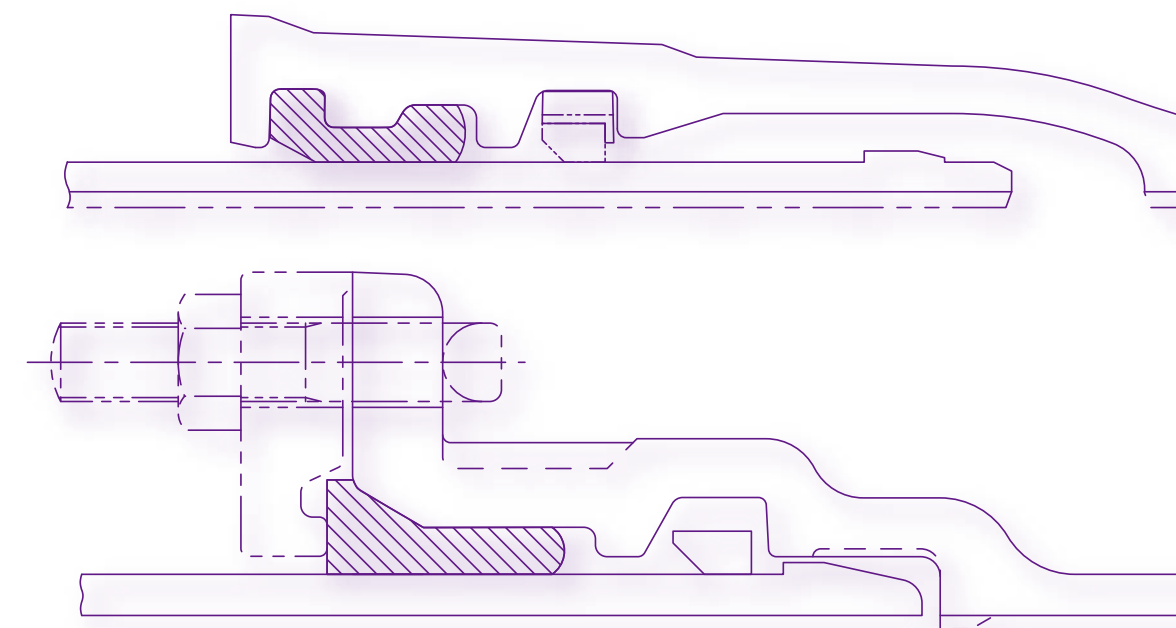


KUBOTA HAZARD RESILIENT DUCTILE IRON PIPE (GENEX®)

Dimensions of Pipes, Fittings and Accessories



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SPECIFICATIONS

【Applicable Standards】

Pipes and fittings conform to the requirements of the following specifications.

ANSI/AWWA C151	Ductile-iron pipe, centrifugally cast
ANSI/AWWA C153	Ductile-iron compact fittings, 3 in. through 16 in., for water and other liquids
JWWA A113	Mortar lining of ductile iron pipes for water supply
JWWA G112	Epoxy-Powder coating for interior of ductile iron pipes and fittings for water supply
JWWA G113	Ductile iron pipes for water supply
JWWA G114	Ductile iron fittings for water supply
JWWA G120	GX Type ductile iron pipes for water supply
JWWA G121	GX Type ductile iron fittings for water supply
JWWA K139	Synthetic resin paints for ductile iron pipes for water supply
JWWA K156	Rubber materials for water supply
JIS G 5502	Spheroidal graphite iron castings
JIS R 5210	Portland cement
ASME/ANSI B16.1	Gray iron pipe flanges and flanged fittings : Classes 125 and 250
ASME/ANSI B16.5	Pipe flanges and flanged fittings
ISO 16134	Earthquake- and subsidence- resistant design of ductile iron pipelines

【Nominal Thickness】

Size (inches)	Pipes			Fittings
	Class 54	Class 52	Class 350	
6	0.37	0.31	0.25	0.36
8	0.39	0.33	0.25	0.38
12	0.43	0.37	0.28	0.42

Note: Upon request, other class of pipes may be applied.

【Mechanical Properties】

Grade of material	Minimum tensile strength PSI (N/mm ²)	Minimum elongation %
FCD(420-10)	60,000 (420)	10

Note: In case of dispute, Brinell hardness will be measured. It shall be maximum 230HBW.

【Standard Coating and Lining】

	Pipes	Fittings
Outside	C-protect (Zn-alloy coating) ¹⁾	
Inside	Cement mortar lining/Epoxy coating	Epoxy coating

Note: 1) Pipes and fittings will be coated externally with metallic zinc-alloy followed by synthetic resin coating in accordance with JWWA G 120 and G 121 respectively. The minimum application mass of the zinc alloy coating will be 0.95 oz./ft2 [290 g/m²]. The synthetic resin paint used for finishing layer will conform to JWWA K 139 and the minimum mean dry film thickness of the coating will be 3.1 mil [0.08 mm].

【Material of Accessories】

Accessories	Material
Rubber gasket	Synthetic rubber(SBR) conforming to JWWA K 156
Lock ring	Ductile iron coated with fusion-bonded epoxy or synthetic resin paint
Lock ring holder	Polypropylene or polyethylene
Gland	Ductile iron coated with the same manner as the external of fittings
T-head bolt and nut	Stainless steel
Liner	Ductile iron coated with fusion-bonded epoxy
Liner board	Polyamide
Spigot ring	Ductile iron coated with fusion-bonded epoxy

【Performance of the Joint】

Pipe size in. [mm]	Pull-out resistance ¹⁾ lbf [kN]	Expansion and contraction ^{1),2)} inches [mm]	Allowable deflection angle ^{2),3)}	Maximum deflection angle ^{2),3)}
6 [150]	102,000 [450]	±1.97 [±50]	4° 00'	8° 00'
8 [200]	136,000 [600]	±1.97 [±50]		
12 [300]	204,000 [900]	±2.36 [±60]		

