Ductile Iron Pipes, Fittings & Valves
for potable water, reclaimed water, sewerage and gas applications

DUCTILE IRON PIPES & FITTINGS

SHIN NAN CASTING FACTORY CO., LTD.

http://www.snpipe.com e-mail:sales@snpipe.com

DET NORSKE VERITAS

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 4956-1996-AQ-RGC-RvA

This is to certify that

Shin Nan Casting Factory Co., Ltd.

Site Name	Address	Site Scope/Main Activity
Yuan Kang Plant	72, Jou Wei Street, Yen Jou Li, Yung Kang District, Tainan 710, Taiwan, R.O.C.	Manufacture of Ductile Iron Pipes and Fittings. Design and Manufacture of Valves, Fire Hydrants and Joints.
Shan Shang Plant	90, Pei Shu Jou, Ming Ho Li, Shan Shang District, Tainan 743, Taiwan, R.O.C.	Manufacture of Ductile Iron Pipes

has been found to conform to the Management System Standard:

ISO 9001:2008

This Certificate is valid for the following product or service ranges:

Manufacture of Ductile Iron Pipes and Fittings.
Design and Manufacture of Valves, Fire Hydrants and Joints.

Initial Certification date:
February 14th, 1996

Place and date:
Taipei, January 28th, 2011

This Certificate is valid until:
February 14th, 2014

MGMT. SYS.
RvA C024

for the Accredited Unit:
DNV CERTIFICATION B.V.,
THE NETHERLANDS

The audit has been performed under the supervision of
Frances Leu
Lead Auditor

Chen Yi
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

SHIN NAN CASTING FACTORY CO., LTD.

DUCTILE IRON PIPES & FITTINGS

Contents

Shin Nan ductile iron pipes and fittings for water and sewerage systems are manufactured according to EN 545 / EN 598 / EN 969 / ISO 2531 and under the quality system of ISO 9001 for quality assurance. The standard nominal sizes DN of pipes to fittings are from 80 mm to 2000 mm. Every pipe and fitting are strictly subjected to hydrostatic pressure tests of the relevant standards.

Standards

ISO 2531 : 1998	Ductile iron pipes, fittings and accessories for pressure pipelines
BS EN 545 : 2002	Ductile iron pipes, fittings, accessories and their joints for water pipelines
BS EN 598 : 2007+A1:2009	Ductile iron pipes, fittings, accessories and their joints for sewerage pipelines
BS EN 969 : 1996	Ductile iron pipes, fittings, accessories and their joints for gas pipelines (DN 80 ~ 600mm)

Pipes

- Standard pipes with fiexible joints shall be class K9, class K8, K10 & K12 are also available.
- Standard pipes with flanges screwed or cast-on shall be class K12.
- Standard pipes with flanges welded-on shall be class K9.
- The standard lengths and thickness of pipes are shown in our catalogue. Lengths of pipes other than those shown may be supplied by agreement between the purchaser and the manufacturer and shall be deemed to comply with the requirements of this specification.
- In the case of centrifugally cast pipes, the increase or decrease, in the thickness of the pipe wall shall be obtained variation of the internal diameter only.

Fittings

- Standard fittings without branches shall be class K12.
- Standard fittings with branches shall be class K14.

Types of Joints

Flexible Joints

- "Push on" "T" type (Tyton Joint) are available for pipes & fittings of the range DN 80 ~ DN 2000.
- "Mechanical" "K" type (Bolted-Gland Joint) are available for pipes and fittings of the range DN 80 ~ DN 2000.

Note:

Standard rubber gaskets for potable water comply with BS 2494:1990 "W" type (water), EN 681-1, ISO 4633 & BS 6920.

Rubber gaskets for sewerage application are nitrile or synthetic rubber comply with EN 598.

Rubber gaskets for gas pipeline in compliance to ISO 6447.

Flange Joints

- Dimensional details of flanges designated PN 10, PN 16, PN 25 and PN 40 are produced in accordance with ISO 2531 / EN 545 / EN 598 / EN 969. Flanges shown in our specification are dimensionally compatible with the corresponding flanges BS 4504.
- PN 16 flanges are supplied as standard for pipes and fittings of the range DN 80 ~ DN 2000. PN 10, PN 25 and PN 40 flanges are also available upon request.

❖ Pressure & Temperature Ratings

◤ Works proof and leak tightness pressures

DN (Nominal size) mm	Pipes bar	Fittings bar
80 ~ 300	50	25
350 ~ 600	40	16
700 ~ 1200	32	10
1400 ~ 2000	25	10

◤ The nominal pressure rating are applicable to the temperature range -10°C to 80°C; the purchasers should be consulted with the manufacturers where pressure-temperature conditions are out of this range.

❖ Angular Deflection & Straight Draw of "Push-in" Type Flexible Joint (Tyton Joint)

DN (Nominal size) mm	Allowable Angular Deflection	Allowable Straight Draw Without Deflection
80 ~ 300	5°	38 mm
350 ~ 600	4°	38 mm
700 ~ 800	4°	56 mm
900 ~ 1200	4°	70 mm
1400 ~ 1600	4°	95 mm
1800 ~ 2000	1.5°	105 mm

❖ Tolerances on Dimensions

Dimensions in mm

Tolerances on Wall Thickness (e)	
Type of Casting	**Tolerance**
Pipes centrifugally cast	- (1.3 + 0.001 DN)
Pipes do not centrifugally cast and fittings	- (2.3 + 0.001 DN)

Tolerances on Lengths	
Type of Casting	**Tolerance**
Socket and spigot pipes (full length or shortened)	± 30
Fitting for socketed joint	± 20

Tolerances on External Diameters (DE)					
DN	**DE**	**Tolerance**	**DN**	**DE**	**Tolerance**
80	98	+1 / -2.2	900	945	+1 / -4.8
100	118	+1 / -2.8	1000	1048	+1 / -5.0
150	170	+1 / -2.9	1100	1152	+1 / -5.4
200	222	+1 / -3.0	1200	1255	+1 / -5.8
250	274	+1 / -3.1	1400	1462	+1 / -6.6
300	326	+1 / -3.3	1500	1565	+1 / -7.0
350	378	+1 / -3.4	1600	1668	+1 / -7.4
400	429	+1 / -3.5	1800	1875	+1 / -8.2
450	480	+1/ -3.6	2000	2082	+1/ -9.0
500	532	+1 / -3.8	2200	2288	+1 / -9.8
600	635	+1 / -4.0	2400	2495	+1 / -10.6
700	738	+1 / -4.3	2600	2702	+1 / -11.4
800	842	+1 / -4.5			

Straightness of Pipes
Pipes shall be straight with a maximum deviation of 0.125% of their length.

❖ Mechanical Properties

Pipes			Fittings
Tensile	420 N / mm² (MPa) min.		420 N / mm² (MPa) min.
Elongation	DN ≤ 1000	10% Min.	5% Min.
Hardness	DN ≥ 1100	7% Min.	HB 250 max.
	HB 230 max.		

❖ Coatings & Linings

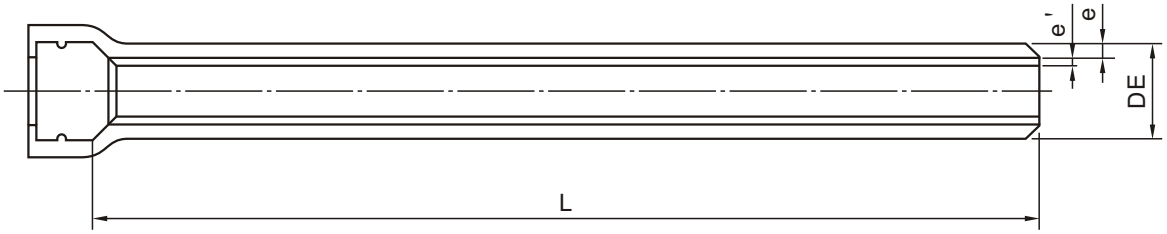
	Pipes	Fittings
Outside External	***Potable Water:*** • Unless otherwise specified by the purchaser, all pipes are coated externally zinc coating with covered by a finishing layer of Bituminous paint in accordance with BS EN 545 and ISO 8179. • Bituminous paint complies with BS 4147 : 1980 type Ⅰ grade C or BS 3416 : 1988 type Ⅱ ***Sewerage:*** • Unless otherwise specified by the purchaser all pipes are coated externally with zinc coating covered by a finish layer of brown reddish epoxy paint. ***Gas:*** • Bitumen or synthetic resin base paint coating.	***Potable Water:*** • Unless otherwise specified by the purchaser, all fittings are coated externally with zinc coating covered by a finishing layer of bituminous paint in accordance with BS EN 545 and ISO 8179. • Bituminous paint complies with BS 4147 : 1980 type Ⅰ grade C or BS 3416 : 1988 type Ⅱ • Fusion Bonded Epoxy, Polyurethane, Liquid applied Epoxy coating are also available upon request and comply to BS 6920 : 1988. ***Sewerage:*** • Unless otherwise specified by the purchaser all fittings are coated externally with zinc coating covered by a finish layer of brown reddish epoxy paint. ***Gas:*** • Bitumen or synthetic resin base paint coating.
Inside	***Potable Water:*** • Unless otherwise specified by the purchaser, all pipes are sulphate-resistant cement lined to ISO 4179. • Polyurethane and liquid epoxy coating are also available upon request and comply to BS 6920:1988. ***Sewerage:*** • Unless otherwise specified by the purchaser all pipes are high alumina cement lined comply to EN 598. • Polyurethane and liquid epoxy coating are also available upon request and comply to EN 598 for sewerage application or corrosive resistant purposes. ***Gas:*** • Bitumen or synthetic resin base paint coating.	***Potable Water:*** • Unless otherwise specified by the purchaser, all fittings are sulphate-resistant cement lined to ISO 4179. • Fusion Bonded Epoxy, Polyurethane, Liquid applied Epoxy coating are also available upon request and comply to BS 6920:1988. ***Sewerage:*** • Unless otherwise specified by the purchaser all fittings are internally lined with Epoxy for corrosive resistant purposes. • Polyurethane or high alumina cement lining are also available and comply to EN 598. ***Gas:*** • Bitumen or synthetic resin base paint coating.

Dimensions in mm

Sulphate-Resistant Cement Mortar Lining BS EN 545 : 2002				
Nominal Size DN	Thickness			Maximum crack width and maximum radial displacement
	Nominal value	Minimum arithmetic mean value	Individual minimum value	
80 ~ 300	5	3.5	2.5	0.8
350 ~ 600	5	4.5	3.5	1.2
700 ~ 1200	6	5.5	4.5	1.5
1400 ~ 1600	9	8.0	7.0	2.0
1800 ~ 2000	9	8.0	7.0	1.5
2200 ~ 2600	12	10.5	9.5	1.8

★ Purchaser can consult with the manufacturer about the best choice of external coatings and internal linings to be used.

Push On "T" Type Flexible Joint (Tyton) Socket & Spigot Pipe
Class K9 / K12

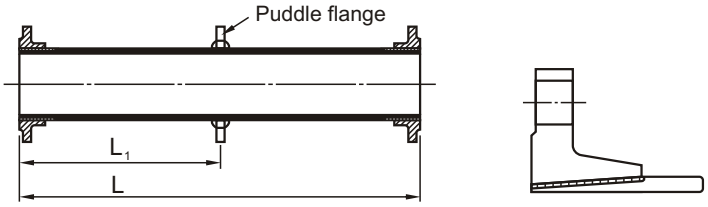


Unit : mm

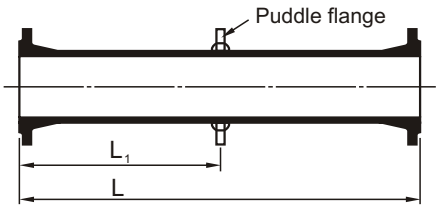
Nominal size	Thickness				Outside diameter	Nominal laying lengh	Mass of Iron (Kg)	
	Unlined pipe		Cement lining					
DN	e		e'		DE	L	K9	K12
	K9	K12	EN	ISO				
80	6.0	7.0	4	3	98	4000	52.0	60.0
100	6.0	7.2	4	3	118	6000	95.0	111.0
150	6.0	7.8	4	3	170	6000	144.0	175.0
200	6.3	8.4	4	3	222	6000	194.0	249.0
250	6.8	9.0	4	3	274	6000	255.0	331.0
300	7.2	9.6	4	3	326	6000	323.0	422.0
350	7.7	10.2	5	5	378	6000	403.0	522.0
400	8.1	10.8	5	5	429	6000	482.0	629.0
450	8.6	11.4	5	5	480	6000	574.0	745.0
500	9.0	12.0	5	5	532	6000	669.0	872.0
600	9.9	13.2	5	5	635	6000	883.0	1150.0
700	10.8	14.4	6	6	738	6000	1126.0	1464.0
800	11.7	15.6	6	6	842	6000	1394.0	1816.0
900	12.6	16.8	6	6	945	6000	1691.0	2202.0
1000	13.5	18.0	6	6	1048	6000	2017.0	2625.0
1100	14.4	19.2	6	6	1152	6000	2372.0	3086.0
1200	15.3	20.4	6	6	1255	6000	2758.0	3585.0
1400	17.1	22.8	9	9	1462	6000	3563.0	4640.0
1500	18.0	24.0	9	9	1565	6000	4015.0	5229.0
1600	18.9	25.2	9	9	1668	6000	4517.0	5877.0
1800	20.7	27.6	9	9	1875	6000	5591.0	7266.0
2000	22.5	30.0	9	9	2082	6000	6784.0	8807.0

