (139,7 x 48,3)	300	-	300	16	20
BS1387 ISO4200	– DN125 x DN50	5.500 x 2.375 (139,7 x 60,3)	-	-	-	16	-
BS1387 ISO4200	– DN125 x DN65	5.500 x 3.000 (139,7 x 76,1)	-	-	-	16	-
BS1387 ISO4200	– DN125 x DN80	5.500 x 3.500 (139,7 x 88,9)	300	-	300	16	20
BS1387 ISO4200	– DN150 x DN32	6.500 x 1.660 (165,1 x 42,4)	300	-	300	16	20

Figure 730 Grooved Outlet 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
BS1387 ISO4200	– DN150 x DN40	6.500 x 1.900 (165,1 x 48,3)	300	-	300	16	20
BS1387 ISO4200	– DN150 x DN50	6.500 x 2.375 (165,1 x 60,3)	300	-	300	16	20
BS1387 ISO4200	– DN150 x DN65	6.500 x 3.000 (165,1 x 76,1)	300	-	300	16	20
BS1387 ISO4200	– DN150 x DN80	6.500 x 3.500 (165,1 x 88,9)	-	-	-	-	20
BS1387 ISO4200	– DN150 x DN100	6.500 x 4.500 (165,1 x 114,3)	-	-	-	-	20
ISO4200	– DN150 x DN40	6.625 x 1.900 (168,3 x 48,3)	-	-	-	16	20
ISO4200	– DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	-	-	-	16	20
ISO4200	– DN150 x DN50	6.625 x 2.875 (168,3 x 73,0)	-	-	-	16	20
ISO4200	– DN150 x DN50	6.625 x 3.000 (168,3 x 76,1)	-	-	-	-	16
ISO4200	– DN150 x DN80	6.625 x 3.500 (168,3 x 88,9)	-	-	-	-	16
ISO4200	– DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	-	-	-	-	16
ISO4200	– DN200 x DN50	8.625 x 3.000 (219,1 x 76,1)	-	-	-	-	16
ISO4200	– DN200 x DN80	8.625 x 3.500 (219,1 x 88,9)	-	-	-	-	16
ISO4200	– DN200 x DN100	8.625 x 4.500 (219,1 x 114,3)	-	-	-	-	16

* See Pipe Schedule Key on Pages 84-85

Figure 40-5 Strap Outlet

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
Schedule 5, 10, 40	**1-1/4 x 1/2** DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	175	175	175	-	-
Schedule 5, 10, 40	**1-1/4 x 3/4** DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	175	175	175	-	-
Schedule 5, 10, 40	**1-1/4 x 1** DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	175	175	175	-	-
Schedule 5, 10, 40	**1-1/2 x 1/2** DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	175	175	175	-	-
Schedule 5, 10, 40	**1-1/2 x 3/4** DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	175	175	175	-	-
Schedule 5, 10, 40	**1-1/2 x 1** DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	175	175	175	-	-
Schedule 5, 10, 40	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
Schedule 5, 10, 40	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
Schedule 5, 10, 40	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
Schedule 10, 40	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	175	175	175	-	-
Schedule 10, 40	**2-1/2 x 3/4** DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	175	175	175	-	-
Schedule 10, 40	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	175	175	175	-	-
BLT, DF, DT, XL	**1-1/4 x 1/2** DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	175	175	175	-	-
BLT, DF, DT, XL	**1-1/4 x 3/4** DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	175	175	175	-	-
BLT, DF, DT, XL	**1-1/4 x 1** DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	175	175	175	-	-

Figure 40-5 Strap Outlet 2 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
BLT, DF, DT, XL	**1-1/2 x 1/2** DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	175	175	175	-	-
BLT, DF, DT, XL	**1-1/2 x 3/4** DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	175	175	175	-	-
BLT, DF, DT, XL	**1-1/2 x 1** DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	175	175	175	-	-
BLT, DF, DT, XL	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
BLT, DF, DT, XL	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
BLT, DF, DT, XL	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
DF, XL	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	175	175	175	-	-
DF, XL	**2-1/2 x 3/4** DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	175	175	175	-	-
DF, XL	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**1-1/4 x 1/2** DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**1-1/4 x 3/4** DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**1-1/4 x 1** DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**1-1/2 x 1/2** DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**1-1/2 x 3/4** DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	175	175	175	-	-