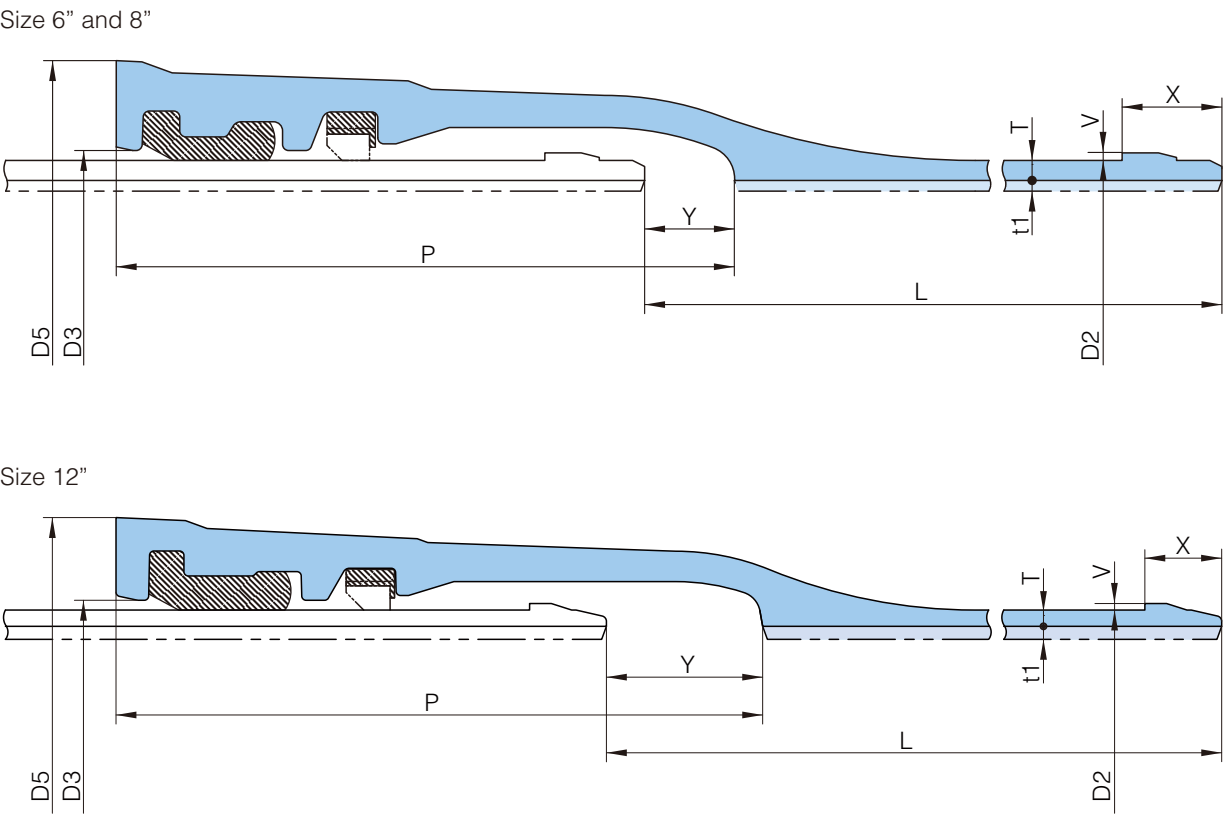
Note: 1) Pull-out resistance conforms to Class A (i.e. 3 D kN [D; pipe size in mm] = 17,000 D lbf [D; pipe size in inches]). and expansion and contraction to Class S-1 (i.e. ±1% of the nominal pipe length) of ISO 16134.

2) Expansion, contraction and deflection angles are for pipes only

3) Allowable angle is applied for an installation phase and maximum angle is applied for earthquake/ground subsidence.

CENTRIFUGALLY CAST PIPES

GX-Pipe



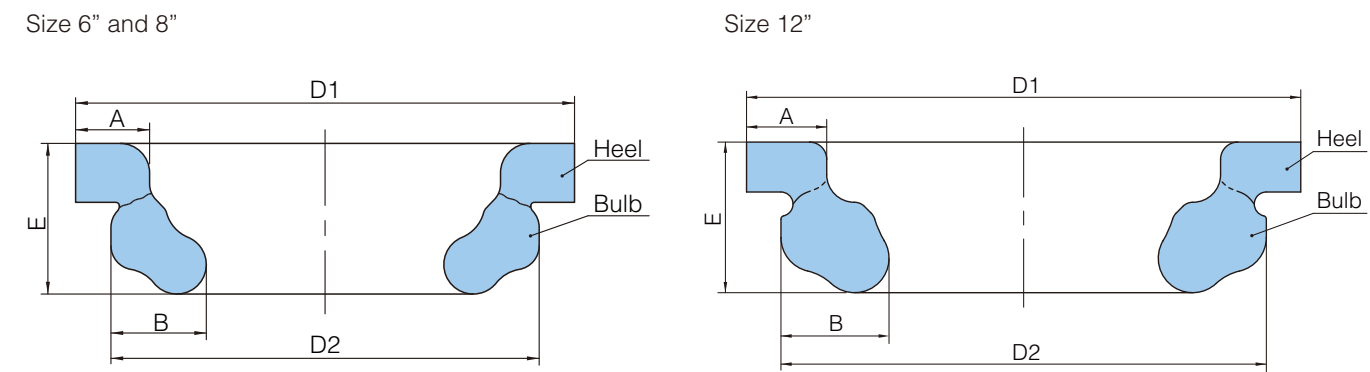
Size (inches)	Wall Thickness (inches)			Outside Diameter (inches)	Dimensions (inches)						
	T				D 2	D 3	D 5	P	V	X	Y
	Class 54	Class 52	Class 350								
6	0.37	0.31	0.25	6.90	7.25	9.78	9.69	0.12	1.30	2.36	
8	0.39	0.33	0.25	9.05	9.41	11.96	10.04	0.12	1.30	2.36	
12	0.43	0.37	0.28	13.20	13.56	16.56	11.73	0.12	1.39	2.83	

Size (inches)	Nominal laying length (feet)	Mass (lb)			Lining ¹⁾			
		Per 1 piece			Thickness (inches)	Mass(lb)		
	L	Class 54	Class 52	Class 350		Class 54	Class 52	Class 350
6	16.40	423	366	309	0.16	50.3	51.1	52.0
8	16.40	595	514	408	0.16	67.9	68.8	69.9
12	19.69	1164	1016	802	0.24	182.5	183.6	186.3

Note: 1) In case of epoxy coating, thickness of coating will be min. 300µm.

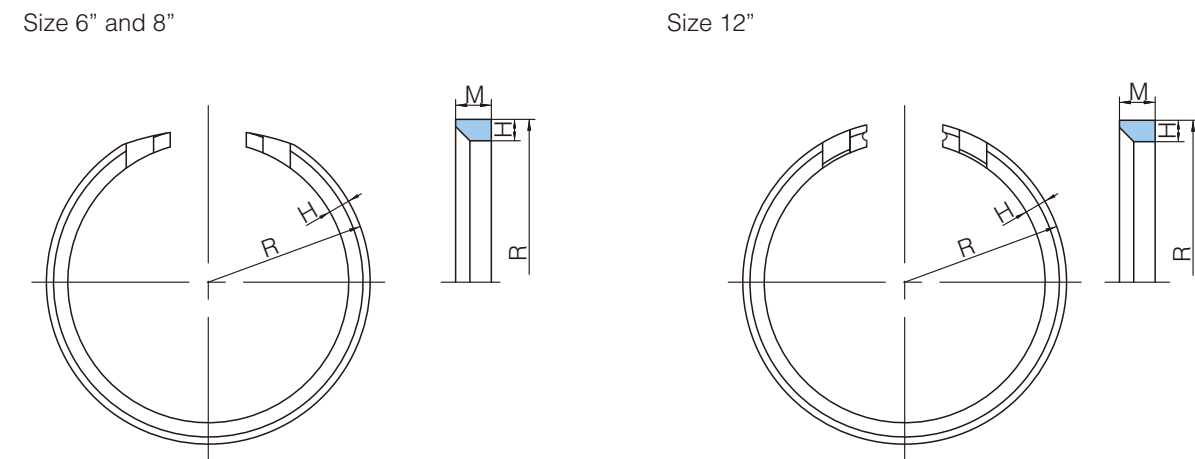
ACCESSORIES FOR PIPES

Rubber Gasket for Pipes



Size (inches)	Dimensions (inches)				
	D 1	D 2	A	B	E
6	8.67	8.03	0.63	0.88	1.40
8	11.07	10.31	0.79	1.02	1.61
12	15.72	14.94	0.92	1.24	1.72

Lock Ring

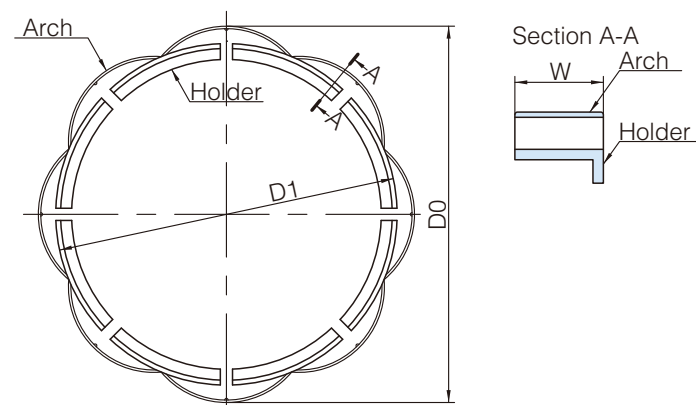


Size (inches)	Dimensions (inches)			Mass (lb)
	H	M	R	
6	0.35	0.59	3.81	0.9
8	0.35	0.59	4.88	1.2
12	0.43	0.79	7.00	3.0

Note: Same Lock ring is used for fittings.

