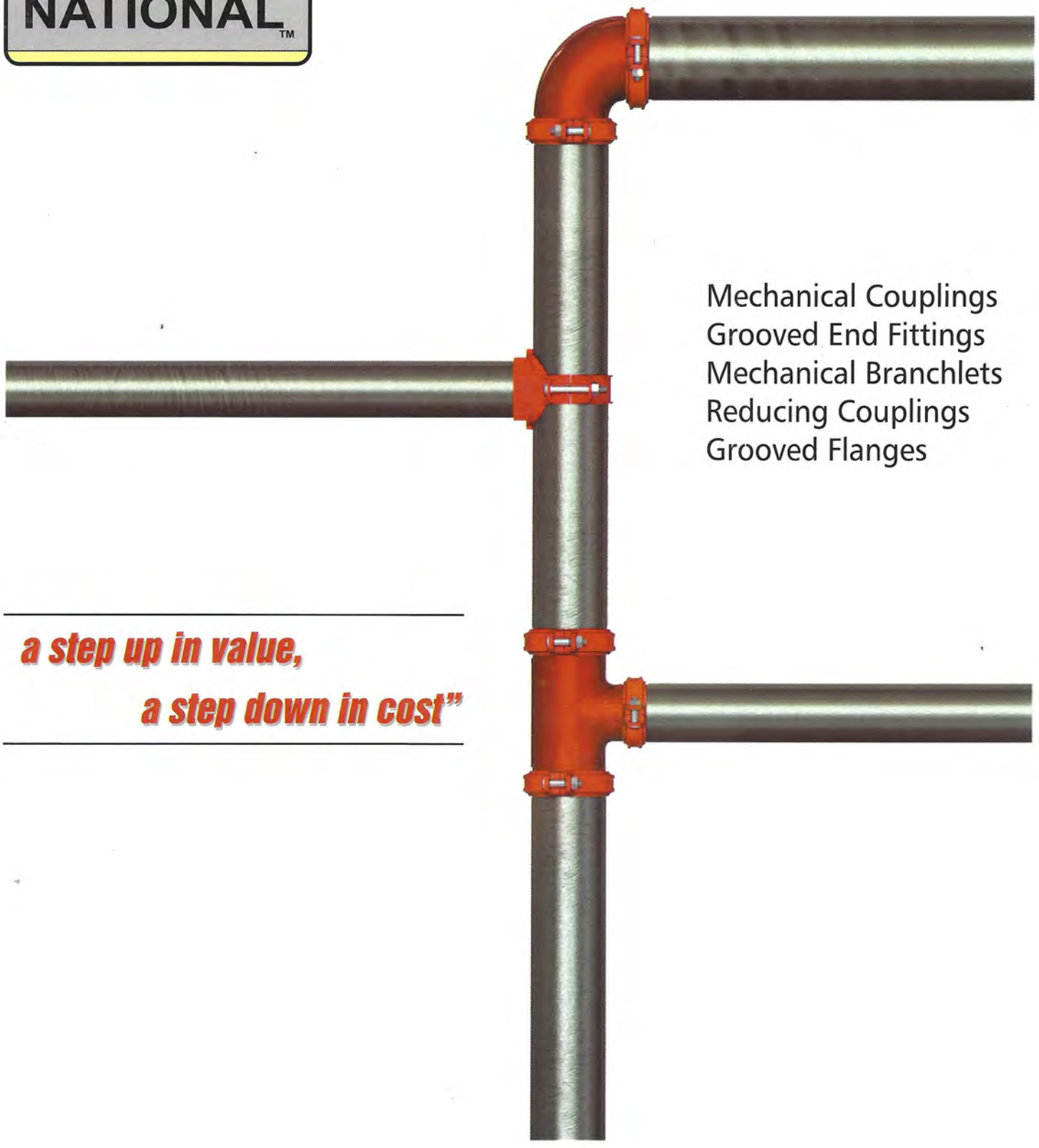
NATIONAL™



Mechanical Couplings
Grooved End Fittings
Mechanical Branchlets
Reducing Couplings
Grooved Flanges

a step up in value,
a step down in cost"

NATIONAL FITTINGS LIMITED

An ISO 9001 certified company

NATIONAL™

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Company Profile

National fittings has been a manufacturer of components for grooved piping system with innovative designs, economical production practices, acceptable quality controls and service oriented marketing to the international markets. 'National' brand grooved products are well accepted in more countries.

Company is managed by well experienced qualified team of engineers and administrative personnel in every department. Work force have been well trained to produce to approved standards and specifications. Products are manufactured under 150,000 Sq.Ft. of space in well organized process flow, to meet ISD 9000 approved procedures.

Production & Testing

National manufactures the Ductile Iron castings and synthetic rubber gaskets in its own plants to the ASTM standards under ISO 9001 quality system. Products manufactured are subjected to quality inspection by underwriters laboratories Inc. (UL) and Factory Mutual Organization (FM), in addition to internal inspection and testing on every lot of finished goods. National also manufactures a line of grooved products in stainless grades. Castings are produced in its own investment casting unit utilizing lost wax process. Grooved fittings are machined to exact dimensions per acceptable standards utilizing special purpose machines.

Unless otherwise requested, Ductile Iron castings utilized in the manufacturing of products are painted with a rust preventive primer based on Alkyl enamel lead free paint to RAL 3000.

Products

Ductile Iron	Stainless & Alloy Steel
Mechanical Couplings & Grooved Fittings	Mechanical Couplings & Grooved Fittings
Ball, Butterfly Valves	Ball Valves
Grooving Machines & Accessories	Threaded Fittings
Threaded Fittings	

INDUSTRY AND GOVERNMENT STANDARDS & APPROVALS

(ABS)	American Bureau of Shipping
(ANSI)	American National Standards Institution
(AWWA)	American Water Works Association : C-606
(API)	American Petroleum Institute
(ASHRAE)	American Society of Heating, Refrigeration & Air Conditioning Engineers
(ASME)	American Society of Mechanical Engineers
(ASTM)	American Society of Testing & Materials
(BBA)	British Board of Agreement
(BOCA)	Building Officials & Code Administrators
(BMI)	Bureau of Marine Inspection
(BPR)	Bureau of Public Roads
(CDC)	Civil Defense Certificate, Dubai
(COA)	Corps of Engineers - CEGS 15000
(FAA)	Federal Aviation administration; HVAC, Plumbing, Fire Protection
(FHA)	Federal Housing Administration
(FM)	Factory Mutual Engineering Corp.
(IAPMO)	International Association of Plumbing & Mechanical Officials
(MEA)	Materials and Equipment acceptance
(NAVFAC)	Naval facilities Engineering Command: NFGS 15000 Series
(NFPA)	National Fire Protection Association
(NSF)	NSF International
(SBCCI)	Southern Building Code Congress International
(TVA)	Tennessee Valley Authority; Fire Protection, Storm drains
(UL)	Underwriter's Laboratories, Inc.
(ULC)	Underwriter's Laboratories of Canada

WORLDWIDE

(AS)	AS 4041 - 1992 Australian Standard (3.24.10)
(BV)	Bureau Veritas
(DNV)	Det Norske Veritas
(DVGW)	Deutscher Verein des Gas-und Wasserfaches



Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
Trading as TÜV SÜD South Asia Private Limited
certifies that

National Fittings Limited
SF No. 112, Madhapur Road, Kaniyur Village,
Coimbatore – 641 659, Tamil Nadu, INDIA

has established and applies
a Quality Management System for

Design, Manufacture and Supply of
Metallic Ball Valves & Pipe Fittings

An audit was performed, Report No. **70747261.**
Proof has been furnished that the requirements
according to

ISO 9001:2008

are fulfilled. The certificate is valid from **2015-02-07** until **2018-02-06.**
Certificate Registration No. **12 100 35564 TMS**

Product Compliance Management
Munich, 2015-01-15

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-14143-01-03

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

TÜV

ZERTIFIKAT ■ CERTIFICATE ■ 認證證書 ■ СЕРТИФИКАТ ■ CERTIFICADO ■ CERTIFICAT



FM APPROVED

Certificate of Compliance

Manufactured by:

Interfit India Ltd.
SF No 112/3-D, Part Madhapur Rd
Kaniyur Village
Coimbatore 641659
India

FM Approvals Class: 1920, dated November 2007

Approval Identification: 3035181 Approval Granted: February 22, 2010

Said Approval is subject to satisfactory field performance, continuing follow-up Facilities and Procedures Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

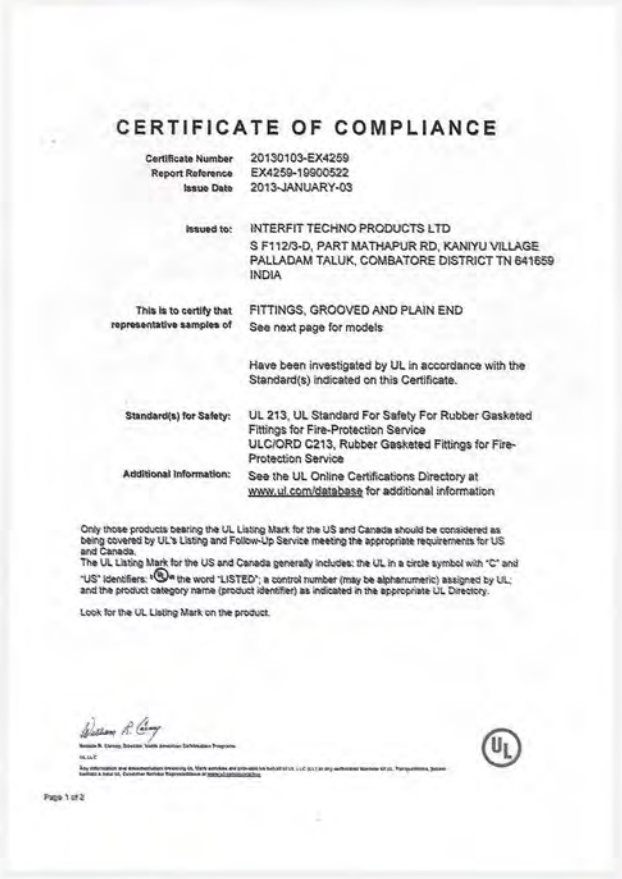
For more than 160 years FM Approvals has partnered with business and industry to reduce property losses.

Richard B. Dunne, Manager
Hydraulics Group
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02962

February 23, 2010
Date

FM Approvals

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CERTIFICATE OF COMPLIANCE

Certificate Number	20130103-EX4259
Report Reference	EX4259-19900522
Issue Date	2013-JANUARY-03
Issued to:	INTERFIT TECHNO PRODUCTS LTD S F112/3-D, PART MATHAPUR RD, KANIYU VILLAGE PALLADAM TALUK, COMBATORE DISTRICT TN 641659 INDIA
This is to certify that representative samples of	FITTINGS, GROOVED AND PLAIN END See next page for models
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 213, UL Standard For Safety For Rubber Gasketed Fittings for Fire-Protection Service ULC/ORD C213, Rubber Gasketed Fittings for Fire-Protection Service
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

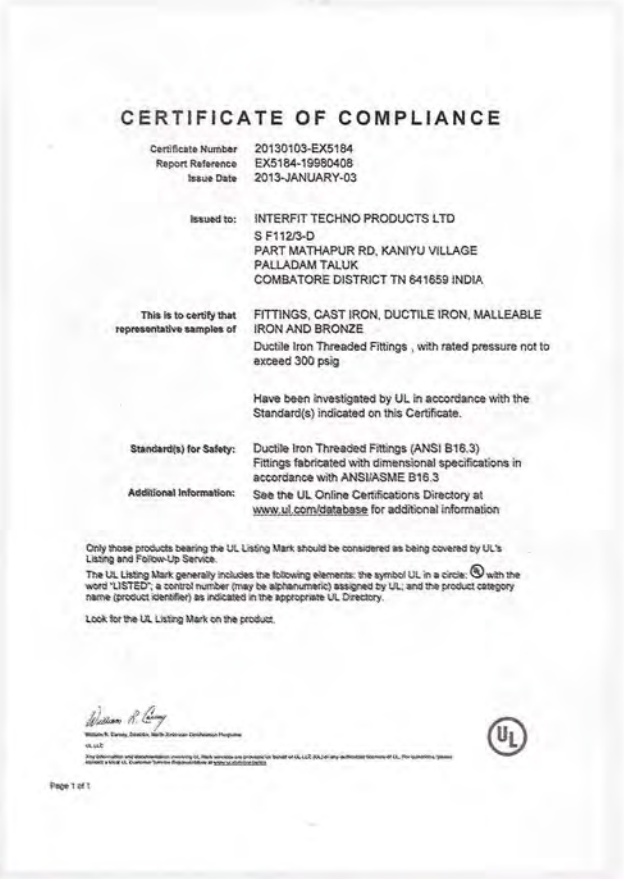
Only those products bearing the UL Listing Mark for the US and Canada should be considered as being covered by UL's Listing and Follow-Up Service meeting the appropriate requirements for US and Canada.
The UL Listing Mark for the US and Canada generally includes: the UL in a circle symbol with "C" and "US" identifiers; the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

William R. Carney
William R. Carney, Director, North American Certification Programs
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus

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CERTIFICATE OF COMPLIANCE

Certificate Number	20130103-EX5184
Report Reference	EX5184-19980408
Issue Date	2013-JANUARY-03
Issued to:	INTERFIT TECHNO PRODUCTS LTD S F112/3-D PART MATHAPUR RD, KANIYU VILLAGE PALLADAM TALUK COMBATORE DISTRICT TN 641659 INDIA
This is to certify that representative samples of	FITTINGS, CAST IRON, DUCTILE IRON, MALLEABLE IRON AND BRONZE Ductile Iron Threaded Fittings , with rated pressure not to exceed 300 psig
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	Ductile Iron Threaded Fittings (ANSI B16.3) Fittings fabricated with dimensional specifications in accordance with ANSI/ASME B16.3
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Listing Mark should be considered as being covered by UL's Listing and Follow-Up Service.
The UL Listing Mark generally includes the following elements: the symbol UL in a circle; with the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product.

William R. Carney
William R. Carney, Director, North American Certification Programs
UL LLC

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PRODUCT FEATURES

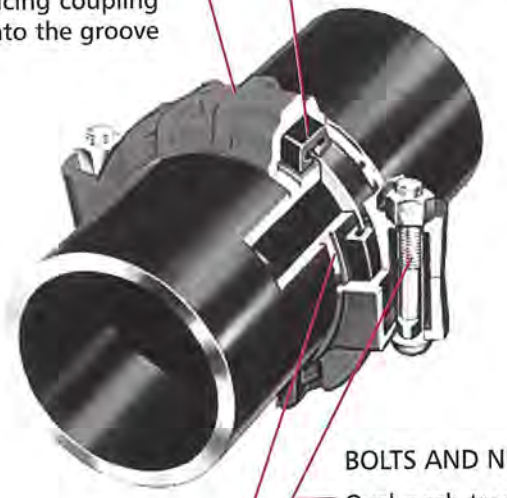
National Grooved piping system is reliable and is faster to install than welding, threading or flanging, resulting in lowest installed cost. It can be adopted to suit standard pipe with cut grooves or standard and light wall pipe with rolled grooves. Triple sealing of the C-shaped pressure responsive gasket is made from specially compounded rubbers with low compression set property. Couplings perform equally well under pressure and vacuum. Couplings with Tri-seal gaskets are highly suitable for higher vacuum service and dry systems subject to freezing. Couplings are available for flexible and rigid system. Grooved end fitting are machined to AWWA C606 cut groove standard Products are offered with RAL 3000 alkyl enamel rust preventive paint as standard and hot dipped galvanised coating is available optionally.

HOUSINGS

Ductile iron housing segments conforming to ASTM-A 536 Grade 65-45-12 fully enclose the gasket. The housing keys engage into the grooves around the full pipe circumference, securing the pipe ends together with a positive grip. Housings are normally two identical castings for couplings through 12" (323.9 mm) sizes. From 14" (355.6 mm) up sizes, coupling housings are cast in multiple identical segments to ensure concentricity and easy handling. The housing is designed to provide the optimum combination of pressure, stress relief and end load conditions while maintaining reasonable weight and manufacturing characteristics. Every grooved pipe coupling , flange adaptor, reducing coupling has a similar key section. This engages fully into the groove tying the joint integrally to the pipe.

GASKETS

The sealing efficiency of gaskets is such that the Gasket forms an initial seal as it is stretched over the pipe Ends. As the housing segments are installed and secured the pressure responsive gasket is slightly compressed to form a leak-tight joint. The strength of the seal is further enhanced by internal line pressure that creates downward pressure on the lips of the gasket. The gasket also seals well under vacuum conditions up to 10inHg (-0.35 Bar) which may occur when a system is drained. Please refer to the Gasket selection guide for additional details and gasket materials. Gasket are pre-lubricated for easy assembly of coupling.



Roll or Cut grooved standard steel pipe.

BOLTS AND NUTS

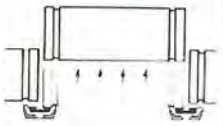
Oval neck track bolt conforming to ASTM A183 with minimum tensile strength of 110,000 psi or square neck carriage bolt to ASTM A449 with 120,000 psi minimum tensile strength permits tightening of the nuts from one side with a single wrench. Nuts conform to ASTM A194. Bolts & Nuts are electro galvanized to ASTM B 695.

Reduced Costs



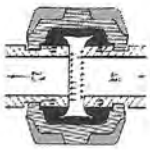
Coupling assembly is quick and easy. Special training not required. The system is free from contaminates such as weld slag and pipe dope. Installation costs are controllable and estimates are more precise.

Union Type Joint



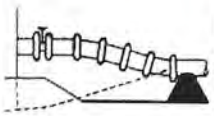
Couplings can be disassembled easily permitting maintenance and servicing of the piping system. It will facilitate periodic rotation of pipe to distribute internal wear from slurries or other abrasive media.

Reliability



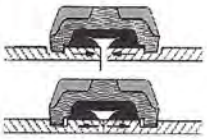
The couplings engage the pipe around the entire circumference and restrain the pipe ends from separation due to pressure and other forces, up to the maximum coupling rated working pressure.

Deflection & Misalignment



Precise location of pipe openings through walls and floors is unnecessary. Long radius curves may be designed with fewer elbows. Useful for providing pitch for drainage Facilitates laying pipe on rough or uneven terrain.

Expansion & Contraction



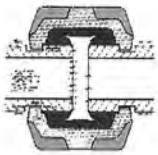
Provides linear movement at each joint. Allows pipe expansion and contraction. Suitable for hot and cold water lines and dual temperature systems.

Stress-Free Joint



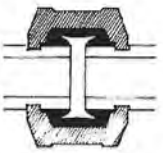
Flexibility of the joint reduces or eliminates stresses from settlement of burried pipe or induced by seismic tremors.

Noise & Vibration



Slight gap between pipe ends isolates noise and vibration. Resilient gasket also helps to absorb noise and vibration. Often permits elimination of noise suppression devices.

Rigidity



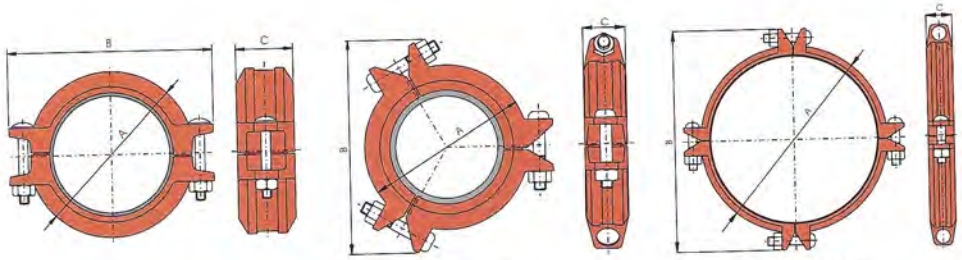
Couplings available for rigidity at valves, equipment or mechanical rooms. Couplings grip pipe to provide a rigid system used with standard groove specifications.

NATIONAL™

RIGID COUPLING STYLE 5

c UL US LISTED FM APPROVED

- Provides joint rigidity, for the support and hanging requirement of ANSI B31.1 Power Piping Code; ANSI B31.9 Building Service Pipe Code and NFPA 13 Sprinkler Systems.
- Tongue and Groove arrangements in housings do not permit expansion, contraction and defections are minimal.
- Available with hot dip Galvanised coating as optional.



1" - 12" 14" - 18" 20" - 24"



Pipe		Part Number	Max. Working Pressure *	Allow Pipe End Separation §	Dimensions (inch / mm)			Approx. Wt. Each
Nominal Size	Actual Size in. / mm		psi / kPa	in. / mm	A	B	C	lb. /kg.
1"	1.315 33.4	05100	750 5175	0.10 2.5	2.19 55.6	3.54 90.0	1.72 43.8	1.2 0.5
1 1/4"	1.660 42.2	05125	750 5175	0.10 2.5	2.56 65.0	3.90 99.0	1.73 43.9	1.2 0.6
1 1/2"	1.900 48.3	05150	750 5175	0.10 2.5	2.80 71.0	4.21 107.0	1.73 43.9	1.3 0.6
2"	2.375 60.3	05200	750 5175	0.10 2.5	3.29 83.6	4.72 120.0	1.79 45.7	1.5 0.7
2 1/2"	2.875 73.0	05250	750 5175	0.10 2.5	3.83 97.3	5.28 134.0	1.79 45.7	1.8 0.8
3"OD	3.000 76.1	05290	750 5175	0.10 2.5	3.96 100.5	5.39 137.0	1.79 45.7	2.1 1.0
3"	3.500 88.9	05300	750 5175	0.10 2.5	4.49 114.1	5.98 152.0	1.79 45.7	2.4 1.1
4"	4.500 114.3	05400	750 5175	0.16 4.1	5.83 148.0	7.20 183.0	1.99 50.6	3.7 1.7
5"	5.563 141.3	05500	750 5175	0.16 4.1	6.91 175.5	8.66 220.0	1.99 50.6	4.6 2.1
5 1/2"OD	5.500 139.7	05550	750 5175	0.16 4.1	6.84 173.8	8.66 220.0	1.99 50.6	4.6 2.1
6"	6.625 168.3	05600	750 5175	0.16 4.1	8.07 205.0	9.80 249.0	1.99 50.6	6.0 2.7
6 1/2"OD	6.500 165.1	05650	750 5175	0.16 4.1	7.91 201.0	9.69 246.0	1.99 50.6	5.5 2.5
8"	8.625 219.1	05800	600 4140	0.19 4.8	10.26 260.5	12.40 315.0	2.32 59.1	11.9 5.4
10"	10.750 273.0	05910	500 3450	0.13 3.3	12.66 321.6	15.43 392.0	2.44 62.2	19.0 8.6
12"	12.750 323.9	05912	400 2760	0.13 3.3	14.65 372.0	17.56 446.0	2.48 63.0	21.0 9.5
14"OD	14.000 355.6	05914	300 2070	0.13 3.3	15.87 403	18.97 481.9	2.91 74.0	30.4 13.8
16"OD	16.000 406.4	05916	300 2070	0.13 3.3	17.87 454.0	20.76 527.4	2.91 74.0	35.5 16.1
18"OD	18.000 457.2	05918	300 2070	0.13 3.3	20.00 508.0	22.57 573.3	3.06 77.6	44.0 20.0
20"OD	20.000 508.0	05920	300 2070	0.13 3.3	21.97 558.0	26.00 660.3	3.06 77.6	67.2 30.5
24"OD	24.000 610.0	05924	250 1725	0.09 2.3	25.98 660.0	30.03 762.8	3.09 78.5	76.2 34.6

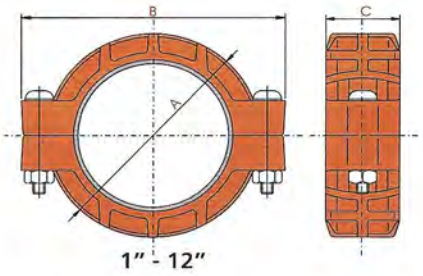
Notes

Allowable pipe end separation is for cut groove pipe and for roll groove, figures will be one-half of the values listed and these are at time of initial pressurisation . Ø - Bolts and Nuts are Galvanized * - Maximum pressure including surges and maximum end loads from all internal and external forces, to which a joint could be subject under normal working conditions. This rating provides a nominal safety factor of 1.5 times working pressure based on standard weight steel pipe, cut or roll groove to pipe end preparation specification. Maximum joint working pressure may be subjected to a one time field test of 1.5 times the figures indicated. Contact our Engineering Department for performance on other pipes, and to request the approvals cut sheet. Refer to installations and groove specifications when assembling any grooved product. For dry system, TRI Seal gasket is recommended. To order galvanised finish, place "G" after the part number. EPDM based gasket is supplied as standard. For other gasket contact us.

