GROOVED PIPE FITTINGS

MECH

LEDE®

LPS
Leyon Piping System

Ningjin APC
Industries

CONTACT US

0921-341-5401

sales@nxsphil.com.ph

B14 L4 Unit 2 Varisha Building, Silcas Village Brgy. San Francisco, Binan, Laguna

Certificate

CERTIFICATE OF COMPLIANCE

Certificate Number 20180313-EX27773
Report Reference EX27773-20180310
Issued Date 2018-March-13

Issued to: Leyon Piping System Co., Ltd
Suite 401 Building D No. 255 Meiqiang RD Minhang District 201104 Shanghai,CHINA

This is to certify that representative samples of FITTINGS, CAST IRON, DUCTILE IRON, MALLEABLE IRON AND BRONZE

Fittings, Cast Iron, Ductile Iron, Malleable Iron Fittings
Model - , 90, 92, 90R, 120, 130, 130R, 130A, 130C, 180, 180R, 241, 270, 240, 529, 280, 291, 301, 121, 220, 221 130S, 130T, 300, 90S

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: EN 10242 - Threaded Pipe Fittings in Malleable Cast Iron
ASME B16.3 - Malleable Iron Threaded Fittings
ASME B16.14 - Ferrous Pipe Plugs, Bushings, and Locknuts with Pipe Threads

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program
UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20221019 - EX28919
Report Reference EX28919-20221019
Issued Date 2022-October-19

Issued to: SGF ENERGY ENGINEERING TECH. INC.
1201 N Orange St Ste 600
Wilmington, DE 19801-1171
United States

This is to certify that representative samples of FITTINGS, WELDED OUTLET
Models:

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 213B WELDED OUTLET FITTINGS FOR FIRE PROTECTION,
ULC/ORD C213 WELDED OUTLET FITTINGS

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program
UL LLC

Ductile Iron–housing Material.

Ductile iron pipe couplings and fittings material confirming to ASTM A536 Grade 65–45–12, equal to:

QT450-12

SAE J434: D4512

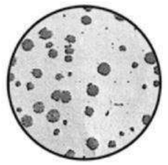
EN1563: EN-GJS-450-10 or EN-GJS-450-15

JIS G5502: FCD450-10

SABS 936/937: SG42

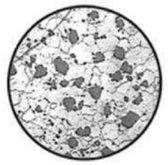
Ductile iron was first invented in the U.S.A. and U.K. in the late 1940's. Superior strength was achieved by crystallizing

graphite in the shape of nodules. The result was ductile iron that had tensile and yield strength properties that were equal to or greater than some steel castings. This superior strength combined with ductile irons excellent castability helped to reduce the weight and cost of many components. Because of these advantages and benefits, many components have been converted from gray iron, malleable iron and steel castings to ductile iron over the past 60 years.



Ductile Iron
Superior tensiie strength with good castabillity

Gray Iron
Excellent castabilty but "brittle"-less strength



Malleable Iron
Stronger than gray iron but poor castability

Technical Data of Bolts and Nuts

ASTM A449, Quenched and Tempered Steel Bolts*(American Standard)

Chemical Requirements	Maximum	Maximum
Carbon, %	0.28	0.55
Manganese, %	0.60	—
Phosphorus, %	—	0.040
Sulfur, %	—	0.050
Physical Properties		
Tensile strength, psi (MPa)	120,000 (825)	—
Yield strength, psi (MPa)	92,000 (635)	—
Elongation, %	14	—

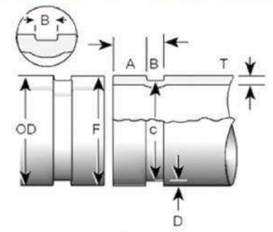
Equivalent to property class 8.8 bolts per ISO 898

Recommended Bolt Torque Range

Always use factory supplied bolts and nuts for assembly of couplings. Shown below are the general recommended torque ranges for common sizes of carbon steel bolts. Never exceed the recommended torque range by more than 25% as excessive torque can lead to joint tailure, personal injury and or property damage. Always depressurize and drain the piping system before attempting disassembly, adjustment or removal of any piping component. Follow installation instructions for proper assembly of all components. For questions contact.

Bolt Size		Proper Torque Range	
mm	in	Nm	Lbs-Ft
M10	3/8″	40-50	30-40
M12	1/2″	120-150	90-110
M16	5/8″	140-180	100-130
M20	3/4″	200-270	150-200
M22	7/8″	240-300	180-220
M24	1″	270-340	200-250
—	1-1/8″	—	225-275

Instructions for Pipe Roll Grooving & Pipe Cut Grooving



"A" Dimension –The 4A" dimension, or the distance from the pipe end to the groove, identiies the gasket seatingarea. This area must be free from indentations, projections (including weld seams), and roll marks from the pipe end to the groove to ensure a leak tight seal for the gasket. All foreign material, such as loose paint, scale, oil, grease,chips.rust. and dirt must be romoved.

"B" Dimension –The "B" dimension, or groove width, controls expansion, contraction, and angular deflection of flexible couplings by the distance it is located from the pipe and its width in relation to the coupling housings' "key" width. The bottom of the groove must be free of all foreign material, such as dirt, chips, rust, and scale that may interfere with proper coupling assemblye "

"C" Dimension – The "C" dimension is the proper diameter at the base of the groove. This dimension must be within the diameter' s tolerance and concentric with the OD for proper coupling fit. The groove must be of uniform depth for the entire pipe circumference.

"D" Dimension – The D" dimension is the normal depth of the groove and is a reference for a "trial groove" only. Variations in pipe O. D. affect this dimension and must be altered, if necessary, to keep the "C" dimension within tolerance. This groove must conform to the "C" dimension described above.

"T" Dimension – The "T" dimension is the lightest grade (minimum, nominal wall thickness) of pipe that is suitable for cut or roll grooving.

"F" Standard Roll Groove Only–Maximum allowable pipe–end flare diameter is measured at the extreme pipe–end diameter. For roll groove specification, please refer Table 1A. For cut groove specification, please refer Table 1B.

Table 1A: Roll Groove Specification
Roll–grooved dimension

Nom. Size	Pipe O.D.	A	B	D	C		T	Max.Flare dia.
		Gasket Seat	Groove Width	Groove Depth	Groove Diameter		Minimum Pipe Wall Thickness	
		Tol (±0.76)	Tol (±0.76)	Ref.	Basic Size	Tol. +0.00		
inch	mm	mm	mm	mm	mm	mm	mm	mm
1	33.7	15.88	7.14	1.60	30.23	-0.38	1.8	34.5
1-¼	42.4	15.88	7.14	1.60	38.99	-0.38	1.8	43.3
1-½	48.3	15.88	7.14	1.60	45.09	-0.38	1.8	49.4
2	60.3	15.88	8.74	1.60	57.15	-0.38	1.8	62.2
2-½	73.0	15.88	8.74	1.98	69.09	-0.46	2.3	75.2
2-½	76.1	15.88	8.74	1.98	72.26	-0.46	2.3	77.7
3	88.9	15.88	8.74	1.98	84.94	-0.46	2.3	89.39
3-½	101.6	15.88	8.74	2.11	97.38	-0.51	2.3	103.4
4	108.0	15.88	8.74	2.11	103.73	-0.51	2.3	109.7
4	114.0	15.88	8.74	2.11	109.2	-0.51	2.3	114.0
5	133.0	15.88	8.74	2.11	129.13	-0.51	2.9	134.9
5	140.0	15.88	8.74	2.11	135.48	-0.51	2.9	141.4
5	141.3	15.88	8.74	2.13	137.03	-0.51	2.9	143.5
6	159.0	15.88	8.74	2.16	153.21	-0.56	2.9	161.0
6	165.0	15.88	8.74	2.16	160.90	-0.56	2.9	166.65
6	168.3	15.88	8.74	2.16	163.96	-0.56	2.9	170.7
8	219.1	19.05	11.91	2.34	214.40	-0.64	2.9	221.5
10	273.0	19.05	11.91	2.39	268.28	-0.69	3.6	275.4
12	323.9	19.05	11.91	2.77	318.29	-0.76	4.0	326.2

Table 1B: Cut Groove Specification
Cut-grooved dimension

Nom. Size	Pipe O.D.	A	B	D	C		T
		Gasket Seat Tol (±0.76)	Groove Width Tol (±0.76)	Groove Depth Ref.	Groove Diameter		Minimum Pipe Wall Thickness
					Basic Size	Tol. +0.00	
inch	mm	mm	mm	mm	mm	mm	mm
1	33.7	15.88	7.93	1.70	30.23	-0.38	3.3
1¼	42.4	15.88	7.93	1.70	38.99	-0.38	3.5
1½	48.3	15.88	7.93	1.58	45.09	-0.38	3.6
2	60.3	15.88	7.93	1.58	57.15	-0.38	3.6
2-½	73.0	15.88	7.93	1.98	69.09	-0.46	4.0
2-½	76.1	15.88	7.93	1.98	72.26	-0.46	4.0
3	8.9	15.88	7.93	1.98	84.94	-0.46	4.5
3-½	101.6	15.88	7.93	2.11	97.38	-0.51	5.0
4	108.0	15.88	9.53	2.11	103.73	-0.51	5.0
4	114.0	15.88	9.53	2.11	110.08	-0.51	5.0
5	133.0	15.88	9.53	2.11	129.13	-0.51	5.0
5	140.0	15.88	9.53	2.11	135.48	-0.51	5.0
5	141.3	15.88	9.53	2.13	137.03	-0.56	5.0
6	159.0	15.88	9.53	2.16	153.21	-0.56	5.4
6	165.1	15.88	9.53	2.16	160.90	-0.56	5.4
6	168.3	15.88	9.53	2.16	163.96	-0.56	5.4
8	219.1	19.05	11.10	2.34	214.40	-0.64	5.4
10	273.0	19.05	12.70	2.39	268.28	-0.69	6.3
12	323.9	19.05	12.70	2.77	318.29	-0.76	7.1

Rubber Gasket Compounds

1) EPDM

EPDM is recognized as the most water resistant rubber available today.Good for cold & hot water from -34℃ up to 150℃, waste water, waterwith acid, deionized water and seawater. EPDM is not recommendedfor use with petroleum based oils and fuels, hydrocarbon solvents and aromatic hydrocarbons.

Green Stripe Grade"E"

2) Nitrile,NBR,

Nitrile and NBR both represent the same copolymer of butadiene and acrylonitrile (ACN), which is inherently resistant to hydraulic fluids,lubricating oils, transmission fluids and other non-polar petroleum based products and water from -29℃ up to 82℃. The higher the ACN content, the higher the resistance to oils and heat, but the lower elastic characteristics and compression set. NBR displays poor resistance to hot water and steam.

Orange Stripe

3) Silicone

Silicone compound features high temperature range stability and low temperature flexibility. Recommended for dry heat and air without hydrocarbons from -40℃ up to 177℃. Silicone compounds are used in many food and medical applications as they do not impart odor or taste. Not recommended for hot water or steam services.

White Gasket

IPS size and Metric (DIN) sizes

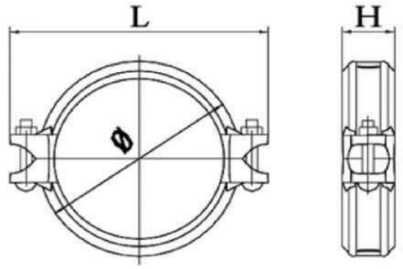
Product data & technical data are identified by the nominal IPS pipe size in inches or nominal diameter of pipe (DN) in millimeters. The following chart shows a comparison between typical IPS size and metric (DIN) sizes.