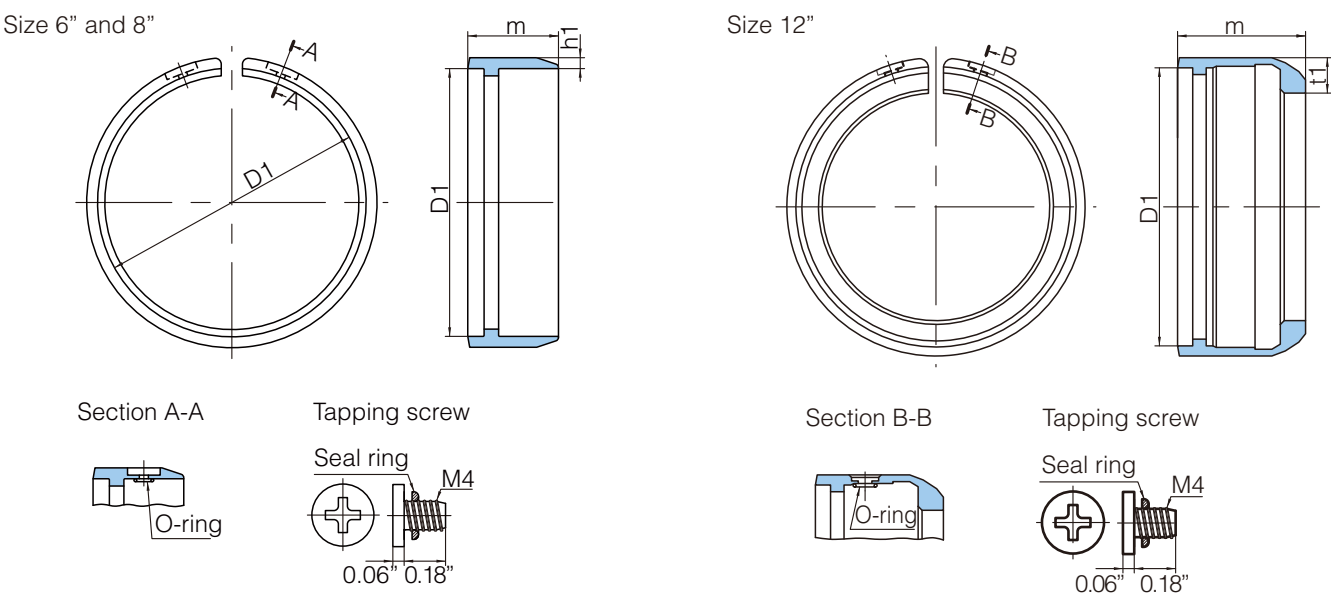
ACCESSORIES FOR PIPES

Lock Ring Holder

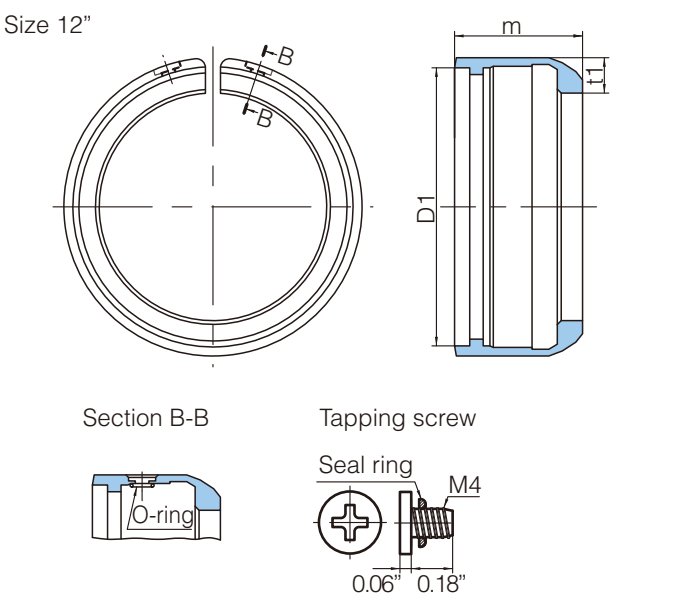


Size (inches)	Dimensions (inches)			Number of holder
	D 0	D 1	W	
6	8.33	7.77	0.67	10
8	10.49	9.92	0.67	12
12	14.72	14.15	0.87	12

Spigot Ring for Cut Pipe



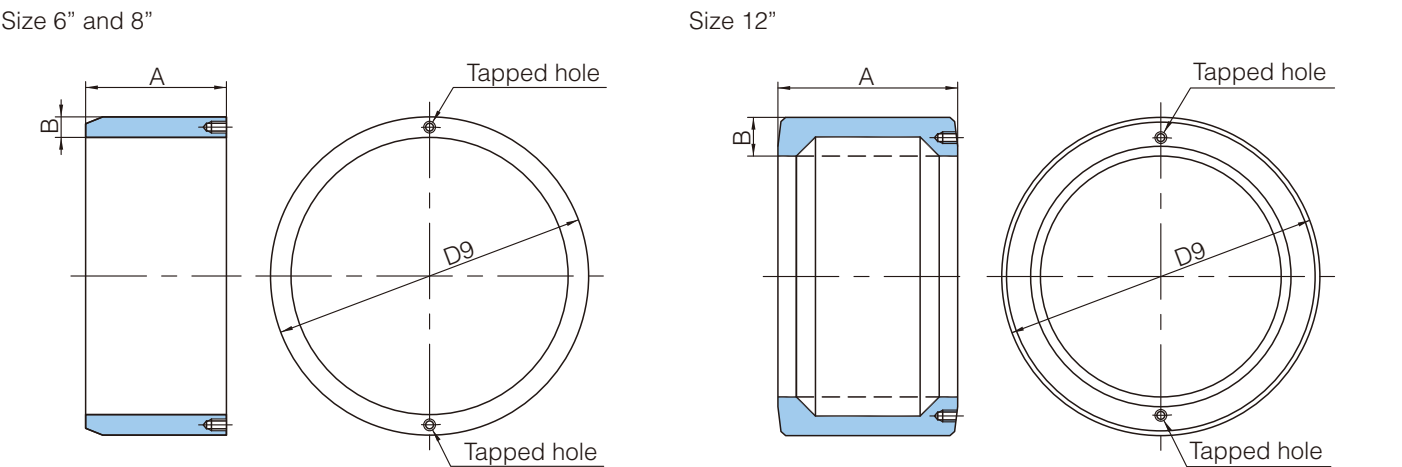
Size (inches)	Dimensions (inches)			Mass(lb)
	D 1	h 1	m	
6	6.90	0.12	1.00	0.7
8	9.05	0.12	1.00	0.9



Size (inches)	Dimensions (inches)			Mass(lb)
	D 1	m	t 1	
12	13.2	1.50	0.41	2.4

Note: 1. Spigot ring is used to form the spigot projection on the spigot end of pipe cut on site.
2. Tapping screw is indicated metric threads.