Flanged Pipes

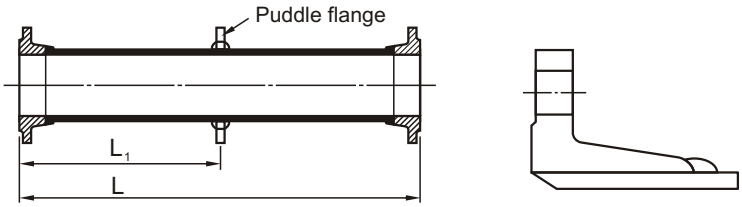
Flanged pipes with screwed-on flanges.
K9 or K12
DN 80 ~ DN 600 mm
L, L_1 to be specified



Flanged pipes with cast-on flanges.
K12
DN 80 ~ DN 2000 mm
L ≤ 2000 mm
L, L_1 to be specified



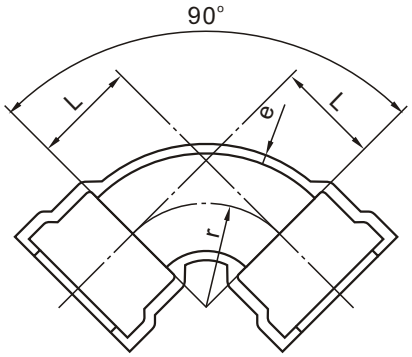
Flanged pipes with welded-on flanges.
K9
DN 80 ~ DN 2000 mm
L, L_1 to be specified



Unit : mm

Nominal size	Body				Mass (Kg)		
	K9		K12		Flange, each		
DN	e	Kg/M	e	Kg/M	PN 10	PN 16	PN 25
80	6.0	12.2	7.0	14.1	2.9	2.9	2.9
100	6.0	15.1	7.2	17.7	3.3	3.3	3.8
150	6.0	22.8	7.8	28.0	4.9	4.9	5.9
200	6.3	30.6	8.4	39.7	6.8	6.6	8.7
250	6.8	40.2	9.0	52.8	9.6	9.2	13.1
300	7.2	50.8	9.6	67.3	12.8	12.4	18.0
350	7.7	63.2	10.2	83.1	14.1	17.2	25.5
400	8.1	75.5	10.8	100.0	16.3	21.9	33.2
450	8.6	89.8	11.4	118.3	20.2	28.1	39.0
500	9.0	104.3	12.0	138.2	21.8	37.0	48.7
600	9.9	137.3	13.2	181.8	30.8	55.6	71.5
700	10.8	173.9	14.4	230.8	40.5	57.3	90.3
800	11.7	215.2	15.6	285.5	54.8	74.0	123.2
900	12.6	260.2	16.8	345.4	64.3	88.2	148.6
1000	13.5	309.3	18.0	410.6	81.4	122.9	200.7
1100	14.4	362.8	19.2	481.7	112.8	147.8	220.7
1200	15.3	420.1	20.4	557.8	120.9	185.2	284.7
1400	17.1	547.2	22.8	726.8	147.8	215.9	368.1
1600	18.9	690.3	25.2	916.9	206.4	308.4	485.5
1800	20.7	850.1	27.6	1129.3	236.3	362.2	601.9
2000	22.5	1026.3	30.0	1363.4	279.4	432.2	784.9

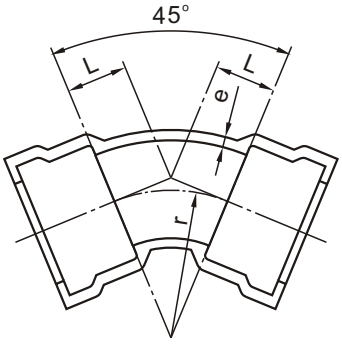
Tyton 90° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass (Kg)
80	7.0	100	80	8.6
100	7.2	120	95	11.4
150	7.8	170	145	20.5
200	8.4	220	195	33.0
250	9.0	270	245	48.5
300	9.6	320	290	68.0
350	10.2	370	340	97.5
400	10.8	420	390	124.0
450	11.4	470	435	143.0
500	12.0	520	485	193.0
600	13.2	620	580	273.0
700	14.4	720	655	455.0
800	15.6	820	745	605.0
900	16.8	920	855	813.0
1000	18.0	1020	945	1045.0
1100	19.2	1120	1065	1358.0
1200	20.4	1220	1155	1663.0

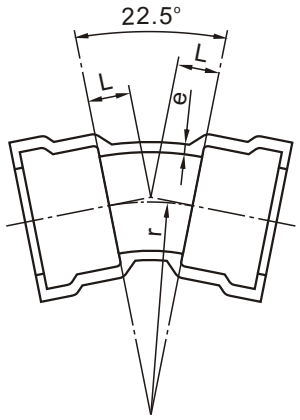
Tyton 45° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass (Kg)
80	7.0	55	80	7.7
100	7.2	65	100	10.1
150	7.8	85	145	17.4
200	8.4	110	200	27.0
250	9.0	130	245	38.5
300	9.6	150	305	53.0
350	10.2	175	350	70.0
400	10.8	195	405	89.0
450	11.4	220	450	117.0
500	12.0	240	495	139.0
600	13.2	285	595	202.0
700	14.4	330	655	282.0
800	15.6	370	745	378.0
900	16.8	415	855	496.0
1000	18.0	460	945	635.0
1100	19.2	505	1065	855.5
1200	20.4	550	1155	986.0
1400	22.8	515	1015	1273.0
1600	25.2	565	1115	1740.0

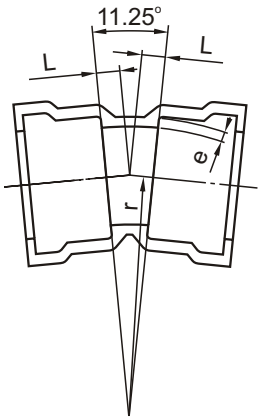
Tyton 22.5° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass (Kg)
80	7.0	40	90	7.3
100	7.2	45	110	9.3
150	7.8	55	155	15.9
200	8.4	65	195	24.0
250	9.0	75	240	33.5
300	9.6	90	305	44.5
350	10.2	100	350	58.0
400	10.8	110	390	74.0
450	11.4	120	435	95.0
500	12.0	135	505	111.0
600	13.2	155	590	157.0
700	14.4	175	655	217.0
800	15.6	195	745	287.0
900	16.8	220	855	373.0
1000	18.0	240	945	470.0
1100	19.2	260	1065	645.0
1200	20.4	285	1155	716.0
1400	22.8	260	1015	933.0
1600	25.2	280	1115	1259.0

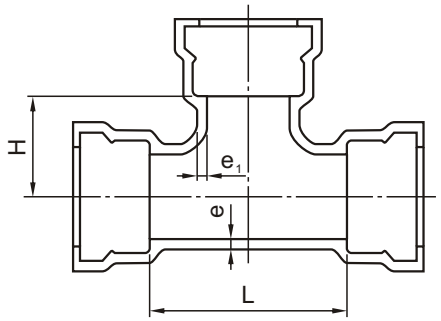
Tyton 11.25° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass (Kg)
80	7.0	30	75	7.1
100	7.2	35	120	8.9
150	7.8	40	155	14.8
200	8.4	45	195	22.0
250	9.0	50	230	30.5
300	9.6	60	315	40.5
350	10.2	65	350	52.0
400	10.8	70	385	65.0
450	11.4	70	420	71.5
500	12.0	85	510	96.0
600	13.2	95	580	134.0
700	14.4	95	510	181.0
800	15.6	110	640	239.0
900	16.8	120	710	305.0
1000	18.0	130	790	381.0
1100	19.2	140	865	525.4
1200	20.4	150	965	568.0
1400	22.8	130	730	747.0
1600	25.2	140	830	1007.0

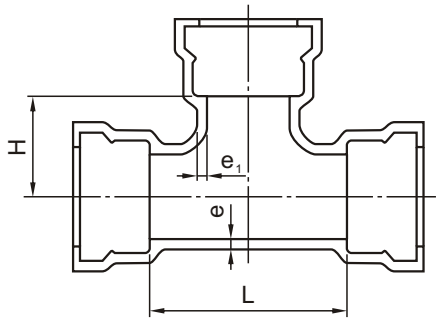
Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass (Kg)
Body DN	Branch dn					
80	80	7.0	7.0	170	85	12.4
100	80	7.2	7.0	170	95	14.8
	100	7.2	7.2	190	95	16.1
150	80	7.8	7.0	170	120	21.5
	100	7.8	7.2	195	120	23.5
	150	7.8	7.8	255	125	28.0
200	80	8.4	7.0	175	145	30.0
	100	8.4	7.2	200	145	32.0
	150	8.4	7.8	255	150	37.0
	200	8.4	8.4	315	155	43.0
250	80	9.0	7.0	180	170	39.8
	100	9.0	7.2	200	170	41.5
	150	9.0	7.8	260	175	46.8
	200	9.0	8.4	315	180	52.2
	250	9.0	9.0	375	190	58.5
300	80	9.6	7.0	180	195	50.7
	100	9.6	7.2	205	195	53.0
	150	9.6	7.8	260	200	58.7
	200	9.6	8.4	320	205	65.0
	250	9.6	9.0	375	210	71.5
	300	9.6	9.6	435	220	78.9
350	80	10.2	7.0	185	220	63.6
	100	10.2	7.2	205	220	65.8
	150	10.2	7.8	265	225	72.6
	200	10.2	8.4	325	230	79.6
	250	10.2	9.0	380	235	86.9
	300	10.2	9.6	440	240	94.8
	350	10.2	10.2	495	250	103.2
400	80	10.8	7.0	185	245	77.4
	100	10.8	7.2	210	245	80.3
	150	10.8	7.8	270	250	87.9
	200	10.8	8.4	325	255	95.4
	250	10.8	9.0	385	365	108.3
	300	10.8	9.6	440	270	112.4
	350	10.8	10.2	500	275	121.6
	400	10.8	10.8	560	280	177.4
450	80	11.4	7.0	190	270	92.4
	100	11.4	7.2	215	270	95.7
	150	11.4	7.8	270	275	103.7
	200	11.4	8.4	330	280	112.5
	250	11.4	9.0	385	290	121.6
	300	11.4	9.6	445	295	131.2
	350	11.4	10.2	505	300	141.4
	400	11.4	10.8	560	305	161.9
	450	11.4	11.4	620	310	197.6
500	80	12.0	7.0	195	295	111.3
	100	12.0	7.2	215	295	114.4
	150	12.0	7.8	275	300	123.9
	200	12.0	8.4	330	305	133.1
	250	12.0	9.0	390	315	143.6
	300	12.0	9.6	450	320	154.2
	350	12.0	10.2	505	325	164.8
	400	12.0	10.8	565	330	187.2
	450	12.0	11.4	620	335	200.0
	500	12.0	12.0	680	340	222.4

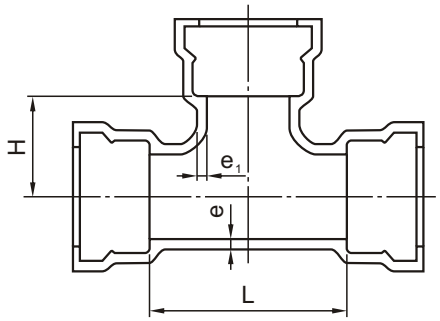
Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass (Kg)
Body DN	Branch dn					
600	80	13.2	7.0	200	345	152.0
	100	13.2	7.2	220	345	155.9
	150	13.2	7.8	280	350	167.5
	200	13.2	8.4	340	355	179.4
	250	13.2	9.0	395	365	191.3
	300	13.2	9.6	455	370	204.0
	350	13.2	10.2	510	375	216.6
	400	13.2	10.8	570	380	243.7
	450	13.2	11.4	630	385	258.0
	500	13.2	12.0	685	390	276.3
	600	13.2	13.2	800	400	287.6
700	150	14.4	7.8	285	400	219.3
	200	14.4	8.4	345	405	233.6
	250	14.4	9.0	400	415	247.7
	300	14.4	9.6	460	420	262.8
	350	14.4	10.2	520	425	278.5
	400	14.4	10.8	575	430	309.5
	450	14.4	11.4	635	435	326.0
	500	14.4	12.0	690	440	339.7
	600	14.4	13.2	810	450	361.1
	700	14.4	14.4	925	460	397.2
800	150	15.6	7.8	290	450	280.2
	200	15.6	8.4	350	455	297.2
	250	15.6	9.0	410	465	314.9
	300	15.6	9.6	465	470	331.6
	350	15.6	10.2	525	475	350.0
	400	15.6	10.8	580	480	386.1
	450	15.6	11.4	640	485	406.2
	500	15.6	12.0	700	490	413.6
	600	15.6	13.2	815	500	445.5
	700	15.6	14.4	930	510	486.7
	800	15.6	15.6	1045	525	531.0
900	150	16.8	7.8	300	500	351.9
	200	16.8	8.4	355	505	370.4
	250	16.8	9.0	415	515	391.1
	300	16.8	9.6	470	520	410.5
	350	16.8	10.2	530	525	431.7
	400	16.8	10.8	590	530	473.5
	450	16.8	11.4	645	535	496.5
	500	16.8	12.0	705	540	499.5
	600	16.8	13.2	820	550	541.4
	700	16.8	14.4	935	560	588.2
	800	16.8	15.6	1050	575	638.1
	900	16.8	16.8	1170	585	690.5

