



JINAN MEIDE CASTING CO., LTD.

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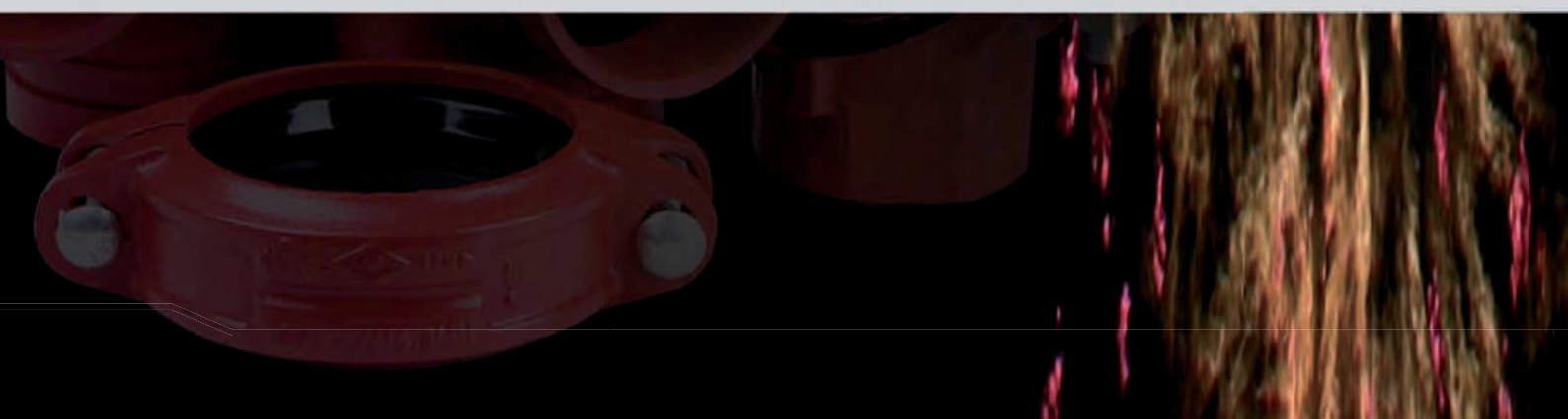
A

Company profile

For more than 50 years, Jinan Meide Casting Co., Ltd. Has worked in the plumbing industrial with providing various kinds of plumbing products with 200,000 metric tons annual output. Our Malleable iron pipe fittings' output is listed No.1 in the world, Grooved Fittings and Steel Pipe Nipples output is listed No.1 in China. "Mech" brand is the only China Well-known Trademark in the plumbing lines in China and has been registered over 80 countries.

Jinan Meide Casting Co, Ltd. Took the lead in getting the certificate with ISO9001 quality system and ISO14001 Environmental management system. The "Mech" brand products has been successively approved by National order Examination, UL/FM/NSF (USA), CSA/ULC (Canada), DVGW/TUV/VDS (Germany) KS (Korea), TSE (Turkey), JIS (Japan), BSI/LPCB (England), SII (Israel) and ABNT (Brazil).

Jinan Meide Casting Co., Ltd. Mainly manufacture the "Mech" brand Malleable Iron Pipe Fittings, Ductile Iron Grooved Fittings, Steel Pipe Nipples etc., widely used in pipe connections to





convey water, oil, gas and so on. The Products enjoy high prestige in both domestic and international market along with higher market share. “Mech” brand products has been listed and approved by government and important projects. Among them, the Malleable Iron Pipe Fittings have 100,000 metric ton capacity with BS, ANSI/ASME#, DIN and JIS standards serious covering all items and sizes from 1/8” to 6”. The Ductile Iron Grooved Fittings have 40,000 metric tons capacity with sizes from DN 25 to DN530.

In order to meet the requirement from customer and market demand, we have fully comprehensive serious of relative products, including DI threaded fittings, CI threaded fitting, Bronze threaded fittings, Pipe Clamps, hangers and rollers, MI Pipe Clamps, Handle wheels, Electrical connectors, Conduits bodies, Insulator Caps (in MI, DI and CI) and much more. And we are able to develop OEM products with MI, DI and CI material according to customer’s requirement as additional benefit.

Jinan Meide Casting Co., Ltd will continuously inherit traditional aim of “High quality products to win customers to provide a quick and thoughtful service to return customers” and distribute itself to the plumbing connections with 50 years’ experience and professional production technology.



B

State of the art equipment

Our company has the state of the art equipment for both production and inspection. We equipped with Denmark DISA automation molding line, China 416 automation molding line, Eirich automation sand mixing line, Induct Electrical furnace, Vertical Machining center, CNC lathe, Proprietary automatic thread machine, automatic box sealing line.



C

Reliable quality assurance



Our laboratory is honored as the Provincial Enterprise Technical Center and conduct full serious of testing and inspection as Leak testing, raw materials receiving inspection, batch chemical composition inspection, Microstructure testing, dimension inspection, first article inspection, in-process inspection and final visual inspection.





For more info

MECH

MEIDE CASTING





Certificates



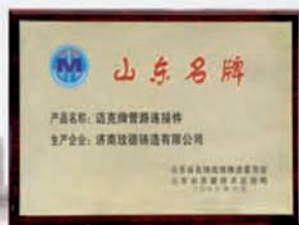




E The qualification of MECH

Mech Brand has been the national famous brand in china and the Chinese pipe fittings customer satisfaction brand. It was the first choice brand in many overseas markets.

Jinan Meide Casting Co., Ltd. has won the National Excellent Enterprise, the county exported casting leading enterprises Chinese enterprises operating in good faith demonstration unit. China Malleable Iron Pipe Fittings production basis honor etc.





Technology improvement and sustainable developments

Our company invests in the information technology, standardization, mechanization and automation process, achieved the fundamental change of the mode of production from labor-intensive to technology-intensive.

Company adheres to the sustainable development. We include energy saving and emission reduction the most important task, various environmental indicators all meet the national standards.





CONTENTS

● Product List	01
● Technical Data	03
● Gasket Data	47
● Hole Diameter of Pipe	48
● Rol Groove Dimensions	49
● Introduction for Coupling & Mechanical Tee	50
● Pressure Ratings and End Loads	52
● Installation Instruction	54
● Movement	58
● Riser Design	59
● Movement - Application	61
● Anchoring and Supports	62
● Flexible Couplings: Linear Movement and Angular Movement	62
● Movement capability of couplings-expansion and contraction joints	63
● Engineering Test	63

Ductile iron grooved fitting

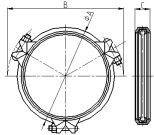
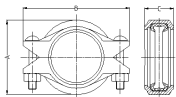
 1N Flexible Coupling	 1NS Light-duty Flexible Coupling	 1N Reducing Flexible Coupling	 1NS/1NH Light-duty Reducing Flexible Coupling Extra Heavy Duty Flexible Coupling	 1G Rigid Coupling
 1GS Light-duty Rigid Coupling	 90 90° Elbow	 90S Light-duty 90° Elbow	 90R 90° Reducing Elbow	 105 11.25° Elbow
 110 22.5° Elbow	 120 45° Elbow	 130 Tee	 130S Light-duty Tee	 130R Reducing Tee
 131R1 Reducing Tee	 180 Cross	 180R Reducing Cross	 181 Reducing Cross	 3G/3GS Mechanical Tee Grooved Outlet Light Duty Mechanical Tee Grooved Outlet

P: Painting E: Electroplate B: Black
S: Epoxy G: Galvanization J: Galvanization+Epoxy

 3J/3JS Mechanical Tee Threaded Outlet Light Duty Mechanical Tee Threaded Outlet	 3L U-Bolt Mechanical Tee	 4G/4GS Heavy Duty / Standard Duty Mechanical Cross Grooved Outlet	 4J/4JS Heavy Duty / Standard Duty Mechanical Cross Threaded Outlet	 230 Grooved Eccentric Reducer
 230N Grooved Eccentric Reducer With Female Thread	 240 Grooved Concentric Reducer	 240N Grooved Concentric Reducer With Female Thread	 240W Grooved Concentric Reducer With Male Thread	 300 Cap
 300 Cap	 300PX Cap	 321 Grooved Flange	 321G Adaptor Flange	 321S Grooved Flange
 Blue	 Galvanized	 Orange	 White	 Red

1N

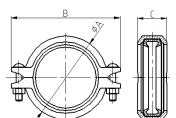
Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
25 1	33.7 1.327	500 3.45	55 2.16	92 3.62	42 1.65	3/8X55-2	UL FM VdS LPCB
32 1¼	42.4 1.669	500 3.45	65 2.56	104 4.14	44 1.74	3/8X55-2	UL FM VdS LPCB
40 1½	48.3 1.900	500 3.45	70 2.75	110 4.33	44 1.74	3/8X55-2	UL FM VdS LPCB
50 2	60.3 2.375	500 3.45	83 3.27	124 4.88	44 1.74	3/8X55-2	UL FM VdS LPCB
65 2½	73.0 2.875	500 3.45	96 3.78	143 5.63	45 1.78	3/8X55-2	UL FM LPCB
65 2½	76.1 3.000	500 3.45	100 3.94	145 5.71	45 1.78	3/8X55-2	UL FM VdS LPCB
80 3	88.9 3.500	500 3.45	115 4.53	160 6.30	45 1.78	1/2X70-2	UL FM VdS LPCB
100 4	108.0 4.250	500 3.45	138 5.43	190 7.48	50 1.97	1/2X70-2	UL FM LPCB
100 4	114.3 4.500	500 3.45	145 5.71	198 7.80	50 1.97	1/2X70-2	UL FM VdS LPCB
125 5	133 5.250	450 3.10	162 6.38	225 8.86	51.0 2.01	5/8X80-2	UL FM LPCB
125 5	139.7 5.500	450 3.10	169 6.65	230 9.06	52 2.05	5/8X80-2	UL FM VdS LPCB
125 5	141.3 5.563	450 3.10	170 6.69	232 9.13	51 2.01	5/8X80-2	UL FM LPCB
150 6	159.0 6.250	450 3.10	190 7.48	254 10.00	52 2.05	5/8X85-2	UL FM LPCB
150 6	165.1 6.500	450 3.10	196 7.72	260 10.24	52 2.05	5/8X85-2	UL FM LPCB
150 6	168.3 6.625	450 3.10	200 7.87	265 10.43	52 2.05	5/8X85-2	UL FM VdS LPCB
200 8	219.1 8.625	450 3.10	258 10.24	350 13.78	60 2.37	3/4X115-2	UL FM VdS LPCB
250 10	273.0 10.750	300 2.07	337 13.27	406 16.00	65 2.56	7/8X140-2	UL FM VdS
300 12	323.9 12.750	300 2.07	372 14.65	460 18.11	64 2.52	7/8X140-2	UL FM
350 14	377.0 14.842	225 1.6	428 16.85	520 20.45	72 2.85	7/8X140-3	UL FM
400 16	426.0 16.772	225 1.6	476 18.74	570 22.45	73 2.87	7/8X140-3	UL FM

1NS

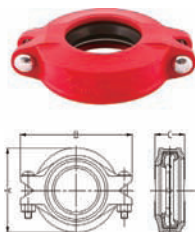
Light-duty Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
125 5	139.7 5.500	450 3.10	168 6.61	228 8.98	51 2.01	5/8X80-2	UL FM
165 6	168.3 6.625	450 3.10	200 7.87	265 10.43	52 2.05	5/8X85-2	UL FM
250 10	273.0 10.750	300 2.07	320 12.60	395.0 15.55	64 2.52	3/4X120-2	UL FM

1N

Reducing Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
50X40 2X1½	60.3X48.3 2.375X1.900	300 2.07	86 3.39	125 4.93	44 1.74	3/8X55-2	UL FM LPCB
65x 25 2½x 1	73.0X33.7 2.875x 1.327	300 2.07	100 3.94	138 5.44	45 1.78	3/8X55-2	UL FM
65x 50 2½x 2	73.0X60.3 2.875x 2.375	300 2.07	100 3.94	138 5.43	45 1.78	3/8X55-2	UL FM LPCB
65x 25 2½x 1	76.1X33.7 3.000x 1.327	300 2.07	102 4.02	140 5.51	45 1.78	3/8X55-2	UL FM
65x 40 2½x 1½	76.1X48.3 3.000x 1.900	300 2.07	102 4.02	140 5.51	45 1.78	3/8X55-2	UL FM VdS LPCB
65x 50 2½x 2	76.1X60.3 3.000x 2.375	300 2.07	102 4.02	140 5.51	45 1.78	3/8X55-2	UL FM LPCB
80x 25 3x 1	88.9X33.7 3.500x 1.327	300 2.07	115 4.53	168 6.61	46 1.81	1/2X70-2	UL FM
80x 50 3x 2	88.9X60.3 3.500x 2.375	300 2.07	115 4.53	168 6.61	46 1.81	1/2X70-2	UL FM VdS LPCB
80x 65 3x 2½	88.9X73.0 3.500x 2.875	300 2.07	115 4.53	168 6.61	46 1.81	1/2X70-2	UL FM LPCB
80x 65 3x 2½	88.9X76.1 3.500x 3.000	300 2.07	115 4.53	168 6.61	46 1.81	1/2X70-2	UL FM VdS LPCB
100x 25 4x 1	114.3x 33.7 4.500x 1.327	300 2.07	144 5.67	198 7.80	50 1.97	1/2X70-2	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	300 2.07	144 5.67	198 7.80	50 1.97	1/2X70-2	UL FM VdS LPCB
100x 65 4x 2½	114.3x 73.0 4.500x 2.875	300 2.07	144 5.67	198 7.80	50 1.97	1/2X70-2	UL FM LPCB
100x 65 4x 2½	114.3x 76.1 4.500x 3.000	300 2.07	144 5.67	198 7.80	50 1.97	1/2X70	UL FM VdS LPCB
100x 80 4x 3	114.3x 88.9 4.500x 3.500	300 2.07	148 5.83	198 7.80	50 1.97	1/2X70	UL FM VdS LPCB
150x 100 6x 4	165.1x 114.3 6.500x 4.500	300 2.07	197 7.75	260 10.24	51 2.01	5/8X85-2	UL FM LPCB
150x 80 6x 3	168.3x 88.9 6.625x 3.500	300 2.07	200 7.87	268 10.55	51 2.01	5/8X85-2	UL FM VdS LPCB
150x 100 6x 4	168.3x 114.3 6.625x 4.500	300 2.07	202.5 7.97	268 10.55	52.5 2.07	5/8X85-2	UL FM VdS LPCB
200x 150 8x 6	219.1x 165.1 8.625x 6.500	300 2.07	257 10.12	335 13.19	60 2.36	3/4X115-2	UL FM LPCB
200x 150 8x 6	219.1x 168.3 8.625x 6.625	300 2.07	257 10.12	335 13.19	60 2.36	3/4X115-2	UL FM LPCB

1NS

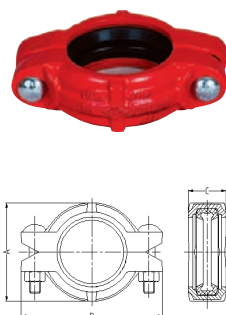
Light-duty Reducing Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
150x 100 6x 4	168.3x 114.3 6.625x 4.500	300 2.07	200 7.87	268 10.55	51 2.01	5/8X85-2	UL FM

1NH

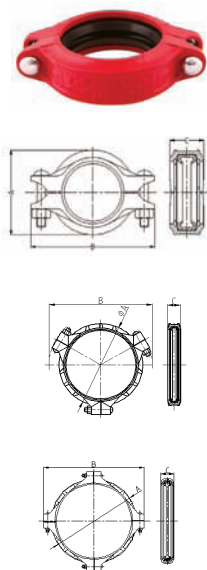
Extra Heavy Duty Flexible Coupling



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt/Nut No.-Size mm
			A mm/in	B mm/in	C mm/in	
50 2	60.3 2.375	750 5.18	90 3.54	134 5.28	45 1.77	2-1/2X75
65 2½	73.0 2.875	750 5.18	100 3.94	150 5.91	45 1.77	2-1/2X75
65 2½	76.1 3.000	750 5.18	102 4.02	154 6.06	45 1.77	2-1/2X75
80 3	88.9 3.500	750 5.18	121 4.76	172 6.78	45 1.77	2-1/2X75
100 4	114.3 4.500	750 5.18	151 5.95	214 8.43	50 1.97	2-5/8X85
125 5	141.3 5.563	700 4.83	180 7.09	248 9.76	51 2.00	2-3/4X115
150 6	165.1 6.500	700 4.83	205 8.07	278 10.95	51 2.00	2-3/4X115
150 6	168.3 6.625	700 4.83	208 8.20	284 11.18	51 2.00	2-3/4X115
200 8	219.1 8.625	600 4.14	268 10.56	354 13.94	61 2.40	2-7/8X140

1G

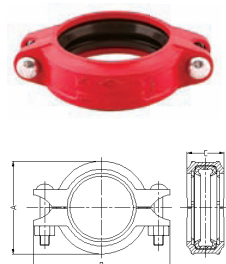
Rigid Coupling



Nominal Size mm/in	Pipe D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
25	33.7	500	59	100	44	3/8X55-2	UL FM
1	1.327	3.45	2.33	3.94	1.74		VdS LPCB
32	42.4	500	66	105	45	3/8X55-2	UL FM
1 1/4	1.669	3.45	2.60	4.13	1.78		VdS LPCB
40	48.3	500	72	112	45	3/8X55-2	UL FM
1 1/2	1.900	3.45	2.84	4.41	1.78		VdS LPCB
50	60.3	500	85	130	45	3/8X55-2	UL FM
2	2.375	3.45	3.35	5.12	1.78		VdS LPCB
65	73.0	500	98	140	45	3/8X55-2	UL FM
2 1/2	2.875	3.45	3.86	5.52	1.78		LPCB
65	76.1	500	101	145	45	3/8X55-2	UL FM
2 1/2	3.000	3.45	3.98	5.71	1.77		VdS LPCB
80	88.9	500	115.0	168	46	1/2X70-2	UL FM
3	3.500	3.45	4.53	6.62	1.82		VdS LPCB
100	108.0	500	140	197	52	1/2X70-2	UL FM
4	4.250	3.45	5.51	7.76	2.05		LPCB
100	114.3	500	146	200	52	1/2X70-2	UL FM
4	4.500	3.45	5.75	7.88	2.05		VdS LPCB
125	133	450	165	226	52	5/8X85-2	UL FM
5	5.250	3.10	6.50	8.90	2.05		LPCB
125	139.7	450	170	235	52	5/8X85-2	UL FM
5	5.500	3.10	6.69	9.25	2.05		VdS LPCB
125	141.3	450	172	235	52	5/8X85-2	UL FM
5	5.563	3.10	6.77	9.25	2.05		LPCB
150	159.0	450	190	267	52	5/8X85-2	UL FM
6	6.250	3.10	7.48	10.51	2.05		LPCB
150	165.1	450	198	262	52	5/8X85-2	UL FM
6	6.500	3.10	7.80	10.32	2.05		LPCB
150	168.3	450	202.0	265	52	5/8X85-2	UL FM
6	6.625	3.10	7.95	10.43	2.05		VdS LPCB
200	219.1	450	260.0	342	62	3/4X115-2	UL FM
8	8.625	3.10	10.24	13.45	2.44		VdS LPCB
250A	267.4	300	318	396	63	3/4X120-2	UL FM
10	10.528	2.07	12.52	15.60	2.48		
250	273.0	300	327	420	63	7/8X125-2	UL FM
10	10.750	2.07	12.88	16.54	2.48		LPCB
300A	318.5	300	364	456	63	7/8X140-2	UL FM
12	12.539	2.07	14.33	17.95	2.48		
300	323.9	300	370	465	63	7/8X140-2	UL FM
12	12.750	2.07	14.57	18.30	2.48		
350	355.6	300	415	510	72	7/8X140-3	UL FM
14	14.000	2.07	16.34	20.08	2.84		
350	377.0	225	435	535	72	7/8X140-3	FM
14	14.842	1.6	17.13	21.05	2.84		
400	406.4	300	468	575	72	7/8X140-3	UL FM
16	16.000	2.07	18.43	22.64	2.84		
400	426.0	225	490	592	72	7/8X140-4	FM
16	16.772	1.6	19.29	23.30	2.84		
500	529.0	225	595	700	76	7/8X140-4	
20	20.827	1.6	23.43	27.56	3.00		

1GS

Light-duty Rigid Coupling



Nominal Size mm/in	Pipe D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt Size No.-Size mm	Certificate
			A mm/in	B mm/in	C mm/in		
65	76.1	300	100	140	45	3/8X55-2	UL FM
2 1/2	3.000	2.07	3.94	5.52	1.77		
80	88.9	300	114	160	45	3/8X55-2	UL FM
3	3.500	2.07	4.50	6.30	1.78		
100	108.0	300	135	185	50	1/2X70-2	UL FM
4	4.250	2.07	5.30	7.28	1.97		
100	114.3	300	140	187	50	1/2X70-2	UL FM
4	4.500	2.07	5.51	7.36	1.97		
125	139.7	300	168	225	50	1/2X75-2	UL FM
5	5.500	2.07	6.62	8.86	1.97		
125	141.3	300	170	225	50	1/2X75-2	UL FM
5	5.563	2.07	6.69	8.86	1.97		
150	159.0	300	190	252	50	5/8X80-2	UL FM
6	6.250	2.07	7.48	9.92	1.97		
150	165.1	300	195	250	50	1/2X75-2	UL FM
6	6.500	2.07	7.68	9.84	1.97		
150	168.3	300	200	255	50	1/2X75-2	UL FM
6	6.625	2.07	7.87	10.04	1.97		
200A	216.3	300	255	320	58	5/8X85-2	UL FM
8	8.516	2.07	10.04	12.60	2.28		
200	219.1	300	255	322	58	5/8X85-2	UL FM
8	8.625	2.07	10.05	12.68	2.28		
250	273.0	300	318	410	63	3/4X120-2	UL FM
10	10.750	2.07	12.52	16.14	2.48		

90

90° Elbow



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	57 2.24	UL FM VdS
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS
50 2	60.3 2.375	500 3.45	82.5 3.25	UL FM VdS
65 2½	73.0 2.875	500 3.45	95 3.74	UL FM
65 2½	76.1 3.000	500 3.45	95 3.74	UL FM VdS
80 3	88.9 3.500	500 3.45	108 4.25	UL FM VdS
100 4	114.3 4.500	500 3.45	127 5.00	UL FM VdS
125 5	133.0 5.250	500 3.45	122 4.80	UL FM
125 5	139.7 5.500	500 3.45	140 5.50	UL FM VdS
125 5	141.3 5.563	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	165 6.50	UL FM
150 6	168.3 6.625	500 3.45	165 6.50	UL FM VdS
200 8	219.1 8.625	500 3.45	197 7.75	UL FM VdS
250 10	267.4 10.528	500 3.45	229 9.00	UL FM
250 10	273.0 10.750	500 3.45	229 9.00	UL FM VdS
300 12	318.5 12.539	500 3.45	254 10.00	UL FM
300 12	323.9 12.750	500 3.45	254 10.00	UL FM VdS
350 14	377.0 14.84	300 2.07	279 10.98	UL FM
400 16	426.0 16.77	300 2.07	305 12.00	UL FM

90S

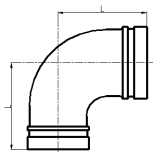
Light-duty 90° Elbow



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50 2	60.3 2.375	300 2.07	70 2.75	UL FM VdS
65 2½	73.0 2.875	300 2.07	76 3.00	UL FM
65 2½	76.1 3.000	300 2.07	76 3.00	UL FM VdS
80 3	88.9 3.500	300 2.07	85.5 3.37	UL FM VdS
100 4	108.0 4.500	300 2.07	101 3.98	UL FM
100 4	114.3 4.500	300 2.07	101 3.98	UL FM VdS
125 5	139.7 5.500	300 2.07	124 4.88	UL FM VdS
150 6	159.0 6.500	300 2.07	140 5.50	UL FM VdS
150 6	165.1 6.500	300 2.07	140 5.50	UL FM
150 6	168.3 6.625	500 3.45	140 5.50	UL FM VdS
200 8	216.3 8.625	300 2.07	175 6.89	UL FM
200 8	219.1 8.625	300 2.07	165 6.50	UL FM VdS

90R

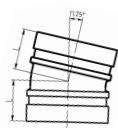
90° Reducing Elbow



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
80X65 3X2½	88.9X76.1 3.500X3.000	500 3.45	108 4.25	UL FM
100X65 4X2½	114.3X76.1 4.500X3.000	500 3.45	127 5.00	UL FM
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	127 5.00	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	165 6.50	UL FM
150X100 6X4	168.3X114.3 6.625X4.500	500 3.45	165 6.50	UL FM

105

11.25° Elbow



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 1¼	42.4 1.660	500 3.45	35 1.38	UL FM
40 1½	48.3 1.900	500 3.45	35 1.38	UL FM
50 2	60.3 2.375	500 3.45	35 1.38	UL FM VdS
65 2½	76.1 3.000	500 3.45	38 1.506	UL FM VdS
80 3	88.9 3.500	500 3.45	38 1.50	UL FM VdS
100 4	108.0 4.250	500 3.45	44 1.73	UL FM
100 4	114.3 4.500	500 3.45	44 1.73	UL FM VdS
125 5	139.7 5.500	500 3.45	51 2.00	UL FM VdS
150 6	159.0 6.250	500 3.45	51 2.00	UL FM
150 6	165.1 6.500	500 3.45	51 2.00	UL FM
150 6	168.3 6.625	500 3.45	51 2.00	UL FM
200 8	219.1 8.625	500 3.45	51 2.00	UL FM VdS

110

22.5° Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 1¼	42.4 1.660	500 3.45	45 1.77	UL FM
40 1½	48.3 1.900	500 3.45	45 1.77	UL FM
50 2	60.3 2.375	500 3.45	48 1.89	UL FM
65 2½	73.0 2.875	500 3.45	51 2.00	UL FM
65 2½	76.1 3.000	500 3.45	51 2.00	UL FM VdS
80 3	88.9 3.500	500 3.45	57 2.24	UL FM VdS
100 4	108.0 4.250	500 3.45	73 2.87	UL FM
100 4	114.3 4.500	500 3.45	73 2.87	UL FM VdS
125 5	139.7 5.500	500 3.45	73 2.87	UL FM VdS
150 6	159.0 6.250	500 3.45	79 3.11	UL FM
150 6	165.1 6.500	500 3.45	79 3.11	UL FM
150 6	168.3 6.625	500 3.45	79 3.11	UL FM
200 8	219.1 8.625	500 3.45	98 3.86	UL FM VdS

120

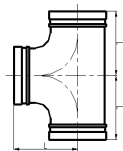
45° Elbow



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	44.5 1.75	UL FM VdS
32 1¼	42.4 1.660	500 3.45	44.5 1.75	UL FM VdS
40 1½	48.3 1.900	500 3.45	44.5 1.75	UL FM VdS
50 2	60.3 2.375	500 3.45	51 2.00	UL FM VdS
65 2½	73.0 2.875	500 3.45	57 2.24	UL FM
65 2½	76.1 3.000	500 3.45	57 2.24	UL FM VdS
80 3	88.9 3.500	500 3.45	63.5 2.50	UL FM VdS
100 4	108.0 4.250	500 3.45	76 3.00	UL FM
100 4	114.3 4.500	500 3.45	76 3.00	UL FM VdS
125 5	133.0 5.250	500 3.45	82.5 3.25	UL FM
125 5	139.7 5.500	500 3.45	82.5 3.25	UL FM VdS
125 5	141.3 5.563	500 3.45	82.5 3.25	UL FM
150 6	159.0 6.250	500 3.45	89 3.50	UL FM
150 6	165.1 6.500	500 3.45	89 3.50	UL FM
150 6	168.3 6.625	500 3.45	89 3.50	UL FM VdS
200 8	216.3 8.516	500 3.45	108 4.25	UL FM
200 8	219.1 8.625	500 3.45	108 4.25	UL FM VdS
250 10	267.4 10.528	500 3.45	120.5 4.75	UL FM
250 10	273.0 10.750	500 3.45	120.5 4.75	UL FM VdS
300 12	318.5 12.750	500 3.45	133 5.25	UL FM
300 12	323.9 12.750	500 3.45	133 5.25	UL FM VdS
300 12	377 12.750	300 2.07	122 4.80	