Nominal Size		Outside Diameter （O.D.）								
Inches (Imperial)	DN (Metric.mm)	mm (Actual Pipe O.D.)	DIN mm	BS mm	ISO mm	JIS mm	ANSI mm	GB mm	India IS 1239	India IS 3589
½	15	21.3mm	DN15	DN15	DN15	21.7mm	½	DN15	DN15	—
¾	20	26.7mm	26.9mm	DN20	DN20	27.2mm	¾	DN20	DN20	—
1	25	33.4mm	33.4mm	DN25	DN25	34.0mm	1	DN25	DN25	—
1¼	32	42.2mm	42.4mm	DN32	DN32	42.7mm	1¼	DN32	DN32	—
1½	40	48.3mm	DN40	DN40	DN40	48.6mm	1½	DN40	DN40	—
2	50	60.3mm	DN50	DN50	DN50	60.5mm	2	DN50	DN50	—
2½	65	73.1mm	—	—	—	—	2½	—	—	—
		76.1mmBS/ISO	76.1mm	76.1mm	76.1mm	76.3mm	—	76.1mm**	76.1mm	—
3	80	88.9mm	DN80	DN80	DN80	DN80	3	DN80	DN80	—
3½	90	101.6mm	—	—	—	—	—	—	—	—
		108.0mmChina	DIN133.0							—
4	100	(&OLD DIN)	mm	—	—	—	—	108.0mm**	—	—
		114.3mm	DN100	DN100	DN101	DN100	4	DN100	DN100	—
—	127.0mm	127.0mm	—	—	—	—	—	—	—	—
		133.0mm China	—	—	—	—	—	133.0mm**	—	—
5	125	139.7mmBS/ISO	DN125	139.7mm		139.7mm	—	139.7mm	139.7mm	—
		141.3mm	—	—	—	—	5	—	—	—
—	152.4mm	152.4mm	—	—	—	—	—	—	—	—
		159.0mm China	—	—	—	—	—	159.0mm	—	—
6	150	165.1mmJIS/BS	—	165.1mm	—	165.2mm	—	—	165.1mm	—
		168.3mm	DN150	—	DN150	—	6	DN150	—	DN150
—	6	193.7mm	—	—	—	—	—	—	—	193.7mm
—	203.2mm	203.2mm	—	—	—	—	—	—	—	—
8	200	216.3mm JIS	—	—	—	216.3mm	—	—	—	—
		219.1mm	DN200	DN200	DN200	—	8	DN200	DN200	DN200
—	254.0mm	254.0mm	—	—	—	—	—	—	—	—
10	250	267.4mm JIS	—	—	—	267.4mm	—	—	—	—
		273.0mm	DN250	DN250	DN250	—	10	DN250	DN250	DN250
—	304.8mm	304.8mm	—	—	—	—	—	—	—	—
12	300	318.5mm JIS	—	—	—	318.5mm	—	—	—	—
		323.9mm	DN300	DN300	DN300	—	12	—	—	—
14	350	355.6mm	DN350	DN350	DN350	DN350	14	DN350	—	—
		377.0mm China	—	—	—	—	—	337.0mm	—	—
16	400	406.4mm	DN400	DN400	DN400	DN400	16	DN400	—	—
		426.0mm China	—	—	—	—	—	426.0mm	—	—
18	450	457.2mm	DN450	DN450	DN450	DN450	18	DN450	—	—
		480.0mm China	—	—	—	—	—	480.0mm	—	—
20	500	508.2mm	DN500	DN500	DN500	DN500	20	DN500	—	—
		530.0mm China	—	—	—	—	—	530.0mm	—	—
22	550	558.8mm	—	—	—	DN550	22	559.0mm	—	—
		580.0mm China	—	—	—	—	—	580.0mm	—	—
24	600	610.0mm	DN600	DN600	DN600	DN600	24	DN600	—	—
		630.0mm China	—	—	—	—	—	630.0mm	—	—

Important Note:

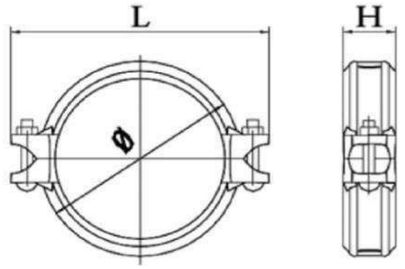
Nominal designations are used where the actual O.D. of the pipe matches the ANSI size.
Otherwise both the nominal and actual O.D. are listed.
China sizes are listed as actual O.D. in mm.
****China sizes are tubing sizes.**

Rigid Coupling



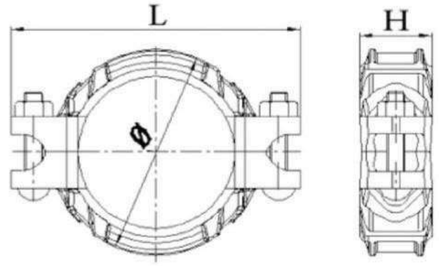
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in		
			No.-Size mm	Φ	L	H
25 1	33.7 1.327	500 3.45	2-M10x45	58 2.283	101 3.976	44 1.732
32 1¼	42.4 1.669	500 3.45	2-M10x45	67 2.638	107 4.213	44 1.732
40 1½	48.3 1.900	500 3.45	2-M10x45	72 2.835	111 4.370	44 1.732
50 2	60.3 2.375	500 3.45	2-M10x55	85 3.346	125 4.921	44 1.732
65 2½	73.0 2.875	500 3.45	2-M10x55	99 3.898	139 5.472	45 1.772
65 2½	76.1 3.000	500 3.45	2-M10x55	102 4.016	143 5.630	45 1.772
80 3	88.9 3.500	500 3.45	2-M12x60	116 4.567	166 6.535	45 1.772
100 4	108.0 4.250	500 3.45	2-M12x65	138 5.433	188 7.401	48 1.889
100 4	114.3 4.500	500 3.45	2-M12x65	141 5.551	191 7.520	49 1.929
125 4	133.0 5.250	300 2.07	2-M12x75	164 6.457	214 8.425	48 1.890
125 5	139.7 5.500	300 2.07	2-M12x75	167 6.575	219 8.622	49 1.929
125 5	141.3 5.563	300 2.07	2-M12x75	167 6.575	219 8.622	49 1.929
150 6	159.0 6.250	300 2.07	2-M12x75	190 7.480	242 9.528	49 1.929
150 6	165.1 6.500	300 2.07	2-M12x75	192 7.559	246 9.685	50 1.969
150 6	168.3 6.625	300 2.07	2-M12x75	200 7.874	251 9.882	49 1.929
200 8	216.3 8.504	300 2.07	2-M12x100	250 9.843	317 12.480	59 2.323
200 8	219.1 8.625	300 2.07	2-M16x85	253 9.961	320 12.598	59 2.323
250 10	273.0 10.748	300 2.07	2-M22x130	335 13.189	426 16.772	68 2.677
300 12	323.9 12.752	300 2.07	2-M22x130	380 14.96	470 18.504	65 2.559

Flexible Coupling



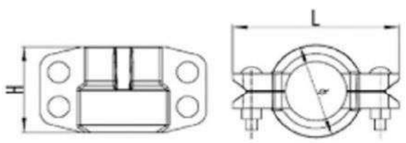
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in		
			No.-Size mm	Φ	L	H
25 1	33.7 1.327	500 3.45	2-M10x45	58 2.283	100 3.937	44 1.732
32 1¼	42.4 1.669	500 3.45	2-M10x45	67 2.638	107 4.213	44 1.732
40 1½	48.3 1.900	500 3.45	2-M10x45	72 2.835	111 4.370	44 1.732
50 2	60.3 2.375	500 3.45	2-M10x55	85 3.346	124 4.882	44 1.732
65 2½	73.0 2.875	500 3.45	2-M10x55	99 3.898	138 5.433	45 1.772
65 2½	76.1 3.000	500 3.45	2-M10x55	102 4.016	142 5.591	45 1.772
80 3	88.9 3.500	500 3.45	2-M12x60	116 4.567	165 6.496	45 1.772
100 4	108.0 4.250	500 3.45	2-M12x65	138 5.433	187 7.362	48 1.889
100 4	114.3 4.500	500 3.45	2-M12x65	141 5.551	190 7.480	49 1.929
125 5	133.0 5.250	300 2.07	2-M12x75	164 6.457	213 8.386	48 1.890
125 5	139.7 5.500	300 2.07	2-M12x75	167 6.575	218 8.583	49 1.929
125 5	141.3 5.563	300 2.07	2-M12x75	167 6.575	219 8.622	49 1.929
150 6	159.0 6.250	300 2.07	2-M12x75	190 7.480	240 9.449	49 1.929
150 6	165.1 6.500	300 2.07	2-M12x75	192 7.559	245 9.646	50 1.969
150 6	168.3 6.625	300 2.07	2-M12x75	200 7.874	250 9.843	49 1.929
200 8	216.3 8.504	300 2.07	2-M12x85	250 9.843	316 12.441	59 2.323
200 8	219.1 8.625	300 2.07	2-M16x85	253 9.961	319 12.559	59 2.323
250 10	267.4 10.512	300 2.07	2-M22x130	307 12.087	388 15.276	65 2.559
250 10	273.0 10.748	300 2.07	2-M22x130	317 12.48	401 15.787	63 2.48
300 12	318.5 12.520	300 2.07	2-M22x165	360 14.173	450 17.717	65 2.559
300 12	323.9 12.752	300 2.07	2-M22x130	375 14.764	455 17.913	64 2.52

Flexible Coupling



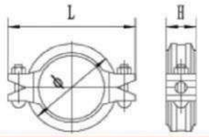
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size No.-Size mm	Dimensions mm/in Φ	L	H
50	60.3	500	2-1/2x60	44	136	46
2	2.375	3.45		1.732	5.354	1.811
80	88.9	500	2-1/2x75	59	161	46
3	3.500	3.45		2.323	6.339	1.811
100	114.3	500	2-5/8x85	74	204	51
4	4.500	3.45		2.913	8.031	2.008
150	168.3	500	2-3/4x120	103	270	54
6	6.625	3.45		4.055	10.630	2.126
200	219.1	400	2-7/8x127	135	355	64
8	8.625	2.76		5.331	13.976	2.520
250	273	400	2-1x165	165	418	67
10	10.75	2.76		6.417	16.457	2.638
300	323.9	400	2-1x165	189	464	68
12	12.75	2.76		7.441	18.268	2.677

Transition HDPE Coupling



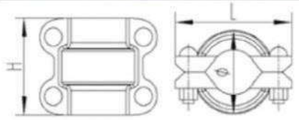
Shouldered Coupling (KRJ)

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size No.-Size mm	Dimensions mm/in Φ	L	H
50	60.3	500	2-M12x60	97	132	48
2	2.375	3.5		3.957	5.197	1.89
80	88.9	500	2-M12x75	125	170	48
3	3.500	3.5		4.921	6.692	1.89
100	114.3	500	2-M12x75	157	205	52
4	4.500	3.5		6.181	8.070	2.047
150	165.1	500	2-M16x85	213	272	52
6	6.500	3.5		8.386	10.708	2.047
200	219.1	500	2-M20x100	278	345	60
8	8.625	3.5		10.945	13.583	2.362
250	273	500	2-M22x130	340	415	64
10	10.748	3.5		13.38	16.339	2.52
300	323.9	500	2-M22x130	387	474	64
12	12.752	3.5		15.236	18.661	2.52
350	377	500	2-M22x130	438	518	76
14	14.843	3.5		17.244	20.394	2.992
400	425.5	500	2-M30x140	506	605	76
16	16.752	3.5		19.921	23.819	2.992



HDEP Coupling

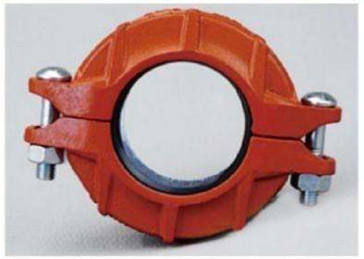
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size No.-Size mm	Dimensions mm/in Φ	L	H
50	60.3	500	2-M12x60	97	132	48
2	2.375	3.5		3.957	5.197	1.89
80	88.9	500	2-M12x75	125	170	48
3	3.500	3.5		4.921	6.692	1.89
100	114.3	500	2-M12x75	157	205	52
4	4.500	3.5		6.181	8.070	2.047
150	165.1	500	2-M16x85	213	272	52
6	6.500	3.5		8.386	10.708	2.047
200	219.1	500	2-M20x100	278	345	60
8	8.625	3.5		10.945	13.583	2.362
250	273	500	2-M22x130	340	415	64
10	10.748	3.5		13.38	16.339	2.52
300	323.9	500	2-M22x130	387	474	64
12	12.752	3.5		15.236	18.661	2.52
350	377	500	2-M22x130	438	518	76
14	14.843	3.5		17.244	20.394	2.992
400	425.5	500	2-M30x140	506	605	76
16	16.752	3.5		19.921	23.819	2.992

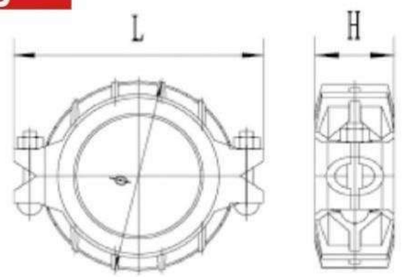


Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size No.-Size mm	Dimensions mm/in Φ	L	H
50	60.3	300	4-M12x60	84	146	78
2	2.375	2.07		3.307	5.748	3.071
80	88.9	300	4-M12x75	112	174	79
3	3.5	2.07		4.409	6.85	3.11
100	114	300	4-M12x75	142	208	95
4	4.5	2.07		5.591	8.189	3.74
150	168.3	300	4-M16x85	198	280	96
6	6.626	2.07		7.795	11.024	3.78

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size No.-Size mm	Dimensions mm/in Φ	L	H
200	219.1	300	4-M16x85	260	342	107
8	8.626	2.07		10.236	13.465	4.213
250	273	300	4-M20x120	314	424	128
10	10.748	2.07		12.362	16.693	5.039
300	323.9	300	4-3/4x120	368	470	129
12	10.748	2.07		14.488	18.504	5.079

