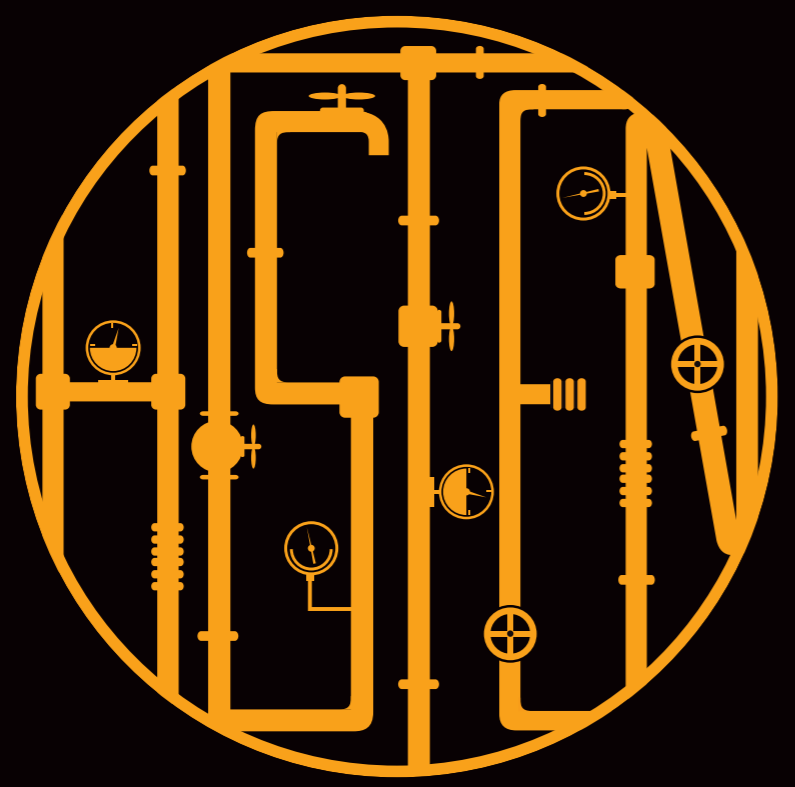




histon



Firefighting related intellectual property rights applied and registered

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caution

- The product-related mentions such as the characteristic values in this catalog do not imply a guarantee.
- The products described in this catalog may have different characteristics and properties from those described, depending on the purpose of use, conditions of use, etc.
- Please note that accidents may occur due to inappropriate use of technical information listed in this catalog.
- The contents of this catalog are subject to change for quality improvement without prior notice.

GROOVED SYSTEM CATALOG





▲ Sanitary Safety Standard Certificate - Groove Coupling



▲ Sanitary Safety Standard Certificate - Groove Fittings



▲ Certificate of Conformity for Water Supply - Groove Coupling



▲ Certificate of Conformity for Water Supply - Groove Fittings



▲ Award Certification - Chief of the Fire and Disaster Prevention Administration



▲ Technology Award - Korea Fire and Fire Protection Association



▲ Sprinkler Stagnant Water Prevention Valve

With the Faith in Trust and the Best Technology, We Create a Safe and Clean World

Histen Co., Ltd. will make the world safe and better with highly-reliable products based on proper materials and functions that are compliant to standards (UL / FM / KS / KC / CP). We protect the life, property, and environment of our society by providing excellent quality and reliable valves, fittings, and joint products manufactured by outstanding techniques in infrastructure facilities and industrial fields. We will contribute to social development and technological advancement by producing and providing eco-friendly and future-oriented products by continuously developing techniques and using cutting-edge materials.

Dear customers! A safer and better world can be created together with Histen. We firmly promise that Histen will develop with you and we ask for your kind support and encouragement.

GROOVED SYSTEM CATALOG

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Angle-pad Coupling

Angle-pad coupling is a method of fixing the groove part as the lower part of the coupling housing from an angle pad (a diagonal sliding fastening method) by fastening it to the pipe groove. The housing allows strong fastening as the fastening force of the coupling's housing by bolts is inclinedly transmitted.

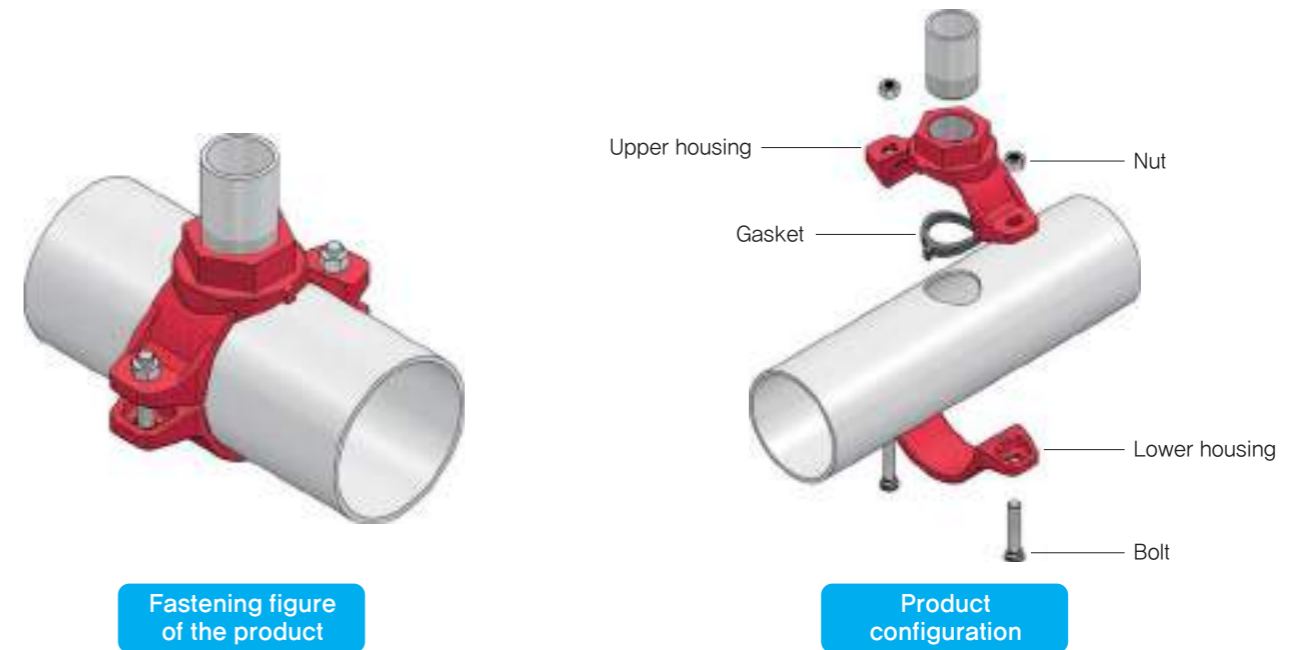
It is a product mainly applicable to fire, sanitation, and air conditioning pipes, and may minimize the movement of pipes, such as expansion, shrink bending, bending, etc.



Mechanical Tee

The mechanical tee is a product that enables the rapid and easily formation of branch pipes in the pipe by directly fastening the mechanical tee by drilling a hole (punching) in the pipe. By using this product, economic feasibility could be expected.

The product may be used for branching sprinkler pipes in fire water pipeline.



Flexible Coupling

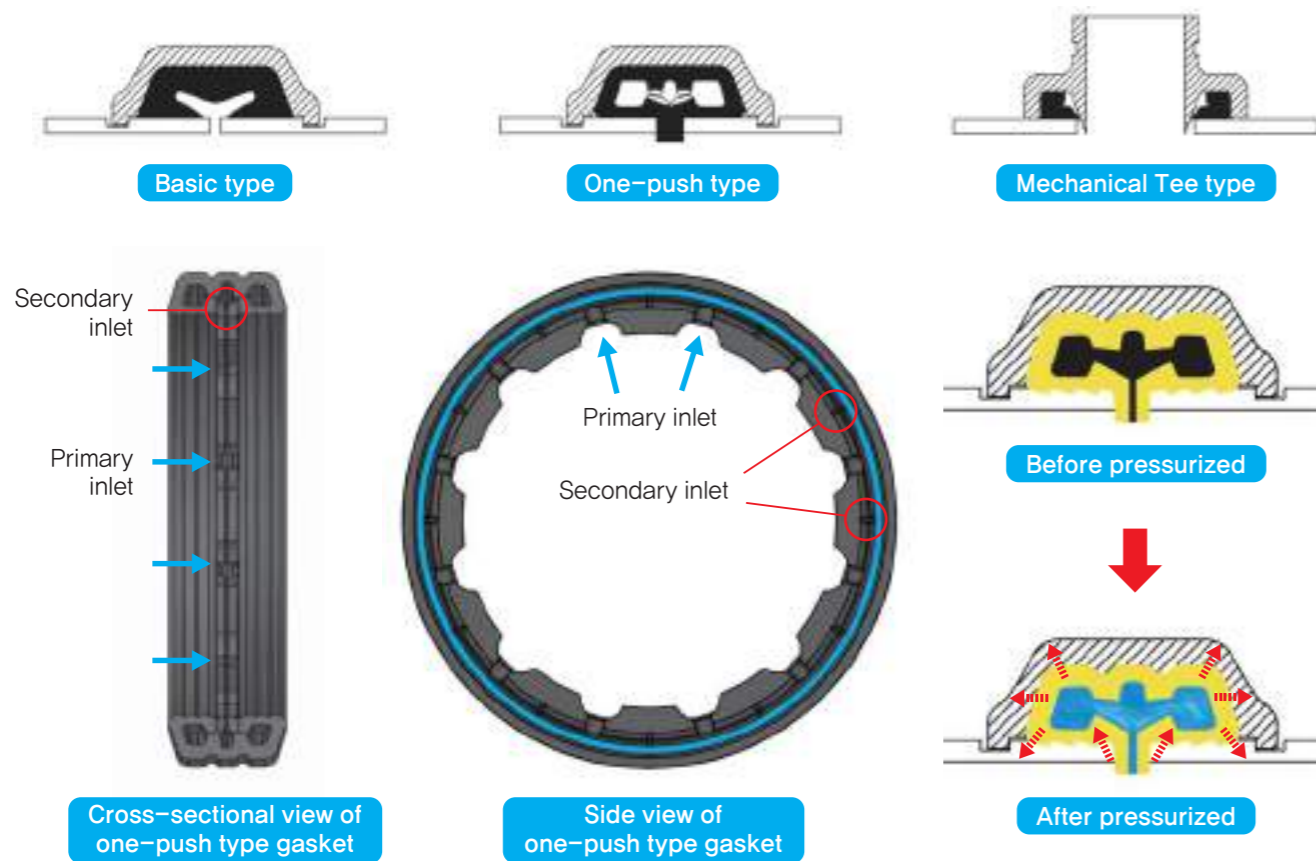
The flexible coupling is a product that may change the axis direction, rotation, and angle of pipes while minimizing stretching, impact, expansion, bending, and deflecting that may occur when connecting pipes, machines, pumps, and other piping materials for coupling or damage due to vibration caused by earthquakes up to a certain extent.



Features of Grooved Coupling

	<p>Rigidity Angle-pad coupling is a method of fixing the groove part as the lower part of the coupling housing from an angle pad (a diagonal sliding fastening method) by fastening it to the pipe groove. The housing allows strong fastening as the fastening force of the coupling's housing by bolts is inclinedly transmitted. It is a product mainly applicable to fire, sanitation, and air conditioning pipes, and may minimize the movement of pipe, such as expansion, shrink bending, bending, etc.</p>
	<p>Flexibility The flexible coupling is a product that may change the axis direction, rotation, and angle of pipes while minimizing stretching, impact, expansion, bending, and deflecting that may occur when connecting pipes, machines, pumps, and other piping materials for coupling or damage due to vibration caused by earthquakes up to a certain extent.</p>
	<p>Stretching and expansion absorption The coupling cover is designed to effectively absorb a change in the pipe due to the internal and external stress of the pipe, and more particularly, absorbs the stretching and expansion of the pipe due to an innate gap in the coupling.</p>
	<p>Noise and vibration absorption The coupling system has a structure that surrounds pipes and the gap between pipes with a rubber ring, and thus, may absorb the noise and vibration transmitted from one pipe to the next.</p>
	<p>Easy construction Since coupling may be assembled or released by tightening or loosening only two bolts (less than 300A), it provides excellent constructability and easy maintenance.</p>

Gasket Type & Feature



The **one-push** type gasket (**patented and design registered product**) is designed to have a structure in which the gasket smoothly and tightly seals the pipe or fitting by merely pushing the pipe or fitting in the gasket without lubricant, unlike the conventional method of sealing by tightening nuts and bolts.