130

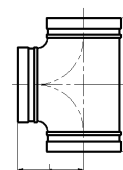
Tee



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	57 2.24	UL FM VdS
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS
50 2	60.3 2.375	500 3.45	82.5 3.25	UL FM VdS
65 2½	73.0 2.875	500 3.45	95 3.74	UL FM
65 2½	76.1 3.000	500 3.45	95 3.74	UL FM VdS
80 3	88.9 3.500	500 3.45	108 4.25	UL FM VdS
100 4	114.3 4.500	500 3.45	127 5.00	UL FM VdS
125 5	133.0 5.250	500 3.45	122 4.80	UL FM
125 5	139.7 5.500	500 3.45	140 5.50	UL FM VdS
125 5	141.3 5.563	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	165 6.50	UL FM
150 6	168.3 6.625	500 3.45	165 6.50	UL FM VdS
200 8	219.1 8.625	500 3.45	197 7.75	UL FM VdS
250 10	267.4 10.528	500 3.45	229 9.00	UL FM
250 10	273.0 10.750	500 3.45	229 9.00	UL FM VdS
300 12	318.5 12.539	500 3.45	254 10.00	UL FM
300 12	323.9 12.750	500 3.45	254 10.00	UL FM VdS
350 14	377.0 14.84	300 2.07	279 10.98	UL FM
400 16	426.0 16.77	300 2.07	305 12.00	UL FM

130S

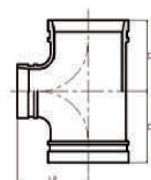
Light-duty Tee



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
50 2	60.3 2.375	300 2.07	70 2.75	UL FM VdS
65 2½	73.0 2.875	300 2.07	76 3.00	UL FM
65 2½	76.1 3.000	300 2.07	76 3.00	UL FM VdS
80 3	88.9 3.500	300 2.07	85.5 3.37	UL FM VdS
100 4	108.0 4.500	300 2.07	101 3.98	UL FM
100 4	114.3 4.500	300 2.07	101 3.98	UL FM VdS
125 5	139.7 5.500	300 2.07	124 4.88	UL FM VdS
150 6	159.0 6.500	300 2.07	140 5.50	UL FM VdS
150 6	165.1 6.500	300 2.07	140 5.50	UL FM
150 6	168.3 6.625	500 3.45	140 5.50	UL FM VdS
200 8	216.3 8.625	300 2.07	175 6.89	UL FM
200 8	219.1 8.625	300 2.07	175 6.89	UL FM VdS

130R

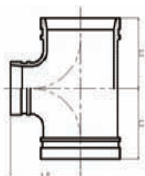
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
50X25 2X1	60.3X33.7 2.375X1.315	500 3.45	70 2.75	70 2.75	UL FM VdS
50x 40 2x 1½	60.3x 48.3 2.375x 1.900	500 3.45	70 2.75	70 2.75	UL FM VdS
65x 40 2½x 1½	73.0x 48.3 2.875x 1.900	500 3.45	76 3.00	76 3.00	UL FM
65x 50 2½x 2	73.0x 60.3 3.000x 2.375	500 3.45	76 3.00	76 3.00	UL FM
65x 32 2½x 1¼	76.1x 42.4 3.000x 1.660	500 3.45	76 3.00	76 3.00	UL FM
65x 40 2½x 1½	76.1x 48.3 3.000x 1.900	500 3.45	76 3.00	76 3.00	UL FM VdS
65x 50 2½x 2	76.1x 60.3 3.000x 2.375	500 3.45	76 3.00	76 3.00	UL FM VdS
80X32 3X1	88.9X33.7 3.500X1.315	500 3.45	108 4.25	108 4.25	UL FM VdS
80X32 3X1¼	88.9X42.4 3.500X1.660	500 3.45	85.5 3.37	85.5 3.37	UL FM
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS
80x 50 3x 2	88.9x 60.3 3.500x 2.375	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS
80X65 3X2½	88.9X73.0 3.500X2.875	500 3.45	85.5 3.37	85.5 3.37	UL FM
80x 65 3x 2½	88.9x 76.1 3.500x 3.000	500 3.45	85.5 3.37	85.5 3.37	UL FM VdS
100x 50 4x 2	108.0x 60.3 4.250x 2.375	500 3.45	101 3.98	101 3.98	UL FM
100x 80 4x 3	108.0x 88.9 4.250x 3.500	500 3.45	101 3.98	101 3.98	UL FM
100x 25 4x 1	114.3x 33.7 4.500x 1.315	500 3.45	101 3.98	101 3.98	UL FM VdS
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	101 3.98	101 3.98	UL FM VdS
100x 50 4x 2	114.3x 60.3 4.500x 2.375	500 3.45	101 3.98	101 3.98	UL FM VdS
100X65 4X2½	114.3X73.0 4.500X2.875	500 3.45	101 3.98	101 3.98	UL FM
100x 65 4x 2½	114.3x 76.1 4.500x 3.000	500 3.45	101 3.98	101 3.98	UL FM VdS
100x 80 4x 3	114.3x 88.9 4.500x 3.500	500 3.45	101 3.98	101 3.98	UL FM VdS
125X50 5X2	133.0X60.3 5.250X2.375	500 3.45	124 4.88	124 4.88	UL FM
125X65 5X2½	133.0X76.1 5.250X3.000	500 3.45	124 4.88	124 4.88	UL FM
125X100 5X4	133.0X108.0 5.250X4.250	500 3.45	124 4.88	124 4.88	UL FM
125X100 5X4	133.0X114.3 5.250X4.500	500 3.45	124 4.88	124 4.88	UL FM
125x 40 5x 1½	139.7x 48.3 5.500x 1.900	500 3.45	140 5.50	140 5.50	UL FM
125x 50 5x 2	139.7x 60.3 5.500x 2.375	500 3.45	124 4.88	124 4.88	UL FM
125x 65 5x 2½	139.7x 76.1 5.500x 3.000	500 3.45	124 4.88	124 4.88	UL FM
125x 80 5x 3	139.7x 88.9 5.500x 3.500	500 3.45	124 4.88	124 4.88	UL FM
125x 100 5x 4	139.7x 114.3 5.500x 4.500	500 3.45	124 4.88	124 4.88	UL FM VdS
150X60 6X2	159.0X60.3 6.250X2.375	500 3.45	140 5.50	140 5.50	UL FM
150X65 6X2½	159.0X76.1 6.250X3.000	500 3.45	140 5.50	140 5.50	UL FM
150X80 6X3	159.0X88.9 6.250X3.500	500 3.45	140 5.50	140 5.50	UL FM

130R

Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
150X100 6X4	159.0X108.0 6.250X4.250	500 3.45	140 5.50	140 5.50	UL FM
150x 100 6x 4	159.0x 114.3 6.250x 4.500	500 3.45	140 5.50	140 5.50	UL FM
150x 125 6x 5	159.0x 133.0 6.250x 5.250	500 3.45	140 5.50	140 5.50	UL FM VdS
150x 50 6x 2	165.1x 60.3 6.500x 2.375	500 3.45	140 5.50	140 5.50	UL FM
150x 65 6x 2½	165.1x 76.1 6.500x 3.000	500 3.45	140 5.50	140 5.50	UL FM
150x 80 6x 3	165.1x 88.9 6.500x 3.500	500 3.45	140 5.50	140 5.50	UL FM
150x 100 6x 4	165.1x 114.3 6.500x 4.500	500 3.45	140 5.50	140 5.50	UL FM
150x 125 6x 5	165.1x 139.7 6.500x 5.500	500 3.45	140 5.50	140 5.50	UL FM
150X50 6X2	168.3X60.3 6.625X2.375	500 3.45	140 5.50	140 5.50	UL FM
150x 65 6x 2½	168.3x 73.0 6.625x 2.875	500 3.45	140 5.50	140 5.50	UL FM
150x 65 6x 2½	168.3x 76.1 6.625x 3.000	500 3.45	140 5.50	140 5.50	UL FM
150X80 6X3	168.3X88.9 6.625X3.500	500 3.45	140 5.50	140 5.50	UL FM VdS
150x 100 6x 4	168.3x 114.3 6.625x 4.500	500 3.45	140 5.50	140 5.50	UL FM VdS
150x 125 6x 5	168.3x 141.3 6.625x 5.563	500 3.45	140 5.50	140 5.50	UL FM VdS
200x 150 8x 6	216.3x 165.1 8.516x 6.500	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 50 8x 2	219.1x 60.3 8.625x 2.375	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 65 8x 2½	219.1x 76.1 8.625x 3.000	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 80 8x 3	219.1x 88.9 8.625x 3.500	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 100 8x 4	219.1x 108.0 8.625x 4.250	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 100 8x 4	219.1x 114.3 8.625x 4.500	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 125 8x 5	219.1x 133.0 8.625x 5.250	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 125 8x 5	219.1x 139.7 8.625x 5.500	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 150 8x 6	219.1x 159.0 8.625x 6.250	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 150 8x 6	219.1x 165.1 8.625x 6.500	500 3.45	175 6.89	175 6.89	UL FM VdS
200x 150 8x 6	219.1x 168.3 8.625x 6.625	500 3.45	175 6.89	175 6.89	UL FM VdS
250x 150 10x 6	273.0x 159.0 10.750x 6.250	500 3.45	229 9.00	229 9.00	UL FM VdS
250x 150 10x 6	273.0x 165.1 10.750x 6.500	500 3.45	229 9.00	229 9.00	UL FM VdS
250x 200 10x 8	273.0x 219.1 10.750x 8.625	500 3.45	229 9.00	229 9.00	UL FM VdS
300x 150 12x 6	323.9x 165.1 12.750x 6.500	500 3.45	254 10	254 10	UL FM VdS
300x 200 12x 8	323.9x 219.1 12.750x 8.625	500 3.45	254 10	254 10	UL FM VdS
300x 250 12x 10	323.9x 273.0 12.750x 10.750	500 3.45	254 10	254 10	UL FM VdS

131R-1

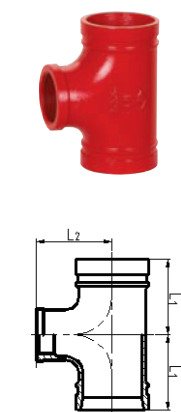
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
50x 25 2x 1	60.3x 33.7 2.375x 1.315	300 2.07	70 2.75	70 2.75	UL FM
50x 32 2x 1¼	60.3x 42.4 2.375x 1.660	300 2.07	70 2.75	70 2.75	UL FM
50x 40 2x 1½	60.3x 48.3 2.375x 1.900	300 2.07	70 2.75	70 2.75	UL FM
65x 25 2½x 1	73.0x 33.7 2.875x 1.315	300 2.07	76 3.00	76 3.00	UL FM
65x 32 2½x 1¼	73.0x 42.4 2.875x 1.660	300 2.07	76 3.00	76 3.00	UL FM
65x 25 2½x 1	76.1x 33.7 3.000x 1.315	300 2.07	76 3.00	76 3.00	UL FM
65x 32 2½x 1¼	76.1x 42.4 3.000x 1.660	300 2.07	76 3.00	76 3.00	UL FM
65x 40 2½x 1½	76.1x 48.3 3.000x 1.900	300 2.07	76 3.00	76 3.00	UL FM
65x 50 2½x 2	76.1x 60.3 3.000x 2.375	300 2.07	76 3.00	76 3.00	UL FM
80x 25 3x 1	88.9x 33.7 3.500x 1.315	300 2.07	85.5 3.37	85.5 3.37	UL FM
80x 32 3x 1¼	88.9x 42.4 3.500x 1.660	300 2.07	85.5 3.37	85.5 3.37	UL FM
80x 40 3x 1½	88.9x 48.3 3.500x 1.900	300 2.07	85.5 3.37	85.5 3.37	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	300 2.07	85.5 3.37	85.5 3.37	UL FM
80x 65 3x 2½	88.9x 76.1 3.500x 3.000	300 2.07	85.5 3.37	85.5 3.37	UL FM
100x 65 4x 2½	108.0x 76.1 4.250x 3.000	300 2.07	100 3.94	96 3.78	UL FM
100x 80 4x 3	108.0x 88.9 4.250x 3.500	300 2.07	100 3.94	96 3.78	UL FM
100x 65 4x 2½	114.3x 76.1 4.500x 3.000	300 2.07	100 3.94	96 3.78	UL FM
100x 80 4x 3	114.3x 88.9 4.500x 3.500	300 2.07	100 3.94	96 3.78	UL FM
200x 50 8x 2	219.1x 60.3 8.625x 2.375	300 2.07	175 6.89	175 6.89	FM
200x 65 8x 2½	219.1x 76.1 8.625x 3.000	300 2.07	175 6.89	175 6.89	FM
200x 80 8x 3	219.1x 88.9 8.625x 3.500	300 2.07	175 6.89	175 6.89	FM

131R-2

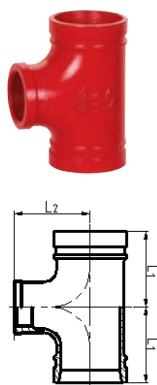
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
100x 25 4x 1	114.3x 33.7 4.500x 1.315	300 2.07	76 2.99	88 3.47	UL FM
100x 32 4x 1¼	114.3x 42.4 4.500x 1.660	300 2.07	76 2.99	88 3.47	UL FM
100x 40 4x 1½	114.3x 48.3 4.500x 1.900	300 2.07	85 3.35	91 3.58	UL FM
100x 50 4x 2	108.0x 60.3 4.250x 2.375	300 2.07	85 3.35	91 3.58	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	300 2.07	85 3.35	91 3.58	UL FM
125x 50 5x 2	133.0x 60.3 5.250x 2.375	300 2.07	86 3.39	106 4.17	UL FM
125x 65 5x 2½	133.0x 76.1 5.250x 3.000	300 2.07	102 4.02	111 4.37	UL FM
125x 80 5x 3	133.0x 88.9 5.250x 3.500	300 2.07	102 4.02	111 4.37	UL FM
125x 25 5x 1	139.7x 33.7 5.500x 1.315	300 2.07	78 3.07	103 4.06	UL FM
125x 32 5x 1¼	139.7x 42.4 5.500x 1.660	300 2.07	78 3.07	103 4.06	UL FM
125x 40 5x 1½	139.7x 48.3 5.500x 1.900	300 2.07	86 3.39	106 4.17	UL FM
125x 50 5x 2	139.7x 60.3 5.500x 2.375	300 2.07	86 3.39	106 4.17	UL FM

131R

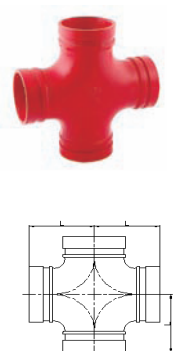
Reducing Tee



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
125× 65 5× 2½	139.7× 76.1 5.500× 3.000	300 2.07	102 4.02	111 4.37	UL FM
125× 80 5× 3	139.7× 88.9 5.500× 3.500	300 2.07	102 4.02	111 4.37	UL FM
150× 60 6× 2	159.0× 60.3 6.250× 2.375	300 2.07	92 3.62	124 4.88	UL FM
150× 65 6× 2½	159.0× 76.1 6.250× 3.000	300 2.07	107 4.21	129 5.08	UL FM
150× 80 6× 3	159.0× 88.9 6.250× 3.500	300 2.07	107 4.21	129 5.08	UL FM
150× 25 6× 1	165.1× 33.7 6.500× 1.315	300 2.07	83 3.27	121 4.76	UL FM
150× 32 6× 1¼	165.1× 42.4 6.500× 1.660	300 2.07	83 3.27	121 4.76	UL FM
150× 40 6× 1½	165.1× 48.3 6.500× 1.900	300 2.07	92 3.62	124 4.88	UL FM
150× 50 6× 2	165.1× 60.3 6.500× 2.375	300 2.07	92 3.62	124 4.88	UL FM
150× 65 6× 2½	165.1× 76.1 6.500× 3.000	300 2.07	107 4.21	129 5.08	UL FM
150× 80 6× 3	165.1× 88.9 6.500× 3.500	300 2.07	107 4.21	129 5.08	UL FM
150× 100 6× 4	165.1× 114.3 6.500× 4.500	300 2.07	121 4.76	132 5.20	UL FM
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	92 3.62	124 4.88	UL FM
150× 65 6× 2½	168.3× 76.1 6.625× 3.000	300 2.07	107 4.21	129 5.08	UL FM

180

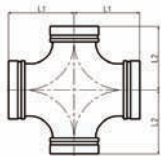
Cross



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32 1¼	42.4 1.660	500 3.45	70 2.75	UL FM VdS
40 1½	48.3 1.900	500 3.45	70 2.75	UL FM VdS
50 2	60.3 2.375	500 3.45	70 2.75	UL FM VdS
65 2½	73.0 2.875	500 3.45	76 3.00	UL FM
65 2½	76.1 3.000	500 3.45	76 3.00	UL FM VdS
80 3	88.9 3.500	500 3.45	85.5 3.37	UL FM VdS
100 4	108.0 4.250	500 3.45	101 3.98	UL FM
100 4	114.3 4.500	500 3.45	101 3.98	UL FM VdS
125 5	139.7 5.500	500 3.45	124 4.88	UL FM VdS
125 5	141.3 5.563	500 3.45	124 4.88	UL FM
150 6	159.0 6.250	500 3.45	140 5.50	UL FM
150 6	165.1 6.500	500 3.45	140 5.50	UL FM
150 6	168.3 6.625	500 3.45	140 5.50	UL FM VdS
200 8	219.1 8.625	500 3.45	175 6.89	UL FM VdS
250 10	273.0 10.750	500 3.45	229 9.00	UL FM VdS
300 12	323.9 12.750	500 3.45	254 10.00	UL FM VdS

180R

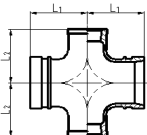
Reducing Cross



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
65x 50 2½x 2	76.1x 60.3 3.000x 2.375	500 3.45	76 3.00	76 3.00	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	500 3.45	108 4.25	108 4.25	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	500 3.45	101 3.98	101 3.98	UL FM
100x 80 4x 3	114.3x 88.9 4.500x 3.500	500 3.45	127 5.00	127 5.00	UL FM
125x 100 5x 4	139.7x 114.3 5.500x 4.500	500 3.45	124 4.88	124 4.88	UL FM
150x 50 6x 2	165.1x 60.3 6.500x 2.375	500 3.45	140 5.50	140 5.50	UL FM
150x 65 6x 2½	165.1x 76.1 6.500x 3.000	500 3.45	165 6.50	165 6.50	UL FM
150x 80 6x 3	165.1x 88.9 6.500x 3.500	500 3.45	140 5.50	140 5.50	UL FM
150x 100 6x 4	165.1x 114.3 6.500x 4.500	500 3.45	140 5.50	140 5.50	UL FM
200x 50 8x 2	219.1x 60.3 8.625x 2.375	500 3.45	197 7.75	197 7.75	UL FM
200x 50 8x 4	219.1x 114.3 8.625x 4.500	500 3.45	175 6.89	175 6.89	UL FM
200x 100 8x 4	219.1x 114.3 8.625x 4.500	500 3.45	175 6.89	175 6.89	UL FM
200x 125 8x 5	219.1x 139.7 8.625x 5.500	500 3.45	175 6.89	175 6.89	UL FM
200x 150 8x 6	219.1x 159.0 8.625x 6.250	500 3.45	175 6.89	175 6.89	UL FM
200x 150 8x 6	219.1x 165.1 8.625x 6.500	500 3.45	175 6.89	175 6.89	UL FM

181

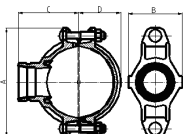
Reducing Cross



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L1 mm/in	Dimensions L2 mm/in	Certificate
65x 50 2½x 2	76.1x 60.3 3.000x 2.375	300 2.07	76 3.00	76 3.00	UL FM
80x 32 3x 1¼	88.9x 42.4 3.500x 1.660	300 2.07	108 4.25	108 4.25	UL FM
80x 40 3x 1½	88.9x 48.3 3.500x 1.900	300 2.07	108 4.25	108 4.25	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	300 2.07	85.5 3.37	85.5 3.37	UL FM
100x 25 4x 1	114.3x 33.7 4.500x 1.315	300 2.07	76 2.99	88 3.47	UL FM
100x 32 4x 1¼	114.3x 42.4 4.500x 1.660	300 2.07	76 2.99	88 3.47	UL FM
100x 40 4x 1½	114.3x 48.3 4.500x 1.900	300 2.07	85 3.35	91 3.58	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	300 2.07	85 3.35	91 3.58	UL FM
100x 65 4x 2½	114.3x 76.1 4.500x 3.000	300 2.07	101 3.98	101 3.98	UL FM
100x 80 4x 3	114.3x 88.9 4.500x 3.500	300 2.07	101 3.98	101 3.98	UL FM
150x 32 6x 1¼	165.1x 42.4 6.500x 1.660	300 2.07	142 5.59	142 5.59	UL FM
150x 40 6x 1½	165.1x 48.3 6.500x 1.900	300 2.07	142 5.59	142 5.59	UL FM
150x 50 6x 2	165.1x 60.3 6.500x 2.375	300 2.07	142 5.59	142 5.59	UL FM
150x 80 6x 3	165.1x 88.9 6.500x 3.500	300 2.07	140 5.50	140 5.50	UL FM

3G

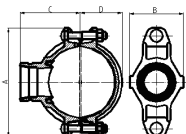
Mechanical Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/ +0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
50x 32 2x 1/4	60.3x 42.4 2.375x 1.660	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8x 55	UL FM
50x 40 2x 1/2	60.3x 48.3 2.375x 1.900	300 2.07	45 1.75	116 4.57	76 2.99	69.5 2.74	39 1.54	3/8x 55	UL FM
65x 32 2 1/2x 1/4	73.0x 42.4 2.875x 1.660	300 2.07	51 2.00	144 5.67	84.5 3.33	75 2.95	49 1.93	1/2x 70	UL FM
65x 25 76.1x 1	76.1x 33.7 3.000x 1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	49.5 1.95	1/2x 70	UL FM
65x 32 76.1x 1 1/4	76.1x 42.4 3.000x 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2x 70	UL FM
65x 40 76.1x 1 1/2	76.1x 48.3 3.000x 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2x 70	UL FM
80x 25 3x 1	88.9x 33.7 3.500x 1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	84.5 3.33	56.5 2.22	1/2x 75	UL FM
80x 32 3x 1 1/4	88.9x 42.4 3.500x 1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	56.5 2.22	1/2x 75	UL FM
80x 40 3x 1 1/2	88.9x 48.3 3.500x 1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	56.5 2.22	1/2x 75	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	300 2.07	64 2.50	152 5.98	98 3.86	84.5 3.33	56.5 2.22	1/2x 75	UL FM
100x 25 4x 1	114.3x 33.7 4.500x 1.315	300 2.07	38 1.50	188 7.40	78.4 3.09	102 4.02	70 2.76	1/2x 75	UL FM
100x 40 4x 1 1/2	114.3x 48.3 4.500x 1.900	300 2.07	51 2.00	188 7.40	89 3.50	102 4.02	70 2.76	1/2x 75	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2x 75	UL FM
100x 65 4x 2 1/2	114.3x 73.0 4.500x 2.875	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2x 75	UL FM
100x 65 4x 76.1	114.3x 76.1 4.500x 3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2x 75	UL FM
100x 80 4x 3	114.3x 88.9 4.500x 3.500	300 2.07	89 3.50	188 7.40	124 4.88	102 4.02	70 2.76	1/2x 75	UL FM
125x 80 133.0x 3	133.0x 88.9 5.250x 3.500	300 2.07	89 3.50	209 8.23	132 5.20	109.5 4.31	77 3.03	5/8x 85	UL FM
125x 50 139.7x 2	139.7x 60.3 5.500x 2.375	300 2.07	64 2.50	221.5 8.72	112.5 4.43	118 4.65	84 3.31	5/8x 85	UL FM
125x 65 139.7x 76.1	139.7x 76.1 5.500x 3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	118 4.65	84 3.31	5/8x 85	UL FM
125x 80 139.7x 3	139.7x 88.9 5.500x 3.500	300 2.07	89 3.50	221.5 8.720	136 5.35	122 4.80	84 3.31	5/8x 85	UL FM
125x 100 139.7x 4	139.7x 114.3 5.500x 4.500	300 2.07	114 4.50	221.5 8.720	160 6.30	125 4.92	84 3.31	5/8x 85	UL FM
150x 100 159.0x 108.0	159.1x 108.0 6.250x 4.250	300 2.07	114 4.50	244 9.60	154 6.06	133 5.24	94 3.70	5/8x 105	UL FM
150x 100 159.0x 4	159.1x 114.3 6.250x 4.500	300 2.07	114 4.50	244 9.60	159 6.26	125 4.92	94 3.70	5/8x 105	UL FM
150x 50 165.1x 2	165.1x 60.3 6.500x 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	127 5.00	97.5 3.84	5/8x 105	UL FM
150x 65 165.1x 76.1	165.1x 76.1 6.500x 3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	127 5.00	97.5 3.84	5/8x 105	UL FM
150x 80 6 1/2 O.D x 3	165.1x 88.9 6.500x 3.500	300 2.07	89 3.50	244 9.60	132 5.20	141 5.55	97.5 3.84	5/8x 105	UL FM
150x 100 6 1/2 O.D x 4	165.1x 114.3 6.500x 4.500	300 2.07	114 4.50	244 9.60	154 6.06	135 5.32	97.5 3.84	5/8x 105	UL FM
150x 40 6x 1 1/2	168.3x 48.3 6.500x 1.900	300 2.07	51 2.00	247 9.72	95 3.74	128 5.04	98.5 3.88	5/8x 105	UL FM
150x 50 6x 2	168.3x 60.3 6.625x 2.375	300 2.07	64 2.50	247 9.72	114 4.49	134 5.28	98.5 3.88	5/8x 105	UL FM
150x 65 6x 2 1/2	168.3x 73.0 6.625x 2.875	300 2.07	70 2.75	247 9.72	115 4.53	134 5.28	98.5 3.88	5/8x 105	UL FM
150x 80 6x 3	168.3x 88.9 6.625x 3.500	300 2.07	89 3.50	247 9.72	132 5.20	141 5.55	98.5 3.88	5/8x 105	UL FM
150x 100 6x 4	168.3x 114.3 6.625x 4.500	300 2.07	114 4.50	247 9.72	156.5 6.16	138 5.43	98.5 3.88	5/8x 105	UL FM
200x 50 8x 2	219.1x 60.3 8.625x 2.375	300 2.07	64 2.50	322 12.68	118 4.65	158 6.22	125 4.92	3/4x 115	UL FM
200x 65 8x 76.1	219.1x 76.1 8.625x 3.000	300 2.07	70 2.75	322 12.68	118 4.65	158 6.22	125 4.92	3/4x 115	UL FM
200x 80 8x 3	219.1x 88.9 8.625x 3.500	300 2.07	89 3.50	322 12.68	136.5 5.37	161 6.34	125 4.92	3/4x 115	UL FM
200x 100 8x 4	219.1x 114.3 8.625x 4.500	300 2.07	114 4.50	322 12.68	164 6.46	161 6.34	125 4.92	3/4x 115	UL FM
250x 100 10x 4	273.0x 114.3 10.750x 4.500	300 2.07	114 4.50	376 14.80	164 6.46	189 7.44	155 6.10	3/4x 120	UL FM

