

D

DUCTILE IRON PIPES & FITTINGS

BS EN 545 / 598 (WATER & SANITARY)

BS EN 969 (GAS)



VARIOUS TYPE OF DUCTILE IRON JOINTS FOR PIPES & FITTINGS

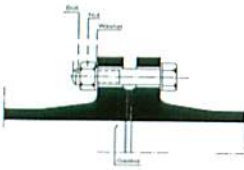
TYTON SOCKET JOINT (PUSH -ON JOINT)



Tyton Socket is one of the most frequently used rubber sealed push-in sockets. They can be moved longitudinally and can be deflected. This flexibility is advantageous for counteracting soil-related stresses caused by :

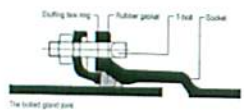
- Soil settling combined with inadequate compaction;
- Building transition on filled terrain;
- Vibration resulting from traffic effects;
- Settling induced by mining;
- Pipes laid in unstable environment likes bogs and mud.

A specially profiled rubber gasket consisting of a soft sealing element and a harder retaining element, acts as a seal between the socket and the spigot.



FLANGE JOINT

Flange Joint is one of the oldest methods of connecting Ductile Iron pipes and is sealed with the aid of flat gaskets made from less mouldable materials than used on sockets gaskets. This is a RIGID JOINT and unlike the Tyton Socket Joint it will not absorb longitudinal or lateral movement.

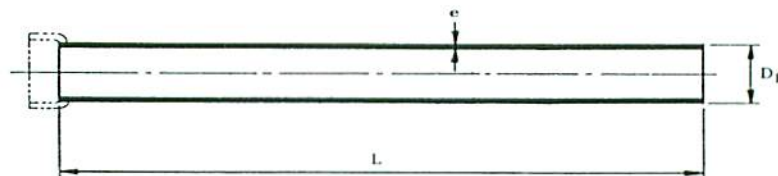


BOLTED GLAND JOINT (MECHANICAL JOINT)

Bolted Gland Joint is principally used for pipelines conveying gas and liquids. The loose stuffing box ring squeezes the wedge-shaped gasket between the inside of the socket and the outside of the spigot. Gasket compression is effected by tightening the stuffing box ring with the aid of T-bolts. Installed, this kind of joint allows deflection of up to 3°. Longitudinal displacement is between 80mm & 100mm.

DUCTILE IRON PIPES

PIPES WITH TYTON SOCKET JOINTS, CLASS K9



Nominal size DN	D_E	e	Approx. mass of pipe barrel	Mass of length L, including mass of socket			
				4.0m	5.0m	5.5m	6.0m
	mm	mm	Kg/m	Kg	Kg	Kg	Kg
80	98	6.0	12.2	52	64.5	70.5	76.5
100	118	6.1	15.1	64.5	80.0	87	95
150	170	6.3	22.8	98.5	121	131	144
200	222	6.4	30.6	133	163	177	194
250	274	6.8	40.2	175	215	234	255
300	326	7.2	50.8	222	273	297	323
350	378	7.7	63.2	277	340	368	403
400	429	8.1	75.5	331	407	441	482
450	480	8.6	89.8	389	479	524	569
500	532	9.0	104.3	460	564	610	669
600	635	9.9	137.1	608	745	806	882
700	738	10.8	173.9	775	949	1012	1123
800	842	11.7	215.2	963	1179	1247	1394
900	945	12.6	260.2	1171	1431	-	1691
1000	1048	13.5	309.3	1399	1708	-	2017

PRESSURE RATING FOR PIPES & FITTINGS WITH TYTON SOCKET & BOLTED GLAND JOINTS

Field working & test pressures

Rating	Nominal size DN	Pressure
	mm	bar
Maximum hydraulic working pressure exclusive of surge	80-300 350-1600	40 25
Maximum field hydrostatic test pressure	80-300 350-1600	45 30