The product is designed in such a way that when pressure is applied to the pipe, or fluid or air enters the gasket through the gasket's primary and secondary inlets, and expands the inner space of the gasket for a stronger seal to be maintained.

For more detailed information on gasket selection and usage, please contact Histen Co., Ltd. before use.

Ductile Iron Groove Coupling & Fittings

Gasket Data

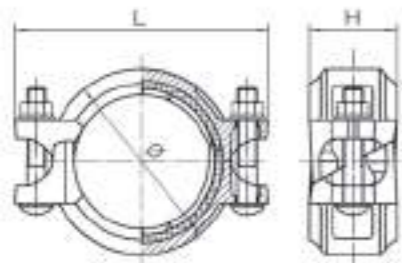
Reference characters	Element	Temperature range	Field of use	Color
E	EPDM	-34 ~ +110°C (-30 ~ +230°F)	May be used for warm-water, diluted acid, oil-free air, and various chemical products within a designated temperature range <i>(However, not suitable for petroleum products)</i>	Green Strip
D	NBR	-29 ~ +82°C (-20 ~ +180°F)	May be used for petroleum products, air including oil vapor, vegetable and mineral oil within a designated temperature range <i>(However, not suitable for warm-water piping)</i>	Orange Strip
S	Silicon	-40 ~ +177°C (-40 ~ +350°F)	May be used for high-temperature dry air and some high-temperature chemical products	White

※ Please note that the temperature range and field of use shown above are merely characteristics of unique elements of the gasket material and the performance of the actual product may vary.

Angle-Pad Coupling – Basic Type



- **MODEL** XGQT7
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Connection** Angle Pad
- **Applications** Fire water pipeline



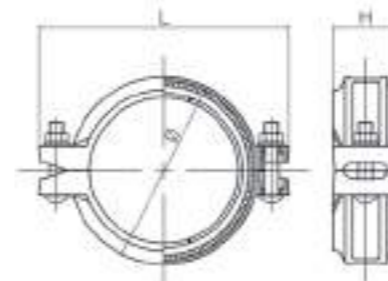
Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
25 1	33.7	M10 X 45L (17)	57	97	44	300 2.07
32 1¼	42.4	M10 X 45L (17)	67	107.5	44	300 2.07
40 1½	48.3	M10 X 50L (17)	72	114	44	300 2.07
50 2	60.3	M10 X 60L (17)	85	125	45	300 2.07
65 2½	76.1	M10 X 60L (17)	100	139	45	300 2.07
80 3	88.9	M10 X 60L (19)	114	160	45	300 2.07
100 4	114.3	M12 X 75L (19)	147.2	193	49	300 2.07
125 5	139.7	M12 X 75L (19)	170	222	50	300 2.07
150 6	165.1	M16 X 85L (22)	203	248	50	300 2.07
200 8	216.3	M20 X 110L (24)	257	330	58	300 2.07
250 10	267.4	M22 X 140L (36)	328	420	62	300 2.07
300 12	318.5	M22 X 140L (36)	380	454	63	300 2.07



Flexible Coupling – Basic Type



- **MODEL** XGQT2
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Applications** Fire water pipeline
- **Features** Absorbs pipe expansion, contraction, and vibration



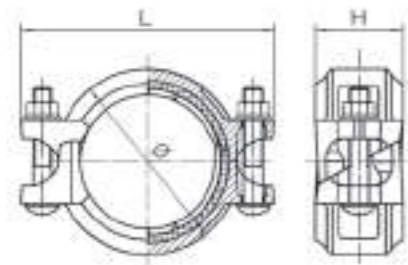
Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
25 1	33.7	M10 X 50L (17)	57	97	44	300 2.07
32 1¼	42.4	M10 X 50L (17)	67	107.5	44	300 2.07
40 1½	48.3	M10 X 50L (17)	72	114	44	300 2.07
50 2	60.3	M10 X 60L (17)	85	125	45	300 2.07
65 2½	76.1	M10 X 60L (17)	100	139	45	300 2.07
80 3	88.9	M10 X 60L (19)	114	160	45	300 2.07
100 4	114.3	M12 X 75L (19)	147.2	193	50	300 2.07
125 5	139.7	M12 X 75L (19)	170	222	50	300 2.07
150 6	165.1	M16 X 85L (22)	203	248	50	300 2.07
200 8	216.3	M20 X 110L (24)	257	330	58	300 2.07
250 10	267.4	M22 X 140L (36)	328	420	62	300 2.07
300 12	318.5	M22 X 140L (36)	380	454	63	300 2.07



Angle-Pad Coupling – One Push Type



- **MODEL** Z10D
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Connection** Angle Pad
- **Applications** Fire water pipeline

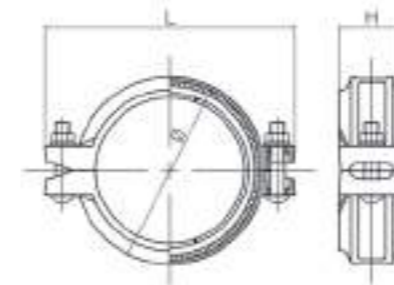


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi / Mpa)
			∅	L	H	
50 2	60.5	M10 X 65L (17)	82	120	49	500 3.45
65 2½	76.3	M10 X 65L (17)	98	140	49	500 3.45
80 3	89.1	M12 X 80L (19)	116.1	163	50	500 3.45
100 4	114.3	M12 X 80L (19)	141.3	190	50	500 3.45
125 5	139.8	M12 X 80L (19)	169.5	225	52	365 2.51
150 6	165.2	M16 X 90L (24)	196	255	52	365 2.51
200 8	216.3	M20 X 100L (30)	253	330	63	300 2.07
250 10	267.4	M20 X 140L (30)	309.1	394	64	300 2.07
300 12	318.5	M20 X 140L (30)	363	450	65	300 2.07

Flexible Coupling – One Push Type



- **MODEL** Z11D
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Applications** Fire water pipeline
- **Features** Absorbs pipe expansion, contraction, and vibration

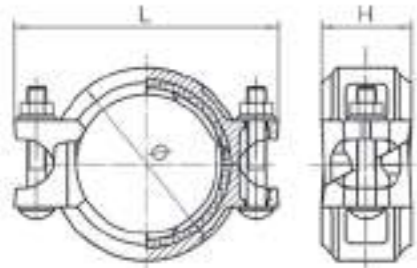


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi / Mpa)
			∅	L	H	
50 2	60.5	M10 X 65L (17)	82	120	49	500 3.45
65 2½	76.3	M10 X 65L (17)	98	140	49	500 3.45
80 3	89.1	M12 X 80L (19)	116.1	163	50	500 3.45
100 4	114.3	M12 X 80L (19)	141.3	190	50	500 3.45
125 5	139.8	M12 X 80L (19)	169.5	225	52	365 2.51
150 6	165.2	M16 X 90L (24)	196	255	52	365 2.51
200 8	216.3	M20 X 100L (30)	253	330	63	300 2.07
250 10	267.4	M22 X 150L (32)	309.1	394	64	300 2.07
300 12	318.5	M22 X 150L (32)	363	450	65	300 2.07

High Pressure Angle – Pad Coupling



- **MODEL** XGQT8
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Connection** Angle Pad
- **Applications** Fire water pipeline



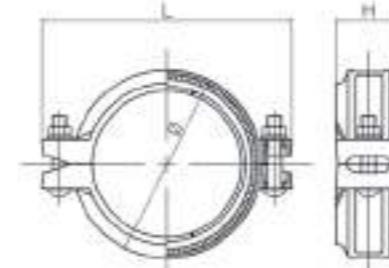
Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
25 1	33.7	M10 X 60L (17)	60	98	45	500 3.5
32 1¼	42.4	M10 X 60L (17)	69	110	45	500 3.5
40 1½	48.3	M10 X 60L (17)	73	118	45	500 3.5
50 2	60.3	M10 X 55L (17)	90	124	45	500 3.5
65 2½	76.1	M10 X 55L (17)	100	138	45	500 3.5
80 3	88.9	M12 X 75L (19)	120	154	46	500 3.5
100 4	114.3	M12 X 75L (19)	149	190	48	500 3.5
125 5	139.7	M12 X 70L (19)	176	217	48	500 3.5
150 6	165.1	M16 X 85L (22)	202	245	48	500 3.5
200 8	216.3	M20 X 110L (24)	258	320	56	500 3.5
250 10	267.4	M22 X 150L (36)	316	390	58	500 3.5
300 12	318.5	M22 X 150L (36)	366	446	60	500 3.5



High Pressure Flexible Coupling



- **MODEL** XGQT9
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red, Gray)
- **Applications** Fire water pipeline



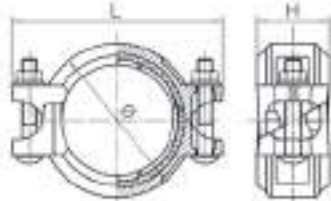
Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
50 2	60.3	M10 X 55L (17)	86	124	45	500 3.5
65 2½	76.1	M10 X 55L (17)	96	138	45	500 3.5
80 3	88.9	M12 X 70L (19)	115	154	46	500 3.5
100 4	114.3	M12 X 70L (19)	145	190	48	500 3.5
125 5	139.7	M12 X 70L (19)	170	217	48	500 3.5
150 6	165.1	M14 X 75L (22)	195	245	48	500 3.5
200 8	216.3	M16 X 100L (24)	254	320	56	500 3.5
250 10	267.4	M24 X 135L (36)	316	390	58	500 3.5
300 12	318.5	M24 X 135L (36)	366	446	75	500 3.5



Stainless Steel Angle – Pad Coupling – Basic Type



- **MODEL** K01 Rigid Coupling
- **HOUSING** ASTM A351 CF8 / CF8M
- **Bolt & Nut** ASTM A193
- **GASKET** EPDM
- **Applications** Stainless steel pipeline (water only)

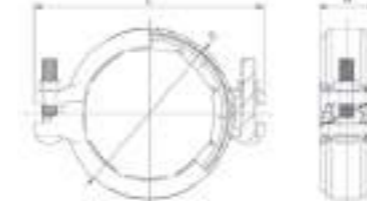


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
50 2	60.5	M10 X 65L (17)	84.6	120	45	300 2.1
65 2½	76.3	M10 X 65L (17)	101.6	136	47	300 2.1
80 3	89.1	M12 X 70L (19)	116.2	161	47	300 2.1
100 4	114.3	M12 X 70L (19)	144.0	195	50	300 2.1
125 5	139.8	M12 X 70L (19)	170.8	220	51	300 2.1
150 6	165.2	M16 X 80L (24)	197.2	260	51	300 2.1
200 8	216.3	M16 X 100L (24)	259.9	312	63	300 2.1
250 10	267.4	M24 X 135L (36)	301	387	58.5	500 3.5
300 12	318.5	M24 X 135L (36)	348	436	63.5	500 3.5

Stainless Steel Angle – Pad Coupling – One Push Type



- **MODEL** Z10N
- **HOUSING** ASTM A351 CF8 / CF8M
- **Bolt & Nut** ASTM A193
- **GASKET** EPDM
- **Applications** Stainless steel pipeline (water only)

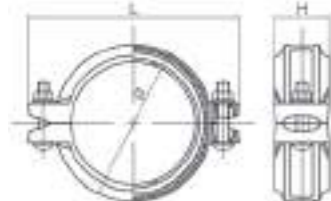


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
50 2	60.5	M10 X 65L (17)	82	120	48	300 2.07
65 2½	76.3	M10 X 65L (17)	98	140	48	300 2.07
80 3	89.1	M12 X 80L (19)	116.1	163	48	300 2.07
100 4	114.3	M12 X 80L (19)	141.3	190	48	175 1.21
125 5	139.8	M12 X 80L (19)	168.5	225	51	175 1.21
150 6	165.2	M16 X 90L (24)	195	255	51	175 1.21
200 8	216.3	M20 X 100L (30)	252	330	62	175 1.21
250 10	267.4	M20 X 140L (30)	307.1	394	64	175 1.21
300 12	318.5	M20 X 140L (30)	361	450	65	175 1.21

Stainless Steel Flexible Coupling – Basic Type



- **MODEL** K06 Flexible Coupling
- **HOUSING** ASTM A351 CF8 / CF8M
- **Bolt & Nut** ASTM A193
- **GASKET** EPDM
- **Applications** Stainless steel pipeline (water only)