3GS

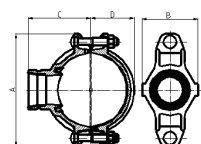
Light-duty Mechanical
Tee Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	49.5 1.95	1/2× 70	UL FM
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2× 70	UL FM
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	49.5 1.95	1/2× 70	UL FM
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	84 3.31	55.5 2.19	1/2× 75	UL FM
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	55.5 2.19	1/2× 75	UL FM
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	55.5 2.19	1/2× 75	UL FM
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	150 5.91	98 3.86	84 3.31	55.5 2.19	1/2× 75	UL FM
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	178 7.01	88 3.46	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	178 7.01	88 3.46	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 65 4× 2½	114.3× 73.0 4.500× 2.875	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 65 4× 76.1	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 80 4× 3	114.3× 88.9 4.500× 3.500	300 2.07	89 3.50	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2× 75	UL FM
125× 80 133.0× 3	133.0× 88.9 5.250× 3.500	300 2.07	89 3.50	203 7.99	132 5.12	110 4.33	77.5 3.05	5/8× 85	UL FM
125× 50 139.7× 2	139.7× 60.3 5.500× 2.375	300 2.07	64 2.50	210 8.27	110 4.33	113 4.45	82 3.23	5/8× 85	UL FM
125× 65 139.7× 76.1	139.7× 76.1 5.500× 3.000	300 2.07	70 2.75	210 8.27	110 4.33	113 4.45	82 3.23	5/8× 85	UL FM
125× 80 139.7× 3	139.7× 88.9 5.500× 3.500	300 2.07	89 3.50	210 8.27	130 5.12	113 4.45	82 3.23	5/8× 85	UL FM
125× 100 139.7× 4	139.7× 114.3 5.500× 4.500	300 2.07	114 4.50	210 8.27	153 6.02	115 4.52	82 3.23	5/8× 85	UL FM
150× 100 159.0× 108.0	159.1× 108.0 6.250× 4.250	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	91 3.58	5/8× 105	UL FM
150× 100 159.0× 4	159.1× 114.3 6.250× 4.500	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	91 3.58	5/8× 105	UL FM
150× 50 165.1× 2	165.1× 60.3 6.500× 2.375	300 2.07	64 2.50	235 9.25	110 4.33	124.5 4.90	94.5 3.72	5/8× 105	UL FM
150× 65 165.1× 76.1	165.1× 76.1 6.500× 3.000	300 2.07	70 2.75	235 9.25	110 4.33	124.5 4.90	94.5 3.72	5/8× 105	UL FM
150× 80 165.1× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	235 9.25	130 5.12	124.5 4.90	94.5 3.72	5/8× 105	UL FM
150× 100 165.1× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	235 9.25	155 6.10	126 4.96	94.5 3.72	5/8× 105	UL FM
150× 32 6× 1¼	168.3× 42.4 6.500× 1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	96.5 3.80	5/8× 105	UL FM
150× 40 6× 1½	168.3× 48.3 6.500× 1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	96.5 3.80	5/8× 105	UL FM
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	240 9.45	110 4.33	126 4.96	96.5 3.80	5/8× 105	UL FM
150× 65 6× 2½	168.3× 73.0 6.625× 2.875	300 2.07	70 2.75	240 9.45	110 4.33	126 4.96	96.5 3.80	5/8× 105	UL FM
150× 80 6× 3	168.3× 88.9 6.625× 3.500	300 2.07	89 3.50	240 9.45	130 5.12	126 4.96	96.5 3.80	5/8× 105	UL FM
150× 100 6× 4	168.3× 114.3 6.625× 4.500	300 2.07	114 4.50	240 9.45	155 6.10	128 5.04	96.5 3.80	5/8× 105	UL FM
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	300 11.81	115 4.53	155 6.10	123 4.84	5/8× 105	UL FM
200× 65 8× 76.1	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	123 4.84	5/8× 105	UL FM
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	123 4.84	5/8× 105	UL FM
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	123 4.84	5/8× 105	UL FM

3J

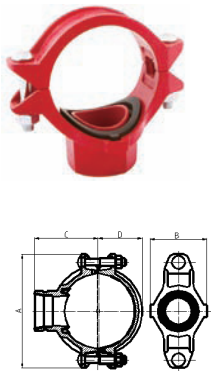
Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
50x 15 2x 1/2	60.3x 21.3 2.375x 0.825	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8x 55	UL FM
50x 20 2x 3/4	60.3x 26.9 2.375x 1.050	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8x 55	UL FM
50x 25 2x 1	60.3x 33.7 2.375x 1.315	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	39 1.54	3/8x 55	UL FM
50x 32 2x 1 1/4	60.3x 42.4 2.375x 1.660	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	39 1.54	3/8x 55	UL FM
50x 40 2x 1 1/2	60.3x 48.3 2.375x 1.900	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	39 1.54	3/8x 55	UL FM
65x 20 2 1/2x 3/4	73.0x 26.9 2.875x 1.050	300 2.07	38 1.50	144 5.67	71 2.76	75 2.72	49 1.93	1/2x 70	UL FM
65x 25 2 1/2x 1	73.0x 33.7 2.875x 1.315	300 2.07	38 1.50	144 5.67	70 2.76	69 2.72	49 1.93	1/2x 70	UL FM
65x 32 2 1/2x 1 1/4	73.0x 42.4 2.875x 1.660	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	49 1.93	1/2x 70	UL FM
65x 40 2 1/2x 1 1/2	73.0x 48.3 2.875x 1.900	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	49 1.93	1/2x 70	UL FM
65x 15 76.1x 1/2	76.1x 21.3 3.000x 0.825	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2x 70	UL FM
65x 20 76.1x 3/4	76.1x 26.9 3.000x 1.050	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2x 70	UL FM
65x 25 76.1x 1	76.1x 33.7 3.000x 1.315	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2x 70	UL FM
65x 32 76.1x 1 1/4	76.1x 42.4 3.000x 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2x 70	UL FM
65x 40 76.1x 1 1/2	76.1x 48.3 3.000x 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2x 70	UL FM
80x 25 3x 1/2	88.9x 21.3 3.500x 0.825	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	56.5 2.22	1/2x 75	UL FM
3x 3/4	88.9x 26.9 3.500x 1.050	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	56.5 2.22	1/2x 75	UL FM
80x 25 3x 1	88.9x 33.7 3.500x 1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	56.5 2.22	1/2x 75	UL FM
80x 32 3x 1 1/4	88.9x 42.4 3.500x 1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	56.5 2.22	1/2x 75	UL FM
80x 40 3x 1 1/2	88.9x 48.3 3.500x 1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	56.5 2.22	1/2x 75	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	300 2.07	64 2.50	152 5.98	98 3.86	80 3.15	56.5 2.22	1/2x 75	UL FM
100x 25 108.0x 1	108.1x 33.7 4.250x 1.315	300 2.07	38 1.50	172 6.77	78.5 3.09	87 3.43	64.5 2.54	1/2x 75	UL FM
100x 32 108.0x 1 1/4	108.1x 42.4 4.250x 1.660	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	64.5 2.54	1/2x 75	UL FM
100x 40 108.0x 1 1/2	108.0x 48.3 4.250x 1.900	300 2.07	51 2.00	172 6.77	89 3.50	87 3.43	64.5 2.54	1/2x 75	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	100 3.94	70 2.76	1/2x 75	UL FM
100x 65 108.0x 76.1	108.0x 76.1 4.250x 3.000	300 2.07	70 2.75	172 6.77	106.5 4.19	100 3.94	64.5 2.54	1/2x 75	UL FM
100x 15 4x 1/2	114.3x 21.3 4.500x 0.825	300 2.07	38 1.50	188 7.40	78.5 3.09	90 3.54	70 2.76	1/2x 75	UL FM
100x 20 4x 3/4	114.3x 26.9 4.500x 1.050	300 2.07	38 1.50	188 7.40	78.5 3.09	90 3.54	70 2.76	1/2x 75	UL FM
100x 25 4x 1	114.3x 33.7 4.500x 1.315	300 2.07	38 1.50	188 7.40	78.5 3.09	93 3.66	70 2.76	1/2x 75	UL FM
100x 32 4x 1 1/4	114.3x 42.4 4.500x 1.660	300 2.07	51 2.00	188 7.40	89 3.50	95 3.74	70 2.76	1/2x 75	UL FM

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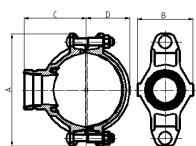
Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
100x 40 4x 1½	114.3x 48.3 4.500x 1.900	300 2.07	51 2.00	188 7.40	89 3.50	97 3.82	70 2.76	1/2x 75	UL FM
100x 50 4x 2	108.0x 60.3 4.250x 2.375	300 2.07	64 2.50	172 6.77	106.5 4.19	92 3.62	64.5 2.54	1/2x 75	UL FM
100x 65 4x 2½	114.3x 73.0 4.500x 2.875	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2x 75	UL FM
100x 65 4x 76.1	114.3x 76.1 4.500x 3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	70 2.76	1/2x 75	UL FM
100x 80 4x 3	114.3x 88.9 4.500x 3.500	300 2.07	89 3.50	188 7.40	124 4.88	102 4.02	70 2.76	1/2x 75	UL FM
125x 25 133.0x 1	133.0x 33.7 5.250x 1.315	300 2.07	38 1.50	209 8.23	78 3.07	105 4.13	77 3.03	5/8x 85	UL FM
125x 32 133.0x 1.25	133.0x 42.4 5.250x 1.660	300 2.07	51 2.00	209 8.23	93 3.66	105 4.13	77 3.03	5/8x 85	UL FM
125x 40 133.0x 1½	133.0x 48.3 5.250x 1.900	300 2.07	51 2.00	209 8.23	93 3.66	105 4.13	77 3.03	5/8x 85	UL FM
125x 50 133.0x 2	133.0x 60.3 5.250x 2.375	300 2.07	64 2.50	209 8.23	112.5 4.43	110 4.33	77 3.03	5/8x 85	UL FM
125x 65 133.0x 76.1	133.0x 76.1 5.250x 3.000	300 2.07	70 2.75	209 8.23	112.5 4.43	115 4.53	77 3.03	5/8x 85	UL FM
125x 80 133.0x 3	133.0x 88.9 5.250x 3.500	300 2.07	89 3.50	209 8.23	132 5.20	118 4.65	77 3.03	5/8x 85	UL FM
125x 25 139.7x 1	139.7x 33.7 5.500x 1.315	300 2.07	38 1.50	221.5 8.72	78 3.07	110 4.33	84 3.31	5/8x 85	UL FM
125x 32 139.7x 1¼	139.7x 42.4 5.500x 1.660	300 2.07	51 2.00	221.5 8.72	93 3.66	112 4.41	84 3.31	5/8x 85	UL FM
125x 40 139.7x 1½	139.7x 48.3 5.500x 1.900	300 2.07	51 2.00	221.5 8.72	93 3.66	112 4.41	84 3.31	5/8x 85	UL FM
125x 50 139.7x 2	139.7x 60.3 5.500x 2.375	300 2.07	64 2.50	221.5 8.72	112.5 4.43	115 4.53	84 3.31	5/8x 85	UL FM
125x 65 139.7x 76.1	139.7x 76.1 5.500x 3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	115 4.53	84 3.31	5/8x 85	UL FM
125x 80 139.7x 3	139.7x 88.9 5.500x 3.500	300 2.07	89 3.50	221.5 8.72	132 5.20	120 4.72	84 3.31	5/8x 85	UL FM
125x 100 139.7x 4	139.7x 114.3 5.500x 4.500	300 2.07	114 4.50	221.5 8.72	156 6.30	125 4.92	84 3.31	5/8x 85	UL FM
150x 25 159.0x 1	159.0x 33.7 6.250x 1.315	300 2.07	38 1.50	244 9.60	78 3.07	116 4.57	94 3.70	5/8x 105	UL FM
150x 32 159.0x 1¼	159.0x 42.4 6.250x 1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	94 3.70	5/8x 105	UL FM
150x 40 159.0x 1½	159.0x 48.3 6.250x 1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	94 3.70	5/8x 105	UL FM
150x 50 159.0x 2	159.0x 60.3 6.250x 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	115 4.92	94 3.70	5/8x 105	UL FM
150x 65 159.0x 76.1	159.0x 76.1 6.250x 3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	125 4.92	94 3.70	5/8x 105	UL FM
150x 80 159.0x 3	159.0x 88.9 6.250x 3.500	300 2.07	89 3.50	244 9.60	133 5.20	125 4.92	94 3.70	5/8x 105	UL FM
150x 100 159.0x 4	159.1x 114.3 6.250x 4.500	300 2.07	114 4.50	244 9.60	156.5 6.16	130 5.12	94 3.70	5/8x 105	UL FM
150x 15 165.1x ½	165.1x 21.3 6.500x 0.825	300 2.07	38 1.50	244 9.60	78 3.07	115 4.53	97.5 3.84	5/8x 105	UL FM

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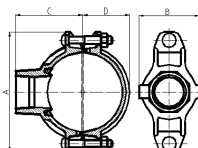
Mechanical Tee Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
125× 20 165.1× ¾	165.1× 26.9 6.500× 1.050	300 2.07	38 1.50	244 9.60	78 3.07	115 4.53	97.5 3.84	5/8× 105	UL FM
150× 25 165.1× 1	165.1× 33.7 6.500× 1.315	300 2.07	38 1.50	244 9.60	78 3.07	118 4.65	97.5 3.84	5/8× 105	UL FM
150× 32 165.1× 1¼	165.1× 42.4 6.500× 1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	97.5 3.84	5/8× 105	UL FM
150× 40 165.1× 1½	165.1× 48.3 6.500× 1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	97.5 3.84	5/8× 105	UL FM
150× 50 165.1× 2	165.1× 60.3 6.500× 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	128.5 5.43	97.5 3.84	5/8× 105	UL FM
150× 65 165.1× 2½	165.1× 76.1 6.500× 3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	128.5 5.43	97.5 3.84	5/8× 105	UL FM
150× 80 165.1× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	244 9.60	132 5.20	128.5 5.06	97.5 3.84	5/8× 105	UL FM
150× 100 165.1× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	244 9.60	154 6.18	135 5.32	97.5 3.84	5/8× 105	UL FM
150× 32 6× 1¼	168.3× 42.4 6.500× 1.660	300 2.07	51 2.00	247 9.72	95 3.74	130 5.12	98.5 3.88	5/8× 105	UL FM
150× 40 6× 1½	168.3× 48.3 6.500× 1.900	300 2.07	51 2.00	247 9.72	95 3.74	122 4.80	98.5 3.88	5/8× 105	UL FM
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	247 9.72	112.5 4.43	132 5.20	98.5 3.88	5/8× 105	UL FM
150× 65 6× 2½	168.3× 73.0 6.625× 2.875	300 2.07	70 2.75	247 9.72	112.5 4.43	132 5.20	98.5 3.88	5/8× 105	UL FM
150× 80 6× 3	168.3× 88.9 6.625× 3.500	300 2.07	89 3.50	247 9.72	132 5.20	140 5.51	98.5 3.88	5/8× 105	UL FM
150× 100 6× 4	168.3× 114.3 6.625× 4.500	300 2.07	114 4.50	247 9.72	156.5 6.16	140 5.51	98.5 3.88	5/8× 105	UL FM
200× 25 8× 1	219.0× 33.7 8.625× 1.315	300 2.07	38 1.50	322 12.68	79.5 3.13	150 5.91	125 4.92	3/4× 115	UL FM
200× 32 8× 1¼	219.1× 42.4 8.625× 1.660	300 2.07	51 2.00	322 12.68	96.5 3.80	150 5.91	125 4.92	3/4× 115	UL FM
200× 40 8× 1½	219.1× 48.3 8.625× 1.900	300 2.07	51 2.00	322 12.68	96.5 3.80	150 5.91	125 4.92	3/4× 115	UL FM
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	322 12.68	117 4.61	160 6.30	125 4.92	3/4× 115	UL FM
200× 65 8× 2½	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	322 12.68	118 4.65	158.5 6.24	125 4.92	3/4× 115	UL FM
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	322 12.68	136.5 5.37	160 6.30	125 4.92	3/4× 115	UL FM
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	322 12.68	164 6.46	160 6.30	125 4.92	3/4× 115	UL FM
250× 40 10× 1½	273.0× 48.3 10.750× 1.900	300 2.07	51 2.00	376 14.80	95.5 3.76	180 7.09	155 6.10	3/4× 120	UL FM
250× 50 10× 2	273.0× 60.3 10.750× 2.375	300 2.07	64 2.50	376 14.80	118 4.65	185 7.28	155 6.10	3/4× 120	UL FM
250× 65 10× 2½	273.0× 76.1 10.750× 3.000	300 2.07	70 2.75	376 14.80	118 4.65	190 7.48	155 6.10	3/4× 120	UL FM
250× 80 10× 3	273.0× 88.9 10.750× 3.500	300 2.07	89 3.50	376 14.80	136.5 5.37	190 7.48	155 6.10	3/4× 120	UL FM
250× 100 10× 4	273.0× 114.3 10.750× 4.500	300 2.07	114 4.50	376 14.80	164 6.46	190 7.48	155 6.10	3/4× 120	UL FM

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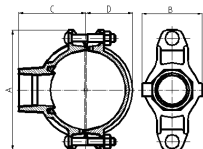
Light-duty Mechanical Tee
Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
65× 15 76.1× ½	76.1× 21.3 3.000× 0.825	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2× 70	UL FM
65× 20 76.1× ¾	76.1× 26.9 3.000× 1.050	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2× 70	UL FM
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	49.5 1.95	1/2× 70	UL FM
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2× 70	UL FM
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	49.5 1.95	1/2× 70	UL FM
80× 15 3× ½	88.9× 21.3 3.500× 0.825	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	55.5 2.19	1/2× 75	UL FM
80× 20 3× ¾	88.9× 26.9 3.500× 1.050	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	55.5 2.19	1/2× 75	UL FM
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	55.5 2.19	1/2× 75	UL FM
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	55.5 2.19	1/2× 75	UL FM
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	55.5 2.19	1/2× 75	UL FM
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	150 5.91	98 3.86	77 3.03	55.5 2.19	1/2× 75	UL FM
100× 25 108.0× 1	108.1× 33.7 4.250× 1.315	300 2.07	38 1.50	172 6.77	77.5 3.05	85 3.35	64.5 2.54	1/2× 75	UL FM
100× 32 108.0× 1¼	108.1× 42.4 4.250× 1.660	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	64.5 2.54	1/2× 75	UL FM
100× 40 108.0× 1½	108.0× 48.3 4.250× 1.900	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	64.5 2.54	1/2× 75	UL FM
100× 50 108.0× 2	108.0× 60.3 4.250× 2.375	300 2.07	64 2.50	172 6.77	103.5 4.19	89 3.50	64.5 2.54	1/2× 75	UL FM
100× 65 108.0× 76.1	108.0× 76.1 4.250× 3.000	300 2.07	70 2.75	172 6.77	103.5 4.07	96 3.78	64.5 2.54	1/2× 75	UL FM
100× 15 4× ½	114.3× 21.3 4.500× 0.825	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	67.5 2.66	1/2× 75	UL FM
100× 20 4× ¾	114.3× 26.9 4.500× 1.050	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	67.5 2.66	1/2× 75	UL FM
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	67.5 2.66	1/2× 75	UL FM
100× 32 4× 1¼	114.3× 42.4 4.500× 1.660	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	67.5 2.66	1/2× 75	UL FM
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	67.5 2.66	1/2× 75	UL FM
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	92 3.62	67.5 2.66	1/2× 75	UL FM
100× 65 4× 2½	114.3× 73.0 4.500× 2.875	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 65 4× 76.1	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	67.5 2.66	1/2× 75	UL FM
100× 80 4× 3	114.3× 88.9 4.500× 3.500	300 2.07	89 3.50	178 7.01	124 4.88	100 3.94	67.5 2.66	1/2× 75	UL FM
125× 25 133.0× 1	133.0× 33.7 5.250× 1.315	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	77.5 3.05	5/8× 85	UL FM
125× 32 133.0× 1.25	133.0× 42.4 5.250× 1.660	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	77.5 3.05	5/8× 85	UL FM
125× 40 133.0× 1½	133.0× 48.3 5.250× 1.900	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	77.5 3.05	5/8× 85	UL FM
125× 50 133.0× 2	133.0× 60.3 5.250× 2.375	300 2.07	64 2.50	203 7.99	110 4.33	105 4.13	77.5 3.05	5/8× 85	UL FM
125× 65 133.0× 76.1	133.0× 76.1 5.250× 3.000	300 2.07	70 2.75	203 7.99	110 4.33	110 4.33	77.5 3.05	5/8× 85	UL FM
125× 80 133.0× 3	133.0× 88.9 5.250× 3.500	300 2.07	89 3.50	203 7.99	132 5.12	110 4.33	77.5 3.05	5/8× 85	UL FM
125× 25 139.7× 1	139.7× 33.7 5.500× 1.315	300 2.07	38 1.50	210 8.27	77 3.03	100 3.94	82 3.23	5/8× 85	UL FM
125× 32 139.7× 1¼	139.7× 42.4 5.500× 1.660	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	82 3.23	5/8× 85	UL FM

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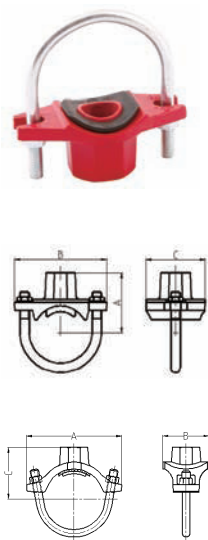
Light-duty Mechanical Tee
Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions mm/in				Bolt Size	Certificate
				A	B	C	D		
125x 40 139.7x 1½	139.7x 48.3 5.500x 1.900	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	82 3.23	5/8x 85	UL FM
125x 50 139.7x 2	139.7x 60.3 5.500x 2.375	300 2.07	64 2.50	210 8.27	110 4.33	108 4.25	82 3.23	5/8x 85	UL FM
125x 65 139.7x 2½	139.7x 76.1 5.500x 3.000	300 2.07	70 2.75	210 8.27	110 4.33	115 4.53	82 3.23	5/8x 85	UL FM
125x 80 139.7x 3	139.7x 88.9 5.500x 3.500	300 2.07	89 3.50	210 8.27	130 5.12	115 4.53	82 3.23	5/8x 85	UL FM
125x 100 139.7x 4	139.7x 114.3 5.500x 4.500	300 2.07	114 4.50	210 8.27	153 6.02	118 4.65	82 3.23	5/8x 85	UL FM
150x 25 159.0x 1	159.0x 33.7 6.250x 1.315	300 2.07	38 1.50	227 8.94	77 3.03	110 4.33	91 3.58	5/8x 105	UL FM
150x 32 159.0x 1¼	159.0x 42.4 6.250x 1.660	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	91 3.58	5/8x 105	UL FM
150x 40 159.0x 1½	159.0x 48.3 6.250x 1.900	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	91 3.58	5/8x 105	UL FM
150x 50 159.0x 2	159.0x 60.3 6.250x 2.375	300 2.07	64 2.50	227 8.94	110 4.33	116.5 4.59	91 3.58	5/8x 105	UL FM
150x 65 159.0x 2½	159.0x 76.1 6.250x 3.000	300 2.07	70 2.75	227 8.94	110 4.33	121.5 4.78	91 3.58	5/8x 105	UL FM
150x 80 159.0x 3	159.0x 88.9 6.250x 3.500	300 2.07	89 3.50	227 8.94	130 5.12	123.5 4.86	91 3.58	5/8x 105	UL FM
150x 100 159.0x 4	159.1x 114.3 6.250x 4.500	300 2.07	114 4.50	227 8.94	155 6.10	127 5.00	91 3.58	5/8x 105	UL FM
150x 15 165.1x ½	165.1x 21.3 6.500x 0.825	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8x 105	UL FM
125x 20 165.1x ¾	165.1x 26.9 6.500x 1.050	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8x 105	UL FM
150x 25 165.1x 1	165.1x 33.7 6.500x 1.315	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	94.5 3.72	5/8x 105	UL FM
150x 32 165.1x 1¼	165.1x 42.4 6.500x 1.660	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	94.5 3.72	5/8x 105	UL FM
150x 40 165.1x 1½	165.1x 48.3 6.500x 1.900	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	94.5 3.72	5/8x 105	UL FM
150x 50 165.1x 2	165.1x 60.3 6.500x 2.375	300 2.07	64 2.50	235 9.25	110 4.33	120 4.72	94.5 3.72	5/8x 105	UL FM
150x 65 165.1x 2½	165.1x 76.1 6.500x 3.000	300 2.07	70 2.75	235 9.25	110 4.33	125 4.92	94.5 3.72	5/8x 105	UL FM
150x 80 165.1x 3	165.1x 88.9 6.500x 3.500	300 2.07	89 3.50	235 9.25	130 5.12	125 4.92	94.5 3.72	5/8x 105	UL FM
150x 100 165.1x 4	165.1x 114.3 6.500x 4.500	300 2.07	114 4.50	240 9.45	155 6.10	130 5.12	94.5 3.72	5/8x 105	UL FM
150x 25 6x 1	168.3x 33.7 6.500x 1.315	300 2.07	38 1.50	240 9.45	77 3.03	115 4.53	96.5 3.80	5/8x 105	UL FM
150x 32 6x 1¼	168.3x 42.4 6.500x 1.660	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	96.5 3.80	5/8x 105	UL FM
150x 40 6x 1½	168.3x 48.3 6.500x 1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	115 4.53	96.5 3.80	5/8x 105	UL FM
150x 50 6x 2	168.3x 60.3 6.625x 2.375	300 2.07	64 2.50	240 9.45	110 4.33	121 4.76	96.5 3.80	5/8x 105	UL FM
150x 65 6x 2½	168.3x 73.0 6.625x 2.875	300 2.07	70 2.75	240 9.45	110 4.33	127 5.00	96.5 3.80	5/8x 105	UL FM
150x 80 6x 3	168.3x 88.9 6.625x 3.500	300 2.07	89 3.50	240 9.45	130 5.12	127 5.00	96.5 3.80	5/8x 105	UL FM
150x 100 6x 4	168.3x 114.3 6.625x 4.500	300 2.07	114 4.50	240 9.45	155 6.10	143 5.12	96.5 3.80	5/8x 105	UL FM
200x 25 8x 1	219.0x 33.7 8.625x 1.315	300 2.07	38 1.50	300 11.81	78 3.07	140 5.51	123 4.84	5/8x 105	UL FM
200x 32 8x 1¼	219.1x 42.4 8.625x 1.660	300 2.07	51 2.00	300 11.81	93 3.66	140 5.51	123 4.84	5/8x 105	UL FM
200x 40 8x 1½	219.1x 48.3 8.625x 1.900	300 2.07	51 2.00	300 11.81	93 3.66	143 5.63	123 4.84	5/8x 105	UL FM
200x 50 8x 2	219.1x 60.3 8.625x 2.375	300 2.07	64 2.50	300 11.81	115 4.53	149 5.87	123 4.84	5/8x 105	UL FM
200x 65 8x 2½	219.1x 76.1 8.625x 3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	123 4.84	5/8x 105	UL FM
200x 80 8x 3	219.1x 88.9 8.625x 3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	123 4.84	5/8x 105	UL FM
200x 100 8x 4	219.1x 114.3 8.625x 4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	123 4.84	5/8x 105	UL FM

3L

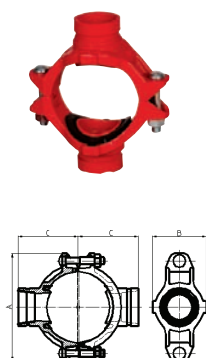
U-Bolt Mechanical Tee



Nominal Size mm/in	Hole Dia +1.6, 0/+0.063, 0 mm/in	Working Pressure PSI/Mpa	Dimensions			U Bolt Size in	Certificate
			A mm/in	B mm/in	C mm/in		
32X15 1¼X1/2	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8X73	UL FM
32X20 1¼X3/4	30 1.18	300 2.07	54.4 2.14	88.9 3.50	57.2 2.25	3/8X73	UL FM
32X25 1¼X1	30 1.18	300 2.07	57.7 2.27	88.9 3.50	57.2 2.25	3/8X73	UL FM
40X15 1½X1/2	30 1.18	300 2.07	57.4 2.26	88.9 3.50	57.2 2.25	3/8X73	UL FM
40X20 1½X3/4	30 1.18	300 2.07	57.4 2.26	88.9 3.50	57.2 2.25	3/8X73	UL FM
40X25 1½X1	30 1.18	300 2.07	60.8 2.39	88.9 3.50	57.2 2.25	3/8X73	UL FM
50X15 2X1/2	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8X90	UL FM
50X20 2X3/4	30 1.18	300 2.07	63.3 2.49	95.3 3.75	57.2 2.25	3/8X90	UL FM
50X25 2X1	30 1.18	300 2.07	66.6 2.62	95.3 3.75	57.2 2.25	3/8X90	UL FM
65X15 2½X1/2	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105	UL FM
65X20 2½X3/4	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105	UL FM
65X25 2½X1	30 1.18	300 2.07	73.2 2.88	108.0 4.25	57.2 2.25	3/8X105	UL FM
65X15 76.1X1/2	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105	UL FM
65X20 76.1X3/4	30 1.18	300 2.07	69.9 2.75	108.0 4.25	57.2 2.250	3/8X105	UL FM
65X25 76.1X1	30 1.18	300 2.07	73.2 2.88	108.0 4.25	57.2 2.25	3/8X105	UL FM
80X25 3X1	38 1.5	300 2.07	145 5.71	73 2.87	79 3.11	1/2X105	UL FM
100X25 4X1	38 1.5	300 2.07	185 7.28	72 2.83	89 3.50	1/2X125	UL FM
100X32 4X1¼	51 2.0	300 2.07	185 7.28	85 3.35	95 3.74	1/2X125	UL FM
100X40 4X1½	51 2.0	300 2.07	185 7.28	85 3.35	95 3.74	1/2X125	UL FM
150X25 6X1	38 1.5	300 2.07	254 10.00	75 2.95	120 4.72	5/8X173	UL FM
150X32 6X1¼	51 2.0	300 2.07	254 10.00	88 3.46	120 4.72	5/8X173	UL FM
150X40 6X1½	51 2.0	300 2.07	254 10.00	88 3.46	120 4.72	5/8X173	UL FM