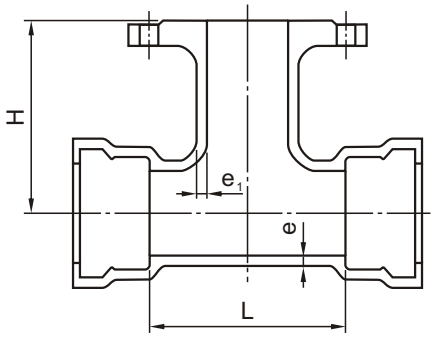
Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass (Kg)
Body DN	Branch dn					
1000	150	18.0	7.8	305	550	432.5
	200	18.0	8.4	360	555	453.9
	250	18.0	9.0	420	565	477.8
	300	18.0	9.6	480	570	501.8
	350	18.0	10.2	535	575	524.6
	400	18.0	10.8	595	580	572.5
	450	18.0	11.4	650	585	595.5
	500	18.0	12.0	710	590	598.7
	600	18.0	13.2	825	600	649.7
	700	18.0	14.4	940	610	702.6
	800	18.0	15.6	1060	625	760.3
	900	18.0	16.8	1175	635	817.4
	1000	18.0	18.0	1290	645	876.6
1100	150	19.2	7.8	310	600	520.5
	200	19.2	8.4	370	605	547.1
	250	19.2	9.0	425	615	572.4
	300	19.2	9.6	485	620	599.9
	350	19.2	10.2	540	625	625.9
	400	19.2	10.8	600	630	682.5
	450	19.2	11.4	660	635	700.4
	500	19.2	12.0	715	640	710.1
	600	19.2	13.2	830	650	767.8
	700	19.2	14.4	950	660	829.3
	800	19.2	15.6	1065	675	892.0
	900	19.2	16.8	1180	685	955.7
	1000	19.2	18.0	1295	695	1021.5
	1100	19.2	19.2	1410	705	1087.7
1200	150	20.4	7.8	315	650	626.7
	200	20.4	8.4	375	655	657.1
	250	20.4	9.0	430	665	685.9
	300	20.4	9.6	490	670	717.1
	350	20.4	10.2	550	675	748.8
	400	20.4	10.8	605	680	810.5
	450	20.4	11.4	665	685	824.7
	500	20.4	12.0	720	690	841.6
	600	20.4	13.2	840	700	908.8
	700	20.4	14.4	955	710	975.4
	800	20.4	15.6	1070	725	1045.2
	900	20.4	16.8	1185	735	1116.1
	1000	20.4	18.0	1300	745	1189.0
	1100	20.4	19.2	1420	750	1262.5
	1200	20.4	20.4	1535	765	1343.6

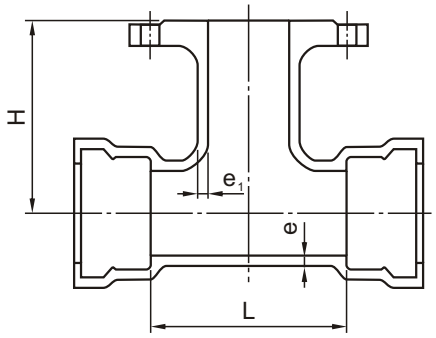
Flange on Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
80	80	7.0	7.0	170	165	12.8	12.8	12.8
100	80	7.2	7.0	170	175	15.1	15.1	15.1
	100	7.2	7.2	190	180	16.1	16.1	16.6
150	80	7.8	7.0	170	205	22.2	22.2	22.2
	100	7.8	7.2	195	210	23.5	23.5	24.0
	150	7.8	7.8	255	220	27.2	27.2	28.2
200	80	8.4	7.0	175	235	30.4	30.4	30.4
	100	8.4	7.2	200	240	32.0	32.0	32.5
	150	8.4	7.8	255	250	36.2	36.2	37.2
	200	8.4	8.4	315	260	41.0	40.8	42.9
250	80	9.0	7.0	180	265	40.4	40.4	40.4
	100	9.0	7.2	200	270	42.0	42.0	42.5
	150	9.0	7.8	260	280	47.0	47.0	48.0
	200	9.0	8.4	315	290	52.3	52.1	54.2
	250	9.0	9.0	375	300	58.7	58.3	62.2
300	80	9.6	7.0	180	295	51.4	51.4	51.4
	100	9.6	7.2	205	300	53.5	53.5	54.0
	150	9.6	7.8	260	310	59.0	59.0	60.0
	200	9.6	8.4	320	320	65.2	65.0	67.1
	250	9.6	9.0	380	330	72.4	72.0	75.9
	300	9.6	9.6	435	340	79.8	79.4	85.0
350	80	10.2	7.0	185	325	64.3	64.3	64.3
	100	10.2	7.2	205	330	66.4	66.4	66.9
	150	10.2	7.8	270	340	73.3	73.3	74.3
	200	10.2	8.4	325	350	80.1	79.9	82.0
	250	10.2	9.0	385	360	88.0	87.6	91.5
	300	10.2	9.6	440	370	96.2	95.8	101.4
	350	10.2	10.2	495	380	102.5	105.6	113.9
400	80	10.8	7.0	185	355	78.1	78.1	78.1
	100	10.8	7.2	210	360	80.9	80.9	81.4
	150	10.8	7.8	270	370	88.5	88.5	89.5
	200	10.8	8.4	325	380	95.9	95.7	97.8
	250	10.8	9.0	385	390	104.8	104.4	108.3
	300	10.8	9.6	440	400	113.8	113.4	119.0
	350	10.8	10.2	500	410	121.3	124.4	132.7
	400	10.8	10.8	560	420	129.7	135.3	146.6
450	80	11.4	7.0	190	385	93.3	93.3	93.3
	100	11.4	7.2	215	390	96.5	96.5	97.0
	150	11.4	7.8	270	400	104.4	104.4	105.4
	200	11.4	8.4	330	410	113.3	113.1	115.2
	250	11.4	9.0	390	420	123.1	122.7	126.6
	300	11.4	9.6	445	430	132.9	132.5	138.1
	350	11.4	10.2	505	440	141.4	144.5	152.8
	400	11.4	10.8	560	450	150.3	155.9	167.2
	450	11.4	11.4	620	460	160.1	168.0	178.9
500	80	12.0	7.0	195	415	112.2	112.2	112.2
	100	12.0	7.2	215	420	115.2	115.2	115.7
	150	12.0	7.8	275	430	124.7	124.7	125.7
	200	12.0	8.4	330	440	134.0	133.8	135.9
	250	12.0	9.0	390	450	144.9	144.5	148.4
	300	12.0	9.6	450	460	156.2	155.8	161.4
	350	12.0	10.2	505	470	165.1	168.2	176.5
	400	12.0	10.8	565	480	175.6	181.2	192.5
	450	12.0	11.4	620	490	185.8	193.7	204.6
	500	12.0	12.0	680	500	197.2	212.4	224.1

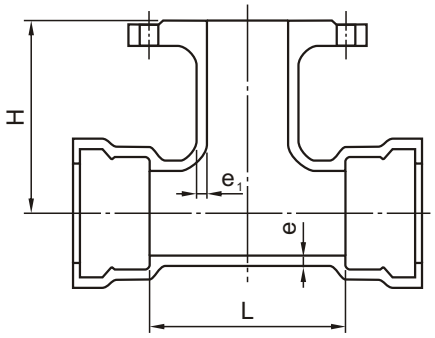
Flange on Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
600	80	13.2	7.0	200	475	153.0	153.0	153.0
	100	13.2	7.2	220	480	156.8	156.8	157.3
	150	13.2	7.8	280	490	168.5	168.5	169.5
	200	13.2	8.4	340	500	180.6	180.4	182.5
	250	13.2	9.0	395	510	193.0	192.6	196.5
	300	13.2	9.6	455	520	206.5	206.1	211.7
	350	13.2	10.2	510	530	217.6	220.7	229.0
	400	13.2	10.8	570	540	230.3	235.9	247.2
	450	13.2	11.4	630	550	243.4	251.3	262.2
	500	13.2	12.0	685	560	256.3	271.5	283.2
	600	13.2	13.2	800	580	287.7	312.5	328.4
700	150	14.4	7.8	285	520	219.8	219.8	220.8
	200	14.4	8.4	345	525	234.0	233.8	235.9
	250	14.4	9.0	400	535	248.3	247.9	251.8
	300	14.4	9.6	460	540	263.7	263.3	268.9
	350	14.4	10.2	520	550	277.5	280.6	288.9
	400	14.4	10.8	575	555	290.8	296.4	307.7
	450	14.4	11.4	635	565	305.8	313.7	324.6
	500	14.4	12.0	690	570	319.8	335.0	346.7
	600	14.4	13.2	810	585	354.5	379.3	395.2
	700	14.4	14.4	925	600	383.5	400.3	433.3
800	150	15.6	7.8	290	580	281.0	281.0	282.0
	200	15.6	8.4	350	585	298.0	297.8	299.9
	250	15.6	9.0	410	595	316.0	315.6	319.5
	300	15.6	9.6	465	600	333.0	332.6	338.2
	350	15.6	10.2	525	610	349.6	352.7	361.0
	400	15.6	10.8	580	615	365.5	371.1	382.4
	450	15.6	11.4	640	625	383.3	391.2	402.1
	500	15.6	12.0	700	630	401.1	416.3	428.0
	600	15.6	13.2	1045	645	494.4	519.2	535.1
	700	15.6	14.4	1045	660	510.3	527.1	560.1
	800	15.6	15.6	1045	675	518.4	537.6	586.8
900	150	16.8	7.8	300	640	353.0	353.0	354.0
	200	16.8	8.4	355	645	371.5	371.3	373.4
	250	16.8	9.0	415	655	392.6	392.2	396.1
	300	16.8	9.6	470	660	412.4	412.0	417.6
	350	16.8	10.2	530	670	432.1	435.2	443.5
	400	16.8	10.8	590	675	452.2	457.8	469.1
	450	16.8	11.4	645	685	471.7	479.6	490.5
	500	16.8	12.0	705	690	492.5	507.7	519.4
	600	16.8	13.2	1170	705	637.2	662.0	677.9
	700	16.8	14.4	1170	720	653.5	670.3	703.3
	800	16.8	15.6	1170	735	662.0	681.2	730.4
	900	16.8	16.8	1170	750	671.8	695.7	756.1

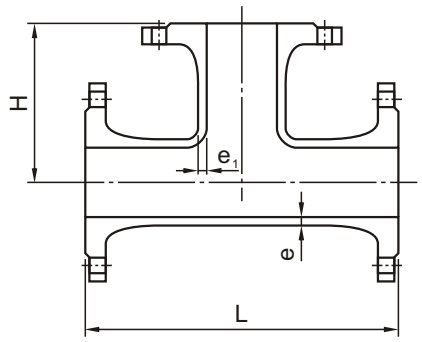
Flange on Tyton Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
1000	150	18.0	7.8	305	700	433.7	433.7	434.7
	200	18.0	8.4	360	705	455.3	455.1	457.2
	250	18.0	9.0	420	715	479.7	479.3	483.2
	300	18.0	9.6	480	720	504.3	503.9	509.5
	350	18.0	10.2	535	730	525.6	528.7	537.0
	400	18.0	10.8	595	735	549.1	554.7	566.0
	450	18.0	11.4	650	745	571.6	579.5	590.4
	500	18.0	12.0	710	750	595.8	611.0	622.7
	600	18.0	13.2	1290	765	804.7	829.5	845.4
	700	18.0	14.4	1290	780	821.4	838.2	871.2
	800	18.0	15.6	1290	795	830.1	849.3	898.5
	900	18.0	16.8	1290	810	840.4	864.3	924.7
	1000	18.0	18.0	1290	825	857.5	899.0	976.8
1100	150	19.2	7.8	310	760	522.0	522.0	523.0
	200	19.2	8.4	370	765	548.8	548.6	550.7
	250	19.2	9.0	425	775	574.8	574.4	578.3
	300	19.2	9.6	485	780	603.0	602.6	608.2
	350	19.2	10.2	540	790	627.6	630.7	639.0
	400	19.2	10.8	600	795	654.7	660.3	671.6
	450	19.2	11.4	660	805	682.6	690.5	701.4
	500	19.2	12.0	715	810	708.5	723.7	735.4
	600	19.2	13.2	830	825	767.2	792.0	807.9
	700	19.2	14.4	950	840	823.2	840.0	873.0
	800	19.2	15.6	1065	855	886.5	905.7	954.9
	900	19.2	16.8	1180	870	942.7	966.6	1027.0
	1000	19.2	18.0	1295	885	1005.8	1047.3	1125.1
	1100	19.2	19.2	1410	900	1075.5	1110.5	1183.4
1200	150	20.4	7.8	315	820	628.4	628.4	629.4
	200	20.4	8.4	375	825	659.1	658.9	661.0
	250	20.4	9.0	430	835	688.7	688.3	692.2
	300	20.4	9.6	490	840	720.7	720.3	725.9
	350	20.4	10.2	550	850	751.2	754.3	762.6
	400	20.4	10.8	605	855	779.9	785.5	796.8
	450	20.4	11.4	665	865	811.6	819.5	830.4
	500	20.4	12.0	720	870	841.1	856.3	868.0
	600	20.4	13.2	840	885	909.6	934.4	950.3
	700	20.4	14.4	955	900	971.2	988.0	1021.0
	800	20.4	15.6	1070	915	1042.1	1061.3	1110.5
	900	20.4	16.8	1185	930	1105.9	1129.8	1190.2
	1000	20.4	18.0	1300	945	1176.7	1218.2	1296.0
	1100	20.4	19.2	1420	960	1256.4	1291.4	1364.3
	1200	20.4	20.4	1535	975	1323.2	1387.5	1487.0