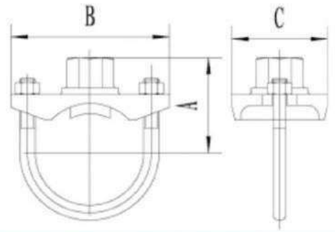
Reducing Flexible Coupling





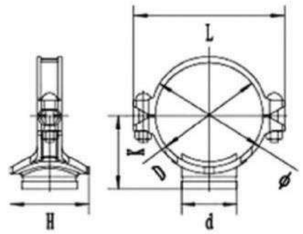
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in		
			No.-Size mm	Φ	L	H
50x40 2x1½	60.3x48.3 2.375x1.900	300 2.07	2-M10x55	90 3.543	129 5.079	47 1.850
65x40 2½x1½	73.0x48.3 2.874x1.900	300 2.07	2-M10x55	101 3.976	137 5.394	48 1.890
65x50 2½x2	73.0x60.3 2.874x2.375	300 2.07	2-M10x55	101 3.976	137 5.394	48 1.890
65x40 2½x1½	76.1x48.3 2.996x1.900	300 2.07	2-M10x55	105 4.134	140 5.512	48 1.890
65x50 2x2	76.1x60.3 2.996x2.375	300 2.07	2-M10x55	105 4.134	140 5.512	48 1.890
80x40 3x1½	88.9x48.3 3.500x1.900	300 2.07	2-M12x65	120 4.724	164 6.457	48 1.890
80x50 3x2	88.9x60.3 3.500x2.375	300 2.07	2-M12x65	120 4.724	164 6.457	48 1.890
80x65 3x2½	88.9x73 3.500x2.874	300 2.07	2-M12x65	120 4.724	164 6.457	48 1.890
80x65 3x2½	88.9x76.1 3.500x2.996	300 2.07	2-M12x65	120 4.724	164 6.457	48 1.890
100x40 4x1½	114.3x48.3 4.500x1.900	300 2.07	2-M12x65	150 5.906	195 7.677	49 1.929
100x50 4x2	114.3x60.3 4.500x2.375	300 2.07	2-M12x65	150 5.906	195 7.677	49 1.929
100x65 4x2½	114.3x73 4.500x2.874	300 2.07	2-M12x65	150 5.906	195 7.677	49 1.929
100x65 4x2½	114.3x76.1 4.500x2.996	300 2.07	2-M12x65	150 5.906	195 7.677	49 1.929
100x80 4x3	114.3x88.9 4.500x3.500	300 2.07	2-M12x65	150 5.906	195 7.677	49 1.929
150x100 6x4	165.1x114.3 4.500x4.500	300 2.07	2-M12x75	203 7.992	235 9.252	50 1.969
150x80 6x3	168.3x88.9 6.625x3.500	300 2.07	2-M12x75	203 7.992	235 9.252	50 1.969
150x100 6x4	168.3x114.3 6.625x4.500	300 2.07	2-M12x75	203 7.992	235 9.252	50 1.969
200x150 8x6	219.1x168.3 8.625x6.625	300 2.07	2-M16x100	264 10.394	313 12.323	60 2.362

U-Bolted Mechanical Tee Threaded



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	U Bolt Size	Dimensions mm/in			Hole cuting dimensions mm/in
			No.-Size mm	A	B	C	
25x15 1x½	33.7x21.3 1.327x0.839	300 2.07	M10x25	49 1.929	76 2.992	43 1.654	24 0.945
25x20 1x3/4	33.7x26.9 1.327x1.059	300 2.07	M10x25	58 2.283	84 3.307	43 1.693	24 0.945
32x15 1¼x1/2	42.4x21.3 1.669x0.839	300 2.07	M10x28.5	43 1.693	90 3.543	56 2.205	30 1.181
32x20 1¼x3/4	42.4x26.9 1.669x1.059	300 2.07	M10x28.5	45 1.772	90 3.543	56 2.205	30 1.181
32x25 1¼x1	42.4x33.7 1.669x1.327	300 2.07	M10x28.5	50 1.969	90 3.543	56 2.205	30 1.181
40x15 1½x½	48.3x21.3 1.900x0.839	300 2.07	M10x28.5	43 1.693	93 3.661	59 2.323	30 1.181
40x20 1½x3/4	48.3x26.9 1.900x1.059	300 2.07	M10x28.5	54 2.126	93 3.661	59 2.323	30 1.181
40x25 1½x1	48.3x33.7 1.900x1.327	300 2.07	M10x28.5	58 2.283	93 3.661	59 2.323	30 1.181
50x15 2x1/2	60.3x21.3 2.375x0.839	300 2.07	M10x30	54 2.126	96 3.780	59 2.323	30 1.181
50x20 2x3/4	60.3x26.9 2.375x1.059	300 2.07	M10x30	56 2.205	96 3.780	59 2.323	30 1.181
50x25 2x1	60.3x33.7 2.375x1.327	300 2.07	M10x30	66 2.598	96 3.780	59 2.323	30 1.181
65x15	73.1x21.3 2.878x0.839	300 2.07	M10x30	60 2.362	110 4.331	59 2.323	30 1.181
65x20	73.1x26.9 2.878x1.059	300 2.07	M10x30	63 2.480	110 4.331	59 2.323	30 1.181
65x25	73.1x33.7 2.878x1.327	300 2.07	M10x30	70 2.756	110 4.331	59 2.323	30 1.181
65x15	76.1x21.3 2.996x0.839	300 2.07	M10x30	61 2.402	110 4.331	59 2.323	30 1.181
65x20	76.1x26.9 2.996x1.059	300 2.07	M10x30	67 2.638	110 4.331	59 2.323	30 1.181
65x25	76.1x33.7 2.847x1.327	300 2.07	M10x30	74 2.913	110 4.331	59 2.323	30 1.181

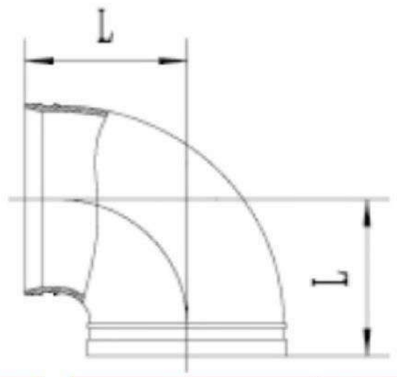
V-Mechanical Tee Grooved



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in				Hole cuting dimension
			No.-Size mm	Φ	L	K	H	mm/in
25x15	33.7x21.3	300		75	116	57	69	38
1x1/2	1.327x0.839	2.07		2.953	4.567	2.244	2.717	1.496
25x20	33.7x26.7	300		75	116	57	69	38
1x3/4	1.327x1.050	2.07		2.953	4.567	2.244	2.717	1.496
50x25	60.3x33.7	300	2-M10x55	75	116	57	69	38
2x1	2.375x1.327	2.07		2.953	4.567	2.244	2.717	1.496
50x32	60.3x42.4	300		75	116	57	72	45
2x1¼	2.375x1.669	2.07		2.953	4.567	2.244	2.835	1.772
50x40	60.3x48.3	300		75	116	62	72	45
2x1½	2.375x1.900	2.07		2.953	4.567	2.241	2.835	1.772
65x15	73x21.3	300		93	144	65	78	38
2½x1/2	2.87x0.839	2.07		3.661	5.669	2.559	3.071	1.496
65x20	73x26.7	300		93	144	65	78	38
2½x3/4	2.87x1.050	2.07		3.661	5.669	2.559	3.071	1.496
65x25	73x33.7	300		93	144	65	78	38
2½x1	2.87x1.327	2.07		3.661	5.669	2.559	3.071	1.496
65x32	73x42.4	300		93	137	65	84	51
2½x1¼	2.87x1.669	2.07		3.661	5.394	2.559	3.307	2.007
65x40	73x48.3	300	2-M12x60	93	144	60	84	51
2½x1½	2.87x1.900	2.07		3.661	5.669	2.362	3.307	2.007
65x25	76.1x33.7	300		102	144	70	77	38
2½x1	2.996x1.327	2.07		4.016	5.669	2.756	3.031	1.496
65x32	76.1x42.4	300		102	144	70	83	51
2½x1¼	2.996x1.669	2.07		4.016	5.669	2.756	3.268	2.008
65x40	76.1x48.3	300		102	144	70	83	51
2½x1½	2.996x1.900	2.07		4.016	5.669	2.756	3.268	2.008
65x40	76.1x60.3	300		102	144	74	83	51
2½x2	2.996x2.375	2.07		4.016	5.669	2.913	3.268	2.008
80x15	88.9x21.3	300		114	152	74	77	38
3x1/2	3.500x0.839	2.07		4.488	5.984	2.913	3.031	1.496
80x20	88.9x26.7	300	2-M12x65	114	152	74	77	38
3x3/4	3.500x1.050	2.07		4.488	5.984	2.913	3.031	1.496
80x25	88.9x33.7	300		114	152	74	77	38
3x1	3.500x1.327	2.07		4.488	5.984	2.913	3.031	1.496
80x32	88.9x42.4	300		114	152	76	84	51
3x1¼	3.500x1.669	2.07		4.488	5.984	2.992	3.307	2.007
80x40	88.9x48.3	300		114	152	73	92	51
3x1½	3.500x1.900	2.07		4.488	5.984	2.874	3.622	2.007
80x50	88.9x60.3	300		114	152	78	99	64
3x2	3.500x2.375	2.07		4.488	5.984	3.070	3.897	2.519
100x25	114.3x21.3	300		140	180	88	77	38
4x1/2	4.500x0.839	2.07		5.512	7.086	3.465	3.031	1.496
100x25	114.3x26.7	300		140	180	88	77	38
4x3/4	4.500x1.050	2.07		5.512	7.086	3.465	3.031	1.496
100x25	114.3x33.7	300		140	180	88	77	38
4x1	4.500x1.327	2.07		5.512	7.086	3.465	3.031	1.496
100x32	114.3x42.4	300		140	180	93	84	51
4x1¼	4.500x1.669	2.07		5.512	7.086	3.661	3.307	2.007
100x40	114.3x48.3	300		140	180	93	92	51

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in				Hole cuting dimension
			No.-Size mm	Φ	L	K	H	mm/in
4x1½	4.500x1.900	2.07		5.512	7.086	3.661	3.622	2.007
100x50	114.3x60.3	300		140	180	93	103	64
4x2	4.500x2.375	2.07		5.512	7.086	3.661	4.055	2.519
100x65	114.3x73	300		140	180	98	108	70
4x2½	4.500x2.875	2.07		5.512	7.402	3.858	4.251	2.756
125x25	141.3x33.7	300		168	220	104	77	38
5x1	5.563x1.327	2.07		6.614	8.661	4.094	3.031	1.496
125x32	141.3x42.4	300	2-M16x75	168	220	104	82	51
5x1½	5.563x1.669	2.07		6.614	8.661	4.094	3.228	2.007
125x40	141.3x48.3	300		168	220	104	95	51
5x1½	5.563x1.900	2.07		6.614	8.661	4.094	3.740	2.007
125x50	141.3x60.3	300		168	220	104	108	64
5x2	5.563x2.375	2.07		6.614	8.661	4.094	4.252	2.519
125x25	141.3x60.3	300		194	247	112	77	38
6x1	6.500x1.327	2.07		7.638	9.724	4.409	3.031	1.496
150x32	165.1x42.4	300		194	247	112	83	51
6x1¼	6.500x1.669	2.07		7.638	9.724	4.409	3.268	2.008
150x40	165.1x48.3	300	2-M16x85	194	247	112	92	51
6x1½	6.500x1.900	2.07		7.638	9.724	4.409	3.622	2.008
150x50	165.1x60.3	300		194	247	116	108	64
6x2	6.500x2.375	2.07		7.638	9.724	4.567	4.251	2.519
150x65	165.1x76.1	300		194	247	125	108	70
6x2½	6.500x2.996	2.07		7.638	9.724	4.921	4.251	2.756
150x80	165.1x88.9	300		194	247	125	136	89
6x3	6.500x3.500	2.07		7.638	9.724	4.921	5.354	3.504
150x25	168.3x33.7	300		198	247	120	77	38
6x1	6.625x1.327	2.07		7.795	9.724	4.724	3.031	1.496
150x32	168.3x42.4	300		198	247	120	82	51
6x1¼	6.625x1.669	2.07		7.795	9.724	4.724	3.228	2.007
150x40	168.3x48.3	300		198	247	120	92	51
6x1½	6.625x1.900	2.07		7.795	9.724	4.724	6.622	2.007
150x50	168.3x60.3	300		198	250	120	108	64
6x2	6.625x2.375	2.07		7.795	9.842	4.724	4.251	2.519
150x65	168.3x73	300		198	250	122	108	70
6x2½	6.625x2.875	2.07		7.795	9.842	4.803	4.251	2.756
150x80	168.3x8.9	300		198	247	120	136	89
6x3	6.625x3.500	2.07		7.795	9.724	4.724	5.354	3.504
200x25	219.1x33.7	300		250	310	146	77	46
8x1	8.625x1.327	2.07		9.843	12.205	5.748	3.031	1.811
200x32	219.1x42.4	300		250	310	146	83	46
8x¼	8.625x1.669	2.07		9.843	12.205	5.748	3.268	1.811
200x40	219.1x48.3	300		250	310	146	92	51
8x½	8.625x1.900	2.07		9.843	12.205	5.748	3.622	2.008
200x50	219.1x60.3	300	2-M16x100	250	310	146	97	61
8x2	8.625x2.375	2.07		9.843	12.205	5.748	3.819	2.402
200x65	219.1x76.1	300		250	310	146	130	81
8x2½	8.625x2.996	2.07		9.843	12.205	5.748	5.118	3.189
200x80	219.1x88.9	300		250	310	146	137	86
8x3	8.625x3.500	2.07		9.843	12.205	5.748	5.394	3.386
200x100	219.1x114.3	300		250	310	146	162	114

