

CPS CATALOGUE

CPS GROOVED PIPING SYSTEM



Approved worldwide



Factory Mutual Research Corp.
Approved for the protection services



Underwriters Laboratories Inc.
Listed for the protection services



Underwriters Laboratories
Canada-Listed for the protection services

CPS Grooved Piping System offers versatility, economy and reliability in the installation of piping systems. It is faster to install than welding, easier and more reliable than threading or flanging. Most importantly, it generally results in the lowest installed cost and greatest time savings.

CPS Grooved Piping System elastomeric gaskets, ductile iron clamps and heat-treated nuts and bolts have been manufactured under the exacting standards set by UL (Underwriters Laboratories Inc.) and FM (Factory Mutual System). Correspondingly, the CPS line of fittings and pipes are UL and ULC listed as well as FM approved. As a factory policy every batch of CPS fittings and gaskets go through rigorous chemical analysis as well as mechanical testing under the standards imposed UL and FM.

CPS Grooved Piping System provides for quick and ease of installation. The full engagement of the coupling into the groove insures joint reliability as it provides resistance to compression and tension loads while torsional loads are negated. With CPS couplings, misalignment of pipes is better tolerated since the grooved system allows full rotation of pipes, valves, fittings or couplings before tightening. This compensates for alignment errors and eliminates the "two-holing" required with flanges. Naturally, fitting in tight spaces becomes easier.

CPS Grooved Piping System lowers the cost of installation through ready-to-install pipes and couplings. AutoCAD drawings are analyzed and products manufactured to specifications in our factory. Once at site, the pipes and fittings are ready for assembly. No further cutting, welding or machining is required, significantly improving efficiency and increasing savings.

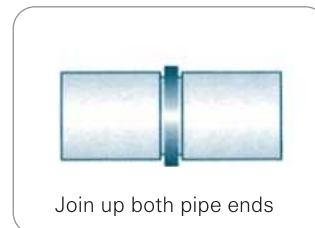
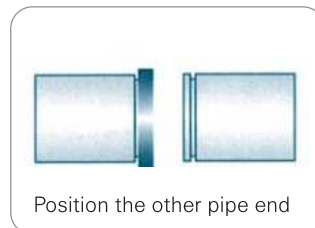
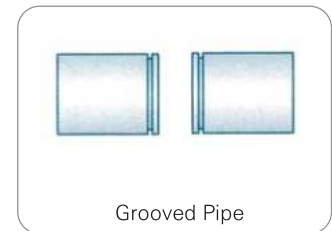
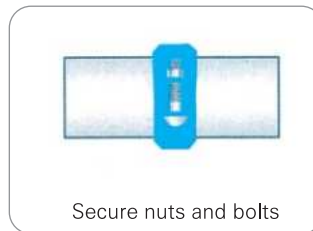
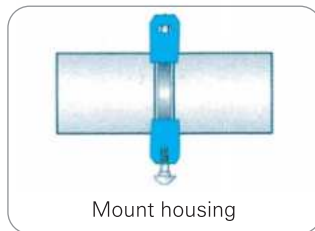
CPS Grooved Piping System provides ease of cleaning, maintenance, system changes or expansions. Disassembly is simple: just remove four bolts (2 couplings) and pipes can be changed out. Also, the system is free of contaminants such as pipe dope and weld slag, making cleaning and maintenance easy.

CPS stands by its products and provides a lifetime warranty on them. In addition, CPS is geared towards a worldwide presence and has factory-trained specialists that can be deployed worldwide to provide technical services.

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1. Installation

CPS Grooved Piping System is assembled using a slightly stretched gasket over pipe ends. This is followed by fully encasing the housing over the gasket and tightening the assembly with nuts and bolts.



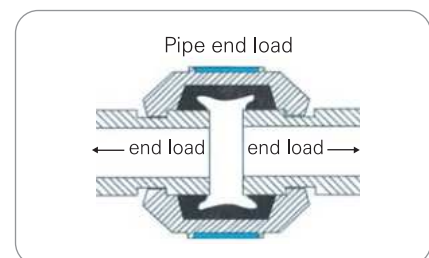
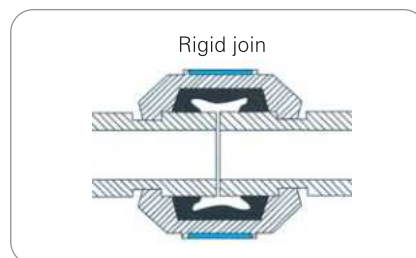
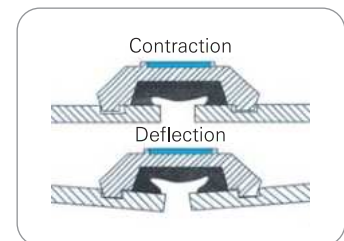
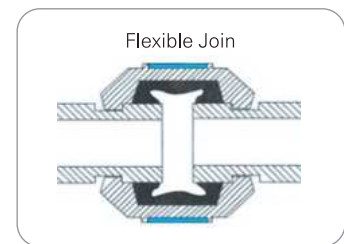
- To prepare the pipe ends for the CPS coupling assembly, the ends can be roll-grooved or cut grooved depending on pipe size, material and other factors. Roll grooving is used for lightweight pipes with insufficient wall thickness to permit cut grooving. To create a roll groove, a roll is impressed into the pipe to form a groove. In cut grooving, material is machined around the pipe to form a groove. Grooving is now applicable to carbon steel, stainless steel, copper, aluminium, ductile and cast iron and PVC pipes.
- Gasket compounds are selected depending on the service the couplings are utilized for. For water services, the main rubber compound is EPDM(Ethylene Propylene Diene Monomer). For oil services (to 82°C) and gas streams with hydrocarbon, Bunan is adopted for gasket material.
- Clamps are usually manufactured from ductile iron according to ASTM A536 Grade 65-45-12 with 65,000 PSI(448110kPa) minimum tensile strength, 45,000PSI(310,230kPa) minimum yield strength and 12% minimum elongation. This clamp employs an exclusive guide-on tongue which aids make-up alignment during the assembly process. For special requests, we can also supply clamps made from stainless steel and copper.
- The nuts and bolts used are heat-treated, oval neck, track head as well as conform to ASTM A-183 with minimum tensile strength 110,000 PSI (758,340kPa) for bolts and ASTM A-194 for nuts. Although they secure the entire system, they are not taking the primary load nor are they functional in the sealing process. The bolts fit into the oval-shaped housing, thereby permitting the installer to tighten the bolts from one side with a single socket head wrench. Stainless steel nuts and bolts are an option.

- Thorough lubrication of the gasket exterior including the lips and/or pipe ends and housing interiors is essential in preventing gasket pinching. It also aids proper installation. CPS recommends using our proprietary lubricant or other recommended lubricants to provide proper sealing and gasket life.

2. Grooved Couplings

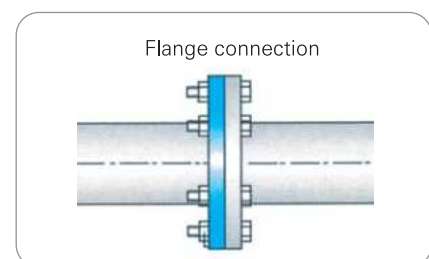
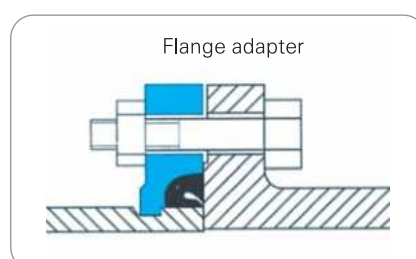
CPS Grooved Piping Systems offer both rigid and flexible style couplings. The option of having flexibility or rigidity adds to the design versatility and can be incorporated into any system to take full advantage of the characteristics of each type.

CPS flexible coupling is designed to allow contraction and expansion from temperatures changes, piping system movements, vibration and noise, and help reduce the need for expansion joints. This was accomplished by providing controlled rotational and normal longitudinal movement at each joint. These features will benefit many engineers designing piping systems and must be considered for proper assembly and Installation. Rigid coupling have cast teeth that bite into the shoulders of the pipe to restrict movement. These rigid couplings offer a rigid joint which is very functional where flexibility is preferred.



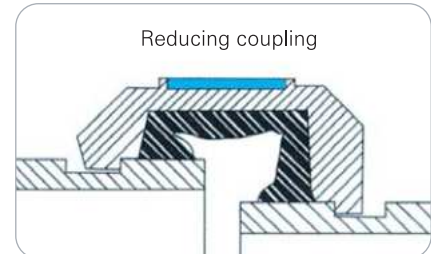
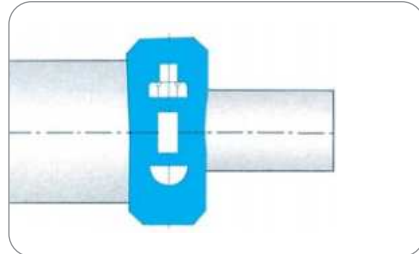
3. Flanged Adapters

CPS flanged adapters can be mated with grooved cut pipes and joined to ASME or other internationally standardized flanged pipe ends. The nuts and bolts used must also conform to the relevant standards.



4. Reducing Couplings

Reducing couplings from CPS allows pipe reduction and possess the same options of flexible or rigid couplings.



5. Mechanical Snap Tees

CPS Mechanical Snap Tees provide a direct branch connection at any location a hole can be cut in a pipe. The hole is oversized to receive a "holefinder" location collar which secures the outlet in position permanently. A pressure responsive gasket seals on the pipe O.D. Outlets are available grooved or threaded to NPT or BSPT.