* See Pipe Schedule Key on Pages 84-85

Figure 40-5 Strap Outlet 3 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
LS, Gal-7, TL, Gal-Flo	**1-1/2 x 1** DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
LS, Gal-7, TL, Gal-Flo	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/4 x 1/2** DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/4 x 3/4** DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/4 x 1** DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/2 x 1/2** DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/2 x 3/4** DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	175	175	175	-	-
GL, MF, MLT, MT	**1-1/2 x 1** DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	175	175	175	-	-
GL, MF, MLT, MT	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
GL, MF, MLT, MT	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
GL, MF, MLT, MT	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
MF	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	175	175	175	-	-
MF	**2-1/2 x 3/4** DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	175	175	175	-	-

Figure 40-5 Strap Outlet 4 of 4

Pipe Schedule*	Nominal Pipe Size		Rated Pressure				
	ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
			psi			bar	
MF	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	175	175	175	-	-
EZT	**1-1/4 x 1/2** DN32 x DN15	1.660 x 0.840 (42,2 x 21,3)	175	175	175	-	-
EZT	**1-1/4 x 3/4** DN32 x DN20	1.660 x 1.050 (42,2 x 26,7)	175	175	175	-	-
EZT	**1-1/4 x 1** DN32 x DN25	1.660 x 1.315 (42,2 x 33,4)	175	175	175	-	-
STF, EZT, FF	**1-1/2 x 1/2** DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	175	175	175	-	-
STF, EZT, FF	**1-1/2 x 3/4** DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	175	175	175	-	-
STF, EZT, FF	**1-1/2 x 1** DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	175	175	175	-	-
STF	**2 x 1/2** DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	175	175	175	-	-
STF	**2 x 3/4** DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	175	175	175	-	-
STF	**2 x 1** DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	175	175	175	-	-
STF	**2-1/2 x 1/2** DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	175	175	175	-	-
STF	**2-1/2 x 3/4** DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	175	175	175	-	-
STF	**2-1/2 x 1** DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	175	175	175	-	-

* See Pipe Schedule Key on Pages 84-85

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi			bar	
ADACAP®						
1-1/2 x 1/2 DN40 x DN15	1.900 x 0.840 (48,3 x 21,3)	300	300	300	-	-
1-1/2 x 3/4 DN40 x DN20	1.900 x 1.050 (48,3 x 26,7)	300	300	300	-	-
1-1/2 x 1 DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	300	300	300	-	-
2 x 1/2 DN50 x DN15	2.375 x 0.840 (60,3 x 21,3)	300	300	300	-	-
2 x 3/4 DN50 x DN20	2.375 x 1.050 (60,3 x 26,7)	300	300	300	-	-
2 x 1 DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	300	300	300	-	-
2-1/2 x 1/2 DN65 x DN15	2.875 x 0.840 (73,0 x 21,3)	300	300	300	-	-
2-1/2 x 3/4 DN65 x DN20	2.875 x 1.050 (73,0 x 26,7)	300	300	300	-	-
2-1/2 x 1 DN65 x DN25	2.875 x 1.315 (73,0 x 33,4)	300	300	300	-	-
Figure 260 End Cap						
1-1/4 DN32	1.660 (42,4)	500	500	500	16	20
1-1/2 DN40	1.900 (48,3)	500	500	500	16	20
2 DN50	2.375 (60,3)	500	500	500	16	20
2-1/2 DN65	2.875 (73,0)	500	500	500	-	-
– DN65	3.00 (76,1)	500	-	500	16	20
3 DN80	3.500 (88,9)	500	500	500	16	20
4 DN100	4.500 (114,3)	500	500	500	16	20
– DN125	5.563 (139,7)	500	-	500	16	-
5 DN125	5.563 (141,3)	500	500	500	-	-
– DN150	6.500 (165,1)	500	-	500	-	20
6 DN150	6.625 (168,3)	500	500	500	16	20
8 DN200	8.625 (219,1)	500	500	500	16	20
10 DN250	10.750 (273,1)	450	450	450	16	20
12 DN300	12.750 (323,4)	450	450	400	16	20