Works proof & leak tightness test pressures

Nominal Size DN	Works hydrostatic proof test pressure for centrifugally cast pipe	Works hydrostatic leak tightness test pressure for fittings
mm	mm	mm
80-300	50	25
350-600	40	16
700-1200	32	10

PRESSURE RATING FOR PIPES & FITTINGS WITH FLANGE JOINTS

Field working & field test pressures

Rating	Nominal Size DN	Pressure	
		PN 10 flanges	PN 16 flanges
	mm	bar	bar
Maximum hydraulic working pressure exclusive of surge	80-1600	10	16
Maximum field hydrostatic test pressure	80-600	16	25
	700-1600	16	25

Works proof leak tightness test pressures for flange pipes and fittings

Nominal Size DN	Proof test pressure for pipes with screwed or welded on flanges		Leak tightness test pressure for fittings and pipes with cast on flanges
	PN 10 flange	PN 16 flange	
Mm	bar	bar	bar
80-300	16	25	25*
350-600	16	25	16
700-800	16	25	10****

MECHANICAL PROPERTIES & STANDARDS COATINGS & LININGS

MECHANICAL PROPERTIES

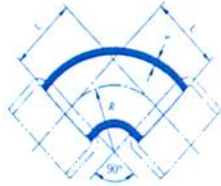
Nominal Size	Type of Casting	Tensile Strength	Proof Stress	Elongation	Hardness
DN 80 mm - DN 1000 mm	Centrifugally Cast Pipes	Minimum 420 N/mm ²	Minimum 300 N/mm ²	Minimum 10 %	Maximum 230 HB
Over DN 1000 mm	Centrifugally Cast Pipes	Minimum 420 N/mm ²	Minimum 300 N/mm ²	Minimum 7%	Maximum 230 HB
All Size	Pipes Not Centrifugally Cast and Fitting	Minimum 420 N/mm ²	Minimum 300 N/mm ²	Minimum 5%	Maximum 250 HB

STANDARD COATING & LINING

Centrifugally Cast Pipes & Fittings		
Outside	Bitumen Coating	In Accordance With BS 3416, Type II or BS 4147, Type I.
	Zinc Coating	In Accordance With BS 4772 : 1988 and ISO 8179 - 1985.
Inside	Bitumen Coating	In Accordance With BS 3416, Type II or BS 4147, Type I.
	Cement Mortar Lining	In Accordance With BS 4772 & BS 4027 or BS 12.

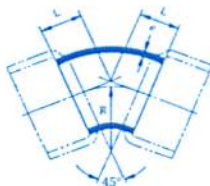
DUCTILE IRON FITTINGS

DOUBLE SOCKET 90° BEND



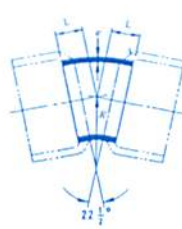
Nominal Size DN	e	L	R (approx)	Mass
80	7.0	100	80	7.1
100	7.2	120	95	9.2
150	7.8	170	145	16.8
200	8.4	220	195	28
250	9.0	270	245	42.5
300	9.6	320	290	63.5
350	10.2	370	340	83
400	10.8	420	390	113
450	11.4	470	435	143
500	12.0	520	485	183
600	13.2	620	580	273
700	14.4	720	675	455
800	15.6	820	775	605
900	16.8	920	870	813
1000	18.0	1020	970	1045

DOUBLE SOCKET 45° BEND



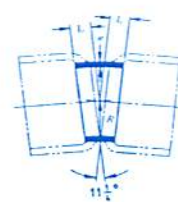
L	R (approx)	Mass
mm	mm	kg
55	80	6.3
65	100	7.9
85	145	13.5
110	200	22
130	245	32.5
155	305	49
175	350	61
200	405	82.5
220	450	103
240	495	130
285	595	191
330	685	336
370	785	434
415	885	583
460	985	741