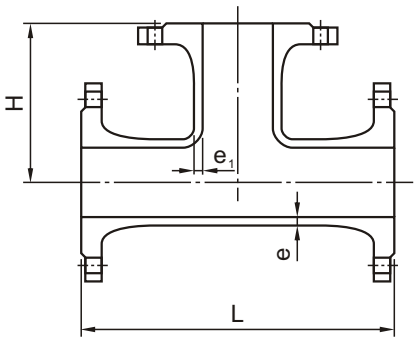
All Flanged Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
80	80	7.0	7.0	330	165	13.7	13.7	13.7
100	80	7.2	7.0	360	175	15.9	15.9	16.9
	100	7.2	7.2	360	180	16.5	16.5	18.0
150	80	7.8	7.0	440	205	24.0	24.0	26.0
	100	7.8	7.2	440	210	24.7	24.7	27.2
	150	7.8	7.8	440	220	27.1	27.1	30.1
200	80	8.4	7.0	520	235	34.7	34.3	38.5
	100	8.4	7.2	520	240	35.4	35.0	39.7
	150	8.4	7.8	520	250	37.9	37.5	42.7
	200	8.4	8.4	520	260	40.7	40.1	46.4
250	80	9.0	7.0	700	265	53.8	53.0	60.8
	100	9.0	7.2	700	275	54.6	53.8	62.1
	150	9.0	7.8	700	300	57.4	56.6	65.4
	200	9.0	8.4	700	325	61.0	60.0	69.9
	250	9.0	9.0	700	350	65.8	64.6	76.3
300	80	9.6	7.0	800	290	74.0	73.2	84.4
	100	9.6	7.2	800	300	74.8	74.0	85.7
	150	9.6	7.8	800	325	77.7	76.9	89.1
	200	9.6	8.4	800	350	81.2	80.2	93.5
	250	9.6	9.0	800	375	86.0	84.8	99.9
	300	9.6	9.6	800	400	91.7	90.5	107.3
350	80	10.2	7.0	850	325	90.6	96.8	113.4
	100	10.2	7.2	850	325	91.2	97.4	114.5
	150	10.2	7.8	850	325	93.5	99.7	117.3
	200	10.2	8.4	850	325	95.9	101.9	120.6
	250	10.2	9.0	850	325	99.1	104.9	125.4
	300	10.2	9.6	850	425	108.0	113.8	136.0
	350	10.2	10.2	850	425	110.6	119.9	144.8
400	80	10.8	7.0	900	350	110.9	122.1	144.7
	100	10.8	7.2	900	350	111.6	122.8	145.9
	150	10.8	7.8	900	350	113.8	125.0	148.6
	200	10.8	8.4	900	350	116.3	127.3	152.0
	250	10.8	9.0	900	350	119.5	130.3	156.8
	300	10.8	9.6	900	450	128.4	139.2	167.4
	350	10.8	10.2	900	450	130.9	145.2	176.1
	400	10.8	10.8	900	450	134.2	151.0	184.9
450	80	11.4	7.0	950	375	134.3	150.1	171.9
	100	11.4	7.2	950	375	135.0	150.8	173.1
	150	11.4	7.8	950	375	137.2	153.0	175.8
	200	11.4	8.4	950	375	139.7	155.3	179.2
	250	11.4	9.0	950	375	142.9	158.3	184.0
	300	11.4	9.6	950	475	151.8	167.2	194.6
	350	11.4	10.2	950	475	154.3	173.2	203.3
	400	11.4	10.8	950	475	157.5	178.9	212.0
	450	11.4	11.4	950	475	160.9	184.6	217.3
500	80	12.0	7.0	1000	400	161.5	191.9	215.3
	100	12.0	7.2	1000	400	162.2	192.6	216.5
	150	12.0	7.8	1000	400	164.4	194.8	219.2
	200	12.0	8.4	1000	400	166.9	197.1	222.6
	250	12.0	9.0	1000	400	170.0	200.0	227.3
	300	12.0	9.6	1000	500	178.9	208.9	237.9
	350	12.0	10.2	1000	500	181.5	215.0	246.7
	400	12.0	10.8	1000	500	184.7	220.7	255.4
	450	12.0	11.4	1000	500	188.0	226.3	260.6
	500	12.0	12.0	1000	500	191.6	237.2	272.3

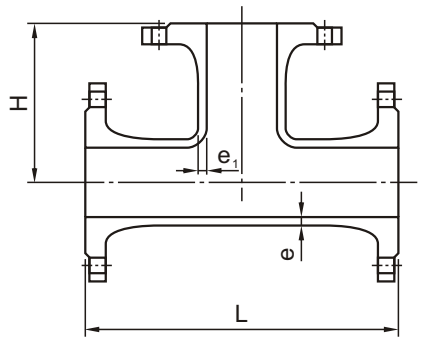
All Flanged Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
600	80	13.2	7.0	1100	450	233.7	283.3	315.1
	100	13.2	7.2	1100	450	234.4	284.0	316.3
	150	13.2	7.8	1100	450	236.6	286.2	319.0
	200	13.2	8.4	1100	450	239.0	288.4	322.3
	250	13.2	9.0	1100	450	242.2	291.4	327.1
	300	13.2	9.6	1100	550	251.1	300.3	337.7
	350	13.2	10.2	1100	550	253.6	306.3	346.4
	400	13.2	10.8	1100	550	256.8	312.0	355.1
	450	13.2	11.4	1100	550	260.1	317.6	360.3
	500	13.2	12.0	1100	550	263.6	328.4	371.9
	600	13.2	13.2	1100	550	274.5	348.9	396.6
700	150	14.4	7.8	595	520	198.1	231.7	298.7
	200	14.4	8.4	650	525	211.3	244.7	312.8
	250	14.4	9.0	705	535	225.6	258.8	328.7
	300	14.4	9.6	760	540	240.0	273.2	344.8
	350	14.4	10.2	815	550	252.9	289.6	363.9
	400	14.4	10.8	870	555	266.2	305.4	382.7
	450	14.4	11.4	925	565	280.2	321.7	398.6
	500	14.4	12.0	980	570	294.2	343.0	420.7
	600	14.4	13.2	1200	585	348.0	406.4	488.3
	700	14.4	14.4	1200	600	356.7	407.1	506.1
800	150	15.6	7.8	635	580	266.5	304.9	404.3
	200	15.6	8.4	690	585	282.2	320.4	420.9
	250	15.6	9.0	745	595	299.1	337.1	439.4
	300	15.6	9.6	800	600	316.1	354.1	458.1
	350	15.6	10.2	855	610	331.5	373.0	479.7
	400	15.6	10.8	910	615	347.5	391.5	501.2
	450	15.6	11.4	965	625	364.1	410.4	519.7
	500	15.6	12.0	1020	630	380.7	434.3	544.4
	600	15.6	13.2	1350	645	470.5	533.7	648.0
	700	15.6	14.4	1350	660	480.4	535.6	667.0
	800	15.6	15.6	1350	675	494.5	552.1	699.7
900	150	16.8	7.8	675	640	328.3	376.1	497.9
	200	16.8	8.4	730	645	346.8	394.4	517.3
	250	16.8	9.0	785	655	366.5	413.9	538.6
	300	16.8	9.6	840	660	386.3	433.7	560.1
	350	16.8	10.2	895	670	404.6	455.5	584.6
	400	16.8	10.8	950	675	423.3	476.7	608.8
	450	16.8	11.4	1005	685	442.8	498.5	630.2
	500	16.8	12.0	1060	690	462.2	525.2	657.7
	600	16.8	13.2	1500	705	599.8	672.4	809.1
	700	16.8	14.4	1500	720	610.8	675.4	829.2
	800	16.8	15.6	1500	735	624.6	691.6	861.6
	900	16.8	16.8	1500	750	634.4	706.1	887.3

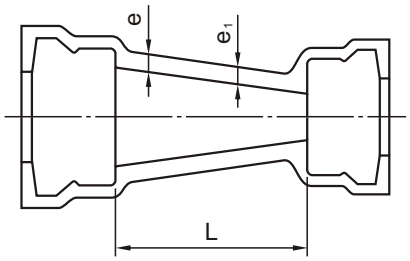
All Flanged Tees



Unit : mm

Nominal size		e	e_1	L	H	Mass with flange (Kg)		
Body DN	Branch dn					PN 10	PN 16	PN 25
1000	150	18.0	7.8	715	700	412.5	495.5	652.1
	200	18.0	8.4	770	705	434.0	516.8	674.5
	250	18.0	9.0	825	715	456.7	539.3	698.8
	300	18.0	9.6	880	720	479.6	562.2	723.4
	350	18.0	10.2	935	730	500.9	587.0	750.9
	400	18.0	10.8	990	735	522.7	611.3	778.2
	450	18.0	11.4	1045	745	545.3	636.2	802.7
	500	18.0	12.0	1100	750	567.8	666.0	833.3
	600	18.0	13.2	1650	765	766.5	874.3	1045.8
	700	18.0	14.4	1650	780	777.5	877.3	1065.9
	800	18.0	15.6	1650	795	792.0	894.2	1099.0
	900	18.0	16.8	1650	810	802.2	909.1	1125.1
	1000	18.0	18.0	1650	825	819.3	943.8	1177.2
1100	150	19.2	7.8	690	760	493.7	563.7	710.5
	200	19.2	8.4	750	765	520.6	590.4	738.3
	250	19.2	9.0	805	775	546.6	616.2	765.9
	300	19.2	9.6	865	780	574.8	644.4	795.8
	350	19.2	10.2	920	790	599.4	672.5	826.6
	400	19.2	10.8	980	795	626.5	702.1	859.2
	450	19.2	11.4	1040	805	654.4	732.3	889.0
	500	19.2	12.0	1095	810	680.3	765.5	923.0
	600	19.2	13.2	1210	825	739.0	833.8	995.5
	700	19.2	14.4	1330	840	795.0	881.8	1060.6
	800	19.2	15.6	1445	855	858.3	947.5	1142.5
	900	19.2	16.8	1560	870	914.5	1008.4	1214.6
	1000	19.2	18.0	1675	885	977.6	1089.1	1312.7
	1100	19.2	19.2	1790	900	1047.3	1152.3	1371.0
1200	150	20.4	7.8	715	820	578.4	707.0	907.0
	200	20.4	8.4	775	825	609.1	737.5	938.6
	250	20.4	9.0	830	835	638.6	766.8	969.7
	300	20.4	9.6	890	840	670.7	798.9	1003.5
	350	20.4	10.2	950	850	701.1	832.8	1040.1
	400	20.4	10.8	1005	855	729.9	864.1	1074.4
	450	20.4	11.4	1065	865	761.6	898.1	1108.0
	500	20.4	12.0	1120	870	791.1	934.9	1145.6
	600	20.4	13.2	1240	885	859.6	1013.0	1227.9
	700	20.4	14.4	1355	900	921.2	1066.6	1298.6
	800	20.4	15.6	1470	915	992.0	1139.8	1388.0
	900	20.4	16.8	1585	930	1055.9	1208.4	1467.8
	1000	20.4	18.0	1700	945	1126.6	1296.7	1573.5
	1100	20.4	19.2	1820	960	1206.3	1369.9	1641.8
	1200	20.4	20.4	1935	975	1273.2	1466.1	1764.6