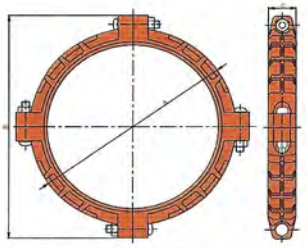
FLEXIBLE COUPLING STYLE 11

c UL us LISTED FM APPROVED

- Provides joint flexibility required in some piping systems.
- Conforms to the requirements of ANSI B31.1 Power Piping Code; ANSI B31.9 Building Service Pipe Code and NFPA 13 Sprinkler Systems.
- Heavy duty housing provide higher pressure ratings.
- Available with hot dipped galvanised coating as optional.



1" - 12"


14" - 24"



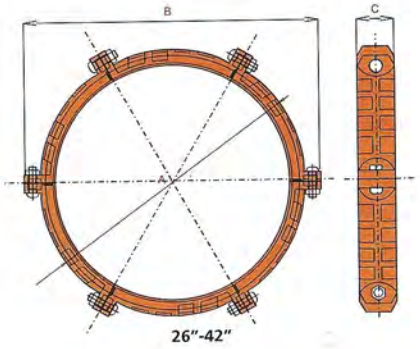
Pipe		Part Number	Max. Working Pressure *	Allow Pipe End Sepration §	Max. Deflection § from Center Line			Dimensions (inch / mm)			Approx. Wt. Each
Nominal Size	Actual Size in. / mm		psi / kPa	in. / mm	Per Coup Deg.	Pipe in./ft.	Pipe mm/m	A	B	C	lb. /kg.
1 ¼"	1.660 42.2	11125	1000 6900	0 -0.06 0 -1.6	2° 34′	0.90	75	2.62 66.6	4.50 114.3	1.73 43.9	1.9 0.9
1 ½"	1.900 48.3	11150	1000 6900	0 -0.06 0 -1.6	1° 56′	0.79	66	3.00 76.2	4.75 120.6	1.73 43.9	1.9 0.9
2"	2.375 60.3	11200	1000 6900	0 -0.06 0 -1.6	1° 31′	0.62	52	3.62 92.0	5.00 127.0	1.79 45.7	3.0 1.4
2 ½"	2.875 73.0	11250	1000 6900	0 -0.06 0 -1.6	1° 15′	0.52	43	4.21 106.9	5.50 139.7	1.79 45.7	3.7 1.7
3 OD"	3.000 76.1	11290	1000 6900	0 -0.06 0 -1.6	1° 12′	0.52	43	4.37 110.9	5.91 150.0	1.79 45.7	3.2 1.5
3"	3.500 88.9	11300	1000 6900	0 -0.06 0 -1.6	1° 2′	0.43	36	5.00 127.0	6.63 168.4	1.79 45.7	4.5 2.0
4"	4.500 114.3	11400	1000 6900	0 – 0.13 0 – 3.2	1° 36′	0.67	56	6.37 161.9	8.38 212.8	1.99 50.6	6.6 3.0
5"	5.563 141.3	11500	1000 6900	0 – 0.13 0 – 3.2	1° 18′	0.54	45	7.62 193.6	10.22 259.6	1.99 50.6	11.3 5.1
6"	6.625 168.3	11600	1000 6900	0 – 0.13 0 – 3.2	1° 5′	0.46	38	9.00 228.6	11.00 279.4	1.99 50.6	11.5 5.2
6 ½ OD"	6.500 165.1	11650	1000 6900	0 – 0.13 0 – 3.2	1° 6′	0.46	38	8.88 225.6	10.88 276.4	1.99 50.6	12.4 5.6
8"	8.625 219.1	11800	800 5520	0 – 0.13 0 – 3.2	0° 50′	0.34	29	11.37 288.9	13.12 333.2	2.32 59.1	18.7 8.5
10"	10.750 273.0	11910	800 5520	0 – 0.13 0 – 3.2	0° 40′	0.28	23	13.19 335.0	15.47 393.0	2.44 62.2	20.7 9.4
12"	12.750 323.9	11912	800 5520	0 – 0.13 0 – 3.2	0° 34′	0.24	20	15.10 383.5	17.56 446.0	2.48 63.0	23.8 10.8
14"	14.000 355.6	11914	300 2065	0 – 0.13 0 – 3.2	0° 31′	0.22	18	16.42 417.0	19.53 496.0	2.87 73.0	35.3 16.0
16"	16.000 406.4	11916	300 2065	0 – 0.13 0 – 3.2	0° 27′	0.19	16	18.50 470.0	21.65 550.0	2.87 73.0	50.7 23.0
18"	18.000 457.0	11918	300 2065	0 – 0.13 0 – 3.2	0° 24′	0.17	14	20.83 529.0	23.82 605.0	3.11 79.0	63.9 29.0
20"	20.000 508.0	11920	300 2065	0 – 0.13 0 – 3.2	0° 22′	0.15	12	22.95 583.0	26.69 678.0	3.11 79.0	90.4 41.0
24"	24.000 610.0	11924	250 1725	0 – 0.13 0 – 3.2	0° 18′	0.13	11	27.28 693.0	30.75 781.0	3.11 79.0	94.8 43.0

Refer Page No: 6 for Notes

FLEXIBLE COUPLING STYLE 11L

c UL us LISTED FM APPROVED

- Style 11L couplings are designed to provide a strong reliable component for joining large diameter piping systems.
- Coupling housing are cast in multiple identical segments, provides a joint with limited flexibility to accommodate settlement and alignment.
- Ideal for roll grooved black or galvanized steel pipes upto 435 psi depending on pipe size, pipe material and wall thickness.





NOMINAL SIZE Inches mm	PART NUMBER	MAX. WORK PRESS. PSI* kPA	COUPLING DIMENSIONS Inches/mm			NOMINAL RANGE OF LINEAR MOVEMENT Inches/mm		NOMINAL DEFLECTION CL±		APPROX. WGT. EACH lbs. kg
			A	B	C	MIN.	MAX.	DEGREES	In/ft. mm/m	
26 660.4	011926	375 2580	29.75 756	34.25 870	5.00 127	0 0	0.38 9.7	0° - 50°	0.17 14.2	150.0 68.0
28 711.0	011928	330 2270	31.75 807	36.33 923	5.00 127	0 0	0.38 9.7	0° - 46°	0.16 13.3	175.0 78.0
30 762.0	011930	300 2065	33.75 857	38.32 973	5.00 127	0 0	0.38 9.7	0° - 43°	0.15 12.5	200.0 90.7
32 813.0	011932	260 1790	35.75 908	40.43 1027	5.00 127	0 0	0.38 9.7	0° - 40°	0.14 11.7	225.0 102.0
36 914.0	011936	200 1380	39.75 1010	44.33 1126	5.00 127	0 0	0.38 9.7	0° - 36°	0.12 10.0	250.0 113.4
42 1067.0	011942	145 1000	45.75 1162	51.56 1310	2.76 146	0.31 7.9	0.69 17.5	0° - 31°	0.20 16.7	400.0 181.4

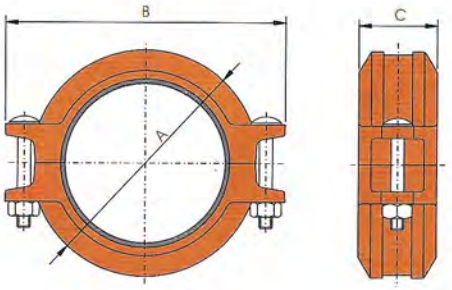
Refer Page No: 6 for Notes

FLEXIBLE COUPLING STYLE 12

LISTED

APPROVED

- Provides joint flexibility required in some piping systems.
- Conforms to the requirements of ANSI B31.1 Power Piping Code; ANSI B31.9 Building Service Pipe Code and NFPA 13 Sprinkler Systems.
- Most economical design for low pressue application.
- Available with hot dipped galvanised coating as optional.





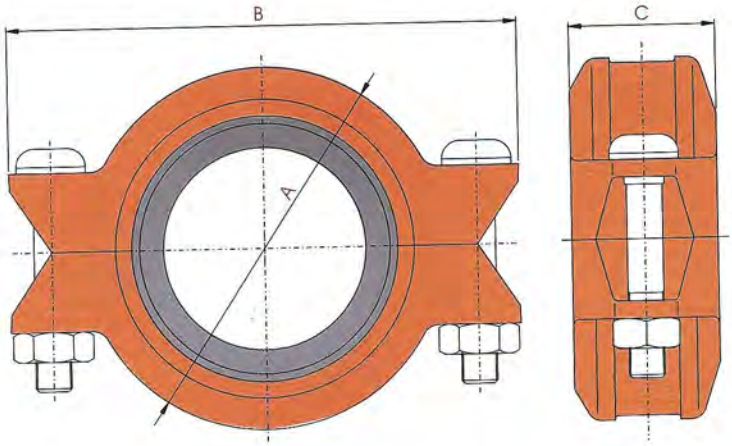
Pipe		Part Number	Max. Working Pressure *	Allow Pipe End Sepration §	Max. Deflection § from Center Line			Dimensions (inch / mm)			Approx. Wt. Each
Nominal Size	Actual Size in. / mm		psi / kPa	in. / mm	Per Coup Deg.	Pipe in./ft.	Pipe mm/m	A	B	C	lb. / kg.
1"	1.315 33.4	12100	300 2070	0 - 0.06 0 - 1.6	2° 43'	0.57	48	2.19 55.6	3.54 90.0	1.72 43.8	1.2 0.5
1 1/4"	1.660 42.2	12125	300 2070	0- 0.06 0-1.6	2°10'	0.45	38	2.56 65.0	3.90 99.0	1.73 43.9	1.2 0.6
1 ½"	1.900 48.3	12150	300 2070	0-0.06 0-1.6	1° 56'	0.40	33	2.80 71.0	4.21 107.0	1.73 43.9	1.3 0.6
2"	2.375 60.3	12200	300 2070	0-0.06 0-1.6	1° 31'	0.32	27	3.29 83.6	4.72 120.0	1.79 45.7	1.5 0.7
2 ½"	2.875 73.0	12250	300 2070	0-0.06 0-1.6	1° 15'	0.26	22	3.83 97.3	5.28 134.0	1.79 45.7	1.8 0.8
3" OD	3.000 76.1	12290	300 2070	0-0.06 0-1.6	1° 12'	0.26	22	3.96 100.5	5.39 137.0	1.79 45.7	2.1 1.0
3"	3.500 88.9	12300	300 2070	0-0.06 0-1.6	1° 2'	0.22	18	4.49 114.1	5.98 152.0	1.79 45.7	2.4 1.1
4"	4.500 114.3	12400	300 2070	0-0.13 0-3.2	1° 36'	0.34	28	5.83 148.0	7.20 183.0	1.99 50.6	3.7 1.7
5"	5.563 141.3	12500	300 2070	0-0.13 0-3.2	1° 18'	0.27	22	6.91 175.5	8.66 220.0	1.99 50.6	4.6 2.1
5 ½" OD	5.500 139.7	12550	300 2070	0-0.13 0-3.2	1° 18'	0.28	23	6.84 173.8	8.66 220.0	1.99 50.6	4.6 2.1
6"	6.625 168.3	12600	300 2070	0-0.13 0-3.2	1°5'	0.23	19	8.07 205.0	9.80 249.0	1.99 50.6	6.0 2.7
6 ½" OD	6.500 165.1	12650	300 2070	0-0.13 0-3.2	1°6'.	0.23	19	7.91 201.0	9.69 246.0	1.99 50.6	5.5 2.5
8"	8.625 219.1	12800	300 2070	0-0.13 0-3.2	0° 50'	0.18	15	10.26 260.5	12.40 315.0	2.32 59.1	11.9 5.4

Refer Page No:4 for Notes

REDUCING COUPLING STYLE 25

c UL US LISTED FM APPROVED

- Replaces two couplings and an in-line reduced (concentric or eccentric).
- Comes standard with a metal insert to prevent smaller pipe from slipping into larger pipe during vertical installations.
- Available with hot dipped galvanised coating as optional.





HEAD LOSS

Size (Inches)	Flow Reducing		Flow Expanding	
	CL Value	Equivalent Pipe Length(Smaller Dia.)	CL Value	Equivalent Pipe Length(Smaller Dia.)
6 x 4	0.16	4.5 ft	0.08	2.3 ft
5 x 4	0.14	3.0 ft	0.14	3.3 ft
4 x 3	0.37	6.0 ft	0.15	2.5 ft
3 x 2 1/2	0.30	3.8 ft	0.19	2.5 ft
3 x 2	0.50	5.5 ft	0.30	3.5 ft
2 1/2 x 2	0.18	1.9 ft	0.09	1.0 ft
2 x 1 1/2	0.25	1.9 ft	0.23	2.0 ft

In above table, $C_L = \frac{2GH^L}{V^2}$

H^L =Head Loss in feet.
V =Velocity in smaller pipe in feet/sec.
G =Acceleration due to gravity = 32.2 feet/sec^2

Pipe		Part Number	Max. Working Press.*	Allow Pipe End sep. §	Max. Deflection § from Center Line			Dimensions (in./mm.)			Approx. Wt. Each
Nominal Size	Actual Size in./mm		psi/kPa	in./mm	Per Coup. Deg.	Pipe in./ft.	Pipe mm/m	A	B	C	lb./kg.
1 1/2" X 1 1/4"	1.900 X 1.660 48.3 X 42.2	25150125	500 3450	0.12 3.2	1°-53'	0.40	33	2.88 73.1	4.55 115.8	1.77 45.0	2.2 1.0
2" X 1 1/4"	2.375 X 1.660 60.3 X 42.2	25200125	500 3450	0.12 3.2	1°-53'	0.40	33	3.33 84.6	4.87 123.8	1.80 45.8	2.2 1.0
2" X 1 1/2"	2.375 X 1.900 60.3 X 48.3	25200150	500 3450	0.12 3.2	1°-33'	0.40	33	3.33 84.6	4.87 123.8	1.80 45.8	2.0 0.9
2 1/2" X 2"	2.875 X 2.375 73.0 X 60.3	25250200	500 3450	0.12 3.2	1°-33'	0.32	27	3.88 98.6	5.75 146.1	1.84 46.7	3.1 1.4
3"OD X 2"	3.000 X 2.375 76.2 X 60.3	25290200	500 3450	0.12 3.2	1°-33'	0.32	27	4.00 101.7	5.88 149.4	1.84 46.7	3.1 1.4
3" X 2"	3.500 X 2.375 88.9 X 60.3	25300200	500 3450	0.12 3.2	1°-17'	0.26	22	4.55 115.8	6.42 163.1	1.84 46.7	4.0 1.8
3" X 2 1/2"	3.500 X 2.875 88.9 X 73.0	25300250	500 3450	0.12 3.2	1°-17'	0.26	22	4.55 115.8	6.42 163.1	1.84 46.7	3.7 1.7
3" X 3"OD	3.500 X 3.000 88.9 X 76.2	25300290	500 3450	0.12 3.2	1°-17'	0.26	22	4.55 115.8	6.42 163.1	1.84 46.7	3.7 1.7
4" X 2"	4.500 X 2.375 114.3 X 60.3	25400200	500 3450	0.25 6.4	2°-38'	0.55	46	5.86 149.0	7.81 198.6	2.01 51.0	6.4 2.9
4" X 2 1/2"	4.500 X 2.875 114.3 X 73.0	25400250	500 3450	0.25 6.4	2°-38'	0.55	46	5.86 149.0	7.81 198.6	2.01 51.0	6.2 2.8
4" X 3"OD	4.500 X 3.000 114.3 X 76.2	25400290	500 3450	0.25	2°-38'	0.55	46	5.86 149.0	7.81 198.6	2.01 51.0	6.0 2.7
4" X 3"	4.500 X 3.500 114.3 X 88.9	25400300	500 3450	0.25 6.4	2°-38'	0.55	46	5.86 149.0	7.81 198.6	2.01 51.0	5.5 2.5
5" X 4"	5.563 X 4.500 141.3 X 114.3	25500400	500 3450	0.25 6.4	2°-5'	0.44	37	7.05 179.0	10.58 268.7	2.06 52.2	10.8 4.9
6 1/2"ODX4"	6.500 X 4.500 165.1 X 114.3	25650400	500 3450	0.25 6.4	1°-44'	0.38	32	7.95 202.3	10.88 276.4	2.06 52.2	11.0 5.0
6" X 4"	6.625 X 4.500 168.3 X 114.3	25600400	500 3450	0.25 6.4	1°-44'	0.38	32	8.07 205.3	10.88 276.4	2.06 52.2	11.0 5.0
8" X 6 1/2"OD	8.625 X 6.500 219.1 X 165.1	25800650	500 3450	0.25 6.4	1°-15'	0.26	22	10.39 263.8	13.43 341.2	2.21 56.2	19.0 8.6
8" X 6"	8.625 X 6.625 219.1 X 168.3	25800600	500 3450	0.25 6.4	1°-15'	0.26	22	10.39 263.8	13.43 341.2	2.21 56.2	18.5 8.4

Refer Page No: 6 for Notes

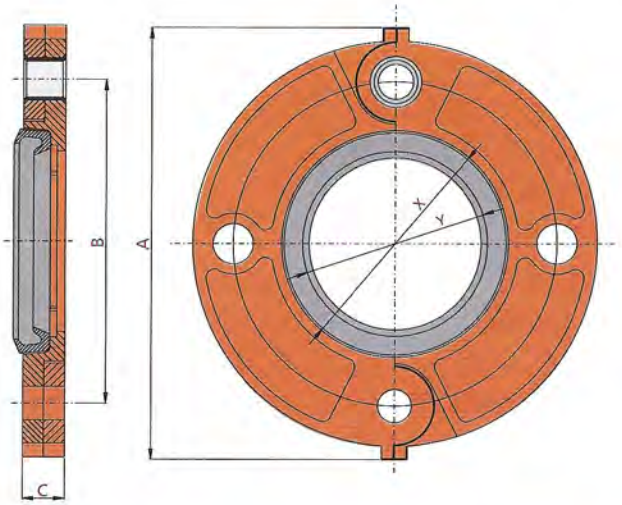
GROOVE FLANGE STYLE 14

LISTED

APPROVED

- Designed to connect ANSI Class 125 or 150 and BS 4504 Class PN16 flanged components to a grooved piping system.
- Made of ductile iron conforming to ASTM A-536. Every lot is metallurgically examined to insure compliance.
- Provided with EPDM rubber gasket as standard, suitable for -30°F to 230°F (-34°C to 110°C).
- Available with hot dipped galvanised coating as optional.