DOUBLE SOCKET 22.5° BEND



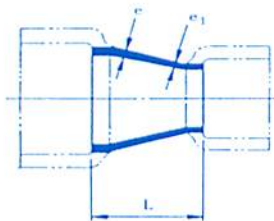
L	R (approx)	Mass
mm	mm	kg
40	90	5.9
45	110	7.3
55	155	12
65	195	18.8
75	240	27
90	305	41
100	350	50
110	390	66
120	435	81.5
135	505	103
155	590	147
175	650	271
195	750	343
220	850	461
240	950	577

DOUBLE SOCKET 11.25° BEND



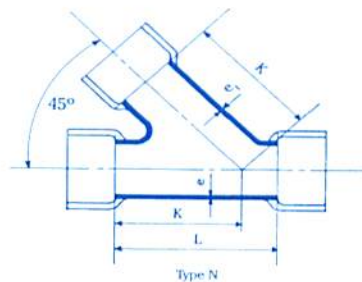
L	R (approx)	Mass
mm	mm	kg
30	75	5.6
35	120	6.9
40	155	11.2
45	195	17.2
50	230	24.5
60	315	37
65	350	44
70	385	58
75	420	71.5
85	510	90
95	580	126
95	500	235
110	600	295
120	700	393
130	800	489

DOUBLE SOCKET CONCENTRIC TAPER



Nominal Size DN	DN	e	e1	L	Mass
100	80	7.2	7.0	90	6.6
150	80	7.8	7.0	190	10.9
150	100	7.8	7.2	150	10.8
200	100	8.4	7.2	250	17
200	150	8.4	7.8	150	16.4
250	150	9.0	7.8	250	24.5
250	200	9.0	8.4	150	23.5
300	150	9.6	7.8	350	35.5
300	200	9.6	8.4	250	34.5
300	250	9.6	9.0	150	33
350	200	10.2	8.4	360	45.5
350	250	10.2	9.0	260	44
350	300	10.2	9.6	160	43
400	200	10.8	8.4	460	61.5
400	250	10.8	9.0	360	59.5
400	300	10.8	9.6	260	58
400	350	10.8	10.2	160	53
450	250	11.4	9.0	460	76
450	300	11.4	9.6	360	75
450	350	11.4	10.2	260	69.5
450	400	11.4	10.8	160	66
500	250	12.0	9.0	560	96.5
500	300	12.0	9.6	460	96.5
500	350	12.0	10.2	360	90.5
500	400	12.0	10.8	260	86.5
500	450	12.0	11.4	160	80.5

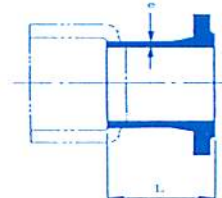
TYTON 45° ANGLE BRANCH



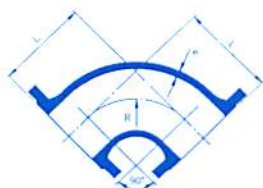
Nominal Size		e	e1	Type	L	K	Mass	Extra mass For cement Mortar lining
Body DN	Branch dn	mm	mm		mm	mm	Kg	Kg
80	80	8.1	8.1	N	500	375	19.0	1.4
100	100	8.4	8.4	N	540	405	25.5	1.9
150	150	9.1	9.1	N	640	480	45.5	3.3
200	200	9.8	9.8	N	735	560	71.5	5.0
250	250	10.5	10.5	N	830	640	106.0	7.0
300	300	11.2	11.2	N	930	715	151.0	9.0

FLANGE SOCKET PIECE

Nominal Size DN	e	l	Mass with PN 16 flanges
80	7.0	130	7.3
100	7.2	130	8.7
150	7.8	135	13.6
200	8.4	140	19.7
250	9.0	145	27.5
300	9.6	150	38
350	10.2	155	48.5
400	10.8	160	62.5
450	11.4	165	75.5
500	12.0	170	97
600	13.2	180	140
700	14.4	190	202
800	15.6	200	253
900	16.8	210	327
1000	18.0	220	415