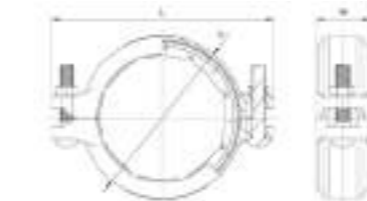


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
50 2	60.5	M10 X 50L (17)	84.5	125	45	300 2.1
65 2½	76.3	M10 X 50L (17)	101.6	142	45	300 2.1
80 3	89.1	M12 X 70L (19)	115.0	161	45	300 2.1
100 4	114.3	M12 X 70L (19)	144.0	195	47	300 2.1
125 5	139.8	M12 X 70L (19)	170.8	224	48	300 2.1
150 6	165.2	M16 X 80L (24)	197.2	260	49	300 2.1
200 8	216.3	M16 X 100L (24)	259.9	312	63	300 2.1
250 10	267.4	M24 X 135L (36)	301	387	58.5	500 3.5
300 12	318.5	M24 X 135L (36)	348	436	63.5	500 3.5

Stainless Steel Flexible Coupling – One Push Type



- **MODEL** Z11N
- **HOUSING** ASTM A351 CF8 / CF8M
- **Bolt & Nut** ASTM A193
- **GASKET** EPDM
- **Applications** Stainless steel pipeline (water only)

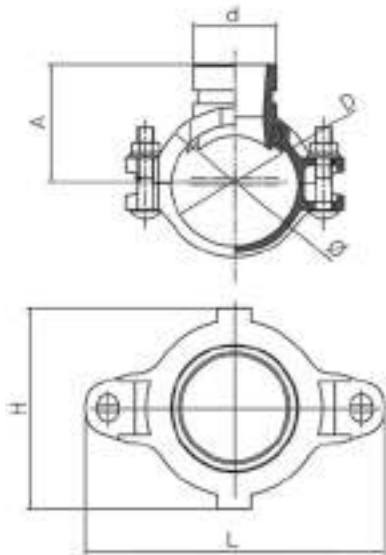


Size (mm / in)	Pipe Outer Diameter (mm)	Bolt (Nut) (mm)	Dimensions (mm)			Max working pressure (psi/Mpa)
			Ø	L	H	
50 2	60.5	M10 X 65L (17)	82	120	48	300 2.07
65 2½	76.3	M10 X 65L (17)	98	140	48	300 2.07
80 3	89.1	M12 X 80L (19)	116.1	163	48	300 2.07
100 4	114.3	M12 X 80L (19)	141.3	190	48	175 1.21
125 5	139.8	M12 X 80L (19)	168.5	225	51	175 1.21
150 6	165.2	M16 X 90L (24)	195	255	51	175 1.21
200 8	216.3	M20 X 100L (30)	252	330	62	175 1.21
250 10	267.4	M22 X 150L (32)	307.1	394	64	175 1.21
300 12	318.5	M22 X 150L (32)	361	450	65	175 1.21

Grooved Mechanical Tee



- **MODEL** XGQT3G
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing Piping

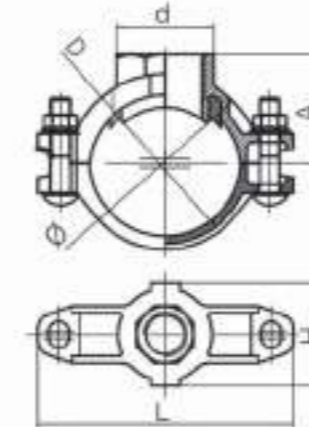


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)					Max working pressure (psi / Mpa)
		Hole Dimensions	∅	L	A	H	
80 X 32 3 X 1¼	88.9 X 42.4	46	114	152	85	83	300 2.07
80 X 40 3 X 1½	88.9 X 48.3	51	114	152	85	93	300 2.07
80 X 50 3 X 2	88.9 X 60.3	64	114	152	85	99	300 2.07
100 X 32 4 X 1¼	114.3 X 42.4	46	140	180	97	83	300 2.07
100 X 40 4 X 1½	114.3 X 48.3	51	140	180	97	92	300 2.07
100 X 50 4 X 2	114.3 X 60.3	64	140	180	99	99	300 2.07
100 X 65 4 X 2½	114.3 X 76.1	70	140	180	99	122	300 2.07
125 X 40 5 X 1½	139.7 X 48.3	51	168	220	109	92	300 2.07
125 X 50 5 X 2	139.7 X 60.3	64	168	220	112	100	300 2.07
125 X 65 5 X 2½	139.7 X 76.1	70	168	220	103	122	300 2.07
125 X 80 5 X 3	139.7 X 88.9	89	168	220	113	134	300 2.07
150 X 32 6 X 1¼	165.1 X 42.4	46	194	248	118	83	300 2.07
150 X 40 6 X 1½	165.1 X 48.3	51	194	248	118	94	300 2.07
150 X 50 6 X 2	165.1 X 60.3	64	194	248	118	99	300 2.07
150 X 65 6 X 2½	165.1 X 76.1	70	194	248	106	122	300 2.07
150 X 80 6 X 3	165.1 X 88.9	89	194	248	125	139	300 2.07
200 X 65 8 X 2½	216.3 X 76.1	70	250	311	152	130	300 2.07
200 X 80 8 X 3	216.3 X 88.9	89	250	311	152	137	300 2.07

Threaded Mechanical Tee



- **MODEL** XGQT3S
- **HOUSING** Ductile iron (ASTM A536)
- **Bolt & Nut** ASTM A183
- **GASKET** EPDM
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing Piping

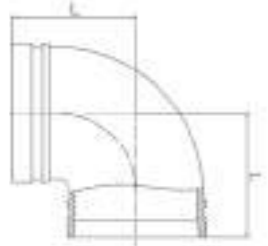


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)					Max working pressure (psi / Mpa)
		Hole Dimensions	∅	L	A	H	
65 X 25 2½ X 1	76.1 X 33.7	38	102	144	67	77	300 2.07
65 X 32 2½ X 1¼	76.1 X 42.4	46	102	144	67	83	300 2.07
65 X 40 2½ X 1½	76.1 X 48.3	51	102	144	67	83	300 2.07
80 X 25 3 X 1	88.9 X 33.7	38	114	155	74	77	300 2.07
80 X 32 3 X 1¼	88.9 X 42.4	46	114	155	73	83	300 2.07
80 X 40 3 X 1½	88.9 X 48.3	51	114	155	73	93	300 2.07
80 X 50 3 X 2	88.9 X 60.3	64	114	155	78	99	300 2.07
100 X 25 4 X 1	114.3 X 33.7	38	140	181	83	77	300 2.07
100 X 32 4 X 1¼	114.3 X 42.4	46	140	181	95	83	300 2.07
100 X 40 4 X 1½	114.3 X 48.3	51	140	181	95	92	300 2.07
100 X 50 4 X 2	114.3 X 60.3	64	140	181	93	100	300 2.07
100 X 65 4 X 2½	114.3 X 76.1	70	140	181	93	122	300 2.07
125 X 40 5 X 1½	139.7 X 48.3	51	168	220	100	92	300 2.07
125 X 50 5 X 2	139.7 X 60.3	64	168	220	100	100	300 2.07
125 X 65 5 X 2½	139.7 X 76.1	70	168	220	103	122	300 2.07
150 X 32 6 X 1¼	165.1 X 42.4	46	194	248	112	83	300 2.07
150 X 40 6 X 1½	165.1 X 48.3	51	194	248	112	94	300 2.07
150 X 50 6 X 2	165.1 X 60.3	64	194	248	116	99	300 2.07
150 X 65 6 X 2½	165.1 X 76.1	70	194	248	106	122	300 2.07

90° Elbow Standard



- **MODEL** XGQT01L
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping



Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	57		300 2.07
32 1¼	42.4	70		300 2.07
40 1½	48.3	70		300 2.07
50 2	60.3	83		300 2.07
65 2½	76.1	95		300 2.07
80 3	88.9	108		300 2.07
100 4	114.3	127		300 2.07
125 5	139.7	140		300 2.07
150 6	165.1	165		300 2.07
200 8	216.3	197		300 2.07
250 10	267.4	229		300 2.07
300 12	318.5	254		300 2.07

45° Elbow



- **MODEL** XGQT02
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

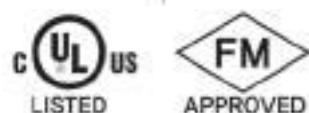
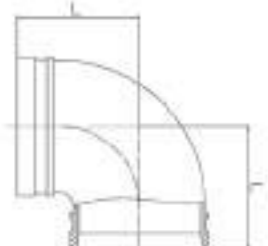


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	44		300 2.07
32 1¼	42.4	44		300 2.07
40 1½	48.3	44		300 2.07
50 2	60.3	51		300 2.07
65 2½	76.1	57		300 2.07
80 3	88.9	64		300 2.07
100 4	114.3	76		300 2.07
125 5	139.7	83		300 2.07
150 6	165.1	89		300 2.07
200 8	216.3	108		300 2.07
250 10	267.4	121		300 2.07
300 12	318.5	133		300 2.07

90° Elbow Shot



- **MODEL** XGQT01
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping



Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	57		300 2.07
32 1¼	42.4	60		300 2.07
40 1½	48.3	60		300 2.07
50 2	60.3	70		300 2.07
65 2½	76.1	76		300 2.07
80 3	88.9	76		300 2.07
100 4	114.3	102		300 2.07
125 5	139.7	122		300 2.07
150 6	165.1	140		300 2.07
150 6	168.3	140		300 2.07
200 8	216.3	175		300 2.07
250 10	267.4	215		300 2.07
300 12	318.5	245		300 2.07

22.5° Elbow



- **MODEL** XGQT07
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

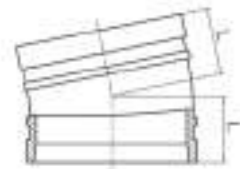


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	41		300 2.07
32 1¼	42.4	44		300 2.07
40 1½	48.3	44		300 2.07
50 2	60.3	51		300 2.07
65 2½	76.1	51		300 2.07
80 3	88.9	57		300 2.07
100 4	114.3	73		300 2.07
125 5	139.7	73		300 2.07
150 6	165.1	79		300 2.07
200 8	216.3	98		300 2.07
250 10	267.4	111		300 2.07
300 12	318.5	124		300 2.07

11.25° Elbow



- **MODEL** XGQT08
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

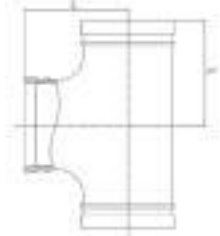


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	35		300 2.07
32 1¼	42.4	35		300 2.07
40 1½	48.3	35		300 2.07
50 2	60.3	35		300 2.07
65 2½	76.1	38		300 2.07
80 3	88.9	38		300 2.07
100 4	114.3	44		300 2.07
125 5	139.7	51		300 2.07
150 6	165.1	51		300 2.07
200 8	216.3	51		300 2.07
250 10	267.4	54		300 2.07
300 12	318.5	57		300 2.07

Grooved Tee Standard



- **MODEL** XGQT03L
- **BODY** Ductile iron (ASTM) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

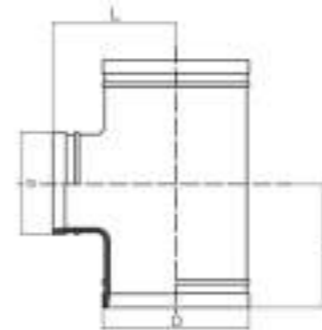


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	57		300 2.07
32 1¼	42.4	70		300 2.07
40 1½	48.3	70		300 2.07
50 2	60.3	83		300 2.07
65 2½	76.1	95		300 2.07
80 3	88.9	108		300 2.07
100 4	114.3	127		300 2.07
125 5	139.7	140		300 2.07
150 6	165.1	165		300 2.07
200 8	216.3	197		300 2.07
250 10	267.4	229		300 2.07
300 12	318.5	254		300 2.07