4G

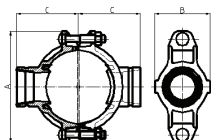
Mechanical Cross Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in			Bolt Size
				A	B	C	
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	1/2× 70
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	1/2× 70
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	84.5 3.33	1/2× 75
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	1/2× 75
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	84.5 3.33	1/2× 75
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	152 5.98	98 3.86	84.5 3.33	1/2× 75
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	188 7.40	78.5 3.09	101.5 4.00	1/2× 75
100× 32 4× 1¼	114.3× 42.4 4.500× 1.660	300 2.07	51 2.00	188 7.40	89 3.50	101.5 4.00	1/2× 75
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	188 7.40	89 3.50	101.5 4.00	1/2× 75
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	101.5 4.00	1/2× 75
100× 65 4× 2½	114.3× 73.0 4.500× 2.875	300 2.07	70 2.75	188 7.40	104.5 4.11	101.5 4.00	1/2× 75
100× 65 4× 76.1	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	101.5 4.00	1/2× 75
125× 80 133.0× 3	133.0× 88.9 5.250× 3.500	300 2.07	89 3.50	209 8.23	132 5.20	109.5 4.31	5/8× 85
125× 50 139.7× 2	139.7× 60.3 5.500× 2.375	300 2.07	64 2.50	221.5 8.70	112.5 4.43	118 4.65	5/8× 85
125× 65 139.7× 76.1	139.7× 76.1 5.500× 3.000	300 2.07	70 2.75	221.5 8.70	112.5 4.43	118 4.65	5/8× 85
125× 80 139.7× 3	139.7× 88.9 5.500× 3.500	300 2.07	89 3.50	221.5 8.70	136 5.35	122 4.80	5/8× 85
150× 100 159.0× 108.0	159.1× 108.0 6.250× 4.250	300 2.07	114 4.50	244 9.60	154 6.06	133 5.24	5/8× 105
150× 100 159.0× 4	159.1× 114.3 6.250× 4.500	300 2.07	114 4.50	244 9.60	159 6.26	125 4.92	5/8× 105
150× 50 165.1× 2	165.1× 60.3 6.500× 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	128 5.04	5/8× 105
150× 65 165.1× 76.1	165.1× 76.1 6.500× 3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	128 5.04	5/8× 105
150× 80 6½O.D× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	244 9.60	132 5.20	141 5.55	5/8× 105
150× 100 6½O.D× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	244 9.60	154 6.06	135 5.32	5/8× 105
150× 40 6× 1½	168.3× 48.3 6.500× 1.900	300 2.07	51 2.00	247 9.72	95 3.74	128 5.04	5/8× 105
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	247 9.72	114 4.49	134 5.28	5/8× 105
150× 65 6× 2½	168.3× 73.0 6.625× 2.875	300 2.07	70 2.75	247 9.72	115 4.53	134 5.28	5/8× 105
150× 80 6× 3	168.3× 88.9 6.625× 3.500	300 2.07	89 3.50	247 9.72	132 5.20	141 5.55	5/8× 105
150× 100 6× 4	168.3× 114.3 6.625× 4.500	300 2.07	114 4.50	247 9.72	156.5 6.16	138 5.43	5/8× 105
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	322 12.68	118 4.65	158 6.22	3/4× 115
200× 65 8× 76.1	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	322 12.68	118 4.65	158 6.22	3/4× 115
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	322 12.68	136.5 5.37	161 6.34	3/4× 115
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	322 12.68	164 6.46	161 6.34	3/4× 115
250× 100 10× 4	273.0× 114.3 10.750× 4.500	300 2.07	114 4.50	376 14.80	164 6.46	189 7.44	3/4× 120

4GS

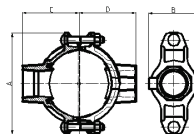
Mechanical Cross Grooved Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/ +0.063,0	Dimensions L mm/in			Bolt Size
				A	B	C	
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	78 3.07	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	1/2× 70
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	78 3.07	1/2× 70
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	84 3.31	1/2× 75
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	1/2× 75
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	84 3.31	1/2× 75
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	150 5.91	98 3.86	84 3.31	1/2× 75
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	98 3.86	1/2× 75
100× 32 4× 1¼	114.3× 42.4 4.500× 1.660	300 2.07	51 2.00	178 7.01	88 3.46	98 3.86	1/2× 75
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	178 7.01	88 3.46	98 3.86	1/2× 75
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	178 7.01	88 3.46	98 3.86	1/2× 75
100× 65 4× 2½	114.3× 73.0 4.500× 2.875	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	1/2× 75
100× 65 4× 76.1	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	1/2× 75
125× 80 133.0× 3	133.0× 88.9 5.250× 3.500	300 2.07	89 3.50	203 7.99	132 5.12	110 4.33	5/8× 85
125× 50 139.7× 2	139.7× 60.3 5.500× 2.375	300 2.07	64 2.50	210 8.27	110 4.33	113 4.45	5/8× 85
125× 65 139.7× 76.1	139.7× 76.1 5.500× 3.000	300 2.07	70 2.75	210 8.27	110 4.33	113 4.45	5/8× 85
125× 80 139.7× 3	139.7× 88.9 5.500× 3.500	300 2.07	89 3.50	210 8.27	130 5.12	113 4.45	5/8× 85
150× 100 159.0× 108.0	159.1× 108.0 6.250× 4.250	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	5/8× 105
150× 100 159.0× 4	159.1× 114.3 6.250× 4.500	300 2.07	114 4.50	227 8.94	155 6.10	122.5 4.83	5/8× 105
150× 50 165.1× 2	165.1× 60.3 6.500× 2.375	300 2.07	64 2.50	235 9.25	110 4.33	124.5 4.90	5/8× 105
150× 65 165.1× 76.1	165.1× 76.1 6.500× 3.000	300 2.07	70 2.75	235 9.25	110 4.33	124.5 4.90	5/8× 105
150× 80 165.1× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	235 9.25	130 5.12	124.5 4.90	5/8× 105
150× 100 165.1× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	235 9.25	155 6.10	126 4.96	5/8× 105
150× 40 6× 1½	168.3× 48.3 6.500× 1.900	300 2.07	51 2.00	240 9.45	92.5 3.64	126 4.96	5/8× 105
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	240 9.45	110 4.33	126 4.96	5/8× 105
150× 65 6× 2½	168.3× 73.0 6.625× 2.875	300 2.07	70 2.75	240 9.45	110 4.33	126 4.96	5/8× 105
150× 80 6× 3	168.3× 88.9 6.625× 3.500	300 2.07	89 3.50	240 9.45	130 5.12	126 4.96	5/8× 105
150× 100 6× 4	168.3× 114.3 6.625× 4.500	300 2.07	114 4.50	240 9.45	155 6.10	128 5.04	5/8× 105
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	300 11.81	115 4.53	155 6.10	3/4× 115
200× 65 8× 76.1	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	3/4× 115
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	3/4× 115
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	3/4× 115
250× 100 10× 4	273.0× 114.3 10.750× 4.500	300 2.07	114 4.50	376 14.80	164 6.46	189 7.44	3/4× 120

4J

Mechanical Gross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
50× 25 2× 1	60.3× 33.7 2.375× 1.315	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	60 2.36	3/8× 55
50× 32 2× 1¼	60.3× 42.4 2.375× 1.660	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	65 2.56	3/8× 55
50× 32× 25 2× 1¼× 1	60.3× 42.4× 33.7 2.375× 1.660× 1.315	300 2.07	45/38 1.75/1.50	116 4.57	76 2.99	65 2.56	60 2.36	3/8× 55
50× 40 2× 1½	60.3× 48.3 2.375× 1.900	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	65 2.56	3/8× 55
50× 40× 25 2× 1½× 1	60.3× 48.3× 33.7 2.375× 1.900× 1.315	300 2.07	45/38 1.75/1.50	116 4.57	76 2.99	65 2.56	60 2.36	3/8× 55
65× 25 2½× 1	73.0× 33.7 2.875× 1.315	300 2.07	38 1.50	144 5.67	70 2.76	69 2.72	69 2.72	1/2× 70
65× 32 2½× 1¼	73.0× 42.4 2.875× 1.660	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	73 2.87	1/2× 70
65× 40 2½× 1½	73.0× 48.3 2.875× 1.900	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	73 2.87	1/2× 70
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	75 3.05	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 32× 25 76.1× 1¼× 1	76.1× 42.4× 33.7 3.000× 1.660× 1.315	300 2.07	51/38 2.00/1.50	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40× 25 76.1× 1½× 1	76.1× 48.3× 33.7 3.000× 1.900× 1.315	300 2.07	51/38 2.00/1.50	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40× 25× 32 76.1× 1½× 1¼	76.1× 48.3× 42.4 3.000× 1.900× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
3× ¾	88.9× 26.9 3.500× 1.050	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	80 3.15	1/2× 70
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	152 5.98	72.5 2.85	80 3.15	80 3.15	1/2× 75
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2× 75
80× 32× 25 3× 1¼× 1	88.9× 42.4× 33.7 3.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2× 75
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2× 75
80× 40× 25 3× 1½× 1	88.9× 48.3× 33.7 3.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2× 75
80× 40× 32 3× 1½× 1¼	88.9× 48.3× 42.4 3.500× 1.900× 1.660	300 2.07	51 2.00	152 5.98	85.5 3.37	80 3.15	80 3.15	1/2× 75
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	152 5.98	98 3.86	80 3.15	80 3.15	1/2× 75

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
80× 50× 25 3× 2× 1	88.9× 60.3× 33.7 3.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	152 5.98	98 3.86	80 3.15	80 3.15	1/2× 75
80× 50× 32 3× 2× 1¼	88.9× 60.3× 42.4 3.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	152 5.98	98 3.86	80 3.15	80 3.15	1/2× 75
80× 50× 40 3× 2× 1½	88.9× 60.3× 48.3 3.500× 2.375× 1.900	300 2.07	64/51 2.50/2.00	152 5.98	98 3.86	80 3.15	80 3.15	1/2× 75
100× 25 108.0× 1	108.1× 33.7 4.250× 1.315	300 2.07	38 1.50	172 6.77	78.5 3.09	87 3.43	87 3.43	1/2× 75
100× 32 108.0× 1¼	108.1× 42.4 4.250× 1.660	300 2.07	51 2.00	172 6.77	85.4 3.36	87 3.43	87 3.43	1/2× 75
100× 32× 25 108.0× 1¼× 1	108.1× 42.4× 33.7 4.250× 1.660× 1.315	300 2.07	51/38 2.00/1.50	172 6.77	85.4 3.36	87 3.43	87 3.43	1/2× 75
100× 40 108.0× 1½	108.0× 48.3 4.250× 1.900	300 2.07	51 2.00	172 6.77	85.4 3.36	89 3.50	89 3.50	1/2× 75
100× 40× 25 108.0× 1½× 1	108.0× 48.3× 33.7 4.250× 1.900× 1.315	300 2.07	51/38 2.00/1.50	172 6.77	85.4 3.36	89 3.50	87 3.43	1/2× 75
100× 40× 32 108.0× 1½× 1¼	108.0× 48.3× 42.4 4.250× 1.900× 1.660	300 2.07	51 2.00	172 6.77	85.4 3.36	89 3.50	87 3.43	1/2× 75
100× 50 108.0× 2	108.0× 60.3 4.250× 2.375	300 2.07	64 2.50	172 6.77	106.5 4.19	92 3.62	92 3.62	1/2× 75
100× 50× 25 108.0× 2× 1	108.0× 60.3× 33.7 4.250× 2.375× 1.315	300 2.07	64/38 2.50/1.50	172 6.77	106.5 4.19	92 3.62	87 3.43	1/2× 75
100× 50× 32 108.0× 2× 1¼	108.0× 60.3× 42.4 4.250× 2.375× 1.660	300 2.07	64/51 2.50/2.00	172 6.77	106.5 4.19	92 3.62	87 3.43	1/2× 75
100× 50× 40 108.0× 2× 1½	108.0× 60.3× 48.3 4.250× 2.375× 1.900	300 2.07	64/51 2.50/2.00	172 6.77	106.5 4.19	92 3.62	89 3.50	1/2× 75
100× 65 108.0× 76.1	108.0× 76.1 4.250× 3.000	300 2.07	70 2.75	172 6.77	106.5 4.19	100 3.94	100 3.94	1/2× 75
100× 15 4× ½	114.3× 21.3 4.500× 0.825	300 2.07	38 1.50	188 7.40	78.4 3.09	90 3.54	90 3.54	1/2× 75
100× 20 4× ¾	114.3× 26.9 4.500× 1.050	300 2.07	38 1.50	188 7.40	78.4 3.09	90 3.54	90 3.54	1/2× 75
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	188 7.40	78.4 3.09	93 3.66	93 3.66	1/2× 75
100× 32 4× 1¼	114.3× 42.4 4.500× 1.660	300 2.07	51 2.00	188 7.40	89 3.50	95 3.74	95 3.74	1/2× 75
100× 32× 25 4× 1¼× 1	114.3× 42.4× 33.7 4.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	188 7.40	89 3.50	95 3.74	93 3.66	1/2× 75
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	188 7.40	89 3.50	97 3.82	97 3.82	1/2× 75
100× 40× 25 4× 1½× 1	114.3× 48.3× 33.7 4.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	188 7.40	89 3.50	97 3.82	93 3.66	1/2× 75
100× 40× 32 4× 1½× 1¼	114.3× 48.3× 42.4 4.500× 1.900× 1.660	300 2.07	51 2.00	188 7.40	89 3.50	97 3.82	95 3.74	1/2× 75
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	188 7.40	104.5 4.11	100 3.94	100 3.94	1/2× 75
100× 50× 25 4× 2× 1	114.3× 60.3× 33.7 4.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	188 7.40	104.5 4.11	100 3.94	93 3.66	1/2× 75
100× 50× 32 4× 2× 1¼	114.3× 60.3× 42.4 4.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	188 7.40	104.5 4.11	100 3.94	95 3.74	1/2× 75
100× 65 4× 76.1	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	188 7.40	104.5 4.11	102 4.02	102 4.02	1/2× 75
100× 65× 32 4× 76.1× 1¼	114.3× 76.1× 42.4 4.500× 3.000× 1.660	300 2.07	70/51 2.75/2.00	188 7.40	104.5 4.11	102 4.02	95 3.74	1/2× 75
100× 65× 40 4× 76.1× 1½	114.3× 76.1× 48.3 4.500× 3.000× 1.900	300 2.07	70/51 2.75/2.00	188 7.40	104.5 4.11	102 4.02	97 3.82	1/2× 75

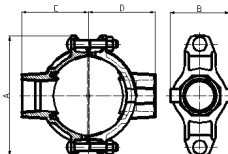
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
100× 65× 50 4× 3/4× 2	114.3× 76.1× 60.3 4.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	188 7.40	104.5 4.11	102 4.02	100 3.94	1/2× 75
100× 80 4× 3	114.3× 88.9 4.500× 3.500	300 2.07	89 3.50	188 7.40	124 4.88	102 4.02	102 4.02	1/2× 75
100× 80× 32 4× 3× 1 1/4	114.3× 88.9× 42.4 4.500× 3.500× 1.660	300 2.07	89/51 3.50/2.00	188 7.40	124 4.88	102 4.02	95 3.74	1/2× 75
100× 80× 40 4× 3× 1 1/2	114.3× 88.9× 48.3 4.500× 3.500× 1.900	300 2.07	89/51 3.50/2.00	188 7.40	124 4.88	102 4.02	97 3.82	1/2× 75
100× 80× 50 4× 3× 2	114.3× 88.9× 60.3 4.500× 3.500× 2.375	300 2.07	89/64 3.50/2.50	188 7.40	124 4.88	102 4.02	100 3.94	1/2× 75
100× 80× 65 4× 3× 2 1/4	114.3× 88.9× 76.1 4.500× 3.500× 3.000	300 2.07	89/70 3.50/3.75	188 7.40	124 4.88	102 4.02	102 4.02	1/2× 75
125× 15 133.0× 1/2	133.0× 21.3 5.250× 0.825	300 2.07	38 1.50	209 8.23	96.5 3.80	103 4.06	103 4.06	5/8× 85
125× 20 133.0× 3/4	133.0× 26.9 5.250× 1.050	300 2.07	38 1.50	209 8.23	96.5 3.80	103 4.06	103 4.06	5/8× 85
125× 25 133.0× 1	133.0× 33.7 5.250× 1.315	300 2.07	38 1.50	209 8.23	96.5 3.80	103 4.06	103 4.06	5/8× 85
125× 32 133.0× 1.25	133.0× 42.4 5.250× 1.660	300 2.07	51 2.00	209 8.23	96.5 3.80	106 4.17	106 4.17	5/8× 85
125× 50 133.0× 2	133.0× 60.3 5.250× 2.375	300 2.07	64 2.50	209 8.23	112.5 4.43	110 4.33	110 4.33	5/8× 85
125× 25 139.7× 1	139.7× 33.7 5.500× 1.315	300 2.07	38 1.50	221.5 8.72	78 3.07	110 4.33	110 4.33	5/8× 85
125× 32 139.7× 1 1/4	139.7× 42.4 5.500× 1.660	300 2.07	51 2.00	221.5 8.72	94.5 3.72	112 4.41	112 4.41	5/8× 85
125× 32× 25 139.7× 1 1/4× 1	139.7× 42.4× 33.7 5.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	221.5 8.72	94.5 3.72	112 4.41	110 4.33	5/8× 85
125× 40 139.7× 1 1/2	139.7× 48.3 5.500× 1.900	300 2.07	51 2.00	221.5 8.72	94.5 3.72	112 4.41	112 4.41	5/8× 85
125× 40× 25 139.7× 1 1/2× 1	139.7× 48.3× 33.7 5.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	221.5 8.72	94.5 3.72	112 4.41	110 4.33	5/8× 85
125× 40× 32 139.7× 1 1/2× 1 1/4	139.7× 48.3× 42.4 5.500× 1.900× 1.660	300 2.07	51 2.00	221.5 8.72	94.5 3.72	112 4.41	112 4.41	5/8× 85
125× 50 139.7× 2	139.7× 60.3 5.500× 2.375	300 2.07	64 2.50	221.5 8.72	112.5 4.43	115 4.53	115 4.53	5/8× 85
125× 50× 25 139.7× 2× 1	139.7× 60.3× 33.7 5.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	221.5 8.72	112.5 4.43	115 4.53	110 4.33	5/8× 85
125× 50× 32 139.7× 2× 1 1/4	139.7× 60.3× 42.4 5.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	221.5 8.72	112.5 4.43	115 4.53	112 4.41	5/8× 85
125× 50× 40 139.7× 2× 1 1/2	139.7× 60.3× 48.3 5.500× 2.375× 1.900	300 2.07	64/51 2.50/2.00	221.5 8.72	112.5 4.43	115 4.53	112 4.41	5/8× 85
125× 65 139.7× 2 1/4	139.7× 76.1 5.500× 3.000	300 2.07	70 2.75	221.5 8.72	112.5 4.43	115 4.53	119 4.69	5/8× 85
125× 65× 32 139.7× 2 1/4× 1 1/4	139.7× 76.1× 42.4 5.500× 3.000× 1.660	300 2.07	70/51 2.75/2.00	221.5 8.72	112.5 4.43	115 4.53	112 4.41	5/8× 85
125× 65× 40 139.7× 2 1/4× 1 1/2	139.7× 76.1× 48.3 5.500× 3.000× 1.900	300 2.07	70/51 2.75/2.00	221.5 8.72	112.5 4.43	115 4.53	112 4.41	5/8× 85
125× 65× 50 139.7× 2 1/4× 2	139.7× 76.1× 60.3 5.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	221.5 8.72	112.5 4.43	115 4.53	115 4.53	5/8× 85
125× 80 139.7× 3	139.7× 88.9 5.500× 3.500	300 2.07	89 3.50	221.5 8.72	136 5.35	120 4.72	122 4.80	5/8× 85
125× 100 139.7× 4	139.7× 114.3 5.500× 4.500	300 2.07	114 4.50	221.5 8.72	156 6.30	125 4.92	125 4.92	5/8× 85
150× 25 159.0× 1	159.0× 33.7 6.250× 1.315	300 2.07	38 1.50	244 9.60	78 3.07	116 4.57	116 4.57	5/8× 105

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
150x 32 159.0x 1¼	159.0x 42.4 6.250x 1.660	300 2.07	51 2.00	244 9.60	92 3.62	118 4.65	118 4.65	5/8x 105
150x 32x 25 159.0x 1¼x 1	159.0x 42.4x 33.7 6.250x 1.660x 1.315	300 2.07	51/38 2.00/1.50	244 9.60	92 3.62	118 4.65	116 4.57	5/8x 105
150x 40 159.0x 1½	159.0x 48.3 6.250x 1.900	300 2.07	51 2.00	244 9.60	92 3.62	118 4.65	118 4.65	5/8x 105
150x 40x 25 159.0x 1½x 1	159.0x 48.3x 33.7 6.250x 1.900x 1.315	300 2.07	51/38 2.00/1.50	244 9.60	92 3.62	118 4.65	116 4.57	5/8x 105
150x 40x 32 159.0x 1½x 1¼	159.0x 48.3x 42.4 6.250x 1.900x 1.660	300 2.07	51 2.00	244 9.60	92 3.62	118 4.65	118 4.65	5/8x 105
150x 50 159.0x 2	159.0x 60.3 6.250x 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	125 4.92	125 4.92	5/8x 105
150x 50x 25 159.0x 2x 1	159.0x 60.3x 33.7 6.250x 2.375x 1.315	300 2.07	64/38 2.50/1.50	244 9.60	112.5 4.43	125 4.92	116 4.57	5/8x 105
150x 50x 32 159.0x 2x 1¼	159.0x 60.3x 42.4 6.250x 2.375x 1.660	300 2.07	64/51 2.50/2.00	244 9.60	112.5 4.43	125 4.92	118 4.65	5/8x 105
150x 50x 40 159.0x 2x 1½	159.0x 60.3x 48.3 6.250x 2.375x 1.900	300 2.07	64/51 2.50/2.00	244 9.60	112.5 4.43	125 4.92	118 4.65	5/8x 105
150x 65 159.0x 2½	159.0x 76.1 6.250x 3.000	300 2.07	70 2.75	244 9.60	112 4.41	125 4.92	120 4.72	5/8x 105
150x 80 159.0x 3	159.0x 88.9 6.250x 3.500	300 2.07	89 3.50	244 9.60	136 5.35	125 4.92	120 4.72	5/8x 105
150x 80x 40 159.0x 3x 1½	159.0x 88.9x 48.3 6.250x 3.500x 1.900	300 2.07	89/51 3.50/2.00	244 9.60	136 5.35	125 4.92	118 4.65	5/8x 105
150x 15 165.1x ½	165.1x 21.3 6.500x 0.825	300 2.07	38 1.50	244 9.60	78 3.07	115 4.53	115 4.53	5/8x 105
125x 20 165.1x ¾	165.1x 26.9 6.500x 1.050	300 2.07	38 1.50	244 9.60	78 3.07	115 4.53	115 4.53	5/8x 105
150x 25 165.1x 1	165.1x 33.7 6.500x 1.315	300 2.07	38 1.50	244 9.60	78 3.07	118 4.65	118 4.65	5/8x 105
150x 32 165.1x 1¼	165.1x 42.4 6.500x 1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	118 4.65	5/8x 105
150x 32x 25 165.1x 1¼x 1	165.1x 42.4x 33.7 6.500x 1.660x 1.315	300 2.07	51/38 2.00/1.50	244 9.60	93 3.66	118 4.65	118 4.65	5/8x 105
150x 40 165.1x 1½	165.1x 48.3 6.500x 1.900	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	118 4.65	5/8x 105
150x 40x 25 165.1x 1½x 1	165.1x 48.3x 33.7 6.500x 1.900x 1.315	300 2.07	51/38 2.00/1.50	244 9.60	93 3.66	118 4.65	118 4.65	5/8x 105
150x 40x 32 165.1x 1½x 1¼	165.1x 48.3x 42.4 6.500x 1.900x 1.660	300 2.07	51 2.00	244 9.60	93 3.66	118 4.65	118 4.65	5/8x 105
150x 50 165.1x 2	165.1x 60.3 6.500x 2.375	300 2.07	64 2.50	244 9.60	112.5 4.43	130 5.12	130 5.12	5/8x 105
150x 50x 25 165.1x 2x 1	165.1x 60.3x 33.7 6.500x 2.375x 1.315	300 2.07	64/38 2.50/1.50	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105
150x 50x 32 165.1x 2x 1¼	165.1x 60.3x 42.4 6.500x 2.375x 1.660	300 2.07	64/51 2.50/2.00	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105
150x 50x 40 165.1x 2x 1½	165.1x 60.3x 48.3 6.500x 2.375x 1.900	300 2.07	64/51 2.50/2.00	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105
150x 65 165.1x 2½	165.1x 76.1 6.500x 3.000	300 2.07	70 2.75	244 9.60	112.5 4.43	130 5.12	130 5.12	5/8x 105
150x 65x 25 165.1x 2½x 1	165.1x 76.1x 33.7 6.500x 3.000x 1.315	300 2.07	70/38 2.75/1.50	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105
150x 65x 32 165.1x 2½x 1¼	165.1x 76.1x 42.4 6.500x 3.000x 1.660	300 2.07	70/51 2.75/2.00	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105
150x 65x 40 165.1x 2½x 1½	165.1x 76.1x 48.3 6.500x 3.000x 1.900	300 2.07	70/51 2.75/2.00	244 9.60	112.5 4.43	130 5.12	118 4.65	5/8x 105