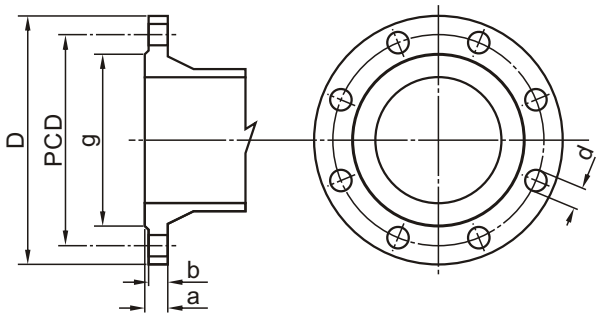
Tyton Concentric Tapers



Unit : mm

Nominal size		e	e_1	L	Mass (Kg)
Large DN	Small dn				
100	80	7.2	7.0	90	8.5
150	80	7.8	7.0	190	13.5
	100	7.8	7.2	150	13.8
200	100	8.4	7.2	250	20.5
	150	8.4	7.8	150	21.0
250	150	9.0	7.8	250	29.0
	200	9.0	8.4	150	30.2
300	150	9.6	7.8	350	41.0
	200	9.6	8.4	250	39.5
	250	9.6	9.0	150	38.5
350	200	10.2	8.4	360	52.0
	250	10.2	9.0	260	51.0
	300	10.2	9.6	160	49.5
400	200	10.8	8.4	460	72.9
	250	10.8	9.0	360	66.0
	300	10.8	9.6	260	64.0
	350	10.8	10.2	160	62.0
450	250	11.4	9.0	460	76.0
	300	11.4	9.6	360	75.0
	350	11.4	10.2	260	69.5
	400	11.4	10.8	160	66.0
500	250	12.0	9.0	560	96.5
	300	12.0	9.6	460	95.5
	350	12.0	10.2	360	90.5
	400	12.0	10.8	260	86.5
	450	12.0	11.4	160	80.5
600	300	13.2	9.6	660	144.0
	350	13.2	10.2	560	138.0
	400	13.2	10.8	460	133.0
	450	13.2	11.4	360	127.0
	500	13.2	12.0	260	121.0
700	350	14.4	10.2	800	235.0
	400	14.4	10.8	700	231.0
	450	14.4	11.4	600	224.0
	500	14.4	12.0	480	215.0
	600	14.4	13.2	280	196.0
800	400	15.6	10.8	870	303.0
	450	15.6	11.4	770	295.0
	500	15.6	12.0	670	288.0
	600	15.6	13.2	480	280.0
	700	15.6	14.4	280	270.0
900	450	16.8	11.4	940	396.0
	500	16.8	12.0	840	388.0
	600	16.8	13.2	640	384.0
	700	16.8	14.4	480	365.0
	800	16.8	15.6	280	355.0
1000	500	18.0	12.0	1040	504.0
	600	18.0	13.2	840	498.0
	700	18.0	14.4	680	480.0
	800	18.0	15.6	480	468.0
	900	18.0	16.8	280	446.0
1100	600	19.2	13.2	1020	631.0
	700	19.2	14.4	870	651.0
	800	19.2	15.6	670	619.0
	900	19.2	16.8	480	599.0
	1000	19.2	18.0	280	561.0
1200	600	20.4	13.2	1220	784.0
	700	20.4	14.4	1020	781.0
	800	20.4	15.6	870	768.0
	900	20.4	16.8	670	743.0
	1000	20.4	18.0	480	708.0
	1100	20.4	19.2	300	694.0
1400	1000	22.8	18.0	560	950.0
	1100	22.8	19.2	460	942.0
	1200	22.8	20.4	360	938.0
1600	1000	25.2	18.0	760	1272.0
	1100	25.2	19.2	660	1255.0
	1200	25.2	20.4	560	1252.0
	1400	25.2	22.8	360	1228.0

Flanges



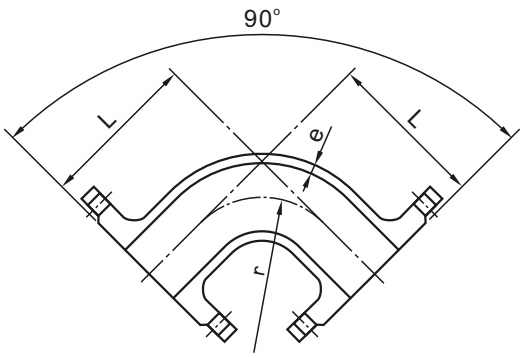
Unit : mm

Nominal size	PN 10							PN 16						
	D	g	a	b	Holes			D	g	a	b	Holes		
DN					PCD	No.	d					PCD	No.	d
80	200	132	19.0	16.0	160	8	19	200	132	19.0	16.0	160	8	19
100	220	156	19.0	16.0	180	8	19	220	156	19.0	16.0	180	8	19
150	285	211	19.0	16.0	240	8	23	285	211	19.0	16.0	240	8	23
200	340	266	20.0	17.0	295	8	23	340	266	20.0	17.0	295	12	23
250	400	319	22.0	19.0	350	12	23	400	319	22.0	19.0	355	12	28
300	455	370	24.5	20.5	400	12	23	455	370	24.5	20.5	410	12	28
350	505	429	24.5	20.5	460	16	23	520	429	26.5	22.5	470	16	28
400	565	480	24.5	20.5	515	16	28	580	480	28.0	24.0	525	16	31
450	615	527	25.5	21.5	565	20	28	640	544	30.0	26.0	585	20	31
500	670	582	26.5	22.5	620	20	28	715	609	31.5	27.5	650	20	34
600	780	682	30.0	25.0	725	20	31	840	720	36.0	31.0	770	20	37
700	895	794	32.5	27.5	840	24	31	910	794	39.5	34.5	840	24	37
800	1015	901	35.0	30.0	950	24	34	1025	901	43.0	38.0	950	24	40
900	1115	1001	37.5	32.5	1050	28	34	1125	1001	46.5	41.5	1050	28	40
1000	1230	1112	40.0	35.0	1160	28	37	1255	1112	50.0	45.0	1170	28	43
1100	1340	1221	42.5	37.5	1270	32	37	1355	1215	53.5	48.5	1270	32	43
1200	1455	1328	45.0	40.0	1380	32	40	1485	1328	57.0	52.0	1390	32	49
1400	1675	1530	46.0	41.0	1590	36	43	1685	1530	60.0	55.0	1590	36	49
1600	1915	1750	49.0	44.0	1820	40	49	1930	1750	65.0	60.0	1820	40	56

Unit : mm

Nominal size	PN 25							PN 40						
	D	g	a	b	Holes			D	g	a	b	Holes		
DN					PCD	No.	d					PCD	No.	d
80	200	132	19.0	16.0	160	8	19	200	132	19.0	16.0	160	8	19
100	235	156	19.0	16.0	190	8	23	235	156	19.0	16.0	190	8	23
150	300	211	20.0	17.0	250	8	28	300	211	26.0	23.0	250	8	28
200	360	274	22.0	19.0	310	12	28	375	284	30.0	27.0	320	12	31
250	425	330	24.5	21.5	370	12	31	450	345	34.5	31.0	385	12	34
300	485	389	27.5	23.5	430	16	31	515	409	39.5	35.5	450	16	34
350	555	448	30.0	26.0	490	16	34							
400	620	503	32.0	28.0	550	16	37							
450	670	553	34.5	30.5	600	20	37							
500	730	609	36.5	32.5	660	20	37							
600	845	720	42.0	37.0	770	20	40							
700	960	820	46.5	41.5	875	24	43							
800	1085	928	51.0	46.0	990	24	49							
900	1185	1028	55.5	50.5	1090	28	49							
1000	1320	1140	60.0	55.0	1210	28	56							
1100	1420	1240	64.5	59.5	1310	32	56							
1200	1530	1350	69.0	64.0	1420	32	56							

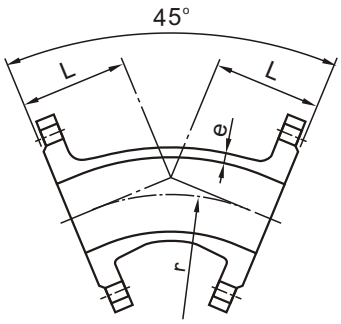
Double Flanged 90° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass with flange (Kg)		
				PN 10	PN 16	PN 25
80	7.0	165	115	9.7	9.7	9.7
100	7.2	180	120	11.9	11.9	12.9
150	7.8	220	155	20.0	20.0	22.0
200	8.4	260	190	30.9	30.5	34.7
250	9.0	350	275	50.3	49.5	57.3
300	9.6	400	315	70.8	70.0	81.2
350	10.2	450	360	89.8	96.0	112.6
400	10.8	500	405	115.8	127.0	149.6
450	11.4	550	450	144.2	160.0	181.8
500	12.0	600	490	180.6	211.0	234.4
600	13.2	700	580	275.4	325.0	356.8
700	14.4	800	685	382.4	416.0	482.0
800	15.6	900	785	533.6	572.0	670.4
900	16.8	1000	875	697.2	745.0	865.8
1000	18.0	1100	965	907.0	990.0	1145.6
1100	19.2	1200	1055	1163.0	1233.0	1378.8
1200	20.4	1300	1145	1444.4	1573.0	1772.0

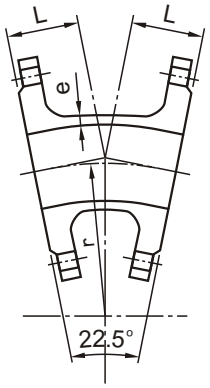
Double Flanged 45° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass with flange (Kg)		
				PN 10	PN 16	PN 25
80	7.0	130	190	9.3	9.3	9.3
100	7.2	140	200	11.3	11.3	12.3
150	7.8	160	230	18.5	18.5	20.5
200	8.4	180	265	27.4	27.0	31.2
250	9.0	350	660	54.8	54.0	61.8
300	9.6	400	765	77.8	77.0	88.2
350	10.2	300	505	76.8	83.0	99.6
400	10.8	325	550	95.8	107.0	129.6
450	11.4	350	595	116.2	132.0	153.8
500	12.0	375	645	144.6	175.0	198.4
600	13.2	425	735	216.4	266.0	297.8
700	14.4	480	875	301.4	335.0	401.0
800	15.6	530	1000	405.6	444.0	542.4
900	16.8	580	1100	528.2	567.0	696.8
1000	18.0	630	1200	674.0	751.0	912.6
1100	19.2	695	1300	861.0	931.0	1076.8
1200	20.4	750	1400	1058.4	1178.0	1386.0
1400	22.8	775	1595	1462.8	1524.0	1903.4
1600	25.2	845	1800	2069.0	2119.0	2627.2

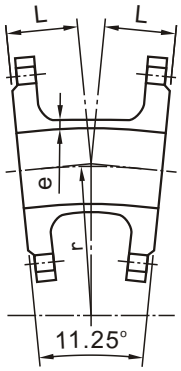
Double Flanged 22.5° Bends



Unit : mm

Nominal size DN	e	L	r approx.	Mass with flange (Kg)		
				PN 10	PN 16	PN 25
80	7.0	130	395	9.2	9.2	9.2
100	7.2	140	410	11.5	11.5	12.5
150	7.8	160	480	18.6	18.6	20.6
200	8.4	180	555	27.4	27.0	31.2
250	9.0	350	1370	55.3	54.5	62.3
300	9.6	400	1595	78.3	77.5	88.7
350	10.2	298	1050	76.8	83.0	99.6
400	10.8	324	1145	95.8	107.0	129.6
450	11.4	349	1240	119.2	135.0	156.8
500	12.0	375	1340	145.6	176.0	199.4
600	13.2	426	1535	217.4	267.0	298.8
700	14.4	478	1825	308.4	342.0	408.0
800	15.6	529	2080	409.6	448.0	546.4
900	16.8	581	2295	540.2	588.0	708.8
1000	18.0	632	2500	690.0	773.0	928.6
1100	19.2	600	2290	882.0	952.0	1097.8
1200	20.4	652	2500	1084.4	1213.0	1412.0
1400	22.8	835	3320	1498.8	1635.0	1939.4
1600	25.2	940	3745	2121.0	2325.0	2679.2

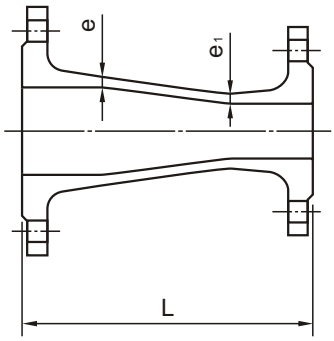
Double Flanged 11.25° Bends



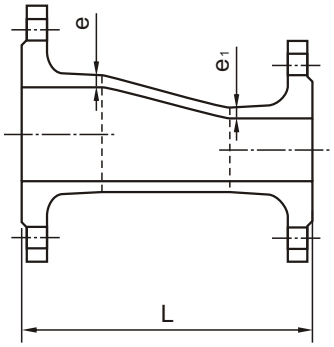
Unit : mm

Nominal size DN	e	L	r approx.	Mass with flange (Kg)		
				PN 10	PN 16	PN 25
80	7.0	130	800	9.2	9.2	9.2
100	7.2	140	830	11.5	11.5	12.5
150	7.8	160	975	18.6	18.6	20.6
200	8.4	180	1115	27.9	27.5	31.7
250	9.0	350	2770	55.8	55.0	62.8
300	9.6	400	3220	78.8	78.0	89.2
350	10.2	298	2120	77.3	83.5	100.1
400	10.8	324	2315	96.8	108.0	130.6
450	11.4	349	2505	119.2	135.0	156.8
500	12.0	375	2710	146.6	177.0	200.4
600	13.2	426	3095	218.4	268.0	299.8
700	14.4	478	3685	309.4	343.0	409.0
800	15.6	529	4200	412.6	451.0	549.4
900	16.8	581	4625	544.2	592.0	712.8
1000	18.0	632	5045	695.0	778.0	933.6
1100	19.2	683	5460	887.0	957.0	1102.8
1200	20.4	735	5890	1091.4	1220.0	1419.0
1400	22.8	835	6700	1506.8	1643.0	1947.4
1600	25.2	940	7565	2134.0	2338.0	2692.2