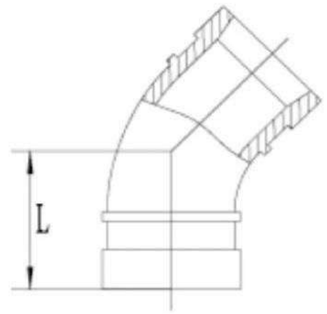
90° Elbow



Size	Pipe O.D.	90° Elbow	
		Long	Short
		L	L
DN	mm	mm	mm
in	in	in	in
25	33.7	57	57
1	1.315	2.24	2.244
32	42.4	70	60
1¼	1.660	2.755	2.362
40	48.3	70	60
1½	1.900	2.755	2.362
50	57.0	83	70
	2.244	3.267	2.755
50	60.3	83	70
2	2.375	3.267	2.755
65	73.0	95	76
2½	2.875	3.74	2.992
65	76.1	95	76
	3.000	3.74	2.992
80	88.9	108	86
3	3.500	4.251	3.386
100	108.0	127	101.5
	4252	5	3.996
100	114.3	127	101.5
4	4.500	5	3.996

Size	Pipe O.D.	90° Elbow	
		Long	Short
		L	L
DN	mm	mm	mm
in	in	in	in
125	133.0	140	122
	5.250	5.511	4.803
125	139.7	140	122
	5.500	5.511	4.803
125	141.3	140	122
5	5.563	5.511	4.803
150	159.0	165	140
	6.260	6.496	5.511
150	165.1	165	140
	6.500	6.496	5.511
150	168.3	165	140
6	6.625	6.496	5.511
200	219.1	197	175
8	8.625	7.755	6.889
250	273.0	229	215
10	10.750	9.015	8.464
300	323.9	254	245
12	12.750	10	9.645
350	377.0		280
	14.843		11.024

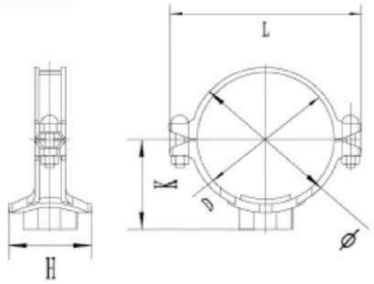
45° Elbow



Size	Pipe O.D.	45° Elbow
		L
DN	mm	mm
in	in	in
25	33.7	38
1	1.315	1.496
32	42.4	44
1¼	1.660	1.732
40	48.3	44
1½	1.900	1.732
50	60.3	51
2	2.375	2.007
65	73.0	57
2½	2.875	2.244
65	76.1	57
	3.000	2.244
80	88.9	64
3	3.500	2.519
100	108.0	76
	4.252	2.992
100	114.3	76
4	4.500	2.992

Size	Pipe O.D.	45° Elbow
		L
DN	mm	mm
in	in	in
125	133.0	83
	5.250	3.267
125	139.7	83
	5.500	3.267
125	141.3	83
5	5.563	3.276
150	159.0	89
	6.260	3.503
150	165.1	89
	6.500	3.503
150	168.3	89
6	6.625	3.503
200	219.1	108
8	8.625	4.251
250	273.0	121
10	10.750	4.763
300	323.9	133
12	12.750	5.236

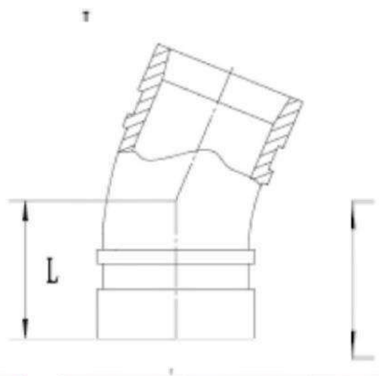
V-Mechanical Tee Threaded



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in				Hole cuting dimension
			No.-Size mm	Φ	L	K	H	mm/in
50x25 2x1	60.3x33.7 2.375x1.327	300 2.07		75 2.953	116 4.567	57 2.244	69 2.717	38 1.496
50x32 2x1¼	60.3x42.4 2.375x1.669	300 2.07	2-M10x55	75 2.953	116 4.567	57 2.244	72 2.835	45 1.772
50x40 2x1½	60.3x48.3 2.375x1.900	300 2.07		75 2.953	116 4.567	62 2.441	72 2.835	45 1.772
65x15 2½x½	73x21.3 2.87x0.839	300 2.07		93 3.661	144 5.669	65 2.559	78 3.071	38 1.496
65x20 2½x3/4	73x26.7 2.87x1.050	300 2.07		93 3.661	144 5.669	65 2.559	78 3.071	38 1.496
65x25 2½x1	73x33.7 2.87x1.327	300 2.07		93 3.661	144 5.669	65 2.559	78 3.071	38 1.496
65x32 2½x1¼	73x42.4 2.87x1.669	300 2.07		93 3.661	137 5.394	65 2.559	84 3.307	51 2.007
65x40 2½x1½	73x48.3 2.87x1.900	300 2.07	2-M12x60	93 3.661	144 5.669	65 2.559	84 3.307	51 2.007
65x25 2½x1	76.1x33.7 2.996x1.327	300 2.07		102 4.016	144 5.669	70 2.756	77 3.031	38 1.496
65x32 2½x1¼	76.11x42.4 2.996x1.669	300 2.07		102 4.016	144 5.669	70 2.756	83 3.268	51 2.008
65x40 2½x1½	76.1x48.3 2.996x1.900	300 2.07		102 4.016	144 5.669	70 2.756	83 3.268	51 2.008
65x40 2½x2	76.1x60.3 2.996x2.375	300 2.07		102 4.016	144 5.669	74 2.913	83 3.268	51 2.008
80x15 3x1/2	88.9x21.3 3.500x0.839	300 2.07		114 4.488	152 5.984	74 2.913	77 3.031	38 1.496
80x20 3x3/4	88.9x26.7 3.500x1.050	300 2.07		114 4.488	152 5.984	74 2.913	77 3.031	38 1.496
80x25 3x1	88.9x33.7 3.500x1.327	300 2.07	2-M12x65	114 4.488	152 5.984	74 2.913	77 3.031	38 1.496
80x32 3x1¼	88.9x42.4 3.500x1.669	300 2.07		114 4.488	152 5.984	76 2.992	77 3.031	38 1.496
80x40 3x1½	88.9x48.3 3.500x1.900	300 2.07		114 4.488	152 5.984	73 2.874	92 3.622	51 2.007
80x50 3x2	88.9x60.3 3.500x2.375	300 2.07		114 4.488	152 5.984	78 3.070	99 3.897	64 2.519
100x25 4x1/2	114.3x21.3 4.500x0.839	300 2.07		140 5.512	180 7.086	88 3.465	77 3.031	38 1.496
100x25 4x3/4	114.3x26.7 4.500x1.050	300 2.07		140 5.512	180 7.086	88 3.465	77 3.031	38 1.496
100x25 4x1	114.3x33.7 4.500x1.327	300 2.07		140 5.512	180 7.086	88 3.465	77 3.031	38 1.496
100x32 4x1¼	114.3x42.4 4.500x1.669	300 2.07		140 5.512	180 7.086	93 3.661	84 3.307	51 2.007
100x40 4x1½	114.3x48.3 4.500x1.900	300 2.07		140 5.512	180 7.086	93 3.661	92 3.622	51 2.007
100x50 4x2	114.3x60.3 4.500x2.375	300 2.07		140 5.512	180 7.086	93 3.661	103 4.055	64 2.519

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Bolt Size	Dimensions mm/in				Hole cuting dimension
			No.-Size mm	Φ	L	K	H	mm/in
100x65 4x2½	114.3x73 4.500x2.875	300 2.07		140 5.512	180 7.402	98 3.858	108 4.251	70 2.756
125x25 5x1	141.3x33.7 5.563x1.327	300 2.07		168 6.614	220 8.661	104 4.094	77 3.031	38 1.496
125x32 5x1¼	141.3x42.4 5.563x1.669	300 2.07	2-M16x75	168 6.614	220 8.661	104 4.094	82 3.228	51 2.007
125x40 5x1½	141.3x48.3 5.563x1.900	300 2.07		168 6.614	220 8.661	104 4.094	95 3.740	51 2.007
125x50 5x2	141.3x60.3 5.563x2.375	300 2.07		168 6.614	220 8.661	104 4.094	108 4.252	64 2.519
150x25 6x1	165.1x33.7 6.500x1.327	300 2.07		194 7.638	247 9.724	112 4.409	77 3.031	38 1.496
150x32 6x1¼	165.1x42.4 6.500x1.669	300 2.07		194 7.638	247 9.724	112 4.409	83 3.268	51 2.008
150x40 6x1½	165.1x48.3 6.500x1.900	300 2.07		194 7.638	247 9.724	112 4.409	92 3.622	51 2.008
150x50 6x2	165.1x60.3 6.500x2.375	300 2.07	2-M16x85	194 7.638	247 9.724	116 4.567	108 4.251	64 2.519
150x65 6x2½	165.1x76.1 6.500x2.996	300 2.07		194 7.638	247 9.724	125 4.921	108 4.251	70 2.756
150x80 6x3	165.1x88.9 6.500x3.500	300 2.07		194 7.638	247 9.724	125 4.921	136 5.345	89 3.504
150x25 6x1	168.3x33.7 6.625x1.327	300 2.07		198 7.795	247 9.724	120 4.724	77 3.031	38 1.496
150x32 6x1¼	168.3x42.4 6.625x1.669	300 2.07		198 7.795	247 9.724	120 4.724	82 3.228	51 2.007
150x40 6x1½	168.3x42.4 6.625x1.900	300 2.07		198 7.795	247 9.724	120 4.724	92 6.622	51 2.007
150x50 6x2	168.3x60.3 6.625x2.375	300 2.07		198 7.795	250 9.842	120 4.724	108 4.251	64 2.519
150x65 6x2½	168.3x73 6.625x2.875	300 2.07		198 7.795	250 9.842	122 4.803	108 4.251	70 2.756
150x80 6x3	168.3x88.9 6.625x3.500	300 2.07		198 7.795	247 9.724	120 4.724	136 5.354	89 3.504
200x25 8x1	219.1x33.7 8.625x1.327	300 2.07		250 9.843	310 12.205	146 5.748	77 3.031	46 1.811
200x32 8x1¼	219.1x42.4 8.625x1.669	300 2.07		250 9.843	310 12.205	146 5.748	83 3.268	46 1.811
200x40 8x1½	219.1x48.3 8.625x1.900	300 2.07		250 9.843	310 12.205	146 5.748	92 3.622	51 2.008
200x50 8x2	219.1x60.3 8.625x2.375	300 2.07	2-M16x100	250 9.843	310 12.205	146 5.748	97 3.819	61 2.402
200x65 8x2½	219.1x76.1 8.625x2.996	300 2.07		250 9.843	310 12.205	146 5.748	130 5.118	81 3.189
200x80 8x3	219.1x88.9 8.625x3.500	300 2.07		250 9.843	310 12.205	146 5.748	137 5.394	81 3.386
200x100 8x4	219.1x114.3 8.625x4.500	300 2.07		250 9.843	310 12.205	146 5.748	162 6.378	114 4.488

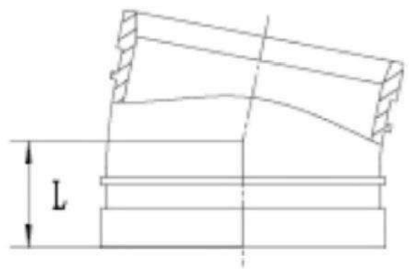
22.5° Elbow



Size		22.5° Elbow
	Pipe O.D.	Standard
		L
DN	mm	mm
in	in	in
25	33.7	41
1	1.315	1.61
32	42.4	44
1¼	1.660	1.732
40	48.3	44
1½	1.900	1.732
50	60.3	51
2	2.375	2
65	73.0	51
2½	2.875	2
65	76.1	51
	3.000	2
80	88.9	57
3	3.500	2.244
100	108.0	73
	4252	2.874
100	114.3	73
4	4.500	2.874

Size		22.5° Elbow
	Pipe O.D.	Standard
		L
DN	mm	mm
in	in	in
125	133.0	73
	5.250	2.874
125	139.7	73
	5.500	2.874
125	141.3	73
5	5.563	2.874
150	159.0	79
	6.260	3.11
150	165.1	79
	6.500	3.11
150	168.3	79
6	6.625	3.11
200	219.1	98
8	8.625	3.858
250	273.0	111
10	10.750	4.37
300	323.9	124
12	12.750	4.88

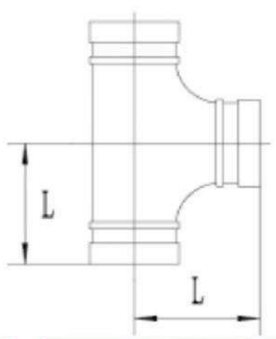
11.25° Elbow



Size		11.25° Elbow
	Pipe O.D.	Standard
		L
DN	mm	mm
in	in	in
25	33.7	35
1	1.315	1.377
32	42.4	35
1¼	1.660	1.377
40	48.3	35
1½	1.900	1.377
50	60.3	35
2	2.375	1.377
65	73.0	38
2½	2.875	1.496
65	76.1	38
	3.000	1.496
80	88.9	38
3	3.500	1.496
100	108.0	44
	4252	1.732
100	114.3	48
4	4.500	1.889