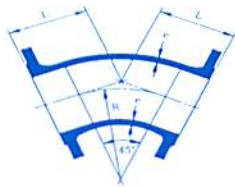


DOUBLE FLANGE 90° BEND



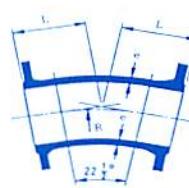
Nominal Size DN	e	L	R (approx)	Mass with PN 16 flanges
	mm	mm	mm	Kg
80	7.0	165	115	9.7
100	7.2	180	120	11.9
150	7.8	220	155	20
200	8.4	260	190	30.5
250	9.0	350	275	49
300	9.6	400	315	69
350	10.2	450	360	96
400	10.8	500	405	126
450	11.4	550	450	160
500	12.0	600	490	210
600	13.2	700	580	324
700	14.4	800	685	423
800	15.6	900	785	571
900	16.8	1000	875	750
1000	18.0	1100	965	990

DOUBLE FLANGE 45° BEND



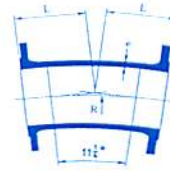
L	R (approx)	Mass with PN 16 flanges
mm	mm	Kg
130	190	9.3
140	200	11.3
160	230	18.5
180	265	27
350	660	54
400	765	76
298	505	82
324	550	106
349	595	132
375	645	174
426	735	264
478	875	335
529	1000	444
581	1100	576
632	1200	757

DOUBLE FLANGE 22.5° BEND



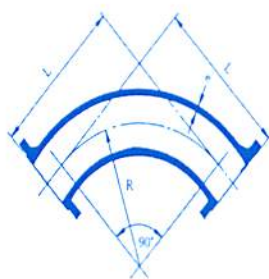
L	R (approx)	Mass with PN 16 flanges
mm	mm	Kg
130	395	9.2
140	410	11.5
160	480	18.6
180	555	27
350	1370	54.5
400	1595	77.5
298	1050	83
324	1145	107
349	1240	135
375	1340	176
426	1535	267
478	1825	342
529	2080	448
581	2295	588
632	2500	773

DOUBLE FLANGE 11.25° BEND



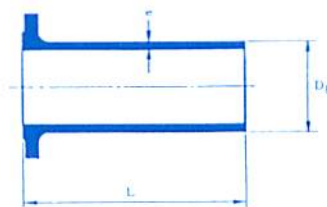
L	R (approx)	Mass with PN 16 flanges
mm	mm	Kg
130	800	9.2
140	830	11.5
160	975	18.6
180	1115	27.5
350	2770	55
400	3220	78
298	2120	83.5
324	2315	108
349	2505	135
375	2710	177
426	3095	268
478	3685	343
529	4200	451
581	4630	592
632	5045	778

DOUBLE FLANGE 90° LONG BEND



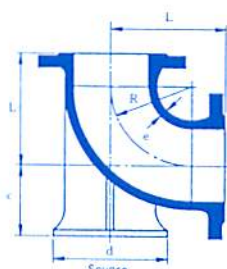
Nominal Size DN	D _E	e	L	Mass with PN 16 flanges
	mm	mm	mm	Kg
80	7.0	380	330	13.8
100	7.2	400	340	18
150	7.8	450	385	30
200	8.4	500	430	45.5
250	9.0	550	475	65
300	9.6	600	515	89.5
350	10.2	650	560	121
400	10.8	700	605	157
450	11.4	750	650	197
500	12	800	690	252
600	13.2	900	780	379

FLANGE SPIGOT PIECE



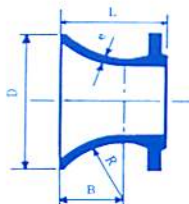
Nominal Size DN	D _E	e	L	Mass with PN 16 flanges
	mm	mm	mm	Kg
80	98	7.0	350	7.9
100	118	7.2	360	9.7
150	170	7.8	380	15.6
200	222	8.4	400	22.5
250	274	9.0	420	31.5
300	326	9.6	440	42
350	378	10.2	460	55.5
400	429	10.8	480	70
450	480	11.4	500	86
500	532	12.0	520	109
600	635	13.2	560	159
700	738	14.4	600	206
800	842	15.6	600	254
900	945	16.8	600	320
1000	1048	18.0	600	395