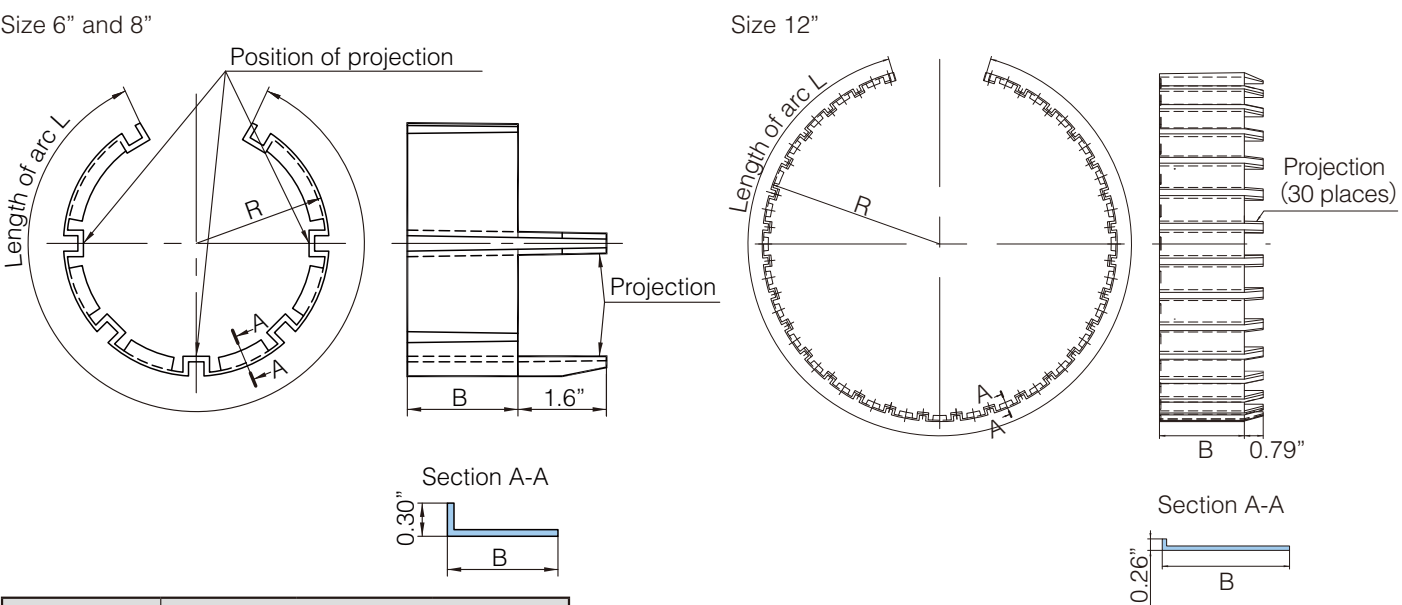
Liner



Size (inches)	Dimensions (inches)			Mass (lb)
	D 9	A	B	
6	6.90	3.90	0.26	5.3
8	9.05	3.90	0.26	7.1
12	13.35	4.96	0.79	22.7

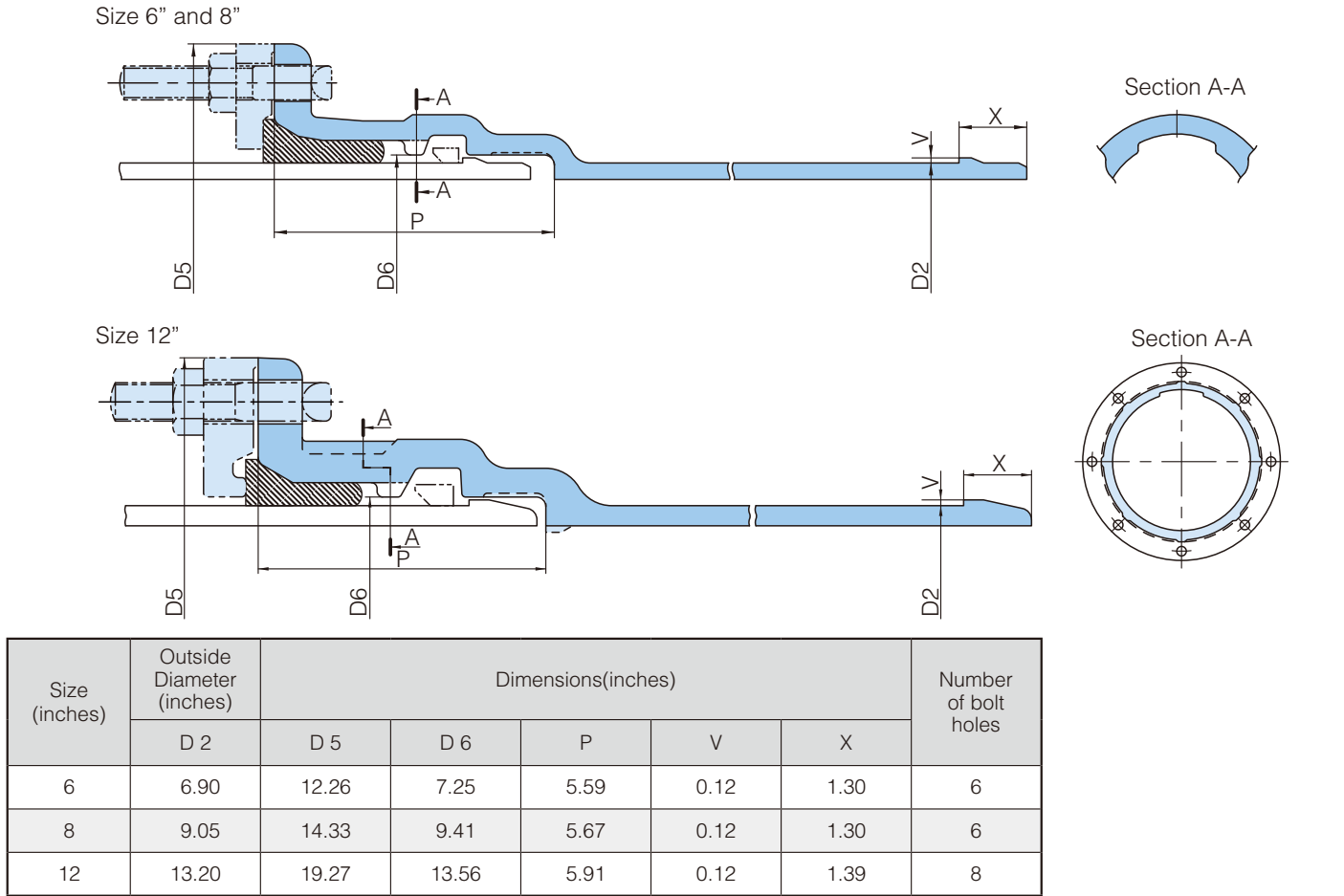
Note: 1. Liner is placed into the socket of pipes to convert the joint into restrained type when pipes are used for the thrust protection of fittings.
2. Tapped holes might be set on face (within two holes). In this case, tapped holes will be filled with epoxy resin.
3. Dotted line of inside of size 12" is also allowed.