Grooved Reducing Tee



- **MODEL** XGQT04
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

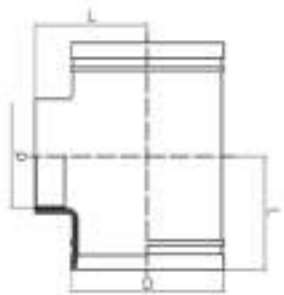


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
50 X 40 2 X 1½	60.3 X 48.3	70		300 2.07
65 X 25 2½ X 1	76.1 X 33.7	76		300 2.07
65 X 32 2½ X 1¼	76.1 X 42.4	76		300 2.07
65 X 40 2½ X 1½	76.1 X 48.3	76		300 2.07
65 X 50 2½ X 2	76.1 X 60.3	76		300 2.07
80 X 25 3 X 1	88.9 X 33.7	86		300 2.07
80 X 32 3 X 1¼	88.9 X 42.4	86		300 2.07
80 X 40 3 X 1½	88.9 X 48.3	86		300 2.07
80 X 50 3 X 2	88.9 X 60.3	86		300 2.07
80 X 65 3 X 2½	88.9 X 76.1	86		300 2.07
100 X 25 4 X 1	114.3 X 33.7	102		300 2.07
100 X 32 4 X 1¼	114.3 X 42.4	102		300 2.07
100 X 40 4 X 1½	114.3 X 48.3	102		300 2.07
100 X 50 4 X 2	114.3 X 60.3	102		300 2.07
100 X 65 4 X 2½	114.3 X 76.1	102		300 2.07
100 X 80 4 X 3	114.3 X 88.9	102		300 2.07
125 X 50 5 X 2	139.7 X 60.3	122		300 2.07
125 X 65 5 X 2½	139.7 X 76.1	122		300 2.07
125 X 80 5 X 3	139.7 X 88.9	122		300 2.07
125 X 100 5 X 4	139.7 X 114	122		300 2.07
150 X 50 6 X 2	165.1 X 60.3	140		300 2.07
150 X 65 6 X 2½	165.1 X 76.1	140		300 2.07
150 X 80 6 X 3	165.1 X 88.9	140		300 2.07
150 X 100 6 X 4	165.1 X 114	140		300 2.07
150 X 125 6 X 5	165.1 X 139	140		300 2.07
200 X 50 8 X 2	216.3 X 60.3	175		300 2.07
200 X 65 8 X 2½	216.3 X 76.1	175		300 2.07
200 X 80 8 X 3	216.3 X 88.9	175		300 2.07
200 X 100 8 X 4	216.3 X 114	175		300 2.07
200 X 125 8 X 5	216.3 X 139	175		300 2.07
200 X 150 8 X 6	216.3 X 165	175		300 2.07
250 X 150 10 X 6	267.4 X 165.1	215		300 2.07
250 X 200 10 X 8	267.4 X 216.3	215		300 2.07
300 X 150 12 X 6	318.5 X 165	245		300 2.07
300 X 200 12 X 8	318.5 X 216.3	245		300 2.07
300 X 250 12 X 10	318.5 X 267.4	245		300 2.07

Threaded Reducing Tee



- **MODEL** XGQT04S
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

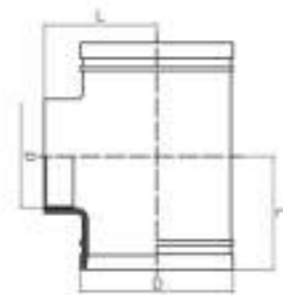


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
50 X 25 2 X 1	60.3 X 33.7	70		300 2.07
50 X 32 2 X 1¼	60.3 X 42.4	70		300 2.07
50 X 40 2 X 1½	60.3 X 48.3	70		300 2.07
65 X 25 2½ X 1	76.1 X 33.7	76		300 2.07
65 X 32 2½ X 1¼	76.1 X 42.4	76		300 2.07
65 X 40 2½ X 1½	76.1 X 48.3	76		300 2.07
65 X 50 2½ X 2	76.1 X 60.3	76		300 2.07
80 X 25 3 X 1	88.9 X 33.7	86		300 2.07
80 X 32 3 X 1¼	88.9 X 42.4	86		300 2.07
80 X 40 3 X 1½	88.9 X 48.3	86		300 2.07
80 X 50 3 X 2	88.9 X 60.3	86		300 2.07
100 X 25 4 X 1	114.3 X 33.7	102		300 2.07
100 X 32 4 X 1¼	114.3 X 42.4	102		300 2.07
100 X 40 4 X 1½	114.3 X 48.3	102		300 2.07
100 X 50 4 X 2	114.3 X 60.3	102		300 2.07

Threaded Reducing Tee



- **MODEL** XGQT04S
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

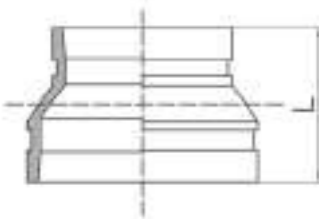


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
125 X 25 5 X 1	139.7 X 33.7	122		300 2.07
125 X 32 5 X 1¼	139.7 X 42.4	122		300 2.07
125 X 40 5 X 1½	139.7 X 48.3	122		300 2.07
125 X 50 5 X 2	139.7 X 60.3	122		300 2.07
150 X 25 6 X 1	165.1 X 33.7	140		300 2.07
150 X 32 6 X 1¼	165.1 X 42.4	140		300 2.07
150 X 40 6 X 1½	165.1 X 48.3	140		300 2.07
150 X 50 6 X 2	165.1 X 60.3	140		300 2.07
200 X 40 8 X 1½	216.3 X 48.3	175		300 2.07
200 X 50 8 X 2	216.3 X 60.3	175		300 2.07

Grooved Concentric Reducer



- **MODEL** XGQT07G
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

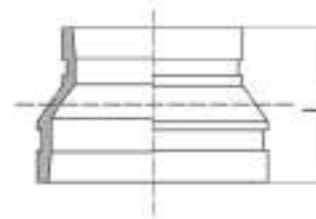


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)	Max working pressure (psi / Mpa)
		L	
50 X 32 2 X 1¼	60.3 X 42.4	64	300 2.07
50 X 40 2 X 1½	60.3 X 48.3	64	300 2.07
65 X 40 2½ X 1½	76.1 X 48.3	64	300 2.07
65 X 50 2½ X 2	76.1 X 60.3	64	300 2.07
80 X 40 3 X 1½	88.9 X 48.3	64	300 2.07
80 X 50 3 X 2	88.9 X 60.3	64	300 2.07
80 X 65 3 X 2½	88.9 X 76.1	64	300 2.07
100 X 40 4 X 1½	114.3 X 48.3	76	300 2.07
100 X 50 4 X 2	114.3 X 60.3	76	300 2.07
100 X 65 4 X 2½	114.3 X 76.1	76	300 2.07
100 X 80 4 X 3	114.3 X 88.9	76	300 2.07
125 X 50 5 X 2	139.7 X 60.3	89	300 2.07
125 X 65 5 X 2½	139.7 X 76.1	89	300 2.07
125 X 80 5 X 3	139.7 X 88.9	89	300 2.07
125 X 100 5 X 4	139.7 X 114.3	89	300 2.07

Grooved Concentric Reducer



- **MODEL** XGQT07G
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

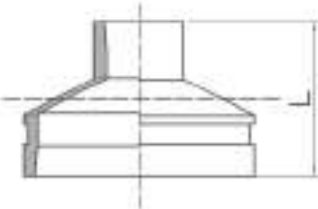


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)	Max working pressure (psi / Mpa)
		L	
150 X 50 6 X 2	165.1 X 60.3	102	300 2.07
150 X 65 6 X 2½	165.1 X 76.1	102	300 2.07
150 X 80 6 X 3	165.1 X 88.9	102	300 2.07
150 X 100 6 X 4	165.1 X 114.3	102	300 2.07
150 X 125 6 X 5	165.1 X 139.7	102	300 2.07
200 X 50 8 X 2	216.3 X 60.3	127	300 2.07
200 X 65 8 X 2½	216.3 X 76.1	127	300 2.07
200 X 80 8 X 3	216.3 X 88.9	127	300 2.07
200 X 100 8 X 4	216.3 X 114.3	127	300 2.07
200 X 125 8 X 5	216.3 X 139.7	127	300 2.07
200 X 150 8 X 6	216.3 X 165.1	127	300 2.07

Threaded Concentric Reducer



- **MODEL** XGQT07S
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

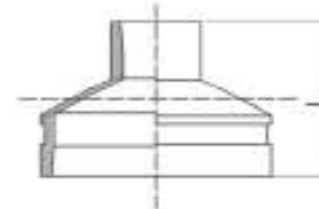


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
32 X 25 1¼ X 1	42.4 X 33.7	64		300 2.07
40 X 25 1½ X 1	48.3 X 33.7	64		300 2.07
40 X 32 1½ X 1¼	48.3 X 42.4	64		300 2.07
50 X 15 2 X ½	60.3 X 21.3	64		300 2.07
50 X 25 2 X 1	60.3 X 33.7	64		300 2.07
50 X 32 2 X 1¼	60.3 X 42.4	64		300 2.07
50 X 40 2 X 1½	60.3 X 48.3	64		300 2.07
65 X 25 2½ X 1	76.1 X 33.7	64		300 2.07
65 X 32 2½ X 1¼	76.1 X 42.4	64		300 2.07
65 X 40 2½ X 1½	76.1 X 48.3	64		300 2.07
65 X 50 2½ X 2	76.1 X 60.3	64		300 2.07
80 X 15 3 X ½	88.9 X 21.3	64		300 2.07
80 X 20 3 X ¾	88.9 X 26.7	64		300 2.07
80 X 25 3 X 1	88.9 X 33.7	64		300 2.07
80 X 32 3 X 1¼	88.9 X 42.4	64		300 2.07
80 X 40 3 X 1½	88.9 X 48.3	64		300 2.07
80 X 50 3 X 2	88.9 X 60.3	64		300 2.07
80 X 65 3 X 2½	88.9 X 76.1	64		300 2.07
100 X 25 4 X 1	114.3 X 33.7	76		300 2.07
100 X 32 4 X 1¼	114.3 X 42.4	76		300 2.07
100 X 40 4 X 1½	114.3 X 48.3	76		300 2.07
100 X 50 4 X 2	114.3 X 60.3	76		300 2.07

Threaded Concentric Reducer



- **MODEL** XGQT07S
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

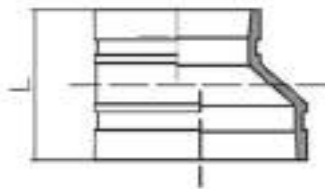


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
100 X 65 4 X 2½	114.3 X 76.1	76		300 2.07
125 X 25 5 X 1	139.7 X 33.7	89		300 2.07
125 X 32 5 X 1¼	139.7 X 42.4	89		300 2.07
125 X 40 5 X 1½	139.7 X 48.3	89		300 2.07
125 X 50 5 X 2	139.7 X 60.3	89		300 2.07
125 X 65 5 X 2½	139.7 X 76.1	89		300 2.07
150 X 25 6 X 1	165.1 X 33.7	102		300 2.07
150 X 32 6 X 1¼	165.1 X 42.4	102		300 2.07
150 X 40 6 X 1½	165.1 X 48.3	102		300 2.07
150 X 50 6 X 2	165.1 X 60.3	102		300 2.07
150 X 65 6 X 2½	165.1 X 76.1	102		300 2.07

Grooved Eccentric Reducer



- **MODEL** XGQT07P
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping



Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
80 X 50 3 X 2	88.9 X 60.3	64		300 2.07
100 X 50 4 X 2	114.3 X 60.3	76		300 2.07
100 X 65 4 X 2½	114.3 X 76.1	76		300 2.07
100 X 80 4 X 3	114.3 X 88.9	76		300 2.07
125 X 50 5 X 2	139.7 X 60.3	89		300 2.07
125 X 65 5 X 2½	139.7 X 76.1	89		300 2.07
125 X 80 5 X 3	139.7 X 88.9	89		300 2.07
125 X 100 5 X 4	139.7 X 114.3	89		300 2.07
150 X 50 6 X 2	165.1 X 60.3	102		300 2.07
150 X 65 6 X 2½	165.1 X 76.1	102		300 2.07
150 X 80 6 X 3	165.1 X 88.9	102		300 2.07
150 X 100 6 X 4	165.1 X 114.3	102		300 2.07
200 X 50 8 X 2	216.3 X 60.3	127		300 2.07
200 X 65 8 X 2½	216.3 X 76.1	127		300 2.07
200 X 80 8 X 3	216.3 X 88.9	127		300 2.07
200 X 100 8 X 4	216.3 X 114.3	127		300 2.07
200 X 125 8 X 5	216.3 X 139.7	127		300 2.07
200 X 150 8 X 6	216.3 X 165.1	127		300 2.07
250 X 100 10 X 4	267.4 X 114.3	152		300 2.07
250 X 150 10 X 6	267.4 X 165.1	152		300 2.07
300 X 200 10 X 8	318.5 X 216.3	152		300 2.07

Grooved Cap



- **MODEL** XGQT06
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

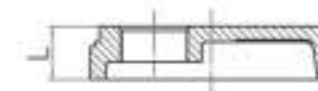


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
25 1	33.7	23.8		300 2.07
32 1¼	42.4	23.8		300 2.07
40 1½	48.3	23.8		300 2.07
50 2	60.3	23.8		300 2.07
65 2½	76.1	23.8		300 2.07
80 3	88.9	23.8		300 2.07
100 4	114.3	25.4		300 2.07
125 5	139.7	25.4		300 2.07
150 6	165.1	25.4		300 2.07
200 8	216.3	32		300 2.07
250 10	267.4	32		300 2.07
300 12	318.5	32		300 2.07