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi			bar	

Figure 550 Reducer

1-1/2 x 1 DN40 x DN25	1.900 x 1.315 (48,3 x 33,4)	500	500	500	16	-
2 x 1 DN50 x DN25	2.375 x 1.315 (60,3 x 33,4)	500	500	500	16	-
2 x 1-1/4 DN50 x DN32	2.375 x 1.660 (60,3 x 42,2)	500	500	500	16	20
2 x 1-1/2 DN50 x DN40	2.375 x 1.900 (60,3 x 48,3)	500	500	500	16	20
2-1/2 x 2 DN65 x DN50	2.875 x 2.375 (73,0 x 60,3)	500	500	500	16	20
3 x 2 DN80 x DN50	3.500 x 2.375 (88,9 x 60,3)	500	500	500	16	20
3 x 2-1/2 DN80 x DN65	3.500 x 2.875 (88,9 x 73,0)	500	500	500	16	20
4 x 2 DN100 x DN50	4.500 x 2.375 (114,3 x 60,3)	500	500	500	16	-
4 x 2-1/2 DN100 x DN65	4.500 x 2.875 (114,3 x 73,0)	500	500	500	16	20
5 x 4 DN125 x DN100	5.563 x 4.500 (141,3 x 114,3)	500	500	500	-	-
6 x 2 DN150 x DN50	6.625 x 2.375 (168,3 x 60,3)	500	500	500	16	-
6 x 4 DN150 x DN100	6.625 x 4.500 (168,3 x 114,3)	500	500	500	16	20
6 x 5 DN150 x DN125	6.625 x 5.563 (168,3 x 141,3)	500	500	500	-	-
– DN65 x DN40	3.000 x 1.900 (76,1 x 48,3)	500	500	500	16	20
– DN65 x DN50	3.000 x 2.375 (76,1 x 60,3)	500	500	500	16	20
– DN80 x DN65	3.500 x 2.875 (88,9 x 76,1)	500	500	500	16	20
– DN100 x DN65	4.500 x 2.875 (114,3 x 76,1)	500	500	500	16	20
– DN125 x DN80	5.500 x 3.500 (139,7 x 88,9)	500	500	500	16	-
– DN125 x DN100	5.500 x 4.500 (139,7 x 114,3)	500	500	500	16	-
– DN150 x DN80	6.500 x 3.500 (165,1 x 88,9)	500	-	500	-	-
– DN150 x DN100	6.500 x 4.500 (165,1 x 114,3)	500	500	500	-	20
– DN150 x DN125	6.500 x 5.500 (165,1 x 139,7)	500	-	500	-	-
– DN150 x DN65	6.625 x 3.000 (168,3 x 76,1)	500	500	500	16	-
– DN150 x DN125	6.625 x 5.500 (168,3 x 139,7)	500	500	500	16	-

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi			bar	

Figure 501 45° Elbow
Figure 510 90° Elbow
Figure 519 Tee

1-1/4 DN32	1.660 (42,4)	300	300	300	16	20
1-1/2 DN40	1.900 (48,3)	300	300	300	16	20
2 DN50	2.375 (60,3)	300	300	300	16	20
2-1/2 DN65	2.875 (73,0)	300	300	300	-	-
– DN65	3.00 (76,1)	300	300	300	16	20
3 DN80	3.500 (88,9)	300	300	300	16	20
4 DN100	4.500 (114,3)	300	300	300	16	20
– DN125	5.563 (139,7)	300	300	300	16	-
5 DN125	5.563 (141,3)	300	300	300	-	-
– DN150	6.500 (165,1)	300	300	300	-	20
6 DN150	6.625 (168,3)	300	300	300	16	20
8 DN200	8.625 (219,1)	300	300	300	16	20

Nominal Pipe Size		Rated Pressure				
ANSI Inches DN	O.D. Inches (mm)	UL	ULC	FM	VdS	LPCB
		psi			bar	