DOUBLE FLANGE 90° DUCKFOOT BEND



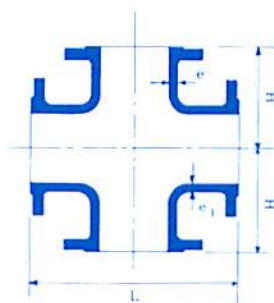
Nominal Size DN	e	L	c	d	R (approx)	Mass with PN 16 flanges
	mm	mm	mm	mm	mm	Kg
80	7.0	165	110	180	115	14
100	7.2	180	125	200	120	17.7
150	7.8	220	160	250	155	30.5
200	8.4	260	190	300	190	47
250	9.0	350	225	350	275	76
300	9.6	400	255	400	315	108
350	10.2	450	290	450	360	147
400	10.8	500	320	500	405	196
450	11.4	550	355	550	450	246
500	12.0	600	385	600	490	322
600	13.2	700	450	700	580	493
700	14.4	800	515	800	685	586
800	15.6	900	580	900	785	798
900	16.8	1000	645	1000	875	1050
1000	18.0	1100	710	1100	965	1380

FLANGE BELLMOUTH



Nominal Size DN	e	L	D	B	R	Mass PN 16 flange (approx.)
	mm	mm	mm	mm	mm	Kg
80	7.0	135	160	80	100	5.2
100	7.2	140	185	85	106	6.3
150	7.8	155	245	95	119	10.1
200	8.4	170	310	110	137	14.7
250	9.0	190	370	120	150	21
300	9.6	210	435	135	169	29

ALL FLANGE CROSS TEE



Nominal Size		e	e ₁	L	H	Mass with PN 16 flanges
Body DN	Branch dn	mm	mm	mm	mm	Kg
80	80	8.1	8.1	330	165	20.5
100	100	8.4	8.4	360	180	24.5
150	150	9.1	9.1	440	220	41
200	200	9.8	9.8	520	260	60.5
250	250	10.5	10.5	700	350	99.5
300	300	11.2	11.2	800	400	143.0

ALL FLANGE TEE

Nominal Size		e	e ₁	L	H	Mass with PN 16 flanges	Nominal Size		e	e ₁	L	H	Mass with PN 16 flanges
DN Body	DN Branch						DN Body	DN Branch					
		mm	mm	mm	mm	Kg			mm	mm	mm	mm	Kg
80	50	8.1	7.7	330	160	13.6	400	150					
80	80		8.1	330	165	15.6	400	300	12.6	11.2	900	450	173
100	50		8.1	360	170	17.6	400	400		12.6	900	450	190
100	80	8.4	8.1	360	175	18.4	450	150		9.1	950	375	190
100	100		8.4	360	180	19.3	450	300	13.3	11.2	950	475	213
150	80		8.1	440	205	28.5	450	450		13.3	950	475	237
150	100	9.1	8.4	440	210	29.5	500	150		9.1	1000	400	241
150	150		9.1	440	220	32.5	500	300	14.0	11.2	1000	500	258
200	80		8.1	520	235	41.5	500	500		14.0	1000	500	304
200	100	9.8	8.4	520	240	42.5	600	150		9.1	1100	450	352
200	150		9.1	520	250	45.5	600	300	15.4	11.2	1100	550	369
200	200		9.8	520	260	49	600	450		13.3	1100	550	404
250	80		8.1	700	265	65	600	600		15.4	1100	550	447
250	100		8.4	700	275	67	700	400	16.8	12.6	870	555	379
250	150	10.5	9.1	700	300	70	700	700		16.8	1200	600	548
250	200		9.8	700	325	75	800	400		12.6	910	615	478
250	250		10.5	700	350	81	800	600	18.2	15.4	1350	645	699
300	80		8.1	800	290	91	800	800		18.2	1350	675	741
300	100		8.4	800	300	93	900	400		12.6	950	675	615
300	150	11.2	9.1	800	325	95.5	900	600	21.0	15.4	1500	705	965
300	200		9.8	800	350	101	900	900		21.0	1500	750	1046
300	250		10.5	800	375	106	1000	400		12.6	990	735	779
300	300		11.2	800	400	115	1000	600	22.5	15.4	1650	765	1155
350	150	11.9	9.1	850	325	123	1000	1000		22.5	1650	825	1392
350	350		11.9	850	425	150							