Cap With Eccentric Hole



- **MODEL** XGQT06P
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

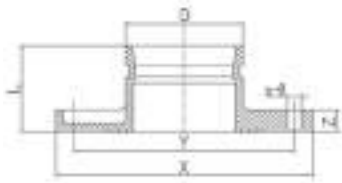


Size (mm / in)	Pipe Outer Diameter D X d mm	Dimensions (mm)		Max working pressure (psi / Mpa)
		L		
50 X 25 2 X 1	60.3 X 33.7	25		300 2.07
65 X 25 2½ X 1	76.1 X 33.7	25		300 2.07
80 X 25 3 X 1	88.9 X 33.7	25		300 2.07
100 X 25 4 X 1	114.3 X 33.7	25		300 2.07
150 X 25 6 X 1	165.1 X 33.7	25		300 2.07
200 X 25 8 X 1	216.3 X 33.7	30		300 2.07
250 X 25 10 X 1	267.4 X 33.7	32		300 2.07
300 X 25 12 X 1	318.5 X 33.7	32		300 2.07

Adaptor Flange 10K



- **MODEL** XGQT10
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping



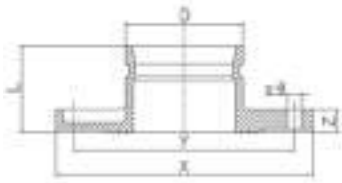
Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)				Max working pressure (psi / Mpa)
		L	X	Y	n-Ø	
50 2	60.3	60.3	155	120	8-Ø19	300 2.07
65 2½	76.1	60.3	175	140	8-Ø19	300 2.07
80 3	88.9	60.3	185	150	8-Ø23	300 2.07
100 4	114.3	70	210	175	8-Ø23	300 2.07
125 5	139.7	70	250	210	8-Ø25	300 2.07
150 6	165.1	70	280	240	12-Ø25	300 2.07
200 8	216.3	76	330	290	12-Ø25	300 2.07
250 10	267.4	85	400	355	12-Ø27	300 2.07
300 12	318.5	90	445	400	16-Ø27	300 2.07

Stainless Steel Grooved Fittings

Adaptor Flange 20K



- **MODEL** XGQT10A
- **BODY** Ductile iron (ASTM A536) / SPP
- **PAINTING** Epoxy (Red)
- **Applications** Extinguishing, Sanitary Piping

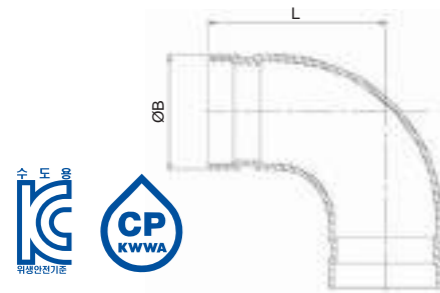


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)				Max working pressure (psi / Mpa)
		L	X	Y	n-Ø	
50 2	60.3	60.3	165	120.5	4-Ø18	300 2.07
65 2½	76.1	60.3	185	139.7	4-Ø18	300 2.07
80 3	88.9	60.3	200	152.4	8-Ø18	300 2.07
100 4	114.3	70	228	190.5	8-Ø18	300 2.07
125 5	139.7	70	250	216	8-Ø18	300 2.07
150 6	165.1	70	285	241.3	8-Ø22	300 2.07
200 8	216.3	76	340	298.5	8-Ø22	300 2.07
250 10	267.4	85	405	362	12-Ø26	300 2.07
300 12	318.5	90	482	432	12-Ø26	300 2.07

Stainless Steel – 90° Elbow



- MODEL XGS01
- BODY STS 304
- Applications Sanitary and air conditioning pipelines

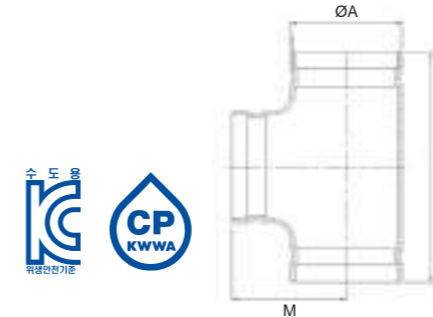


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)
	ØB	L
50 2	60.5	94
65 2½	76.3	110
80 3	89.1	129
100 4	114.3	152.4
125 5	139.8	190.5
150 6	165.2	228.6
200 8	216.3	334.8
250 10	267.4	411
300 12	318.5	487.2

Stainless Steel – Grooved Tee



- MODEL XGS03
- BODY STS 304
- Applications Sanitary and air conditioning pipelines

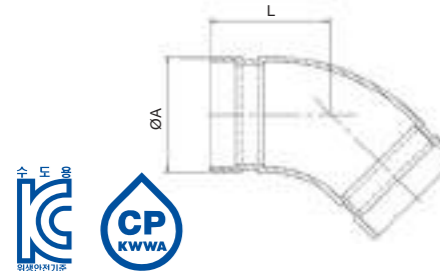


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)	
	ØA	L	M
50 2	60.5	158	84
65 2½	76.3	182	91
80 3	89.1	200	100
100 4	114.3	230	115
125 5	139.8	260	130
150 6	165.2	276	148
200 8	216.3	356	178
250 10	267.4	432	216
300 12	318.5	508	254

Stainless Steel – 45° Elbow



- MODEL XGS02
- BODY STS 304
- Applications Sanitary and air conditioning pipelines

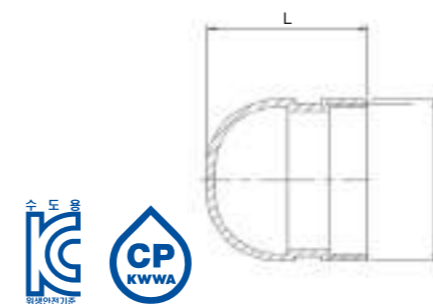


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)
	ØA	L
50 2	60.5	62
65 2½	76.3	69
80 3	89.1	77
100 4	114.3	93.1
125 5	139.8	78.9
150 6	165.2	94.7
200 8	216.3	126.3
250 10	267.4	157.8
300 12	318.5	189.4

Stainless Steel – Grooved Cap



- MODEL XGS04
- BODY STS 304
- Applications Sanitary and air conditioning pipelines



Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)
	ØB	L
50 2	60.5	55
65 2½	76.3	55
80 3	89.1	60
100 4	114.3	65
125 5	139.8	80
150 6	165.2	90
200 8	216.3	102
250 10	267.4	127
300 12	318.5	152

Stainless Steel – Grooved Reducing Tee



- **MODEL** XGS03R
- **BODY** STS 304
- **Applications** Sanitary and air conditioning pipelines

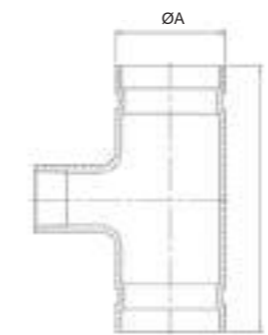


Size (mm / in)	Pipe Outer Diameter (mm)		Dimensions (mm)		
	ØA	ØC	L	M	
65 X 50 2½ X 3	76.3	60.5	182	80	
80 X 50 3 X 2	89.1	60.5	200	93	
80 X 65 3 X 2½	89.1	76.3	200	93	
100 X 50 4 X 2	114.3	60.5	230	113	
100 X 65 4 X 2½	114.3	76.3	230	113	
100 X 80 4 X 3	114.3	89.1	230	113	
125 X 65 5 X 2½	139.8	76.3	260	126	
125 X 80 5 X 3	139.8	89.1	260	126	
125 X 100 5 X 4	139.8	114.3	260	126	
150 X 80 6 X 3	165.2	89.1	296	145	
150 X 100 6 X 4	165.2	114.3	296	145	
150 X 125 6 X 5	165.2	139.8	296	145	
200 X 100 8 X 4	216.3	114.3	356	178	
200 X 125 8 X 5	216.3	139.8	356	178	
200 X 150 8 X 6	216.3	165.2	356	178	
250 X 125 10 X 5	267.4	139.8	432	200	
250 X 150 10 X 6	267.4	165.2	432	200	
250 X 200 10 X 8	267.4	216.3	432	200	
300 X 150 12 X 6	318.5	165.2	508	240	
300 X 200 12 X 8	318.5	216.3	508	240	
300 X 250 12 X 10	318.5	267.4	508	240	

Stainless Steel – Threaded Reducing Tee



- **MODEL** XGS03RS
- **BODY** STS 304
- **Applications** Sanitary and air conditioning pipelines

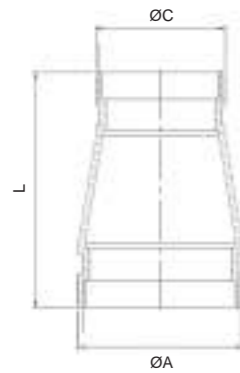


Size (mm / in)	Pipe Outer Diameter (mm)		Dimensions (mm)
	ØA		L
50 X 25 2 X 1	60.5		152
50 X 32 2 X 1¼	60.5		152
50 X 40 2 X 1½	60.5		152
65 X 20 2½ X ¾	76.3		168
65 X 25 2½ X 1	76.3		168
65 X 32 2½ X 1¼	76.3		168
65 X 40 2½ X 1½	76.3		168
65 X 50 2½ X 2	76.3		168
80 X 25 3 X 1	89.1		173
80 X 32 3 X 1¼	89.1		173
80 X 40 3 X 1½	89.1		173
80 X 50 3 X 2	89.1		173
100 X 25 4 X 1	114.3		210
100 X 32 4 X 1¼	114.3		210
100 X 40 4 X 1½	114.3		210
100 X 50 4 X 2	114.3		210
125 X 25 5 X 1	139.8		248
125 X 32 5 X 1¼	139.8		248
125 X 40 5 X 1½	139.8		248
125 X 50 5 X 2	139.8		248
150 X 25 6 X 1	165.2		296
150 X 32 6 X 1¼	165.2		296
150 X 40 6 X 1½	165.2		296
150 X 50 6 X 2	165.2		296

Stainless Steel – Grooved Concentric Reducer



- MODEL XGS05
- BODY STS 304
- Applications Sanitary and air conditioning pipelines

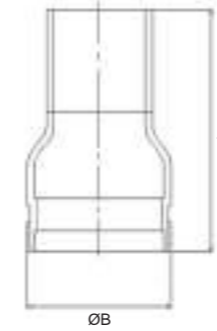


Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)	
	ØA	ØC	L
65 X 50 2½ X 3	76.3	60.5	110
80 X 50 3 X 2	89.1	60.5	120
80 X 65 3 X 2½	89.1	76.3	120
100 X 50 4 X 2	114.3	60.5	125
100 X 65 4 X 2½	114.3	76.3	125
100 X 80 4 X 3	114.3	89.1	125
125 X 65 5 X 2½	139.8	76.3	150
125 X 80 5 X 3	139.8	89.1	150
125 X 100 5 X 4	139.8	114.3	150
150 X 80 6 X 3	165.2	89.1	170
150 X 100 6 X 4	165.2	114.3	170
150 X 125 6 X 5	165.2	139.8	170
200 X 100 8 X 4	216.3	114.3	190
200 X 125 8 X 5	216.3	139.8	190
200 X 150 8 X 6	216.3	165.2	190
250 X 125 10 X 5	267.4	139.8	220
250 X 150 10 X 6	267.4	165.2	220
250 X 200 10 X 8	267.4	216.3	220
300 X 150 12 X 6	318.5	165.2	240
300 X 200 12 X 8	318.5	216.3	240
300 X 250 12 X 10	318.5	267.4	240

Stainless Steel – Threaded Concentric Reducer



- MODEL XGS05S
- BODY STS 304
- Applications Sanitary and air conditioning pipelines



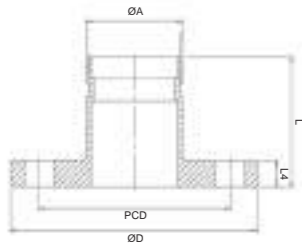
Size (mm / in)	Pipe Outer Diameter (mm)	Dimensions (mm)
	ØB	L
50 X 15 2 X ½	60.5	100
50 X 20 2 X ¾	60.5	100
50 X 25 2 X 1	60.5	100
50 X 32 2 X 1¼	60.5	100
65 X 25 2½ X 1	76.3	105
65 X 32 2½ X 1¼	76.3	105
65 X 40 2½ X 1½	76.3	105
65 X 50 2½ X 2	76.3	105
80 X 32 3 X 1¼	89.1	110
80 X 40 3 X 1½	89.1	110
80 X 50 3 X 2	89.1	110
100 X 40 4 X 1½	114.3	125
100 X 50 4 X 2	114.3	125
125 X 50 5 X 2	139.8	136
150 X 50 6 X 2	165.2	142

Stainless Steel – Adaptor Flange 10K

- 10kgf/cm²



- MODEL XGS06
- BODY STS 304
- Applications Sanitary and air conditioning pipelines



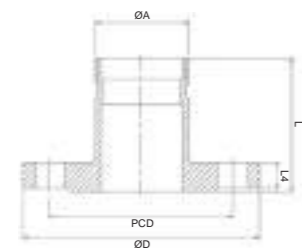
Size (mm / in)	Dimensions (mm)				
	PCD	ØD	L4	ØA	L
50 2	120	155	16	60.5	80
65 2½	140	175	18	76.3	85
80 3	150	185	18	89.1	85
100 4	175	210	18	114.3	90
125 5	210	250	20	139.8	95
150 6	240	280	22	165.2	100
200 8	290	330	22	216.3	115
250 10	355	400	24	267.4	120
300 12	400	445	24	318.5	120

Stainless Steel – Adaptor Flange 20K

- 20kgf/cm²



- MODEL XGS06S
- BODY STS 304
- Applications Sanitary and air conditioning pipelines



Size (mm / in)	Dimensions (mm)				
	PCD	ØD	L4	ØA	L
50 2	120	155	16	60.5	80
65 2½	140	175	18	76.3	85
80 3	160	200	20	89.1	85
100 4	185	225	22	114.3	95
125 5	225	270	24	139.8	95
150 6	260	305	26	165.2	100
200 8	305	350	28	216.3	115
250 10	380	430	32	267.4	120
300 12	430	480	33	318.5	120

* The flanges used for the adaptor flanges are casting products. The pinhole may cause water leakage.
In case of defects, we will offer the 1:1 exchange.