Figure 510S 90° Elbow
Figure 519S Tee

2 DN50	2.375 (60,3)	300	300	300	16	20
2-1/2 DN65	2.875 (73,0)	300	300	300	-	-
– DN65	3.00 (76,1)	300	300	300	16	20
3 DN80	3.500 (88,9)	300	300	300	16	20
4 DN100	4.500 (114,3)	300	300	300	16	20
– DN125	5.563 (139,7)	300	300	300	16	-
5 DN125	5.563 (141,3)	300	300	300	-	-
– DN150	6.500 (165,1)	300	300	300	-	20
6 DN150	6.625 (168,3)	300	300	300	16	20
8 DN200	8.625 (219,1)	300	300	300	16	20

Figure 510DE Drain Elbow

2-1/2 DN65	2.875 (73,0)	300	300	300	-	-
3 DN80	3.500 (88,9)	300	300	300	-	-
4 DN100	4.500 (114,3)	300	300	300	-	-
5 DN125	5.563 (141,3)	300	300	300	-	-
6 DN150	6.625 (168,3)	300	300	300	-	-
8 DN200	8.625 (219,1)	300	300	300	-	-

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

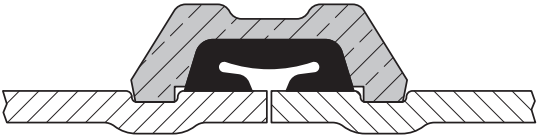
Nominal Pipe Size		Rated Pressure	
ANSI Inches DN	O.D. Inches (mm)	UL	FM
		psi	
1 DN25	1.315 (33,7)	300	300
1-1/4 DN32	1.660 (42,4)	300	300
1-1/2 DN40	1.900 (48,3)	300	300
2 DN50	2.375 (60,3)	300	300
2-1/2 DN65	2.875 (73,0)	300	300
3 DN80	3.500 (88,9)	300	300
4 DN100	4.500 (114,3)	300	300
5 DN125	5.563 (141,3)	300	300
6 DN150	6.625 (168,3)	300	300
8 DN200	8.625 (219,1)	300	300
10 DN250	10.750 (273,1)	300	300
12 DN300	12.750 (323,4)	300	300

Figure 312 22-1/2° Elbow
Figure 313 11-1/4° 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	
1-1/4 DN32	1.660 (42,4)	300	300
1-1/2 DN40	1.900 (48,3)	300	300
2 DN50	2.375 (60,3)	300	300
2-1/2 DN65	2.875 (73,0)	300	300
3 DN80	3.500 (88,9)	300	300
4 DN100	4.500 (114,3)	300	300
5 DN125	5.563 (141,3)	300	300
6 DN150	6.625 (168,3)	300	300
8 DN200	8.625 (219,1)	300	300
10 DN250	10.750 (273,1)	300	300
12 DN300	12.750 (323,4)	300	300

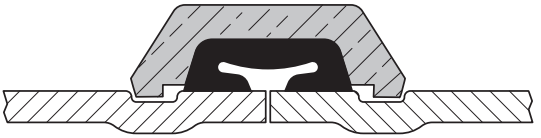
Grinnell Grooved Piping Products provide the versatility required in piping systems through the use of rigid and flexible piping products. Figure 772 and Figure 577 Couplings incorporate rotation resistant gripping teeth that provide the installer and designer with increased benefits.

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

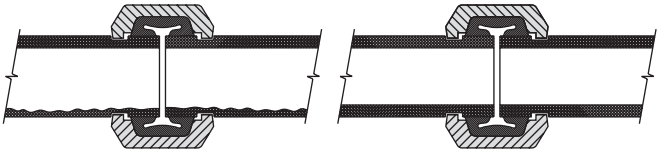


Flexible Couplings act as an “expansion joint”, allowing linear and angular movement of the pipe. They are designed with the coupling keys engaging the pipe without gripping on the bottom of the grooves, while still providing for a restrained mechanical joint. This is particularly useful to allow for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



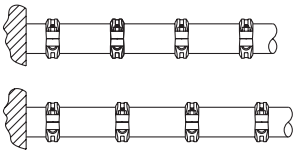
Even distribution of pipe wear can be achieved with this method on inner surface of the pipe.