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
150× 65× 50 165.1× 76.1× 2	165.1× 76.1× 60.3 6.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	244 9.60	112.5 4.43	130 5.12	130 5.12	5/8× 105
150× 80 165.1× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	244 9.60	132 5.20	128.5 5.06	128.5 5.06	5/8× 105
150× 80× 25 165.1× 3× 1	165.1× 88.9× 33.7 6.500× 3.500× 1.315	300 2.07	89/38 3.50/1.50	244 9.60	132 5.20	128.5 5.06	118 4.65	5/8× 105
150× 80× 32 165.1× 3× 1¼	165.1× 88.9× 42.4 6.500× 3.500× 1.660	300 2.07	89/51 3.50/2.00	244 9.60	132 5.20	128.5 5.06	118 4.65	5/8× 105
150× 80× 40 165.1× 3× 1½	165.1× 88.9× 48.3 6.500× 3.500× 1.900	300 2.07	89/51 3.50/2.00	244 9.60	132 5.20	128.5 5.06	118 4.65	5/8× 105
150× 80× 50 165.1× 3× 2	165.1× 88.9× 60.3 6.500× 3.500× 2.375	300 2.07	89/64 3.50/2.50	244 9.60	132 5.20	128.5 5.06	130 5.12	5/8× 105
150× 80× 65 165.1× 3× 2½	165.1× 88.9× 76.1 6.500× 3.500× 3.000	300 2.07	89/70 3.50/2.75	244 9.60	132 5.20	128.5 5.06	130 5.12	5/8× 105
150× 100 165.1× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	244 9.60	154 6.06	135 5.52	135 5.52	5/8× 105
150× 100× 32 165.1× 4× 1¼	165.1× 114.3× 42.4 6.500× 4.500× 1.660	300 2.07	114/51 4.50/2.00	244 9.60	154 6.06	135 5.52	118 4.65	5/8× 105
150× 100× 40 165.1× 4× 1½	165.1× 114.3× 48.3 6.500× 4.500× 1.900	300 2.07	114/51 4.50/2.00	244 9.60	154 6.06	135 5.52	118 4.65	5/8× 105
150× 100× 50 165.1× 4× 2	165.1× 114.3× 60.3 6.500× 4.500× 2.375	300 2.07	114/64 4.50/2.50	244 9.60	154 6.06	135 5.52	130 5.12	5/8× 105
150× 100× 65 165.1× 4× 2½	165.1× 114.3× 76.1 6.500× 4.500× 3.000	300 2.07	114/70 4.50/2.75	244 9.60	154 6.06	135 5.52	130 5.12	5/8× 105
150× 100× 80 165.1× 4× 3	165.1× 114.3× 88.9 6.500× 4.500× 3.500	300 2.07	114/89 4.50/3.50	244 9.60	154 6.06	135 5.52	128.5 5.06	5/8× 105
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	247 9.72	114 4.49	135 5.31	135 5.31	5/8× 105
150× 65 6× 2½	168.3× 76.1 6.625× 3.000	300 2.07	70 2.75	247 9.72	115 4.53	134 5.28	134 5.28	5/8× 105
200× 40 8× 1½	219.1× 48.3 8.625× 1.900	300 2.07	51 2.00	322 12.68	96.5 3.80	150 5.91	150 5.91	3/4× 115
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	322 12.68	117 4.61	160 6.30	160 6.30	3/4× 115
200× 50× 25 8× 2× 1	219.1× 60.3× 33.7 8.625× 2.375× 1.315	300 2.07	64/38 2.50/1.50	322 12.68	117 4.61	160 6.30	150 5.91	3/4× 115
200× 50× 32 8× 2× 1¼	219.1× 60.3× 42.4 8.625× 2.375× 1.660	300 2.07	64/51 2.50/2.00	322 12.68	117 4.61	160 6.30	150 5.91	3/4× 115
200× 50× 40 8× 2× 1½	219.1× 60.3× 48.3 8.625× 2.375× 1.900	300 2.07	64/51 2.50/2.00	322 12.68	117 4.61	160 6.30	150 5.91	3/4× 115
200× 65 8× 2½	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	322 12.68	118 4.65	158.5 6.24	158.5 6.24	3/4× 115
200× 65× 40 8× 2½× 1¼	219.1× 76.1× 48.3 8.625× 3.000× 1.900	300 2.07	70/51 2.75/2.00	322 12.68	118 4.65	158.5 6.24	150 5.91	3/4× 115
200× 65× 50 8× 2½× 2	219.1× 76.1× 60.3 8.625× 3.000× 2.375	300 2.07	70/64 2.75/2.50	322 12.68	118 4.65	158.5 6.24	160 6.30	3/4× 115
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	322 12.68	142 5.59	160 6.30	160 6.30	3/4× 115
200× 80× 65 8× 3× 2½	219.1× 88.9× 76.1 8.625× 3.500× 3.000	300 2.07	89/70 3.50/2.75	322 12.68	142 5.59	160 6.30	158.5 6.24	3/4× 115
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	322 12.68	170 6.70	170 6.70	170 6.70	3/4× 115
200× 100× 65 8× 4× 2½	219.1× 114.3× 76.1 8.625× 4.500× 3.000	300 2.07	114/70 4.50/2.75	322 12.68	170 6.70	170 6.70	158.5 6.24	3/4× 115
200× 100× 80 8× 4× 3	219.1× 114.3× 88.9 8.625× 4.500× 3.500	300 2.07	114/89 4.50/3.50	322 12.68	170 6.70	170 6.70	160 6.30	3/4× 115

4JS

Mechanical Gross Threaded Outlet



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
50× 25 2× 1	60.3× 33.7 2.375× 1.315	300 2.07	38 1.50	116 4.57	68 2.68	60 2.36	60 2.36	3/8× 55
50× 32 2× 1¼	60.3× 42.4 2.375× 1.660	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	65 2.56	3/8× 55
50× 32× 25 2× 1¼× 1	60.3× 42.4× 33.7 2.375× 1.660× 1.315	300 2.07	45/38 1.75/1.50	116 4.57	76 2.99	65 2.56	60 2.36	3/8× 55
50× 40 2× 1½	60.3× 48.3 2.375× 1.900	300 2.07	45 1.75	116 4.57	76 2.99	65 2.56	65 2.56	3/8× 55
50× 40× 25 2× 1½× 1	60.3× 48.3× 33.7 2.375× 1.900× 1.315	300 2.07	45/38 1.75/1.50	116 4.57	76 2.99	65 2.56	60 2.36	3/8× 55
65× 25 2½× 1	73.0× 33.7 2.875× 1.315	300 2.07	38 1.50	144 5.67	70 2.76	69 2.72	69 2.72	1/2× 70
65× 32 2½× 1¼	73.0× 42.4 2.875× 1.660	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	73 2.87	1/2× 70
65× 40 2½× 1½	73.0× 48.3 2.875× 1.900	300 2.07	51 2.00	144 5.67	84.5 3.33	73 2.87	73 2.87	1/2× 70
65× 25 76.1× 1	76.1× 33.7 3.000× 1.315	300 2.07	38 1.50	137 5.39	71 2.80	75 3.05	75 3.05	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 32 76.1× 1¼	76.1× 42.4 3.000× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 32× 25 76.1× 1¼× 1	76.1× 42.4× 33.7 3.000× 1.660× 1.315	300 2.07	51/38 2.00/1.50	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40 76.1× 1½	76.1× 48.3 3.000× 1.900	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40× 25 76.1× 1½× 1	76.1× 48.3× 33.7 3.000× 1.900× 1.315	300 2.07	51/38 2.00/1.50	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
65× 40× 25× 32 76.1× 1½× 1¼	76.1× 48.3× 42.4 3.000× 1.900× 1.660	300 2.07	51 2.00	137 5.39	84.5 3.33	75 3.05	75 3.05	1/2× 70
3× ¾	88.9× 26.9 3.500× 1.050	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	68 2.68	1/2× 70
80× 25 3× 1	88.9× 33.7 3.500× 1.315	300 2.07	38 1.50	150 5.91	71.0 2.80	68 2.68	68 2.68	1/2× 75
80× 32 3× 1¼	88.9× 42.4 3.500× 1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	74 2.91	1/2× 75

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
80× 32× 25 3× 1¼× 1	88.9× 42.4× 33.7 3.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	150 5.91	84.5 3.33	74 2.91	68 2.68	1/2× 75
80× 40 3× 1½	88.9× 48.3 3.500× 1.900	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	74 2.91	1/2× 75
80× 40× 25 3× 1½× 1	88.9× 48.3× 33.7 3.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	150 5.91	84.5 3.33	74 2.91	68 2.68	1/2× 75
80× 40× 32 3× 1½× 1¼	88.9× 48.3× 42.4 3.500× 1.900× 1.660	300 2.07	51 2.00	150 5.91	84.5 3.33	74 2.91	74 2.91	1/2× 75
80× 50 3× 2	88.9× 60.3 3.500× 2.375	300 2.07	64 2.50	150 5.91	98 3.86	77 3.03	77 3.03	1/2× 75
80× 50× 25 3× 2× 1	88.9× 60.3× 33.7 3.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	150 5.91	98 3.86	77 3.03	68 2.68	1/2× 75
80× 50× 32 3× 2× 1¼	88.9× 60.3× 42.4 3.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	150 5.91	98 3.86	77 3.03	74 2.91	1/2× 75
80× 50× 40 3× 2× 1½	88.9× 60.3× 48.3 3.500× 2.375× 1.900	300 2.07	64/51 2.50/2.00	150 5.91	98 3.86	77 3.03	74 2.91	1/2× 75
100× 25 108.0× 1	108.1× 33.7 4.250× 1.315	300 2.07	38 1.50	172 6.77	77.5 3.05	85 3.35	85 3.35	1/2× 75
100× 32 108.0× 1¼	108.1× 42.4 4.250× 1.660	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	85 3.35	1/2× 75
100× 32× 25 108.0× 1¼× 1	108.1× 42.4× 33.7 4.250× 1.660× 1.315	300 2.07	51/38 2.00/1.50	172 6.77	88 3.46	85 3.35	85 3.35	1/2× 75
100× 40 108.0× 1½	108.0× 48.3 4.250× 1.900	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	85 3.35	1/2× 75
100× 40× 25 108.0× 1½× 1	108.0× 48.3× 33.7 4.250× 1.900× 1.315	300 2.07	51/38 2.00/1.50	172 6.77	88 3.46	85 3.35	85 3.35	1/2× 75
100× 40× 32 108.0× 1½× 1¼	108.0× 48.3× 42.4 4.250× 1.900× 1.660	300 2.07	51 2.00	172 6.77	88 3.46	85 3.35	85 3.35	1/2× 75
100× 50 108.0× 2	108.0× 60.3 4.250× 2.375	300 2.07	64 2.50	172 6.77	103.5 4.19	89 3.50	89 3.50	1/2× 75
100× 50× 25 108.0× 2× 1	108.0× 60.3× 33.7 4.250× 2.375× 1.315	300 2.07	64/38 2.50/1.50	172 6.77	103.5 4.19	89 3.50	85 3.35	1/2× 75
100× 50× 32 108.0× 2× 1¼	108.0× 60.3× 42.4 4.250× 2.375× 1.660	300 2.07	64/51 2.50/2.00	172 6.77	103.5 4.19	89 3.50	85 3.35	1/2× 75
100× 50× 40 108.0× 2× 1½	108.0× 60.3× 48.3 4.250× 2.375× 1.900	300 2.07	64/51 2.50/2.00	172 6.77	103.5 4.19	89 3.50	85 3.35	1/2× 75
100× 65 108.0× 76.1	108.0× 76.1 4.250× 3.000	300 2.07	70 2.75	172 6.77	103.5 4.07	96 3.78	96 3.78	1/2× 75
100× 15 4× ½	114.3× 21.3 4.500× 0.825	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2× 75
100× 20 4× ¾	114.3× 26.9 4.500× 1.050	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2× 75
100× 25 4× 1	114.3× 33.7 4.500× 1.315	300 2.07	38 1.50	178 7.01	77.5 3.05	82 3.23	82 3.23	1/2× 75
100× 32 4× 1¼	114.3× 42.4 4.500× 1.660	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	89.5 3.53	1/2× 75

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
100× 32× 25 4× 1¼× 1	114.3× 42.4× 33.7 4.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	178 7.01	88 3.46	89.5 3.53	82 3.23	1/2× 75
100× 40 4× 1½	114.3× 48.3 4.500× 1.900	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	89.5 3.53	1/2× 75
100× 40× 25 4× 1½× 1	114.3× 48.3× 33.7 4.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	178 7.01	88 3.46	89.5 3.53	82 3.23	1/2× 75
100× 40× 32 4× 1½× 1¼	114.3× 48.3× 42.4 4.500× 1.900× 1.660	300 2.07	51 2.00	178 7.01	88 3.46	89.5 3.53	89.5 3.53	1/2× 75
100× 50 4× 2	114.3× 60.3 4.500× 2.375	300 2.07	64 2.50	178 7.01	103.5 4.07	92 3.62	92 3.62	1/2× 75
100× 50× 25 4× 2× 1	114.3× 60.3× 33.7 4.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	178 7.01	103.5 4.07	92 3.62	82 3.23	1/2× 75
100× 50× 32 4× 2× 1¼	114.3× 60.3× 42.4 4.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	178 7.01	103.5 4.07	92 3.62	89.5 3.53	1/2× 75
100× 65 4× 2½	114.3× 76.1 4.500× 3.000	300 2.07	70 2.75	178 7.01	103.5 4.07	98 3.86	98 3.86	1/2× 75
100× 65× 32 4× 2½× 1¼	114.3× 76.1× 42.4 4.500× 3.000× 1.660	300 2.07	70/51 2.75/2.00	178 7.01	103.5 4.07	98 3.86	89.5 3.53	1/2× 75
100× 65× 40 4× 2½× 1½	114.3× 76.1× 48.3 4.500× 3.000× 1.900	300 2.07	70/51 2.75/2.00	178 7.01	103.5 4.07	98 3.86	89.5 3.53	1/2× 75
100× 65× 50 4× 2½× 2	114.3× 76.1× 60.3 4.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	178 7.01	103.5 4.07	98 3.86	92 3.62	1/2× 75
100× 80 4× 3	114.3× 88.9 4.500× 3.500	300 2.07	89 3.50	178 7.01	124 4.88	100 3.94	100 3.94	1/2× 75
100× 80× 32 4× 3× 1¼	114.3× 88.9× 42.4 4.500× 3.500× 1.660	300 2.07	89/51 3.50/2.00	178 7.01	124 4.88	100 3.94	89.5 3.53	1/2× 75
100× 80× 40 4× 3× 1½	114.3× 88.9× 48.3 4.500× 3.500× 1.900	300 2.07	89/51 3.50/2.00	178 7.01	124 4.88	100 3.94	89.5 3.53	1/2× 75
100× 80× 50 4× 3× 2	114.3× 88.9× 60.3 4.500× 3.500× 2.375	300 2.07	89/64 3.50/2.50	178 7.01	124 4.88	100 3.94	92 3.62	1/2× 75
100× 80× 65 4× 3× 2½	114.3× 88.9× 76.1 4.500× 3.500× 3.000	300 2.07	89/70 3.50/3.75	178 7.01	124 4.88	100 3.94	98 3.86	1/2× 75
125× 15 133.0× ½	133.0× 21.3 5.250× 0.825	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	98 3.86	5/8× 85
125× 20 133.0× ¾	133.0× 26.9 5.250× 1.050	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	98 3.86	5/8× 85
125× 25 133.0× 1	133.0× 33.7 5.250× 1.315	300 2.07	38 1.50	203 7.99	77 3.03	98 3.86	98 3.86	5/8× 85
125× 32 133.0× 1.25	133.0× 42.4 5.250× 1.660	300 2.07	51 2.00	203 7.99	91 3.58	102 4.01	102 4.01	5/8× 85
125× 50 133.0× 2	133.0× 60.3 5.250× 2.375	300 2.07	64 2.50	203 7.99	110 4.33	105 4.13	105 4.13	5/8× 85
125× 25 139.7× 1	139.7× 33.7 5.500× 1.315	300 2.07	38 1.50	210 8.27	77 3.03	100 3.94	100 3.94	5/8× 85
125× 32 139.7× 1¼	139.7× 42.4 5.500× 1.660	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	105 4.13	5/8× 85

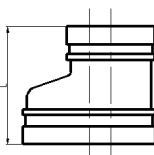
Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
125× 32× 25 139.7× 1¼× 1	139.7× 42.4× 33.7 5.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	210 8.27	91 3.58	105 4.13	100 3.94	5/8× 85
125× 40 139.7× 1½	139.7× 48.3 5.500× 1.900	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	105 4.13	5/8× 85
125× 40× 25 139.7× 1½× 1	139.7× 48.3× 33.7 5.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	210 8.27	91 3.58	105 4.13	100 3.94	5/8× 85
125× 40× 32 139.7× 1½× 1¼	139.7× 48.3× 42.4 5.500× 1.900× 1.660	300 2.07	51 2.00	210 8.27	91 3.58	105 4.13	105 4.13	5/8× 85
125× 50 139.7× 2	139.7× 60.3 5.500× 2.375	300 2.07	64 2.50	210 8.27	110 4.33	108 4.25	108 4.25	5/8× 85
125× 50× 25 139.7× 2× 1	139.7× 60.3× 33.7 5.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	210 8.27	110 4.33	108 4.25	100 3.94	5/8× 85
125× 50× 32 139.7× 2× 1¼	139.7× 60.3× 42.4 5.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	210 8.27	110 4.33	108 4.25	105 4.13	5/8× 85
125× 50× 40 139.7× 2× 1½	139.7× 60.3× 48.3 5.500× 2.375× 1.900	300 2.07	64/51 2.50/2.00	210 8.27	110 4.33	108 4.25	105 4.13	5/8× 85
125× 65 139.7× 76.1	139.7× 76.1 5.500× 3.000	300 2.07	70 2.75	210 8.27	110 4.33	115 4.53	115 4.53	5/8× 85
125× 65× 32 139.7× 76.1× 1¼	139.7× 76.1× 42.4 5.500× 3.000× 1.660	300 2.07	70/51 2.75/2.00	210 8.27	110 4.33	115 4.53	109 4.13	5/8× 85
125× 65× 40 139.7× 76.1× 1½	139.7× 76.1× 48.3 5.500× 3.000× 1.900	300 2.07	70/51 2.75/2.00	210 8.27	110 4.33	115 4.53	105 4.13	5/8× 85
125× 65× 50 139.7× 76.1× 2	139.7× 76.1× 60.3 5.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	210 8.27	110 4.33	115 4.53	108 4.25	5/8× 85
125× 80 139.7× 3	139.7× 88.9 5.500× 3.500	300 2.07	89 3.50	210 8.27	130 5.12	115 4.53	115 4.53	5/8× 85
125× 100 139.7× 4	139.7× 114.3 5.500× 4.500	300 2.07	114 4.50	210 8.27	153 6.02	118 4.65	118 4.65	5/8× 85
150× 25 159.0× 1	159.0× 33.7 6.250× 1.315	300 2.07	38 1.50	227 8.94	77 3.03	110 4.33	110 4.33	5/8× 105
150× 32 159.0× 1¼	159.0× 42.4 6.250× 1.660	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	112 4.41	5/8× 105
150× 32× 25 159.0× 1¼× 1	159.0× 42.4× 33.7 6.250× 1.660× 1.315	300 2.07	51/38 2.00/1.50	227 8.94	77 3.03	110 4.33	110 4.33	5/8× 105
150× 40 159.0× 1½	159.0× 48.3 6.250× 1.900	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	112 4.41	5/8× 105
150× 40× 25 159.0× 1½× 1	159.0× 48.3× 33.7 6.250× 1.900× 1.315	300 2.07	51/38 2.00/1.50	227 8.94	92.5 3.64	112 4.41	110 4.33	5/8× 105
150× 40× 32 159.0× 1½× 1¼	159.0× 48.3× 42.4 6.250× 1.900× 1.660	300 2.07	51 2.00	227 8.94	92.5 3.64	112 4.41	112 4.41	5/8× 105
150× 50 159.0× 2	159.0× 60.3 6.250× 2.375	300 2.07	64 2.50	227 8.94	110 4.33	116.5 4.59	116.5 4.59	5/8× 105
150× 50× 25 159.0× 2× 1	159.0× 60.3× 33.7 6.250× 2.375× 1.315	300 2.07	64/38 2.50/1.50	227 8.94	110 4.33	116.5 4.59	110 4.33	5/8× 105
150× 50× 32 159.0× 2× 1¼	159.0× 60.3× 42.4 6.250× 2.375× 1.660	300 2.07	64/51 2.50/2.00	227 8.94	110 4.33	116.5 4.59	112 4.41	5/8× 105

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
150× 50× 40 159.0× 2× 1½	159.0× 60.3× 48.3 6.250× 2.375× 2.375	300 2.07	64/51 2.50/2.00	227 8.94	110 4.33	116.5 4.59	112 4.41	5/8× 105
150× 65 159.0× 76.1	159.0× 76.1 6.250× 3.000	300 2.07	70 2.75	227 8.94	110 4.33	121.5 4.78	121.5 4.78	5/8× 105
150× 80 159.0× 3	159.0× 88.9 6.250× 3.500	300 2.07	89 3.50	227 8.94	130 5.12	123.5 4.86	123.5 4.86	5/8× 105
150× 80× 40 159.0× 3× 1½	159.0× 88.9× 48.3 6.250× 3.500× 2.375	300 2.07	89/51 3.50/2.00	227 8.94	130 5.12	123.5 4.86	112 4.41	5/8× 105
150× 15 165.1× ½	165.1× 21.3 6.500× 0.825	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8× 105
125× 20 165.1× ¾	165.1× 26.9 6.500× 1.050	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8× 105
150× 25 165.1× 1	165.1× 33.7 6.500× 1.315	300 2.07	38 1.50	235 9.25	77 3.03	115 4.53	115 4.53	5/8× 105
150× 32 165.1× 1¼	165.1× 42.4 6.500× 1.660	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8× 105
150× 32× 25 165.1× 1¼× 1	165.1× 42.4× 33.7 6.500× 1.660× 1.315	300 2.07	51/38 2.00/1.50	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8× 105
150× 40 165.1× 1½	165.1× 48.3 6.500× 1.900	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8× 105
150× 40× 25 165.1× 1½× 1	165.1× 48.3× 33.7 6.500× 1.900× 1.315	300 2.07	51/38 2.00/1.50	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8× 105
150× 40× 32 165.1× 1½× 1¼	165.1× 48.3× 42.4 6.500× 1.900× 1.660	300 2.07	51 2.00	235 9.25	92.5 3.64	115 4.53	115 4.53	5/8× 105
150× 50 165.1× 2	165.1× 60.3 6.500× 2.375	300 2.07	64 2.50	235 9.25	110 4.33	120 4.72	120 4.72	5/8× 105
150× 50× 25 165.1× 2× 1	165.1× 60.3× 33.7 6.500× 2.375× 1.315	300 2.07	64/38 2.50/1.50	235 9.25	110 4.33	120 4.72	115 4.53	5/8× 105
150× 50× 32 165.1× 2× 1¼	165.1× 60.3× 42.4 6.500× 2.375× 1.660	300 2.07	64/51 2.50/2.00	235 9.25	110 4.33	120 4.72	115 4.53	5/8× 105
150× 50× 40 165.1× 2× 1½	165.1× 60.3× 48.3 6.500× 2.375× 1.900	300 2.07	64/51 2.50/2.00	235 9.25	110 4.33	120 4.72	115 4.53	5/8× 105
150× 65 165.1× 76.1	165.1× 76.1 6.500× 3.000	300 2.07	70 2.75	235 9.25	110 4.33	125 4.92	125 4.92	5/8× 105
150× 65× 25 165.1× 76.1× 1	165.1× 76.1× 33.7 6.500× 3.000× 1.315	300 2.07	70/38 2.75/1.50	235 9.25	110 4.33	125 4.92	115 4.53	5/8× 105
150× 65× 32 165.1× 76.1× 1¼	165.1× 76.1× 42.4 6.500× 3.000× 1.660	300 2.07	70/51 2.75/2.00	235 9.25	110 4.33	125 4.92	115 4.53	5/8× 105
150× 65× 40 165.1× 76.1× 1½	165.1× 76.1× 48.3 6.500× 3.000× 1.900	300 2.07	70/51 2.75/2.00	235 9.25	110 4.33	125 4.92	115 4.53	5/8× 105
150× 65× 50 165.1× 76.1× 2	165.1× 76.1× 60.3 6.500× 3.000× 2.375	300 2.07	70/64 2.75/2.50	235 9.25	110 4.33	125 4.92	120 4.72	5/8× 105
150× 80 165.1× 3	165.1× 88.9 6.500× 3.500	300 2.07	89 3.50	235 9.25	130 5.12	125 4.92	125 4.92	5/8× 105
150× 80× 25 165.1× 3× 1	165.1× 88.9× 33.7 6.500× 3.500× 1.315	300 2.07	89/38 3.50/1.50	235 9.25	130 5.12	125 4.92	115 4.53	5/8× 105
150× 80× 32 165.1× 3× 1¼	165.1× 88.9× 42.4 6.500× 3.500× 1.660	300 2.07	89/51 3.50/2.00	235 9.25	130 5.12	125 4.92	115 4.53	5/8× 105

Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Hole Dia mm/in +1.6,0/+0.063,0	Dimensions L mm/in				Bolt Size
				A	B	C	D	
150× 80× 40 165.1× 3× 1½	165.1× 88.9× 48.3 6.500× 3.500× 1.900	300 2.07	89/51 3.50/2.00	235 9.25	130 5.12	125 4.92	115 4.53	5/8× 105
150× 80× 50 165.1× 3× 2	165.1× 88.9× 60.3 6.500× 3.500× 2.375	300 2.07	89/64 3.50/2.50	235 9.25	130 5.12	125 4.92	120 4.72	5/8× 105
150× 80× 65 165.1× 3× 76.1	165.1× 88.9× 76.1 6.500× 3.500× 3.000	300 2.07	89/70 3.50/2.75	235 9.25	130 5.12	125 4.92	125 4.92	5/8× 105
150× 100 165.1× 4	165.1× 114.3 6.500× 4.500	300 2.07	114 4.50	240 9.45	155 6.10	130 5.12	130 5.12	5/8× 105
150× 100× 32 165.1× 4× 1¼	165.1× 114.3× 42.4 6.500× 4.500× 1.660	300 2.07	114/51 4.50/2.00	240 9.45	155 6.10	130 5.12	115 4.53	5/8× 105
150× 100× 40 165.1× 4× 1½	165.1× 114.3× 48.3 6.500× 4.500× 1.900	300 2.07	114/51 4.50/2.00	240 9.45	155 6.10	130 5.12	115 4.53	5/8× 105
150× 100× 50 165.1× 4× 2	165.1× 114.3× 60.3 6.500× 4.500× 2.375	300 2.07	114/64 4.50/2.50	240 9.45	155 6.10	130 5.12	120 4.72	5/8× 105
150× 100× 65 165.1× 4× 76.1	165.1× 114.3× 76.1 6.500× 4.500× 3.000	300 2.07	114/70 4.50/2.75	240 9.45	155 6.10	130 5.12	125 4.92	5/8× 105
150× 100× 80 165.1× 4× 3	165.1× 114.3× 88.9 6.500× 4.500× 3.500	300 2.07	114/89 4.50/3.50	240 9.45	155 6.10	130 5.12	115 4.53	5/8× 105
150× 50 6× 2	168.3× 60.3 6.625× 2.375	300 2.07	64 2.50	240 9.45	110 4.33	121 4.76	121 4.76	5/8× 105
150× 65 6× 76.1	168.3× 76.1 6.625× 3.000	300 2.07	70 2.75	240 9.45	110 4.33	127 5.00	127 5.00	5/8× 105
200× 40 8× 1½	219.1× 48.3 8.625× 1.900	300 2.07	51 2.00	300 11.81	93 3.66	143 5.63	143 5.63	5/8× 105
200× 50 8× 2	219.1× 60.3 8.625× 2.375	300 2.07	64 2.50	300 11.81	115 4.53	149 5.87	149 5.87	5/8× 105
200× 50× 25 8× 2× 1	219.1× 60.3× 33.7 8.625× 2.375× 1.315	300 2.07	64/38 2.50/1.50	300 11.81	115 4.53	149 5.87	140 5.51	5/8× 105
200× 50× 32 8× 2× 1¼	219.1× 60.3× 42.4 8.625× 2.375× 1.660	300 2.07	64/51 2.50/2.00	300 11.81	115 4.53	149 5.87	143 5.63	5/8× 105
200× 50× 40 8× 2× 1½	219.1× 60.3× 48.3 8.625× 2.375× 1.900	300 2.07	64/51 2.50/2.00	300 11.81	115 4.53	149 5.87	149 5.87	5/8× 105
200× 65 8× 76.1	219.1× 76.1 8.625× 3.000	300 2.07	70 2.75	300 11.81	115 4.53	155 6.10	155 6.10	5/8× 105
200× 65× 40 8× 76.1× 1½	219.1× 76.1× 48.3 8.625× 3.000× 1.900	300 2.07	70/51 2.75/2.00	300 11.81	115 4.53	155 6.10	149 5.87	5/8× 105
200× 65× 50 8× 76.1× 2	219.1× 76.1× 60.3 8.625× 3.000× 2.375	300 2.07	70/64 2.75/2.50	300 11.81	115 4.53	155 6.10	149 5.87	5/8× 105
200× 80 8× 3	219.1× 88.9 8.625× 3.500	300 2.07	89 3.50	300 11.81	133.5 5.25	155 6.10	155 6.10	5/8× 105
200× 80× 65 8× 3× 76.1	219.1× 88.9× 76.1 8.625× 3.500× 3.000	300 2.07	89/70 3.50/2.75	300 11.81	133.5 5.25	155 6.10	155 6.10	5/8× 105
200× 100 8× 4	219.1× 114.3 8.625× 4.500	300 2.07	114 4.50	300 11.81	159.5 6.29	160 6.30	160 6.30	5/8× 105
200× 100× 65 8× 4× 76.1	219.1× 114.3× 76.1 8.625× 4.500× 3.000	300 2.07	114/70 4.50/2.75	300 11.81	159.5 6.29	160 6.30	155 6.10	5/8× 105
200× 100× 80 8× 4× 3	219.1× 114.3× 88.9 8.625× 4.500× 3.500	300 2.07	114/89 4.50/3.50	300 11.81	159.5 6.29	160 6.30	155 6.10	5/8× 105