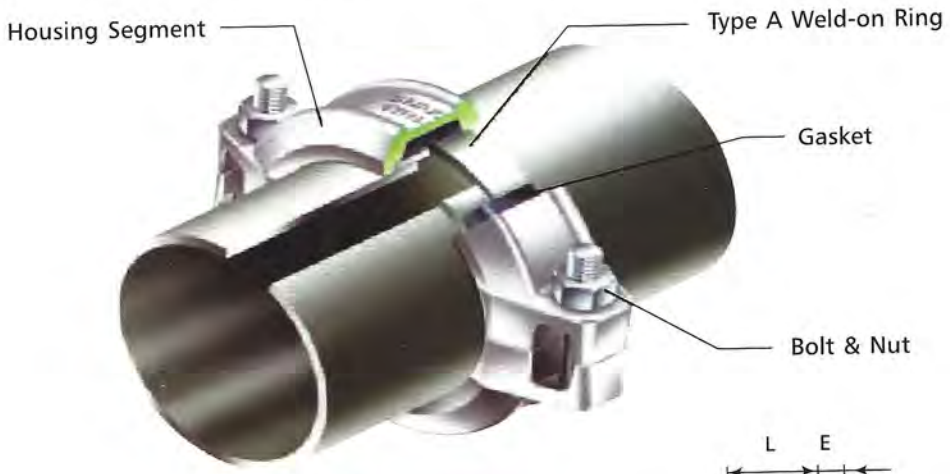
Pipe		Part Number	Max. * Working Pressure psi/ kPa	No.Bolt/Nut Reqd.-Size Inch	Sealing Surface in./mm		Dimensions in./mm							Approx. Wt. Each lb./kg
Nominal Size	Actual Size in. / mm				X Min.	Y Max.	A			B			C	
							ANSI	PN 10	PN 16	ANSI	PN 10	PN 16		
2"	2.375 60.3	14200	300 2070	4/4 - 5/8x2 1/2	3.09 78.7	2.42 61.5	6.50 165.1	7.02 178.3	7.02 178.3	4.75 120.7	4.92 124.9	4.92 124.9	0.78 19.8	3.0 1.4
2 1/2"	2.875 73.0	14250	300 2070	4/4-5/8x3	3.58 91.0	2.92 74.3	7.50 190.5	7.79 198.1	7.79 198.1	5.50 139.7	5.71 145.0	5.71 145.0	0.78 19.8	4.2 1.9
3"OD	3.000 76.1	14290	300 2070	4/4-5/8x3	3.70 94.1	3.05 77.5	7.50 190.5	7.79 198.1	7.79 198.1	5.50 139.7	5.71 145.0	5.71 145.0	0.78 19.8	4.3 2.0
3"	3.500 88.9	14300	300 2070	4/4-5/8x3	4.21 106.9	3.56 90.3	8.00 203.2	8.39 213.2	8.39 213.2	6.00 152.4	6.30 160.0	6.30 160.0	0.78 19.8	4.4 2.0
4"	4.500 114.3	14400	300 2070	8/8-5/8x3	5.26 133.6	4.57 116.0	10.00 253.7	9.66 245.5	9.66 245.5	7.50 190.5	7.08 179.9	7.08 179.9	1.00 25.4	8.4 3.8
5"	5.563 141.3	14500	300 2070	8/8-3/4x3 1/2	6.41 162.8	5.65 143.4	11.00 279.4	10.76 273.4	10.76 273.4	8.50 216.0	8.26 210.0	8.26 210.0	1.00 25.4	9.0 4.1
5 1/2"OD	5.500 139.7	14550	300 2070	8/8-3/4x3 1/2	6.35 161.3	5.59 141.9	11.00 279.4	10.76 273.4	10.76 273.4	8.50 216.0	8.26 210.0	8.26 210.0	1.00 25.4	8.8 4.0
6"	6.625 168.3	14600	300 2070	8/8-3/4x3 1/2	7.48 190.0	6.71 170.5	12.00 304.8	12.22 310.4	12.22 310.4	9.50 241.3	9.45 240.0	9.45 240.0	1.00 25.4	10.4 4.7
6 1/2"OD	6.500 165.1	14650	300 2070	8/8-3/4x3 1/2	7.35 186.8	6.59 167.5	12.00 304.8	12.22 310.4	12.22 310.4	9.50 241.3	9.45 240.0	9.45 240.0	1.00 25.4	9.7 4.5
8"	8.625 219.1	14800	300 2070	8/8-3/4x3 1/2(ANSI&PN10) 12/12-3/4x3 1/2(PN16)	9.58 243.3	8.70 221.0	14.50 368.3	14.37 365.1	14.37 365.1	11.75 298.4	11.61 295.0	11.61 295.0	1.12 28.6	19.8 9.0
10"	10.750 273.0	14910	300 2070	12/12-7/8x4	11.54 293.0	10.84 275.4	18.00 456.8	17.52 444.8	17.71 449.8	14.25 362.0	13.78 350.0	13.98 355.0	1.18 30.0	24.2 11.0
12"	12.750 323.9	14912	300 2070	12/12-7/8x4	13.58 345.0	12.84 326.2	21.00 533.8	19.56 496.8	20.15 511.8	17.00 432.0	15.75 400.0	16.14 410.0	1.26 32.0	36.4 16.5

Notes

Style 14 provides a rigid joint with no angular or linear movement. Bolt pattern conforms to ANSI Class 125 and 150.* - Maximum pressure includes surges and Maximum end loads, from all internal and external forces, to which a joint could be subject under normal working conditions. This rating provides a nominal safety factor of 1.5 times working pressure based on standard weight steel pipe, cut or roll groove to pipe end preparation specification. Maximum joint working pressure may be subject to a one-time field test of 1.5 times the figures indicated. Contact our Engineering Department for performance on other pipe, request the approvals cut sheet. Refer to installations and groove specifications when assembling grooved product. When used with rubber faced valve or flanges, use Flange washer.

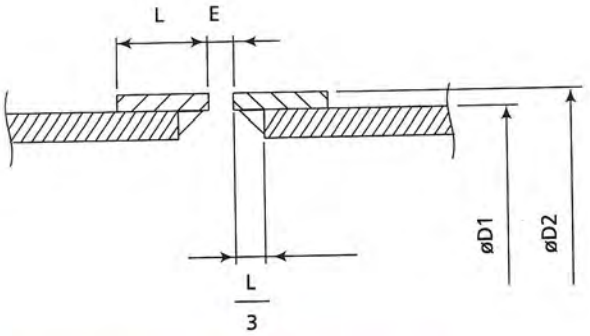
SHOULDERED PIPING SYSTEM - STYLE 30

The shouldered piping system is a classic and versatile piping method used for a wide range of applications including irrigation, dewatering on construction sites, and other installations, etc. The shouldered system features full flow characteristics, provides speed and ease of installation, and proven reliability. The system provides for limited expansion and contraction and accommodates some linear and angular movement. Each joint is a union. The shouldered piping system utilizes. Type A weld-on rings, manufactured from mild steel or material compatible to pipe and used.



Shouldered Coupling

The shouldered piping system utilizes Type A weld-on rings, manufactured from mild steel or material compatible to pipe end used. Type A rings are suitable for services up to maximum 600 psi / 40 bar for sizes up to 4" / 100mm and 400psi / 28 bar for 5" / 125mm through 8" / 200 mm. For other size contact us.



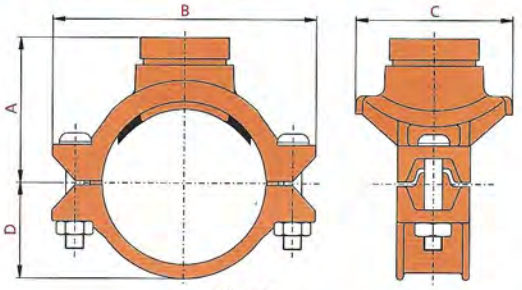
SHOULDER DIMENSIONS (TYPE A WELD-ON RINGS)

NOMINAL Size Inch	PART NUMBER	PIPE OD(D1) mm	SHOULDER DIA(D2) mm	LENGTH(L) SHOULDER mm	NOMINAL GAP(E) mm
11/2"	112150	48.3	54.0	16.0	2.9
2"	112200	60.3	66.5	16.0	2.9
21/2"	112250	76.1	82.5	16.0	2.9
3"	112300	88.9	97.0	16.0	2.9
4"	112400	114.3	122.0	17.5	3.1
5"	112500	139.7	147.5	17.5	3.1
61/2"OD	112650	165.1	174.5	17.5	3.1
6"	112600	168.3	178.0	17.5	3.1
8"	112800	219.1	232.0	20.5	3.5
10"	112910	273.0	286.0	20.5	3.5
12"	112912	323.9	336.5	20.5	3.5
14"	112914	355.6	388.5	24.0	5.0
16"	112916	406.4	419.0	24.0	5.0
18"	112918	457.0	470.0	25.5	5.5
20"	112920	508.0	520.5	25.5	5.5
22"	112922	559.0	571.5	25.5	5.5
24"	112924	609.6	622.5	25.5	5.5

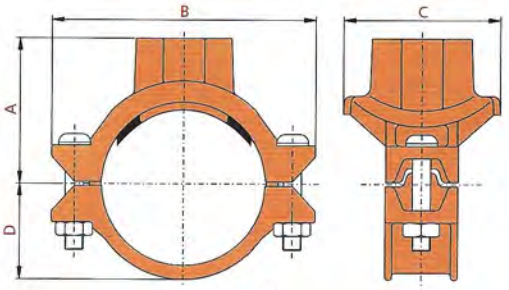
MECHANICAL BRANCHLETS
STYLE 15 GROOVED & STYLE 16 THREADED

c UL us LISTED FM APPROVED

Mechanical Branchlet provides a direct branch connection at any location along the pipe run without welding. A hole cut along the center line of pipe will receive the hole locator collar to secure the outlet. A pressure responsive gasket moulded to suit the run pipe insures leak tight joint. Cross type connections can be made utilizing upper housings only.



Style 15



Style 16





Run Size (Inch)	Outlet Size (Inch)	Part Number		Max. * Working Pressure psi/ kPa	Hole Diameter		Dimensions (inch / mm)					Approx. Weight Each	
		Style 15 Grvd.	Style 16 Thrd.		Hole Saw in./ mm	Max. Perm. in./ mm	Grvd. A	Thrd. A	B	C	D	Grvd. lb. /kg.	Thrd. lb. /kg.
2	1/2	-	016 200050	500 3450	1.50 38.1	1.63 41.2	-	2.79 71.0	4.62 117.4	2.87 73.0	1.57 39.9	-	2.5 1.1
	3/4	-	016 200075	500 3450	1.50 38.1	1.63 41.2	-	2.79 71.0	4.62 117.4	2.87 73.0	1.57 39.9	-	2.2 1.0
	1	-	016 200100	500 3450	1.50 38.1	1.63 41.2	-	2.79 71.0	4.62 117.4	2.87 73.0	1.57 39.9	-	2.4 1.1
	1 1/4	015 200125	016 200125	500 3450	1.75 44.5	1.81 46.0	2.79 71.0	2.79 71.0	4.62 117.4	2.87 73.0	1.57 39.9	2.5 1.1	2.5 1.1
	1 1/2	015 200150	016 200150	500 3450	1.75 44.5	1.81 46.0	2.79 71.0	2.79 71.0	4.62 117.4	2.87 73.0	1.57 39.9	2.5 1.1	2.5 1.1
2 1/2	1/2	-	016 250050	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.83 46.5	-	3.5 1.6
	3/4	-	016 250075	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.83 46.5	-	3.3 1.5
	1	-	016 250100	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.83 46.5	-	3.3 1.5
	1 1/4	-	016 250125	500 3450	2.00 50.8	2.13 54.1	3.16 80.4	3.16 80.4	5.70 144.8	3.44 87.4	1.83 46.5	-	3.5 1.6
	1 1/2	-	016 250150	500 3450	2.00 50.8	2.13 54.1	3.16 80.4	3.16 80.4	5.70 144.8	3.44 87.4	1.83 46.5	-	3.5 1.6
3 OD.	1/2	-	016 290050	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.88 47.8	-	3.5 1.6
	3/4	-	016 290075	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.88 47.8	-	3.3 1.5
	1	-	016 290100	500 3450	1.50 38.1	1.63 41.2	-	3.16 80.4	5.70 144.8	3.44 87.4	1.88 47.8	-	3.3 1.5
	1 1/4	-	016 290125	500 3450	2.00 50.8	2.13 54.1	3.16 80.4	3.16 80.4	5.70 144.8	3.44 87.4	1.88 47.8	-	3.8 1.7
	1 1/2	-	016 290150	500 3450	2.00 50.8	2.13 54.1	3.16 80.4	3.16 80.4	5.70 144.8	3.44 87.4	1.88 47.8	-	3.8 1.7
3	1/2	-	016 300050	500 3450	1.50 38.1	1.63 41.2	-	3.38 85.9	6.25 159.0	3.74 95.0	2.13 54.1	-	4.0 1.8
	3/4	-	016 300075	500 3450	1.50 38.1	1.63 41.2	-	3.38 85.9	6.25 159.0	3.74 95.0	2.13 54.1	-	3.9 1.8
	1	-	016 300100	500 3450	1.50 38.1	1.63 41.2	-	3.38 85.9	6.25 159.0	3.74 95.0	2.13 54.1	-	3.9 1.8
	1 1/4	015 300125	016 300125	500 3450	2.00 50.8	2.13 54.1	3.38 85.9	3.38 85.9	6.25 159.0	3.74 95.0	2.13 54.1	4.2 1.9	4.2 1.9
	1 1/2	015 300150	016 300150	500 3450	2.00 50.8	2.13 54.1	3.38 85.9	3.38 85.9	6.25 159.0	3.74 95.0	2.13 54.1	4.2 1.9	4.2 1.9
	2	015 300200	016 300200	500 3450	2.50 63.5	2.63 66.8	3.50 88.9	3.50 88.9	6.25 159.0	3.87 98.5	2.13 54.1	4.2 1.9	4.3 2.0
4	1/2	-	016 400050	500 3450	1.50 38.1	1.63 41.2	-	3.99 101.5	7.25 184.4	3.74 95.0	2.63 66.8	-	5.3 2.4
	3/4	-	016 400075	500 3450	1.50 38.1	1.63 41.2	-	3.99 101.5	7.25 184.4	3.74 95.0	2.63 66.8	-	5.1 2.3
	1	-	016 400100	500 3450	1.50 38.1	1.63 41.2	-	3.99 101.5	7.25 184.4	3.74 95.0	2.63 66.8	-	4.9 2.2
	1 1/4	015 400125	016 400125	500 3450	2.00 50.8	2.13 54.1	3.99 101.5	3.99 101.5	7.25 184.4	3.74 95.0	2.63 66.8	5.4 2.4	5.1 2.3
	1 1/2	015 400150	016 400150	500 3450	2.00 50.8	2.13 54.1	3.99 101.5	3.99 101.5	7.25 184.4	3.74 95.0	2.63 66.8	4.8 2.2	5.1 2.3
	2	015 400200	016 400200	500 3450	2.50 63.5	2.63 66.8	3.99 101.5	3.99 101.5	7.25 184.4	4.37 111.0	2.63 66.8	5.1 2.3	4.8 2.2
	■ 2 1/2	015 400250	016 400250	500 3450	2.75 69.9	2.88 73.2	3.99 101.5	3.99 101.5	7.25 184.4	4.37 111.0	2.63 66.8	5.3 2.4	5.1 2.3
	■ 3 O.D.	015 400290	016 400290	500 3450	2.75 69.9	2.88 73.2	3.99 101.5	3.99 101.5	7.25 184.4	4.37 111.0	2.63 66.8	5.6 2.6	5.6 2.6
	3	015 400300	016 400300	500 3450	3.50 88.9	3.63 92.2	4.50 114.3	4.50 114.3	7.25 184.4	5.11 130.0	2.63 66.8	6.4 2.9	6.4 2.9

■ Requires 1/2" x 3 1/4" bolt in Cross configuration

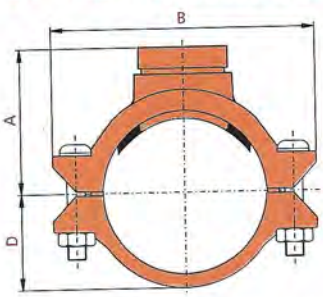
Refer Page No: 14 for Notes

MECHANICAL BRANCHLETS
STYLE 15 GROOVED & STYLE 16 THREADED

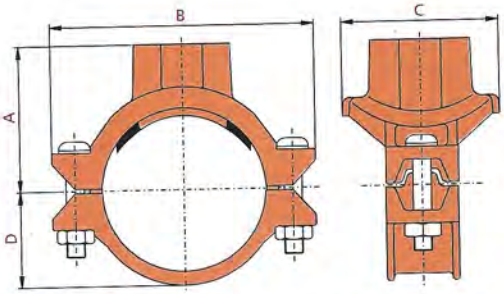
c UL US LISTED FM APPROVED

Performance Data :

OUTLET SIZE Nominal Size Inches Actual Size mm	Cv Values	Equiv.Feet/ Meters of Pipe	
		Grvd.	Female Thd.
1/2 21.3	15	- -	2.0 0.6
3/4 26.7	18	- -	4.0 1.2
1 33.4	22	- -	5.0 1.5
1 1/4 42.2	39	5.5 1.7	6.0 1.8
1 1/2 48.3	52	7.0 2.1	8.0 2.4
2 60.3	87	9.0 2.7	10.5 3.2
2 1/2 73.0	117	11.0 3.4	12.5 3.8
3 88.9	173	13.5 4.1	15.5 4.7
4 114.3	346	20.0 6.1	22.0 6.7



Style 15



Style 16

Run Size (Inch)	Outlet Size (Inch)	Part Number Style 15 Grvd.	Part Number Style 16 Thrd.	Max. * Working Pressure psi/ kPa	Hole Diameter Hole Saw in./mm	Hole Diameter Max. Perm. in./mm	Dimensions (in./mm.) Grvd. A	Thrd. A	B	C	D	Approx. Weight Each Grvd. lb./kg.	Thrd. lb./kg.
5	1 1/4	015 500125	016 500125	500 3450	2.00 50.8	2.13 54.1	4.81 122.2	4.81 122.2	8.37 212.8	3.74 95.0	3.16 80.2	6.0 2.7	6.8 3.1
	1 1/2	015 500150	016 500150	500 3450	2.00 50.8	2.13 54.1	4.81 122.2	4.81 122.2	8.37 212.8	3.74 95.0	3.16 80.2	6.2 2.8	6.6 3.0
	2	015 500200	016 500200	500 3450	2.50 63.5	2.63 66.8	4.81 122.2	4.81 122.2	8.37 212.8	4.37 111.0	3.16 80.2	6.6 3.0	6.8 3.1
	2 1/2	015 500250	016 500250	500 3450	2.75 69.9	2.88 73.2	4.81 122.2	4.81 122.2	8.37 212.8	4.67 118.7	3.16 80.2	7.5 3.4	7.9 3.6
	3 OD	015 500290	016 500290	500 3450	2.75 69.9	2.88 73.2	4.81 122.2	4.81 122.2	8.37 212.8	4.67 118.7	3.16 80.2	7.5 3.4	7.9 3.6
	3	015 500300	016 500300	500 3450	3.50 88.9	3.63 92.2	5.05 128.5	5.05 128.5	8.37 212.8	5.11 130.0	3.16 80.2	8.3 3.7	8.2 3.7
6 1/2OD	1 1/4	015 650125	016 650125	500 3450	2.00 50.8	2.13 54.1	5.13 130.3	5.13 130.3	9.37 238.2	3.74 95.0	3.65 92.6	7.0 3.2	7.0 3.2
	1 1/2	015 650150	016 650150	500 3450	2.00 50.8	2.13 54.1	5.13 130.3	5.13 130.3	9.37 238.2	3.74 95.0	3.65 92.6	7.0 3.2	7.0 3.2
	2	015 650200	016 650200	500 3450	2.50 63.5	2.63 66.8	5.13 130.3	5.13 130.3	9.37 238.2	4.37 111.0	3.65 92.6	7.3 3.3	7.3 3.3
	2 1/2	015 650250	016 650250	500 3450	2.75 69.9	2.88 73.2	5.13 130.3	5.13 130.3	9.37 238.2	4.67 118.7	3.65 92.6	7.6 3.4	7.6 3.4
	3 OD	015 650290	016 650290	500 3450	2.75 69.9	2.88 73.2	5.13 130.3	5.13 130.3	9.37 238.2	4.67 118.7	3.65 92.6	7.6 3.4	7.6 3.4
	3	015 650300	016 650300	500 3450	3.50 88.9	3.63 92.2	5.50 139.7	5.50 139.7	9.37 238.2	5.18 131.6	3.65 92.6	7.7 3.5	7.7 3.5
	4	015 650400	016 650400	500 3450	4.50 114.3	4.63 117.6	5.76 146.4	5.76 146.4	9.37 238.2	6.28 159.6	3.65 92.6	7.8 3.5	7.8 3.5
6	1 1/4	015 600125	016 600125	500 3450	2.00 50.8	2.13 54.1	5.13 130.3	5.13 130.3	9.37 238.2	3.74 95.0	3.70 94.2	8.2 3.7	7.7 3.5
	1 1/2	015 600150	016 600150	500 3450	2.00 50.8	2.13 54.1	5.13 130.3	5.13 130.3	9.37 238.2	3.74 95.0	3.70 94.2	7.5 3.4	7.9 3.6
	2	015 600200	016 600200	500 3450	2.50 63.5	2.63 66.8	5.13 130.3	5.13 130.3	9.37 238.2	4.37 111.0	3.70 94.2	7.7 3.5	8.2 3.7
	2 1/2	015 600250	016 600250	500 3450	2.75 69.9	2.88 73.2	5.13 130.3	5.13 130.3	9.37 238.2	4.67 118.7	3.70 94.2	7.7 3.5	8.3 3.8
	3 OD	015 600290	016 600290	500 3450	2.75 69.9	2.88 73.2	5.13 130.3	5.13 130.3	9.37 238.2	4.67 118.7	3.70 94.2	8.5 3.9	8.5 3.9
	3	015 600300	016 600300	500 3450	3.50 88.9	3.63 92.2	5.50 139.7	5.50 139.7	9.37 238.2	5.18 131.6	3.70 94.2	9.0 4.1	8.8 4.0
	4	015 600400	016 600400	500 3450	4.50 114.3	4.63 117.6	5.76 146.4	5.76 146.4	9.37 238.2	6.28 159.6	3.70 94.2	11.0 5.0	12.8 5.8
8	2	015 800200	016 800200	500 3450	2.50 63.5	2.63 66.8	6.31 160.2	6.31 160.2	12.00 304.8	4.37 111.0	4.71 119.6	11.0 5.0	11.5 5.2
	2 1/2	015 800250	016 800250	500 3450	2.75 69.9	2.88 73.2	6.31 160.2	6.31 160.2	12.00 304.8	4.37 111.0	4.71 119.6	10.8 4.9	10.8 4.9
	3 OD	015 800290	016 800290	500 3450	2.75 69.9	2.88 73.2	6.56 166.6	6.31 160.2	12.00 304.8	4.37 111.0	4.71 119.6	11.0 5.0	11.0 5.0
	3	015 800300	016 800300	500 3450	3.50 88.9	3.63 92.2	6.31 160.2	6.56 166.6	12.00 304.8	5.18 131.6	4.71 119.6	12.3 5.8	12.5 5.7
	4	015 800400	016 800400	500 3450	4.50 114.3	4.63 117.6	6.31 160.2	6.31 160.2	12.00 304.8	6.28 159.6	4.71 119.6	12.6 5.8	13.2 6.0



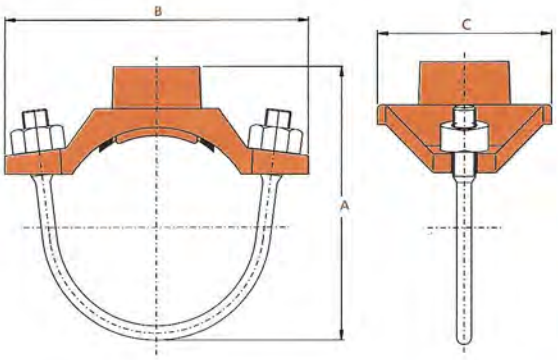
Cross Configuration

Notes

Ø Maximum torque is specified on casting DO NOT EXCEED. Oval neck track bolt conforming to the requirements of ASTM A-183 or A-449. * Maximum pressure including surges and maximum end loads, from all internal and external forces, to which a joint could be subject unde normal working conditions. This rating provides a normal safety factor of 1.5 times working pressure based on standard weight steep pip cut or roll grooved to pipe end preparation specification. Maximum joint working pressure may be subject to a one-time field test of 1. times the figures indicated. For performance on other pipe, request the approvals cut sheet. Rubber gaskets with standard grade 'E' (EPDM Temperature range -30°F + 230°F (-34°C to +110°C). Refer to installations and groove specifications when assembling any grooved produc Galvanized outlets are available. Add "G" at the end of part number. Available with BSP threads. Place "B" at the end of the part number.