Double Flanged Tapers



● Concentric Taper

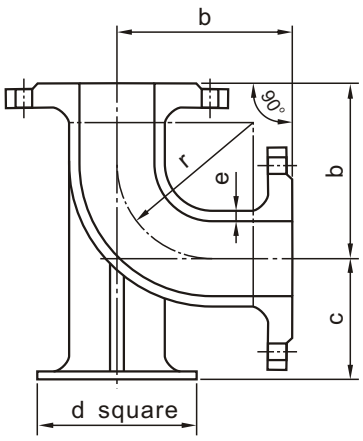


● Ecentric(Flat) Taper

Unit : mm

Nominal size		e	e_1	L	Mass with flange (Kg)		
Large DN	Small dn				PN 10	PN 16	PN 25
100	80	7.2	7.0	200	9.4	9.4	9.4
150	80	7.8	7.0	400	16.2	16.2	17.2
	100	7.8	7.2	300	15.1	15.1	16.6
200	100	8.4	7.2	600	27.3	27.1	29.7
	150	8.4	7.8	300	21.9	21.7	24.8
250	150	9.0	7.8	600	38.7	38.3	43.2
	200	9.0	8.4	300	30.3	29.7	35.7
300	150	9.6	7.8	600	46.4	46.0	52.6
	200	9.6	8.4	600	51.7	51.1	58.8
	250	9.6	9.0	300	40.4	39.6	49.1
350	200	10.2	8.4	600	57.7	60.6	71.0
	250	10.2	9.0	600	64.5	67.2	79.4
	300	10.2	9.6	300	49.5	52.2	66.1
400	200	10.8	8.4	600	65.6	71.0	84.4
	300	10.8	9.6	600	79.3	84.5	101.4
	350	10.8	10.2	300	58.3	67.0	86.6
450	250	11.4	9.0	600	81.1	88.6	103.4
	300	11.4	9.6	600	88.7	96.2	112.7
	350	11.4	10.2	600	94.7	105.7	124.9
	400	11.4	10.8	300	69.3	82.8	105.0
500	250	12.0	9.0	700	99.2	114.0	129.6
	300	12.0	9.6	600	96.3	111.1	128.4
	350	12.0	10.2	600	102.7	121.0	141.0
	400	12.0	10.8	600	109.2	130.0	153.0
	450	12.0	11.4	300	80.9	104.0	126.6
600	300	13.2	9.6	800	146.6	171.0	192.5
	350	13.2	10.2	700	139.1	167.0	191.2
	400	13.2	10.8	600	133.6	164.0	191.2
	450	13.2	11.4	600	142.3	175.0	201.8
	500	13.2	12.0	600	150.0	190.0	217.6
700	350	14.4	10.2	900	205.1	225.0	266.3
	400	14.4	10.8	800	197.6	220.0	264.3
	450	14.4	11.4	700	191.3	216.0	259.9
	500	14.4	12.0	600	181.0	213.0	257.7
	600	14.4	13.2	600	203.4	245.0	293.9
800	400	15.6	10.8	1000	268.2	293.0	353.5
	450	15.6	11.4	900	259.9	287.0	347.1
	500	15.6	12.0	800	250.6	285.0	345.9
	600	15.6	13.2	600	231.0	275.0	340.1
	700	15.6	14.4	600	259.0	295.0	377.2
900	450	16.8	11.4	1100	348.2	380.0	451.3
	500	16.8	12.0	1000	337.9	377.0	449.1
	600	16.8	13.2	800	317.3	366.0	442.3
	700	16.8	14.4	600	292.3	333.0	426.4
	800	16.8	15.6	600	320.9	364.0	473.6
1000	500	18.0	12.0	1200	444.3	501.0	590.5
	600	18.0	13.2	1000	420.7	487.0	580.7
	700	18.0	14.4	800	393.7	452.0	562.8
	800	18.0	15.6	600	357.3	418.0	545.0
	900	18.0	16.8	600	388.6	454.0	592.2
1100	600	19.2	13.2	1230	557.2	617.0	705.8
	700	19.2	14.4	1050	540.2	592.0	697.9
	800	19.2	15.6	860	506.8	561.0	683.1
	900	19.2	16.8	800	520.1	579.0	712.3
	1000	19.2	18.0	600	473.5	550.0	700.7
1200	600	20.4	13.2	1450	711.9	801.0	916.4
	700	20.4	14.4	1260	686.9	768.0	900.5
	800	20.4	15.6	1070	648.5	732.0	880.7
	900	20.4	16.8	880	604.8	693.0	852.9
	1000	20.4	18.0	790	609.2	715.0	892.3
	1100	20.4	19.2	600	566.7	666.0	838.4
1400	1000	22.8	18.0	1500	1071.9	1181.5	1411.5
	1100	22.8	19.2	1250	1013.6	1116.7	1341.8
	1200	22.8	20.4	850	816.2	948.6	1200.3
1600	1000	25.2	18.0	2000	1575.5	1719.0	1973.9
	1100	25.2	19.2	1750	1521.8	1658.8	1908.8
	1200	25.2	20.4	1500	1424.8	1591.1	1867.7
	1400	25.2	22.8	910	1104.9	1275.0	1604.3

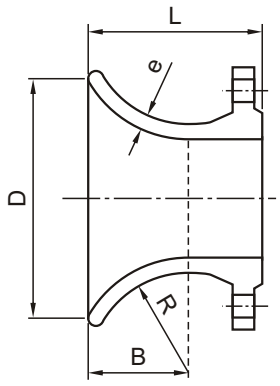
Double Flanged 90° Duckfoot Bends



Unit : mm

Nominal size DN	e	d	r approx.	b	c	Mass with flange (Kg)		
						PN 10	PN 16	PN 25
80	7.0	180	115	165	110	14.1	14.1	14.1
100	7.2	200	120	180	125	17.8	17.8	18.8
150	7.8	250	155	220	160	30.5	30.5	32.5
200	8.4	300	190	260	190	47.4	47.0	51.2
250	9.0	350	275	350	225	76.8	76.0	83.8
300	9.6	400	315	400	255	108.8	108.0	119.2
350	10.2	450	360	450	290	140.8	147.0	163.6
400	10.8	500	405	500	320	184.8	196.0	218.6
450	11.4	550	450	550	355	230.2	246.0	267.8
500	12.0	600	490	600	385	291.6	322.0	345.4
600	13.2	700	580	700	450	443.4	493.0	524.8
700	14.4	800	685	800	515	552.4	586.0	652.0
800	15.6	900	785	900	580	759.6	798.0	896.4
900	16.8	1000	875	1000	645	1002.2	1050.0	1170.8
1000	18.0	1100	965	1100	710	1297.0	1380.0	1535.6
1100	19.2	1200	1055	1200	775	1586.0	1656.0	1801.8
1200	20.4	1300	1145	1300	840	1934.4	2063.0	2262.0

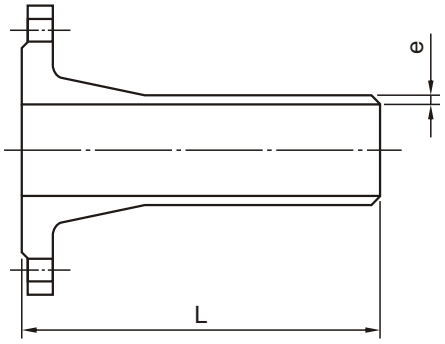
Flange Bellmouths



Unit : mm

Nominal size DN	e	L	D	B	R	Mass with flange (Kg)		
						PN 10	PN 16	PN 25
80	7.0	135	160	80	100	5.2	5.2	5.6
100	7.2	140	185	85	106	6.3	6.3	6.8
150	7.8	155	245	95	119	10.1	10.1	11.1
200	8.4	170	310	110	137	14.9	14.7	16.8
250	9.0	190	370	120	150	21.4	21.0	24.9
300	9.6	210	435	135	169	29.4	29.0	34.6
350	10.2	225	495	145	181	35.9	39.0	47.3
400	10.8	245	560	160	200	45.4	51.0	62.3
450	11.4	260	620	170	212	55.1	63.0	73.9
500	12.0	280	685	185	231	67.3	82.5	94.2
600	13.2	300	810	210	262	97.2	122.0	137.9
700	14.4	340	945	225	281	137.2	154.0	187.0
800	15.6	380	1055	240	300	183.8	203.0	252.2
900	16.8	420	1165	255	319	239.1	263.0	323.4
1000	18.0	440	1290	270	337	297.5	339.0	416.8
1100	19.2	465	1400	285	357	374.0	409.0	481.9
1200	20.4	490	1515	300	376	450.7	515.0	614.5
1400	22.8	515	1725	305	400	540.9	609.0	761.2
1600	25.2	540	1945	310	400	724.0	826.0	1003.1

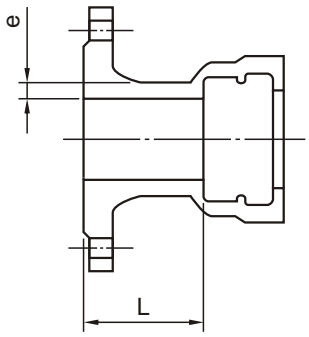
Flange Spigot Pieces



Unit : mm

Nominal size DN	e	L	Mass with flange (Kg)		
			PN 10	PN 16	PN 25
80	7.0	350	7.9	7.9	7.9
100	7.2	360	9.7	9.7	10.2
150	7.8	380	15.6	15.6	16.6
200	8.4	400	22.7	22.5	24.6
250	9.0	420	31.9	31.5	35.4
300	9.6	440	43.4	43.0	48.6
350	10.2	460	52.9	56.0	64.3
400	10.8	480	64.4	70.0	81.3
450	11.4	500	79.4	87.3	98.2
500	12.0	520	93.8	109.0	120.7
600	13.2	560	134.2	159.0	174.9
700	14.4	600	179.2	196.0	229.0
800	15.6	600	226.1	245.3	294.5
900	16.8	600	271.5	295.4	355.8
1000	18.0	600	327.8	369.3	447.1
1100	19.2	600	402.0	437.0	509.9
1200	20.4	600	455.7	520.0	619.5
1400	22.8	710	663.9	732.0	884.2
1600	25.2	780	922.0	1024.0	1201.1

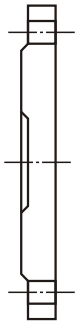
Flange Socket Pieces



Unit : mm

Nominal size DN	e	L	Mass with flange (Kg)		
			PN 10	PN 16	PN 25
80	7.0	130	7.4	7.4	7.4
100	7.2	130	9.0	9.0	9.5
150	7.8	135	14.2	14.2	15.2
200	8.4	140	20.2	20.0	22.1
250	9.0	145	27.9	27.5	31.4
300	9.6	150	36.9	36.5	42.1
350	10.2	155	44.9	48.0	56.3
400	10.8	160	54.4	60.0	71.3
450	11.4	165	65.1	73.0	83.9
500	12.0	170	77.8	93.0	104.7
600	13.2	180	110.2	135.0	150.9
700	14.4	190	142.2	159.0	192.0
800	15.6	200	188.8	208.0	257.2
900	16.8	210	234.1	258.0	318.4
1000	18.0	220	282.5	324.0	401.8
1100	19.2	230	467.0	502.0	574.9
1200	20.4	240	456.7	521.0	620.5
1400	22.8	310	654.9	723.0	875.2
1600	25.2	330	887.0	989.0	1166.1

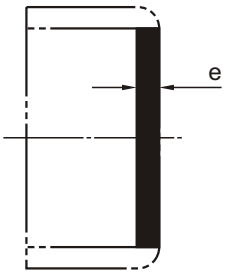
Blank Flanges



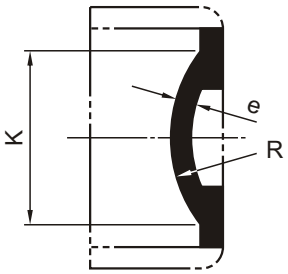
Unit : mm

Nominal size DN	Mass (Kg)		
	PN 10	PN 16	PN 25
80	3.5	3.5	3.5
100	4.3	4.3	4.8
150	7.2	7.2	8.3
200	11.0	10.8	13.3
250	16.9	16.6	21.0
300	24.0	23.5	30.0
350	30.5	34.5	44.5
400	37.5	46.0	59.5
450	46.5	63.5	80.5
500	58.0	79.5	97.0
600	88.5	125.0	149.0
700	128.0	163.0	215.0
800	180.0	228.0	304.0
900	234.0	299.0	397.0
1000	307.0	405.0	535.0
1100	391.0	518.0	670.0
1200	491.0	635.0	843.0
1400	739.0	993.0	1196.0
1600	1239.0	1462.0	1668.0