Liner Board

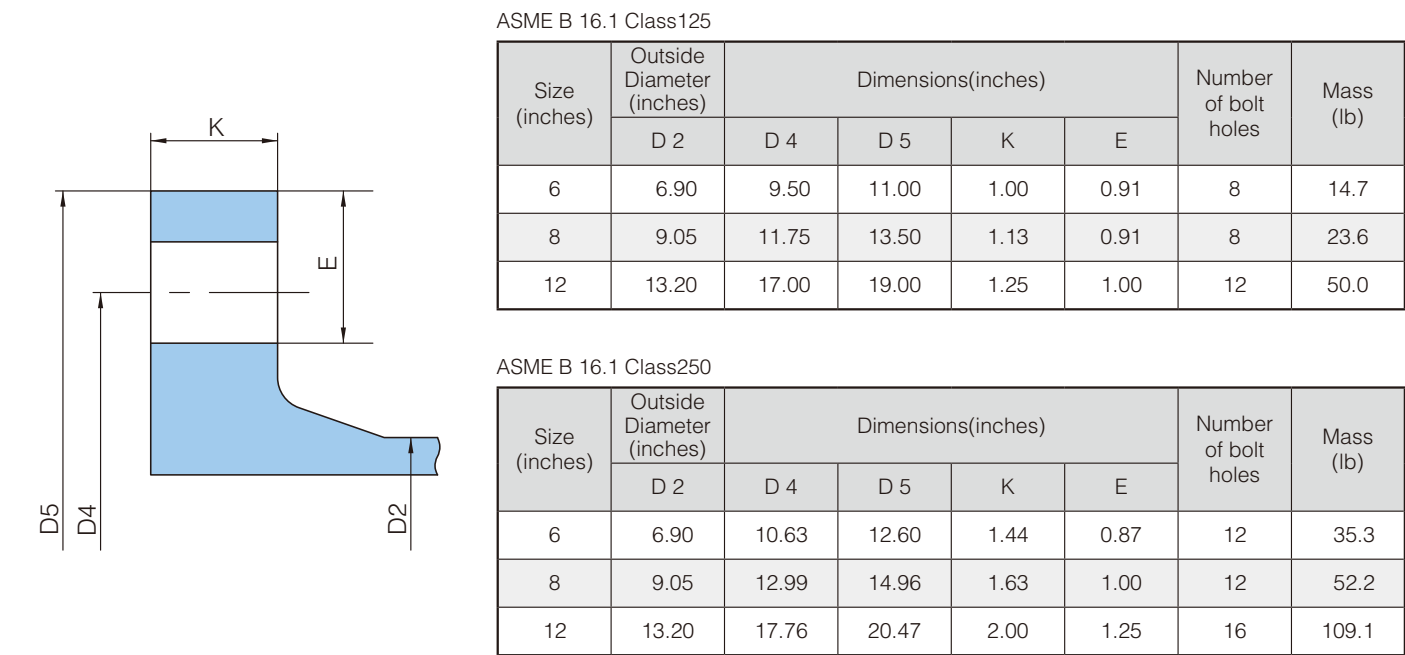


Size (inches)	Dimensions (inches)		
	R	B	L
6	4.04	1.97	22.40
8	5.12	1.97	28.94
12	7.60	3.54	42.76

GX-Fitting

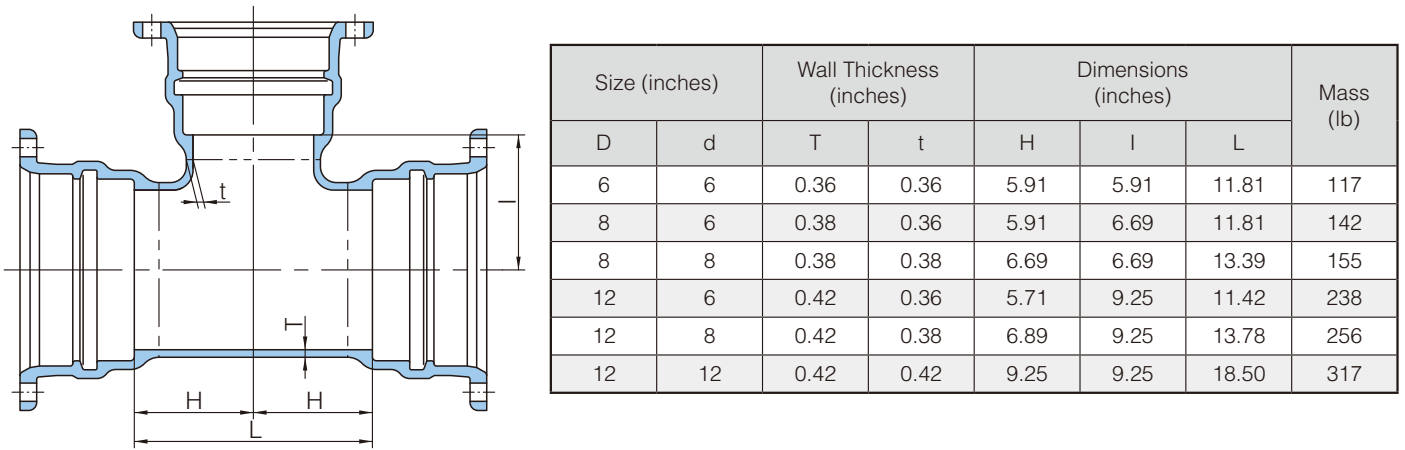


Flange

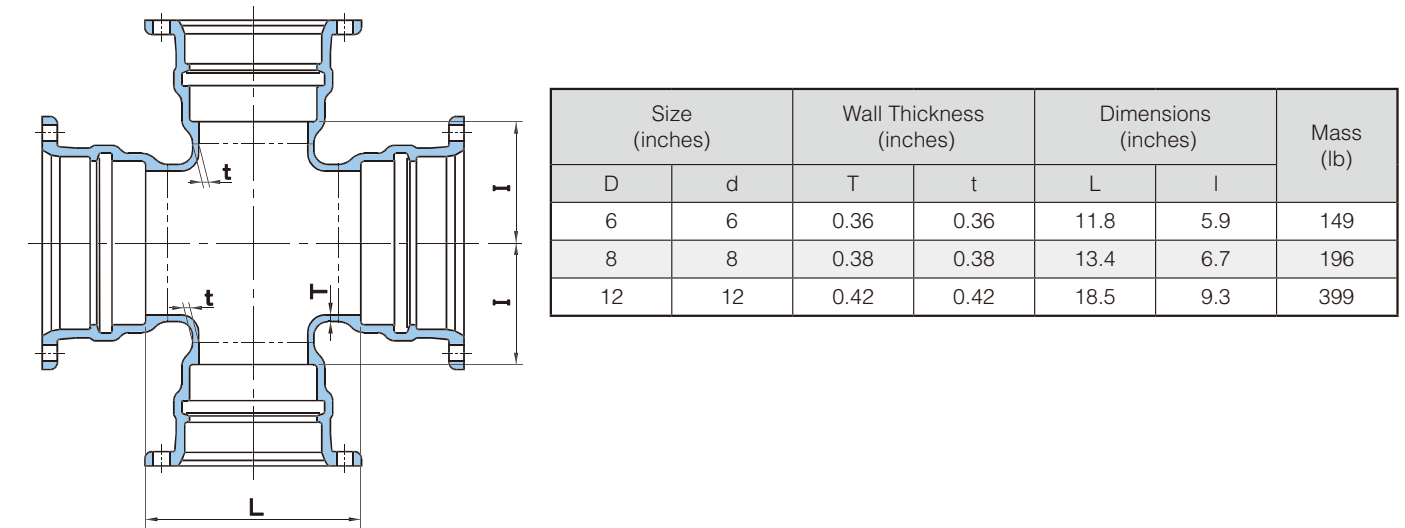


Note: Upon request, other class of flanges may be applied.