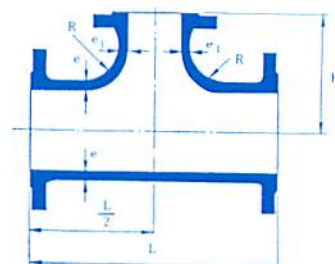
Tolerance on L, L/2 and H:

DN 80 to DN 300 inclusive ±3.0

DN 350 to DN 600 inclusive ±4.0

Over DN 600 ±5.0

Note: R is not specified but internal and external radius are equal.

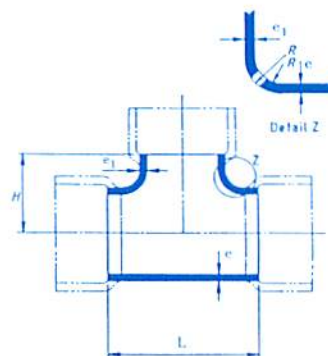


ALL SOCKET & FLANGE ON DOUBLE SOCKET TEE

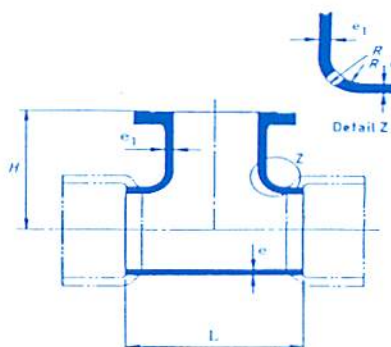
Note: R is not specified, but internal and external radius are to be equal (excepting strengthened tees).

Nominal Size		e	e ₁	All socket and flange on Double socket L	Socket Branch, H	Flange Branch, H	Mass	Flange branch PN 16 flange
DN Body	DN Branch						Socket Branch	
		mm	mm	mm	mm	mm	Kg	Kg
80	80	8.1	8.1	185	110	185	10.9	12.6
100	80	8.4	8.1	185	125	195	12.6	14.3
100	100		8.4	210	125	200	13.8	15.9
150	80		8.1	190	150	220	18.1	19.7
150	100	9.1	8.4	210	150	230	19.5	21.5
150	150		9.1	270	150	245	23.0	26.5
200	80		8.1	190	180	250	25.5	27
200	100	9.8	8.4	215	180	255	27.0	29
200	150		9.1	270	180	270	31.5	35
200	200		9.8	330	180	275	37.5	41.5
250	80		8.1	220	205	275	35.5	37
250	100		8.4	220	205	285	36	38
250	150	10.5	9.1	335	210	300	45	48.5
250	200		9.8	335	210	305	48	52
250	250		10.5	390	210	320	55	61
300	80		8.1	220	235	305	48	49.5
300	100		8.4	220	235	310	49	51
300	150	11.2	9.1	335	235	325	60	63
300	200		9.8	335	235	330	62	66.5
300	250		10.5	450	240	345	74.5	80.5
300	300		11.2	450	240	360	79.5	87.5
350	80		8.1	225		330		58.5
350	100		8.4	225		340		59.5
350	150	11.9	9.1	340	265	355	70.5	74
350	350		11.9	515	270	405	99	114
400	80		8.1	225		360		74
400	100	12.6	8.4	225		365		75
400	150		9.1	340	290	380	88.5	91.5
400	400		12.6	575	300	445	133	152
450	80		8.1	230		385		88
450	100	13.3	8.4	230		395		89
450	150		9.1	345	320	410	105	108
450	300		11.2	635	325	445	159	167
450	450		13.3	635	330	490	171	196
500	80		8.1	230		415		107
500	100		8.4	230		420		108
500	150	14	9.1	350	345	435	127	130
500	300		11.2	580	350	470	171	182
500	500		14	695	360	530	219	252