230

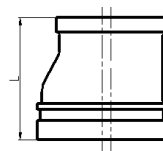
Grooved Eccentric Reducer



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	89 3.50	UL FM
100X65 4X2½	108.0X76.1 4.250X3.000	500 3.45	102 4.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	102 4.00	UL FM
100X65 4X2½	114.3X60.3 4.500X2.000	500 3.45	102 4.00	UL FM
100X65 4X2½	114.3X76.1 4.500X3.000	500 3.45	102 4.00	UL FM
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	102 4.00	UL FM
125X100 5X4	139.7X114.3 5.500X4.500	500 3.45	127 5.00	UL FM
150X100 6X4	159.0X108.0 6.250X4.250	500 3.45	140 5.50	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	500 3.45	140 5.50	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	140 5.50	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	140 5.50	UL FM
150X125 6X5	165.1X139.7 6.500X5.500	500 3.45	140 5.50	UL FM
150X80 6X3	168.3X88.9 6.625X3.500	500 3.45	140 5.50	UL FM
150X100 6X4	168.3X114.3 6.625X4.500	500 3.45	140 5.50	UL FM
150X125 6X5	168.3X139.7 6.625X5.500	500 3.45	140 5.50	UL FM
200X100 8X4	219.1X114.3 8.625X4.500	500 3.45	215 8.50	UL FM
200X100 8X6	219.1X165.1 8.625X6.500	500 3.45	215 8.50	UL FM
200X100 8X6	219.1X168.3 8.625X6.625	500 3.45	215 8.50	UL FM
200X100 10X8	273.0X219.1 10.750X8.625	500 3.45	330 13.0	UL FM

230N

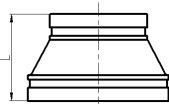
Grooved Eccentric Reducer With Female Thread



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
100X65 108.0X2½	108.0X76.1 4.250X3.000	500 3.45	102 4.00	UL FM
100X65 4X2½	114.3X76.1 4.500X3.000	500 3.45	102 4.00	UL FM
125X80 5X3	139.7X88.9 5.500X3.500	500 3.45	127 5.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	140 5.50	UL FM

240

Grooved Concentric Reducer



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
32X25 1 ¹ / ₄ X1	42.4X33.7 1.660X1.315	500 3.45	64 2.50	UL FM VdS
40X32 1 ¹ / ₂ X1 ¹ / ₄	48.3X42.4 1.900X1.660	500 3.45	64 2.50	UL FM VdS
50X32 2X1 ¹ / ₄	60.3X42.4 2.375X1.660	500 3.45	64 2.50	UL FM VdS
50X40 2X1 ¹ / ₂	60.3X48.3 2.375X1.900	500 3.45	64 2.50	UL FM VdS
65X32 2 ¹ / ₂ X1 ¹ / ₄	73.0X42.4 2.875X1.660	500 3.45	64 2.50	UL FM
65X40 2 ¹ / ₂ X1 ¹ / ₂	73.0X48.3 2.875X1.900	500 3.45	64 2.50	UL FM
65X50 2 ¹ / ₂ X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X50 2 ¹ / ₂ X1 ¹ / ₄	76.1X42.4 3.000X1.660	500 3.45	64 2.50	UL FM VdS
65X40 2 ¹ / ₂ X1 ¹ / ₂	76.1X48.3 3.000X1.900	500 3.45	64 2.50	UL FM VdS
65X50 2 ¹ / ₂ X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM VdS
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM VdS
80X40 3X1 ¹ / ₂	88.9X48.3 3.500X1.900	500 3.45	64 2.50	UL FM VdS
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	64 2.50	UL FM VdS
80X65 3X2 ¹ / ₂	88.9X73.0 3.500X2.875	500 3.45	64 2.50	UL FM
80X65 3X2 ¹ / ₂	88.9X76.1 3.500X3.000	500 3.45	64 2.50	UL FM VdS
100X50 4X2	108.0X60.3 4.250X2.375	500 3.45	76 3.00	UL FM
100X65 4X2 ¹ / ₂	108.0X73.0 4.250X2.875	500 3.45	76 3.00	UL FM
100X65 4X2 ¹ / ₂	108.0X76.1 4.250X3.000	500 3.45	76 3.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	76 3.00	UL FM
100X32 4X1 ¹ / ₄	114.3X42.4 4.500X1.660	500 3.45	76 3.00	UL FM VdS
100X40 4X1 ¹ / ₂	114.3X48.3 4.500X1.900	500 3.45	76 3.00	UL FM VdS
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM VdS
100X65 4X2 ¹ / ₂	114.3X73.0 4.500X2.875	500 3.45	76 3.00	UL FM
100X65 4X2 ¹ / ₂	114.3X76.1 4.500X3.000	500 3.45	76 3.00	UL FM VdS
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	76 3.00	UL FM VdS
125X100 5X4	133.0X108.0 5.250X4.250	500 3.45	89 3.50	UL FM
125X100 15X4	133.0X114.3 5.250X4.500	500 3.45	89 3.50	UL FM
125X50 5X2	139.7X60.3 5.500X2.375	500 3.45	89 3.50	UL FM
125X65 5X2 ¹ / ₂	139.7X76.1 5.500X3.000	500 3.45	89 3.50	UL FM VdS
125X80 5X3	139.7X88.9 5.500X3.500	500 3.45	89 3.50	UL FM VdS
125X100 5X4	139.7X114.3 5.500X4.500	500 3.45	89 3.50	UL FM VdS
125X65 5X2 ¹ / ₂	141.3X73.0 5.563X2.875	500 3.45	89 3.50	UL FM
125X80 5X3	141.3X88.9 5.563X3.500	500 3.45	89 3.50	UL FM
125X100 5X4	141.3X114.3 5.563X4.500	500 3.45	89 3.50	UL FM
150X50 6X2	159.0X60.3 6.250X2.375	500 3.45	102 4.00	UL FM

240

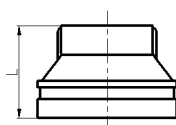
Grooved Concentric Reducer



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
150X65 159.0X2½	159.0X76.1 6.250X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	159.0X88.9 6.250X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X108 6.250X4.250	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	500 3.45	102 4.00	UL FM
150X125 6X5	159.0X133.0 6.250X5.250	500 3.45	102 4.00	UL FM
150X50 6X2	165.1X60.3 6.500X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	165.1X76.1 6.500X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	102 4.00	UL FM
150X125 6X5	165.1X139.7 6.500X5.500	500 3.45	102 4.00	UL FM
150X50 6X2	168.3X60.3 6.625X2.375	500 3.45	102 4.00	UL FM VdS
150X65 6X2½	168.3X73.0 6.625X2.875	500 3.45	102 4.00	UL FM
150X65 6X2½	168.3X76.1 6.625X3.000	500 3.45	102 4.00	UL FM VdS
150X80 6X3	168.3X88.9 6.625X3.500	500 3.45	102 4.00	UL FM VdS
150X100 6X4	168.3X114.3 6.625X4.500	500 3.45	102 4.00	UL FM VdS
150X125 6X5	168.3X139.7 6.625X5.500	500 3.45	102 4.00	UL FM VdS
150X125 6X5	168.3X141.3 6.625X5.563	500 3.45	102 4.00	UL FM
200X100 8X4	216.3X114.3 8.516X4.500	500 3.45	127 5.00	UL FM
200X150 8X6	216.3X165.1 8.516X6.500	500 3.45	127 5.00	UL FM
200X65 8X2½	219.1X73.0 8.625X2.875	500 3.45	127 5.00	UL FM
200X80 8X3	219.1X88.9 8.625X3.500	500 3.45	127 5.00	UL FM VdS
200X100 8X4	219.1X114.3 8.625X4.500	500 3.45	127 5.00	UL FM VdS
200X125 8X5	219.1X139.7 8.625X5.500	500 3.45	127 5.00	UL FM VdS
200X125 8X5	219.1X141.3 8.625X5.563	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X159.0 8.625X6.250	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X165.1 8.625X6.500	500 3.45	127 5.00	UL FM
200X150 8X6	219.1X168.3 8.625X6.625	500 3.45	127 5.00	UL FM VdS
250X150 10X6	273.0X159.0 10.750X6.250	500 3.45	127 5.00	UL FM
250X150 10X6	273.0X165.1 10.750X6.500	500 3.45	152 6.00	UL FM
250X150 10X6	273.0X168.3 10.750X6.625	500 3.45	152 6.00	UL FM VdS
250X200 10X8	273.0X219.1 10.750X8.625	500 3.45	152 6.00	UL FM VdS
300X200 12X8	323.9X219.1 12.750X8.625	500 3.45	178 7.00	UL FM VdS
300X250 12X10	323.9X273.0 12.750X10.750	500 3.45	178 7.00	UL FM VdS
350X300 14X12	377.0X323.9 14.850X12.750	300 2.07	127 5.00	UL FM
400X350 16X14	426.0X377.0 16.770X14.850	300 2.07	127 5.00	UL FM

240N

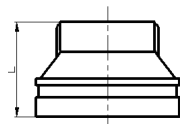
Grooved Concentric
Reducer With Female Thread



Nominal Size GroovedXThreaded mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimension L mm/in	Certificate
50X15 2X1/2	60.3X21.3 2.375X0.825	500 3.45	64 2.50	VdS
50X20 2X3/4	60.3X26.9 2.375X1.05	500 3.45	64 2.50	UL FM VdS
50X25 2X1	60.3X33.7 2.375X1.315	500 3.45	64 2.50	UL FM VdS
50X32 2X1 1/4	60.3X42.4 2.375X1.660	500 3.45	64 2.50	UL FM VdS
50X40 2X1 1/2	60.3X48.3 2.375X1.900	500 3.45	64 2.50	UL FM VdS
65X25 2 1/2X1	73.0X33.7 2.875X1.315	500 3.45	64 2.50	UL FM
65X25 2 1/2X1 1/4	73.0X42.4 2.875X1.660	500 3.45	64 2.50	UL FM
65X40 2 1/2X1 1/2	73.0X48.3 2.875X1.900	500 3.45	64 2.50	UL FM
65X50 2 1/2X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X15 2 1/2X1/2	76.1X21.3 3.000X0.825	500 3.45	64 2.50	UL FM VdS
65X20 2 1/2X3/4	76.1X26.9 3.000X1.05	500 3.45	64 2.50	UL FM VdS
65X25 2 1/2X1	76.1X33.7 3.000X1.315	500 3.45	64 2.50	UL FM VdS
65X32 2 1/2X1 1/4	76.1X42.4 3.000X1.660	500 3.45	64 2.50	UL FM VdS
65X40 2 1/2X1 1/2	76.1X48.3 3.000X1.900	500 3.45	64 2.50	UL FM VdS
65X50 2 1/2X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM VdS
80X15 3X1/2	88.9X21.3 3.500X0.825	500 3.45	64 2.50	VdS
80X20 3X3/4	88.9X26.9 3.500X1.05	500 3.45	64 2.50	UL FM VdS
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM VdS
80X32 3X1 1/4	88.9X42.4 3.500X1.660	500 3.45	64 2.50	VdS
80X40 3X1 1/2	88.9X48.3 3.500X1.900	500 3.45	64 2.50	UL FM VdS
80X50 3X2	88.9X60.3 3.500X2.375	500 3.45	64 2.50	UL FM VdS
80X65 3X2 1/2	88.9X73.0 3.500X2.875	500 3.45	64 2.50	UL FM
80X65 3X2 1/2	88.9X76.1 3.500X3.000	500 3.45	64 2.50	UL FM VdS
100X25 4X1	108.0X33.7 4.250X1.315	500 3.45	76 3.00	UL FM
100X32 4X1 1/4	108.0X42.4 4.250X1.660	500 3.45	76 3.00	UL FM
100X40 4X1 1/2	108.0X48.3 4.250X1.900	500 3.45	76 3.00	UL FM
100X50 4X2	108.0X60.3 4.250X2.375	500 3.45	76 3.00	UL FM
100X65 4X2 1/2	108.0X76.1 4.250X3.000	500 3.45	76 3.00	UL FM
100X80 4X3	108.0X88.9 4.250X3.500	500 3.45	76 3.00	UL FM
100X15 4X1/2	114.3X21.3 4.500X0.825	500 3.45	76 3.00	UL FM VdS
100X20 4X3/4	114.3X26.9 4.500X1.05	500 3.45	76 3.00	UL FM VdS
100X25 4X1	114.3X33.7 4.500X1.315	500 3.45	76 3.00	UL FM VdS
100X32 4X1 1/4	114.3X42.4 4.500X1.660	500 3.45	76 3.00	UL FM VdS
100X40 4X1 1/2	114.3X48.3 4.500X1.900	500 3.45	76 3.00	UL FM VdS
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM VdS
100X65 4X2 1/2	114.3X76.1 4.500X3.000	500 3.45	76 3.00	UL FM VdS
100X80 4X3	114.3X88.9 4.500X3.500	500 3.45	76 3.00	UL FM VdS

240N

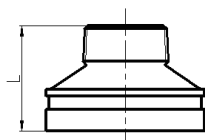
Grooved Concentric
Reducer With Female Thread



Nominal Size GroovedXThreaded mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimension L mm/in	Certificate
125X40 5X1½	133.0X48.3 5.250X1.900	500 3.45	89 3.50	UL FM
125X40 5X2	133.0X60.3 5.250X2.375	500 3.45	89 3.50	UL FM
125X65 5X2½	133.0X76.1 5.250X3.000	500 3.45	89 3.50	UL FM
125X65 5X3	133.0X88.9 5.250X3.500	500 3.45	89 3.50	UL FM
125X25 5X1	139.7X33.7 5.500X1.315	500 3.45	89 3.50	UL FM VdS
125X32 5X1¼	139.7X42.4 5.500X1.660	500 3.45	89 3.50	UL FM VdS
125X40 5X1½	139.7X48.3 5.500X1.900	500 3.45	89 3.50	UL FM VdS
125X50 5X2	139.7X60.3 5.500X2.375	500 3.45	89 3.50	UL FM VdS
125X65 5X2½	139.7X76.1 5.500X3.000	500 3.45	89 3.50	UL FM VdS
125X80 5X3	139.7X88.9 5.500X3.500	500 3.45	89 3.50	UL FM VdS
125X100 5X4	139.7X114.3 5.500X4.500	500 3.45	89 3.50	UL FM VdS
125X100 5X4	141.3X114.3 5.563X4.500	500 3.45	89 3.50	UL FM
150X20 6X3/4	159.0X26.9 6.250X1.05	500 3.45	102 4.00	UL FM
150X25 6X1	159.0X33.7 6.250X1.315	500 3.45	102 4.00	UL FM
150X32 6X1¼	159.0X42.4 6.250X1.660	500 3.45	102 4.00	UL FM
150X40 6X1½	159.0X48.3 6.250X1.900	500 3.45	102 4.00	UL FM
150X50 6X2	159.0X60.3 6.250X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	159.0X76.1 6.250X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	159.0X88.9 6.250X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	159.0X114.3 6.250X4.500	500 3.45	102 4.00	UL FM
150X15 6X1/2	165.1X21.3 6.500X0.825	500 3.45	102 4.00	UL FM
150X20 6X3/4	165.1X26.9 6.500X1.05	500 3.45	102 4.00	UL FM
150X25 6X1	165.1X33.7 6.500X1.315	500 3.45	102 4.00	UL FM
150X32 6X1¼	165.1X42.4 6.500X1.660	500 3.45	102 4.00	UL FM
150X40 6X1½	165.1X48.3 6.500X1.900	500 3.45	102 4.00	UL FM
150X50 6X2	165.1X60.3 6.500X2.375	500 3.45	102 4.00	UL FM
150X65 6X2½	165.1X76.1 6.500X3.000	500 3.45	102 4.00	UL FM
150X80 6X3	165.1X88.9 6.500X3.500	500 3.45	102 4.00	UL FM
150X100 6X4	165.1X114.3 6.500X4.500	500 3.45	102 4.00	UL FM
150X25 6X1	168.3X33.7 6.625X1.315	500 3.45	102 4.00	UL FM
150X50 6X2	168.3X60.3 6.625X2.375	500 3.45	102 4.00	UL FM VdS
150X125 6X5	168.3X141.3 6.625X5.563	500 3.45	102 4.00	UL FM
200X40 8X1½	219.1X48.3 8.625X1.900	500 3.45	127 5.00	UL FM
200X50 8X2	219.1X60.3 8.625X2.375	500 3.45	127 5.00	UL FM VdS
200X65 8X2½	219.1X73.0 8.625X2.875	500 3.45	127 5.00	UL FM
200X65 8X2½	219.1X76.1 8.625X3.000	500 3.45	127 5.00	UL FM
200X80 8X3	219.1X88.9 8.625X3.500	500 3.45	127 5.00	UL FM VdS
200X100 8X4	219.1X114.3 8.625X4.500	500 3.45	127 5.00	UL FM
200X100 8X6	219.1X168.3 8.625X6.625	500 3.45	127 5.00	UL FM

240W

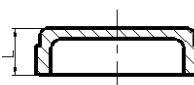
Grooved Concentric Reducer With Male Thread



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
65X50 2 1/2 X2	73.0X60.3 2.875X2.375	500 3.45	64 2.50	UL FM
65X50 2 1/2 X2	76.1X60.3 3.000X2.375	500 3.45	64 2.50	UL FM
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	64 2.50	UL FM
100X50 4X2	114.3X60.3 4.500X2.375	500 3.45	76 3.00	UL FM
200X150 8X6	219.1X168.3 8.625X6.625	500 3.45	127 5.00	UL FM

300

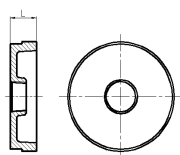
Cap



Nominal Size mm/in	Pipe O.D. mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
25 1	33.7 1.315	500 3.45	22.1 0.87	UL FM VdS
32 1 1/4	42.4 1.660	500 3.45	23.5 0.93	UL FM VdS
40 1 1/2	48.3 1.900	500 3.45	23.5 0.93	UL FM VdS
50 2	60.3 2.375	500 3.45	23.5 0.93	UL FM VdS
65 2 1/2	73.0 2.875	500 3.45	23.5 0.93	UL FM
65 2 1/2	76.1 3.000	500 3.45	25.5 1.00	UL FM VdS
80 3	88.9 3.500	500 3.45	25.5 1.00	UL FM VdS
100 4	108.0 4.250	500 3.45	27 1.06	UL FM
100 4	114.3 4.500	500 3.45	27 1.06	UL FM VdS
25 5	133.0 5.250	500 3.45	27 1.06	UL FM
125 5	139.7 5.500	500 3.45	27 1.06	UL FM VdS
125 5	141.3 5.563	500 3.45	27 1.06	UL FM
150 6	159.0 6.250	500 3.45	27 1.06	UL FM
150 6	165.1 6.500	300 2.07	27 1.06	UL FM
150 6	168.3 6.625	300 2.07	24.5 0.97	UL FM VdS
200 8	216.3 8.516	300 2.07	30.2 1.19	UL FM
200 8	219.1 8.625	300 2.07	30.5 1.20	UL FM VdS
250 10	273.0 10.750	300 2.07	32 1.26	UL FM VdS
300 12	323.9 12.750	300 2.07	32 1.26	UL FM VdS

300

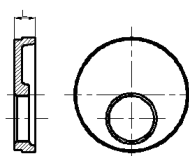
Cap



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
65x 40 2½x 1½	76.1x 48.3 3.000x 1.900	500 3.45	23.5 0.925	UL FM
80X15 3X1½	88.9X21.3 3.500X0.825	500 3.45	25.4 1.00	UL FM
80X25 3X1	88.9X33.7 3.500X1.315	500 3.45	25.4 1.00	UL FM
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	23.5 0.925	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	500 3.45	23.5 0.925	UL FM
100x 15 4x 1/2	114.3x 21.3 4.500x 0.825	500 3.45	27.0 1.06	UL FM
100x 25 4x 1	114.3x 33.7 4.500x 1.315	500 3.45	27.0 1.06	UL FM
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	25.4 1.00	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	500 3.45	25.4 1.00	UL FM
125x 50 5x 2	139.7x 60.3 5.500x 2.375	500 3.45	27 1.06	UL FM
150x 15 6x 1/2	165.1x 21.3 6.500x 0.825	300 2.07	27 1.06	UL FM VdS
150x 25 6x 1	165.1x 33.7 6.500x 1.315	300 2.07	27 1.06	UL FM VdS
150x 40 6x 1½	165.1x 48.3 6.500x 1.900	300 2.07	25.4 1.00	UL FM
150x 50 6x 2	165.1x 60.3 6.500x 2.375	300 2.07	27 1.06	UL FM
150x 50 6x 2	168.3x 60.3 6.625x 2.375	300 2.07	27 1.06	UL FM

300PX

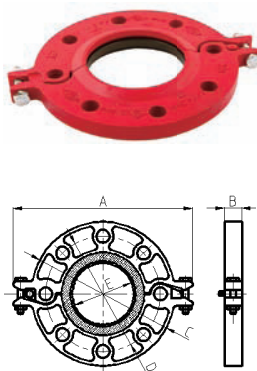
Cap



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions L mm/in	Certificate
80X40 3X1½	88.9X48.3 3.500X1.900	500 3.45	23.5 0.925	UL FM
80x 50 3x 2	88.9x 60.3 3.500x 2.375	500 3.45	23.5 0.925	UL FM
100X40 4X1½	114.3X48.3 4.500X1.900	500 3.45	25.4 1.00	UL FM
100x 50 4x 2	114.3x 60.3 4.500x 2.375	500 3.45	25.4 1.00	UL FM
125x 40 5x 1½	139.7x 48.3 5.500x 1.900	500 3.45	25.4 1.00	UL FM
125x 50 5x 2	139.7x 60.3 5.500x 2.375	500 3.45	25.4 1.00	UL FM
150x 40 6x 1½	165.1x 48.3 6.500x 1.900	500 3.45	25.4 1.00	UL FM
150x 40 6x 1½	168.3x 48.3 6.625x 1.900	500 3.45	25.4 1.00	UL FM
150x 50 6x 2	168.3X60.3 6.625X2.375	500 3.45	25.4 1.00	UL FM
200x 40 8x 1½	219.1x 48.3 8.625x 1.900	500 3.45	30.2 1.19	UL FM
200x 50 8x 2	219.1x 60.3 8.625x 2.375	500 3.45	30.2 1.19	UL FM

321-PN16

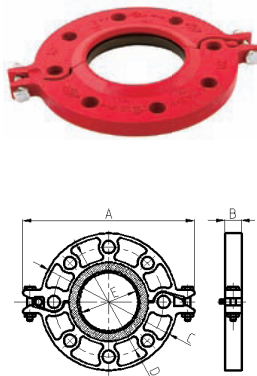
GROOVED FLANGE



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
40 1½	48.3 1.900	225 1.6	195 7.68	24 0.95	150 5.90	110 4.33	45.4 1.78	M10X50-2	4-M16	UL FM
50 2	60.3 2.375	225 1.6	220 8.66	24 0.95	165 6.50	125 4.92	57.5 2.26	M10X50-2	4-M16	UL FM
65 2½	76.1 3.000	225 1.6	235 9.25	24 0.95	185 7.28	145 5.71	72.7 2.86	M10X50-2	4-M16	UL FM
80 3	88.9 3.500	225 1.6	252 9.92	24 0.95	200 7.87	160 6.30	85.5 3.37	M10X50-2	8-M16	UL FM
100 4	108.0 4.250	225 1.6	280 11.02	25.5 1.00	220 8.66	180 7.09	104.5 4.11	M12X55-2	8-M16	UL FM
100 4	114.3 4.500	225 1.6	280 11.02	25.5 1.00	229 9.00	180 7.09	110.5 4.35	M12X55-2	8-M16	UL FM
125 5	133.0 5.250	225 1.6	312 12.28	25.5 1.00	250 9.84	210 8.27	129.2 5.08	M12X65-2	8-M16	UL FM
125 5	139.7 5.500	225 1.6	320 12.60	25.5 1.00	254 10.00	210 8.27	135.5 5.33	M12X65-2	8-M16	UL FM
150 6	159.0 6.25	225 1.6	346 13.62	25.5 1.00	280 11.00	240 9.45	154.8 6.10	M12X65-2	8-M20	UL FM
150 6	165.1 6.500	225 1.6	346 13.62	25.5 1.00	280 11.00	240 9.45	160.8 6.33	M12X65-2	8-M20	UL FM
150 6	168.3 6.625	225 1.6	346 13.62	25.5 1.00	280 11.00	240 9.45	164.3 6.47	M12X65-2	8-M20	UL FM
200 8	219.1 8.625	225 1.6	414.3 16.31	30 1.18	341.4 13.44	295 11.61	214.9 8.46	3/8X70-2	12-M20	UL FM VdS
250 10	273.0 10.750	225 1.6	481.2 18.94	30.3 1.19	405.6 15.97	355 13.98	268.9 10.59	3/8X70-2	12-M24	UL FM VdS
300 12	323.9 12.750	225 1.6	530.5 20.88	30.3 1.19	460 18.11	410 16.14	318.9 12.56	3/8X70-2	12-M24	UL FM

321A-ANSI 125/150

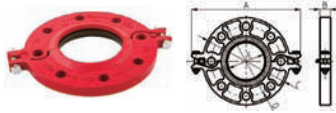
GROOVED FLANGE



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
50 2	60.3 2.375	300 2.07	206 8.11	22 0.86	152 5.98	121 4.76	57.5 2.26	M10X50-2	4-5/8	UL FM
65 2½	73.0 2.875	300 2.07	230 9.05	22 0.86	178 7.00	140 5.51	69.8 2.74	M10X50-2	4-5/8	UL FM
80 3	88.9 3.500	300 2.07	242 9.53	24 0.95	191 7.52	152 5.98	85.5 3.37	M10X50-2	4-5/8	UL FM
100 4	114.3 4.500	300 2.07	280 11.02	24 0.95	229 9.00	191 7.52	110.5 4.35	M12X55-2	8-5/8	UL FM
125 5	141.3 5.563	300 2.07	325 12.79	24.5 0.96	254 10.00	216 8.50	137.4 5.41	M12X65-2	8-3/4	UL FM
150 6	168.3 6.625	300 2.07	346 13.62	25.5 1.00	280 11.00	241.3 9.50	164.3 6.47	M12X65-2	8-3/4	UL FM
200 8	219.1 8.625	300 2.07	414.3 16.31	30 1.18	341.4 13.44	298.5 11.75	214.9 8.46	3/8X70-2	8-3/4	UL FM
250 10	273.0 10.750	300 2.07	481.2 18.94	30.3 1.19	405.6 15.97	361.95 14.25	268.9 10.59	3/8X70-2	12-7/8	UL FM
300 12	323.9 12.750	300 2.07	553.3 21.78	30.4 1.20	482.6 19.00	431.8 17.00	318.9 12.56	3/8X70-2	12-7/8	UL FM

321H-PN25

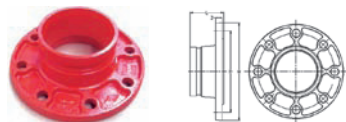
GROOVED FLANGE



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
100 108.0	108.0 4.250	362 2.5	280 11.02	25.5 1.00	220 8.66	180 7.09	104.5 4.11	2-M12X55	8-M16	UL FM
150 165.1	165.1 6.500	362 2.5	346 13.62	25.5 1.00	280 11.00	240 9.45	160.8 6.33	2-M12X65	8-M20	UL FM