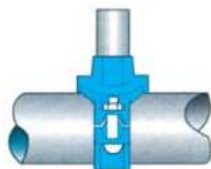
Hole cutting



Mechanical snap Tee



Threaded Outlet



Grooved outlet



6. CPS Grooved Fittings

CPS offers a broad line of grooved fittings and elbows in sizes through 24" in a variety of straight and reducing styles. Fittings are provided in various materials including malleable iron, ductile iron, steel or segmentally welded steel depending on styles and size. They are painted orange enamel and are designed specifically for use in grooved piping systems. Also available are pipe end caps for sealing pipes (use with CPS couplings).

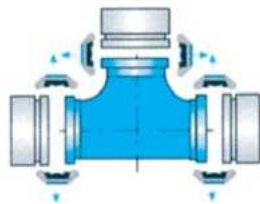
90° elbow



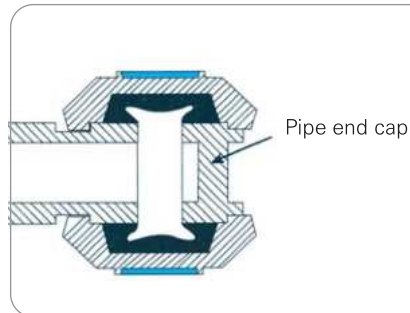
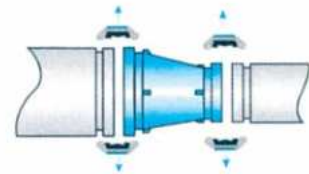
45° elbow



Tee



Reducing fitting



7. CPS Lubricant

CPS lubricant is required for lubrication of gaskets and pipe ends. Proper lubrication will prevent gasket pinching and, at the same time, allow for proper seating as well as alignment of gaskets. The lubricant is made from environmentally safe chemicals and will not pollute water systems.



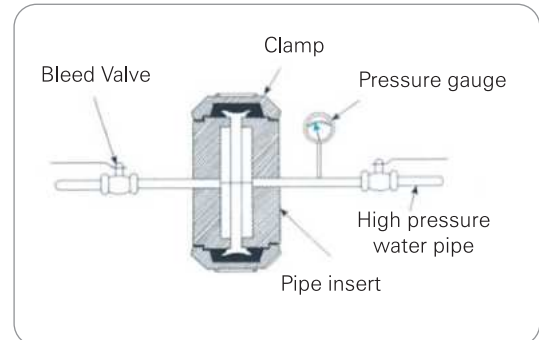
CPS Lubricant

8. CPS Couplings And Fitting Test Procedure

All CPS products, whether in new product development stage, design stage or production stage, employ UL and FM standards of testing. A series of tests under strict UL and FM protocol is conducted to ensure quality and reliability in large batches of products.

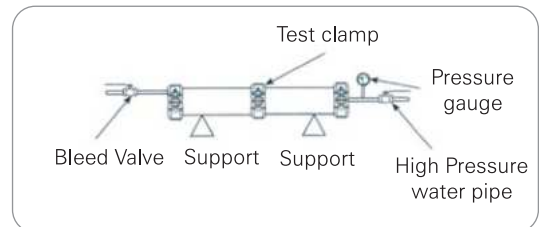
I Pressure Test

Pressure tests are conducted to ensure that CPS products satisfy the working pressure requirements for safety and reliability. Products are normally tested at safety and reliability. Products are normally tested at 4 to 5 times their normal operating pressure.



II Leak Test

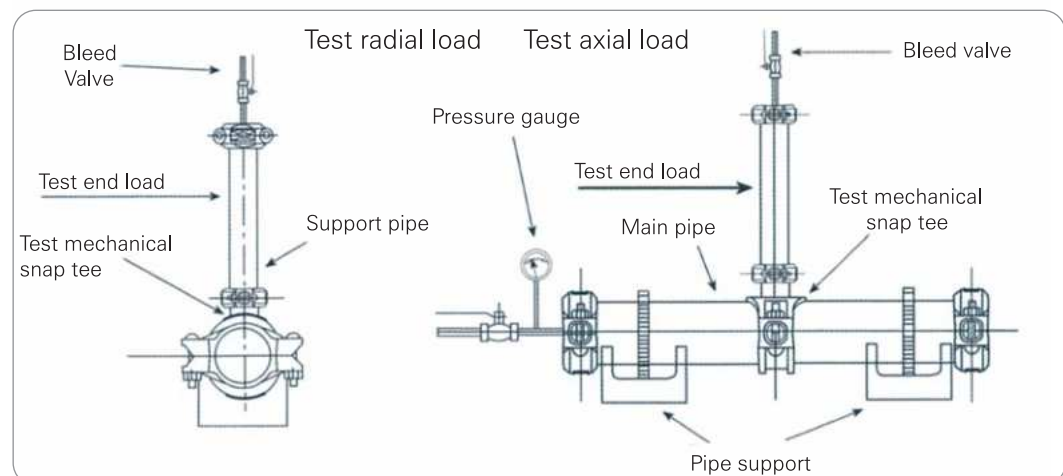
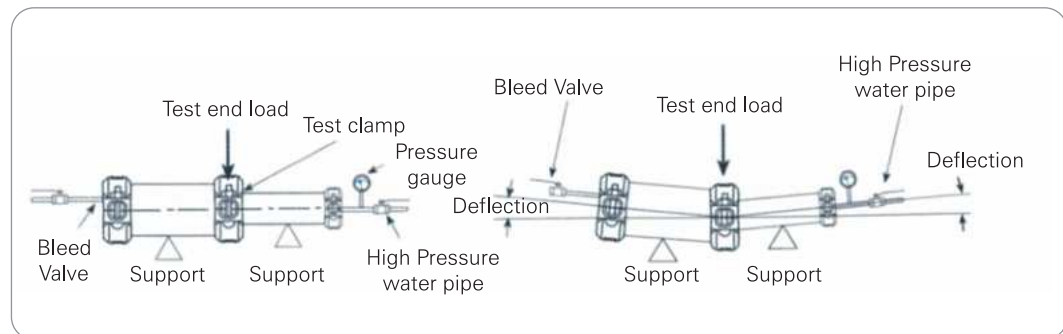
Leak tests are conducted to ensure that CPS products maintain their sealing (gasket) effectiveness at normally twice their working pressure.



Hydrostatic Streeg Test

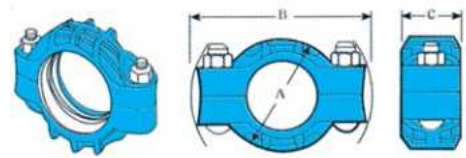
III Bending Test

CPS products are tested for misalignment angles and torsional stress to investigate their breaking points and sealing capabilities.



9. Standard Weight Couplings (Style 11)

The standard of the CPS line is the style 11. It is available through 12" IPS sizes. Its heavy - duty ribbed construction provides for working pressures up to 1000 psi. The coupling can be optionally galvanized or coated by request.



Pipe		Max. Work. Press.	Max. End. Load	Allow. Pipe End Sep	Deflection from CL		Dimensions			Unit Weight
Size	O.D						A	B	C	
INCH	mm	Mpa	N	mm	Degree	mm/M	mm	mm	mm	Kg
1 1/4"	42.2	7	9791	0-1.6	4° -20'	75.6	67	118	46.7	1.0
1 1/2"	48.3	7	12826	0-1.6	3° -56'	68.6	76	127	46.7	0.9
2"	57	7	17862	0-1.6	3° -20'	58.1	92	143	46.7	1.1
	60.3	7	19990	0-1.6	3° -10'	55.2	92	143	46.7	1.2
2 1/2"	73	7	29298	0-1.6	2° -30'	43.6	108	159	46.7	1.4
	76.1	7	31839	0-1.6	2° -24'	41.9	110	160	46.7	1.5
3"	88.9	7	43450	0-1.6	2° -4'	36.1	127	178	46.7	2.1
4"	108	7	64126	0-3.2	3° -22'	58.7	149	205	52	2.9
	114.3	7	71826	0-3.2	3° -12'	55.8	162	216	51	3.2
5"	133	7	97250	0-3.2	2° -42'	47.1	186	234	52	4.8
	140	7	107295	0-3.2	2° -36'	45.4	193	240	52	5.0
6"	159	7	138990	0-3.2	2° -18'	40.1	216	264	52	4.85
	165.1	7	149859	0-3.2	2° -12'	38.4	233	292	52	5.8
	168.3	7	155170	0-3.2	1° -24'	24.4	229	292	51	6.0
8"	219	5.5	207177	0-3.2	1° -40'	29.1	289	368	60	8.0
10"	273	5.5	326100	0-3.2	1° -40'	29.1	334	416	65	11.4

Recommend: The standard weight couplings should be connected with thick wall grooved pipes.

10. Lightweight Couplings (Style 10)

When low to moderate pressure are anticipated, or when weight considerations become significant, the Style 10 is recommended. Pressures up to 500 psi, depending on size may be handled. Special coatings or hot dip galvanizing may be optionally ordered.



Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load	Allow. Pipe End Sep	Deflection from CL		Dimensions			Unit Weight
Size	O.D							A	B	C	
INCH	mm	Mpa	Mpa	N	mm	Degree	mm/M	mm	mm	mm	Kg
1 1/4"	42.2	4.4	3.5	4814	0-3.2	4° -19'	75.3	67	113	44.5	0.67
1 1/2"	48.3	4.4	3.5	6229	0-3.2	3° -46'	65.8	79	114	44.5	0.70
2"	57	4.4	3.5	8931	0-3.2	3°	52.3	90	131	48	0.72
	60.3	4.4	3.5	9855	0-3.2	3° -1'	52.5	89	130	44.5	0.80
2 1/2"	73	4.4	3.5	14649	0-3.2	2° -30'	43.6	102	149	44.5	0.90
	76.1	4.4	3.5	15919	0-3.2	2° -30'	43.6	102	149	44.5	0.95
3"	88.9	4.4	3.5	21400	0-3.2	2° -3'	35.8	118	172	44.5	1.34
4"	108	2.8	2.1	19238	0-6.35	2° -5'	36.4	135	233	52	1.80
	114.3	2.8	2.1	28297	0-6.35	2° -11'	38.1	149	203	51	1.90
5"	133	2.8	2.1	29175	0-6.35	2° -10'	37.8	166	220	51	2.40
	140	2.8	2.1	43245	0-6.35	2° -35'	45.1	178	276	51	2.80

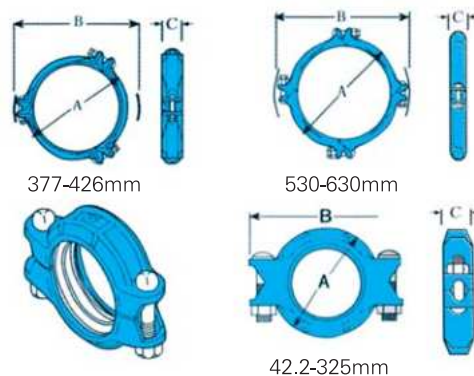
10. Lightweight Couplings (Style 10)

Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Allow Pipe End Sep	Deflection from CL		Dimensions			Unit Weight
Size	O.D							A	B	C	
INCH	mm	Mpa	Mpa	N	mm	Degree	mm/M	mm	mm	mm	Kg
6"	159	2.8	2.1	52434	0-6.35	2° -20'	40.7	190	273	52.3	3.3
	165.1	2.8	2.1	61354	0-6.35	2° -10'	37.8	200	274	52	3.2
	168.3	2.8	2.1	61354	0-6.35	2° -10'	37.8	181	279	51	3.3
8"	219	2.8	2.1	90986	0-6.35	1° -40'	29.1	264	355	60	6.5
10"	273	2.5	1.9	134303	0-9.4	0° -45'	13.1	324	414	65	11
12"	325	2.5	1.9	182801	0-9.4	0° -40'	11.5	376	466	65	12.8
14"	377	2.1	1.6	207139	0-7.4	0° -35'	10.2	434	530	75	16.5
16"	426	2.1	1.6	265905	0-7.4	0° -30'	8.7	460	630	79	20.5
20"	530	2.1	1.6	399731	0-6.2	0° -25'	7.3	564	706	79	23.6
24"	630	2.1	1.6	560741	0-6.2	0° -10'	2.9	696	808	82	30.8

11. Rigid Couplings (Style 5)

Style 5 couplings adjust to standard pipe and rolled or cut groove tolerances, positively clamping the pipe to resist flexural and torsional loads. Wider key section fills more of groove area. Special coatings or hot dip galvanizing may be optionally ordered.

symbol 



Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Deflection from CL		Dimensions			Unit Weight
Size	O.D						A	B	C	
INCH	mm	Mpa	Mpa	N	Degree	mm/M	mm	mm	mm	Kg
11/4"	42.2	4.4	3.5	4814	1° ~30'	26.2	72	110	46.7	0.7
11/2"	48.3	4.4	3.5	6229	1° ~30'	26.2	78	115	46.7	0.75
2"	57	4.4	3.5	8931	1° ~30'	26.2	90	124	46.7	0.82
	60.3	4.4	3.5	9855	1° ~30'	26.2	90	124	46.7	0.82
2 1/2"	73	4.4	3.5	14649	1° ~30'	26.2	102	118	46.7	0.9
	76.1	4.4	3.5	15919	1° ~30'	26.2	102	118	46.7	1.0
3"	88.9	4.4	3.5	21400	1° ~30'	26.2	118	162	46.7	1.3
4"	108	2.8	2.1	19238	1° ~10'	20.4	143	200	52	1.97
	114.3	2.8	2.1	28297	0° ~30'	8.7	151	196	51	2
5"	133	2.8	2.1	29175	0° ~30'	8.7	171	220	51	2.5
	140	2.8	2.1	43245	0° ~30'	8.7	179	276	51	3
6"	159	2.8	2.1	52434	0° ~30'	8.7	186	264	52	3.5
	165.1	2.8	2.1	61354	0° ~30'	8.7	203	274	52	3.58
	168.3	2.8	2.1	61354	0° ~30'	8.7	181	279	51	3.7

11. Rigid Couplings (Style 5)

Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Deflection from CL		Dimensions			Unit Weight
Size	O.D						A	B	C	
INCH	mm	Mpa	Mpa	N	Degree	mm/M	mm	mm	mm	Kg
8"	219	2.8	2.1	90986	0° ~30°	8.7	264	349	61	6.34
10"	273	2.5	1.9	134303	0° ~30°	8.7	326	409	65	8.5
12"	325	2.5	1.9	182801	0° ~25°	7.3	378	467	65	10.7
14"	377	2.1	1.6	207139	0° ~20°	5.8	434	488	75	14.9
16"	426	2.1	1.6	265905	0° ~20°	5.8	484	540	79	20.5
20"	530	2.1	1.6	399731	0° ~15°	4.4	590	706	79	23.6
24"	630	2.1	1.6	560741	0° ~10°	2.9	712	808	82	30.8

12. Reducing Couplings (Style 25)

Reducing couplings permit direct reduction on the piping run. Special coatings or hot dip galvanizing may be optionally ordered.



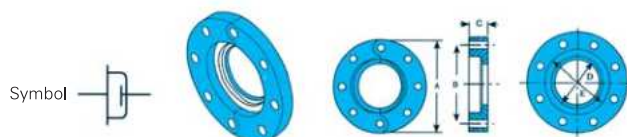
Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Allow Pipe End Sep	Deflection from CL		Dimensions			Frictional resistance*		Unit Weight
Size	O.D							A	B	C	D/d	d/D	
INCH	mm	Mpa	Mpa	N	mm	Degree	mm/M	mm	mm	mm	M	M	Kg
2" x 1 1/2"	60.3 x 48.3	2.8	2.1	4449	1.59-3.17	1° -53'	33.3	86	127	48	0.6	0.6	1
2 1/2" x 2"	73 x 60.3	2.8	2.1	6896	1.59-3.17	1° -33'	26.7	105	149	48	0.6	0.6	1.4
	76.1 x 60.3	2.8	2.1	6896	1.59-3.17	1° -33'	26.7	105	149	48	0.6	0.6	1.4
3" x 2"	88.9 x 60.3	2.8	2.1	6896	1.59-3.17	1° -17'	22.4	121	172	48	1.7	1.1	1.9
3" x 2 1/2"	88.9 x 73	2.8	2.1	10122	1.59-3.17	1° -17'	22.4	121	172	48	1.2	0.8	1.9
	88.9 x 76.1	2.8	2.1	10122	1.59-3.17	1° -17'	22.4	121	172	48	1.2	0.8	1.9
4" x 2"	108 x 60.3	2.8	2.1	6896	1.59-6.53	2° -38'	45.8	135	233	52	1.8	0.9	2.13
	114.3 x 60.3	2.8	2.1	6896	1.59-6.53	2° -38'	45.8	156	216	56	1.8	0.9	2.13
4" x 2 1/2"	108 x 73	2.8	2.1	10122	1.59-6.53	2° -38'	45.8	135	233	52	1.8	0.9	1.7
	108 x 76.1	2.8	2.1	10122	1.59-6.53	2° -38'	45.8	135	233	52	1.8	0.9	1.7
	114.3 x 73	2.8	2.1	10122	1.59-6.53	2° -38'	45.8	156	216	56	1.8	0.9	2.18
	114.3 x 76.1	2.8	2.1	10122	1.59-6.53	2° -38'	45.8	156	216	56	1.8	0.9	2.18
4" x 3"	108 x 88.9	2.8	2.1	14972	1.59-6.53	2° -38'	45.8	135	233	52	1.8	0.9	2.0
	114.3 x 88.9	2.8	2.1	14972	1.59-6.53	2° -38'	45.8	156	216	56	1.8	0.9	2.1
6" x 4"	159 x 108	2.3	1.72	17332	1.59-6.53	1° -44'	30.2	190	273	52	1.8	1.4	4
	165.1 x 108	2.3	1.72	17332	1.59-6.53	1° -44'	30.2	216	286	54	1.8	1.4	4
	165.1 x 114.3	2.3	1.72	24766	1.59-6.53	1° -44'	30.2	216	286	54	1.8	1.4	5.5
	168.3 x 108	2.3	1.72	17332	1.59-6.53	1° -44'	30.2	216	286	54	1.8	1.4	5.5
	168.3 x 114.3	2.3	1.72	24766	1.59-6.53	1° -44'	30.2	216	286	54	1.8	1.4	5.5
6" x 5"	165.1 x 141.3	2.3	1.72	37818	1.59-6.53	1° -44'	30.2	216	286	54	1.4	0.7	6
	168.3 x 141.3	2.3	1.72	37818	1.59-6.53	1° -44'	30.2	216	286	54	1.4	0.7	6
8" x 6"	219 x 165.1	2.3	1.72	53680	1.59-6.53	1° -15'	21.8	273	286	54	2.2	1.8	7
	219 x 168.3	2.3	1.72	53680	1.59-6.53	1° -15'	21.8	273	286	54	2.2	1.8	7

13. General Notes for Tables

- I. Maximum working pressure and end load are based on standard weight (ANSI) steel pipe, standard roll or cut grooved.
- II. Listed working pressure is based on UL 213 standard (it satisfies American NFPA 13 standards for fire prevention and safety systems). The testing procedure employs schedule 10 or 40 roll-grooved steel pipes depending on application.
- III. Maximum and load, deflection and pipe end separation show the maximum nominal range of movement available at each joint for standard cutting grooved pipe. For design and installation purpose, these figures should be reduced by 50%.
- IV. For multi-purpose piping system, please refer to the CPS technical service department for maximum working pressure.