NOTE

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

Linear Movement

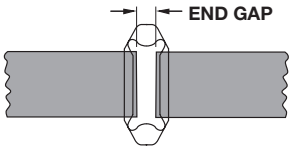
The inherent flexibility of the coupling must be consider when deciding on support arrangements for the pipe system as movement can occur in more than one plane (linear movement, angular deflection, and rotational movement.



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.

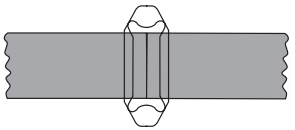
Linear Movement (Flexible Couplings)

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.



Pipe Ends Gapped for Expansion

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



Pipe Ends Butted for Contraction

prevent the pipe ends from opening up to the maximum end gap when pressurized.

End Gap Reduction	
Nominal Pipe Size ANSI Inches / DN	**Maximum Pipe End Gap Reduction**
1-1/4 - 3 DN32 - DN80	50%
4-24 DN100 - DN600	25%

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

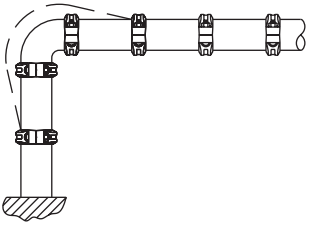
Therefore the following values should be used as available pipe end movements for Grinnell Figure 705 and 716 Flexible Couplings:

Pipe End Movements		
Nominal Pipe Size ANSI Inches / DN	**Cut Grooved Inches / (mm)**	**Roll Grooved* Inches / (mm)**
1-1/4 - 3 DN32 - DN80	0 - 0.063 (0 - 1,6)	0 - 0.031 (0 - 0,8)
4 - 24 DN100 - DN600	0 - 0.188 (0 - 4,8)	0 - 0.094 (0 - 2,4)

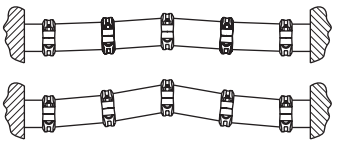
***** Roll grooved joints provide 1/2 the available movement of cut grooved joints.

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.

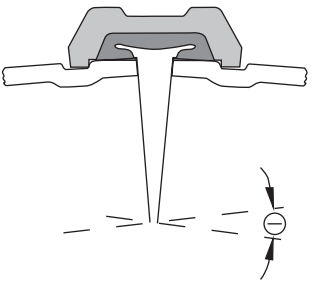


Angular Deflection

Grinnell Flexible Couplings are capable of accommodating angular deflection.

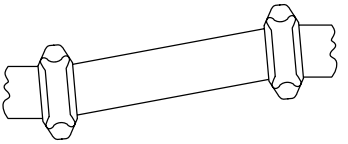
The deflection published is a maximum value. For design purposes the maximum deflection should be reduced to account for field practices as shown:

Deflection	
Nominal Pipe Size ANSI Inches DN	**Maximum Pipe Deflection Reduction**
1-1/4 - 3 DN32 - DN80	50%
4 - 24 DN100 - DN600	25%

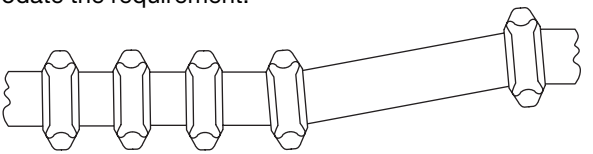


Expansion / Contraction

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.



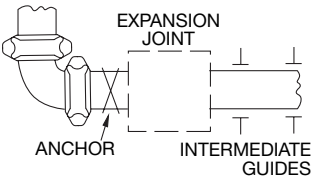
Thermal Movement 1 of 4

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

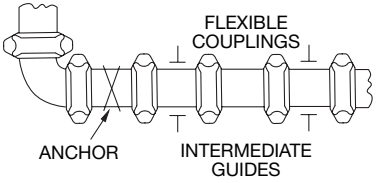
Nominal Pipe Size ANSI Inches DN	Activation Force Lbs. / (N)
1-1/4 DN32	35 (156)
1-1/2 DN50	45 (200)
2 DN50	70 (311)
2-1/2 DN65	100 (645)
– DN65	110 (489)
3 DN80	145 (645)
4 DN100	240 (1068)