MECHANICAL BRANCHLETS STYLE 13

- Ideal outlet fitting for direct connection to Sprinkler heads, drop nipples and or gauges.
- Wrap around casting is combined with a galvanized high tensile U-bolt flattened to prevent pipe deformation.
- Suitable for "arm-over" configurations.
- Utilizes ductile iron ASTM A536 housings, EPDM rubber gasket as standard, suitable for -30°F to 230°F (-34°C to 110°C)



Performance Data :

SIZE Nominal Size Inches Actual Size mm	Equiv.Feet / Meters of Pipe
1 1/4 X 1 42.2 X 33.4	16.53 5.0
1 1/2 X 1 48.3 X 33.4	17.57 5.4
2 X 1 60.3 X 33.4	3.43 1.1
2 1/2 X 1 73.0 X 33.4	2.76 0.8



Run Size Inch	Outlet Size Inch	Part Number	Max. * Working Pressure psi/kPa	Hole Diameter Hole Saw in./mm	Hole Diameter Max. Perm. in./mm	U-Bolt/Nut Size Inch §	Dimensions in./mm A	Dimensions in./mm B	Dimensions in./mm C	Approx. Wt. Each lb./kg.
1 1/4	1/2	13125050	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	1.75 44.4	3.66 93.0	2.16 55.0	0.9 0.4
	3/4	13125075	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	1.75 44.4	3.66 93.0	2.16 55.0	0.9 0.4
	1	13125100	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	2.13 54.0	3.66 93.0	2.16 55.0	0.9 0.4
1 1/2	1/2	13150050	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	1.86 47.3	3.77 96.0	2.16 55.0	0.9 0.4
	3/4	13150075	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	1.86 47.3	3.77 96.0	2.16 55.0	0.9 0.4
	1	13150100	500 3450	1.00 25.4	1.06 26.9	3/8 - U Bolt	2.24 57.0	3.77 96.0	2.16 55.0	0.9 0.4
2	1/2	13200050	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.10 53.4	4.13 105.0	2.52 64.0	1.0 0.5
	3/4	13200075	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.10 53.4	4.13 105.0	2.52 64.0	1.0 0.5
	1	13200100	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.48 63.0	4.13 105.0	2.52 64.0	1.0 0.5
2 1/2	1/2	13250050	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.36 59.9	4.44 113.0	2.52 64.0	1.3 0.6
	3/4	13250075	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.36 59.9	4.44 113.0	2.52 64.0	1.3 0.6
	1	13250100	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.74 69.5	4.44 113.0	2.52 64.0	1.3 0.6
3 OD	1/2	13290050	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.43 61.7	4.59 116.5	2.52 64.0	1.7 0.8
	3/4	13290075	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.43 61.7	4.59 116.5	2.52 64.0	1.7 0.8
	1	13290100	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.80 71.1	4.59 116.5	2.52 64.0	1.7 0.8
3	1/2	13300050	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.69 68.3	5.03 128.0	2.52 64.0	2.0 0.9
	3/4	13300075	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	2.69 68.3	5.03 128.0	2.52 64.0	2.0 0.9
	1	13300100	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	3.07 78.0	5.03 128.0	2.52 64.0	2.0 0.9
4	1/2	13400050	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	3.20 81.2	6.06 154.0	2.52 64.0	2.0 0.9
	3/4	13400075	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	3.20 81.2	6.06 154.0	2.52 64.0	2.0 0.9
	1	13400100	500 3450	1.25 31.8	1.31 33.2	3/8 - U Bolt	3.58 91.0	6.06 154.0	2.52 64.0	2.0 0.9

Notes :
§ - Maximum torque is 30 ft.lb (22 Nm) DO NOT EXCEED. * - Maximum pressure including surges and maximum end loads, from all internal and external forces, to which a joint could be subject under normal working conditions. This rating provides a nominal safety factor of 1.5 times working pressure based on standard weight steel pipe, cut or roll groove to pipe end preparation specification. Maximum joint working pressure may be subject to a one-time field test of 1.5 times the figures indicated. For performance on other pipe, request the approvals cut sheet. For galvanized outlets, place "G" after part number.

1" outlets are available with BSP threads. Add "B" at the end of part number.

STANDARD GROOVED FITTINGS
STYLES 100, 101, 102, 103, 110 & 150

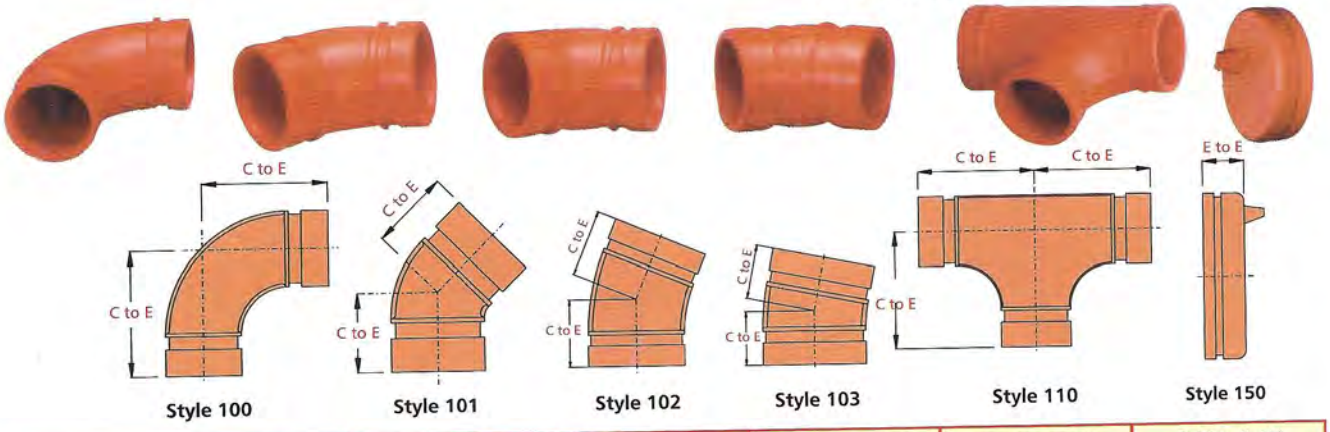
- All fittings are full flow design.
- Pressure ratings of Standard fittings conform to Style 11 Couplings.
- Made of durable, high strength Ductile Iron conforming to ASTM A536. Every lot is metallurgically examined for compliance.
- Available with,hot dipped galvanised coating as optional.

c UL us LISTED FM APPROVED

FLOW DATA
Frictional Resistance
(Expressed as equivalant Straight Pipe in Ft. / m)

Nominal Size Inches	Elbow 90° Elbow	Elbow 45° Elbow	Tee Branch	Tee Run	Nominal Size Inches	Elbow 90° Elbow	Elbow 45° Elbow	Tee Branch	Tee Run
1 1/4	2.3 / 0.7	1.2 / 0.4	5.8 / 1.8	2.3 / 0.7	6 1/2 OD	10.0 / 3.0	5.0 / 1.5	24.9 / 7.6	10.0 / 3.0
1 1/2	2.7 / 0.8	1.3 / 0.4	6.7 / 2.0	2.7 / 0.8	8	13.3 / 4.1	6.7 / 2.0	33.3 / 10.1	13.3 / 4.1
2	3.4 / 1.0	1.7 / 0.5	8.6 / 2.6	3.4 / 1.0	10	16.7 / 5.1	8.4 / 2.6	41.8 / 12.7	16.7 / 5.1
2 1/2	4.1 / 1.2	2.1 / 0.6	10.3 / 3.1	4.1 / 1.2	12	20.0 / 6.1	10.0 / 3.0	50.0 / 15.2	20.0 / 6.1
3 OD	4.3 / 1.3	2.2 / 0.7	10.8 / 3.3	4.3 / 1.3	14	22.2 / 6.8	17.7 / 5.4	64.2 / 19.6	22.9 / 7.0
3	5.1 / 1.6	2.6 / 0.8	12.8 / 3.9	5.1 / 1.6	16	25.5 / 7.8	20.4 / 6.2	73.9 / 22.5	26.4 / 8.0
4	6.7 / 2.0	3.4 / 1.0	16.8 / 5.1	6.7 / 2.0	18	28.9 / 8.8	23.1 / 7.0	87.2 / 26.6	31.1 / 9.5
5	8.4 / 2.6	4.2 / 1.3	21.0 / 6.4	8.4 / 2.6	20	32.2 / 9.8	25.7 / 7.8	97.3 / 29.7	34.8 / 10.6
5 1/2 OD	8.3 / 2.5	4.2 / 1.3	20.9 / 6.4	8.3 / 2.5	24	38.9 / 11.9	31.1 / 9.5	113.0 / 34.4	40.4 / 12.3
6	10.1 / 3.1	5.1 / 1.6	25.3 / 7.7	10.1 / 3.1					

Flow data is based upon the pressure drop of Sch. 40 pipe.



Style 100 | Style 101 | Style 102 | Style 103 | Style 110 | Style 150

Pipe Nominal Size	Pipe Actual Size inch/mm	90° Elbow - No.100 Part Number	C to E inch/mm	Approx. Wgt.Ea. lb./kg.	45° Elbow - No.101 Part Number	C to E inch/mm	Approx. Wgt.Ea. lb./kg.	22 1/2° Elbow - No. 102 Part Number	C to E inch/mm	Approx. Wgt.Ea. lb./kg.	11 1/4° Elbow - No.103 Part Number	C to E inch/mm	Approx. Wgt.Ea. lb./kg.	Equal Tee - No.110 Part Number	C to E inch/mm	Approx. Wgt.Ea. lb./kg.	End Cap - No.150 Part Number	E to E inch/mm	Approx. Wgt.Ea. lb./kg.
1 1/4"	1.660 / 42.2	100125	2.75 / 69.9	0.9 / 0.4	101125	1.75 / 44.5	0.6 / 0.3	102125	1.75 / 44.5	0.7 / 0.3	103125	1.38 / 34.9	0.5 / 0.2	110125	2.75 / 69.9	1.4 / 0.6	-	-	-
1 1/2"	1.900 / 48.3	100150	2.75 / 69.9	1.1 / 0.5	101150	1.75 / 44.5	1.0 / 0.5	102150	1.75 / 44.5	0.8 / 0.4	103150	1.38 / 34.9	0.7 / 0.3	110150	2.75 / 69.9	1.8 / 0.8	-	-	-
2"	2.375 / 60.3	100200	3.25 / 82.6	1.9 / 0.9	101200	2.00 / 50.8	1.3 / 0.6	102200	1.88 / 47.6	1.5 / 0.7	103200	1.38 / 34.9	0.9 / 0.4	110200	3.25 / 82.6	2.8 / 1.3	-	-	-
2 1/2"	2.875 / 73.0	100250	3.75 / 95.3	3.0 / 1.4	101250	2.25 / 57.2	2.2 / 1.0	102250	2.00 / 50.8	1.9 / 0.9	103250	1.50 / 38.1	1.5 / 0.7	110250	3.75 / 95.3	4.4 / 2.0	-	-	-
3" OD	3.000 / 76.1	100290	3.75 / 95.3	3.0 / 1.4	101290	2.25 / 57.2	2.2 / 1.0	-	-	-	-	-	-	110290	3.75 / 95.3	4.4 / 2.0	-	-	-
3"	3.500 / 88.9	100300	4.25 / 108.0	4.7 / 2.1	101300	2.50 / 63.5	3.2 / 1.5	102300	2.25 / 57.2	3.2 / 1.5	103300	1.50 / 38.1	2.0 / 0.9	110300	4.25 / 108.0	6.5 / 3.0	-	-	-
4"	4.500 / 114.3	100400	5.00 / 127.0	7.8 / 3.5	101400	3.00 / 76.2	5.5 / 2.5	102400	2.63 / 66.7	5.3 / 2.4	103400	1.75 / 44.5	3.3 / 1.5	110400	5.00 / 127.0	11.8 / 5.4	-	-	-
5"	5.563 / 141.3	100500	5.50 / 139.7	12.1 / 5.5	101500	3.25 / 82.6	8.5 / 3.9	102500	2.88 / 73.0	7.2 / 3.3	103500	2.00 / 50.8	5.0 / 2.3	110500	5.50 / 139.7	19.2 / 8.7	-	-	-
5 1/2" OD	5.500 / 139.7	100550	5.50 / 139.7	12.1 / 5.5	101550	3.25 / 82.6	8.5 / 3.9	-	-	-	-	-	-	110550	5.50 / 139.7	18.7 / 8.5	-	-	-
6"	6.625 / 168.3	100600	6.50 / 165.1	16.5 / 7.5	101600	3.50 / 88.9	12.5 / 5.7	102600	3.13 / 79.4	11.4 / 5.2	103600	2.00 / 50.8	7.4 / 3.4	110600	6.50 / 165.1	24.0 / 10.9	-	-	-
6 1/2" OD	6.500 / 165.1	100650	6.50 / 165.1	16.5 / 7.5	101650	3.50 / 88.9	12.5 / 5.7	102650	3.13 / 79.4	11.4 / 5.2	103650	2.00 / 50.8	7.4 / 3.4	110650	6.50 / 165.1	23.4 / 10.6	-	-	-
8"	8.625 / 219.1	100800	7.75 / 196.9	33.1 / 15.0	101800	4.25 / 107.9	21.8 / 9.9	102800	3.88 / 98.4	17.8 / 8.1	103800	2.00 / 50.8	10.0 / 4.5	110800	7.75 / 196.9	51.8 / 23.5	-	-	-
10"	10.750 / 273.0	100910	9.00 / 228.6	61.1 / 27.7	101910	4.75 / 120.7	28.9 / 13.1	102910	4.38 / 111.1	30.0 / 13.6	103910	2.13 / 54.0	14.5 / 6.6	110910	9.00 / 228.6	77.1 / 35.0	150910	2.72 / 69.1	26.0 / 11.8
12"	12.750 / 323.9	100912	10.00 / 254.0	67.2 / 30.5	101912	5.25 / 133.3	40.1 / 18.2	102912	4.88 / 123.8	40.4 / 18.3	103912	2.25 / 57.2	18.7 / 8.5	110912	10.00 / 254.0	92.5 / 42.0	150912	2.78 / 70.6	34.2 / 15.5
14"	14.000 / 355.6	100914	11.00 / 279.4	92.6 / 42.0	101914	6.00 / 152.4	59.5 / 27.0	-	-	-	-	-	-	110914	11.00 / 279.4	125.7 / 57.0	150914	3.08 / 78.2	52.0 / 23.6
16"	16.000 / 406.4	100916	12.00 / 304.8	95.9 / 43.5	101916	7.25 / 184.1	79.4 / 36.0	-	-	-	-	-	-	110916	12.00 / 304.8	134.5 / 61.0	150916	3.14 / 79.8	78.7 / 35.7
18"	18.000 / 457.2	100918	15.50 / 394.0	159.9 / 72.5	101918	8.00 / 203.0	89.3 / 40.5	-	-	-	-	-	-	110918	15.50 / 394.0	233.7 / 106.0	150918	3.18 / 81.0	86.0 / 39.0
20"	20.000 / 508.0	100920	17.25 / 438.0	201.8 / 91.5	101920	9.00 / 229.0	123.5 / 56.0	-	-	-	-	-	-	110920	17.25 / 438.0	277.8 / 126.0	150920	3.23 / 82.0	97.0 / 44.0
24"	24.00 / 610.0	100924	20.00 / 508.0	241.4 / 109.5	101924	11.00 / 279.0	179.7 / 81.5	-	-	-	-	-	-	110924	20.00 / 508.0	333.0 / 151.0	150924	3.31 / 84.0	108.0 / 49.0

STANDARD REDUCER TEE
STYLE 115

- All Fittings are Full Flow Design
- Made of durable high strength Ductile Iron conforming to ASTM A536.
- Every lot is metallurgically examined for compliance.
- Pressure ratings of Standard fittings conforms to those of Style 11 couplings.
- Available with hot dipped galvanised coating as optional.

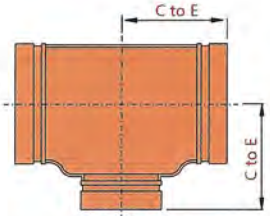
FLOW DATA
Frictional Resistance
(Expressed as equivalant Straight Pipe in Ft./ m.)

Nomial Size Inches	Reducer Tee Branch	Reducer Tee Run	Nomial Size Inches	Reducer Tee Branch	Reducer Tee Run
1 1/4	5.8 1.8	2.3 0.7	6-1/2 OD	24.9 7.6	10.0 3.0
1 1/2	6.7 2.0	2.7 0.8	8	33.3 10.1	13.3 4.1
2	8.6 2.6	3.4 1.0	10	41.8 12.7	16.7 5.1
2 1/2	10.3 3.1	4.1 1.2	12	50.0 15.2	20.0 6.1
3 OD	10.8 3.3	4.3 1.3	14	64.2 19.6	22.9 7.0
3	12.8 3.9	5.1 1.6	16	73.9 22.5	26.4 8.0
4	16.8 5.1	6.7 2.0	18	87.2 26.6	31.1 9.5
5	21.0 6.4	8.4 2.6	20	97.3 29.7	34.8 10.6
5 1/2 OD	20.9 6.4	8.3 2.5	24	113.0 34.4	34.8 12.3
6	25.3 7.7	10.1 3.1			

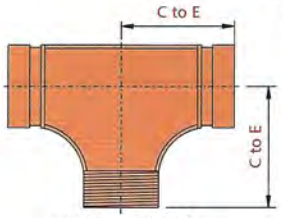
Flow data is based upon the pressure drop of Sch. 40 Pipe.

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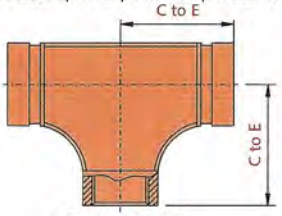
FM APPROVED



Style 115



Style 115 TM
(External Thread)



Style 115 TF
(Internal Thread)

Reducer Tee - No. 115
Add after part number the letters TF for Internal or TM for External threaded outlet

Nominal Size	Part Number	C to E Inch / mm	Style 115 Approx... Wgt. Ea Lb./kg	Style 115TF Approx... Wgt. Ea Lb./kg	Nominal Size	Part Number	C to E Inch/ mm	Style 115 Approx... Wgt. Ea Lb./kg	Style 115TF Approx... Wgt. Ea Lb./kg	Nominal Size	Part Number	C to E Inch/ mm	Style 115 Approx... Wgt. Ea Lb./kg
2"x2"x1"	115200100	3.25 82.5	3.18 1.47	3.11 1.43	6 1/2"x6 1/2"x4"	115650400	6.50 165.1	19.81 9.13	3.11 1.43	12"x12"x10"	115912910	10.00 254.0	96.56 44.5
2"x2"x1 1/4"	115200125	3.25 82.5	3.18 1.47	3.11 1.43	6"x6"x1 1/2"	115600150	6.50 165.1	21.26 9.83	3.11 1.43	14"x14"x4"	115914400	11.00 279.0	111.4 50.5
2"x2"x1 1/2"	115200150	3.25 82.5	3.16 1.46	3.09 1.42	6"x6"x2"	115600200	6.50 165.1	22.37 10.31	3.09 1.42	14"x14"x6"	115914600	11.00 279.0	109.1 49.5
2 1/2"x2 1/2"x1"	115250100	3.75 95.2	3.60 1.66	4.49 2.07	6"x6"x2 1/2"	115600250	6.50 165.1	22.85 10.53	4.49 2.07	14"x14"x8"	115914800	11.00 279.0	108.1 49.1
2 1/2"x2 1/2"x1 1/4"	115250125	3.75 95.2	3.92 1.81	4.51 2.08	6"x6"x3"OD	115600290	6.50 165.1	23.26 10.72	4.51 2.08	14"x14"x10"	115914910	11.00 279.0	107.6 48.8
2 1/2"x2 1/2"x1 1/2"	115250150	3.75 95.2	4.14 1.91	4.55 2.10	6"x6"x3"	115600300	6.50 165.1	21.98 10.13	4.55 2.10	14"x14"x12"	115914912	11.00 279.0	106.1 48.1
2 1/2"x2 1/2"x2"	115250200	3.75 95.2	4.27 1.97	4.66 2.15	6"x6"x4"	115600400	6.50 165.1	19.87 9.16	4.66 2.15	16"x16"x4"	115916400	12.00 305.0	137.6 62.5
3"ODx3"ODx1"	115290100	3.75 95.2	5.85 2.7	5.09 2.35	6"x6"x5"	115600500	6.50 165.1	20.28 9.35	5.09 2.35	16"x16"x6"	115916600	12.00 305.0	136.7 62.0
3"ODx3"ODx1 1/4"	115290125	3.75 95.2	5.64 2.6	4.99 2.30	8"x8"x1 1/2"	115800150	7.75 196.8	5.64 2.6	4.99 2.30	16"x16"x8"	115916800	12.00 305.0	135.6 61.5
3"ODx3"ODx1 1/2"	115290150	3.75 95.2	5.42 2.5	5.22 2.41	8"x8"x2"	115800200	7.75 196.8	53.38 24.6	5.22 2.41	16"x16"x10"	115916910	12.00 305.0	138.6 63.9
3"ODx3"ODx2"	115290200	3.75 95.2	3.75 1.73	5.45 2.52	8"x8"x2 1/2"	115800250	7.75 196.8	49.91 23.0	5.45 2.52	16"x16"x12"	115916912	12.00 305.0	133.4 60.5
3"x3"x1"	115300100	4.25 108.0	6.53 3.01	6.98 3.22	8"x8"x3"OD	115800290	7.75 196.8	49.32 22.73	6.98 3.22	16"x16"x14"	115916914	12.00 305.0	132.3 60.0
3"x3"x1 1/4"	115300125	4.25 108.0	6.81 3.14	6.72 3.11	8"x8"x3"	115800300	7.75 196.8	50.34 23.2	6.72 3.11	18"x18"x4"	115918400	15.50 394.0	185.2 84.1
3"x3"x1 1/2"	115300150	4.25 108.0	6.66 3.07	6.70 3.09	8"x8"x4"	115800400	7.75 196.8	50.9 23.42	6.70 3.09	18"x18"x6"	115918600	15.50 394.0	186.3 84.5
3"x3"x2"	115300200	4.25 108.0	6.18 2.85	6.72 3.10	8"x8"x5"	115800500	7.75 196.8	50.9 23.42	6.72 3.10	18"x18"x8"	115918800	15.50 394.0	189.6 86.0
3"x3"x2 1/2"	115300250	4.25 108.0	5.51 2.54	6.83 3.15	8"x8"x6 1/2"	115800650	7.75 196.8	51.4 23.69	6.83 3.15	18"x18"x10"	115918910	15.50 394.0	202.9 92.0
4"x4"x1"	115400100	5.00 127.0	11.82 5.45	11.65 5.37	8"x8"x6"	115800600	7.75 196.8	52.08 24.0	11.65 5.37	18"x18"x12"	115918912	15.50 394.0	209.5 95.0
4"x4"x1 1/4"	115400125	5.00 127.0	11.78 5.43	11.30 5.21	10"x10"x2"	115910200	9.00 229.0	57.93 26.7	-	18"x18"x14"	115918914	15.50 394.0	211.7 96.0
4"x4"x1 1/2"	115400150	5.00 127.0	11.52 5.31	12.17 5.61	10"x10"x2 1/2"	115910250	9.00 229.0	62.27 28.72	-	18"x18"x16"	115918916	15.50 394.0	212.8 96.5
4"x4"x2"	115400200	5.00 127.0	11.71 5.4	11.89 5.48	10"x10"x3"OD	115910290	9.00 229.0	63.60 29.31	-	20"x20"x6"	115920600	17.25 438.0	237.0 107.5
4"x4"x2 1/2"	115400250	5.00 127.0	11.71 5.4	12.26 5.65	10"x10"x3"	115910300	9.00 229.0	66.20 30.51	-	20"x20"x8"	115920800	17.25 438.0	240.3 109.0
4"x4"x3"OD	115400290	5.00 127.0	9.04 4.16	12.62 5.82	10"x10"x4"	115910400	9.00 229.0	70.3 32.4	-	20"x20"x10"	115920910	17.25 438.0	242.5 110.0
4"x4"x3"	115400300	5.00 127.0	9.04 4.16	12.39 5.71	10"x10"x5"	115910500	9.00 229.0	67.53 31.12	-	20"x20"x12"	115920912	17.25 438.0	249.2 113.0
5"x5"x1 1/2"	115500150	5.50 139.7	14.97 6.9	14.3 6.3	10"x10"x6"	115910600	9.00 229.0	66.3 30.55	-	20"x20"x14"	115920914	17.25 438.0	252.5 114.5
5"x5"x2"	115500200	5.50 139.7	15.1 7.0	14.5 6.6	10"x10"x8"	115910800	9.00 229.0	66.61 30.7	-	20"x20"x16"	115920916	17.25 438.0	255.8 116.0
5"x5"x2 1/2"	115500250	5.50 139.7	15.8 7.3	15.2 6.9	12"x12"x2"	115912200	10.00 254.0	72.69 33.5	-	20"x20"x18"	115920918	17.25 438.0	262.4 119.0
5"x5"x3"OD	115500290	5.50 139.7	15.8 7.3	15.2 6.9	12"x12"x2 1/2"	115912250	10.00 254.0	75.1 34.61	-	24"x24"x8"	115924800	20.00 508.0	357.2 162.0
5"x5"x3"	115500300	5.50 139.7	16.05 7.4	15.4 7.0	12"x12"x3"OD	115912290	10.00 254.0	80.98 37.32	-	24"x24"x10"	115924910	20.00 508.0	360.5 163.5
5"x5"x4"	115500400	5.50 139.7	16.7 7.7	16.1 7.3	12"x12"x3"	115912300	10.00 254.0	88.1 40.6	-	24"x24"x12"	115924912	20.00 508.0	363.8 165.0
6 1/2"x6 1/2"x2"	115650200	6.50 165.1	26.9 12.4	26.4 12.0	12"x12"x4"	115912400	10.00 254.0	94.6 43.6	-	24"x24"x14"	115924914	20.00 508.0	372.8 169.0
6 1/2"x6 1/2"x2 1/2"	115650250	6.50 165.1	27.1 12.5	26.5 12.1	12"x12"x5"	115912500	10.00 254.0	98.08 45.2	-	24"x24"x16"	115924916	20.00 508.0	379.3 172.0
6 1/2"x6 1/2"x3"OD	115650290	6.50 165.1	27.1 12.5	26.5 12.1	12"x12"x6"	115912600	10.00 254.0	104.37 48.1	-	24"x24"x18"	115924918	20.00 508.0	383.7 174.0
6 1/2"x6 1/2"x3"	115650300	6.50 165.1	24.5 11.3	24.0 10.9	12"x12"x8"	115912800	10.00 254.0	103.1 47.5	-	24"x24"x20"	115924920	20.00 508.0	388.1 176.0