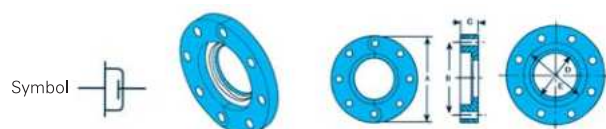
14. Grooved Flanges (Style 14) GFLG (American Standard) ANSI 150

Grooved flanges are designed for directly incorporating flanged components with ANSI bolt hole patterns into a grooved pipe system. Special coatings or hot dip galvanizing may be optionally ordered.



Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Nuts & Bolts	Nuts & Bolts Standard	Sealing Surface		Dimensions			Unit Weight
Size	O.D						D	E	A	B	C	
mm	mm	Mpa	Mpa	N	Set	Dia. x Lt.			mm	mm	mm	Kg
50	60.3	3.2	2.4	6354	4	M16 x 70	63	77	165	125	22	2.2
65	76.1	3.2	2.4	10916	4	M16 x 70	78	92	175	145	22	2.3
80	88.9	3.2	2.4	14897	8	M16 x 70	92	107	190	160	22	3.0
100	108	3.2	2.4	21986	8	M16 x 80	110	129	220	180	23	3.4
	114.3	3.2	2.4	24626	8	M16 x 80	117	130	220	180	23	3.4
125	140	3.2	2.4	36787	8	M16 x 80	142	158	250	210	23	4.0
150	159	3.2	2.4	47654	8	M20 x 80	161	181	285	240	23	4.5
	165.1	3.2	2.4	51380	8	M20 x 80	167	185	285	240	23	5.0
200	219	3.2	2.4	90403	12	M20 x 90	222	240	340	295	27	7.2
250	273	3.2	2.4	140484	12	M24 x 90	275	293	405	355	29	11
300	325	3.2	2.4	199098	12	M24 x 90	328	352	460	410	29	12

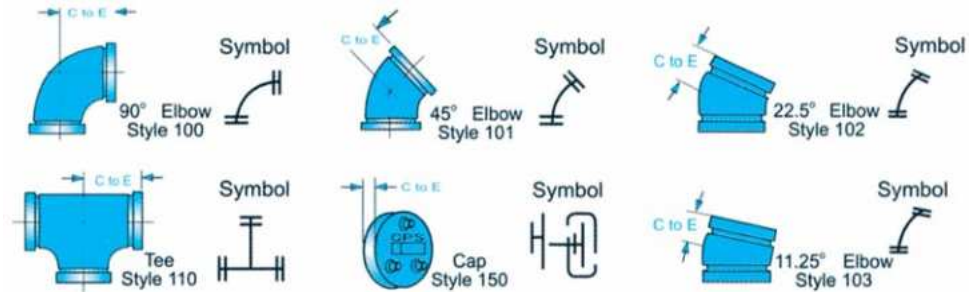
15. Grooved Flanges (Style 14) GB



Pipe		Max. Work. Press.	Rated. Work. Press.	Max. End. Load.	Nuts & Bolts	Nuts & Bolts Standard	Sealing Surface		Dimensions			Unit Weight
Size	O.D						D	E	A	B	C	
mm	mm	Mpa	Mpa	N	Set	Dia. x Lt.			mm	mm	mm	Kg
50	60.3	3.2	2.4	6354	4	M16 x 70	63	77	165	125	22	2.2
65	76.1	3.2	2.4	10916	4	M16 x 70	78	92	175	145	22	2.3
80	88.9	3.2	2.4	14897	8	M16 x 70	92	107	190	160	22	3.0
100	108	3.2	2.4	21986	8	M16 x 80	110	129	220	180	23	3.4
	114.3	3.2	2.4	24626	8	M16 x 80	117	130	220	180	23	3.4
125	140	3.2	2.4	36787	8	M16 x 80	142	158	250	210	23	4.0
150	159	3.2	2.4	47654	8	M20 x 80	161	181	285	240	23	4.5
	165.1	3.2	2.4	51380	8	M20 x 80	167	185	285	240	23	5.0
200	219	3.2	2.4	90403	12	M20 x 90	222	240	340	295	27	7.2
250	273	3.2	2.4	140484	12	M24 x 90	275	293	405	355	29	11
300	325	3.2	2.4	199098	12	M24 x 90	328	352	460	410	29	12

16. Grooved End Fittings

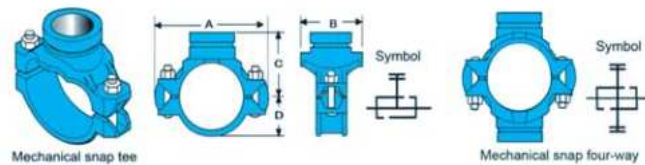
Most standard fittings are cast of ductile iron to precise tolerances. All fittings are supplied with grooves or shoulders to permit fast installation without field preparation. The grooved design permits flexibility for easy alignment. Fittings are provided in various materials and special coatings or hot dip galvanizing may be optionally ordered.



Pipe		Max. Work. Press.	Rated. Work. Press.	90° Elbow			45° Elbow			22.5° Elbow		11.25° Elbow		Tee			Cap	
Size	O.D.			C to E	Wt.	Resist.	C to E	Wt.	Resist.	C to E	Wt.	C to E	Wt.	C to E	Wt.	Resist.	C to E	Wt.
INCH	mm	Mpa	Mpa	mm	K g	m.	mm	K g	m.	mm	K g	mm	K g	mm	K g	m.	mm	K g
11/4"	42.2	4.4	3.5	70	0.5	0.5	44.5	0.4	0.2	44	0.4	35	0.2	70	0.8	1.3	22	0.2
11/2"	48.3	4.4	3.5	70	0.5	0.7	44.5	0.45	0.3	44	0.4	35	0.2	70	0.9	1.5	22	0.3
2"	57	4.4	3.5	83	0.8	1.1	51	0.45	0.5	51	0.4	35	0.3	83	1.0	2.6	22	0.3
	60.3	4.4	3.5	83	1.0	1.1	51	0.6	0.5	51	0.5	35	0.5	83	1.52	2.6	22	0.3
2 1/2"	73	4.4	3.5	95	1.4	1.3	57	0.9	0.7	51	0.6	38	0.5	95	2.3	3.3	22	0.4
	76.1	4.4	3.5	95	1.3	1.3	57	1.0	0.7	51	0.7	38	0.6	95	2.5	3.3	22	0.5
3"	88.9	4.4	3.5	108	2.3	1.5	63.5	1.3	0.8	58	1.2	38	1.0	108	3.5	4.0	22	0.8
4"	108	4.4	3.5	121	3.4	2.1	76	2.4	1.0	73	1.8	44	1.1	127	4.8	4.9	25	1.0
	114.3	4.4	3.5	127	3.4	2.1	76	2.4	1.0	73	2.0	44	1.3	127	5.0	4.9	25	1.2
5"	133	4.4	3.5	140	5.5	2.6	83	2.85	1.3	73	3.0	44	1.8	140	6.3	6.4	25	1.6
	140	4.4	3.5	140	5.7	2.6	83	3.2	1.3	73	3.5	51	2.2	140	7.5	6.4	25	2.1
6"	159	4.4	3.5	165	7.1	3.0	89	4.5	1.5	79	5.0	51	3.0	165	10.4	7.6	25	2.5
	165.1	4.4	3.5	165	7.3	3.0	89	5.0	1.5	79	5.1	51	3.2	165	11.5	7.6	25	2.9
	168.3	4.4	3.5	165	7.3	3.0	89	5.0	1.5	79	5.2	51	3.2	165	11.5	7.6	25	3.5
8"	219	4.4	3.5	197	15.6	4.0	108	9.2	2.0	98	7.0	51	4.6	197	20.4	10.1	30	5.0
10"	273	2.5	1.9	229	30.2	7.0	121	19.6	3.5	111	13.6	54	5.3	230	45.2	14.1	34	9.5
12"	325	2.5	1.9	254	46.8	8.7	133	29.8	4.4	124	18.1	57	13.3	254	56.2	17.5	34	17.1
14"	377	2.1	1.6	540	91	10.6	236	37.2	5.3	127	20.9	89	14.5	290	71	21.1	39	23.0
16"	426	2.1	1.6	640	105.0	12.3	266	45.4	6.2	127	26.3	102	19.1	320	85.0	24.6	45.4	31.1
20"	530	2.1	1.6	780	185.0	16.2	330	78.9	8.1	152	36.0	127	29.5	450	174.0	32.3	50.4	48.1
24"	630	2.1	1.6	930	254.0	20.1	360	114	11.1	178	63.5	152	27.2	530	245.0	40.1	50.4	68.0

17. Mechanical Snap Tees (Style 15G) Grooved Outlet

Mechanical Snap Tees serve as a joining device providing an integral reducing outlet. Tees can also be made into crosses providing two outlets instead of one. Style 15 crosses are labeled as Style 15GC.