321GL-PN10

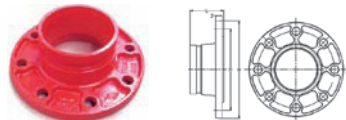
10
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm	Certificate
			L mm/in	X mm	Y mm	Z mm		
200 8	219.1 8.625	145 1.0	80 3.150	340 13.39	295 11.61	19 0.75	8-M20	UL FM
250 10	273.0 10.750	145 1.0	85 3.346	405 15.94	350 13.78	21 0.83	12-M20	UL FM
300 12	323.9 12.750	145 1.0	90 3.543	460 18.11	400 15.75	24 0.94	12-M20	UL FM

321G-PN16

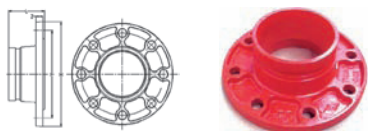
16
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm	Certificate
			L mm/in	X mm	Y mm	Z mm		
25 1	33.7 1.327	225 1.6	60.5 2.382	115 4.53	80 3.15	16 0.63	4-M12	UL FM VdS
32 1¼	42.4 1.669	225 1.6	60.5 2.382	140 5.51	100 3.94	16 0.63	4-M16	UL FM VdS
40 1½	48.3 1.902	225 1.6	60.5 2.382	150 6.91	110 4.33	16 0.63	4-M16	UL FM VdS
50 2	60.3 2.375	225 1.6	65 2.559	165 6.50	125 4.92	16 0.63	4-M16	UL FM VdS
65 2½	76.1 3.000	225 1.6	65 2.559	185 7.28	145 5.70	16 0.63	4-M16	UL FM VdS
80 3	88.9 3.500	225 1.6	65 2.559	200 7.87	160 6.30	16 0.63	8-M16	UL FM VdS
100 108.0	108.0 4.250	225 1.6	70 2.756	220 8.66	180 7.09	16 0.63	8-M16	UL FM
100 4	114.3 4.500	225 1.6	70 2.756	220 8.66	180 7.09	16 0.63	8-M16	UL FM VdS
125 133.0	133 5.250	225 1.6	70 2.756	250 9.84	210 8.27	18 0.71	8-M16	UL FM
125 139.7	139.7 5.500	225 1.6	70 2.756	250 9.84	210 8.27	18 0.71	8-M16	UL FM VdS
150 159.1	159.0 6.250	225 1.6	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM
150 165.1	165.1 6.500	225 1.6	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM
150 6	168.3 6.625	225 1.6	70 2.756	285 11.22	240 9.45	18 0.71	8-M20	UL FM VdS
200 8	219.1 8.625	225 1.6	80 3.150	340 13.39	295 11.61	19 0.75	12-M20	UL FM VdS
250 10	273.0 10.750	225 1.6	85 3.346	405 15.94	355 13.98	21 0.83	12-M24	UL FM VdS
300 12	323.9 12.750	225 1.6	90 3.543	460 18.11	410 16.14	24 0.94	12-M24	UL FM VdS
350 14	377.0 12.843	225 1.6	100 3.937	520 20.47	470 18.50	25 1.00	16-M24	UL FM
400 16	426.0 16.772	225 1.6	110 4.331	580 22.83	525 20.67	27 1.06	16-M27	UL FM

321GH- PN25

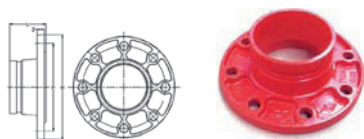
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm	Certificate
			L mm/in	X mm	Y mm	Z mm		
100 108.0	108.0 4.250	362 2.5	70 2.756	230 9.05	190 7.48	18 0.71	8-M20	UL FM
100 4	114.3 4.500	362 2.5	70 2.756	235 9.25	190 7.48	16 0.63	8-M20	UL FM
150 159.0	159.0 6.250	362 2.5	70 2.756	300 11.80	250 9.85	20 0.79	8-M24	UL FM
150 165.1	165.1 6.500	362 2.5	70 2.756	300 11.80	250 9.84	18 0.71	8-M24	UL FM
200 8	219.1 8.625	362 2.5	80 3.150	360 14.17	310 12.20	19 0.75	12-M24	UL FM

321GA - ANSI 125/150

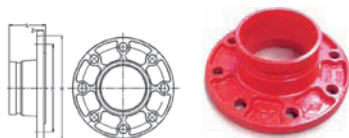
Class 125/150
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm	Certificate
			L mm/in	X mm	Y mm	Z mm		
50 2	60.3 2.375	300 2.07	65 2.559	165 6.50	120.7 4.75	16 0.63	4-5/8	UL FM
65 2½	73.0 2.875	300 2.07	65 2.559	185 7.28	139.7 5.50	16 0.63	4-5/8	UL FM
80 3	88.9 3.500	300 2.07	65 2.559	200 7.87	152.4 6.00	16 0.63	8-5/8	UL FM
100 4	114.3 4.500	300 2.07	70 2.756	229 9.01	190.5 7.50	16 0.63	8-5/8	UL FM
150 6	168.3 6.625	300 2.07	70 2.756	282 11.10	241.3 9.50	18 0.71	8-3/4	UL FM
200 8	219.1 8.625	300 2.07	80 3.150	340 13.39	298.5 11.75	19 0.75	8-3/4	UL FM

321GJ

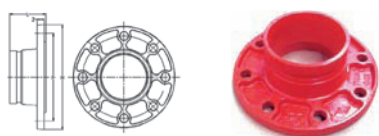
JIS 10K
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm
			L mm/in	X mm	Y mm	Z mm	
65 2½	76.3 3.00	10	65 2.559	175 6.89	140 5.51	18 0.71	4-M16
80 3	89.1 3.50	10	65 2.559	185 7.28	150 5.91	18 0.71	8-M16
100 4	114.3 4.50	10	70 2.756	210 8.27	175 6.89	18 0.71	8-M16
125 5	139.8 5.50	10	70 2.756	250 9.84	210 8.27	20 0.79	8-M20
150 6	165.2 6.50	10	70 2.756	280 11.02	240 9.45	20 0.79	8-M20

321G-BS. TABLE 'E'

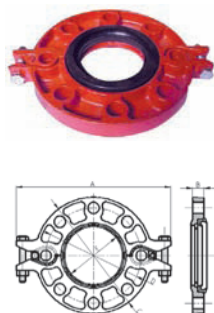
Adaptor Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions				Bolt/Nut No.-Size mm
			L mm/in	X mm	Y mm	Z mm	
65 76.1	76.1 3.000	225 1.6	70 2.756	165 6.50	127 5.00	16 0.63	4-M16
80 3	88.9 3.500	225 1.6	70 2.756	184 7.24	146 5.75	16 0.63	4-M16
100 4	114.3 4.500	225 1.6	70 2.756	216 8.50	178 7.00	16 0.63	8-M16
150 165.1	165.1 6.500	225 1.6	70 2.756	280 11.02	235 9.25	21 0.71	8-M20
200 8	219.1 8.625	225 1.6	102 4.02	337 13.27	292 11.50	19 0.75	12-M20

321S-PN16

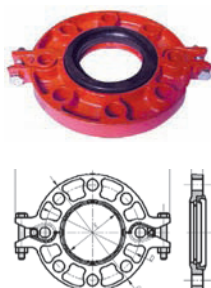
Grooved Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
40 1½	48.3 1.900	225 1.6	195 7.68	19 0.75	150 5.91	110 4.33	45.4 1.78	2-M10X50	4-M16	UL FM VdS
50 2	60.3 2.375	225 1.6	220 8.66	19 0.75	166 6.54	125 4.92	57.5 2.26	2-M10X50	4-M16	UL FM VdS
65 2½	76.1 3.000	225 1.6	235 9.25	19 0.75	185 7.28	145 5.71	72.7 2.86	2-M10X50	4-M16	UL FM VdS
80 3	88.9 3.500	225 1.6	252 9.72	19 0.75	192 7.56	160 6.30	85.5 3.37	2-M10X50	8-M16	UL FM VdS
100 4	108.0 4.250	225 1.6	277 10.91	19 0.75	220 8.66	180 7.09	104.5 4.11	2-M12X55	8-M16	UL FM
100 4	114.3 4.500	225 1.6	277 10.91	19 0.75	224 8.83	180 7.09	110.5 4.35	2-M12X55	8-M16	UL FM VdS
125 5	133.0 5.250	225 1.6	312 12.28	22 0.87	246 9.68	210 8.27	129.2 5.08	2-M12X65	8-M16	UL FM
125 5	139.7 5.500	225 1.6	318 12.52	23 0.87	242 9.84	210 8.27	135.5 5.33	2-M12X65	8-M16	UL FM VdS
150 6	159.0 6.250	225 1.6	346 13.62	22 0.87	280 11.00	240 9.45	160.8 6.33	2-M12X65	8-M20	UL FM
150 6	165.1 6.500	225 1.6	346 13.62	23 0.91	280 11.00	240 9.45	160.8 6.33	2-M12X65	8-M20	UL FM
165 6½	168.3 6.625	225 1.6	346 13.62	23 0.87	285 11.22	240 9.45	164.3 6.47	2-M12X65	8-M20	UL FM VdS

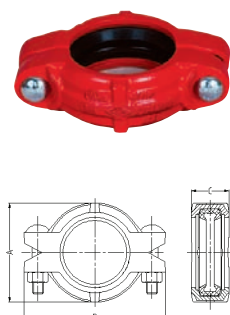
321AS-ANSI 125/150

Grooved Flange



Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions					Bolt/Nut		Certificate
			A mm/in	B mm/in	C mm/in	D mm/in	E mm/in	No.-SIZE mm		
50 2	60.3 2.375	300 2.07	209 8.23	19 0.75	153 6.02	121 4.76	57.5 2.26	2-M10X50	4-5/8	UL FM
65 2½	73.0 2.875	300 2.07	232 9.13	19 0.75	178 7.00	140 5.51	69.8 2.74	2-M10X50	4-5/8	UL FM
80 3	88.9 3.500	300 2.07	246 9.72	19 0.75	192 7.56	152 5.98	85.5 3.37	2-M10X50	4-5/8	UL FM
100 4	114.3 4.500	300 2.07	280 11.02	19 0.75	229 9.00	191 7.52	110.5 4.35	2-M12X55	8-5/8	UL FM
125 5	141.3 5.563	300 2.07	321 12.64	22 0.87	250 9.84	216 8.50	137.4 5.41	2-M12X65	8-3/4	UL FM
150 6	168.3 6.625	300 2.07	346 13.62	22 0.87	285 11.22	241.3 9.50	164.3 6.47	2-M12X65	8-3/4	UL FM

1GK Bevel Coupling



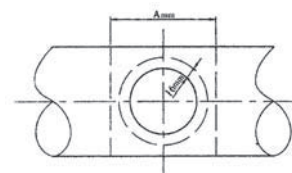
	Nominal Size mm/in	Pipe O.D mm/in	Working Pressure PSI/MPa	Dimensions			Bolt/Nut No.-Size mm
				A mm/in	B mm/in	C mm/in	
1GK	32 1¼	42.4 1.669	300 2.07	65 2.56	99 3.90	46.5 1.83	2-M20X57
1GK	40 1½	48.3 1.900	300 2.07	71.5 2.81	104 4.09	46.5 1.83	2-M20X57
1GK	50 2	60.3 2.375	300 2.07	85 3.35	121 4.76	46.5 1.83	2-M20X57
1GK	65 2½	76.1 3.000	300 2.07	102.5 4.04	137 5.39	47.5 1.87	2-M20X57
1GK	80 3	88.9 3.500	300 2.07	115 4.53	150 5.91	47.5 1.87	2-M20X63
1GK	100 4	114.3 4.500	300 2.07	142 5.59	180 7.09	52 2.05	2-M20X63
1GK	125 5	139.7 5.500	300 2.07	171 6.73	213 8.39	52 2.05	2-M20X76
1GK	150 6	165.1 6.500	300 2.07	197 7.76	244 9.61	52 2.05	2-M20X7
1GK	200 8	219.1 8.65	300 2.07	260 10.24	331 13.03	63 2.50	2-M20X110

GASKET DATA



Gasket	Temperature Range	General Service Recommendations	Color Mark
E	-34~+110 (-30~+230° F)	Recommended for hot water service within the specified temperature range plus a variety of dilute acids,oil-free air and many chemical services.UL classifi ed in accordance with ANSI/NSF 61or cold+86°F (+30°) and hot+180°F (+82) potable water service.Not recommended for petroleum service.	Green Strip
D	-29~+82 (-20~+180° F)	(Recommended for petroleum productsair with oil vapors,vegetable and mineral oils within the specified temperature range.Not recommended for hot water services.)	Orange Strip
S	-40~+177 (-40~+350° F)	(Recommended for high temperature dry air and some high temperature chemical products.)	White

Hole Diameter of pipe



Hole-cutting Machine

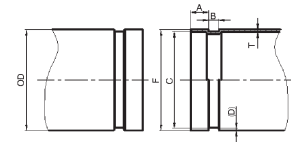
Run Nominal Sine mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in	Run Nominal Size mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in	Run Nominal Size mm/in	Outlet Nominal Size mm/in	Hole Dia. +3.2,0+0.13,0 mm/in		
50 2"/60.3	15 1/2	38 1.50 A89	100 108.0 4"/114.3	15 1/2	38 1.50 A89	150 159.0 165.1 6"/168.3	15 1/2	38 1.50 A89		
	20 3/4			20 3/4			20 3/4			
	25 1			25 1			25 1			
	32 1¼	45 1.75 A102		32 1¼	51 2.00 A102		32 1¼	51 2.00 A102		
	40 1½			40 1½			40 1½			
65 2½" /73.0 76.1	15 1/2	38 1.50 A89		50 2	64 2.50 A114		200 8"/219.1 250 10"/273.0	50 2	64 2.50 A114	
	20 3/4			65 2½/76.1	70 2.75 A120			65 2½/76.1	70 2.75 A120	
	25 1			80 3	89 3.50 A140			80 3	89 3.50 A140	
	32 1¼	51 2.00 A102		100 108.0/4	114 4.50 A165					
	40 1½			25 1	38 1.50 A89					
80 3"/88.9	15 1/2	38 1.50 A89	125 133.0 139.7 5"/141.3	32 1¼	51 2.00 A102	200 8"/219.1 250 10"/273.0		32 1¼	51 2.00 A102	
	20 3/4			40 1½				40 1½		
	25 1			50 2	64 2.50 A114			40 1½		
	32 1¼	65 2½/76.1		70 2.75 A120	50 2		64 2.50 A114			
	40 1½	80 3		89 3.50 A140	65 2½/76.1		70 2.75 A120	70 2.75 A120		
	50 2				64 2.50 A114		80 3	89 3.50 A140		
							100 108.0/4	114 4.50 A165		

The outside surface of the pie within 16mm from the hole must be clean and smooth.

Roll Groove Dimensions



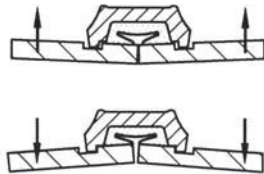
Roll Grooving Machine



Nominal Size mm/in	Pipe OD			Gasket seat A $\pm 0.76/\pm 0.03$ mm/in	Groove Width B $\pm 0.76/\pm 0.03$ mm/in	Groove Dia C		Groove Depth D(ref) mm/in	Max Allow Flare Dia F mm/in	Min. Allow wall thickness T mm/in
	Basic mm/in	Tolerance mm/in				Basic mm/in	Tolerance mm/in			
25	33.7	+0.41	-0.68	15.88	7.14	30.23	-0.38	1.60	34.5	1.8
1	1.327	+0.016	-0.026	0.625	0.281	1.190	-0.015	0.063	1.358	0.071
32	42.4	+0.50	-0.60	15.88	7.14	38.99	-0.38	1.60	43.3	1.8
1 1/4	1.669	+0.020	-0.023	0.625	0.281	1.535	-0.015	0.063	1.705	0.071
40	48.3	+0.44	-0.52	15.88	7.14	45.09	-0.38	1.60	49.4	1.8
1 1/2	1.900	+0.017	-0.020	0.625	0.281	1.779	-0.015	0.063	1.945	0.071
50	60.3	+0.61	-0.61	15.88	8.74	57.15	-0.38	1.60	62.2	1.8
2	2.375	+0.024	-0.024	0.625	0.344	2.250	-0.015	0.063	2.449	0.071
65	73.0	+0.74	-0.74	15.88	8.74	69.09	-0.46	1.98	75.2	2.3
2 1/2	2.875	+0.029	-0.029	0.625	0.344	2.720	-0.018	0.078	2.961	0.091
65	76.1	+0.76	-0.76	15.88	8.74	72.26	-0.46	1.99	77.7	2.3
2 1/2	3.000	+0.030	-0.030	0.625	0.344	2.845	-0.018	0.078	3.059	0.091
80	88.9	+0.89	-0.79	15.88	8.74	84.94	-0.46	1.98	90.6	2.3
3	3.500	+0.035	-0.031	0.625	0.344	3.344	-0.018	0.078	3.567	0.091
100	108.0	+1.07	-0.79	15.88	8.74	103.73	-0.51	2.11	109.7	2.3
4	4.250	+0.042	-0.031	0.625	0.344	4.084	-0.020	0.083	4.319	0.091
100	114.3	+1.14	-0.79	15.88	8.74	110.08	-0.51	2.11	116.2	2.3
4	4.500	+0.045	-0.031	0.625	0.344	4.334	-0.020	0.083	4.575	0.091
125	133.0	+1.32	-0.79	15.88	8.74	129.13	-0.51	2.11	134.9	2.9
5	5.250	+0.052	-0.031	0.625	0.344	5.084	-0.020	0.083	5.311	0.114
125	139.7	+1.40	-0.79	15.88	8.74	135.48	-0.51	2.11	141.7	2.9
5	5.500	+0.055	-0.031	0.625	0.344	5.334	-0.020	0.083	5.579	0.114
125	141.3	+1.42	-0.79	15.88	8.74	137.03	-0.56	2.13	143.5	2.9
5	5.563	+0.056	-0.031	0.625	0.344	5.395	-0.022	0.084	5.650	0.114
150	159.0	+1.60	-0.79	15.88	8.74	154.50	-0.56	2.16	161.0	2.9
6	6.250	+0.063	-0.031	0.625	0.344	6.083	-0.022	0.085	6.339	0.114
150	165.1	+1.60	-0.79	15.88	8.74	160.8	-0.56	2.16	167.1	2.9
6	6.500	+0.063	-0.031	0.625	0.344	6.330	-0.022	0.085	6.579	0.114
150	168.3	+1.60	-0.79	15.88	8.74	163.96	-0.56	2.16	170.7	2.9
6	6.625	+0.063	-0.031	0.625	0.344	6.455	-0.022	0.085	6.720	0.114
200A	216.3	+1.60	-0.79	19.05	11.91	211.60	-0.64	2.35	219.8	2.9
8	8.516	+0.063	-0.031	0.750	0.469	8.331	-0.025	0.093	8.653	0.114
200	219.1	+1.60	-0.79	19.05	11.91	214.40	-0.64	2.34	221.5	2.9
8	8.625	+0.063	-0.031	0.750	0.469	8.441	-0.025	0.092	8.720	0.114
250A	267.4	+1.60	-0.79	19.05	11.91	262.60	-0.69	2.40	270.9	3.6
10	10.528	+0.063	-0.031	0.750	0.469	10.339	-0.027	0.095	10.665	0.142
250	273.0	+1.60	-0.79	19.05	11.91	268.28	-0.69	2.39	275.4	3.6
10	10.750	+0.063	-0.031	0.750	0.469	10.562	-0.027	0.094	10.842	0.142
300A	318.5	+1.60	-0.79	19.05	11.91	312.90	-0.76	2.77	322.0	4.0
12	12.539	+0.063	-0.031	0.750	0.469	12.319	-0.030	0.109	12.677	0.158
300	323.9	+1.60	-0.79	19.05	11.91	318.29	-0.76	2.77	326.2	4.0
12	12.750	+0.063	-0.031	0.750	0.469	12.531	-0.030	0.109	12.842	0.158
350	377.0	+1.60	-0.79	23.83	11.91	371.44	-0.76	2.77	379.5	4.5
14	14.842	+0.063	-0.031	0.938	0.469	14.623	-0.030	0.109	14.941	0.177
400	426.0	+1.60	-0.79	23.83	11.91	420.46	-0.76	2.77	428.5	4.5
16	16.772	+0.063	-0.031	0.938	0.469	16.553	-0.030	0.109	16.870	0.177
500	529.0	+1.60	-0.79	25.40	11.91	523.46	-0.76	2.77	533.0	5.0
20	20.827	+0.063	-0.031	1.000	0.469	20.608	-0.030	0.109	20.984	0.197

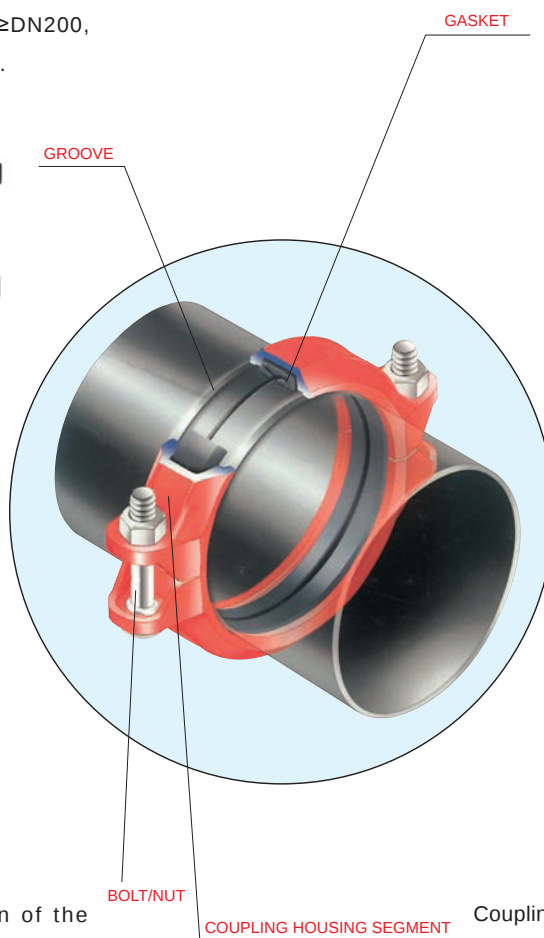
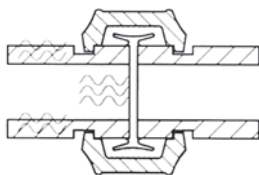
Flexible Coupling :

A flexible coupling accommodates pipe deflection and or non-alignment as below: If nominal diameter $< \text{DN}200$, deflection angle is $\geq 1^\circ$; If nominal diameter $\geq \text{DN}200$, deflection angle is $\geq 0.5^\circ$ but $< 1^\circ$.

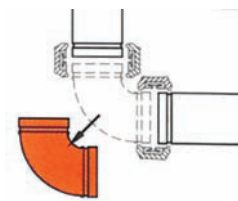


The C-shaped rubber gasket provides excellent self-sealing capabilities in both low and high pressure service as well as under certain vacuum conditions.

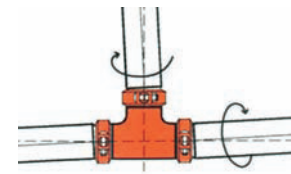
The design and construction of the coupling with elastomeric gaskets can provide significant noise and vibration absorption as well as seismic stress.



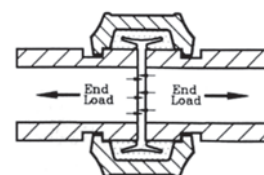
With the removal of just a few bolts you can easily access the system for cleaning, maintenance, changes or system expansion.



Coupling are non-directive and pipe can be rotated 360° during installation.



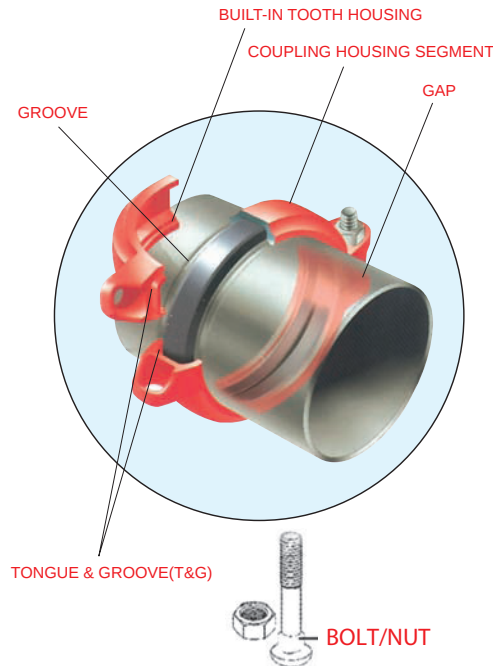
Coupling keys engage the full circumference of the grooves and provide significant pressure and end load restraint against pipe movement from internal and external forces.



Rigid Coupling :

The T&G mechanism in combination with a slightly shortened key diameter provides a mechanical and frictional interlock resulting in a rigid joint which reduces undesired angular movement.

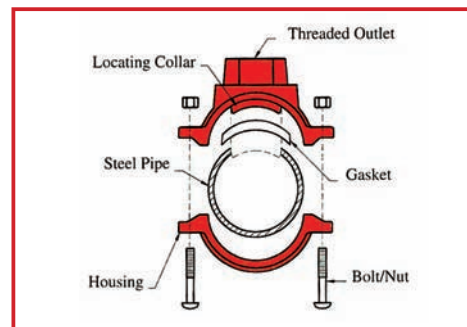
The built-in teeth on the coupling grip the groove shoulder and serve to reduce linear movement.



The T&G mechanism features a slight offset at the foot of the coupling halves which serve to protect the gasket from exposure.

With the T&G style coupling no metal-to-metal contact of the bolt pads is required. You will normally see a 1/16" - 1/8" (1.6mm to 3.2mm) gap between the bolt pads when installed.

The Mechanical Tee (3J, 3G, 3L) provide for a fast and easy grooved or threaded branch outlet and eliminate the need for welding or the use of a reducing tee and couplings. Simply cut a hole to the specified size at the expected location and fasten the mechanical tee to the pipe with the nuts and bolts provided. As the housing bolts are tightened, the pressure responsive gasket forms a leak-tight seal.