Grooved Ball Valve & Nipple System

Grooved Ball Valve & Nipple System



Grooved Ball Valve

1. Body	SSC13 / SSC14	7. Stem Seal	PTFE
2. Bonnet	SSC13 / SSC14	8. O-Ring	EPDM / NBR
3. Ball	STS304 / STS316	9. Gland Packing	PTFE
4. Stem	STS304 / STS316	10. Gland Nut	STS304 / STS316
5. Seat Ring	PTFE	11. Handle	STS304 / STS316
6. Gasket	PTFE	12. Hex Nut	STS304 / STS316



Grooved Nipple



Application Example of Groove Ball Valve and Nipple Combination

Features of the Groove Ball Valve & Nipple System

■ Purpose of use

- Piping requiring frequent maintenance and inspection
- Piping that is difficult to form a welding connection on
- Piping that is difficult to maintain and inspect due to narrow spaces
- Temporary piping to be disassembled
- Piping for the vibration part with frequent leakage when connecting with screws

1. Simplifying piping work via the one-push insertion method (**improves workability**)
2. Minimizing time and costs involved in piping maintenance (**economic feasibility**)
3. Safe structure in earthquake and dynamic displacement (**seismic design**)
4. Designing a safe gasket structure (**safe and stable against leak accidents**)



- Example of applying the grooved ball valve -

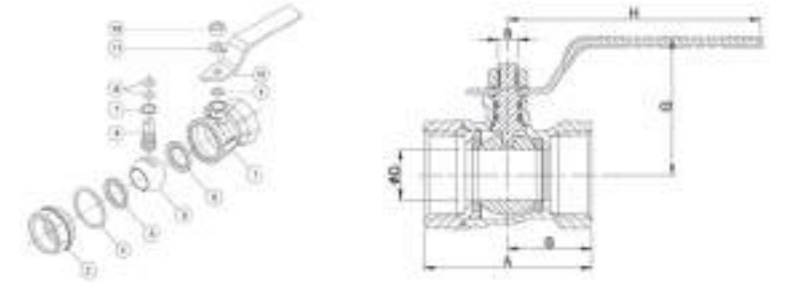


- Example of applying the threaded ball valve -

Two Piece Ball Valve – 10kg/cm²



※ HT Product : Heat Treated Products



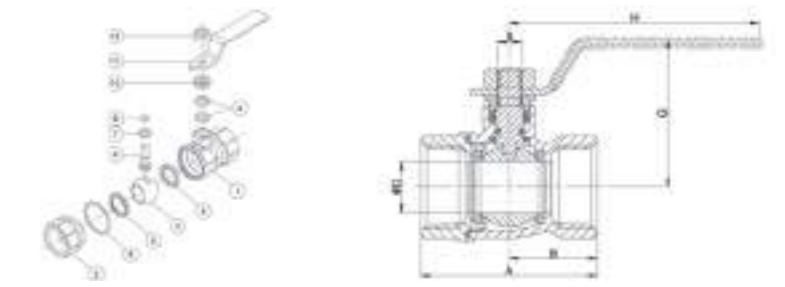
1. Body	SSC13 / SSC14	7. Stem Seal	PTFE
2. Bonnet	SSC13 / SSC14	8. O-Ring	EPDM / NBR
3. Ball	STS304 / STS316	9. Pad	PTFE
4. Stem	STS304 / STS316	10. Handle	STS304 / STS316
5. Seat Ring	PTFE	11. Spring Washer	STS304 / STS316
6. Gasket	PTFE	12. Hex Nut	STS304 / STS316

Size (mm)	ØD	A	B	G	H	R
15A	½B	10	51	25	45	85
20A	¾B	15	57	28.5	49.5	85
25A	1B	20	66	33	55	100
32A	1¼B	25	79	39.5	61	100
40A	1½B	32	89.5	45	69	121
50A	2B	40	102	51	76	121
65A	2½B	50	132	66	94.5	181
80A	3	65	155	77.5	107.5	181

Two Piece Ball Valve – 20kg/cm²



※ HT Product : Heat Treated Products



1. Body	SSC13 / SSC14	7. Stem Seal	PTFE
2. Bonnet	SSC13 / SSC14	8. O-Ring	EPDM / NBR
3. Ball	STS304 / STS316	9. Gland Packing	PTFE
4. Stem	STS304 / STS316	10. Gland Nut	STS304 / STS316
5. Seat Ring	PTFE	11. Handle	STS304 / STS316
6. Gasket	PTFE	12. Hex Nut	STS304 / STS316

Size (mm)	ØD	A	B	G	H	R
15A	½B	10	58.5	28.6	48	86
20A	¾B	15	65.5	33	54.5	99
25A	1B	20	80	40.1	59.5	99
32A	1¼B	25	87.5	44	65	124
40A	1½B	32	98.5	49	70	136
50A	2B	40	114.5	57	79	147

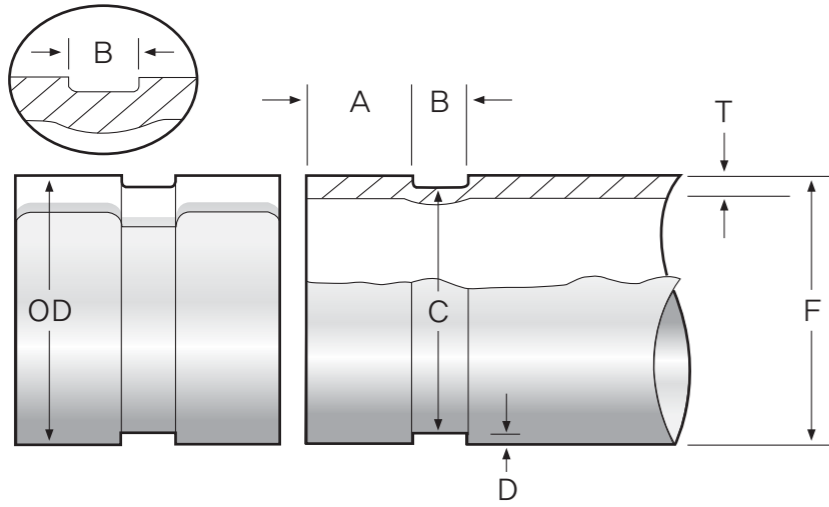
Memo.

Technical Data

Installation Instruction
and inspection

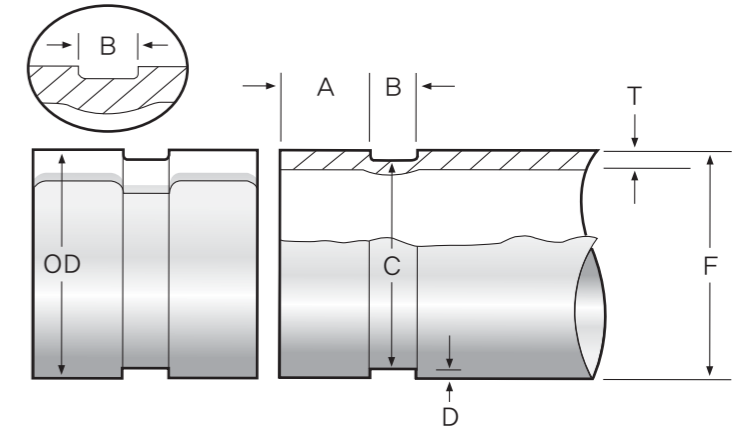
Groove Piping System

Roll Grooving Dimension Standard – Basic Type



Size	Dimensions (mm)						Minimum D (mm)	Maximum F (mm)
	Pipe O.D (mm)		A (±0.76) (mm)	B (±0.76) (mm)	C (mm)			
25	34	±0.5mm	15.88	7.14	30.23	0 -0.38	1.885	34.5
32	42.7	±0.5mm	15.88	7.14	39.99	0 -0.38	1.355	43.3
40	48.6	±0.5mm	15.88	7.14	45.09	0 -0.38	1.755	49.4
50	60.5	±1%	15.88	8.74	57.15	0 -0.38	1.675	62.2
65	76.3	±1%	15.88	8.74	72.26	0 -0.46	2.02	77.7
80	89.1	±1%	15.88	8.74	84.94	0 -0.46	2.08	90.6
100	114.3	±1%	15.88	8.74	110.08	0 -0.51	2.11	116.2
125	139.8	±1%	15.88	8.74	135.48	0 -0.51	2.16	141.7
150	165.2	±1%	15.88	8.74	160.8	0 -0.56	2.2	167.1
200	216.3	±1%	19.05	11.91	211.6	0 -0.64	2.35	219.8
250	267.4	±1%	19.05	11.91	262.6	0 -0.69	2.4	270.9
300	318.5	±1%	19.05	11.91	312.9	0 -0.76	2.8	322

Roll Grooving Dimension Standard – One Push Type



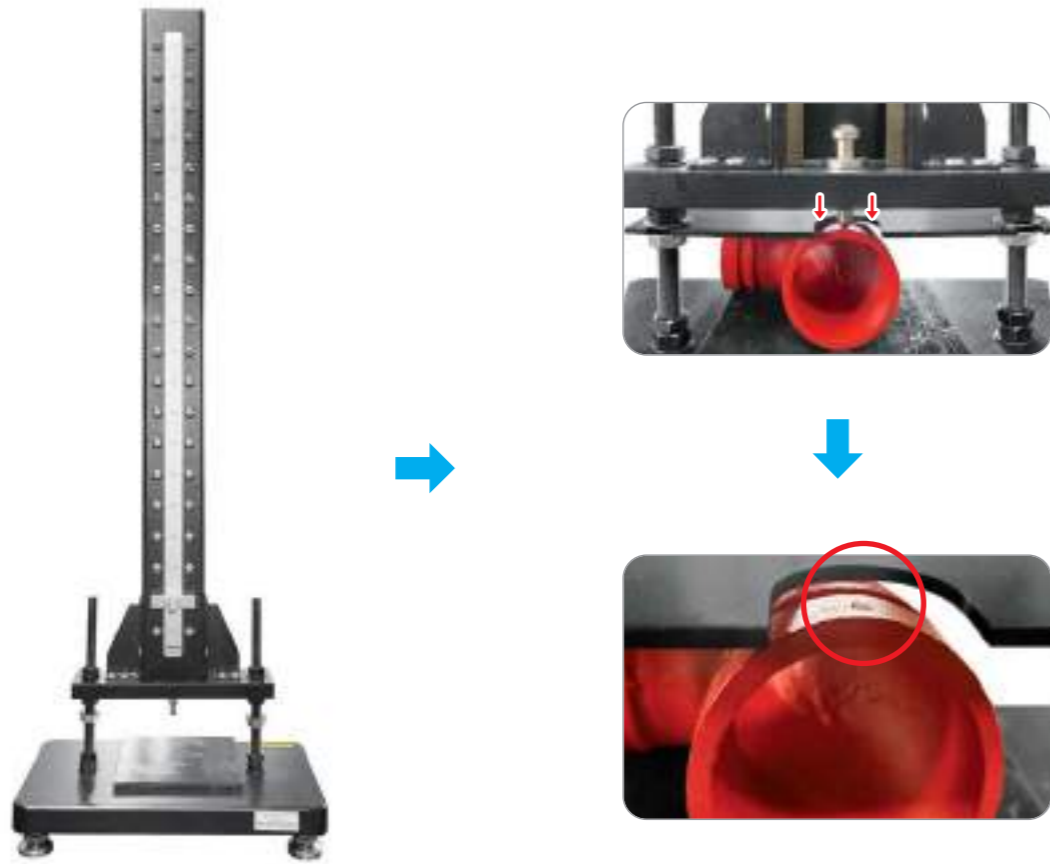
Carbon steel pipe (KS D3507)