Pipe			Max. Work. Press.	Rated. Work. Press.	Dimension				Unit. Wt.	Fric. Resist.
Size	O.D.	Out.Dia.			A	B	C	D		
INCH	mm	IN(mm)	Mpa	Mpa	mm	mm	mm	mm	K g	M
2 1/2" x 1 1/2"	73 x 48.3	2"(50.8)	2.8	2.1	141.2	93.5	79	54	1.0	0.3
	76.1 x 48.3	2"(50.8)	2.8	2.1	141.2	93.5	79	54	1.1	0.3
3" x 1 1/4"	88.9 x 42.2	2"(50.8)	2.8	2.1	159	102	84	62	1.2	0.3

17. Mechanical Snap Tees (Style 15G) Grooved Outlet

Size	Pipe		Max. Work. Press.	Rated Work. Press.	Dimension				Unit. Wt.	Fric. Resist.
	O.D.	Out.Dia.			A	B	C	D		
INCH	mm	IN(mm)	Mpa	Mpa	mm	mm	mm	mm	Kg	M
3" x 1 1/2"	88.9 x 48.3	2"(50.8)	2.8	2.1	159	95	84	54	1.5	0.5
3" x 2"	88.9 x 60.3	2 1/2"(63.5)	2.8	2.1	159	105	87	54	2.0	0.6
4" x 1 1/2"	108 x 48.3	2"(50.8)	2.8	2.1	178	76	97	70	4.2	0.4
	114.3 x 48.3	2"(50.8)	2.8	2.1	184	95	100	67	2.0	0.5
4" x 2"	108 x 60.3	2 1/2"(63.5)	2.8	2.1	178	76	97	70	2.5	0.4
	114.3 x 60.3	2 1/2"(63.5)	2.8	2.1	184	111	100	67	2.5	0.6
4" x 2 1/2"	108 x 73	2 3/4"(69.9)	2.8	2.1	178	76	97	70	2.6	0.4
	114.3 x 73	2 3/4"(69.9)	2.8	2.1	184	118	100	67	2.6	0.2
	108 x 76.1	2 3/4"(69.9)	2.8	2.1	178	76	97	70	3.0	0.4
	114.3 x 76.1	2 3/4"(69.9)	2.8	2.1	184	118	100	67	2.6	0.2
4" x 3"	108 x 88.9	3 1/2"(88.9)	2.8	2.1	178	76	97	95	3.5	0.4
	114.3 x 88.9	3 1/2"(88.9)	2.8	2.1	184	132	113	67	2.9	0.6
5" x 2"	133 x 60.3	2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.4	0.6
	140 x 60.3	2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.4	0.6
5" x 2 1/2"	133 x 73	2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.6	0.6
	140 x 73	3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6	0.6
	133 x 76.1	3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6	0.6
	140 x 76.1	3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6	0.6
5" x 3"	133 x 88.9	3 1/2"(88.9)	2.8	2.1	207	140	126	80	4.2	0.7
	140 x 88.9	3 1/2"(88.9)	2.8	2.1	207	140	126	80	4.2	0.7
6" x 1 1/2"	159 x 48.3	2"(50.8)	2.8	2.1	207	140	126	80	2.5	0.7
	165.1 x 48.3	2 3/8"(60.3)	2.8	2.1	229	108	124	70	3.3	0.4
	168.3 x 48.3	2 3/8"(60.3)	2.8	2.1	238	129	129	94	3.4	0.5
6" x 2"	159 x 60.3	2 1/2"(63.5)	2.8	2.1	238	129	129	94	4.5	0.5
	165.1 x 60.3	2 3/4"(69.9)	2.8	2.1	229	108	124	95	3.5	0.5
	168.3 x 60.3	2 3/4"(69.9)	2.8	2.1	238	129	129	94	3.6	0.6
6" x 2 1/2"	159 x 73	2 3/4"(69.9)	2.8	2.1	238	129	129	94	4.5	0.6
	165.1 x 73	2 3/4"(69.9)	2.8	2.1	229	108	124	95	3.7	0.5
	168.3 x 73	2 3/4"(69.9)	2.8	2.1	238	129	129	94	3.7	0.6
	159 x 76.1	2 3/4"(69.9)	2.8	2.1	238	129	129	94	4.5	0.6
	165.1 x 76.1	2 3/4"(69.9)	2.8	2.1	229	108	124	95	3.7	0.5
	168.3 x 76.1	2 3/4"(69.9)	2.8	2.1	238	129	129	94	3.7	0.6
6" x 3"	159 x 88.9	3 1/2"(88.9)	2.8	2.1	238	129	129	94	4.5	0.6
	165.1 x 88.9	3 1/2"(88.9)	2.8	2.1	229	133	133	95	3.8	0.5
	168.3 x 88.9	3 1/2"(88.9)	2.8	2.1	238	138	138	94	3.8	0.6
6" x 4"	159 x 108	4 1/2"(114.3)	2.8	2.1	238	138	138	94	5.0	0.6
	165.1 x 114.3	4 1/2"(114.3)	2.8	2.1	229	155	139	95	5.2	0.5
	168.3 x 114.3	4 1/2"(114.3)	2.8	2.1	238	173	148	94	5.2	0.7
8" x 2"	219 x 60.3	2 3/8"(60.3)	2.8	2.1						
8" x 2 1/2"	219 x 76.1	3 1/2"(88.9)	2.8	2.1						
8" x 3"	219 x 88.9	3 1/2"(88.9)	2.8	2.1						
8" x 4"	219 x 114	4 1/2"(114.3)	2.8	2.1						

18. Mechanical Snap Tees (Style 16T) Treaded Outlet

Mechanical Snap Tees serve as a joining device providing an integral reducing outlet. Tees can also be made into crosses providing two outlets instead of one. Style 16 crosses are labelled as Style 16TC.



Size	Pipe		Max. Work. Press.	Rated. Work. Press.	Dimension				Unit. Wt.
	O.D	Out.Dia.			A	B	C	D	
INCH	mm	IN(mm)	Mpa	Mpa	mm	mm	mm	mm	K g
2" x 1/2"	57 x 21.3	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
	60.3 x 21.3	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
2" x 3/4"	57 x 26.8	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
	60.3 x 26.8	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
2" x 1"	57 x 33.5	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
	60.3 x 33.5	11/2"(38.1)	2.8	2.1	114	60	67	35	0.7
2" x 1 1/4"	57 x 42.2	113/16"(46)	2.8	2.1	114	60	67	35	0.7
	60.3 x 42.2	113/16"(46)	2.8	2.1	114	60	67	35	0.7
2" x 1 1/2"	57 x 48.3	113/16"(46)	2.8	2.1	114	60	67	35	0.7
	60.3 x 48.3	113/16"(46)	2.8	2.1	114	60	67	35	0.7
2 1/2" x 1/2"	73 x 21.3	11/2"(38.1)	2.8	2.1	148	86	79	41	1.7
	76.1 x 21.3	11/2"(38.1)	2.8	2.1	148	86	79	41	1.7
2 1/2" x 3/4"	73 x 26.8	11/2"(38.1)	2.8	2.1	148	86	79	41	1.7
	76.1 x 26.8	11/2"(38.1)	2.8	2.1	148	86	79	41	1.7
2 1/2" x 1"	73 x 33.5	11/2"(38.1)	2.8	2.1	148	86	79	41	1.6
	76.1 x 33.5	11/2"(38.1)	2.8	2.1	148	86	79	41	1.6
2 1/2" x 1 1/4"	73 x 42.2	2"(50.8)	2.8	2.1	148	86	79	41	1.5
	76.1 x 42.2	2"(50.8)	2.8	2.1	148	86	79	41	1.5
2 1/2" x 1 1/2"	73 x 48.3	2"(50.8)	2.8	2.1	148	86	79	41	1.5
	76.1 x 48.3	2"(50.8)	2.8	2.1	148	86	79	41	1.5
3" x 1/2"	88.9 x 21.3	11/2"(38.1)	2.8	2.1	159	95	84	54	1.8
3" x 3/4"	88.9 x 26.8	11/2"(38.1)	2.8	2.1	159	95	84	54	1.8
3" x 1"	88.9 x 33.5	11/2"(38.1)	2.8	2.1	159	95	84	54	1.8
3" x 1 1/4"	88.9 x 42.2	2"(50.8)	2.8	2.1	159	95	84	54	1.8
3" x 1 1/2"	88.9 x 48.3	2"(50.8)	2.8	2.1	159	95	84	54	1.8
3" x 2"	88.9 x 60.3	2 1/2"(63.5)	2.8	2.1	159	105	84	54	1.9
4" x 1/2"	108 x 21.3	2"(50.8)	2.8	2.1	184	95	84	67	2.1
	114.3 x 21.3	11/2"(38.1)	2.8	2.1	184	95	84	67	2.1
4" x 3/4"	108 x 26.8	2"(50.8)	2.8	2.1	184	95	84	67	2.1
	114.3 x 26.8	11/2"(38.1)	2.8	2.1	184	95	84	67	2.1
4" x 1"	108 x 33.5	2"(50.8)	2.8	2.1	184	95	84	67	2.1
	114.3 x 33.5	11/2"(38.1)	2.8	2.1	184	95	84	67	2.1
4" x 1 1/4"	108 x 42.2	2"(50.8)	2.8	2.1	184	95	84	67	2.2
	114.3 x 42.2	2"(50.8)	2.8	2.1	184	95	84	67	2.2
4" x 1 1/2"	108 x 48.3	2"(50.8)	2.8	2.1	184	95	84	67	2.2
	114.3 x 48.3	2"(50.8)	2.8	2.1	184	95	84	67	2.2
4" x 2"	108 x 60.3	2 1/2"(63.5)	2.8	2.1	184	111	84	67	2.2
	114.3 x 60.3	2 1/2"(63.5)	2.8	2.1	184	111	84	67	2.2