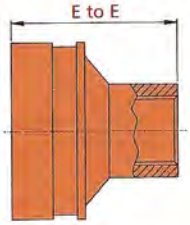
Style 115TM and 115TF are available upto 8" run size and 21/2" outlet size.
Add "B" at end of the part number for BSP threads.

CONCENTRIC REDUCER-STYLE 140





CONCENTRIC REDUCER-STYLE 140TF



c UL us LISTED FM APPROVED

- All fittings are smooth flow patterns.
- Pressure ratings of standard fittings conform to style 11 coupling.
- Made of durable, high strength ductile iron conforming to ASTM A-536. Every lot is metallurgically examined to insure compliance.
- Available with hot dipped galvanized coating, as optional.

Concentric reducer- Style 140, 140TF

Normal size	Style 140 Part number	Style 140TF Part Number	E to E In/mm	Style 140 Wt. Lb. /kg.	Style 140TF Wt. Lb. /kg.
11/4"X1"	140125100	-	2.50/63.5	0.67/0.305	-
11/2"X1"	140150100	-	2.50/63.5	0.71/0.328	-
2"X1"	140200100	140200100	2.50/63.5	0.74/0.342	1.19/0.552
2"X11/4"	140200125	140200125	2.50/63.5	0.78/0.364	1.19/0.553
2"X11/2"	140200150	140200150	2.50/63.5	0.83/0.385	1.32/0.610
21/2"X1"	140250100	140250100	2.50/63.5	0.88/0.407	1.49/0.690
21/2"X11/4"	140250125	140250125	2.50/63.5	0.93/0.431	1.73/0.800
21/2"X11/2"	140250150	140250150	2.50/63.5	0.97/0.450	1.71/0.790
21/2"X2"	140250200	140250200	2.50/63.5	1.02/0.472	1.67/0.770
3"ODX1"	140290100	140290100	2.50/63.5	1.16/0.535	1.51/0.700
3"ODX11/4"	140290125	140290125	2.50/63.5	1.26/0.585	1.69/0.780
3"ODX11/2"	140290150	140290150	2.50/63.5	1.33/0.617	1.75/0.810
3"ODX2"	140290200	140290200	2.50/63.5	1.39/0.642	1.89/0.870
3"X1"	140300100	140300100	2.50/63.5	1.35/0.625	1.60/0.738
3"X11/4"	140300125	140300125	2.50/63.5	1.56/0.719	1.65/0.756
3"X11/2"	140300150	140300150	2.50/63.5	1.63/0.753	1.73/0.798
3"X2"	140300200	140300200	2.50/63.5	1.72/0.796	1.76/0.815
3"X21/2"	140300250	-	2.50/63.5	1.80/0.832	-
3"X3"OD	140300290	-	2.50/63.5	1.88/0.868	-
4"X1"	140400100	140400100	3.0/76.2	2.07/0.957	2.19/1.010
4"X11/4"	140400125	140400125	3.0/76.2	2.26/1.046	2.60/1.200
4"X11/2"	140400150	140400150	3.0/76.2	3.10/1.430	2.87/1.325
4"X2"	140400200	140400200	3.0/76.2	2.06/0.950	3.36/1.550
4"X21/2"	140400250	-	3.0/76.2	2.47/1.142	-
4"X3"OD	140400290	-	3.0/76.2	2.52/1.164	-
4"X3"	140400300	-	3.0/76.2	2.76/1.276	-
5"X2"	140500200	-	3.5/88.9	4.60/2.100	-
5"X21/2"	140500250	-	3.5/88.9	4.20/1.936	-
5"X3"OD	140500290	-	3.5/88.9	4.35/2.006	-
5"X3"	140500300	-	3.5/88.9	4.15/1.914	-
5"X4"	140500400	-	3.5/88.9	4.09/1.888	-
61/2"ODX2"	140650200	-	4.0/101.6	5.29/2.438	-
61/2"ODX3OD	140650290	-	4.0/101.6	5.88/2.712	-
61/2"ODX3"	140650300	-	4.0/101.6	6.20/2.861	-
61/2"ODx4"	140650400	-	4.0/101.6	6.43/2.967	-
6" X 1"	-	140600100	4.0/101.6	-	4.65/2.146
6" X 1 ¼"	-	140600125	4.0/101.6	-	4.88/2.250
6" X 1 ½"	-	140600150	4.0/101.6	-	5.04/2.326
6"X2"	140600200	140600200	4.0/101.6	5.75/2.651	5.25/2.417
6"X21/2"	140600250	-	4.0/101.6	5.88/2.712	-
6"X3"OD	140600290	-	4.0/101.6	5.92/2.732	-
6"X3"	140600300	-	4.0/101.6	3.06/2.975	-
6"X21/2"	140600250	-	4.0/101.6	7.30/3.367	-
6"X5"	140600500	-	4.0/101.6	7.76/3.580	-
8"X3"OD	140800290	-	5.0/127.0	10.0/4.611	-
8"X3"	140800300	-	5.0/127.0	9.94/4.582	-

Concentric reducer - Style 140

Normal size	Style 140 Part number	E to E In/mm	Style 140 Wt. Lb. /kg.
8"X4"	140800400	5.0/127.0	13.9/4.768
8"X5"	140800500	5.0/127.0	10.5/4.819
8"X61/2"OD	140800650	5.0/127.0	11.5/5.317
8"X6"	140800600	5.0/127.0	10.7/4.953
10"X3"	140910300	6.0/152.4	11.5/5.312
10"X4"	140910400	6.0/152.4	12.6/5.812
10"X5"	140910500	6.0/152.4	13.1/6.051
10"X61/2"OD	140910650	6.0/152.4	13.5/6.232
10"X6"	140910600	6.0/152.4	14.6/6.720
10"X8"	140910800	6.0/152.4	17.5/8.040
12"X4"	140912400	7.0/177.8	21.1/9.720
12"X61/2"OD	140912650	7.0/177.8	21.9/10.10
12"X6"	140912600	7.0/177.8	22.3/10.30
12"X8"	140912800	7.0/177.8	22.5/10.41
12"X10"	140912910	7.0/177.8	23.6/10.90
14"X6"	140914600	13.0/330.2	44.1/20.00
14"X8"	140914800	13.0/330.2	48.1/21.80
14"X10"	140914910	13.0/330.2	57.7/26.20
14"X12"	140914912	13.0/330.2	68.3/31.50
16"X8"	140916800	14.0/355.6	56.4/25.60
16"X10"	140916910	14.0/355.6	62.6/28.40
16"X12"	140916912	14.0/355.6	66.1/30.00
16"X14"	140916914	14.0/355.6	81.6/37.60
18"X10"	140918910	15.0/381.0	84.9/38.50
18"X12"	140918912	15.0/381.0	101.4/46.00
18"X14"	140918914	15.0/381.0	83.8/38.00
18"X16"	140918916	15.0/381.0	113.9/52.50
20"X10"	140920910	20.0/508.0	105.8/48.00
20"X12"	140920912	20.0/508.0	191.8/87.00
20"X14"	140920914	20.0/508.0	162.0/73.50
20"X16"	140920916	20.0/508.0	113.5/51.50
20"X18"	140920918	20.0/508.0	162.0/73.50
24"X10"	140924910	20.0/508.0	114.9/52.10
24"X12"	140924912	20.0/508.0	121.7/55.20
24"X14"	140924914	20.0/508.0	128.3/58.20
24"X16"	140924916	20.0/508.0	135.2/61.30
24"X18"	140924918	20.0/508.0	142.2/64.50
24"X20"	140924920	20.0/508.0	148.8/67.50

Place "T" after the part number for threaded outlet.

GROOVED FITTINGS - SHORT PATTERN

STYLES 105, 106, 107, 135 & 155

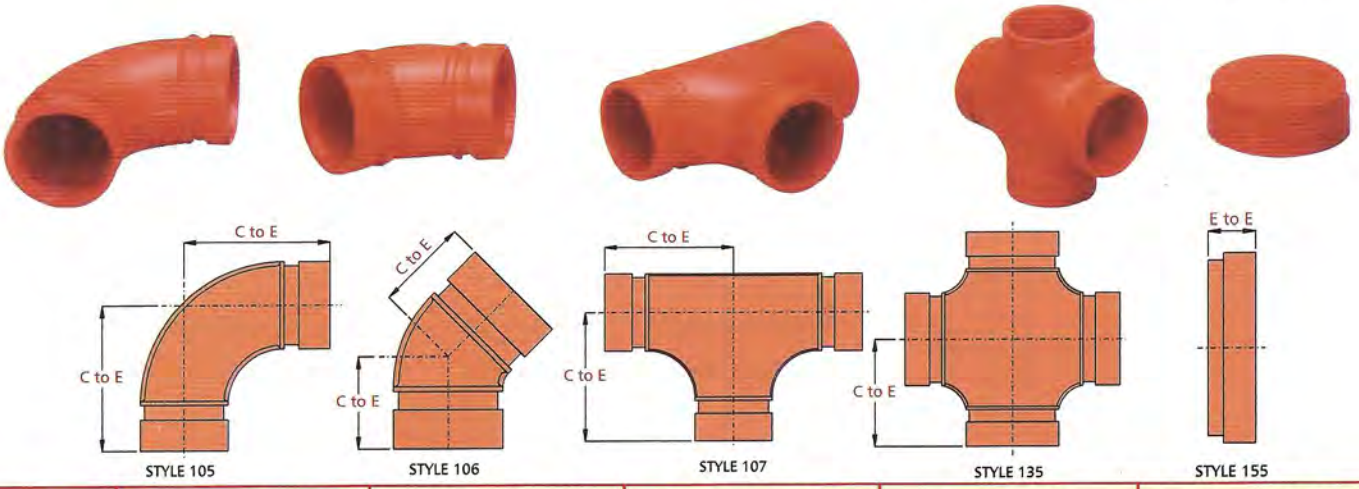
- Sized to improve flow.
- Designed for short center to end dimensions. Easier installation in less space.
- Pressure ratings will be confirm to those of style 5 coupling.
- Made of durable, high strength Ductile Iron conforming to ASTM A-536. Every lot is metallurgically examined to insure compliance.
- Usage of these fittings with Style 10 and Style 11 Couplings should be evaluated properly due to bolt pad interference of Couplings.
- Available with hot dipped galvanised coating, as optional.

c UL US LISTED FM APPROVED

FLOW DATA
Frictional Resistance
(Expressed as equivalant Straight Pipe in Ft./m)

Nominal Size Inches	90° Elbow		45° Elbow		Tee			
					Branch		Run	
	STD	FS300	STD	FS300	STD	FS300	STD	FS300
1	1.7 / 0.5	1.4 / 0.4	0.9 / 0.3	0.9 / 0.3	4.4 / 1.3	4.0 / 1.2	1.7 / 0.5	1.4 / 0.4
1 1/4	2.3 / 0.7	1.8 / 0.5	1.2 / 0.4	1.0 / 0.3	5.8 / 1.8	4.2 / 1.3	2.3 / 0.7	1.8 / 0.5
1 1/2	2.7 / 0.8	2.5 / 0.8	1.3 / 0.4	1.3 / 0.4	6.7 / 2.0	5.5 / 1.7	2.7 / 0.8	2.5 / 0.8
2	3.4 / 1.0	3.2 / 1.0	1.7 / 0.5	1.6 / 0.0	8.6 / 2.6	8.2 / 2.5	3.4 / 1.0	2.5 / 0.8
2 1/2	4.1 / 1.2	3.9 / 1.2	2.1 / 0.6	2.0 / 0.6	10.3 / 3.1	10.1 / 3.1	4.1 / 1.2	3.9 / 1.2
3 OD	4.3 / 1.3	4.5 / 1.4	2.2 / 0.7	2.2 / 0.7	10.8 / 3.3	10.6 / 3.2	4.3 / 1.3	4.5 / 1.4
3	5.1 / 1.6	4.8 / 1.5	2.6 / 0.8	2.4 / 0.7	12.8 / 3.9	12.5 / 3.8	5.1 / 1.6	4.8 / 1.5
4	6.7 / 2.0	6.5 / 2.0	3.4 / 1.0	3.2 / 1.0	16.8 / 5.1	16.0 / 4.9	6.7 / 2.0	6.5 / 2.0
5	8.4 / 2.6	8.4 / 2.6	4.2 / 1.3	4.0 / 1.2	21.0 / 6.4	20.5 / 6.2	8.4 / 2.6	8.2 / 2.5
6	10.1 / 3.1	10.0 / 3.0	5.1 / 1.6	4.8 / 1.5	25.3 / 7.7	24.0 / 7.3	10.1 / 3.1	9.6 / 2.9
6 1/2 OD	10.0 / 3.0	9.6 / 2.9	5.0 / 1.5	4.8 / 1.5	24.9 / 7.6	24.0 / 7.3	10.0 / 3.0	9.6 / 2.9
8	13.3 / 4.1	13.0 / 4.0	6.7 / 2.0	6.5 / 2.0	33.3 / 10.1	33.0 / 10.0	13.3 / 4.1	13.0 / 4.0

Flow data is based upon the pressure drop of Sch. 40 Pipe.

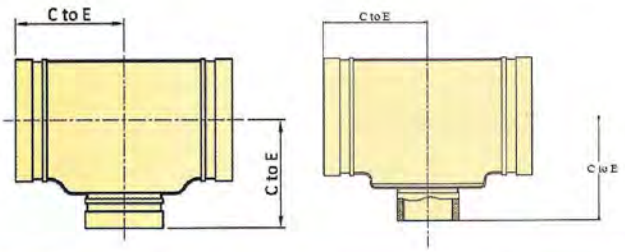


Pipe		90°Elbow - No.105			45°Elbow - No. 106			Equal Tee - No.107			Cross - No.135			End cap - No.155		
Nominal Size	Actual Size in./mm	Part Number	C to E in./mm	Approx. Wgt. Ea. lb./kg.	Part Number	C to E in./mm	Approx. Wgt. Ea. lb./kg.	Part Number	C to E in./mm	Approx. Wgt. Ea. lb./kg.	Part Number	C to E in./mm	Approx. Wgt. Ea. lb./kg.	Part Number	E to E in./mm	Approx. Wgt. Ea. lb./kg.
1 1/4"	1.660 / 42.2	105125	2.25 / 57.2	0.9 / 0.4	106125	1.75 / 44.5	0.5 / 0.2	107125	2.25 / 57.2	1.0 / 0.5	-	-	-	155125	1.00 / 25.4	0.4 / 0.2
1 1/2"	1.900 / 48.3	105150	2.50 / 63.5	1.1 / 0.5	106150	1.75 / 44.5	0.9 / 0.4	107150	2.50 / 63.5	1.5 / 0.7	-	-	-	155150	1.00 / 25.4	0.5 / 0.2
2"	2.375 / 60.3	105200	2.75 / 69.8	1.3 / 0.6	106200	2.00 / 50.8	1.1 / 0.5	107200	2.75 / 69.8	1.9 / 0.9	135200	2.75 / 69.8	2.2 / 1.0	155200	1.00 / 25.4	0.6 / 0.3
2 1/2"	2.875 / 73.0	105250	3.00 / 76.2	2.0 / 0.9	106250	2.25 / 57.2	1.8 / 0.8	107250	3.00 / 76.2	2.6 / 1.2	135250	3.00 / 76.2	3.3 / 1.5	155250	1.00 / 25.4	0.7 / 0.3
3 "OD	3.000 / 76.1	105290	3.13 / 79.5	2.1 / 1.0	106290	2.25 / 57.2	2.0 / 0.9	107290	3.13 / 79.5	3.1 / 1.4	135290	3.13 / 79.5	3.7 / 1.7	155290	1.00 / 25.4	0.8 / 0.4
3"	3.500 / 88.9	105300	3.38 / 85.9	2.6 / 1.2	106300	2.00 / 50.8	2.2 / 1.0	107300	3.38 / 85.9	4.2 / 1.9	135300	3.38 / 85.9	5.1 / 2.3	155300	1.00 / 25.4	1.1 / 0.5
4"	4.500 / 114.3	105400	4.00 / 101.6	5.1 / 2.3	106400	2.25 / 57.2	4.0 / 1.8	107400	4.00 / 101.6	6.6 / 3.0	135400	4.00 / 101.6	7.5 / 3.4	155400	1.06 / 27.0	1.8 / 0.8
5"	5.563 / 141.3	105500	4.88 / 124.0	6.8 / 3.1	106500	2.50 / 63.5	6.4 / 2.9	107500	4.88 / 124.0	9.0 / 4.1	135500	4.88 / 124.0	13.7 / 6.2	155500	1.06 / 27.0	2.9 / 1.3
6 1/2"OD	6.500 / 165.1	105650	5.50 / 139.7	11.0 / 5.0	106650	2.90 / 73.7	9.0 / 4.1	107650	5.50 / 139.7	20.9 / 9.5	135650	5.50 / 139.7	18.3 / 8.3	155650	1.06 / 27.0	3.7 / 1.7
6"	6.625 / 168.3	105600	5.50 / 139.7	12.8 / 5.8	106600	2.90 / 73.7	9.3 / 4.2	107600	5.50 / 139.7	20.9 / 9.5	135600	5.50 / 139.7	19.7 / 9.0	155600	1.06 / 27.0	4.2 / 1.9
8"	8.625 / 219.1	105800	6.80 / 173.0	22.7 / 10.3	106800	3.25 / 82.6	16.3 / 7.4	107800	6.95 / 176.5	32.9 / 14.9	135800	6.80 / 173.0	34.4 / 15.6	155800	1.20 / 30.1	7.9 / 3.6

REDUCING TEE - SHORT PATTERN STYLE 120

LISTED APPROVED

- All fittings are full flow design
- Made of durable high strength Ductile Iron conforming to ASTM A356
- Every lot is metallurgically examined for compliance
- Pressure rating of standard fittings conforms to those of STYLE 5 couplings
- Using of this fittings with style 11 couplings to be properly evaluated to avoid bolt pad interference.
- Available with hot dipped galvanished coating as optional





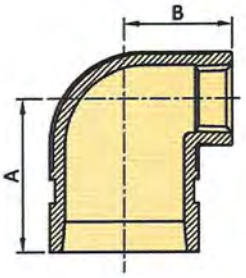
Short Radius Reducing Tee - No.120							
Nominal Size	Part Number	C to E inch/mm	Approx. Wgt.ea lb / kg	Nominal Size	Part Number	C to E inch/mm	Approx. Wgt.ea lb / kg
2" x 2" x 1 ½"	120200150	2.7 69.8	1.6 0.75	6" x 6" x 2	120600200	5.5 139.7	14.6 6.6
2 ½" x 2 1/2" x 1 ½"	120250150	3.0 76.2	3.3 1.5	6" x 6" x 2 ½"	120600250	5.5 139.7	14.6 6.6
2 ½" x 2 ½" x 2"	120250200	3.0 76.2	3.3 1.5	6" x 6" x 3"	120600300	5.5 139.7	14.3 6.6
3" x 3" x 1 ½"	120300150	3.0 85.9	4.0 1.8	6" x 6" x 3"	120600400	5.5 139.7	12.3 5.6
3" x 3" x 2"	120300200	3.0 85.9	4.4 2.0	6" x 6" x 4"	120800200	6.8 173.0	29.8 13.5
3" x 3" x 2 ½"	120300250	3.0 85.9	4.4 2.0	8" x 8" x 2"	120800250	6.8 173.0	29.8 13.5
4" x 4" x 1 ½"	120400150	4.0 101.6	5.3 2.4	8" x 8" x 2 ½"	120800290	6.8 173.0	29.8 13.5
4" x 4" x 2"	120400200	4.0 101.6	5.3 2.4	8" x 8" x 3"	120800300	6.8 173.0	30.0 13.6
4" x 4" x 2 ½"	120400250	4.0 101.6	5.5 2.5	8" x 8" x 4"	120800400	6.8 173.0	30.0 13.6
4" x 4" x 3" OD	120400290	4.0 101.6	5.5 2.5	8" x 8" x 6"	120800600	6.8 173.0	30.0 13.6
4" x 4" x 3"	120400300	4.0 101.6	5.5 2.5	8" x 8" x 6 ½"	120800650	6.8 173.0	30.0 13.6

END OF LINE FITTING - STYLE 112

End of line fitting is a unique domed end cap fitting available with a ½", 3/4" or 1" NPT or BSP threaded outlet. Designed as an end of line fitting. Fittings can be used for the direct connection of sprinkler heads, drops, drains and or gauges.