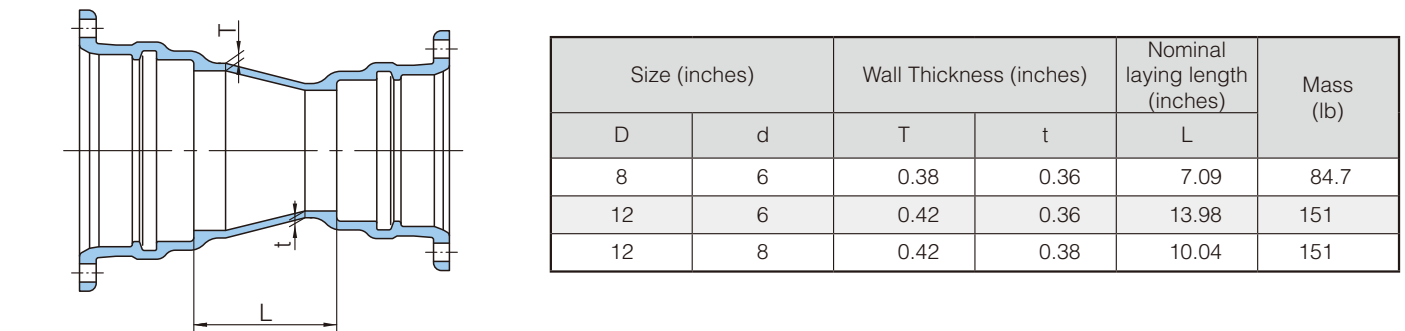
GX-All Socket Tee



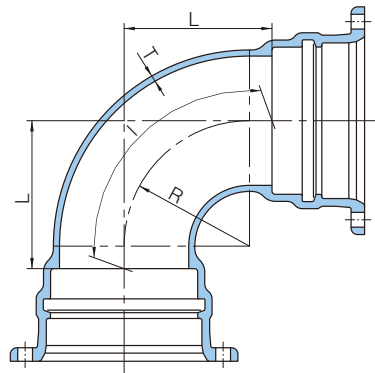
GX-All Socket Cross



GX-Double Socket Reducer

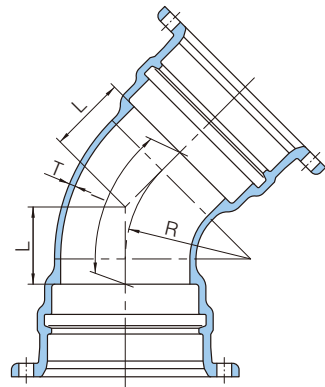


GX-Double Socket 90° Bend



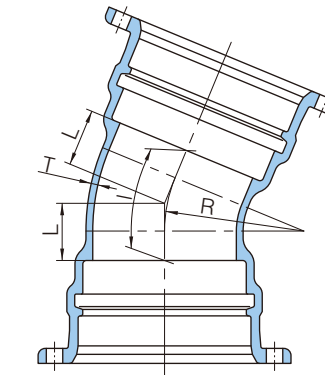
Size (inches)	Wall Thickness (inches)	Dimensions (inches)			Mass (lb)
	T	R	L	I	
6	0.36	5.71	7.09	11.73	82.2
8	0.38	7.68	9.06	14.80	117
12	0.42	9.06	10.43	16.97	229

GX-Double Socket 45° Bend



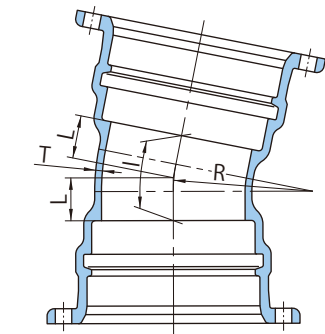
Size (inches)	Wall Thickness (inches)	Dimensions (inches)			Mass (lb)
	T	R	L	I	
6	0.36	5.71	3.94	7.64	74.5
8	0.38	7.68	4.72	9.13	101
12	0.42	9.06	5.12	9.84	197

GX-Double Socket 22 1/2° Bend



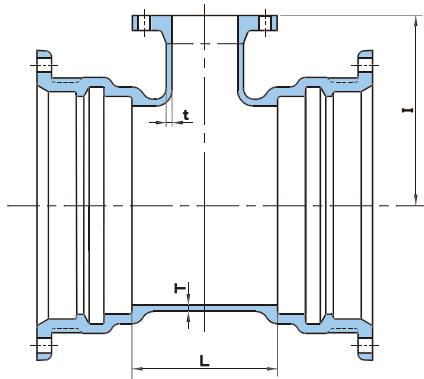
Size (inches)	Wall Thickness (inches)	Dimensions (inches)			Mass (lb)
	T	R	L	I	
6	0.36	5.71	2.76	5.47	70.3
8	0.38	7.68	3.15	6.26	93.5
12	0.42	9.06	3.35	6.65	183

GX-Double Socket 11 1/4° Bend



Size (inches)	Wall Thickness (inches)	Dimensions (inches)			Mass (lb)
	T	R	L	I	
6	0.36	5.71	1.97	3.94	67.5
8	0.38	7.68	2.36	4.72	89.5
12	0.42	9.06	2.36	4.72	175

GX-Double Socket Tee with Flanged Branch

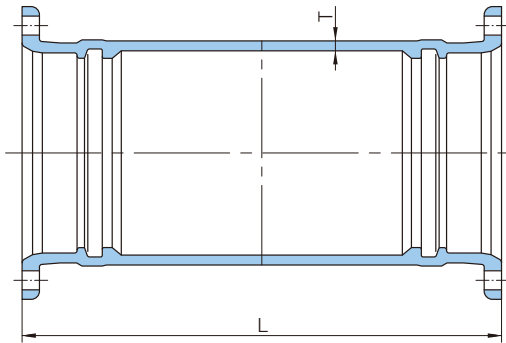


ASME B 16.1 Class 125

Size (inches)		Wall Thickness (inches)		Dimensions (inches)		Mass (lb)
D	d	T	t	L	I	
6	4	0.36	0.34	11.8	9.8	100
6	6	0.36	0.36	11.8	9.8	108
8	4	0.38	0.34	11.8	9.8	125
8	6	0.38	0.36	11.8	9.8	131
8	8	0.38	0.38	13.4	10.6	150
12	4	0.42	0.34	11.4	11.8	220
12	6	0.42	0.36	11.4	12.2	227
12	8	0.42	0.38	13.8	12.6	249
12	12	0.42	0.42	18.5	13.0	306

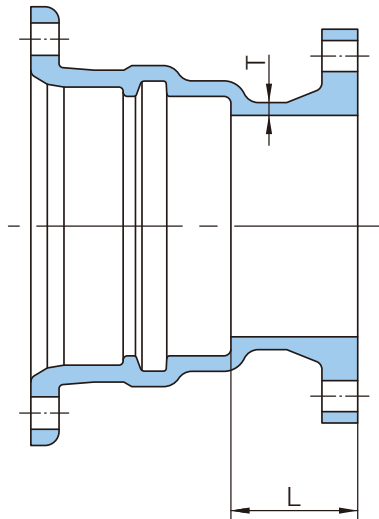
Note : Upon request, other class of flanges may be applied.