18. Mechanical Snap Tees (Style 16T) Threaded Outlet

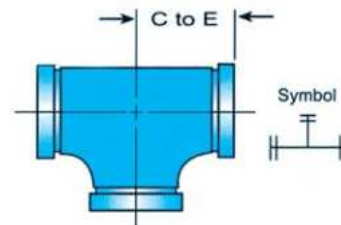
Size	Pipe		Max. Work. Press.	Rated. Work. Press.	Dimension				Unit. Wt.
	O.D	Out.Dia.			A	B	C	D	
INCH	mm	IN(mm)	Mpa	Mpa	mm	mm	mm	mm	Kg
4" x 2 1/2"	108 x 73	23/4"(69.9)	2.8	2.1	184	118	113	67	2.5
	108 x 76.1	23/4"(69.9)	2.8	2.1	184	118	113	67	2.5
	114.3 x 73	23/4"(69.9)	2.8	2.1	184	118	113	67	2.5
	114.3 x 76.1	23/4"(69.9)	2.8	2.1	184	118	113	67	2.5
4" x 3"	108 x 88.9	31/2"(88.9)	2.8	2.1	184	132	129	67	3.5
	114.3 x 88.9	31/2"(88.9)	2.8	2.1	184	132	129	67	3.5
5" x 1"	133 x 33.5	2"(50.8)	2.8	2.1	207	96	105	80	1.6
	140 x 33.5	2"(50.8)	2.8	2.1	207	96	105	80	1.6
		2"(50.8)	2.8	2.1	207	96	105	80	1.6
5" x 1 1/4"	133 x 42.2	2"(50.8)	2.8	2.1	207	96	105	80	2.0
	140 x 42.2	2"(50.8)	2.8	2.1	207	96	105	80	2.0
		2"(50.8)	2.8	2.1	207	96	105	80	2.0
5" x 1 1/2"	133 x 48.3	2"(50.8)	2.8	2.1	207	96	105	80	2.6
	140 x 48.3	2"(50.8)	2.8	2.1	207	96	105	80	2.6
		2"(50.8)	2.8	2.1	207	96	105	80	2.6
5" x 2"	133 x 60.3	2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.4
	140 x 60.3	2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.4
		2 1/2"(63.5)	2.8	2.1	207	140	126	80	3.4
5" x 2 1/2"	133 x 76.1	3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6
	140 x 76.1	3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6
		3 1/2"(88.9)	2.8	2.1	207	140	126	80	3.6
5" x 3"	133 x 88.9	3 1/2"(88.9)	2.8	2.1	207	140	126	80	4.2
	140 x 88.9	3 1/2"(88.9)	2.8	2.1	207	140	126	80	4.2
		3 1/2"(88.9)	2.8	2.1	207	140	126	80	4.2
6" x 1"	165 x 33	23/8"(60.3)							
6" x 1 1/4"	159 x 42.2	2"(50.8)	2.8	2.1	238	95	129	94	3.6
	165.1 x 42.2	23/8"(60.3)	2.8	2.1	238	95	129	94	3.6
	168.3 x 42.2	23/8"(60.3)	2.8	2.1	238	95	129	94	3.6
6" x 1 1/2"	159 x 48.3	2"(50.8)	2.8	2.1	238	95	129	94	3.6
	165.1 x 48.3	23/8"(60.3)	2.8	2.1	238	95	129	94	3.6
	168.3 x 48.3	23/8"(60.3)	2.8	2.1	238	95	129	94	3.6
6" x 2"	159 x 60.3	2 1/2"(63.5)	2.8	2.1	238	113	129	94	3.6
	165.1 x 60.3	23/4"(69.9)	2.8	2.1	238	113	129	94	3.6
	168.3 x 60.3	23/4"(69.9)	2.8	2.1	238	113	129	94	3.6
6" x 2 1/2"	159 x 73	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
	159 x 76.1	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
	165.1 x 73	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
	165.1 x 76.1	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
	168.3 x 73	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
	168.3 x 76.1	23/4"(69.9)	2.8	2.1	238	140	129	94	3.6
6" x 3"	159 x 88.9	3 1/2"(88.9)	2.8	2.1	238	140	138	94	4.4
	165.1 x 88.9	3 1/2"(88.9)	2.8	2.1	238	140	138	94	4.4
	168.3 x 88.9	3 1/2"(88.9)	2.8	2.1	238	140	138	94	4.4
6" x 4"	165.1 x 114.3	4 1/2"(114.3)	2.8	2.1	238	159	148	94	6.2
	168.3 x 114.3	4 1/2"(114.3)	2.8	2.1	238	159	148	94	6.2
8" x 1 1/4"	219 x 42.2	23/8"(60.3)							
8" x 1 1/2"	219 x 48.3	23/8"(60.3)							
8" x 2"	219 x 60.3	23/8"(60.3)							
8" x 2 1/2"	219 x 76.1	3 1/2"(88.9)							
8" x 3"	219 x 88.9	3 1/2"(88.9)							
8" x 4"	219 x 114	4 1/2"(114.3)							

19. Gasket Properties

Grade Temperature	Range	Compound	ColorGeneral	Service Recommendations
E	-34.4°C -+ 110°C	EPDM	Green	Recommended for hot water service within specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified for cold (30°C) and hot (82°C) potable water service. Not recommended for hydrocarbon services.
B	-28.8°C -+ 82.2°C	Buna-N	Orange	Recommended for hydrocarbon products, air with oil vapors, vegetable oils and mineral oils within specified temperature range. Not recommended for hot water services over 66°C or for hot dry air over 60°C.

State: The good will be supplied in compliance with the customer's requirements if the SEALING MATERIALS is used for the specific Media or the Media Working Temperature beyond the Detum in the table above.

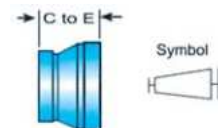
20. Reducing Tee (Style 115)



Size	O.D	Max. Work.Press.	Rated. Work. Press.	C to E	Unit Wt.	Fric. Resist
INCH	mm	Mpa	Mpa	mm	Kg	M
3" x 3" x 2"	88.9 x 88.9 x 60.3	4.4	3.5	108	2.45	4.1
3" x 3" x 2 1/2"	88.9 x 88.9 x 73	4.4	3.5	108	2.6	4.1
	88.9 x 88.9 x 76.1	4.4	3.5	108	2.6	4.1
4" x 4" x 2"	108 x 108 x 60.3	4.4	3.5	127	3.7	4.9
	114.3 x 114.3 x 60.3	4.4	3.5	127	4.3	4.9
4" x 4" x 2 1/2"	108 x 108 x 73	4.4	3.5	127	4.1	4.9
	108 x 108 x 76.1	4.4	3.5	127	4.1	4.9
	114.3 x 114.3 x 73	4.4	3.5	127	4.6	4.9
	114.3 x 114.3 x 76.1	4.4	3.5	127	4.6	4.9
4" x 4" x 3"	108 x 108 x 88.9	4.4	3.5	127	4.8	4.9
	114.3 x 114.3 x 88.9	4.4	3.5	127	5.3	4.9
6" x 6" x 2"	159 x 159 x 60.3	4.4	3.5	165	10.7	7.6
	165.1 x 165.1 x 60.3	4.4	3.5	165	11.1	7.6
	168.3 x 168.3 x 60.3	4.4	3.5	165	11.5	7.6
	159 x 159 x 73	4.4	3.5	165	10.8	7.6
6" x 6" x 2 1/2"	165.1 x 165.1 x 73	4.4	3.5	165	11.2	7.6
	168.3 x 168.3 x 73	4.4	3.5	165	11.7	7.6
	159 x 159 x 76.1	4.4	3.5	165	10.8	7.6
	165.1 x 165.1 x 76.1	4.4	3.5	165	11.2	7.6
	168.3 x 168.3 x 76.1	4.4	3.5	165	11.7	7.6
	159 x 159 x 88.9	4.4	3.5	165	10.8	7.6
6" x 6" x 3"	165.1 x 165.1 x 88.9	4.4	3.5	165	11.5	7.6
	168.3 x 168.3 x 88.9	4.4	3.5	165	12	7.6
	159 x 159 x 114.3	4.4	3.5	165	11.2	7.7
6" x 6" x 4"	165.1 x 165.1 x 114.3	4.4	3.5	165	12	7.7
	168.3 x 168.3 x 114.3	4.4	3.5	165	12.7	7.7
	219 x 219 x 108	4.4	3.5	197	16	8.5
8" x 8" x 4"	219 x 219 x 114.3	4.4	3.5	197	16.4	8.5
	219 x 219 x 165.1	4.4	3.5	197	18.8	10.5
8" x 8" x 6"	219 x 219 x 168.3	4.4	3.5	197	22.5	10.5
10" x 10" x 6"	273 x 273 x 159	2.8	2.1	230	27	14.1
12" x 12" x 6"	325 x 325 x 159	2.8	2.1	254	34	17.5
14" x 14" x 3"	377 x 377 x 88.9	2.1	1.6	290	48	21.1
14" x 14" x 6"	377 x 377 x 159	2.1	1.6	290	63	21.1

21. Concentric Reducers (Style 140G) Grooved on both ends

Style 140G concentric reducers are cut grooved on the both ends.