LISTED APPROVED



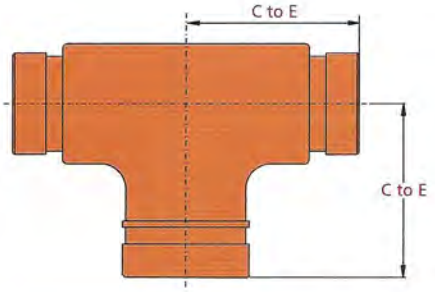


SIZE	PART NUMBER	L		S		WEIGHT Kg
		mm	Inch	mm	Inch	
1" X ½"	112100050	48	1.75	30	1.18	0.19
1" X ¾"	112100075	48	1.75	30	1.18	2
1 ¼" X ½"	112125050	50	1.97	32	1.26	0.24
1 ¼" X ¾"	112125075	50	1.97	32	1.26	0.25
1 ¼" X 1"	112125100	50	1.97	32	1.26	0.32
1 ½" X ½"	112150050	50	1.97	35	1.38	0.29
1 ½" X ¾"	112150075	50	1.97	35	1.38	0.34
1 ½" X 1"	112150100	50	1.97	35	1.38	0.36
2" X ½"	112200050	50	1.97	41	1.61	0.37
2" X ¾"	112200075	50	1.97	41	1.61	0.4
2" X 1"	112200100	50	1.97	41	1.61	0.46
2 ½" X ½"	112250050	50	1.97	44.5	1.75	0.45
2 ½" X ¾"	112250075	50	1.97	44.5	1.75	0.49
2 ½" X 1"	112250100	50	1.97	44.5	1.75	0.52

BULLHEAD TEE - STANDARD
STYLE 111

- Replaces a standard Tee and two reducing couplings.
- Less installed cost.
- Made of Ductile Iron conforming to ASTM A-536. Every lot is metallurgically examined to insure compliance.
- Pressure ratings to fittings conform to those of Style 11 coupling.
- Available with hot dipped galvanised coating as optional.

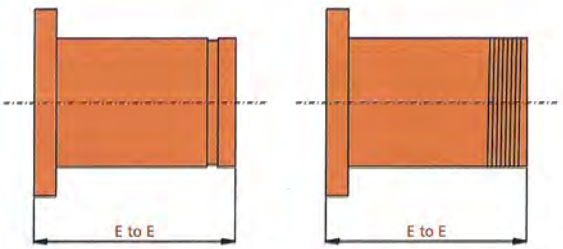




Pipe		Part Number	C to E in./ mm	Approx. Wt. Each lb./ kg.
Nominal Size	Actual Size In. / mm.			
1 1/2"X1 1/2"X2"	1.90X1.90X2.37 48.3X48.3X60.3	111150200	3.25 82.6	1.9 0.9
2"X2"X2 1/2"	2.37X2.37X2.87 60.3X60.3X73.0	111200250	3.75 95.3	4.6 2.1
2"X2"X3"	2.37X2.37X3.50 60.3X60.3X88.9	111200300	4.25 108.0	4.6 2.1
2"X2"X4"	2.37X2.37X4.50 60.3X60.3X114.3	111200400	5.00 127.0	11.9 5.4
2 1/2"X2 1/2"X3"	2.87X2.87X3.50 73.0X73.0X88.9	111250300	4.25 108.0	6.6 3.0
2 1/2"X2 1/2"X4"	2.87X2.87X4.50 73.0X73.0X114.3	111250400	5.00 127.0	12.3 5.6
3"X3"X4"	3.50X3.50X4.50 88.9X88.9X114.3	111300400	5.00 127.0	11.7 5.3
4"X4"X6"	4.50X4.50X6.67 114.3X114.3X168.3	111400600	6.50 165.1	29.8 13.5
6"X6"X8"	6.62X6.62X8.62 168.3x168.3X219.1	111600800	6.50 165.1	37.5 17.0

FLANGE ADAPTERS STYLE 190

- Conforms to class ANSI 125 ib Flange and BS Class Pn16 flange drilling
- Made of ductile iron conforming to ASTM A-536. Every lot is metallurgically examined to ensure compliance.
- Available with hot dipped galvanised coating as optional. When ordering place "G" after the part number



Style 190 Style 190TM

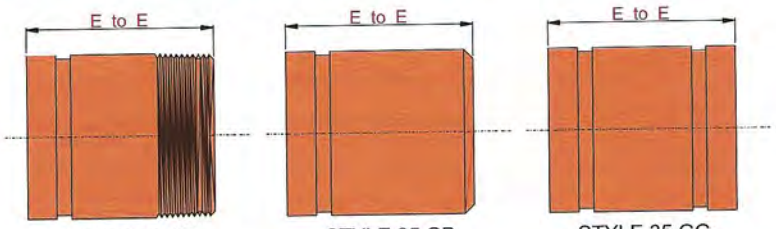
Nominal Size Inch	Actual Size in./ mm	Part Number	Dimensions E to E in./mm	Approx. Wgt.Ea. Lbs./ kg
2	2.375 60.3	190200	4.0 101.6	6.6 3.0
2 1/2	2.875 73.0	190250	4.0 101.6	8.8 4.0
3	3.500 88.9	190300	4.0 101.6	11.0 5.0
4	4.500 114.3	190400	6.0 152.4	19.8 9.0
5	5.563 141.3	190500	6.0 152.4	22.0 10.0
6	6.625 168.3	190600	6.0 152.4	28.6 13.0
8	8.625 219.1	190800	6.0 152.4	43.0 19.5
10	10.750 273.0	190910	8.0 203.2	60.5 27.5
12	12.750 323.9	190912	8.0 203.2	76.0 34.5

Style 190TM and 190TF are available with BSP threads. Add "B" at the end of Part Number.

NATIONAL™

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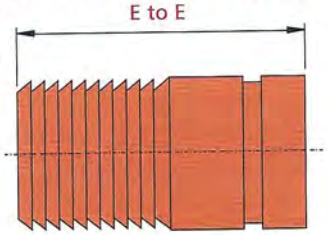
NIPPLES (STEEL) STYLE 35



STYLE 35 GT Grv.X Thd. | STYLE 35 GB Grv.X Bev. | STYLE 35 GG Grv.X Grv.

NOMINAL SIZE	PART NUMBER	E TO E INCH/mm	APPROX. Wgt.Ea Lb./kg
1"	035100	3/76.2	0.4/0.2
1 ¼"	035125	4/101.6	0.8/0.4
1 ½"	035150	4/101.6	0.8/0.4
2"	035200	4/101.6	1.2/0.5
2 ½"	035250	4/101.6	1.9/0.9
3"	035300	4/101.6	2.5/1.1
4"	035400	6/152.4	5.5/2.5
5"	035500	6/152.4	7.4/3.4
6"	035600	6/152.4	9.5/4.3
8"	035800	6/152.4	14.2/6.4
10"	035910	8/203.2	27.0/12.2
12"	035912	8/203.2	33.0/15.0

HOSE NIPPLE STYLE 80



SIZE Inches mm	PART NUMBER	E TO E Inches mm	APPROX. WEIGHT Lbs kg
1 25	080100	3.25 83	0.4 0.2
1 ¼ 32	080125	3.63 92	0.6 0.3
1 ½ 40	080150	4.00 102	0.8 0.4
2 50	080200	4.63 118	1.1 0.5
2 ½ 65	080250	5.50 140	2.0 0.9
3 80	080300	6.00 152	3.2 1.5
4 100	080400	7.25 184	4.9 2.2

ECCENTRIC REDUCER STYLE 145



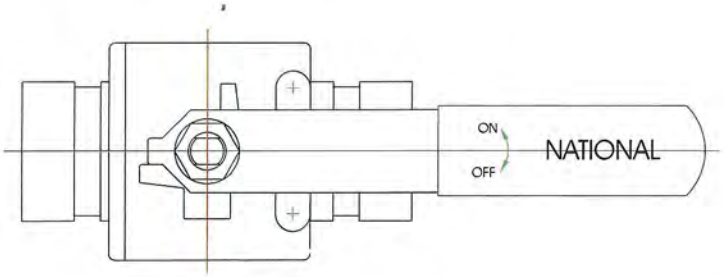
Eccentric Reducer - Style 145			
Normal size	Style 145 Part number	E to E In/mm	Style 145 Wt. Lb./kg.
2" x 1 ¼"	145200125	2.5/63.5	1.1/0.5
2" x 1 ½"	145200150	2.5/63.5	1.3/0.6
2 ½" x 2"	145250200	2.5/63.5	1.6/0.7
3" x 1 ¼"	145300125	2.5/63.5	2.6/1.2
3" x 2"	145300200	2.5/63.5	1.7/0.8
3" x 2 ½"	145300250	2.5/63.5	2.1/1.0
4" x 2"	145400200	3.0/76.2	2.6/1.2
4" x 2 ½"	145400250	3.0/76.2	3.0/1.4
4" x 3"	145400300	3.0/76.2	3.1/1.4
5" x 2"	145500200	3.5/88.9	6.6/3.0
5" x 2 ½"	145500250	3.5/88.9	5.2/2.4
5" x 3"	145500300	3.5/88.9	7.7/3.5
5" x 4"	145500400	3.5/88.9	7.2/3.5
6" x 2"	145600200	4.0/101.6	11.1/5.1
6" x 2 ½"	145600250	4.0/101.6	8.1/3.7
6" x 3"	145600300	4.0/101.6	8.5/3.9
6" x 4"	145600400	4.0/101.6	6.5/3.0
6" x 5"	145600500	4.0/101.6	7.9/3.6
8" x 3"	145800300	5.0/127.0	12.9/5.9
8" x 4"	145800400	5.0/127.0	11.7/5.3
8" x 5"	145800500	5.0/127.0	10.9/5.0
8" x 6"	145800600	5.0/127.0	11.3/5.2
10" x 3"	145910300	6.0/152.4	20.6/9.5
10" x 4"	145910400	6.0/152.4	31.9/14.5
10" x 5"	145910500	6.0/152.4	24.9/11.3
10" x 6"	145910600	6.0/152.4	23.4/10.6
10" x 8"	145910800	6.0/152.4	23.6/10.7
12" x 4"	145912400	7.0/177.8	34.3/15.6
12" x 6"	145912600	7.0/177.8	50.0/22.7
12" x 8"	145912800	7.0/177.8	41.9/19.3
12" x 10"	145912910	7.0/177.8	38.8/17.6
14" x 6"	145914600	13.0/330.2	69.7/32.1
14" x 8"	145914800	13.0/330.2	82.0/37.2
14" x 10"	145914910	13.0/330.2	82.0/37.2
14" x 12"	145914912	13.0/330.2	67.3/31.0

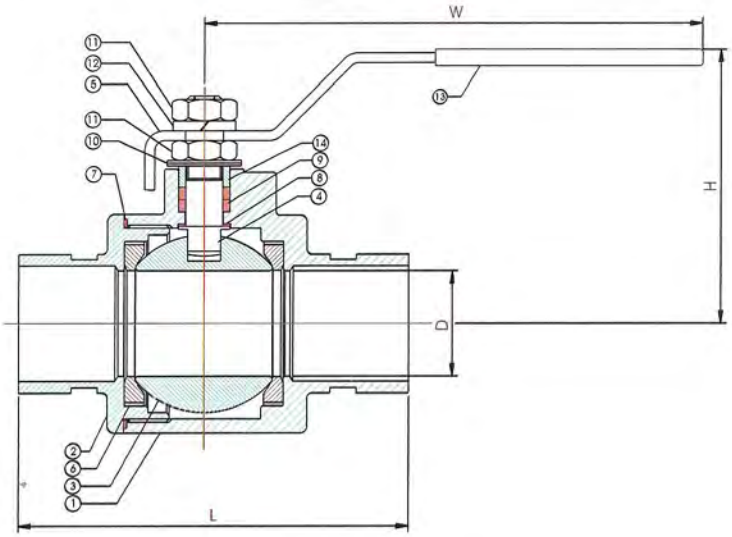
Place "T" after the part number for threaded outlet.

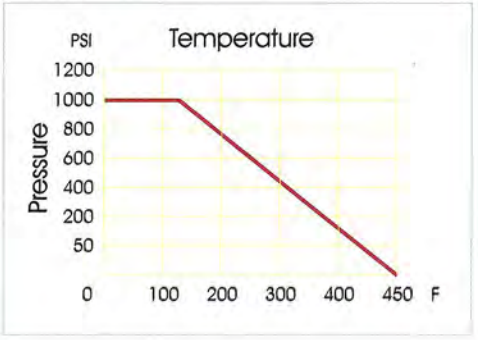
GROOVED END BALL VALVE - STYLE 40

- Full port stream lined design provides better flow characteristics in all sizes.
- Valve body and end cap are ductile iron rated for 500 psi
- Microfinished Steel ball and stem (SS 304/316) seals on PTFE seats.
- Available in full stainless body and end cap (SS 304/316) as optional.









Size	1 1/4"	1 1/2"	2"	2 1/2"	3"
ød	32	38	50	62	77
L	118	123	145	165	190
H	86	95	108	138	151
W	151	181	181	247	247
Cv	46	80	110	310	360
TQ	158	187	230	430	1380
KG	2.05	2.8	4.35	8.4	14.5

TQ = Torque. Unit: in-lb Unit: mm
KG = Weight. Unit: kg
Cv = Gallons per minute of water thru' valve with 1 PSI pressure drop

GROOVED END BUTTERFLY VALVE - STYLE 50

- Grooved end for fast, easy installation
- Excellent flow characteristics
- Ductile iron value body dual seal, rubber coated ductile disc for bubble tight shut-off to 300 psi.
- Available with manual handles, gear operators or automated in two way and three way configurations.



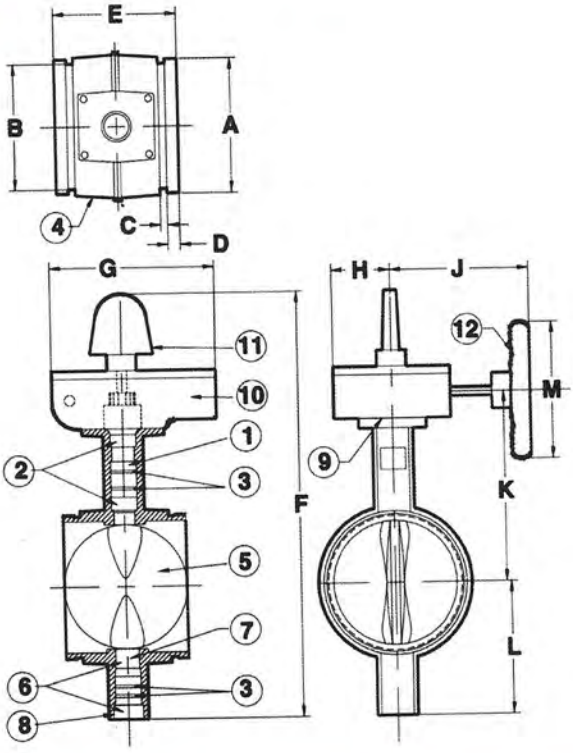
MATERIAL LIST

S.No.	PART	MATERIAL
1.	Upper Stem	Stainless Steel AISI 420
2.	Upper Bushing	Carbon Steel (Fiber-Flon+Glass Coating)
3.	" O " Ring	EPDM
4.	Body	Ductile Iron ASTM A-537 with Nylon Coating
5.	Disc	Ductile Iron ASTM A-536 with EPDM Encapsulating
6.	Lower Busing	Carbon Steel (Fiber-Flon+Glass Coating)
7.	Lower Stem	Stainless Steel AISI 420
8.	Dust Plug	EPDM
9.	Nameplate	Aluminum
10.	Gear Operator	Ductile Iron ASTM A-536, Powder Coated
11.	Indicator Flag	Ductile Iron ASTM A-536, Powder Coated
12.	Handwheel	Carbon Steel ASTM A 619

DIMENSIONS - WEIGHTS

SIZE	A	B	C	D	E	F	G
2 ½"	2.88	2.72	0.31	3.63	3.80	13.27	6.73
3"	3.50	3.34	0.31	0.63	3.80	13.82	6.73
4"	4.50	4.33	0.38	0.63	4.54	15.75	6.73
6"	6.63	6.45	0.38	0.63	5.21	18.58	6.73
8"	8.63	8.44	0.44	0.75	5.80	20.51	6.73

SIZE	H	J	K	L	M	Weight (lbs.)
2 ½"	2.95	5.31	5.31	3.36	4.92	18
3"	2.95	5.31	5.60	3.62	4.92	20
4"	2.95	5.31	6.89	4.25	4.92	24
6"	2.95	7.60	8.27	5.71	8.86	34
8"	2.95	7.60	9.21	6.69	8.86	50



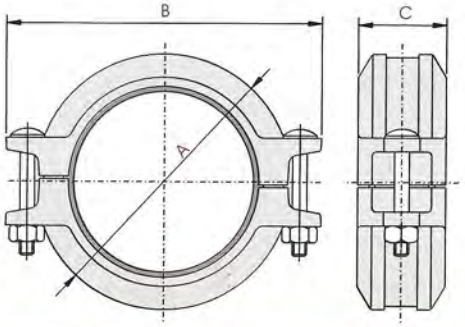
STAINLESS STEEL COUPLINGS

Designed to provide rugged, corrosion resistant components for grooved end stainless steel piping systems, Couplings and fittings are investment cast in SS 304 grade stainless steel for Sch 5,10, or 40 stainless steel pipe. Available in 1" – 8" sizes. Couplings are supplied with Hex head bolts and nuts. Grade 316 Housings with compatible Bolts and nuts are optionally available. Allows for pipe support and hanging to ANSI B 31.1. Available with a variety of gasket material to suit service conditions.

RIGID COUPLING STYLE 05S

Provides joint rigidity and does not allow expansion, contraction nor deflection. Tongue and groove design with wider key section prevents expansion and contraction.





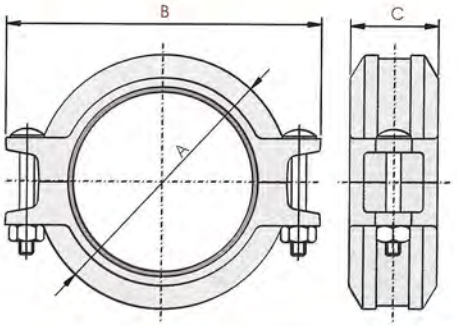
Pipe		Part Number	Max. Working Pressure *	Allow Pipe End Sepration §	No.Bolt/Nut Reqd.-Size	Dimensions (inch / mm)			Approx. Wt. Each
Nominal Size	Actual Size in. / mm		psi / kPa	in. / mm	Inch Ø	A	B	C	lb. / kg.
1"	1.315 33.4	05S100	300 2070	0.10 2.5	2/2 - 3/8x2-1/8	2.19 55.6	3.54 90.0	1.72 43.8	1.4 0.6
1 1/4"	1.660 42.2	05S125	300 2070	0.10 2.5	2/2 - 3/8x2-1/8	2.56 65.0	3.90 99.0	1.73 43.9	1.4 0.6
1 1/2"	1.900 48.3	05S150	300 2070	0.10 2.5	2/2 - 3/8x2-1/8	2.80 71.0	4.21 107.0	1.73 43.9	1.5 0.7
2"	2.375 60.3	05S200	300 2070	0.10 2.5	2/2 - 3/8x2-1/8	3.29 83.6	4.72 120.0	1.79 45.7	1.8 0.8
2 1/2"	2.875 73.0	05S250	300 2070	0.10 2.5	2/2 - 3/8x2-1/8	3.83 97.3	5.28 134.0	1.79 45.7	2.1 0.9
3"	3.500 88.9	05S300	300 2070	0.10 2.5	2/2 - 3/8x2-7/8	4.49 114.1	5.98 152.0	1.79 45.7	2.8 1.3
4"	4.500 114.3	05S400	300 2070	0.16 4.1	2/2 - 3/8x2-7/8	5.83 148.0	7.20 183.0	1.99 50.6	4.3 1.9
5"	5.563 141.3	05S500	300 2070	0.16 4.1	2/2 - 1/2x3-3/8	6.91 175.5	8.66 220.0	1.99 50.6	5.4 2.5
6"	6.625 168.3	05S600	300 2070	0.16 4.1	2/2 - 1/2x3-3/8	8.07 205.0	9.80 249.0	1.99 50.6	7.0 3.2
8"	8.625 219.1	05S800	300 2070	0.19 4.8	2/2 - 5/8x4-1/2	10.26 260.5	12.40 315.0	2.32 59.1	13.9 6.3

Refer Page No: 6 for Notes

FLEXIBLE COUPLING STYLE 12S

Provides expansion, contraction controlled angular and rotational movement of a joint. Accommodates settling, vibration, noise and other piping system movements.