Size		11.25° Elbow
	Pipe O.D.	Standard
		L
DN	mm	mm
in	in	in
125	133.0	51
	5.250	2.007
125	139.7	51
	5.500	2.007
125	141.3	51
5	5.563	2.007
150	159.0	51
	6.260	2.007
150	165.1	51
	6.500	2.007
150	168.3	51
6	6.625	2.007
200	219.1	51
8	8.625	2.007
250	273.0	54
10	10.750	2.125
300	323.9	57
12	12.750	2.244

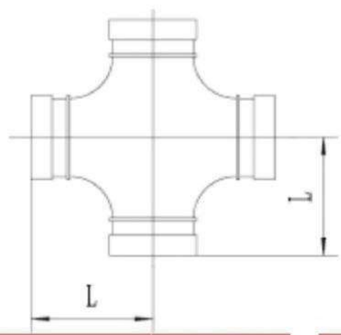
Tee



Size	Pipe O.D.	Tee	
		Long	Short
		L	L
DN	mm	mm	mm
in	in	in	in
25	33.7	57	57
1	1.315	2.24	2.244
32	42.4	70	60
1¼	1.660	2.755	2.362
40	48.3	70	60
1½	1.900	2.755	2.362
50	60.3	83	70
2	2.375	3.267	2.755
65	73.0	95	76
2½	2.875	3.74	2.992
65	76.1	95	76
	3.000	3.74	2.992
80	88.9	108	86
3	3.500	4.251	3.386
100	108.0	127	101.5
	4252	5	3.996
100	114.3	127	101.5
4	4.500	5	3.996

Size	Pipe O.D.	Tee	
		Long	Short
		L	L
DN	mm	mm	mm
in	in	in	in
125	133.0	140	122
	5.250	5.511	4.803
125	139.7	140	122
5	5.500	5.511	4.803
125	141.3	140	122
5	5.563	5.511	4.803
150	159.0	165	140
	6.260	6.496	5.511
150	165.1	165	140
	6.500	6.496	5.511
150	168.3	165	140
6	6.625	6.496	5.511
200	219.1	197	175
8	8.625	7.755	6.889
250	273.0	229	215
10	10.750	9.015	8.464
300	323.9	254	245
12	12.750	10	9.645

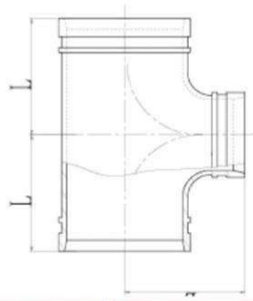
Cross



Size	Pipe O.D.	Cross
		Standard
		L
DN	mm	mm
		in
50	60.3	70
2	2.375	2.755
65	73.0	76
2½	2.875	2.992
65	76.1	76
	3.000	2.992
80	88.9	86
3	3.500	3.386
100	108.0	101.5
	4.252	3.996
100	114.3	101.5
4	4.500	3.996

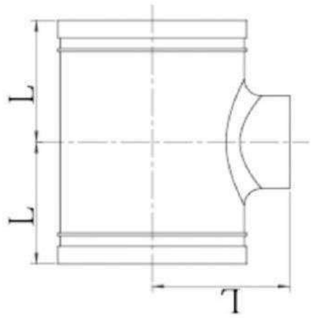
Size	Pipe O.D.	Cross
		Standard
		L
DN	mm	mm
		in
125	139.7	122
5	5.500	4.803
150	159.0	140
	6.260	5.511
150	165.1	140
	6.500	5.511
150	168.3	140
6	6.625	5.511
200	219.1	175
8	8.625	6.889
250	273.0	215
10	10.750	8.464

Reducing Tee Grooved



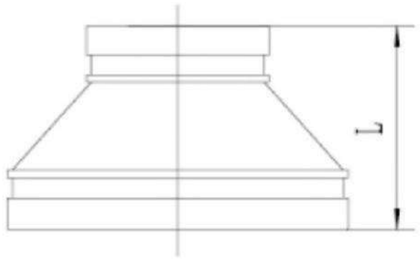
Size DN in	Pipe O.D mm/in	Dimensitions L mm/in
40x32 1½x1¼	48.3x42.4 1.900x1.660	60 2.362
50x32 2x1¼	60.3x42.4 2.375x1.660	70 2.755
50x40 2x1½	60.3x48.3 2.375x1.900	70 2.755
65x25 2½x1	70.3x33.7 2.875x1.315	76 2.992
65x32 2½x1¼	73.0x42.4 2.875x1.660	76 2.992
65x40 2½x1½	73.0x48.3 2.875x1.900	76 2.992
65x50 2½x2	73.0x60.3 2.875x2.375	76 2.992
65x25 2½x1	76.1x33.7 3.000x1.315	76 2.992
65x32 2½x1¼	76.1x42.4 3.000x1.660	76 2.992
65x40 2½x1½	76.1x48.3 3.000x1.900	76 2.992
65x50 2½x2	76.1x60.3 3.000x2.375	76 2.992
80x25 3x1	76.1x42.4 3.500x1.315	86 3.386
80x32 3x1¼	88.9x42.4 3.500x1.660	86 3.386
80x40 3x1½	88.9x48.3 3.500x1.900	86 3.386
80x50 3x2	88.9x60.3 3.500x2.375	86 3.386
80x65 3x2½	88.9x73.0 3.500x2.875	86 3.386
80x65 3x2½	88.9x76.1 3.500x3.000	86 3.386
100x50 4x2	114.3x60.3 4.500x2.375	101.5 3.996
100x65 4x2½	114.3x73.0 4.500x2.875	101.5 3.996
100x65 4x2½	114.3x76.1 4.500x3.000	101.5 3.996
100x80 4x3	114.3x88.9 4.500x3.500	101.5 3.996
125x50 5x2	139.7x60.3 5.500x2.375	122 4.803
125x65 5x2½	139.7x76.1 5.500x3.000	122 4.803
125x80 5x3	139.7x88.9 5.500x3.500	122 4.803
125x100 5x4	139.7x114.3 5.500x4.500	122 4.803
150x50 6x2	165.1x60.3 6.500x2.375	140 5.511
150x65 6x2½	165.1x76.1 6.500x3.000	140 5.511
150x80 6x3	165.1x88.9 6.500x3.500	140 5.511
150x100 6x4	165.1x114.3 6.500x4.500	140 5.511
150x125 6x5	165.1x139.7 6.500x5.500	140 5.511
200x50 8x2	219.1x60.3 6.625x2.375	175 6.889
200x65 8x2½	219.1x73.0 6.625x2.875	175 6.889
200x65 8x2½	219.1x76.1 6.625x3.000	175 6.889
200x80 8x3	219.1x88.9 6.625x3.500	175 6.889
200x100 8x4	219.1x114.3 8.625x4.500	175 6.889
200x125 8x5	219.1x139.7 8.625x5.500	175 6.889
200x150 8x6	219.1x165.1 8.625x6.500	175 6.889
200x150 8x6	219.1x168.3 8.625x6.625	175 6.889
200x100 10x4	273.0x114.3 10.750x4.500	229 9.015
250x125 10x5	273.0x139.7 10.750x5.500	229 9.015
250x150 10x6	273.0x165.1 10.750x6.500	229 9.015
250x200 10x8	273.0x219.1 10.750x8.625	229 9.015
300x100 12x4	323.9x114.3 12.750x4.500	254 10
300x150 12x6	323.9x165.1 12.750x6.500	254 10
300x200 12x8	323.9x219.1 12.750x8.625	254 10
300x250 12x10	323.9x273.0 12.750x10.750	254 10

Reducing Tee Threaded



Size DN in	Pipe O.D mm/in	Dimensitions L mm/in
32x25 1¼x1	42.4x33.7 1.600x1.315	60 2.362
40x25 1½x1	48.3x33.7 1.900x1.315	60 2.362
40x32 1½x1¼	48.3x42.4 1.900x1.660	60 2.362
50x25 2x1	60.3x33.7 2.375x1.315	70 2.755
50x32 2x1¼	60.3x42.4 2.375x1.660	70 2.755
50x40 2x1½	60.3x48.3 2.375x1.900	70 2.755
65x25 2½x1	73.0x33.7 2.875x1.315	76 2.992
65x32 2½x1¼	73.0x42.4 2.875x1.660	76 2.992
65x40 2½x1½	73.0x48.3 2.875x1.900	76 2.992
65x50 2½x2	73.0x60.3 2.875x2.375	76 2.992
65x25 2½x1	76.1x33.7 3.000x1.315	76 2.992
65x32 2½x1¼	76.1x42.4 3.000x1.660	76 2.992
65x40 2½x1½	76.1x48.3 3.000x1.900	76 2.992
65x50 2½x2	76.1x60.3 3.000x2.375	76 2.992
80x25 3x1	88.9x33.7 3.500x1.315	86 3.386
80x32 3x1¼	88.9x42.4 3.500x1.660	86 3.386
80x40 3x1½	88.9x48.3 3.500x1.900	86 3.386
80x50 3x2	88.9x60.3 3.500x2.375	86 3.386
80x65 3x2½	88.9x76.1 3.500x3.000	86 3.386
100x25 4x1	114.3x33.7 4.500x1.315	101.5 3.996
100x32 4x1¼	114.3x42.4 4.500x1.660	101.5 3.996
100x40 4x1½	114.3x48.3 4.500x1.900	101.5 3.996
100x50 4x2	114.3x60.3 4.500x2.375	101.5 3.996
100x65 4x2½	114.3x73.0 4.500x2.875	101.5 3.996
100x65 4x2½	114.3x76.1 4.500x3.000	101.5 3.996
100x80 4x3	114.3x88.9 4.500x3.500	101.5 3.996
125x25 4x1	139.7x33.7 4.500x3.500	122 4.803
125x32 4x1¼	139.7x42.4 5.500x1.660	122 4.803
125x40 4x1½	139.7x48.3 5.500x1.900	122 4.803
125x50 4x2	139.7x60.3 5.500x2.375	122 4.803
125x65 4x2½	139.7x76.1 5.500x3.000	122 4.803
125x80 4x3	139.7x88.9 5.500x3.500	122 4.803
150x25 6x1	165.1x33.7 6.500x1.315	122 4.803
150x32 6x1¼	165.1x42.4 6.500x1.660	122 4.803
150x40 6x1½	165.1x48.3 6.500x1.900	122 4.803
150x50 6x2	165.1x60.3 6.500x2.375	122 4.803
150x65 6x2½	165.1x76.1 6.500x3.000	122 4.803
150x80 6x3	165.1x88.9 6.500x3.500	122 4.803
150x100 6x4	165.1x114.3 6.500x4.500	122 4.803
150x32 6x1¼	168.3x42.4 6.625x1.660	122 4.803
150x40 6x1½	168.3x48.3 6.625x1.900	122 4.803
150x50 6x2	168.3x60.3 6.625x2.375	122 4.803
150x65 6x2½	168.3x76.1 6.625x3.000	122 4.803
150x80 6x3	168.3x88.9 6.625x3.500	122 4.803
200x80 8x3	219.1x88.9 8.625x3.500	175 6.889
200x100 8x4	219.1x14.3 8.625x4.500	175 6.889

Reducer Grooved

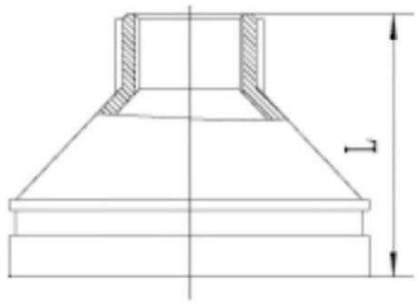


Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
32x25 1¼x1	42.4x33.7 1.669x1.327	400 2.75	64 2.52
40x25 1½x1	48.3x33.7 1.900x1.327	400 2.75	64 2.52
40x32 1½x1¼	48.3x42.4 1.900x1.669	400 2.75	64 2.52
50x25 2x1	60.3x33.7 2.375x1.327	400 2.75	64 2.52
50x32 2x1¼	60.3x42.4 2.375x1.669	400 2.75	64 2.52
50x40 2x1½	60.3x48.3 2.375x1.900	400 2.75	64 2.52
65x25 2½x1	73x33.7 2.87x1.327	400 2.75	64 2.52
65x32 2½x1	73x42.4 2.87x1.669	400 2.75	64 2.52
65x40 2½x1	73x48.3 2.87x1.900	400 2.75	64 2.52
65x50 2½x1	73x60.3 2.87x2.375	400 2.75	64 2.52
65x25 2½x1	76.1x33.7 2.996x1.327	400 2.75	64 2.52
65x32 2½x1	76.1x42.4 2.996x1.669	400 2.75	64 2.52
65x40 2½x1	76.1x48.3 2.996x1.669	400 2.75	64 2.52
65x50 2½x1	76.1x60.3 2.996x2.375	400 2.75	64 2.52

Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
80x32 3x1¼	88.9x42.4 3.500x1.669	400 2.75	64 2.52
80x40 3x1½	88.9x48.3 3.500x1.900	400 2.75	64 2.52
80x50 3x2	88.9x60.3 3.500x2.375	400 2.75	64 2.52
80x65 3x2½	88.9x73.0 3.500x2.875	400 2.75	64 2.52
80x65 3x2½	88.9x76.1 3.500x3.000	400 2.75	64 2.52
100x50 4x2	114.3x60.3 4.500x2.375	400 2.75	76 3.00
100x65 4x2½	114.3x73.0 4.500x2.875	400 2.75	76 3.00
100x65 4x2½	114.3x76.1 4.500x3.000	400 2.75	76 3.00
100x80 4x3	114.3x88.9 4.500x3.000	400 2.75	76 3.00
125x50 5x2	139.7x60.3 5.500x2.375	300 2.07	89 3.50
125x65 5x2½	139.7x76.1 5.500x3.000	300 2.07	89 3.50
125x80 5x3	139.7x88.9 5.500x3.500	300 2.07	89 3.50
125x100 5x4	139.7x114.3 5.500x4.500	300 2.07	89 3.50
150x50 6x2	165.1x60.3 6.500x2.375	300 2.07	102 4.02

Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
150x65 6x2½	165.1x76.1 6.500x3.000	300 2.07	102 4.02
150x80 6x3	165.1x88.9 6.500x3.500	300 2.07	102 4.02
150x100 6x4	165.1x114.3 6.500x4.500	300 2.07	102 4.02
150x125 6x5	165.1x139.7 6.500x5.500	300 2.07	102 4.02
150x50 6x2	168.3x60.3 6.625x2.375	300 2.07	102 4.02
150x65 6x2½	168.3x73 6.625x2.875	300 2.07	102 4.02
150x65 6x2½	168.3x76.1 6.625x3.000	300 2.07	102 4.02
150x80 6x3	168.3x88.9 6.625x3.500	300 2.07	102 4.02
150x100 6x4	168.3x114.3 6.625x4.500	300 2.07	102 4.02
150x125 6x5	168.3x139.7 6.625x5.500	300 2.07	102 4.02
200x150 8x6	216.3x165.1 8.625x6.500	300 2.07	127 5.00
200x50 8x2	219.1x60.3 8.625x2.375	300 2.07	127 5.00
200x65 8x2½	219.1x73 8.625x2.875	300 2.07	127 5.00
200x65 8x2½	219.1x76.1 8.625x3.000	300 2.07	127 5.00
200x80 8x3	219.1x88.9 8.625x3.500	300 2.07	127 5.00
200x100 8x4	219.1x114.3 8.625x4.500	300 2.07	127 5.00
200x125 8x5	219.1x139.7 8.625x5.500	300 2.07	127 5.00
200x150 8x6	219.1x165.1 8.625x6.500	300 2.07	127 5.00
200x150 8x6	219.1x168.3 8.625x6.625	300 2.07	127 5.00
250x100 10x4	273.0x114.3 10.75x4.500	300 2.07	152 5.98
250x100 10x4	273.0x114.3 10.75x4.500	300 2.07	152 5.98
250x150 10x6	273.0x168.3 10.75x6.625	300 2.07	152 5.98
250x200 10x8	273.0x219.1 10.75x8.625	300 2.07	152 5.98
300x150 12x6	323.9x165.1 12.75x6.500	300 2.07	178 7.00
300x150 12x6	323.9x168.3 12.75x6.500	300 2.07	178 7.00
300x200 12x8	323.9x219.1 12.75x8.625	300 2.07	178 7.00
300x250 12x10	323.9x273 12.75x10.75	300 2.07	178 7.00

Reducer Threaded



Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
40x25 1½x1	48.3x33.7 1.900x1.327	400 2.75	64 2.52
50x25 2x1	60.3x33.7 2.375x1.327	400 2.75	64 2.52
50x32 2x1¼	60.3x42.4 2.375x1.669	400 2.75	64 2.52
50x40 2x1½	60.3x48.3 2.375x1.900	400 2.75	64 2.52
65x25 2½x1	73x33.7 2.87x1.327	400 2.75	64 2.52
65x32 2½x1	73x42.4 2.87x1.669	400 2.75	64 2.52
65x40 2½x1	73x48.3 2.87x1.900	400 2.75	64 2.52
65x50 2½x1	73x60.3 2.87x2.375	400 2.75	64 2.52
65x25 2½x1	76.1x33.7 2.996x1.327	400 2.75	64 2.52
65x32 2½x1	76.1x42.4 2.996x1.669	400 2.75	64 2.52
65x40 2½x1	76.1x48.3 2.996x1.669	400 2.75	64 2.52
65x50 2½x1	76.1x60.3 2.996x2.375	400 2.75	64 2.52
80x25 3x1	88.9x33.7 3.500x1.327	400 2.75	64 2.52

Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
80x32 3x1¼	88.9x42.4 3.500x1.669	400 2.75	64 2.52
80x40 3x1½	88.9x48.3 3.500x1.900	400 2.75	64 2.52
80x50 3x2	88.9x60.3 3.500x2.375	400 2.75	64 2.52
80x65 3x2½	88.9x73.0 3.500x2.875	400 2.75	64 2.52
80x65 3x2½	88.9x76.1 3.500x3.000	400 2.75	64 2.52
100x25 4x1	114.3x33.7 4.500x1.327	400 2.75	76 3.00
100x32 4x1¼	114.3x42.4 4.500x1.669	400 2.75	76 3.00
100x40 4x1½	114.3x48.3 4.500x1.900	400 2.75	76 3.00
100x50 4x2	114.3x60.3 4.500x2.375	400 2.75	76 3.00
100x65 4x2½	114.3x73.0 4.500x2.875	400 2.75	76 3.00

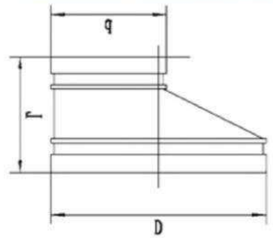
Nominal Size mm/ in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
100x65 4x2½	114.3x76.1 4.500x3.000	400 2.75	76 3.00
100x80 4x3	114.3x88.9 4.500x3.500	400 2.75	76 3.00
125x25 5x1	139.7x33.7 5.500x1.327	300 2.07	89 3.50
125x32 5x1¼	139.7x42.4 5.500x1.669	300 2.07	89 3.50
125x40 5x1½	139.7x48.3 5.500x1.900	300 2.07	89 3.50
125x50 5x2	139.7x60.3 5.500x2.375	300 2.07	89 3.50
125x65 5x2½	139.7x76.1 5.500x3.000	300 2.07	89 3.50
125x80 5x3	139.7x88.9 5.500x3.500	300 2.07	89 3.50
125x100 5x4	139.7x114.3 5.500x4.500	300 2.07	89 3.50
150x25 6x1	165.1x33.7 6.500x1.327	300 2.07	102 4.02
150x32 6x1¼	165.1x42.4 6.500x1.669	300 2.07	102 4.02
150x40 6x1½	165.1x48.3 6.500x1.900	300 2.07	102 4.02
150x50 6x2	165.1x60.3 6.500x2.375	300 2.07	102 4.02
150x65 6x2½	165.1x76.1 6.500x3.000	300 2.07	102 4.02
150x80 6x3	165.1x88.9 6.500x3.500	300 2.07	102 4.02
150x100 6x4	165.1x114.3 6.500x4.500	300 2.07	102 4.02
150x25 6x1	168.3x33.7 6.625x1.327	300 2.07	102 4.02
150x50 6x2	168.3x60.3 6.625x2.327	300 2.07	102 4.02
150x65 6x2½	168.3x76.1 6.625x3.000	300 2.07	102 4.02
150x80 6x3	168.3x88.9 6.625x3.500	300 2.07	102 4.02
200x50 8x2	219.1x60.3 8.625x2.375	300 2.07	127 5.00
200x65 8x2½	219.1x76.1 8.625x3.000	300 2.07	127 5.00
200x80 8x3	219.1x88.9 8.625x3.500	300 2.07	127 5.00

Cap

Size	Pipe O.D.	Concentric Cap	Threaded Cap
		L	L
DN	mm	mm	mm
in	in	in	in
25 1	33.7 1.315	25 0.99	
32 1¼	42.4 1.660	25 0.99	
40 1½	48.3 1.900	25 0.99	
50 2	60.3 2.375	25 0.99	25 0.99
65 2½	73.0 2.875	25 0.99	25 0.99
65	76.1 3.000	25 0.99	25 0.99
80 3	88.9 3.500	25 0.99	25 0.99
100	108.0 4.252	25 0.99	
100 4	114.3 4.500	25 0.99	25 0.99

Size	Pipe O.D.	Concentric Cap	Threaded Cap
		L	L
DN	mm	mm	mm
in	in	in	in
125	133.0 5.250	25 0.99	
125 5	139.7 5.500	25 0.99	25 0.99
150	159.0 6.260	25 0.99	
150	165.1 6.500	25 0.99	25 0.99
150 6	168.3 6.625	25 0.99	25 0.99
200 8	219.1 8.625	30 1.181	30 1.181
250 10	273.0 10.750	32 1.259	32 1.259

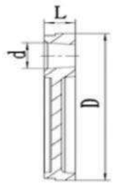
Grooved Eccentric Reducer



Nominal Size mm/in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
80x50 3x2	88.9x60.3 3.500x2.375	500 3.45	64 2.52
80x65 3x2½	88.9x73.0 3.500x2.875	500 3.45	64 2.52
80x65 3x2½	88.9x76.1 3.500x3.000	500 3.45	64 2.52
100x50 4x2	114.3x60.3 4.500x2.375	500 3.45	76 3.00
100x65 4x2½	114.3x73.0 4.500x2.875	500 3.45	76 3.00
100x65 4x2½	114.3x76.1 4.500x3.000	500 3.45	76 3.00
100x80 4x3	114.3x88.9 4.500x3.500	500 3.45	76 3.00
125x65 5x2½	139.7x76.1 5.500x3.000	500 3.45	89 3.50
125x80 5x3	139.7x76.1 5.500x3.000	500 3.45	89 3.50
125x100 5x4	139.7x114.3 5.500x4.500	500 3.45	89 3.50
150x50 6x2	159.0x60.3 6.250x2.375	500 3.45	102 4.02
150x65 6x2½	159.0x76.1 6.250x3.000	500 3.45	102 4.02
150x80 6x3	159.0x88.9 6.250x3.500	500 3.45	102 4.02
150x100 6x4	159.0x108.0 6.250x4.250	500 3.45	102 4.02
150x100 6x4	159.0x114.3 6.625x4.500	500 3.45	102 4.02

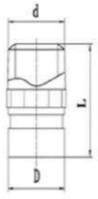
Nominal Size mm/in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
150x65 6x2½	165.1x76.1 6.500x3.500	500 3.45	102 4.02
150x80 6x3	165.1x88.9 6.500x3.500	500 3.45	102 4.02
150x100 6x4	165.1x114.3 6.500x4.500	500 3.45	102 4.02
150x125 6x5	165.1x139.7 6.500x5.500	500 3.45	102 4.02
150x80 6x3	168.3x88.9 6.625x3.500	500 3.45	102 4.02
150x100 6x4	168.3x114.3 6.625x4.500	500 3.45	102 4.02
150x125 6x5	168.3x139.7 6.625x5.500	500 3.45	102 4.02
200x80 8x3	219.1x88.9 8.625x3.500	500 3.45	127 5.00
200x100 8x4	219.1x114.3 8.625x4.500	500 3.45	127 5.00
200x125 8x5	219.1x139.7 8.625x5.500	500 3.45	127 5.00
200x150 8x6	219.1x165.1 8.625x6.500	500 3.45	127 5.00
200x150 8x6	219.1x168.3 8.625x6.625	500 3.45	127 5.00
250x150 10x6	273.0x165.1 10.75x6.500	500 3.45	152 5.98
250x150 10x6	273.0x168.3 10.75x6.625	500 3.45	152 5.98
250x200 10x8	273.0x219.1 10.75x8.625	500 3.45	152 5.98

Drain Cap



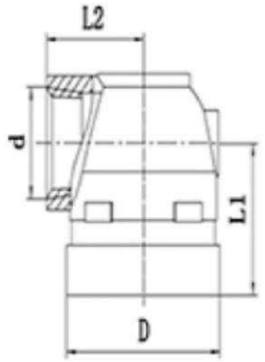
Nominal Size mm/in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensitions L mm/in
50x25 2x1	60.3x33.7 2.375x1.327	500 3.45	25 0.99
50x40 2x1½	60.3x48.3 2.375x1.900	500 3.45	25 0.99
65x25 2½x1	73.0x33.7 2.875x1.327	500 3.45	25 0.99
65x40 2½x1½	76.1x48.3 3.000x1.900	500 3.45	25 0.99
80x25 3x1	88.9x33.7 3.500x1.327	500 3.45	25 0.99
80x40 3x1½	88.9x48.3 3.500x1.900	500 3.45	25 0.99
100x25 4x1	114.3x33.7 4.500x1.327	500 3.45	25 0.99
125x50 5x2	139.7x60.3 5.500x2.375	500 3.45	25 0.99
150x25 6x1	168.3x33.7 6.625x1.327	500 3.45	25 0.99
150x40 6x1½	168.3x48.3 6.625x1.900	500 3.45	25 0.99
150x50 6x2	168.3x60.3 6.625x2.375	500 3.45	25 0.99
200x50 8x2	219.1x60.3 8.625x2.375	500 3.45	31 1.22