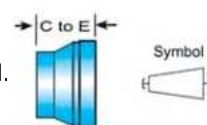
Size	O.D	Max. Work.Press.	Rated. Work.Press.	C to E	Unit Wt.
INCH	mm	Mpa	Mpa	mm	Kg
2" x 1 1/2"	60.3 x 48.3	4.4	3.5	64	0.3
2 1/2" x 2"	73 x 57	4.4	3.5	64	0.5
	76.1 x 57	4.4	3.5	64	0.5
	73 x 60.3	4.4	3.5	64	0.5
	76.1 x 60.3	4.4	3.5	64	0.6
3" x 2"	88.9 x 57	4.4	3.5	64	0.6
	88.9 x 60.3	4.4	3.5	64	0.6
3" x 2 1/2"	88.9 x 73	4.4	3.5	64	0.7
	88.9 x 76.1	4.4	3.5	64	0.7
4" x 2"	108 x 57	4.4	3.5	76	0.8
	108 x 60.3	4.4	3.5	76	0.9
	114.3 x 57	4.4	3.5	76	1.1
	114.3 x 60.3	4.4	3.5	76	1.2
4" x 2 1/2"	108 x 73	4.4	3.5	76	0.8
	108 x 76.1	4.4	3.5	76	0.9
	114.3 x 73	4.4	3.5	76	1.2
	114.3 x 76.1	4.4	3.5	76	1.3
4" x 3"	108 x 88.9	4.4	3.5	76	1.1
	114.3 x 88.9	4.4	3.5	76	1.6
5" x 3"	140 x 88.9	4.4	3.5	102	1.7
5" x 4"	133 x 108	4.4	3.5	102	1.7
	133 x 114.3	4.4	3.5	102	1.8
	140 x 108	4.4	3.5	102	1.8
	140 x 114.3	4.4	3.5	102	1.9
5" x 5"	140 x 133	4.4	3.5	102	2.2
6" x 2"	165.1 x 57	4.4	3.5	102	2.2
	165.1 x 60.3	4.4	3.5	102	2.3
	168.3 x 57	4.4	3.5	102	2.2
	168.3 x 60.3	4.4	3.5	102	2.3
6" x 2 1/2"	165.1 x 73	4.4	3.5	102	2.4
	165.1 x 76.1	4.4	3.5	102	2.4
	168.3 x 73	4.4	3.5	102	2.5
	168.3 x 76.1	4.4	3.5	102	2.5
6" x 3"	159 x 88.9	4.4	3.5	102	2.4
	165.1 x 88.9	4.4	3.5	102	2.4
	168.3 x 88.9	4.4	3.5	102	2.4
6" x 4"	159 x 108	4.4	3.5	102	2.5
	165.1 x 114.3	4.4	3.5	102	2.8
	168.3 x 114.3	4.4	3.5	102	2.8
6" x 5"	159 x 133	4.4	3.5	102	2.0
	165.1 x 133	4.4	3.5	102	3.1
	168 x 133	4.4	3.5	102	3.2
	159 x 140	4.4	3.5	102	3.2
	165.1 x 140	4.4	3.5	102	3.2
	168.3 x 140	4.4	3.5	102	3.3
6" x 6"	165.1 x 159	4.4	3.5	102	3.3
8" x 3"	219 x 88.9	4.4	3.5	127	4.5
8" x 4"	219 x 114.3	4.4	3.5	127	4.7
8" x 5"	219 x 133	4.4	3.5	127	4.1
	219 x 140	4.4	3.5	127	4.1
8" x 6"	219 x 159	4.4	3.5	127	4.8
	219 x 165.1	4.4	3.5	127	5.2
	219 x 168.3	4.4	3.5	127	5.2

21. Concentric Reducers (Style 140G) Grooved on both ends

Size	O.D	Max. Work.Press.	Rated. Work.Press.	C to E	Unit Wt.
INCH	mm	Mpa	Mpa	mm	Kg
10" x 8"	273 x 219	2.8	2.1	152	9.2
12" x 8"	325 x 219	2.8	2.1	178	13.0
12" x 10"	325 x 273	2.8	2.1	178	15.0
14" x 10"	377 x 273	2.8	2.1	330	32.0
14" x 12"	377 x 325	2.8	2.1	330	36.0
16" x 12"	426 x 325	2.8	2.1	356	39.0
16" x 14"	426 x 377	2.8	2.1	356	45.0
20" x 14"	530 x 377	2.8	2.1	508	72.0
20" x 16"	530 x 426	2.8	2.1	508	81.0
24" x 20"	630 x 530	2.8	2.1	508	96.0

22. Concentric Reducers (Style 140T) Threaded on small end

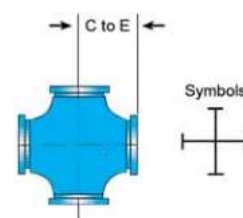
Style 140T concentric reducers threaded on small end grooved on big end.



Size	O.D	Max. Work.Press.	Rated. Work.Press.	C to E	Unit Wt.
mm	mm	Mpa	Mpa	mm	Kg
2" x 1/2"	60.3 x 21.3	4.4	3.5	65	0.5
2" x 3/4"	60.3 x 26.8	4.4	3.5	65	0.5
2" x 1"	60.3 x 33.5	4.4	3.5	65	0.5
2" x 1 1/4"	60.3 x 42.2	4.4	3.5	65	0.5
2" x 1 1/2"	60.3 x 48.3	4.4	3.5	65	0.5
2 1/2" x 1/2"	76.1 x 21.3	4.4	3.5	65	0.5
2 1/2" x 3/4"	76.1 x 26.8	4.4	3.5	65	0.5
2 1/2" x 1"	76.1 x 33.5	4.4	3.5	65	0.5
2 1/2" x 1 1/4"	76.1 x 42.2	4.4	3.5	65	0.7
2 1/2" x 1 1/2"	76.1 x 48.3	4.4	3.5	65	0.7
2 1/2" x 2"	76.1 x 60.3	4.4	3.5	65	0.8
3" x 2"	88.9 x 60.3	4.4	3.5	65	0.9
3" x 2 1/2"	88.9 x 76.1	4.4	3.5	65	0.9
4" x 2 1/2"	114.3 x 76.1	4.4	3.5	75	1.0
4" x 3"	114.3 x 88.9	4.4	3.5	75	1.2

23. Equal Cross Casting (Style 112)

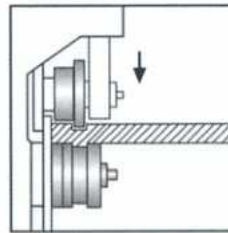
Size	O.D	Max. Work.Press.	Rated. Work.Press.	C to E	Unit Wt.
INCH	mm	Mpa	Mpa	mm	kg
1 1/4"	42.3	4.4	3.5	70	1.0
1 1/2"	48	4.4	3.5	70	1.1
2"	60.3	4.4	3.5	83	1.9
2 1/2"	76.1	4.4	3.5	95	3.0
3"	88.9	4.4	3.5	108	4.0
4"	108	4.4	3.5	127	6.0
	114	4.4	3.5	127	6.5
5"	133	4.4	3.5	122	8.0
	140	4.4	3.5	140	10.2
6"	159	4.4	3.5	159	12.0
	165	4.4	3.5	165	13.5
	168	4.4	3.5	165	13.5
8"	219	4.4	3.5	195	30.0
10"	273	2.5	1.9	229	50.0
12"	325	2.5	1.9	254	55.0



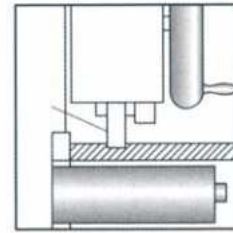
24. Pipe Preparation



Hole Cutting

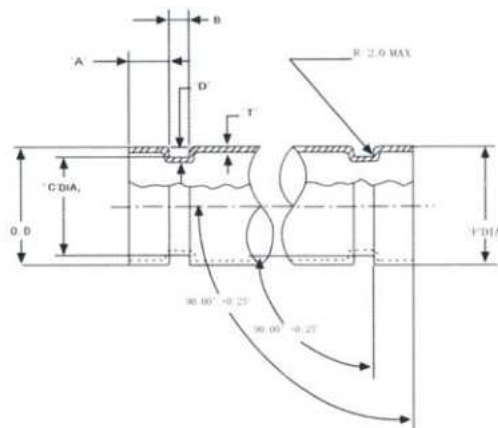


Roll Grooving



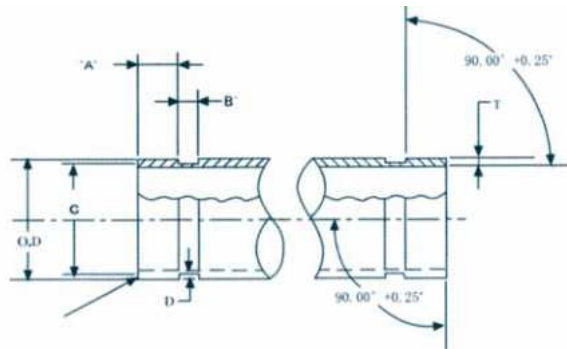
Cut Grooving

25. Roll Groove Dimensions



Size		O.D	A	B	C		D	T	F
INCH	mm	mm	Gasket Seat mm	Groove Width mm	Groove Diameter mm	Tolerance mm	Groove Depth mm	Min. Allow. Wall T. mm	Max. Allow. Flare Dia. mm
1 1/4"	30	42.2+ / - 0.5	15.8	7.9	39.12	-0.38	1.60	1.65	45.10
1 1/2"	40	48.3+ / - 0.5	15.8	7.9	44.82	-0.38	1.60	1.65	50.79
2"	50	57+ / - 0.5	15.8	7.9	53.80	0.38	1.60	1.65	59.70
		60.3+ / - 0.6	15.8	7.9	56.82	-0.38	1.60	1.65	62.67
2 1/2"	65	73+ / - 0.7	15.8	7.9	69.09	0.46	1.98	2.10	75.70
		75.5+ / - 0.7	15.8	7.9	71.54	0.46	1.98	2.10	78.17
		76.1+ / - 0.7	15.8	7.9	72.26	0.46	1.98	2.10	78.70
3"	80	88.9+ / - 0.8	15.8	7.9	84.54	0.46	1.98	2.10	91.04
4"	100	108+ / - 0.8	15.8	9.5	103.78	0.51	2.11	2.10	110.50
		114.3+ / - 1.0	15.8	9.5	110.08	0.51	2.11	2.10	116.54
5"	125	133+ / - 1.0	15.8	9.5	128.78	0.51	2.11	2.77	135.50
		140+ / - 1.0	15.8	9.5	135.48	0.51	2.11	2.77	142.20
		140+ / - 1.3	15.8	9.5	137.03	0.56	2.13	2.77	143.76
6"	150	159+ / - 1.3	15.8	9.5	154.68	0.56	2.16	2.77	161.50
		165.1+/-1.6	15.8	9.5	160.78	0.56	2.16	2.77	167.67
8"	200	168.3+ / - 1.6	15.8	9.5	163.96	0.56	2.16	2.77	170.80
		219+ / - 2.0	19.0	11.1	214.40	0.64	2.34	2.77	223.50
10"	250	267.4+ / - 2.4	19.0	12.7	262.62	0.69	2.39	3.40	271.80
		273+ / - 2.4	19.0	12.7	268.28	0.69	2.39	3.40	277.40
12"	300	318.5+ / - 3.0	19.0	12.7	312.96	-0.76	2.77	3.96	328.17
		325+ / - 3.0	19.0	12.7	319.46	-0.76	2.77	3.96	329.40
14"	350	377+ / - 3.0	23.8	12.7	371.49	-0.76	2.77	4.19	381.40
16"	400	426+ / - 3.0	25.4	12.7	420.46	-0.76	2.77	4.19	430.10
20"	500	530+ / - 3.0	25.4	14.3	521.26	-0.76	4.37	4.78	534.90
24"	600	630+ / - 3.0	25.4	14.3	621.26	-0.76	4.37	5.54	635.10