Nominal Pipe Size ANSI Inches DN	Activation Force Lbs. / (N)
5 DN125	375 (1668)
– DN150	500 (2224)
6 DN150	520 (2313)
8 DN200	880 (3914)
10 DN250	1365 (6072)
12 (DN300)	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:

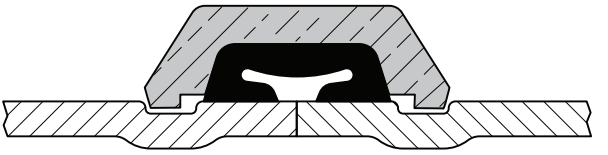
80°F = 0.61 inches per 100 feet
40°F = 0.30 inches per 100 feet
Difference = 0.31 inch per 100 feet
For 150 feet of pipe = 0.31 inch x 1.5 = 0.47 inch per 150 feet)

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:

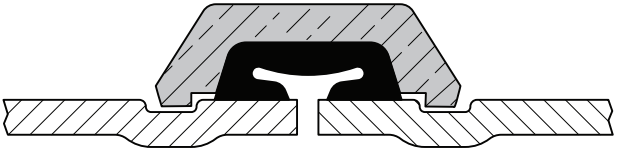
200°F = 1.52 inches per 100 feet
80°F = 0.61 inch per 100 feet
Difference = 0.91 inch per 100 feet
For 150 feet of pipe = 0.91 inch x 1.5 = 1.36 inches per 150 feet

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

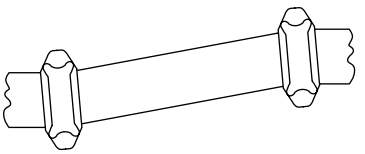
Temperature F° (C°)	Inches/100 ft. (mm/30.5 m)	Temperature F° (C°)	Inches/100 ft. (mm/30.5 m)
-40 (-40)	-0.30 (-7.62)	100 (37.8)	0.76 (19.30)
-30 (-34.4)	-0.23 (-5.84)	110 (43.3)	0.84 (21.34)
-20 (-28.9)	-0.15 (-3.81)	120 (48.9)	0.91 (23.11)
-10 (-23.3)	-0.08 (-2.03)	130 (54.4)	0.99 (25.15)
0 (-17.8)	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.

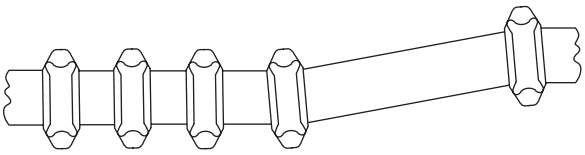


Design Deflection for Roll Grooved Pipe*			
Nominal Pipe Size			Figure 705
ANSI Inches	DN	O. D. Inches / (mm)	
1-1/4	DN32	1.660 (42,4)	1.08°
1-1/2	DN40	1.900 (48,3)	0.94°
2	DN50	2.375 (60,3)	0.75°
2-1/2	DN65	2.875 (73,0)	0.62°
–	DN65	3.000 (76,1)	0.60°
3	DN80	3.500 (88,9)	0.51°
4	DN100	4.500 (114,3)	1.19°
5	DN125	5.563 (141,3)	0.97°
–	DN150	6.500 (165,1)	0.83°
6	DN150	6.625 (168,3)	0.81°
8	DN200	8.625 (219,1)	0.63°
10	DN250	10.750 (273,1)	0.50
12	DN300	12.750 (323,4)	0.42°

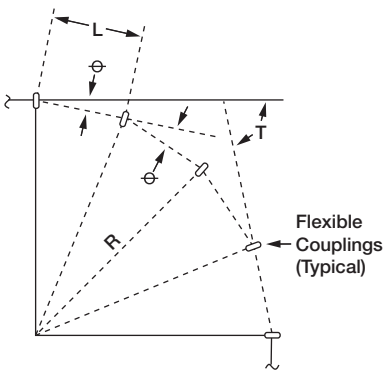
*** Note:** Deflection values are for roll grooved pipe and incorporate design reductions as shown on page 127

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.