Size	Dimensions (mm)					Minimum D (mm)	Minimum T (mm)	Maximum F (mm)
	Pipe O.D (mm)	A (±0.76) (mm)	B (±0.76) (mm)	C (mm)				
50	60.5 ±0.6	15.88	8.74	57.2	0 -0.4	1.65	2	61.5
65	76.3 ±0.8	15.88	8.74	72.3	0 -0.4	2	2.5	77.3
80	89.1 ±0.9	15.88	8.74	84.9	0 -0.4	2.05	2.5	90.1
100	114.3 ±1.1	15.88	8.74	110.1	0 -0.5	2.15	2.5	115.3
125	139.8 ±1.4	15.88	8.74	135.5	0 -0.5	2.15	3	140.8
150	165.2 ±1.6	15.88	8.74	160.8	0 -0.6	2.2	3	166.2
200	216.3 ±2.1	19.05	11.91	211.6	0 -0.6	2.35	3	217.3

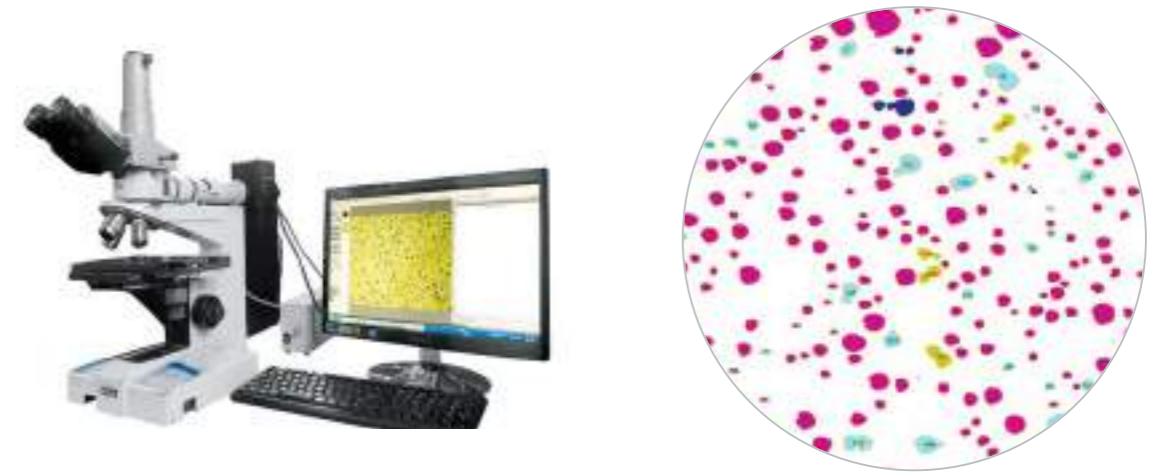
Stainless steel pipe (KS D3576)

Size	Dimensions (mm)					Minimum D (mm)	Minimum T (mm)	Maximum F (mm)
	Pipe O.D (mm)	A (±0.76) (mm)	B (±0.76) (mm)	C (mm)				
50	60.5 ±0.6	15.88	8.74	57.2	0 -0.6	1.65	2	61.5
65	76.3 ±0.8	15.88	8.74	72.3	0 -0.6	2	2.5	77.3
80	89.1 ±0.9	15.88	8.74	84.9	0 -0.6	2.05	2.5	90.1
100	114.3 ±1.1	15.88	8.74	109.5	0 -1.0	2.4	2.5	115.3
125	139.8 ±1.4	15.88	8.74	135	0 -1.0	2.4	3	140.8
150	165.2 ±1.6	15.88	8.74	160.2	0 -1.0	2.5	3	166.2
200	216.3 ±2.1	19.05	11.91	211.2	0 -1.0	2.55	3	217.3

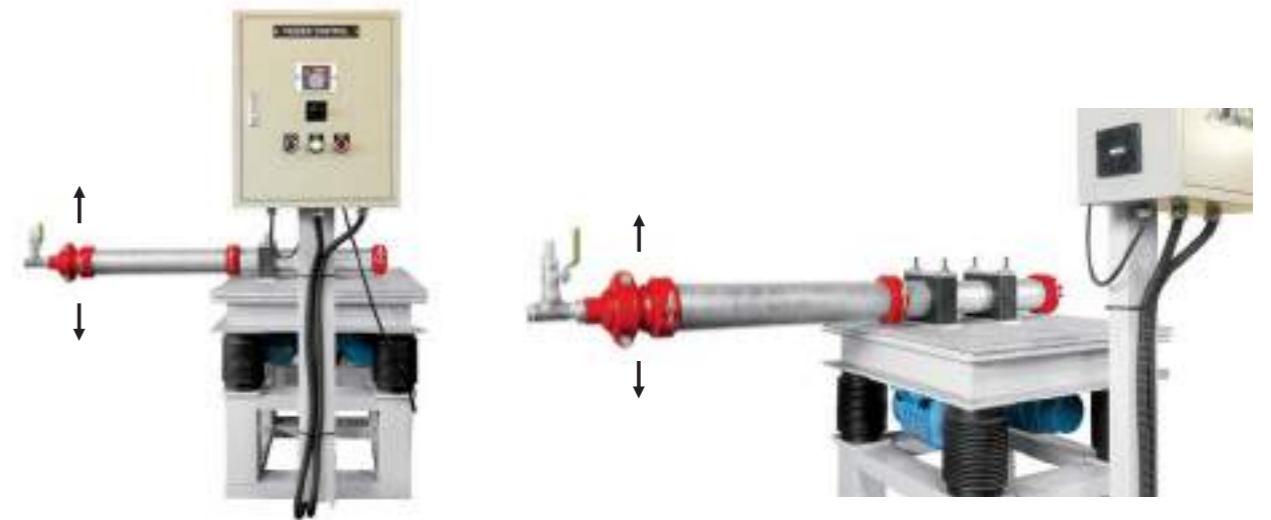
Painting Impact Test



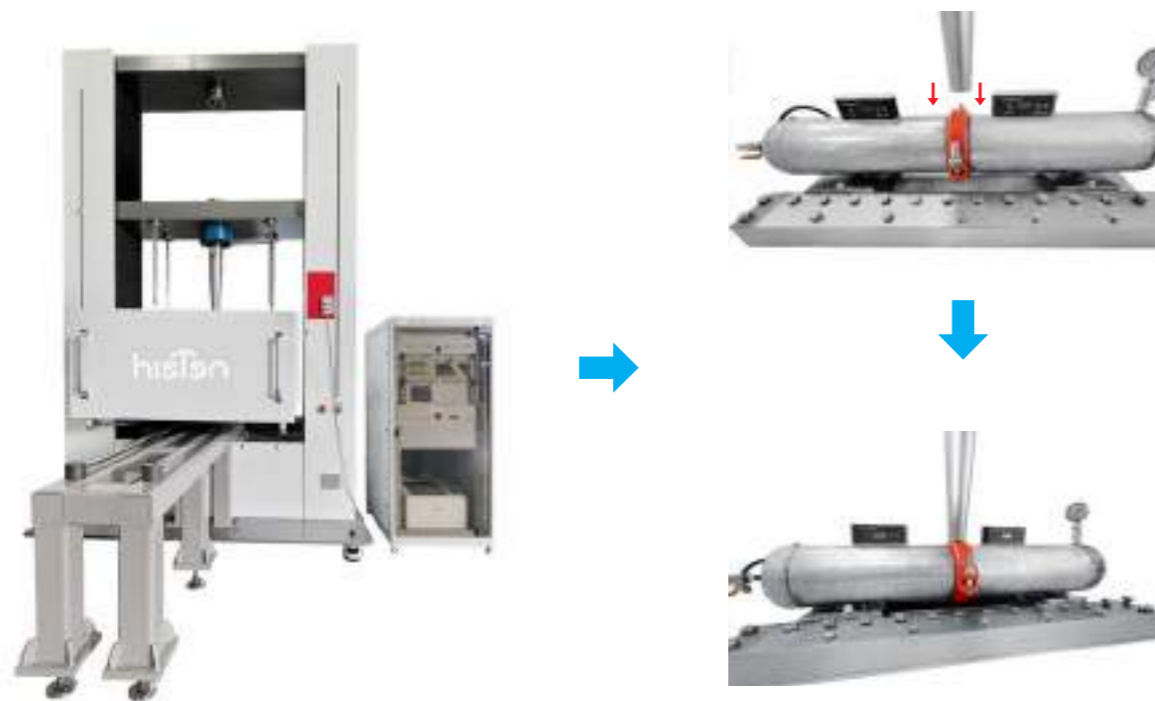
Spheroidizing Ratio Inspection



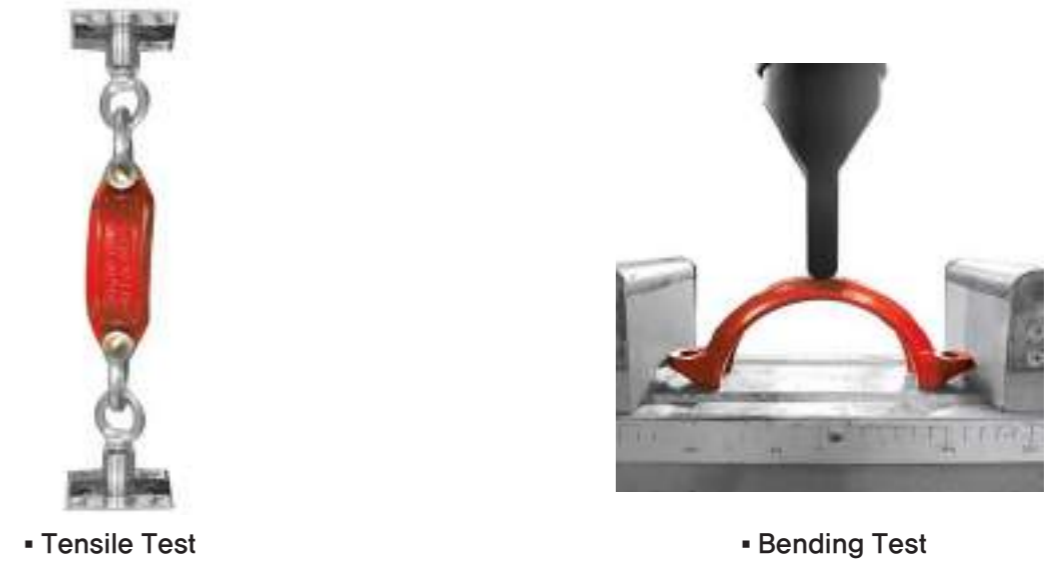
Vibration Resistance Test



Flexibility and Bending Test (UL213/ FM1920)



Housing Tensile & Bending Fracture Test



Grooving Machine



A Type

Product specification

Processing Range
 50A-300A(2"-12") SCH40 STEEL PIPE
 50A-300A(2"-12") SCH10S SCH5S STS STEEL PIPE &
 SCH10 SCH5 STEEL PIPE
Maximum machined pipe thickness : 10mm
Output Rotation Speed : 23rpm
Weight : 163kgs



B Type

Product specification

Processing Range
 25A-150A(1"-6") SCH40 STEEL PIPE
 25A-150A(1"-6") SCH10S SCH5S STS STEEL PIPE &
 SCH10 SCH5 STEEL PIPE
Maximum machined pipe thickness : 6mm
Output Rotation Speed : 23rpm
Weight : 96kgs



Installation Instruction



1. Grooving



2. Measure groove dimensions



3. Applying lubricant inside of the gasket and the coupling housing



4. Insert the Gasket



5. After tightening the bolts and nuts, balance and tighten the nuts on both sides (to prevent damage to the gasket)



6. complete connection

Hydraulic and Bending Test

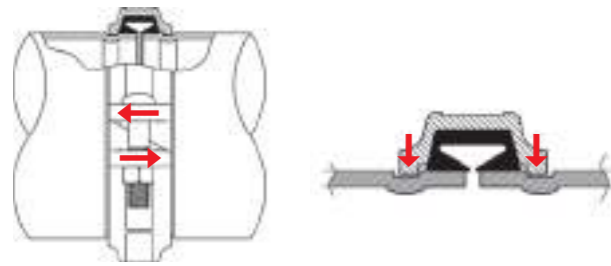


▪ **Angle-pad coupling**

The Angle-pad groove piping system may be a method of mutually fastening couplings to the grooves of both ends of the pipe and may provide sufficient intensity for strong fastening.