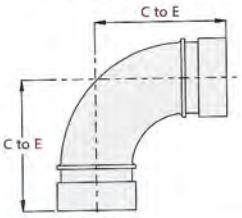


Pipe		Part Number	Max. Working Pressure *	Allow Pipe End Sepration §	Max. Deflection from Center Line §			No.Bolt/Nut Reqd.-Size	Dimensions (inch / mm)			Approx. Wt. Each
Nominal Size	Actual Size in. / mm		psi / kPa	in. / mm	Per Coup. Deg.	Pipe in./ft.	Pipe mm/m	Inch Ø	A	B	C	lb. / kg.
1"	1.315 33.4	12S100	300 2070	0.10 2.5	5°26'	1.14	95	2/2 - 3/8x2-1/8	2.19 55.6	3.54 90.0	1.72 43.8	1.4 0.6
1 1/4"	1.660 42.2	12S125	300 2070	0.10 2.5	4°19'	0.90	75	2/2 - 3/8x2-1/8	2.56 65.0	3.90 99.0	1.73 43.9	1.4 0.6
1 1/2"	1.900 48.3	12S150	300 2070	0.10 2.5	3°46'	0.79	66	2/2 - 3/8x2-1/8	2.80 71.0	4.21 107.0	1.73 43.9	1.5 0.7
2"	2.375 60.3	12S200	300 2070	0.10 2.5	3°- 1 '	0.62	52	2/2 - 3/8x2-1/8	3.29 83.6	4.72 120.0	1.79 45.7	1.8 0.8
2 1/2"	2.875 73.0	12S250	300 2070	0.10 2.5	2°29'	0.52	43	2/2 - 3/8x2-1/8	3.83 97.3	5.28 134.0	1.79 45.7	2.1 0.9
3"	3.500 88.9	12S300	300 2070	0.10 2.5	2°- 3 '	0.43	36	2/2 - 3/8x2-7/8	4.49 114.1	5.98 152.0	1.79 45.7	2.8 1.3
4"	4.500 114.3	12S400	300 2070	0.16 4.1	3°11'	0.67	56	2/2 - 3/8x2-7/8	5.83 148.0	7.20 183.0	1.99 50.6	4.3 1.9
5"	5.563 141.3	12S500	300 2070	0.16 4.1	2°35'	0.54	45	2/2 - 1/2x3-3/8	6.91 175.5	8.66 220.0	1.99 50.6	5.4 2.5
6"	6.625 168.3	12S600	300 2070	0.16 4.1	2°10'	0.46	38	2/2 - 1/2x3-3/8	8.07 205.0	9.80 249.0	1.99 50.6	7.0 3.2
8"	8.625 219.1	12S800	300 2070	0.19 4.8	1°40'	0.34	29	2/2 - 5/8x4-1/2	10.26 260.5	12.40 315.0	2.32 59.1	13.9 6.3

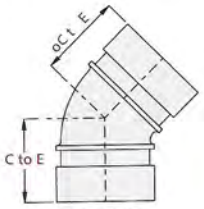
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STAINLESS STEEL GROOVED FITTINGS
STYLES 105S, 106S, 107S, 155S, 115S & 140S

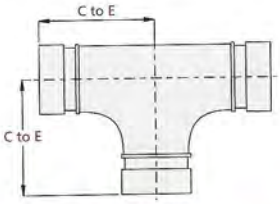
Fittings are full flow design with shorter center to end distances to ease installation and handling. Precision cast thru lost wax process, assures dimensional tolerances and gasket seat finish Grade 304 is standard, grade 316 is optionally available. Pressure ratings will correspond to coupling ratings. Grooving to AWWA C-606.



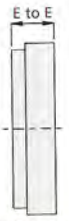
STYLE 105S



STYLE 106S



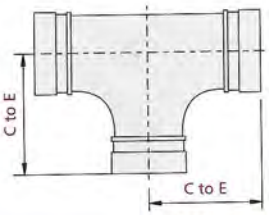
STYLE 107S



STYLE 155S

Pipe Inch		Max. Working Pressure	90°Elbow - No.105S			45°Elbow - No.106S			Equal Tee - No.107S			End cap - No.155S		
Nominal Size	Actual Size in. / mm	psi/ kPa	Part Number	C to E in. / mm	Approx. Wgt. Ea. lb. / kg	Part Number	C to E in. / mm	Approx. Wgt. Ea. lb. / kg	Part Number	C to E in. / mm	Approx. Wgt. Ea. lb. / kg	Part Number	E to E in. / mm	Approx. Wgt. Ea. lb. / kg
1-1/4"	1.660 42.2	300 2070	105S125	2.25 57.2	0.9 0.4	106S125	1.75 44.5	0.6 0.3	107S125	2.25 57.2	1.2 0.5	155S125	1.00 25.4	0.5 0.2
1-1/2"	1.900 48.3	300 2070	105S150	2.50 63.5	1.3 0.6	106S150	1.75 44.5	1.1 0.5	107S150	2.50 63.5	1.8 0.8	155S150	1.00 25.4	0.6 0.3
2"	2.375 60.3	300 2070	105S200	2.75 69.8	1.5 0.7	106S200	2.00 50.8	1.3 0.6	107S200	2.75 69.8	2.2 1.0	155S200	1.00 25.4	0.7 0.3
2 1/2"	2.875 73.0	300 2070	105S250	3.00 76.2	2.2 1.0	106S250	2.25 57.2	2.0 0.9	107S250	3.00 76.2	3.1 1.4	155S250	1.00 25.4	0.8 0.4
3"	3.500 88.9	300 2070	105S300	3.38 85.9	3.1 1.4	106S300	2.50 63.5	2.6 1.2	107S300	3.38 85.9	4.8 2.2	155S300	1.00 25.4	1.3 0.6
4"	4.500 114.3	300 2070	105S400	4.00 101.6	5.9 2.7	106S400	3.00 76.2	4.6 2.1	107S400	4.00 101.6	7.7 3.5	155S400	1.06 27.0	2.0 0.9
5"	5.563 141.3	300 2070	105S500	4.88 124.0	8.0 3.6	106S500	3.25 82.6	7.5 3.4	107S500	4.88 124.0	10.5 4.8	155S500	1.06 27.0	3.5 1.6
6"	6.625 168.3	300 2070	105S600	5.50 139.7	14.9 6.6	106S600	3.50 88.9	10.8 4.9	107S600	5.50 139.7	24.2 11.0	155S600	1.06 27.0	4.8 2.2
8"	8.625 219.1	300 2070	105S800	6.81 173.0	26.5 12.0	106S800	4.25 107.9	18.9 8.6	107S800	6.95 176.5	38.4 17.4	155S800	1.20 30.1	9.3 4.2

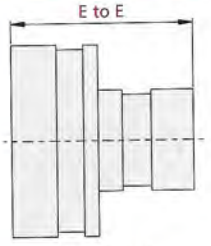
Reducing Tee - No. 115S				
Nominal Size	Part Number	Max. Working Pressure psi/ kPa	C to E Inch/mm	Approx. Wgt.Ea. lb. /kg.
1 1/2"x1 1/2"x1"	115S150100	300 2070	2.50 63.5	1.4 0.6
1 1/2"x1 1/2"x11/4"	115S150125	300 2070	2.50 63.5	1.5 0.7
2"x2"x1"	115S200100	300 2070	2.75 69.8	2.4 1.1
2"x2"x1 1/4"	115S200125	300 2070	2.75 69.8	1.6 0.7
2"x2"x1 1/2"	115S200150	300 2070	2.75 69.8	2.7 1.2
2 1/2"x2 1/2"x1"	115S250100	300 2070	3.00 76.2	3.4 1.6
2 1/2"x2 1/2"x1 1/4"	115S250125	300 2070	3.00 76.2	3.8 1.7
2 1/2"x2 1/2"x1 1/2"	115S250150	300 2070	3.00 76.2	3.5 1.6
2 1/2"x2 1/2"x2"	115S250200	300 2070	3.00 76.2	4.1 1.8
3"x3"x1"	115S300100	300 2070	3.38 85.9	4.2 1.9
3"x3"x1 1/4"	115S300125	300 2070	3.38 85.9	5.2 2.4
3"x3"x1 1/2"	115S300150	300 2070	3.38 85.9	4.8 2.2
3"x3"x2"	115S300200	300 2070	3.38 85.9	5.0 2.2
3"x3"x2 1/2"	115S300250	300 2070	3.38 85.9	5.2 2.4
4"x4"x1"	115S400100	300 2070	4.00 101.6	7.0 3.2
4"x4"x1 1/4"	115S400125	300 2070	4.00 101.6	8.6 3.9
4"x4"x1 1/2"	115S400150	300 2070	4.00 101.6	9.2 4.2
4"x4"x2"	115S400200	300 2070	4.00 101.6	10.1 4.6
4"x4"x2 1/2"	115S400250	300 2070	4.00 101.6	10.3 4.7
4"x4"x3"	115S400300	300 2070	4.00 101.6	10.4 4.7



Style 115S

Reducing Tee - No. 115S				
Nominal Size	Part Number	Max. Working Pressure psi/ kPa	C to E Inch/mm	Approx. Wt Ea. lb. /kg.
6"x6"x2"	115S600200	300 2070	5.50 139.7	23.8 10.8
6"x6"x2 1/2"	115S600250	300 2070	5.50 139.7	23.9 10.8
6"x6"x3"	115S600300	300 2070	5.50 139.7	23.9 10.8
6"x6"x4"	115S600400	300 2070	5.50 139.7	22.5 10.2
6"x6"x5"	115S600500	300 2070	5.50 139.7	20.9 9.5
8"x8"x2"	115S800200	300 2070	6.95 176.5	30.2 13.7
8"x8"x2 1/2"	115S800250	300 2070	6.95 176.5	35.1 15.9
8"x8"x3"	115S800300	300 2070	6.95 176.5	30.2 13.7
8"x8"x4"	115S800400	300 2070	6.95 176.5	45.0 20.4
8"x8"x6"	115S800600	300 2070	6.95 176.5	38.1 17.3

Concentric Reducer - No. 140S				
Nominal Size	Part Number	Max. Working Pressure psi /kpa	E to E in./mm	Approx. Wt. Ea. lb./ kg
1 1/2"x1"	140S150100	300 2070	2.50 63.5	0.9 0.4
1 1/2"x11/4"	140S150125	300 2070	2.50 63.5	1.2 0.5
2"x1"	140S200100	300 2070	2.50 63.5	0.8 0.4
2"x11/4"	140S200125	300 2070	2.50 63.5	1.4 0.6
2"x11/2"	140S200150	300 2070	2.50 63.5	1.2 0.5
21/2"X1"	140S250100	300 2070	2.50 63.5	4.2 1.9
21/2"X1 1/4"	140S250125	300 2070	2.50 63.5	3.9 1.8
21/2"X1 1/2"	140S250150	300 2070	2.50 63.5	4.2 1.9
21/2"X2"	140S250200	300 2070	2.50 63.5	4.6 2.1
3"ODx1"	140S290100	300 2070	2.50 63.5	2.9 1.3
3"ODx1 1/4"	140S290125	300 2070	2.50 63.5	3.5 1.6
3"ODx1 1/2"	140S290150	300 2070	2.50 63.5	3.5 1.6
3"ODx2"	140S290200	300 2070	2.50 63.5	1.9 0.9
3"X1"	140S300100	300 2070	2.50 63.5	1.5 0.7
3"X11/4"	140S300125	300 2070	2.50 63.5	3.5 1.6
3"X11/2"	140S300150	300 2070	2.50 63.5	6.0 2.7
3"X2"	140S300200	300 2070	2.50 63.5	1.9 0.9
3"X21/2"	140S300250	300 2070	2.50 63.5	2.2 1.0



STYLE 140S

Concentric Reducer - No. 140S				
Nominal Size	Part Number	Max. Working Pressure psi /kpa	E to E in./mm	Approx. Wt. Ea. lb./ kg
4"X2"	140S400200	300 2070	3.00 76.2	2.8 1.3
4"X21/2"	140S400250	300 2070	3.00 76.2	3.2 1.4
4"X3"	140S400300	300 2070	3.00 76.2	3.7 1.7
6"X2"	140S600200	300 2070	4.00 101.6	7.7 3.5
6"X21/2"	140S600250	300 2070	4.00 101.6	7.5 3.4
6"X3"	140S600300	300 2070	4.00 101.6	7.5 3.4
6"X4"	140S600400	300 2070	4.00 101.6	7.6 3.4

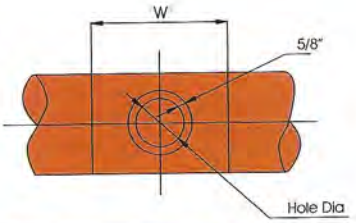
GASKET DATA
STANDARD IPS GASKETS

Grade	E	T
Temperature Range	-30°F to +230°F -34°C to +110°C	-20°F to +180°F -29°C to +82°C
Compound	EPDM Conforming to ASTM D2000 (2CA615A25B24F17Z)	NITRILE (BUNA - N)
General Service Recommendations	Recommended for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI /NSF 61 for cold +86°F (+30°) and hot +180° F (+82°C) portable water service. Not recommended for petroleum services.	Recommended for petroleum products, air with oil vapors, vegetables and mineral oils within the specified temperature range. Not recommended for hot water services over +150° F (+66° C) or hot dry air over + 140° F (+60° C).
Chemical Services	Acetaidehyde Acetic Acid up to 10% 100°F (38°C) Acetic Anhydride Acetone Acetophenone Acetylene Alkalis Allyl Alcohol to 96% Alums Aluminum Chloride Aluminum Flouride Aluminum Hydroxide Aluminum Nitrate Aluminum Phosphate Aluminum Salts Aluminum Sulfate Ammonia Gas, Cold Ammonia Gas, Hot Ammonia, Liquid Ammonium Carbonate Ammonium Fluoride Ammonium Hydroxide Ammonium Metaphosphate Ammonium Nitrate Ammonium Persulfate to 10% Ammonium Sulfate Ammonium Sulfide Ammonium Thictnate Ammonium Thioynate Amyl Acetate Amyl Alcohol Aniline Aniline Dyes Aniline Hydrochloride Aniline Oil Antimony Chloride Antimony Trichloride Argon Gas Barium Carbonate Barium Chloride Barium Hydroxide Benzaldehyde Benzoic Acid Benzyl Alcohol Benzyl Benzoate Bleach, 12% Active CP Borax Borddeaux Mixture Boric Acid Butanol (see Butyl Alcohol) Butyl Acetate Butyl Acetyl Ricinoleate Butyl Alcohol Butyl "Cellosolve Adipate" Butyl Phenol Butylene Glycol Calcium Chloride Calcium Hydroxide (Lime) Calcium Hypochlorite Calcium Hypochloride Calcium Nitrate Calcium Sulfide Carbotol Carbon Dioxide, Dry Carbon Dioxide, Wet Carbon Monoxide Caustic Potash Cellosolve Acetate Cellosolve (Alcohol Ether) Cellulose Acetate Cellilube 220 (Tri-Aryl-Phosphate) Cellulube Hydraulic Fluids Chloric Acid to 20% Chlorine, Water Chloroacetic Acid Chloroacetone Citric Acid Copper Fluoride Copper Nitrate Copper Sulfate Cyclohexanone Deionized Water Dibutyl Phialate Diethyl Sewbacate Diethylene Glycol Dioctyl Phthalate Diozane Dowtherm SR-I Ethanolamine Ethyl Acetoacetate Ethyl Alcohol Ethyl Cellulose Ethyl "Cellusolve" Ethyl Chloride Ethyl Oxalate Ethylene Chlorohydrin Ethylene Glycol Ferric Chloride, to 35% Ferric Chloride, Saturated Ferric Hydroxide Fluboric Acid Fly Ash Foam Formaldehyde Formic Acid Freon 134a, 176°F (86°C) Fumaric Acid Furfuryl Alcohol Glue Glycerin Glycerol Gitcol Glycolic Acid Halon Hexaldehyde Hydrobromic Acid, to 40% Hydrochloric Acid, to 36%, 75°F (240°C) Hydrocyamic Acid Hydrogn Gas, Cold Hydrogen Gas, Hot Hydrogen Sulfide Hydroxylamine Sulfate Hydrochlorous Acid, Dilute Isobutyl Alcohol Isopropyl Acetate Isopropyl Alcohol Ketones Lead Chloride Lime and H2O Magnesium Chloride Magnesium Hydroxide Magnesium Sulfate Mercuric Chloride	ASTM #3 Oil Acetamide Acetonitrate Acetylene Adipic Acid Alums Aluminum Chloride Aliminum Fluoride Aluminum Nitrate Aluminum Oxychloride Aluminum Sulfate Ammonium Bifluoride Ammonium Chloride Ammonium Nitrate Ammonium Phosphate Ammonium Sulfamate Amyl Chloronaphthalene Arsenic Acid, to 75% Barium Chloride Barium Hydroxide Barium Sulfide Black Sulfate Liquor Blast Furnace Gas Boric Acid Butane Gas Butanol (see Butyl Alcohol) Butyl Alcohol Butyl "Cellosolve Adipate" Butyl Stearate Butylene Calcium Acetate Calcium Bisulphate Calcium Bisulphite Calcium Fluophosphate Calcium Hydroxide (Lime) Calcium Sulfate Caliche Liquors Carbitol Carbon Dioxide, Dry Carbon Dioxide, Wet China Wood Oil, Tung Oil Chlorinated Paraline Chrome Alum Coke Oven Gas Copper Chloride Copper Cyanide Copper Nitrate Copper Sulfate Cupric Fluoride Cupric Sulfate Dextrim Dichloro Difloro Methane Dichloro Hexamine Diesel Oil Diethyl Ether Diethylene Glycol Dimethylamine Dipentene (Terpene Hydrocarbon) Dipropylnen Glycol Dowtherm SR-1 Ethyl Alcohol Ethyl Ether Ethyl Silicate Ethylene Diamine Ethylene Glycol F Ferric Chloride, to 35% Ferric Sulfate Fog Oil Formaldehyde Formanide Freon 11, 130°F (54°C) Freon 12, 130°F (54°C) Freon 113, 130°F (54°C) Freon 114, 130°F (54°C) Freon 134a, 176°F (80°C) Fructose Fuel Oil Gasoline, Refined Glue Glycerin Glycerol Glycol Grease Green Sulfate Liquor Heptane Hexane Hexanol Tertiary Hexyl Alcohol Hexlene Glycol Hydrofluosilicic Acid Hydrogen Gas, Cold Hydroquicone Iso Octane, 100°F (38°C) Isopropyl Ether JP-3 JP-4 JP-5 Kerosene Lauric Acid Lavender Oil Lead Acetate Lead Sulfate Lime and H2O Lithium Bromide Lithium Chloride Lubricating Oil, Refined Lubricating Oil, Sour Lubricating Oil, To 150° F (66°C) Magnesium Chloride Magnesium Hydroxide Magnesium Sulphate Maleic Acid Malic Acid Mercuric Chloride

Silicone, Neoprene, Viton gaskets for services not listed above are available optionally. Always use proper lubricant for coupling assembly.

PIPE PREPARATION FOR MECHANICAL BRANCHLETS

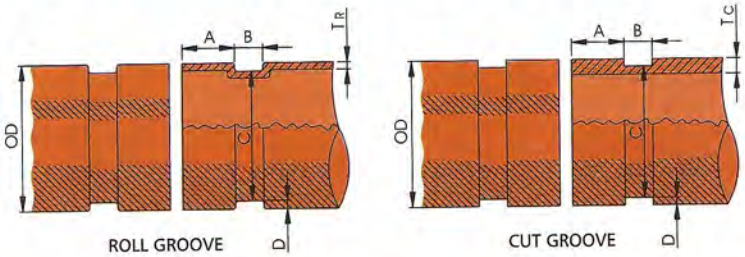
Cut or drill the hole in pipe. Hole diameter for each size is listed in Table. Holes must be drilled on centerline of pipe. Remove the cut piece and cutting chips. Check pipe surface within 5/8" of the hole. This surface must be clean, smooth and free from indentation or projection, which would affect proper sealing. The pipe around entire circumference within the 'W' dimension must be free from any dirt and scale, which might affect sealing performance on the pipe surface (See Table).