Pressure Ratings and End Loads for Mech Couplings on Steel Pipe



1G Rigid



1GS L/Duty Rigid



1NR Reducing

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1G		1GS		1NR	
				Roll Grooved		Roll Grooved		Roll Grooved	
				Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load
DN/in	mm	(Sch)	mm	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs
25	33.7	40	3.38	35/500	3.0/680			20/300	1.8/410
		10	2.77	35/500	3.0/680			20/300	1.8/410
32	42.4	40	3.56	35/500	4.8/1080			20/300	2.9/650
		10	2.77	35/500	4.8/1080			20/300	2.9/650
40	48.3	40	3.68	35/500	6.3/1420			20/300	3.8/850
		10	2.77	35/500	6.3/1420			20/300	3.8/850
50	60.3	40	3.91	35/500	9.8/2210			20/300	5.9/1330
		10	2.77	35/500	9.8/2210			20/300	5.9/1330
65	73	40	5.16	35/500	14.4/3240			20/300	8.7/1950
		10	3.05	35/500	14.4/3240			20/300	8.7/1950
65	76.1	--	6.35						
		--	5.08	35/500	15.7/3530	20/300	9.4/2120	20/300	9.4/2120
		--	3.81	35/500	15.7/3530	20/300	9.4/2120	20/300	9.4/2120
80	88.9	40	5.49	35/500	21.4/4800	20/300	12.8/2885	20/300	12.8/2885
		10	3.05	35/500	21.4/4800	20/300	12.8/2885	20/300	12.8/2885
100	114.3	40	6.02	35/500	35.4/7950	20/300	21.2/4770	20/300	21.2/4770
		10	3.05	35/500	35.4/7950	20/300	21.2/4770	20/300	21.2/4770
125	141.3	40	6.55	31/450	48.6/10930	20/300	32.4/7290	20/300	32.4/7290
		10	3.4	31/450	48.6/10930	20/300	32.4/7290	20/300	32.4/7290
150	165.1	--	6.35	31/450	66.4/14930	20/300	44.3/9960	20/300	44.3/9960
		--	5.08	31/450	66.4/14930	20/300	44.3/9960	20/300	44.3/9960
150	168.3	40	7.11	31/450	68.9/15500	20/300	46.0/10340	20/300	46.0/10340
		10	3.4	31/450	68.9/15500	20/300	46.0/10340	20/300	46.0/10340
200	219.1	40	8.18	31/450	116.9/26280	20/300	77.8/17500		
		30	7.04	31/450	116.9/26280	20/300	77.8/17500		
		10	4.77	20/300	77.8/17500	20/300	77.8/17500		
250	273	40	9.27	20/300	121.0/27210				
		30	7.8	20/300	121.0/27210				
		10	4.77	20/300	121.0/27210				
300	323.9	40	10.31	20/300	170.3/38280				
		STD	9.53	20/300	170.3/38280				
		30	6.35	20/300	170.3/38280				
		10	4.77	20/300	170.3/38280				



1N Flexible



1NH Heavy Duty Flexible



321 Flange Adaptor

Nom. Size	Pipe O.D	Pipe Sched	Wall Thick.	1N		1NH		321	
				Roll Grooved		Roll Grooved		Roll Grooved	
				Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load	Max.Work Press.	Max.End Load
DN/in	mm	(Sch)	mm	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs	Bar/Psi	kN/Lbs
25	33.7	40	3.38	35/500	3.0/680				
		10	2.77	35/500	3.0/680				
32	42.4	40	3.56	35/500	4.8/1080				
		10	2.77	35/500	4.8/1080				
40	48.3	40	3.56	35/500	6.3/1420			16/225	3.2/710
		10	2.77	35/500	6.3/1420			16/225	3.2/710
50	60.3	40	3.91	35/500	9.8/2210	52/750	14.8/3320	16/225	4.4/1000
		10	2.77	35/500	9.8/2210	52/750	14.8/3320	16/225	4.4/1000
65	73	40	5.16	35/500	14.4/3240	52/750	21.7/4870	20/300	5.9/1330
		10	3.05	35/500	14.4/3240	41/600	17.3/3900	20/300	5.9/1330
65	76.1	--	6.35						
		--	5.08	35/500	15.7/3530	52/750	23.6/5300	16/225	7.1/1590
		--	3.81	35/500	15.7/3530	41/600	18.9/4240	16/225	7.1/1590
80	88.9	40	5.49	35/500	21.4/4800	52/750	32.1/7210	16/225	9.6/2165
		10	3.05	35/500	21.4/4800	41/600	25.6/5760	16/225	9.6/2165
100	114.3	40	6.02	35/500	35.4/7950	52/750	53.0/11920	16/225	15.9/3580
		10	3.05	35/500	35.4/7950	41/600	42.4/9540	16/225	15.9/3580
125	141.3	40	6.55	31/450	48.6/10930	48/700	75.7/17010	20/300	31.3/7035
		10	3.4	31/450	48.6/10930	31/450	48.6/10930	20/300	31.3/7035
150	165.1	--	6.35	31/450	66.4/14930	48/700	102.7/23090	16/225	33.2/7460
		--	5.08	31/450	66.4/14930	31/450	66.4/14930	16/225	33.2/7460
150	168.3	40	7.11	31/450	68.9/15500	48/700	107.3/24120	16/225	34.5/7750
		10	3.4	31/450	68.9/15500	31/450	68.9/15500	16/225	34.5/7750
200	219.1	40	8.18	31/450	116.9/26280	41/600	155.7/35000	16/225	58.4/13140
		30	7.04	31/450	116.9/26280	41/600	155.7/35000	16/225	58.4/13140
		10	3.76	20/300	77.8/17500	20/300	77.8/17500	16/225	58.4/13140
250	273	40	9.27	20/300	121.0/27210			16/225	90.8/20410
		30	6.35	20/300	121.0/27210			16/225	90.8/20410
		10	4.19	20/300	121.0/27210			16/225	90.8/20410
300	323.9	40	10.31	20/300	170.3/38280			16/225	127.7/28710
		STD	9.53	20/300	170.3/38280			16/225	127.7/28710
		20	6.35	20/300	170.3/38280			16/225	127.7/28710
		10	4.57	20/300	170.3/38280			16/225	127.7/28710

Installation Instruction For Rigid & Flexible Coupling



Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.



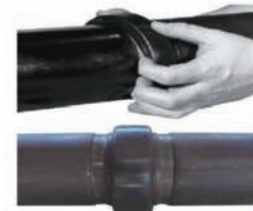
Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.



Gasket installation

Slip the gasket over one pipe, making sure the gasket lip does not over-hang the pipe end.



Alignment

After aligning two pipe ends together, pull the gasket into position, centering between the grooves on each pipe. The gasket should not extend into the groove on either pipe.



Housing installation

Remove one bolt & nut and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes. Re-insert the bolt and connect two housings.



Tighten nuts

Firstly hand tighten nuts and make sure oval neck bolt completely fits into bolt hole. Then securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.



Assembly completed
Rigid Coupling

For Rigid Coupling, keep the gaps at bolt pads evenly spaced. Gaskets can't be seen visually.



Assembly completed
Flexible Coupling

For Flexible Coupling, two housings should be iron to iron connected. Gaskets can't be seen visually.

Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

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

Installation Instruction For Threaded & Grooved Mechanical Tee



Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.



Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.



Gasket installation

Insert the gasket into outlet housing making sure the tab in the gasket line up with the tab recesses in the housing. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



Alignment

Align the strap around the pipe, insert the bolts and tighten the nuts finger tight.



Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.



Assembly completed

There should be even gaps on two sides between upper and lower housings.

Caution

Proper torquing of bolts is required to obtain specified performance. - Over torquing the bolts may result in damage to the bolt and/ or casting which could result in pipe joint separation. - Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N.m
3/8	30-45	40-60
1/2	80-100	110-135
5/8	100-130	135-175
3/4	-	-
7/8	-	-

Installation Instruction For U-Bolt Mechanical Tee



Pipe preparation

Clean the gasket sealing surface within 16mm of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Don't drill the hole on weld line.



Remove burrs

If any burrs or slug exists at the pipe hole, please remove them before assembly, to protect the gasket and avoid leakage.



Gasket installation

Insert the gasket into outlet housing properly. Align outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



Alignment

Attach the U-bolt from the other side and tighten the nuts finger tight.



Tighten nuts

Alternatively and evenly tighten the nuts to the specified bolt torque.



Assembly completed

Assembly completed.

Caution

Proper torquing of bolts is required to obtain specified performance.

- Over torquing the bolts may result in damage to the bolt and / or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

ANSI BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N·m
3/8	30-45	40-60
1/2	80-100	110-135
5/8	100-130	135-175
3/4	-	-
7/8	-	-

Installation Instruction For Grooved Flange



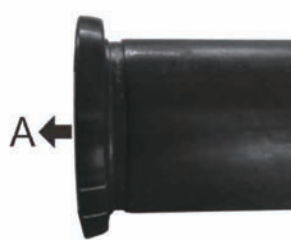
Pipe preparation

Check pipe end for proper groove dimensions and to assure that pipe end is free of indentations and projections that would prevent proper sealing.



Lubricate gasket

Check gasket to be sure it's compatible for the intended service. Apply thin lubricant to the outside and sealing lips of the gasket.



Gasket installation

Slip the gasket over pipe end, with the gasket opening side towards "A". Make sure the gasket sealing lip is even with pipe end.



Housing installation

Remove bolts and nuts, place two housings over the gasket, making sure the housing keys fit into the pipe grooves. Re-insert the bolts and hand tighten the nuts.



Tighten nuts

Securely tighten nuts alternatively and equally to the specified bolt torque by using spanner.



Connect mating flange

Align flange bolt holes with mating flange (or valve) bolt holes. Insert a standard flange bolt through bolt hole and hand tighten a nut. Insert another bolt opposite the first and hand tighten a nut. Continue this until all bolt holes are fitted. Tighten nuts evenly to specified bolt torque, so flange faces remain parallel. Assembly completed.

Caution

Proper torquing of bolts is required to obtain specified performance.

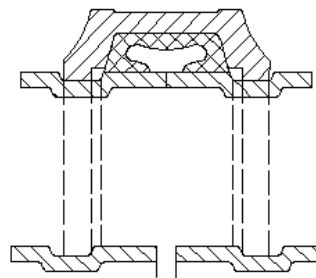
- Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.
- Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

Specified Bolt Torque

METRIC BOLTS		
Bolt Size	Specified Bolt Torque	
Inch	Lbs-Ft.	N·m
M10	30-45	40-60
M12	80-100	110-135
M16	-	-
M20	-	-
M22	-	-
M24	-	-

Movement

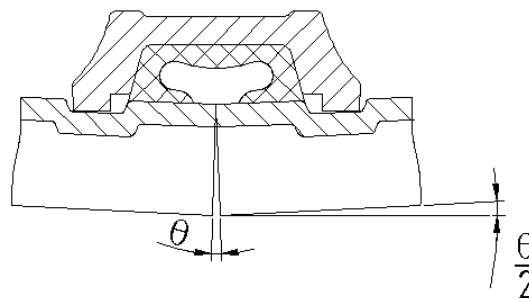
Each flexible design coupling can provide for pipe system movement up to the design maximum for the specific size and type coupling being utilized. Movement is possible in the coupling due to two factors: (1) designed-in clearance between the key of the coupling and the groove diameter and groove width, and (2) the gap between pipe ends joined by the coupling.



Linear Movement

Linear movement is accommodated within the coupling by allowing the pipe ends to move together or apart in response to pressure thrusts and temperature changes. The available linear movement provided by couplings is shown below:

size	1-1¼ 25-32MM	1½-12 40-300MM
movement	0-4.0MM	0-6.4MM



Angular Movement

Designed-in clearances allow limited deflection of the pipe joint within the coupling, without introducing eccentric loads into the coupling joint.

The maximum available angular movement of coupling joints is shown in the performance data for each coupling type. The amount of angular flexibility varies for each coupling size and type. For design purposes the published figures should be reduced by the below listed factors to account for pipe, groove and coupling tolerances.

size	1-3 (IN)	4-12 (IN)
Design factor	Reduce to 50%	Reduce to 75%

Riser Design:

Risers assembled with Flexible couplings are generally installed in either of two ways. In the most common method, the pipe ends are butted together within the coupling joint. Note that when installing risers, the gasket is first placed onto the lower pipe and rolled back away from the pipe end prior to positioning the upper pipe. Anchoring of the riser may be done prior to pressurization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

An alternative method of riser installation is to place a metal spacer of a predetermined thickness, between the pipe ends when an additional length of pipe is added to the riser stack. The upper pipe length is anchored, the spacer removed and the coupling is then installed. This method creates a predetermined gap at each pipe joint which can be utilized in pipe systems where thermal movement is anticipated and in systems with rigid (threaded, welded, flanged) branch connections where shear forces due to pressure thrust could damage the rigid connections.

The following examples illustrate methods of installing commonly encountered riser designs.

Risers without Branch Connections

Install the riser with the pipe ends butted.

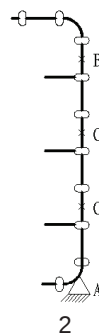
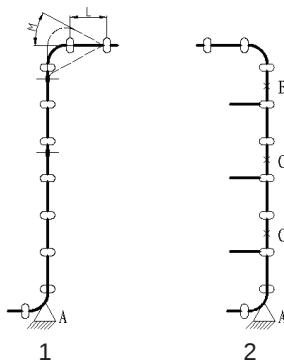
Locate an anchor at the base of the riser (A) to support. When this system is pressurized, the pipe movement due to pressure thrust will be strained and there will be no shear forces acting at the branch connections.

the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to pre-vent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required.

When the system is pressurized the pipe stack will "grow" due to pressure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predetermined (see Linear Movement). In this example the pipe length "L" at the top of the riser must be long enough to permit sufficient deflection (see Angular Movement) to accommodate the total movement "M" from both pressure thrust and thermal gradients.

Risers with Branch Connections

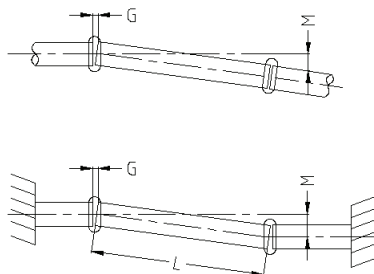
Install the riser with the predetermined gap method. Anchor the pipe at or near the base with a pressure thrust anchor "A" capable of supporting the full pressure thrust, weight of pipe and the fluid column. Anchor at "B" with an anchor capable of withstanding full pressure thrust at the top of the riser plus weight of pipe column. Place intermediate anchors "C" as shown, between anchors "A" and "B". Also place intermediate clamps at every other pipe length as a minimum.



Misalignment & Deflections:

The angular movement capability of the flexible coupling permits the assembly of pipe joints where the piping is not properly aligned. At least two couplings are required to provide for lateral pipe misalignment. Deflection (longitudinal misalignment) may be accommodated within a single coupling as long as the angle of deflection does not exceed the value shown in the coupling performance data for the particular size and coupling type.

A pipe joint that utilizes the angular deflection capability of the coupling will react to pressure and thermal forces dependent upon the manner in which it is restrained. An unrestrained joint will react to these forces by straightening, thus reducing, if not eliminating, the deflection at the joint. If joint deflection has been designed into the pipe layout and must be maintained, then sufficient anchors must be provided to resist the lateral forces and hold the joint in the deflected condition.



The amount of deflection from pipe run centerline can

be calculated utilizing the following equations:

$$M = L \sin \theta$$

$$\theta = \sin^{-1} (G \div D)$$

$$M = (G \div D) \times L$$

Where:

M = Misalignment (inches)

G = Maximum Allowable Pipe End Movement (Inches) as shown under "Performance Data" (Value to be reduced by Design Factor)

θ = Maximum Deflection (Degrees) from centerline as shown under "Performance Data" (Value to be reduced by Design Factor)

D = Pipe Outside Diameter (Inches)

L = Pipe Length (Inches)

Curve Layout:

Utilizing the angular deflection at each coupling joint curves may be laid out using straight pipe lengths and Couplings.

This example shows how to calculate the curve radius, required pipe lengths, and number of required couplings.

$$R = L / (2 \times \sin(\theta / 2))$$

$$L = 2 \times R \times \sin(\theta / 2)$$

$$N = T / \theta$$

WHERE:

N = Number of Couplings

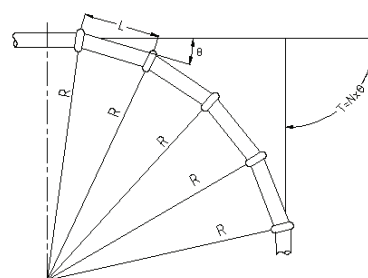
R = Radius of Curve (feet)

L = Pipe Length (feet)

θ = Deflection from centerline (Degrees) of each Coupling

(See coupling performance data, value to be reduced by Design Factor)

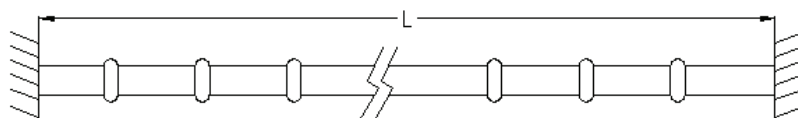
T = Total Angular Deflection of all Couplings.



Movement -Application

Thermal stress

Thermal stress is caused by changes in temperature, resulting in either expansion or contraction. When designing a system you must allow for this thermal movement. To determine the appropriate number of flexible couplings to allow for this thermal movement please refer to the following.



Example:

- 4" straight steel pipe, 30m long
- Anchored on both ends
- Minimum temperature (during installation) = 5
- Maximum working temperature = 55

From the thermal expansion table, we know the overall pipeline length will increase by 18mm (0.71"). You can also use Formula 1 or Table 3 to find the amount of thermal expansion. We want to know the number of couplings that are required to address this thermal movement problem.

The allowed movement of a 4" flexible coupling is :

Movement range x Adjustment = Allowed movement

$$4.3\text{mm} \times 75\% = 3.2\text{mm}$$

The appropriate number of coupling is:

Thermal expansion / Allowed movement = Number of couplings

$$18\text{mm} / 3.2\text{mm} = 5.6$$

Conclusion:

The appropriate number of coupling is 6.

Thermal Expansion

Temperature difference	Pipe length (m)					
	1	5	10	20	30	40
	Thermal Expansion mm)					
1	0.012	0.06	0.12	0.24	0.36	0.48
5	0.06	0.3	0.6	1.2	1.8	2.4
10	0.12	0.6	1.2	2.4	3.6	4.8
20	0.24	1.2	2.4	4.8	7.2	9.6
30	0.36	1.8	3.6	7.2	11	15
40	0.48	2.4	4.8	9.6	14	20
50	0.6	3	6	12	18	24
60	0.72	3.6	7.2	14	22	29
70	0.84	4.2	8.4	17	25	34
80	0.96	4.8	9.6	19	29	39

Thermal Expansion Formula 1

$$\lambda = \alpha \times L \times T$$

λ Thermal Expansion

α Linear Expansion
coefficient for steel

L Pipe length

T Temperature difference

Anchoring and Supports

When designing the hangers, supports and anchors for a grooved end pipe system, the piping designer must consider certain unique characteristics of the grooved type coupling in addition to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

- 1) the weight of the pipe, couplings, fluid and pipe system components;
- 2) reduce stresses at pipe joints; and
- 3) permit required pipe system movement to relieve stress.

The following chart shows the maximum span between pipe hangers, supports and anchors.

Max. Span between Supports (steel pipe)

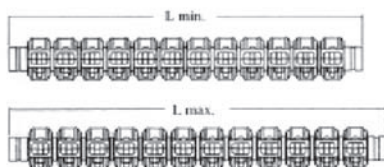
Nominal Size (mm)		15	20	25	32	40	50	70	80	100	125	150	200	250	300
Max. Span Between Supports (mm)	Insulating Pipe	2	2.5	2.5	2.5	3	3	4	4	4.5	6	7	7	8	8.5
	Non-insulating Pipe	2.5	3	3.5	4	4.5	5	6	6	6.5	7	8	9.5	11	12

Flexible Couplings: Linear Movement and Angular Movement

Dimensions		Linear Movemen	Angular Movement	
Nominal Size	Pipe O.D.			
mm/in	mm/in	mm/in	(°)	mm/in in/ft
25 1	33.7 1.315	2.0 0.0787	2° -45	48 0.58
32 1¼	42.4 1.660	2.0 0.0787	2° -10	38 0.45
40 1½	48.3 1.900	3.2 0.125	1° -54	33 0.40
50 2	60.3 2.375	3.2 0.125	1° -31	26 0.32
65 2½	73.0 2.875	3.2 0.125	1° -27	25 0.30
65 2½	76.1 3.000	3.2 0.125	1° -12	21 0.25
80 3	88.9 3.500	3.2 0.125	1° -02	18 0.22
100 4	108.0 4.250	3.2 0.125	1° -51	32 0.39
100 4	114.3 4.500	3.2 0.125	1° -36	28 0.34

Dimensions		Linear Movemen	Angular Movement	
Nominal Size	Pipe O.D.			
mm/in	mm/in	mm/in	(°)	mm/in in/ft
125 5	133.0 5.250	3.2 0.125	1° -41	30 0.36
125 5	139.7 5.500	3.2 0.125	1° -19	23 0.28
125 5	141.3 5.563	3.2 0.125	1° -03	18 0.22
150 6	159.0 6.250	3.2 0.125	1° -18	23 0.27
150 6	165.1 6.500	3.2 0.125	1° -05	20 0.24
150 6	168.3 6.625	3.2 0.125	1° -05	19 0.23
200 8	219.1 8.625	3.2 0.125	0° -50	15 0.17
250 10	273 10.750	3.2 0.125	0° -40	12 0.14
300 12	323.9 12.750	3.2 0.125	0° -34	10 0.12

Movement capability of couplings-expansion and contraction joints



Nominal Size	Pipe O.D. mm	Maximum Allowable Movement m	L min. mm	L max. mm	Number of Couplings	Filled With Water Pressure
1	33.7	45	617	662	10	300
1¼	42.4	45	617	662	10	300
1½	48.3	45	617	662	10	300
2	60.3	45	617	662	10	300
2½	73.0	45	617	662	10	300
76.1	76.1	45	617	662	10	300
3	88.9	45	617	662	10	300
4	114.3	47	503	550	7	300
139.7	139.7	47	503	550	7	300
5	141.3	47	503	550	7	300
165.1	165.1	52	503	550	7	300
6	168.3	52	591	643	7	300
8	219.1	52	591	643	7	300
10	273.0	52	591	643	7	300
12	323.9	52	591	643	7	300

Engineering Test

No.	Test Type	Description
1	Vacuum Test	Grooved couplings, grooved reducing couplings, grooved split flanges, mechanical tees, and plain end couplings shall be able to withstand the effects of vacuum conditions encountered when sprinkler systems are drained. Samples of each nominal size and style of gasketed coupling and fitting shall be subjected to an internal vacuum of 25 inHg (85 kPa) for a duration of 5 minutes. Following the vacuum test, the test assembly shall be pneumatically pressurized from zero to 50 psi (345 kPa) while submerged in a water bath. There shall be no leakage or permanent deformation as a result of this test.
2	Hydrostatic Strength Test	All items shall be able to withstand an internal hydrostatic pressure equal to three-five times the rated working pressure without cracking, rupture, or permanent distortion. The test shall be conducted for a duration of 1 minute. (Test Size ≤6 Five time 8"-10" 4 time ≥12" 3 times)

No.	Test Type	Description
3	Air Leakage Test	The coupling assembly shall be pressurised with air to 3 bar +0.5/-0 bar. The assembly shall be immersed in water to establish that there is no visible leakage
4	Moment Test	The moment resistance shall be demonstrated while the test assembly is internally pressurized to the rated working pressure. Then a force was applied to the test assembly. There shall be no leakage, cracking, or fitting or coupling pull-off as a result of this test.
5	Hot Gasket Test	Standard gaskets shall be assembled to short lengths of pipe, and subjected to 275°F (135°C) for a duration of 45 days. After exposure, the test assembly shall be submerged in a water bath and subjected to an air under water leakage test from zero to 50 psi (0 to 345 kPa) in order to evaluate for leakage. After the air under water testing is completed, the test assembly shall be disassembled and the gasket shall not crack when squeezed together from any twodiametrically opposite points, or twisted into a figure-eight shape. The gasket shall then be visually inspected for signs of cracking, tearing, or excessive degradation as a result of this test.
6	Cold Gasket Test	Standard gaskets shall be assembled to short lengths of pipe, and subjected to 275°F (135°C) for a duration of 45 days. After exposure, the test assembly shall be submerged in a water bath and subjected to an air under water leakage test from zero to 50 psi (0 to 345 kPa) in order to evaluate for leakage. After the air under water testing is completed, the test assembly shall be disassembled and the gasket shall not crack when squeezed together from any twodiametrically opposite points, or twisted into a figure-eight shape. The gasket shall then be visually inspected for signs of cracking, tearing, or excessive degradation as a result of this test.
7	Flame test	The test shall be conducted in a room free from air draught. The test joint is mounted, U-bent on the test apparatus and filled with water. The angle corresponds to the angle documented as a result of the test Subsequently the test joint is drained. The fuel pan is placed centrally below the pipe joint Fuel is filled into the pan and the fuel is ignited Burning time 5 min for nominal diameters < DN 100; 8 min for nominal diameters ≥ DN 100 For reducer couplings the dimension of the smaller nominal diameter shall apply for the determination of the burning time. The flame shall be extinguished immediately once the burning time has expired (5 min or 8 min) and the test joint shall be cooled down. For cooling the test joint is immediately sprayed with water until steam formation is no longer visible, but at least for 3 min. The test joint is then filled completely with water and exposed to a test pressure which corresponds to the maximum permissible pressure and is checked visibly for leaks. Water may leak in form of drops, however, not in form of flowing water or a water spray. The test joint is then pressure relieved (force and internal pressure).
8	Cycling Pressure Resistance Water Hammer Test	Prior to the cycling, assemblies shall be subjected to a hydrostatic strength test to the rated working pressure, 175 psi (1205 kPa) minimum, for a duration of 5 minutes. Without leakage or cracking. Assemblies shall then be subjected to 20,000 cycles from zero pressure to the rated working pressure, 175 psi (1205 kPa) minimum. After cycling, the test assembly shall be tested Hydrostatic Strength and maintain 5minutes without leakage and cracking.
9	Friction Loss Determination	The construction and installation of the coupling or fitting shall be such that obstruction to the passage of water through the coupling or fitting body is minimal. The loss in pressure through the coupling or fitting shall not exceed 5.0 psi (35 kPa) at a flow producing a velocity of 20 ft/s (6.1 m/s) in Schedule 40 steel pipe of the same nominal diameter as the coupling or fitting.

No.	Test Type	Description
10	Leakage Test - Assembly without Gasket	Leakage from a gasket-less coupling assembly or fitting shall not exceed that of an operating sprinkler head whose discharge coefficient (K-factor) is 5.3 to 5.8 gal/min(psi) ^{1/2} [76 - 84 L/min/(bar) ^{1/2}]. This test is for nominal pipe sizes normally associated with over-head piping, less than or equal to 12 in. NPS (300 mm).
11	Torsion test	This test relates to pipe joints ≤ DN 40 only. The test joint is filled with water and exposed once to the maximum permissible pressure and is then pressure relieved again. Subsequently the test joint is fixed on one pipe end and an increasing torque is applied to the other pipe end. At the pressure-less test joint the pipe joint shall be able to transmit a torque of up to 80 Nm from one pipe end to the other pipe end without any torsion of the pipe ends against each other.
12	Flexibility Test for Flexible Fittings	With the assembly pressurized to its rated pressure, a bending moment is to be applied to deflect the joint to the maximum angle specified by the manufacturer, while not less than 1 degree for nominal pipe diameters less than 8 inches (203.2 mm) or 0.5 degrees for 8 inches (203.2 mm) and larger. Observations are to be made for leakage or pipe damage.
13	Seismic Evaluation	In order to evaluate the use of grooved couplings in Earthquake zones 50 through 500 years, test assemblies utilizing flexible couplings and short lengths of steel pipe, in the same nominal size, will be subjected to cyclic testing. The test will deflect the assembly to the manufacturer's maximum recommended angle in the forward and reverse direction for a total 15 cycles with the internal pressure equal to the rated working pressure. There shall be no leakage, cracking, or rupture as a result of this test.
14	Lateral Displacement	The coupling shall not leak during any of the tests, within the manufacturer's stated limitations for angular deflection or lateral displacement of associated pipework.
15	Hydrostatic fluctuation pressure test	The coupling assembly shall be pressurised with water to a gauge pressure of 10 bar ±1 bar for 2min, +30s/-0s to establish a datum. The assembly shall then be drained before being subjected to the greatest vacuum attainable to a maximum of 600mm a/mercury or -0.8bar +0bar/-0.1 bar for 2min +30s/-0s, and allowed to return to atmospheric pressure in not less than 5s. The assembly shall then be pressurised with water to 10 bar ±1bar for 2 min +30s/-0s. The assembly shall be examined for leakage throughout the test. The relative movement of each pipe shall be recorded at the greatest vacuum and at each pressure. There shall be no leakage.
16	Fire Test	If a gasketed pipe coupling or fitting employs non-ferrous materials for its substantial structural components, or if in the judgment of FM Approvals, the design is otherwise suspect with respect to fire resistance, a fire test shall be conducted. A representative size assembled joint without a gasket shall be exposed to a 1000 °F (538 °C) fire environment for 5 minutes. The assembly shall be dry for the duration of this exposure. Immediately after the exposure, a water flow shall be introduced through the joint and sustained until the assembly is cool to the touch. No cracking or distortion of any component of the coupling or fitting shall occur. The coupling or fitting shall then be disassembled and the gasket installed. After reassembly, the joint shall be hydrostatically tested, as described in to the hydrostatic test.

Notes



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