The Angle-pad coupling provides fastening by pressing down on the bottom surface of the pipe groove to fix the pipe and coupling.

The unique angle pad (the diagonal sliding fastening method) of a coupling may strongly fix the pipe as the part of the coupling housing in contact with the groove applies the fastening force to the bottom part of the groove along the pipe circumference.



Angle pad
(diagonal sliding fastening method)

The housing is not fixed but is designed to slide on the angle pad (diagonal sliding fastening method).

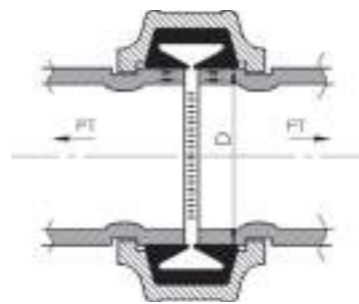
The diagonal sliding fastening method may help strong fastening by pushing the coupling in the diagonal direction to minimize a gap between end portions of the pipe during assembly by applying force to the extent that the key part of the bottom portion of the housing contacts the groove contact portion of the fitting and the pipe from the outer edge to the opposite direction to the inside.

The piping configuration including the Angle-pad coupling may need to be designed to completely absorb thermal expansion and contraction of the pipe and require a support gap similar to the piping systems in welding and flange methods in the aspect of maintaining piping to be straight and to reduce deformation.

▪ **Flexible coupling**

When pressure-thrust, a force that pushes an end portion of the pipe, is applied to the flexible coupling, the force may apply to the processed inner surface of the groove part of the pipe in the inward direction while the protrusion of the bottom portion of the housing body contacts the inner surface of the groove. This force will not cause the pipe to separate.

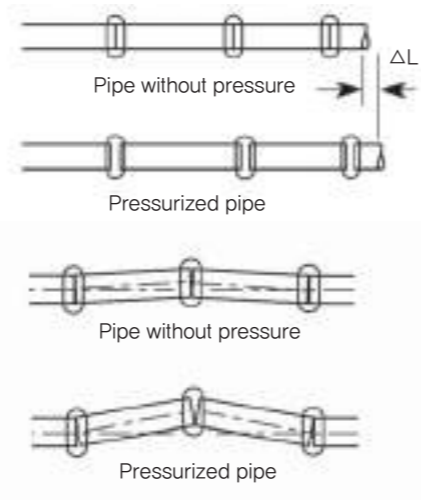
The force that the coupling may withstand may vary depending on the size and type of the coupling, the size, thickness, type of the pipe, and the external environment. The "maximum allowable load for end portions" that each coupling may withstand may be generated by the inner pressure and external load, and the pressure thrust transmitted to the coupling may be calculated by the equation shown below.



$$PT = \frac{\pi}{4} D^2 p$$

Note :

- PT = Pressure thrust
- D = Outside diameter of pipe (inch)
- p = Inner pressure (psi)



In case of a system in which pressure thrust may not fix the coupling due to it being anchored or a system in which a coupling is intentionally bent (e.g., a curved part), the transverse movement of the pipe may need to be restrained to prevent pipe movement due to the pressure thrust at the point where the bending of the pipe occurs.

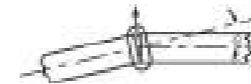


When touching or completely separate, both ends of the pipe may not freely move, and thus, bending deformation of the pipe may not be feasible.

When it is not fixed, the coupling of the bent pipe may be straightened by applying pressure thrust in the axis direction or other forces to separate the pipe thereto.

If you want to maintain the coupling in the bent state, the pipe may need to be fixed by an anchor to suppress the pressure thrust and the force of pulling both ends of the pipe.

Otherwise, a force must need to be applied from the side surface of the pipe that is sufficient enough to maintain the coupling in the deformed state.

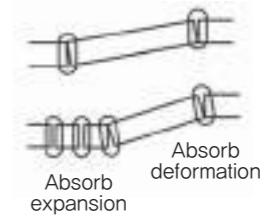


A force "F" from the side surface of the pipe always applies to the bent coupling due to the inner pressure. A completely bent coupling may not provide complete linear movement that a coupling in the normal state may provide.



At least two flexible couplings may be required to provide an eccentric force to the pipe. It shall not exceed maximum deflection from the centerline of each coupling.

Deformation of coupling
Expansion / contraction functions are not available

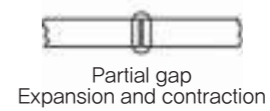
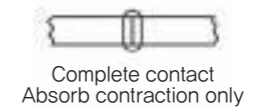
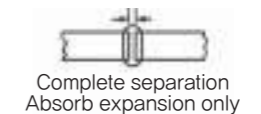


In the groove piping method, the maximum linear movement (contraction/expansion) may not simultaneously occur with the maximum deflecting angle (deflecting / bending) in one coupling.

If it is expected that two kinds of forces are simultaneously applied, the system may need to be designed using the coupling that sufficiently accommodates two kinds of forces.

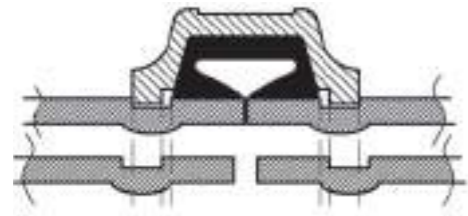
The flexible coupling may not automatically respond to the expansion and contraction of the pipe. The optimal setting values of the space at the end portion of the pipe must always be taken into account.

When using the anchor type system, space may need to be set to respond to a combination of expansions and contractions.



The linear movement that the flexible coupling may absorb may vary depending on the performance of each coupling product.

When used for design or installation, consider the tolerances of the pipe grooves.

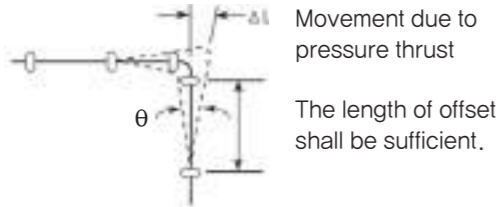


Linear movement tolerance

▪ Offset and branching pipe connections

When a force that pushes the end portion of the pipe, in other words, the pressure thrust, applies to the flexible coupling, a processed surface of the end portion of the pipe of the groove may contact the inner surface of the protrusion of the housing of the coupling and may be pulled forcefully. This is the force that prevents the pipe from being separated. The magnitude of the force that the coupling may withstand may vary depending on the type of coupling, the thickness of the tube, the type of pipes, and the groove method.

The product data provided below the "maximum allowable load for end portions" row shows the maximum allowable load for end portions for each coupling product and these loads may occur due to inner pressure and external load.



Please sufficiently set the length of the offsets and the branching pipe connections to prevent the pipe exceeding the maximum deflection angles and accommodating the expected maximum movement of the pipe.

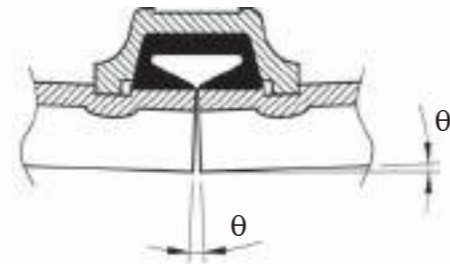
Or please fix the system with an anchor in a way that the direction of the movement faces a different direction. In addition, please ensure that the adjacent pipes can freely move in an expected range.

▪ Deflection angle

The range of the deflection angle that the flexible coupling may absorb can differ for each product.

When used for designing or installation, need to consider and apply the tolerances of the pipe grooves.

θ = the maximum deflection angle range of the centerline based on performance data



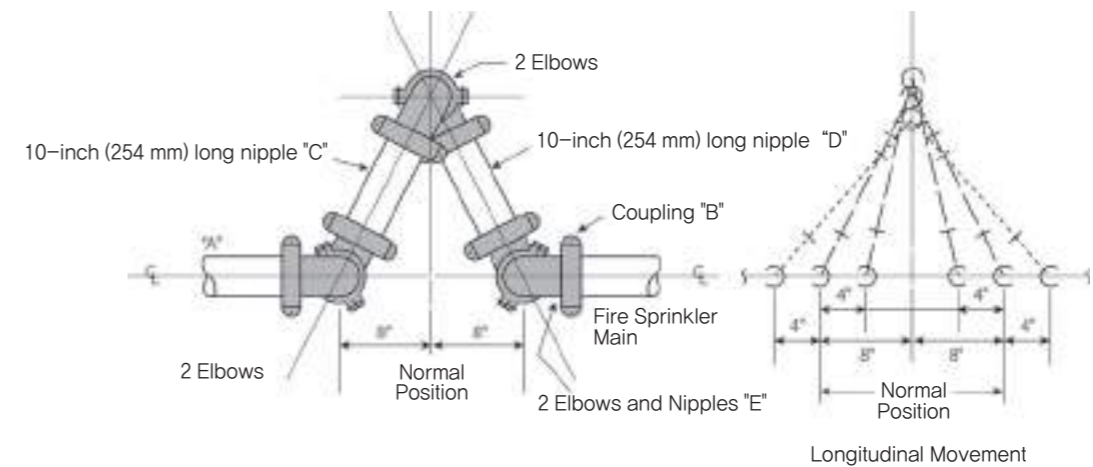
Deflection angle tolerance

Linear movement and bending angle of flexible coupling

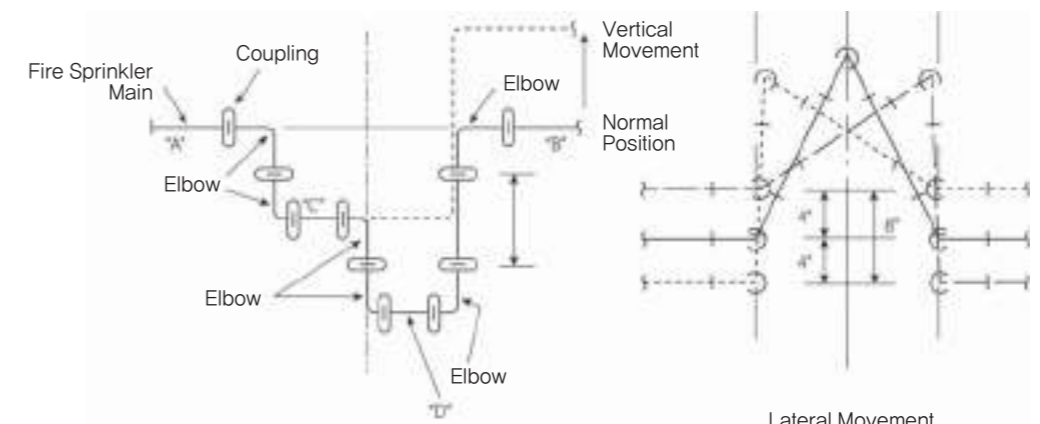
Standard		Actual outside diameter	Roll Groove – Basic type		Roll Groove – One – push type		
mm	inch		Linear movement - Max.	Bending angle (θ) - Max.	Linear movement - Max.	Bending angle (θ) - Max.	
mm	inch	mm	mm	Degree(°)	mm	mm	Degree(°)
25	1	33.7	1	1°-22"	24		
32	1 1/4	42.4	1	1°-05"	19		
40	1 1/2	48.3	1.6	0°-57"	16.5		
50	2	60.3	1.6	0°-45"	13	3.0	2.0°
65	2 1/2	76.1	1.6	0°-36"	10.5	3.0	2.0°
80	3	88.9	1.6	0°-31"	9	3.0	2.0°
100	4	114.3	1.6	0°-48"	14	3.0	1.5°
125	5	139.7	1.6	0°-37"	11.5	3.0	1.5°
150	6	165.1	1.6	0°-35"	10	3.0	1.5°
200	8	216.3	1.6	0°-25"	7.5	4.0	1.3°
250	10	267.4	1.6	0°-20"	6		
300	12	318.5	1.6	0°-18"	5		

※ The linear movement and angle range of the flexible coupling are merely design values and may differ from the actual product.

▪ Standard of Establishment of the Earthquake Separator



Longitudinal Movement



Lateral Movement

※ The picture above is an example of a typical configuration.

- The information and content presented herein is not exhaustive.
- These are general notes for applying the product.
- Because each system is different, this information cannot be used as a standard for installation situations.
- The stated temperature, pressure, internal and external loads, tolerances, and performance standards must not be exceeded.

Patent



Memo.

A series of horizontal dashed lines for taking notes.

Design Registration Certificate