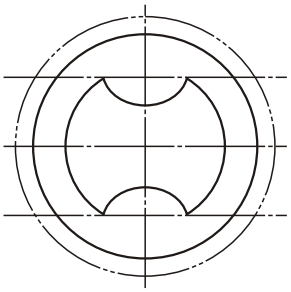
Caps



● Up to & including DN 300



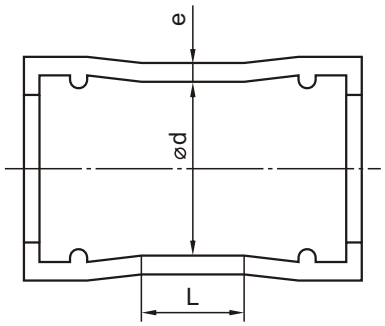
● Over DN 300



Unit : mm

Nominal size DN	e	K & R	Mass (Kg)
80	18.0	-	6.2
100	18.0	-	7.0
150	18.0	-	11.3
200	18.0	-	16.1
250	19.5	-	22.5
300	23.0	-	38.0
350	24.0	315	54.0
400	25.0	370	68.5
450	26.0	420	83.5
500	27.0	460	96.0
600	29.5	565	117.0
700	31.0	665	170.0
800	33.0	760	225.0
900	35.0	860	300.0
1000	37.0	960	370.0
1100	39.0	1060	470.0
1200	41.0	1160	580.0

Tyton Collars



Unit : mm

Nominal size DN	e	d	L	Mass (Kg)
80	7.0	109	160	7.9
100	7.2	130	160	9.9
150	7.8	183	165	15.9
200	8.4	235	170	23.0
250	9.0	288	175	31.5
300	9.6	340	180	41.0
350	10.2	393	185	52.0
400	10.8	445	190	64.0
500	12.0	550	200	93.0
600	13.2	655	210	129.0
700	14.4	760	220	172.0
800	15.6	865	230	223.0
900	16.8	970	240	282.0
1000	18.0	1075	250	349.0
1200	20.4	1285	270	560.0
1400	22.8	1477	340	816.0
1600	25.2	1683	360	1094.0
1800	27.6	1889	380	1427.0
2000	30.0	2095	400	1818.0

Pipe Jointing & Assembly

The Push On (Tyton) Joint pipe has long been regarded as the benchmark for rubber ring jointing systems for the water industry. Its unique design offers quick and effective assembly under all conditions.

Jointing instruction for Push On Joint Pipes.

❖ Insertion of Gasket

The gasket should be wiped clean, flexed as shown, and then placed in the socket with bulb leading. When inserting gaskets, flexing in two places may be necessary. The groove in the gasket must be located on the retaining bead in the socket, and the retaining heel of the gasket firmly bedded in its seat sot that the heel of the gasket is not proud of the mouth of the pipe.

❖ Lubrication

A thin film of lubricant is applied on the inside surface of the gasket which will be in contact with the entering spigot, while a thin film of lubricant should be applied to the chamfer and pipe's spigot. Use only lubricant supplied by the pipe manufacturer.

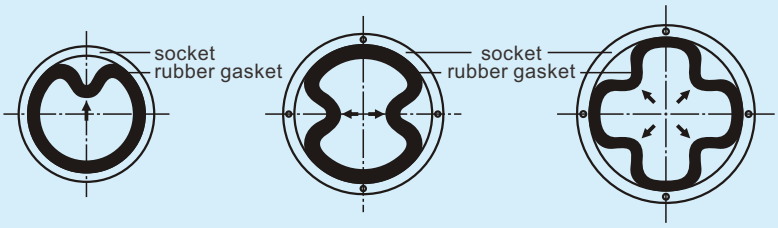
1. Clean of socket

◤ Clean the inside of socket by waste cloth, brush or driver.

2. Clean of gasket

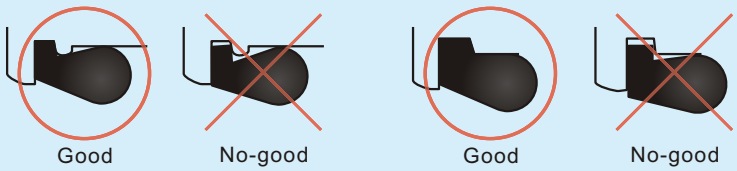
◤ Clean the rubber gasket by waste cloth.

3. Mounting of gasket



● DN 80 ~ 600 ● DN 700 ~ 900 ● DN 1000 ~ 2000

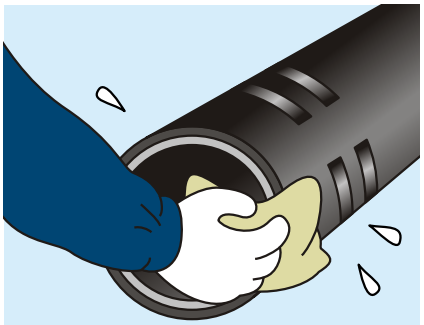
◤ Insert the gasket in the shape into the socket.



● DN 80 ~ 600 ● DN 700 ~ 2000

◤ Confirm that the gasket is seated properly.

4. Cleaning of spigot

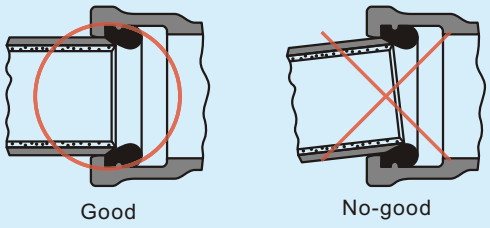


◤ Clean the outside of spigot by waste cloth.

5. Application of lubricant

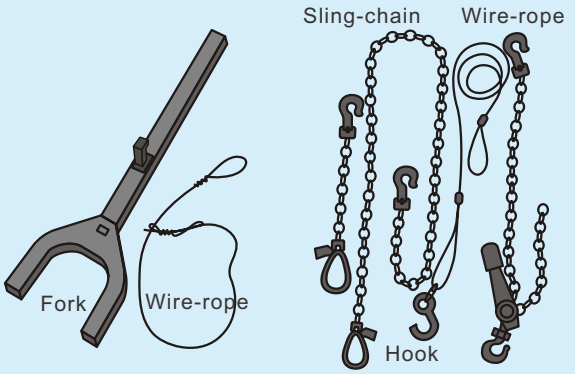
◤ Apply lubricant to the outside of the spigot and surface of gasket.

6. Setting of spigot-end



◤ Push the spigot-end on the socket properly.
(Keeping the pipe in straight alignment.)

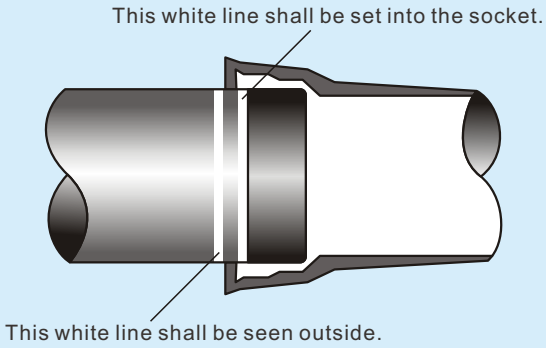
7. Joint of pipes



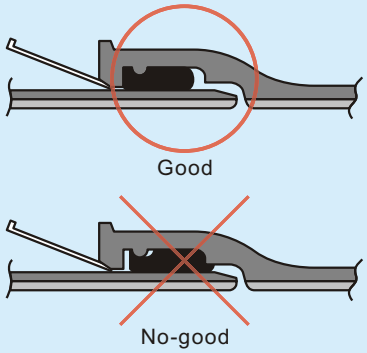
Fork
DN 80 ~ 200

Lever-block

8. Checking of joint-condition

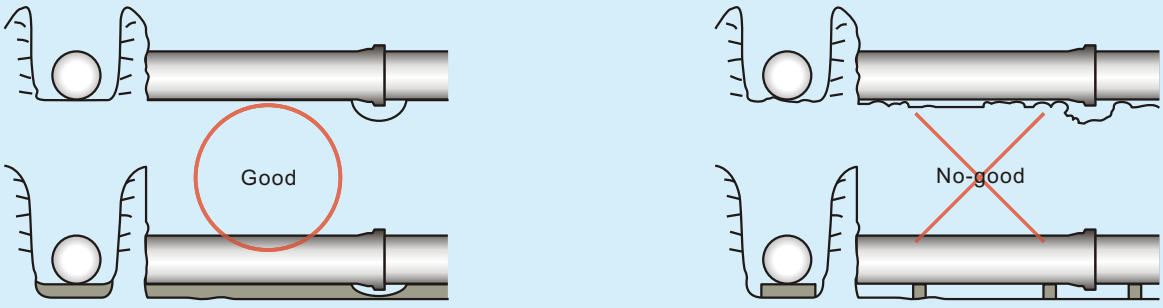


9. Checking of gasket



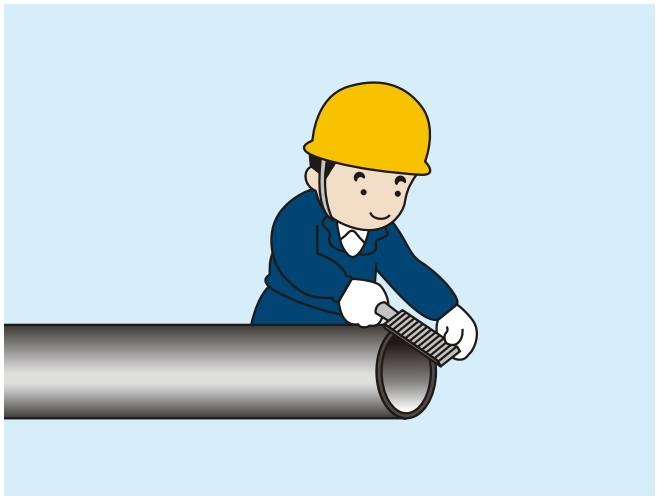
◤ Confirm by the scale (130 ~ 200 mm L) that the gasket is set properly.

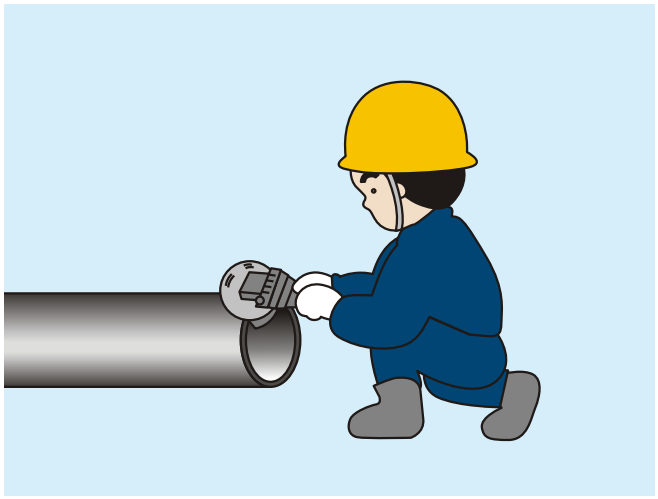
10. Pipe-laying

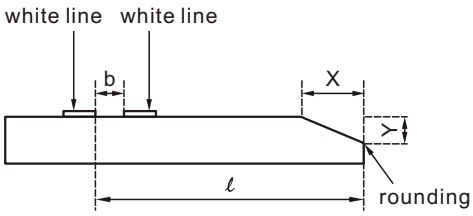


◤ Remove the fork or the lever block.
◤ Lay the pipes on the bottom of the trench properly.

❖ Jointing of Cut Pipes







Dimensions in mm

Nominal diameter	Chamfering dimensions		Position of white line	
	X	Y	ℓ	b
80	9	3.0	78	13
100	9	3.0	82	13
150	9	3.0	93	13
200	9	3.0	108	13
250	9	3.0	113	13
300	9	3.0	118	13
350	14	5.0	130	13
400	14	5.0	130	13
450	14	5.0	130	13
500	14	5.0	140	13
600	14	5.0	145	13
700	15	6.0	160	20
800	15	6.0	165	20
900	15	6.0	180	20
1000	19	7.5	190	20
1100	19	7.5	205	20
1200	19	7.5	220	20
1400	23	8.5	250	20
1500	23	8.5	265	20
1600	23	8.5	280	20
1800	26	9.5	310	20
2000	26	9.5	340	20

Pipe Handling Recommendations

Ductile Iron Pipes are not susceptible to breakage by impact loading, but bad handling can result in damages to linings and in severe situation to bruising and deformation of the spigot which could affect the sealing of the joint when install.

Damage to pipes and joint components may be caused by the following:

1. Insecure loading on truck or vehicle
2. Improper use of handling equipments
3. Incorrect stacking or storing methods
4. Improper storing of jointing components
5. Unloading on uneven or sloping ground

Damage can be avoided by paying attention to the following points:

❖ Transportation

All pipes must be secured with steel wire rope to the truck to prevent movement during transport. Suitable protection such as rubber or carpet should be placed between the wire rope and the outer pipes of the top row.

The use of straight sided loading allows full advantage to be taken of the carrying capacity of the vehicle. Pipes should be loaded onto vehicles using scalloped hardwood timbers of sufficient thickness to ensure no metal to metal contact occurs between rows of pipes.

❯ Inspection

On receipt of pipes, it should be inspected of damages to:

a. The Pipe itself
b. Cement mortar linings
c. Jointing surfaces (Socket area)

And proposed remedial work shall be undertaken (whenever require) as soon as possible.