GX-Collar



Size (inches)	Wall Thickness (inches)	Dimensions (inches)	Mass (lb)
	T	L	
6	0.47	21.65	94.8
8	0.47	22.05	121
12	0.55	25.39	234

GX-Flanged Socket



ASME B 16.1 Class125

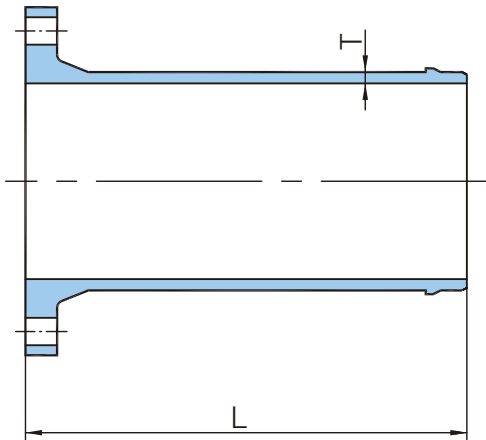
Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	3.54	51.4
8	0.38	3.54	71.4
12	0.42	3.94	144

ASME B 16.1 Class250

Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	5.12	73.1
8	0.38	5.12	103
12	0.42	6.10	208

Note : Upon request, other class of flanges may be applied.

GX-Flanged Spigot



ASME B 16.1 Class125

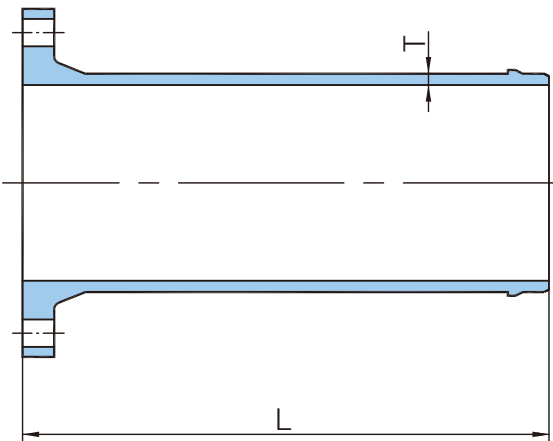
Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	15.75	44.8
8	0.38	16.14	67.2
12	0.42	18.90	133

ASME B 16.1 Class250

Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	17.32	66.6
8	0.38	18.11	99.7
12	0.42	18.90	181

Note : Upon request, other class of flanges may be applied.

GX-Flanged Spigot for GX-Collar Connection



ASME B 16.1 Class125

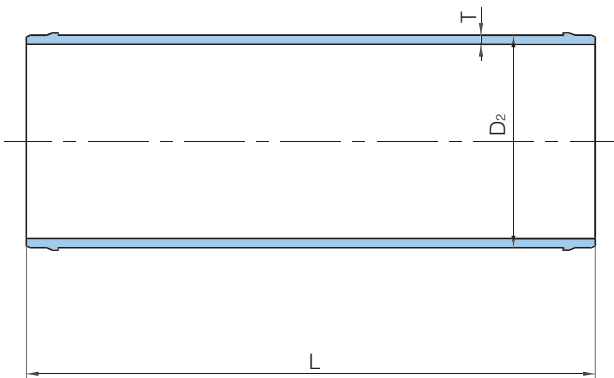
Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	21.89	56.4
8	0.38	22.60	84.7
12	0.42	26.57	167

ASME B 16.1 Class250

Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.36	23.30	78.9
8	0.38	24.09	117
12	0.42	28.31	231

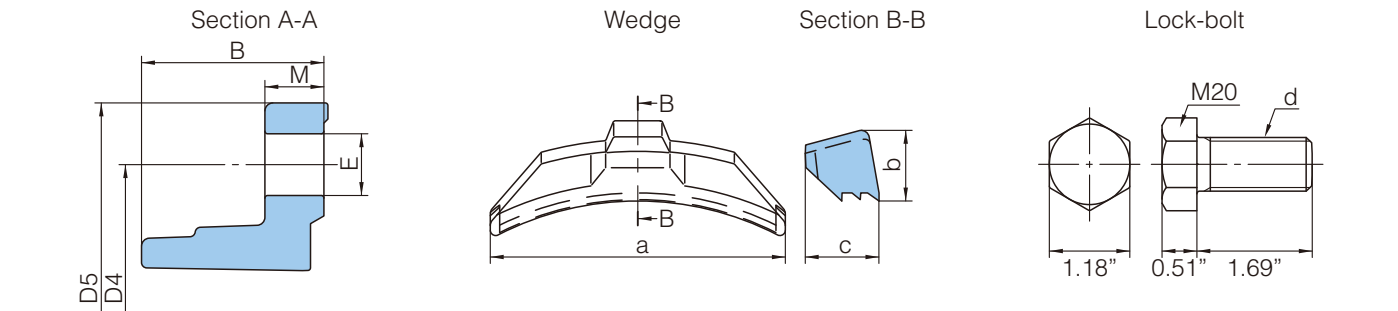
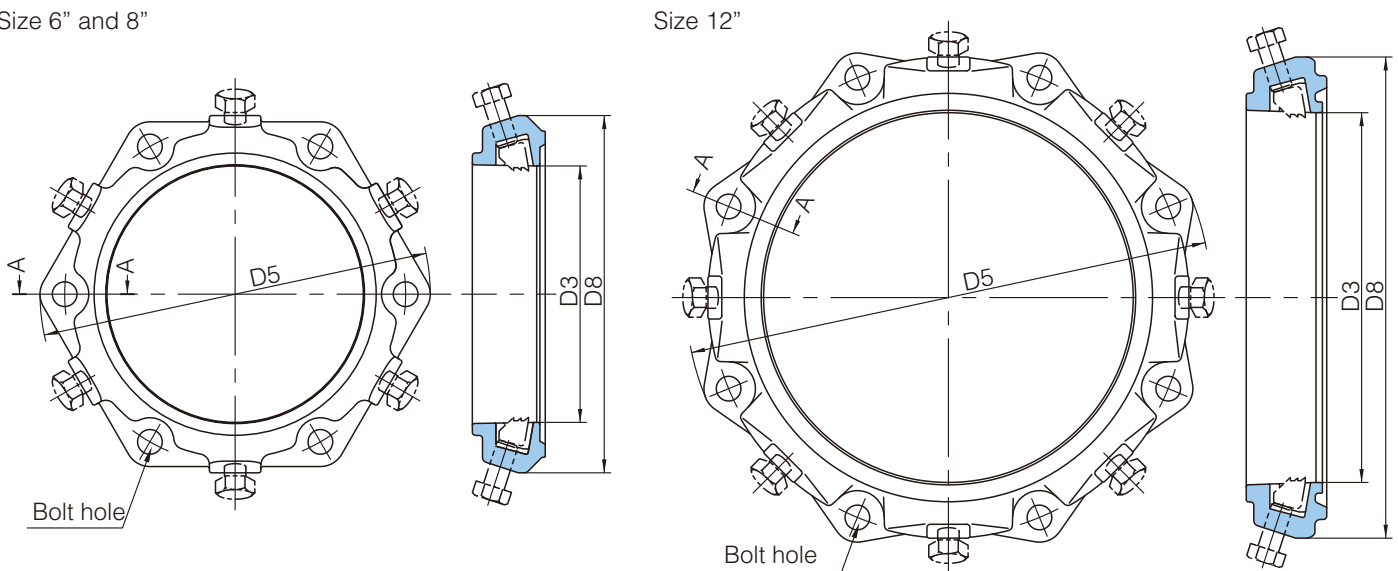
Note : Upon request, other class of flanges may be applied.