26. Cut Groove Dimensions



Size		O.D	A	B	C		D	T
INCH	mm	mm	Gasket Seat mm	Groove Width mm	Groove Diameter mm	Tolerance mm	Groove Depth mm	Min. Allow Wall t. mm
1 1/4"	32	42.2+ / - 0.5	15.8	7.9	39.12	-0.38	1.60	1.65
1 1/2"	40	48.3+ / - 0.5	15.8	7.9	44.82	-0.38	1.60	1.65
2"	50	57+ / - 0.5	15.8	7.9	53.80	-0.38	1.60	1.65
		60.3+ / - 0.6	15.8	7.9	56.82	-0.38	1.60	1.65
2 1/2"	65	73+ / - 0.7	15.8	7.9	69.09	-0.46	1.98	2.10
		75.5+ / - 0.7	15.8	7.9	71.54	-0.46	1.98	2.10
		76.1+ / - 0.7	15.8	7.9	72.26	-0.46	1.98	2.10
3"	80	88.9+ / - 0.8	15.8	7.9	84.54	-0.46	1.98	2.10
4"	100	108+ / - 0.8	15.8	9.5	103.78	-0.51	2.11	2.10
		114.3+ / - 1.0	15.8	9.5	110.08	-0.51	2.11	2.10
5"	125	133+ / - 1.0	15.8	9.5	128.78	-0.51	2.11	2.77
		140+ / - 1.0	15.8	9.5	135.48	-0.51	2.11	2.77
		140+ / - 1.3	15.8	9.5	137.03	-0.56	2.13	2.77
6"	150	159+ / - 1.3	15.8	9.5	154.68	-0.56	2.16	2.77
		165.1+ / - 1.6	15.8	9.5	160.78	-0.56	2.16	2.77
		168.3+ / - 1.6	15.8	9.5	163.96	-0.56	2.16	2.77
8"	200	219+ / - 2.0	19.0	11.1	214.40	-0.64	2.34	2.77
10"	250	267.4+ / - 2.4	19.0	12.7	262.62	-0.69	2.39	3.40
		273+ / - 2.4	19.0	12.7	268.28	-0.69	2.39	3.40
12"	300	318.5+ / - 3.0	19.0	12.7	312.96	-0.76	2.77	3.96
		325+ / - 3.0	19.0	12.7	319.46	-0.76	2.77	3.96
14"	350	377+ / - 3.0	23.8	12.7	371.49	-0.76	2.77	4.19
16"	400	426+ / - 3.0	25.4	12.7	420.46	-0.76	2.77	4.19
20"	500	530+ / - 3.0	25.4	14.3	521.26	-0.76	4.37	4.78
24"	600	630+ / - 3.0	25.4	14.3	621.26	-0.76	4.37	5.54

27. Pipe Drilling



Cutting diameter	INCH	1-1/2"	1-13/16"	2"	2-3/8"	2-1/2"	2-3/4"	3-1/2"	4-1/2"
	MM	38.1	46	50.8	60.3	63.5	69.9	88.9	114.3

28. CPS Fire Protection Automatic Sprinkler System Steel Pipes

CPS Fire Protection Automatic Sprinkler System steel pipes conform to National Fire Protection Association (NFPA-13) sprinkler systems standards. The pipes also satisfy ASTM A 135 and A795 fire protection piping standards. Additionally, CPS steel pipes obtained UL approval for sale in North America, which is the standard adopted by many countries regarding fire protection services.

CPS offers the following pipes: SCH 10, SCH 20, SCH 30, SCH 40.

SCH 10 is the thinnest and suitable for roll grooving, SCH 40 is the thickest and suitable for both roll and cut grooving.

SCH 40 pipes. SCH 10 pipes are able to withstand moderate pressure.



CPS ASTM A135 Fire Sprinkler System Steel Pipe SCH 10A Grade Black and Hot-Dip Galvanized

Size	O.D	Wall Thickness	Weight	Max. Tested Pressure
INCH	mm	mm	Kg/M	Mpa
3/4"	26.8	2.11	1.28	17.24
1"	33.5	2.77	2.09	17.24
1 1/4"	42.2	2.77	2.70	16.55
1 1/2"	48.3	2.77	3.10	14.48
2"	60.3	2.77	3.93	11.72
2 1/2"	73	3.05	5.26	10.34
3"	88.9	3.05	6.45	8.27
3 1/2"	101.6	3.05	7.41	6.89
4"	114.3	3.05	8.36	6.21
5"	140	3.40	11.58	5.86
6"	168.3	3.4	13.84	5.02
8"	219	4.8	25.41	4.26

CPS ASTM A135 Fire Sprinkler System Steel Pipe SCH 40A Grade Black and Hot-Dip Galvanized

Size	O.D	Wall Thickness	Weight	Max. Tested Pressure
INCH	mm	mm	Kg/M	Mpa
1/2"	21.3	2.77	1.27	17.2
3/4"	26.8	2.87	1.68	17.2
1"	33.5	3.38	2.50	17.2
1 1/4"	42.2	3.56	3.38	17.2
1 1/2"	48.3	3.68	4.05	17.2
2"	60.3	3.91	5.43	16.08
2 1/2"	73	5.16	8.62	17.2
3"	88.9	5.49	11.28	15.3
3 1/2"	101.6	5.74	13.56	14.0
4"	114.3	6.02	16.06	13.06
5"	140	6.55	21.76	11.50
6"	168.3	7.11	28.34	10.48
8"	219	7.04	36.90	7.96

Note: 8" steel pipes have SCH 30 wall thickness.

CPS Fire Protection Steel Pipes

For CPS Fire Protection Steel Pipes, the maximum working pressure is determined by whether it is installed through grooved couplings, threaded couplings, flanges or welding. When SCH 10 CPS roll-grooved pipes are used with CPS grooved couplings, the maximum working pressure can be determined from the tabled listed pressure for the specific coupling. When SCH 40 CPS cut-grooved pipes are used with CPS grooved couplings, the maximum working pressure can be determined from the tabled maximum working pressure for the specific coupling. Please consult CPS Technical Services on CPS steel pipe maximum working pressure for services other than fire protection systems.

29. Roll Grooving Procedure

GMT 9/6-03 Technical Data

Voltage: 220V

Frequency: 50Hz

Wattage: 1.1kw

Revolutions : 35RPM

Pipe Size: Normal Size: 11/2" to 6"

O.D: 48mm - 165.1mm

Max.Wall Thickness: 7mm

GMT9/14-01 Technical Data

Voltage: 380V

Frequency: 50Hz

Wattage: 2.2kw

Revolutions: 35RPM

Pipe size: Normal Size: 4" to 14"

O.D: 114mm-377mm

Max.Wall Thickness: 7mm



Roll mechanism
Type: GMT9/6-03

Serial number

Max.pipe diameter

Advanced Third



1. Pipe cutting



2. Smoothing pipe ends



3. Horizontal positioning of pipe



4. Hand-operated hydraulic pump to position upper roll



5. Lock upper roll into position



6. Adjust roll depth



7. Start operation of roll groove machine



8. Roll-grooving operation



9. Inspecting for damages



10. Inspection of groove depth

30. Pipe Drilling Procedure

Hole Cutter DHT8/4.5 Technical Data

Voltage: 380V

Frequency: 50 Hz

Wattage: 1.9kw

Revolutions : 120RPM

Pipe Size: Nominal Size: 1 1/2" to 8"

O.D: 48mm - 219mm

Max.Hole Diameter: 4 1/2"



Hole Cutter
Type: DHT8/4.5-01



1. Mark position
of hole



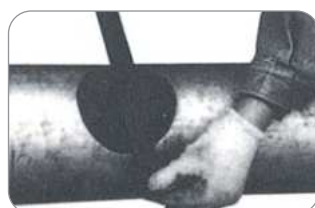
2. Lock pipe
into position



3. Position hole
cutting machine



4. Hole cutting



5. Smoothing
and inspection of hole

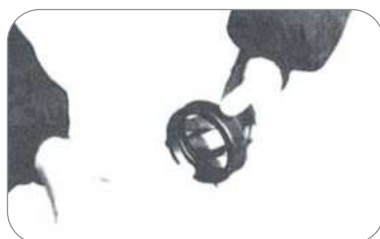
31. Grooved Coupling Installation



1. Inspect pipe ends for smoothness



4. Slip on gasket to other pipe end



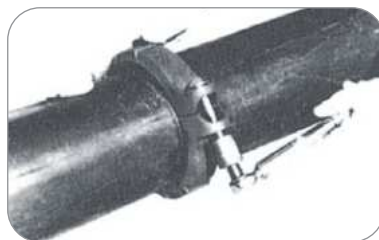
2. Apply lubricant to gasket and housing interior



5. Install coupling housing



3. Slip on gasket to pipe end



6. Tighten nuts and bolts

32. Pipe Hanger Standards

Nominal Pipe Dia.	Max. Distance from Pipe in M	Min. Hanger Dia. in mm	Max. Support Wt.
			Kg
1 1/4"	2.133	9.52	245
1 1/2"	2.743	9.52	245
2"	3.048	9.52	245
2 1/2"	3.353	12.70	459
3"	3.657	12.70	459
4"	4.267	15.87	732
5"	4.877	15.87	732
6"	5.181	19.05	1100
8"	5.791	25.40	2009