❖ Unloading

❯ Offloading by Crane

Pipe masses, type of stacking, outreach required and the site conditions are the important factors to take into account when determining the suitability of lifting equipment. The machine used must be of the type which retains the load safely in the event of a power failure.

❯ Lifting Operation

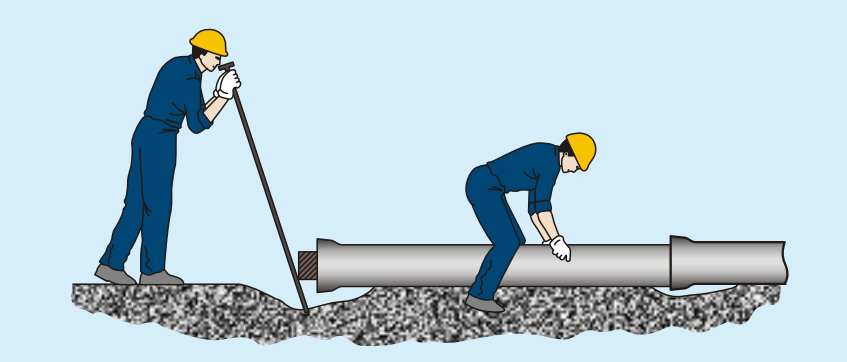
It is necessary when using mechanical handling equipment to employ experienced and qualified personnel to carry out the operation efficiently and safely.

Where the crane operator does not have a clear view of the load, he should be guided by the person supervising the operation. The pipes should be lifted smoothly, without sudden jerking motions, and pipe movement should be controlled by the use of guide ropes. This is necessary for safety and also to prevent damage caused by pipes bumping together or against surrounding objects.

Lifting and placing must be carried out in such a way that the stability of the stack, crane of vehicle is not affected. Steel wire rope securing the pipes to the truck should not be released before ensuring the truck is positioned on level ground.

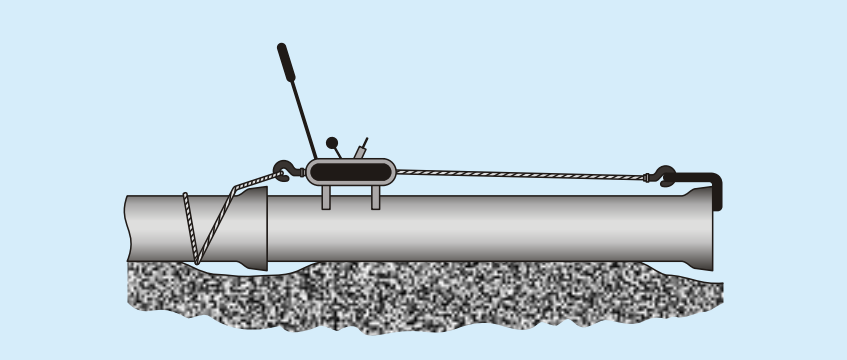
Pipe Installation & Joint Assembly Method

Pipe installation and assembly of joint is easy and quick, may depend on pipes sizes and local conditions to be carried out by the following applications:



❖ Crowbar System

Complete entry of the spigot into the socket may be obtained by pushing with a crowbar or suitable lever against the face of the socket of the entering pipe.

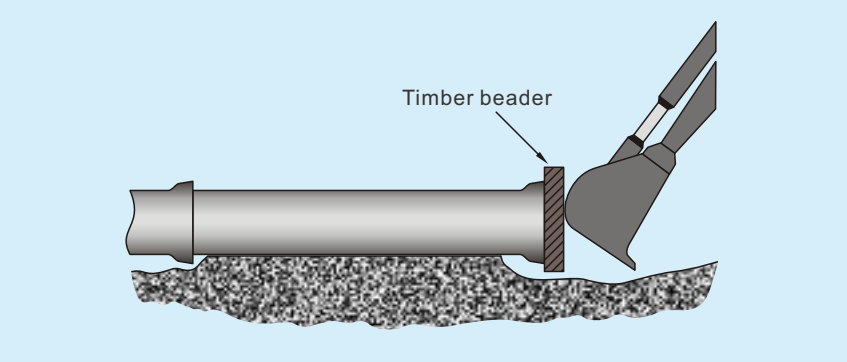


❖ Trifor System

For pipes diameter larger than DN 150mm, a wire rope or chain puller can by used as shown in the drawing. This puller devise is available as Trifor system.

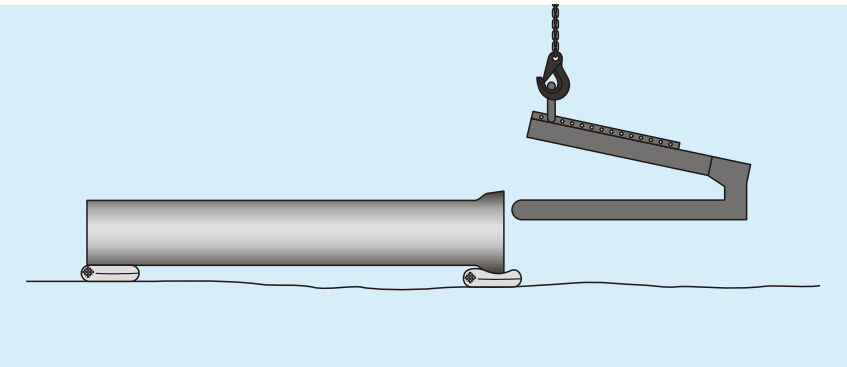
❖ Trench Excavator System

Where the trench is being prepared by using a backhoe or excavator, either machine may be used to push the spigot into its position. This system in mainly used on large diameter pipe and a timber header should be placed between the pipe and the bucket to prevent damage to the pipe.



❖ Hairpin Lifting System

A hairpin lifting mandrel may be utilized for both lifting the pipe and making the joint assembly. The mandrel is inserted into the bore of the pipe as shown, make sure care should be taken not to damage the internal cement lining of the inner coating of the pipe surface. The pipe can be lifted and placed into the trench and jointed. The hairpin may also be used for the pipes sleeving wrapping up prior to laying and jointing at the trench.



Corrosion Protection

❖ Polyethylene Sleeves

Polyethylene sleeves use for ductile iron pipelines is intended to prevent surrounding aggressive soils/groundwater contacting the pipeline and causing corrosion. Condensate or small amounts of water trapped within the sleeve are not of concern. Free flow of ground water within the sleeve however is unacceptable and should not be occurring in properly installed sleeve.

The PE sleeve is one piece tubular of size to easily slip over the pipes and fittings. After slipping onto the pipe of fitting, the sleeve is folded longitudinally to more tightly fit the pipe of fitting.

The sleeve is held folded by tape tightly wrapped circumferentially, at 1000 mm maximum intervals for pipe and adjacent to joints for fittings, to prevent free flow of water. Sleeve is to be serrated at 6.1 m intervals to tear easily to useable lengths.

❯ Advantages

- ◤ It is inexpensive.
- ◤ It requires no monitoring or maintenance.
- ◤ It has no operating costs.
- ◤ It will not deteriorate while in the ground.
- ◤ It is easy to install.
- ◤ It is easy to repair damages area (repaired with adhesive tapes).
- ◤ It requires no special handing or packaging when shipment of pipe.

❯ Standard

ISO 8180 Ductile Iron Pipes - Polyethylene sleeving

❯ Materials

Polyethylene or ethylene and olefin copolymers

❯ Design

- ◤ High resistance to moisture
- ◤ Moderate conformability to uneven surfaces

❯ Thickness

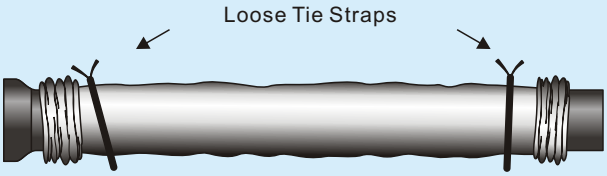
min. 200 μm

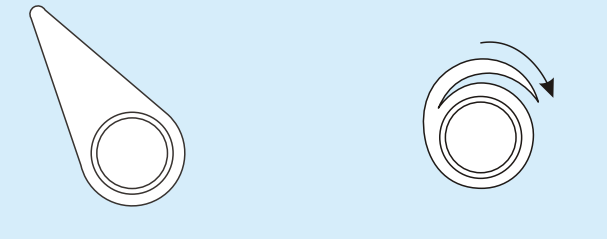
❯ Elongation

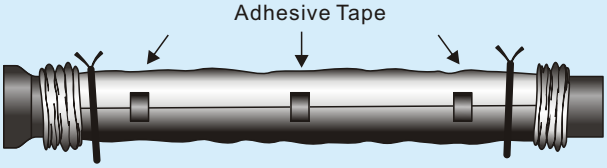
min. 300% in both directions

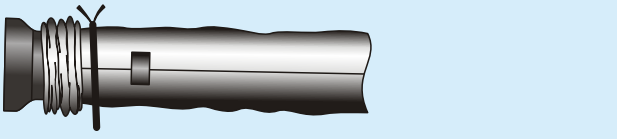
❯ Color

Black









Pipeline PE Sleeving Installation

Guidance for the assembly of Polyethylene Sleeving to Ductile Iron Pipes.

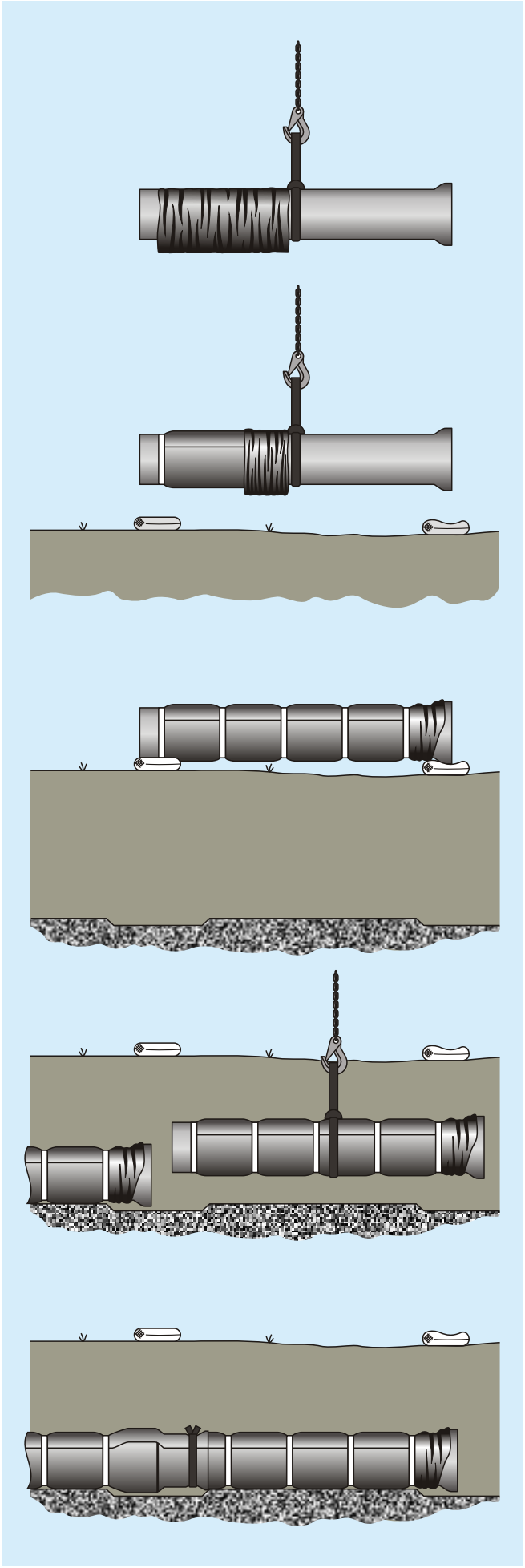
1. Lift the pipe to the sleeving area. Check the pipe surfaces is free from any debris or adherent soil. Remove a sleeve from the roll and draw it over the spigot end of the pipe. Draw the entire sleeve onto the raised end of the pipe (socket side) bunching the sleeving in folded method towards the sling.
2. Locate the sleeve end on the line of diamonds near the spigot end. Pull the sleeving tightly around the pipe barrel, over a length of approximately 1.5m from the spigot end, and fold the surplus over to form a triple layer thickness of sleeving on top of the pipe.

   Secure the sleeve end to the pipe by sealing the free edge to the pipe with three overlapping turns of tape.

   Work loose sleeving toward the sling and secure the fold with tape. Lower onto sand bags andremove sling.
3. Spread the bunched sleeve towards the socket, tightly wrapped and secure the fold with tape at 1.0m intervals.
4. Lower the pipe into the excavated earth (trench) after ensuring that suitable depression has been made in the bedding at the joint position to allow the overlap to be made.
5. Locate the spigot of the pipe in the preceding socket when bedding the pipe. Remove the sling and complete assembly of the joint.

   Draw the bunched sleeving from behind the socket of the preceding pipe over the joint onto the barrel of the next pipe. Care should be taken to avoid scooping backfill into the sleeving as it is pulled across the bedding depression.

   Ensure the overlapping sleeving follows the contour of the joint, avoiding bridging of irregular profiles.
6. Secure the overlap to the sleeved barrel of the last pipe using steel wire strap and buckle.



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