GX-Nipple



Size (inches)	Wall Thickness (inches)	Nominal laying length (inches)	Mass (lb)
	T	L	
6	0.41	24.02	51.8
8	0.43	24.02	72.5
12	0.46	24.02	116

G-Link for Cut Pipe

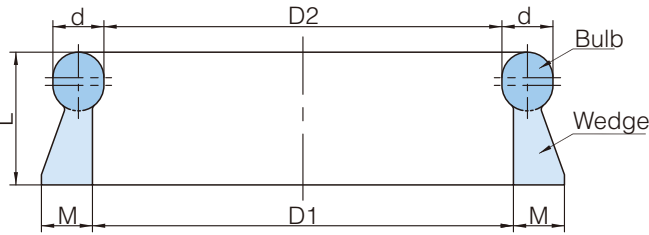


Size (inches)	Body								Wedge				Lock-bolt		
	Dimensions(inches)							Number of bolt holes	Mass (lb)	Dimensions(inches)			Number of wedges	Size	Number of lock-bolt
	D3	D4	D5	D8	B	M	E			a	b	c		d	
6	7.26	10.44	12.26	10.81	2.40	0.83	0.91	6	14.8	3.31	0.84	0.96	6	M20	6
8	9.41	12.52	14.33	13.11	2.68	0.87	0.91	6	21.7	4.33	1.04	1.08	6	M20	6
12	13.56	17.46	19.27	17.65	2.95	1.02	0.91	8	44.8	4.84	1.16	1.16	8	M20	8

Note: 1. Wedge will be of ductile iron conforming to FCD450-10 of JIS G 5502. In addition, wedge will be in the groove with rubber in an appropriate manner.
2. Lock-bolt will be of stainless steel (SUS304, SUS304J3 or SUSXM7) and is indicated metric threads.

ACCESSORIES FOR FITTINGS

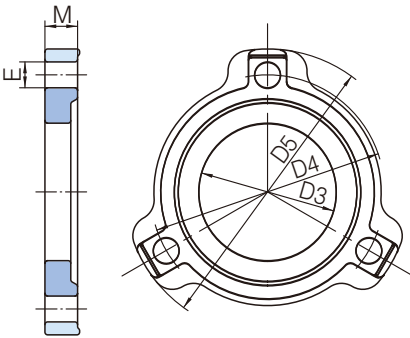
Rubber Gasket for Fittings



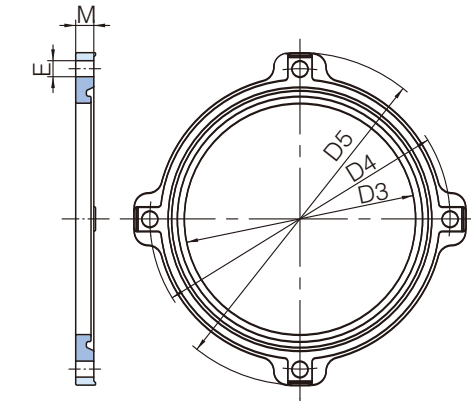
Size (inches)	Dimensions (inches)				
	D 1	D 2	d	L	M
6	6.74	6.39	0.79	1.97	0.79
8	8.89	8.54	0.79	1.97	0.79
12	12.93	12.56	0.85	2.13	0.87

Gland

Size 6" and 8"

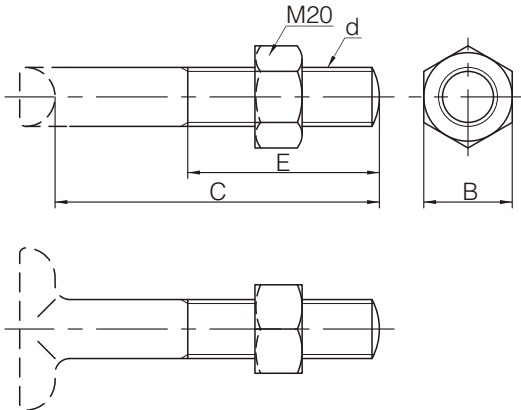


Size 12"



Size (inches)	Dimensions (inches)					Number of bolt holes	Mass (lb)
	D 3	D 4	D 5	M	E		
6	7.26	10.44	12.26	0.83	0.91	3	7.7
8	9.41	12.52	14.33	0.87	0.91	3	11.0
12	13.56	17.46	19.27	1.02	0.91	4	19.2

T-head Bolt and Nut

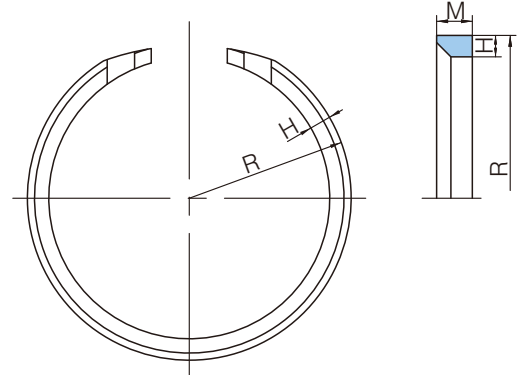


Size (inches)	d	Dimensions (inches)			No.
		B	C	E	
6	M 20	1.18	3.94	2.76	3 (6)
8	M 20	1.18	3.94	2.76	3 (6)
12	M 20	1.18	4.33	2.95	4 (8)

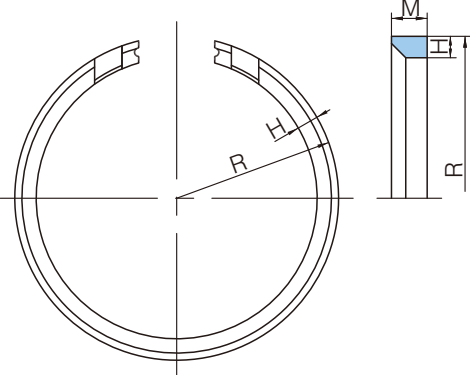
Note: 1. T-head Bolt and Nut is indicated metric threads.
2. No. in parentheses shows G-Link use.

Lock Ring

Size 6" and 8"



Size 12"



Size (inches)	Dimensions (inches)			Mass (lb)
	H	M	R	
6	0.35	0.59	3.81	0.9
8	0.35	0.59	4.88	1.2
12	0.43	0.79	7.00	3.0

Note: Same Lock ring is used for pipes.