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

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

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

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
2	0.0333
3	0.0500
4	0.0666
5	0.0833
6	0.1000
7	0.1166
8	0.1333
9	0.1500
10	0.1666
11	0.1833
12	0.2000
13	0.2166
14	0.2333
15	0.2500
16	0.2666
17	0.2833
18	0.3000
19	0.3166
20	0.3333
21	0.3500
22	0.3666
23	0.3833
24	0.4000
25	0.4166
26	0.4333
27	0.4500
28	0.4666
29	0.4833
30	0.5000

31	0.5166
32	0.5333
33	0.5500
34	0.5666
35	0.5833
36	0.6000
37	0.6166
38	0.6333
39	0.6500
40	0.6666
41	0.6833
42	0.7000
43	0.7166
44	0.7333
45	0.7500
46	0.7666
47	0.7833
48	0.8000
49	0.8166
50	0.8333
51	0.8500
52	0.8666
53	0.8833
54	0.9000
55	0.9166
56	0.9333
57	0.9500
58	0.9666
59	0.9833
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 DN	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 DN15	0.840 (21,3)	0.065 (1,65)	0.54 (0,80)	0.083 (2,11)	0.67 (0,99)
3/4 DN20	1.050 (26,7)	0.065 (1,65)	0.68 (1,02)	0.083 (2,11)	0.86 (1,27)
1 DN25	1.315 (33,7)	0.065 (1,65)	0.87 (1,29)	0.109 (2,77)	1.41 (2,09)
1-1/4 DN32	1.660 (42,4)	0.065 (1,65)	1.11 (1,65)	0.109 (2,77)	1.81 (2,69)
1-1/2 DN40	1.900 (48,3)	0.065 (1,65)	1.27 (1,89)	0.109 (2,77)	2.09 (3,11)
2 DN50	2.375 (60,3)	0.065 (1,65)	1.60 (2,39)	0.109 (2,77)	2.64 (3,93)
2-1/2 DN65	2.875 (73,0)	0.083 (2,11)	2.47 (3,68)	0.120 (3,05)	3.53 (5,25)
3 DN80	3.500 (88,9)	0.083 (2,11)	3.03 (4,51)	0.120 (3,05)	4.34 (6,46)
4 DN100	4.500 (114,3)	0.083 (2,11)	3.91 (5,82)	0.120 (3,05)	5.62 (8,37)
5 DN125	5.563 (141,3)	0.109 (2,77)	6.35 (9,45)	0.134 (3,40)	7.78 (11,58)
6 DN150	6.625 (168,3)	0.109 (2,77)	7.58 (11,29)	0.134 (3,40)	9.30 (13,85)
8 DN200	8.625 (219,1)	0.109 (2,77)	9.91 (14,75)	0.148 (3,76)	13.40 (19,94)
10 DN250	10.750 (273,1)	0.134 (3,40)	15.19 (22,61)	0.165 (4,19)	18.65 (27,76)
12 DN300	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 DN15	0.840 (21,3)	0.11 (2,77)	0.85 (1,26)
3/4 DN20	1.050 (26,7)	1.13 (2,87)	1.13 (1,68)
1 DN25	1.315 (33,7)	0.13 (3,38)	1.68 (2,50)
1-1/4 DN32	1.660 (42,4)	0.14 (3,56)	2.27 (3,39)
1-1/2 DN40	1.900 (48,3)	0.14 (3,68)	2.72 (4,05)
2 DN50	2.375 (60,3)	0.15 (3,91)	3.66 (5,45)
2-1/2 DN65	2.875 (73,0)	0.20 (5,16)	5.80 (8,64)
3 DN80	3.500 (88,9)	0.22 (5,49)	7.58 (11,29)
4 DN100	4.500 (114,3)	0.24 (6,02)	10.80 (16,09)
5 DN125	5.563 (141,3)	0.25 (6,55)	14.63 (21,79)
6 DN150	6.625 (168,3)	0.28 (7,11)	18.99 (28,29)
8 DN200	8.625 (219,1)	0.32 (8,18)	28.55 (42,50)
10 DN250	10.750 (273,1)	0.36 (9,27)	40.48 (60,25)
12 DN300	12.750 (323,9)	0.41 (10,30)	53.52 (79,66)

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