Adapter Nipple



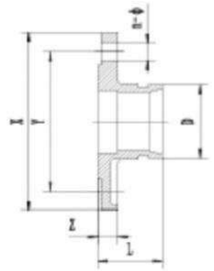
Nominal Size mm/in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Measurement
40x25 1½x1	48.3x33.7 1.900x1.327	500 3.45	63 2.48
40x40 1½x1½	48.3x48.3 1.900x1.900	500 3.45	63 2.48
50x40 2x1½	60.3x48.3 2.375x1.900	500 3.45	63 2.48
50x50 2x2	60.3x60.3 2.375x2.375	500 3.45	63 2.48

End All



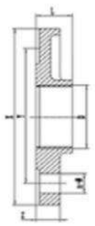
Nominal Size mm/in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Measurement L1 mm/in	Measurement L2 mm/in
32x15 1¼x½	42.4x21.3 1.669x0.839	500 3.45	45 1.77	30.5 1.20
32x20 1¼x3/4	42.4x26.9 1.669x1.059	500 3.45	45 1.77	30.5 1.20
32x25 1¼x1	42.4x33.7 1.669x1.3.27	500 3.45	48.5 1.91	31.5 1.24
40x15 1½x½	48.3x21.3 1.900x0.839	500 3.45	45 1.77	33.5 1.32
40x20 1½x3/4	48.3x26.9 1.900x1.059	500 3.45	45 1.77	33.5 1.32
40x25 1½x1	48.3x33.7 1.900x1.327	500 3.45	48.5 1.91	35.5 1.32
50x15 2x½	60.3x21.3 2.375x0.839	500 3.45	44.5 1.75	40 1.57
50x20 2x3/4	60.3x26.9 2.375x1.059	500 3.45	45 1.77	40 1.57
50x25 2x1	60.3x33.7 2.375x1.327	500 3.45	48.5 1.91	41.5 1.63
65x15 2½x½	73x21.3 2.87x0.839	500 3.45	44.5 1.75	44.5 1.75
65x20 2½x3/4	73x26.9 2.87x1.059	500 3.45	44.5 1.75	44.5 1.75
65x25 2½x1	73x33.7 2.87x1.327	500 3.45	48.5 1.91	46 1.81

Flange Adapter-Class150



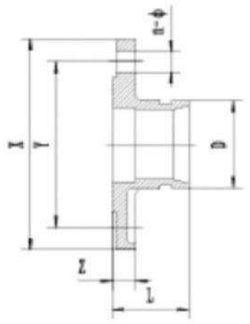
Nominal Size mm /in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-Size mm
50 2	60.3 2.375	300 2.07	60.3 2.37	152 5.98	120.5 4.744	16 0.629	4-M16
65 2½	73.0 2.875	300 2.07	60.3 2.37	178 7.00	139.5 5.693	17.5 0.688	4-M16
80 3	88.9 3.500	300 2.07	60.3 2.37	190 7.48	152.5 6.000	19 0.748	4-M16
100 4	114.3 4.500	300 2.07	70 2.755	229 9.015	190.5 7.500	24 0.960	8-M16
125 5	141.3 5.562	300 2.07	70 2.755	254 10	216 8.503	24 0.960	8-M20
150 6	168.3 6.625	300 2.07	70 2.755	279 10.98	241.5 9.507	25.5 1.100	8-M20
200 8	219.1 8.625	300 2.07	76.1 2.990	343 13.50	298.5 11.751	28.5 1.112	8-M20
250 10	273.0 10.750	300 2.07	85 3.346	406 15.98	362 14.251	30 1.11	12-M24
300 12	323.9 12.750	300 2.07	90 3.543	483 19.01	432 17.000	32 1.259	12-M24

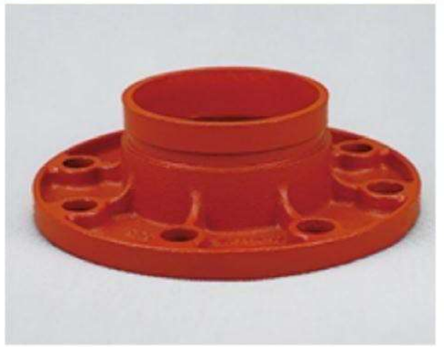
Flange Threaded-PN16



Nominal Size mm /in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-Size mm
50 2	60.3 2.375	230 1.6	32 1.306	165 6.496	125 4.92	19 0.748	4-M16
65 2½	76.1 3.000	230 1.6	32 1.306	185 7.283	145 5.70	19 0.748	4-M16
80 3	88.9 3.500	230 1.6	34 1.388	200 7.874	160 6.29	19 0.748	8-M16
100 4	114.3 4.500	230 1.6	40 1.633	220 8.661	180 7.08	19 0.748	8-M16

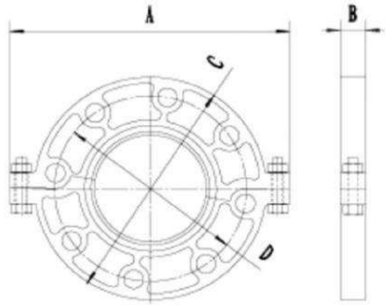
Flange Adapter-PN16





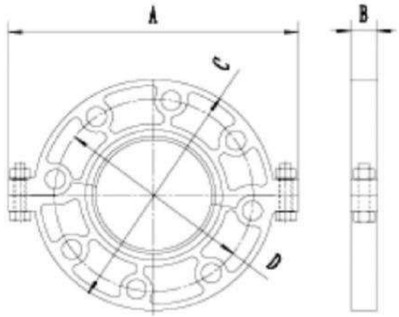
Nominal Size mm /in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-Size mm
50 2	60.3 2.375	230 1.6	60.3 2.37	165 6.496	125 4.92	19 0.748	4-M16
65 2½	73.0 2.875	230 1.6	60.3 2.37	185 7.283	145 5.70	19 0.748	4-M16
65 2½	76.1 3.000	230 1.6	60.3 2.37	185 7.283	145 5.70	19 0.748	4-M16
80 3	88.9 3.500	230 1.6	60.3 2.37	200 7.874	160 6.29	19 0.748	8-M16
100 4	108.0 4.250	230 1.6	70 2.755	220 8.661	180 7.08	19 0.748	8-M16
100 4	114.3 4.500	230 1.6	70 2.755	220 8.661	180 7.08	19 0.748	8-M16
125 5	133.0 5.250	230 1.6	60.3 2.37	250 9.842	210 8.26	19 0.748	8-M16
125	139.7 5.500	230 1.6	60.3 2.37	250 9.842	210 8.26	19 0.748	8-M16
125 5	141.3 5.563	230 1.6	70 2.755	250 9.842	210 8.26	19 0.748	8-M16
150 6	159.0 6.250	230 1.6	70 2.755	285 11.22	240 9.448	19 0.748	8-M20
150 6	165.1 6.500	230 1.6	70 2.755	285 11.22	240 9.448	19 0.748	8-M20
150 6	168.3 6.625	230 1.6	70 2.755	285 11.22	240 9.448	19 0.748	8-M20
200 8	219.1 8.625	230 1.6	76.1 2.99	340 13.38	295 11.61	20 0.748	12-M20
250 10	273.0 10.750	230 1.6	85 3.346	405 15.944	355 13.97	22 0.866	12-M20
300 12	323.9 12.750	230 1.6	90 3.543	460 18.11	410 16.14	24.5 0.96	12-M20
350 14	377.0 14.843	230 1.6	100 3.937	520 20.47	470 18.50	26 1.02	16-M24

Grooved Flange-PN16



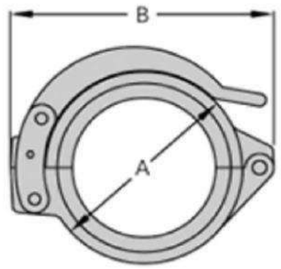
Nominal Size mm /in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-Size mm
50 2	60.3 2.375	230 1.6	222 8.740	23 0.906	165 6.496	125 4.921	4-M16
65 2½	73 2.875	230 1.6	240 9.448	23 0.906	185 7.283	145 5.708	4-M16
65	76.1 3.000	230 1.6	240 9.448	23 0.906	185 7.283	145 5.708	4-M16
80 3	88.9 3.500	230 1.6	252 9.921	23 0.906	192 7.559	160 6.299	8-M16
100 4	108 4.252	230 1.6	280 11.023	23 0.906	220 8.661	180 7.086	8-M16
100 4	114.3 4.500	230 1.6	280 11.023	23 0.906	220 8.661	180 7.086	8-M16
125	139.7 5.500	230 1.6	316 12.44	24 0.944	250 9.842	210 8.267	8-M16
125 5	141.3 5.563	230 1.6	324 12.75	24 0.944	250 9.842	210 8.267	8-M16
150 6	159 6.260	230 1.6	346 13.622	24 0.944	285 11.22	240 9.448	8-M16
150 6	168.3 6.625	230 1.6	346 13.622	24 0.944	285 11.22	240 9.448	8-M20
200 8	219.1 8.625	230 1.6	418 16.456	28 1.102	340 13.38	295 11.614	12-M20

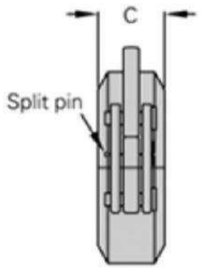
Grooved Flange-Class150



Nominal Size mm /in	Pipe O.D mm/in DXd	Working Pressure PSI/MPa	Dimensions mm/in				Bolt Size
			L mm/in	X mm/in	Y mm/in	Z mm/in	No.-Size mm
50 2	60.3 2.375	300 2.07	206 8.110	22 0.866	152 5.984	121 4.763	4-M16
65 2½	73.0 2.875	300 2.07	230 9.055	22 0.866	178 7.007	140 5.511	4-M16
80 3	88.9 3.500	300 2.07	242 9.527	24 0.944	191 7.519	152 5.984	4-M16
100 4	114.3 4.500	300 2.07	280 11.023	24 0.944	229 9.015	191 7.519	8-M16
125 5	139.7 5.500	300 2.07	325 12.795	24.5 0.964	254 10	216 8.503	8-M20
125 5	141.3 5.563	300 2.07	325 12.795	24.5 0.964	254 10	216 8.503	8-M20
150 6	168.3 6.625	300 2.07	345 13.583	24.5 0.964	282 1.102	241.5 9.508	8-M20
200 8	219.1 8.625	300 2.07	414.3 16.311	28 1.102	341.4 13.44	298.5 11.751	8-M20

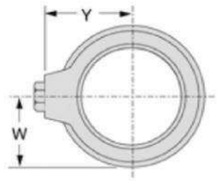
Hinged Lever Coupling





Nominal Size	Pipe O.D.	Max. Working Pressure(CWP)**	Max. End Load(CWP)	Axial Displacement+	Angular Movement/ Deflection**+	Dimensions			Weight
						A	B	C	
In	In	PSI	Lbs	In	(°)	In	In	In	Lbs
mm	mm	Bar	KN	mm	(°)	mm	mm	mm	Kgs
1½	1.900	300	850	0-0.06		2.95	4.65	1.85	2.2
40	48.3	20	3.66	0-1.6	1° -54′	75	118	47	1.0
2	2.375	300	1320	0-0.06		3.43	5.08	1.85	2.4
50	60.3	20	5.71	0-1.6	1° -54′	87	129	47	1.1
2½	2.875	300	1940	0-0.06		3.94	5.63	1.85	3.1
65	73.0	20	8.37	0-1.6	1° -15′	100	143	47	1.4
	3.000	300	2120	0-0.06		4.06	5.67	1.85	3.1
76.1mm	76.1	20	9.09	0-1.6	1° -12′	103	144	47	1.4
3	3.500	300	2880	0-0.06		4.69	6.46	1.85	4.0
80	88.9	20	12.41	0-1.6	1° -12′	119	164	47	1.7
4	4.500	300	4760	0-0.13		5.98	7.95	2.05	5.9
100	114.3	20	20.51	0-3.2	1° -36′	152	202	52	2.7
4	5.500	300	7120	0-0.13		6.97	9.80	2.05	10.8
139.7mm	139.7	20	30.64	0-3.2	1° -18′	177	249	52	4.9
5	5.563	300	7280	0-0.13		7.05	10.00	2.05	10.8
125	141.3	20	31.35	0-3.2	1° -18′	179	254	52	4.9
	6.500	300	9950	0-0.13		7.80	10.87	2.05	13.2
165.1mm	165.1	20	42.80	0-3.2	1° -07′	198	276	52	6.0
6	6.625	300	10330	0-0.13		8.11	11.02	2.05	13.2
150	168.3	20	44.47	0-3.2	1° -05′	206	280	52	6.0
8	8.625	300	17510	0-0.13		10.08	13.58	2.44	15.2
200	219.1	20	75.37	0-3.2	1° -05′	256	345	62	6.9
10	10.750	300	27210	0-0.13		12.68	17.48	2.60	36.1
250	273.0	20	117.01	0-3.2	1° -40′	322	444	68	16.4

Sock-It Coupling



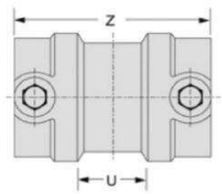
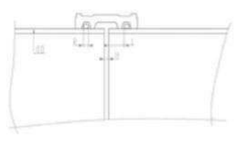


FIGURE 7107 SOCK-IT® COUPLING(SXS)