Run Size Inches	Branch Size Inches	Hole Diameter Inches +1/8 -0	W Dimension Inches
All	1/2, 3/4, 1	1 1/2	3 1/2
2	1 1/4, 1 1/2	1 3/4 *	4
All	1 1/4, 1 1/2	2	4
All	2	2 1/2	4 1/2
All	2 1/2	2 3/4	4 3/4
All	3	3 1/2	5 1/2
All	4	4 1/2	6 1/2

* 2 X 1 1/4, 2 X 1 1/2 - Hole size 1-3/4 ±1/16 O.D

PIPE GROOVING SPECIFICATIONS



1 Nominal Size	2 Pipe Outside Diameter OD in./mm			3 Gasket Seat A in./mm +0.030 +0.79	4 Groove Width B +0.030/+0.79 in./mm		5 Groove Diameter C in./mm		6 Groove Depth (Ref.) D in./mm	7 Min. Allowable Wall Thickness in./mm		8 Max. Allowable Flare Dia. in./mm
	Actual Size	Tolerance			Roll Groove	Cut Groove	Actual Size	Toler. +0.000 +0.00		Roll Groove Tr	Cut Groove Tc	
1"	1.315 33.4	+0.013 +0.33	-0.013 -0.33	0.625 15.88	0.281 7.14	0.313 7.95	1.190 30.23	-0.015 -0.38	0.063 1.60	0.065 1.65	0.133 3.38	1.43 36.3
1 1/4"	1.660 42.2	+0.016 +0.41	-0.016 -0.41	0.625 15.88	0.281 7.14	0.313 7.95	1.535 38.99	-0.015 -0.38	0.063 1.60	0.065 1.65	0.140 3.56	1.77 45.0
1 1/2"	1.900 48.3	+0.019 +0.48	-0.019 -0.48	0.625 15.88	0.281 7.14	0.313 7.95	1.775 45.09	-0.015 -0.38	0.063 1.60	0.065 1.65	0.145 3.68	2.01 51.1
2"	2.375 60.3	+0.024 +0.61	-0.024 -0.61	0.625 15.88	0.344 8.74	0.313 7.95	2.250 57.15	-0.015 -0.38	0.063 1.60	0.065 1.65	0.154 3.91	2.48 63.0
2 1/2"	2.875 73.0	+0.029 +0.74	-0.029 -0.74	0.625 15.88	0.344 8.74	0.313 7.95	2.720 69.09	-0.018 -0.46	0.078 1.98	0.083 2.11	0.188 4.78	2.98 75.7
3" OD	3.000 76.1	+0.030 +0.76	-0.030 -0.76	0.625 15.88	0.344 8.74	0.313 7.95	2.845 72.26	-0.018 -0.46	0.078 1.98	0.083 2.11	0.188 4.78	3.10 78.7
3"	3.500 88.9	+0.035 +0.89	-0.031 -0.79	0.625 15.88	0.344 8.74	0.313 7.95	3.344 84.94	-0.018 -0.46	0.078 1.98	0.083 2.11	0.188 4.78	3.60 91.4
4"	4.500 114.3	+0.045 +1.14	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	4.334 110.08	-0.020 -0.51	0.083 2.11	0.083 2.11	0.203 5.16	4.60 116.8
5"	5.563 141.3	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	5.395 137.03	-0.022 -0.56	0.084 2.13	0.109 2.77	0.203 5.16	5.66 143.8
5 1/2" OD	5.500 139.7	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	5.334 135.48	-0.020 -0.51	0.083 2.11	0.109 2.77	0.203 5.16	5.60 142.2
6"OD	6.000 152.4	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	5.830 148.08	-0.022 -0.56	0.085 2.16	0.109 2.77	0.219 5.56	6.10 154.9
6"	6.625 168.3	+0.063 +1.60	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	6.455 163.96	-0.022 -0.56	0.085 2.16	0.109 2.77	0.219 5.56	6.73 170.9
6 1/2" OD	6.500 165.1	+0.063 +1.60	-0.031 -0.79	0.625 15.88	0.344 8.74	0.375 9.53	6.330 160.78	-0.022 -0.56	0.085 2.16	0.109 2.77	0.219 5.56	6.60 167.6
8"	8.625 219.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	0.438 11.13	8.441 214.40	-0.025 -0.64	0.092 2.34	0.109 2.77	0.238 6.05	8.80 223.5
10"	10.750 273.0	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	0.500 12.70	10.562 268.28	-0.027 -0.69	0.094 2.39	0.134 3.40	0.250 6.35	10.92 277.4
12"	12.750 323.9	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	0.500 12.70	12.531 318.29	-0.030 -0.76	0.109 2.77	0.156 3.96	0.279 7.09	12.92 328.2
14"OD	14.000 355.6	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.469 11.91	0.500 12.70	13.781 350.04	-0.030 -0.76	0.109 2.77	0.156 3.96	0.281 7.14	14.10 358.1
15"OD	15.000 381.0	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.469 11.91	0.500 12.70	14.781 375.44	-0.030 -0.76	0.109 2.77	0.165 4.19	0.312 7.92	15.10 383.5
16"OD	16.000 406.4	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.469 11.91	0.500 12.70	15.781 400.84	-0.030 -0.76	0.109 2.77	0.165 4.19	0.312 7.92	16.10 408.9
18"OD	18.000 457.2	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.469 11.91	0.500 12.70	17.781 451.64	-0.030 -0.76	0.109 2.77	0.165 4.19	0.312 7.92	18.16 461.3
20"OD	20.000 508.0	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.469 11.91	0.500 12.70	19.781 502.44	-0.030 -0.76	0.109 2.77	0.188 4.78	0.312 7.92	20.16 512.1
22"OD	22.000 559.0	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.500 12.70	0.563 14.30	21.656 550.06	-0.030 -0.76	0.172 4.37	0.188 4.78	0.375 9.53	22.20 563.9
24"OD	24.000 609.6	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.500 12.70	0.563 14.30	23.656 600.86	-0.030 -0.76	0.172 4.37	0.218 5.54	0.375 9.53	24.20 614.7

COLUMN 1

Nominal IPS pipe outside diameter.

COLUMN 2

Maximum Deviation from square cut ends for 1.25" thru' 3" is 0.03"; for 4" thru' 6" is 0.045" and for 8" and above is 0.06".

COLUMN 3

To provide a leak tight seal, the gasket seating area on pipe shall be free from roll marks, indentations, paint scale, dirt, chips, grease and rust etc.

COLUMN 4

Groove width - Groove bottom to be free from loose dirt, chips, rust and scales. Bottom of grooves to be radius and the vertical wall of grooves must provide at least 0.03" vertical side for proper assembly of coupling.

COLUMN 5

Groove outside diameter - The groove must be concentric to the pipe circumference. Groove must be within the diameter tolerance indicated.

COLUMN 6

Groove Depth - for reference only. Refer to Column 5

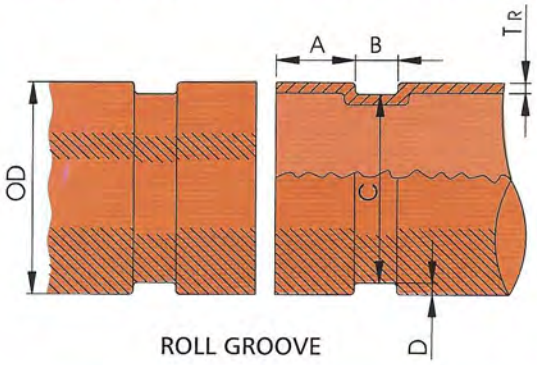
COLUMN 7

Minimum allowable wall thickness to which the pipe may be roll grooved or cut grooved.

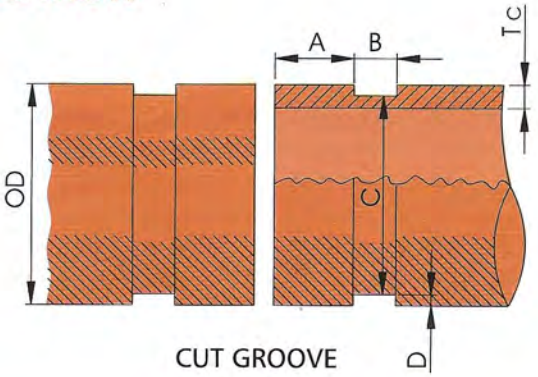
COLUMN 8

Maximum allowable pipe end flare diameter. Measured at the most extreme pipe ends.

LARGE DIAMETER PIPE GROOVING SPECIFICATION



ROLL GROOVE



CUT GROOVE

1 Nominal Size	2 Pipe Outside Diameter O.D. in/mm			3 Gasket Seat A in/mm +0.03/-0.06 +0,8/ -1,5	4 Groove Width B in/mm ±0.03/±0,76		5 Groove Diameter C in/mm		6 Groove Depth (Ref.) D in/mm	7 Min. Allow. Wall Thickness in/mm		8 Max. Allow. Flare Dia. in/mm
	Actual Size	Tolerance			Roll Groove	Cut Groove	Actual Size	Tol. +0.000 +0,00		Roll Groove T_R	Cut Groove T_C	
26 O.D.	26.00 660.4	+0093 +2.36	-0.031 -0.79	1.75 44.45	0.625 15.88	0.625 15.88	25.50 647.7	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	26.20 665.5
28 O.D.	28.00 711.0	+0.093 +2.36	-0.031 -0.79	1.75 44.45	0.625 15.88	0.625 15.88	27.50 698.50	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	28.20 716.3
30 O.D.	30.00 762.0	+0.093 +2.36	-0.031 -0.79	1.75 44.45	0.625 15.88	0.625 15.88	29.50 749.30	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	30.20 767.1
32 O.D.	32.00 813.0	+0.093 +2.36	-0.031 -0.79	1.75 44.45	0.625 15.88	0.625 15.88	31.50 800.10	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	32.20 817.9
36 O.D.	36.00 914.0	+0.093 +2.36	-0.031 -0.79	1.75 44.45	0.625 15.88	0.625 15.88	35.50 901.70	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	36.20 919.5
42 O.D.	42.00 1067.0	+0.093 +2.36	-0.031 -0.79	2.00 50.80	0.625 15.88	0.625 15.88	41.50 1054.10	-0.063 -1.60	0.250 6.35	0.250 6.35	0.625 15.88	42.20 1071.8

RECOMMENDED BOLT TORQUE RANGE

Always use factory supplied bolts and nuts for assembly of National couplings. Never exceed the Recommended torque range by more than 25% as excessive torque can lead to joint failure, personal injury and or property damage. Always depressurize and drain the piping system before attempting disassembly, adjustment or removal of any piping component.

BOLT SIZE In	TORQUE RANGE	
	N-m	Los-Ft
3/8	20-30	15-22
1/2	40-68	30-50
5/8	81-122	60-90
3/4	129-237	96-175



INSTALLATION INSTRUCTIONS

MECHANICAL GROOVED COUPLINGS STYLES 5, 10, 11, 12

1. Remove one nut and bolt from housings. Loosen the other nut until it is flush with the end of the bolt. Remove the gasket from the housings.
2. Check suitability of gasket for intended service and apply a thin coat of silicone or other compatible pipe lubricant to gasket lips and outside of the gasket, if the gasket surface does not have lubricity.
3. Insert and push the gasket over one of the grooved ends of the two pipes to be joined. Gasket lip should not overhang pipe end.
4. Align and bring the pipe ends together and slide gasket into position centered between the grooves on each pipe. Gasket should not extend into groove on either pipe.
5. Place housings over gasket and apply pressure by hands to engage the keys into the grooves. Insert bolts and apply nuts finger tight. Make sure on Style 5 the tongue and groove match to avoid product failure.
6. Tighten nuts alternately and equally until housing bolts pads are firmly together, metal-to-metal. Uneven tightening will pinch the gasket. On Style 5 there may be a slight gap at bolt pads.
7. WARNING : DO NOT MAKE ADJUSTMENT TO GROOVED PRODUCTS WHILE THE PIPING SYSTEM IS UNDER PRESSURE.

REDUCING COUPLING STYLE 25

1. Remove nuts and bolts from housings. Remove gasket from housings.
2. Check suitability of gasket for intended service and apply a thin coat of silicone or other suitable pipe lubricant to gasket lips and outside of gasket, if the gasket surface does not have lubricity.
3. Insert the large opening of the gasket over the larger pipe ends until the steel washer touches the pipe ends.
4. Align the pipe centerline and insert the smaller pipe end into the gasket. A slight twisting motion of the pipe eases assembly. Steel washer will prevent the movement of smaller pipe inside the larger pipe.
5. Position the housing halves over the gasket, making sure the housing keys engage the grooves on each pipe. Proper lubrication of the interior of the housing and exterior of the gasket is important to prevent gasket pinching.
6. Insert the bolts and start the nuts manually. Tighten the nuts uniformly, alternating side until housing bolts pads meet firmly metal-to-metal. Uneven tightening will pinch the gasket.
7. WARNING : DO NOT MAKE ADJUSTMENT TO GROOVED PRODUCTS WHILE THE PIPING SYSTEM IS UNDER PRESSURE.

MECHANICAL BRANCH OUTLETS STYLES 13,15,16

1. Cut or drill hole in pipe. Hole diameter for each mechanical branch out-let is listed on the chart pertaining to the product. Holes must be drilled on the center-line of the pipe. Remove the cut piece and cutting chips. Make sure that the pipe surface within 7/8" of the hole is clean, smooth and free of indentations or projections which would affect proper sealing.
2. Remove one nut and bolt from assembled housings. Loosen the other nut until it is flush with the end of bolt. Remove the tape and lift the gasket.
3. Check suitability of gasket for intended service. Reposition the gasket into the housing using alignment tabs on the sides for proper positioning.
4. Rotate the lower housing approximately 90 degrees away from the upper or outlet section. Place the upper on to the surface of the pipe in line with the outlet hole prepared per instructions and rotate the lower section around the pipe and close the two halves.
5. Insert bolt in its hole and finger tighten both nuts, making sure that the locating collar is in the outlet hole. Also make sure that the positioning lugs are aligned properly.
6. Tighten nuts uniformly until the gasket pocket area of the upper housing is in complete contact with pipe surface and the assembly is rigid. Nuts must be tightened with even gaps between bolt pads. Torque in excess of what is recommended is not desirable.
7. WARNING : DO NOT MAKE ADJUSTMENT TO GROOVED PRODUCTS WHILE THE PIPING SYSTEM IS UNDER PRESSURE.

GROOVE FLANGE ADAPTER STYLE 14

1. Open the Flange Adapter and place hinged flange around the grooved pipe end with the circular key section locating into the groove.
2. Insert a standard bolt through the mating holes of the Flange to secure the Flange in the groove.
3. Check suitability of gasket for the intended service and apply a thin coat of silicone or other compatible lubricant to gasket lips and outside of the gasket, if the gasket surface does not have lubricity.
4. Press the gasket into cavity between the pipe OD. and Flange recess.
5. Insert a standard Flange bolt in the hinge hole opposite the lock-bolt and direct the two bolt assembly to mate with the Flange of the device to be joined.
6. Add the remaining standard Flange bolts and tighten all nuts evenly until faces contact firmly or bolts attain recommended joint torque values.
7. WARNING: DO NOT MAKE ADJUSTMENT TO GROOVED PRODUCTS WHILE THE PIPING SYSTEM IS UNDER PRESSURE.

FIRE PROTECTION LISTINGS / APPROVAL

STYLE PRODUCT	UL/ULC LISTED		FM APPROVED	
	Size (in.)	Rating(PSI)	Size (in.)	Rating(PSI)
ST-05 RIGID COUPLING	1 – 18	300	1 – 12, 14 – 18	300 175
ST-11 MEDIUM FLEXIBLE COUPLING	1¼ – 4, 3 OD, 5 – 12	500 300	1¼ – 8, 3OD, 6½, 10 – 12	500 300 300
ST-12 LIGHT FLEXIBLE COUPLING	1 – 8	300	1 – 8	300
ST-13 MECHANICAL BRANCHLET	1¼ x ½ – 4 x 1	300	1¼ x ½ – 4 x 1	300
ST-14 GROOVED FLANGE ANSI 150, PN 10, 16	2 – 8, 10 – 12	300 175	2 – 8, 10 – 12	300 175
ST-15 MECHANICAL BRANCHLET	2 x 1¼ – 2 x 1½, 3 x 1¼ – 4 x 3, 5 x 1¼ – 5 x 3, 6½ x 1¼ – 8 x 4	300 300 300 300	2 x 1¼ – 4 x 3, 6½ x 1¼ – 6½ x 4, 6 x 1½ – 6 x 4, 8 x 2 – 8 x 4	300 300 300 300
ST-16 MECHANICAL BRANCHLET	2 x ½ – 5 x 3, 6½ x 1 – 6 x 4, 8 x 3 OD 8 x 2, 8 x 4	300 300 300	2 x ½ – 5 x 3, 6½ x 1¼ – 6½ x 4, 6 x 1¼ – 6 x 4	300 300 300
ST-25 REDUCING COUPLING	2 x 1½ – 4 x 3, 6½ x 4, 6 x 4, 8 x 6½, 8 x 6	300 250 175	2 x 1 – 4 x 3, 3OD x 2, 6 x 4.6½ x 4, 8 x 6½ – 8 x 6	300 300 300 175
ST-100 STANDARD ELBOW-90°	1¼ – 8, 3OD, 5½, 6½,14,16, 10, 12, 18	500 300 175	1¼ – 12, 3OD, 5½, 6½, 14 – 18	500 300 175
ST-101 STANDARD ELBOW-45°	1¼ – 8, 3OD, 5½, 6½, 14, 16, 10, 12	500 300 175	1¼ – 8, 3OD, 5½, 6½, 10 – 18	500 300 175
ST-102 STANDARD ELBOW-22 ½°	1¼ – 2½, 3 – 8	300	2, 2½, 3, 4	500
ST-103 STANDARD ELBOW-11 ¼°	1¼ – 2½, 3 – 8	300 300	-	-
ST-105 SHORT PATTERN ELBOW-90°	1¼ - 4, 6 – 8	300	1¼ – 4 , 6 – 8, 3OD, 6½	300 300
ST-106 SHORT PATTERN ELBOW-45°	1¼ – 4, 6 – 8	300	1¼ – 4 , 6 – 8, 3OD, 6½	300 300
ST-107 SHORT PATTERN TEE	1¼ – 4, 6 – 8	300	1¼ – 4 , 6 – 8, 3OD, 6½	300 300
ST-109 REDUCING FLANGE ADAPTOR	6 x 4 , 8 x 4 , 8 x 6	175	6 x 4, 8 x 4, 8 x 6	500
ST-110 STANDARD TEE	1¼ – 8, 3OD, 5½, 6½, 14, 16, 10, 12	500 300 300 175	1¼ - 8, 3OD, 5½, 6½, 10, 12, 14, 16, 18	500 300 300 175

STYLE PRODUCT	UL/ULC LISTED		FM APPROVED	
	Size (in.)	Rating(PSI)	Size (in.)	Rating(PSI)
ST-111 BULL HEAD TEE	1½ x 1½ x 2 – 4 x 4 x 6,	300	1½ x 1½ x 2 – 4 x 4 x 6.	300
ST-115 REDUCING TEE	2 x 2 x 1 – 12 x 12 x 10,	300	2 x 2 x 1 – 12 x 12 x 10.	300
ST-115TF THREADED REDUCING TEE	2½ x 2½ x 1 – 2½ x 2½ x 2, 3 x 3 x 1 – 4 x 4 x 2.	300 300	-	-
ST-120 SHORT PATTERN REDUCING TEE	2 x 2 x 1¼ – 2½ x 2½ x 2, 3 x 3 x 1½ – 4 x 4 x 3. 6 x 6 x 2 – 8 x 8 x 6.	300 300 300	-	-
ST-135 SHORT PATTERN CROSS	2 – 4, 6, 6½	300	2 – 4, 6, 6½ , 8	300 175
ST-140 CONCENTRIC REDUCER	2 x 1¼ – 8 x 6, 10 x 3, 5, 5½, 6½, 12 x 6½, 10 x 4, 6, 8, 12 x 4, 6, 8,10.	300 300 300 175 175	2 x 1¼ – 12 x 10.	300
ST-140 TM CONCENTRIC REDUCER	2 x 1 – 4 x 2,	300	2 x 1 – 6 x 4.	300
ST-145 ECCENTRIC REDUCER 140 TF	2 x 1¼ – 2½ x 2, 3 x 1¼ – 4 x 3, 5 x 2 – 5 x 4, 6 x 2 – 10 x 8, 12 x 4 – 14 x 12	300 300 300 300 175	-	-
ST-150 STANDARD CAP	10 – 16	175	10 – 16	175
ST-155 SHORT PATTERN CAP	1¼ – 4, 6 – 8.	300	1 – 8.	300

NOTES

1. ALL THE ABOVE PRODUCTS HAVE BEEN APPROVED BY MEA, NEW YORK CITY.
2. RUBBER GASKET STYLES ARE UL LISTED AND FM APPROVED WITH STANDARD GRADE "E" GASKET. TEMPERATURE RANGE -30°F TO +230°F. NOT SUITABLE FOR DRY SYSTEM. RECOMMEND TRI SEAL GASKET FOR FREEZER AND DRY SYSTEMS.
3. LIGHT WALL PIPE SHALL HAVE MINIMUM WALL THICKNESS IN ACCORDANCE WITH SCH. 10 AND SHALL BE ROLL GROOVED AS PER NATIONAL SPECIFICATION.
4. UL / FM LISTED PRESSURE RATING UNDER ROLL GROOVE SPECIFICATION FOR STYLE 5, 10, 11, 12, 14, 16 & 25.

300 PS : 1-1/4 THRU' 4XL & SUPER FLOW BY ALLIED TUBE & CONDUIT CORP.
: 1-1/4 THRU' 2 LS BY CENTURY TUBE CORP, ID0D GAL7
: 1 THRU" 4SL & HIGH FLOW BY WESTERN TUBE CORP,
: 1-1/4 THRU' 2 EDDIE LIGHT BY BULL MOOSE TUBE CO,
: 1-1/4 THRU' 4 CENTRAL SPRINKLER TL PIPE,
: 1-1/4 THRU' 4 WESTERN INTERNATIONAL
: 1 1/4 THRU 4 WELDEDTUBE-BERKELY LLC STEADY FLOW
: 11/4 THRU 6 NORTH WEST "EZ-FLOW, TEXTUBE, TEX FLOW
: 1 1/4 THRU 8 BRITISH STANDARD BS 1387 PIPE, MED AND HEAVY

175 PSI : 1-1/4 THRU' 4 DYNA FLOW BY AMERICAN TUBE CO, WHEAT LAND SH.5, 1DOD GAL.5
: 1-1/4 THRU' 2 BLT BY AMERICAN TUBE CO.

GENERAL TERMS AND CONDITIONS

GENERAL These terms and conditions shall control with respect to any purchase order or sale of seller's products. No waiver, alteration or modification of these terms and conditions whether on Buyers's purchase order or otherwise shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of seller

DELIVERY Seller will make every effort to complete delivery of products as indicated on Seller's acceptance of an order , but Seller assumes no responsibility or liability, and will accept no back charge, for loss or damage due to delay or inability to deliver caused by acts of God, war labor difficulties, accident, delays or carriers, by contractors or suppliers, inability to obtain materials, shortages of fuel and energy, or any other causes of any kind whatsoever beyond the control of Seller. Seller may terminate any contract of sale of its Products without liability of any nature, by written notice to Buyer, in the event that the delay in the delivery or performance resulting from any of the aforesaid causes shall continue for a period of sixty(60)days. Under no circumstances shall Seller be liable for any special or consequential damages or for loss, damage, or expense (whether or not based on negligence) directly or indirectly arising from delays or failure to give notice of delay.

WARRANTY We warrant all products to be free from defects in materials and workmanship under normal conditions of use and service. Our obligation under this warranty is limited to repairing or replacing at our option at our factory any product which shall within one year after delivery to original buyer be returned with transportation charges prepaid, and our examination shall show to our satisfaction to have been defective.

THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE BUYER'S SOLE AND EXCLUSIVE REMEDY SHALL BE FOR THE REPAIR OR REPLACEMENT OF DEFECTIVE PRODUCTS AS PROVIDED HEREIN. THE BUYER AGREES THAT NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO HIM.

Seller neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of any such products.

This warranty shall not apply to any product which has been subject to misuse, negligence or accident, which has been repaired or altered in any manner outside of Seller's factory or which has been used in a manner contrary to Sellers's instructions or recommendations. Seller shall not be responsible for design errors Due to inaccurate or incomplete information supplied by Buyer or its representatives.

LIABILITY Seller will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether based upon warranty (except for the obligation accepted by Seller under "Warranty" above), contract or negligence, arising in connection with the design, manufacture, sale , use or repair of the products or of the engineering designs supplied to Buyer

RETURNS Seller cannot accept return of any products unless its written permission has been first obtained, in which case same will be credited subject to the following: (a) All material returned must, on its arrival at Seller's plant, be found to be in first-class condition; if not, cost of putting in saleable condition will be deducted from credit memoranda; (b) A handling charge deduction of twenty five (25%) will be made from all credit memoranda issued for material returned; (c) Transportation charges , if not prepaid will be deducted from credit memoranda.

SHIPMENTS All products sent out will be carefully examined, counted and packed. The cost any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten(10) days of receipt of a shipment. Claims for products damaged or lost in transit should be made on the carrier, as Seller's responsibility ceases, and title passes, on delivery to the carrier.

PRODUCTS Orders covering special or non-standard products are not subject to cancellation except on such terms as Seller may specify on application.

GOVERNING LAW The contract shall be governed by, construed, and enforced in accordance with the laws of the Republic of India, Coimbatore Jurisdiction within state of Tamil Nadu.

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