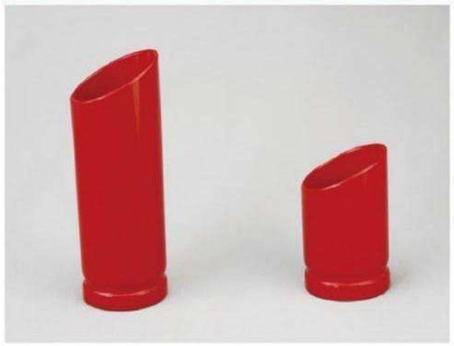
Nominal Size	Pipe O.D.	Max. Working Pressure		Dimensions				Approx. Wt.Ea
		UL/ULC Listed	FM Approved	U*	W	Y	Z	
In	In	PSI	PSI	In	In	In	In	Lbs
mm	mm	Bar	Bar	mm	mm	mm	mm	Kg
1	1.315	300	300	1/4	1 1/16	1 11/16	3 1/8	1.7
25	33.7	20.7	30.7	6	27	43	79	0.8
1¼	1.660	300	300	1/4	1¼	1 13/16	3 1/8	1.9
32	42.4	20.7	20.7	6	32	46	79	0.9
1½	1.900	300	300	1/4	1 3/8	1 15/16	3¼	2.1
40	48.3	20.7	20.7	6	35	49	83	1.0
2	2.375	175	250	1/4	1 5/8	2 3/16	3 5/8	2.9
50	60.3	12.1	17.2	6	41	56	92	1.3

Ring Joint Couplings



Nominal Size mm	Pipe O.D. mm	Working Pressure Mpa	Allow Pipe End sep. H(mm)	Deflection from CL		NO.-Size mm	Maximum overall size(mm) A	B	C	Basic Size L mm	Sealing Size R mm
350	355.6	2.5	0-6.4	1.2°	0.25 21	M16x135x6	405	490	99	26	8
400	406.4	2.5	0-6.4	0.9°	0.19 16	M16x135x6	455	540	99	26	8
450	457.2	2.5	0-9.5	1.2°	0.25 21	M20x120x6	508	605	105	30	8
500	508	2.5	0-9.5	1.08°	0.23 19	M22x100x8	568	678	115	30	9.5
600	609.6	2.5	0-9.5	0.8°	0.17 14	M22x100x8	672	782	125	30	12.7

Steel pipe for sprinkler fire fighting and water system



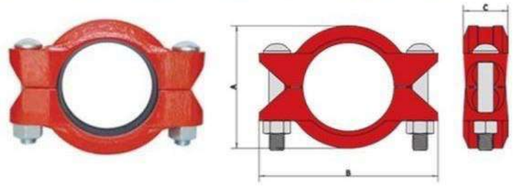
Specification: O.D. : 33.7-219.1(mm)
Wall thickness: 2.75-5.0(mm)
Anticorrosive:
1.hot galvanized
2.powder coating
3.painting
End state:
1.grooved
2.plain end
3.screwed and socketed
Function: Fire and water supply system in building

ASTM A795(BLACK&GALVANIZED)

N.D.		O.D.		SCH10				SCH40			
				Wall Thickness		Nominal Weight		Wall Thickness		Nominal Weight	
mm	inch	mm	inch	mm	inch	Kg/mtrs	Ibs/ft	mm	inch	Kg/mtrs	Ibs/ft
15	1/2	21.30	0.840	-	-	-	-	2.77	0.109	1.27	0.85
20	3/4	26.70	1.050	2.11	0.083	1.28	0.86	2.87	0.113	1.69	1.13
25	1	33.40	1.315	2.77	0.109	2.09	1.41	3.38	0.133	2.50	1.68
32	1-1/4	42.20	1.660	2.77	0.109	2.69	1.81	3.56	0.140	3.39	2.27
40	1-1/2	48.30	1.900	2.77	0.109	3.11	2.09	3.68	0.145	4.05	2.72
50	2	60.30	2.375	2.77	0.109	3.93	2.64	3.91	0.154	5.45	3.66
65	2-1/2	73.00	2.875	3.05	0.120	5.26	3.53	5.16	0.203	8.64	5.80
80	3	88.90	3.500	3.05	0.120	6.46	4.34	5.49	0.216	11.29	7.58
90	3-1/2	101.60	4.000	3.05	0.120	7.41	4.98	5.74	0.226	13.58	9.12
100	4	114.30	4.500	3.05	0.120	8.37	5.62	6.02	0.237	16.09	10.80
125	5	141.30	4.563	3.40	0.134	11.58	7.78	6.55	0.258	21.79	14.63
150	6	168.30	6.625	3.40	0.134	13.85	9.30	7.11	0.280	28.29	18.99
200	8	219.10	8.625	4.78	0.188	25.26	16.96	8.18	0.277	36.82	24.72
250	10	273.10	10.750	4.78	0.188	31.62	21.23	9.27	0.307	51.05	34.27

Model 31HP Extra Heavy Rigid Coupling

The Model 31HP is an extra heavy rigid coupling designed for high pressure services up to 1000psi(70bar). The wider housing keys grip the grooved with the aid of heavy duty bolts and nuts. The bolts and nuts must be tightened to the required torque to achieve rigidity.

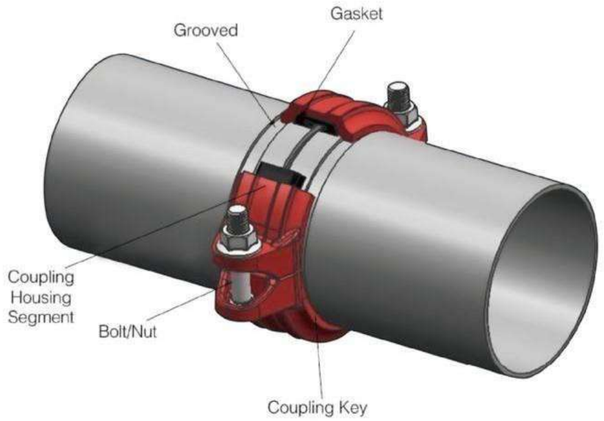


Nomina Size mm/in	Pipe O.D. mm/in	Max.Working Pressure Bar/PSI	Max.End Load KN/Lbs	Axial Displacement mm/in	Dimensions			Bolts	
					A mm/in	B mm/in	C mm/in	No.	Size mm/in
50	60.3	70	19.98	0-3.6	90	145	49	2	M16x80
2	2.375	1000	4420	0.014	3.54	5.71	1.93	2	5/8x3-1/8
65	73	70	29.28	0-3.6	102	168	49	2	M16x80
21/2	2.875	1000	6480	0.014	4.02	6.61	1.93	2	5/8x3-1/8
80	88.9	70	43.43	0-3.6	123	188	49	2	M16x80
3	3.5	1000	9610	0.014	4.84	7.40	1.93	2	5/8x3-1/8
100	114.3	70	71.79	0-6.4	153	216	54	2	M20x110
4	4.5	1000	15890	0-0.25	6.02	8.50	2.13	2	3/4x4-1/3
150	168.3	70	155.65	0-6.4	218	295	57	2	M22x130
6	6.625	1000	34450	0-0.25	8.58	11.61	2.24	2	7/8x5-1/8
200	219.1	55	207.26	0-64	275	364	70	2	M24x90
8	8.625	800	46710	0-0.25	10.83	14.33	2.76	2	1x3-1/2
250	273	55	321.78	0-6.4	334	424	75	2	M24x90
10	10.75	800	72570	0-0.25	13.15	16.69	2.95	2	1x3-1/2
300	323.9	55	452.95	0-6.4	390	480	75	2	M24x90
12	12.75	800	102080	0-0.25	15.35	18.90	2.95	2	1x3-1/2

Rigid & Flexible Couplings

Grooved mechanical couplings (GMC) are available in both rigid and flexible models. A rigid coupling is used in applications where a rigid joint is desired,similar to that of a traditional flanged, welded ,or threaded connection.To be considered rigid, a coupling would allow less than one degree of deflection or angular movement.

Flexible couplings are designed to accommodate axial displacement,rotation and a minimum one degree of angular movement. Flexible couplings are used in applications that call for curved or deflected layouts or when systems are exposed to outside forces beyond normal static conditions. such as seismic events or where vibration or noise attenuation are a concem.



Flexible Coupling

Grooved couplings become less flexible as the pipe size increases.For sizes in excess of 18(450mm) couplings are very limited in their angular movement.

Coupling Installation Instructions

1.Before installation,whether the groove meet the standard should be checked and then wipe away the burrs,iron rust,greasy dirt on gasket ring and pipe.

2.Spread a non-petronleun base ,non-toxic lubricant to gasket ring outside and inside.

3.Slip gasket over pipe/fittingend.The lip of the gasket must not overhang the pipe/fitting ends.

4.Secure another grooved steel pipe to this one and cover the gasket ring on pipe end,making sure the gasket ring at the sealing position of both pipes the gasket should be no twist.

5.Make sure coupling has fixed the pipes.

6.Tighten the nuts evenly by alternating sides until the specified torque value are achieved.For rigid coupling,keep gaps at bolt pads evenly spaced, for flexible, iron
to iron. Refer to the "Required Assembly Torques" table on this page.

WARNING

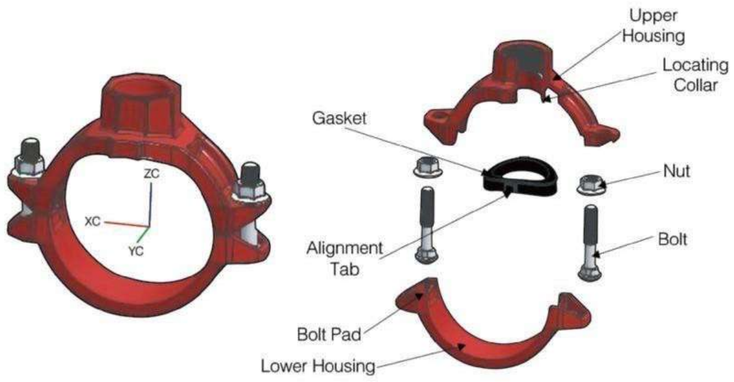
1、Read and understand all instructions before attempting to install any piping products.
2、Depressurize and drain the piping system before attempting to install, remove, or adjust any piping products.
3、Wear safety glasses, helmet, and foot protection during installation.
4、Failure to follow these instructions could result in serious personal injury, improper product installation, and/or property damage.

1.It is important to tighten the nuts evenly by alternating sides to prevent gasket pinching.
2.Proper torquing of bolts is required to obtain specified performance.Over torquing may result bolts or cast broken.Pipe joint separation may result in significant property damage and serious injury!

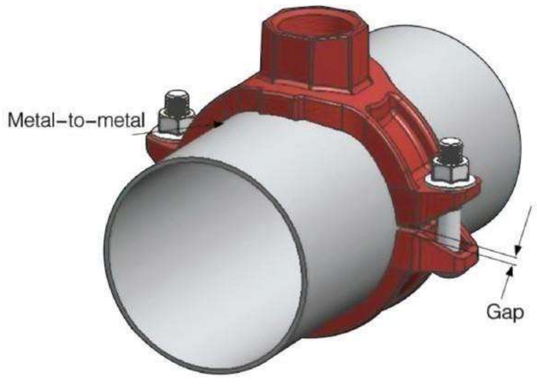
Bolt Size	Required Torque	
Inch	N.M	Lbs-Ft.
3/8	40-60	30-45
1/2	110-135	80-100
5/8	135/175	100-130
3/4	175-245	130-180
7/8	245-325	180-240

Mechanical Tees

Mechanical tees provide a fast and easy mid-point branch outlet,eliminating the need for welding or the use of multiple fittings.



When bolts are tightened with a proper torque,the outlet housing makes metal to metal contact with the outer surface of the pipe.



It is normal to see bolt pad gaps,though they should be equal on both sides of the mechanical tee.

Mechanical Tee Installation Instructions

1.Make sure the correct hole saw size is being used.Holes must be drilled on the centerline but not on the weld line of the pipe. Ensure that a 5/8inch/16mm area around the hole is clean,wipe away the burrs,iron rust,greasy dirt.

2.Inspect the sealing surface of the gasket to make sure no debris is present.Lubricate the exposed sealing surface of the gasket.

3.Put gasket seal in the Mechanical Tee making sure the tab in the gasket line up with the tab recesses in the house.

4.Install the Mechanical Tee in the hole.

5.Install the bottom piece and Make sure the locating collar engages the outlet hole properly.Check this engagement by rocking the upper (outlet) housing in the hole.

6.Tighten the nuts evenly by alternating sides until the specified torque value are achieved.

WARNING

1、Read and understand all instructions before attempting to install any piping products.
2、Depressurize and drain the piping system before attempting to install, remove, or adjust any piping products.
3、Wear safety glasses, helmet, and foot protection during installation.
4、Failure to follow these instructions could result in serious personal injury, improper product installation, and/or property damage.

1.It is important to tighten the nuts evenly by alternating sides to prevent gasket pinching.
2.Proper torquing of bolts is required to obtain specified performance.Over torquing may result bolts or cast broken.Pipe joint separation may result in significant property damage and serious injury!

Bolt Size	Required Torque	
Inch	N.M	Lbs-Ft.
3/8	40-60	30-45
1/2	110-135	80-100
5/8	135/175	100-130
3/4	175-245	130-180
7/8	245-325	180-240