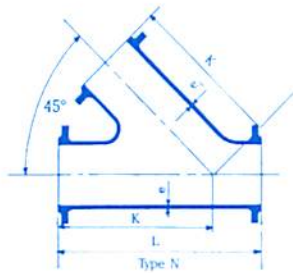
(Tyton Socket)



(Flange On Double Socket Tee)

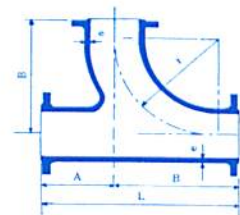


ALL FLANGE 45° ANGLE BRANCH



Nominal Size		e	e ₁	L	K	Mass with PN 16 flanges	Extra mass for cement mortar lining
Body DN	Branch dn						
mm	mm	mm	mm	mm	mm	Kg	Kg
80	80	8.1	8.1	500	375	21	1.4
100	100	8.4	8.4	540	405	27	1.9
150	150	9.1	9.1	640	480	47	3.3
200	200	9.8	9.8	735	560	71	5.0
250	250	10.5	10.5	830	640	105	7.0
300	300	11.2	11.2	930	715	147	9.0

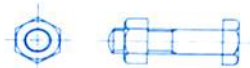
ALL FLANGE RADIAL TEE



Nominal Size		e	L	A	B	r	Mass with PN 16 flanges
Body DN	Branch dn					Approx.	
mm	mm	mm	mm	mm	mm	mm	Kg
80	80	8.1	545	165	380	330	23.0
100	100	8.4	580	180	400	340	29.5
150	150	9.1	670	220	450	385	48.5
200	200	9.8	760	260	500	430	72.5
250	250	10.5	900	350	550	475	106.0
300	300	11.2	1000	400	600	515	146.0

BOLTS AND NUTS FOR FLANGE JOINT

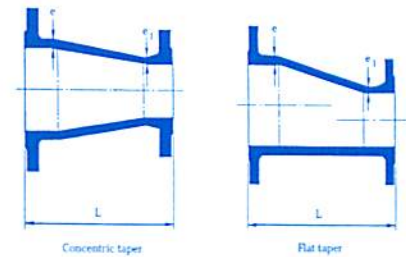
- STEEL BOLTS & NUTS



Nominal Pipe diameter DN	PN 10 Flange		PN 16 Flange	
	Size and Length	No. of Bolts	Size and Length	No. of Bolts
80	M16 X 65	8	M16 X 65	8
100	M16 X 65	8	M16 X 65	8
150	M20 X 70	8	M20 X 70	8
200	M20 X 70	8	M20 X 70	12
250	M20 X 80	12	M24 X 85	12
300	M20 X 80	12	M24 X 85	12
350	M20 X 80	16	M24 X 85	16
400	M24 X 85	16	M27 X 100	16
450	M24 X 85	20	M27 X 100	20
500	M24 X 85	20	M30 X 110	20
600	M27 X 100	20	M33 X 120	20
700	M27 X 100	24	M33 X 120	24
800	M30 X 110	24	M36 X 140	24
900	M30 X 120	28	M36 X 140	28
1000	M33 X 130	28	M39 X 160	28

DOUBLE FLANGE TAPER

Tolerance on dimension L = ±3.0 mm.



Nominal Size		e	e ₁	L	Mass with PN 16 flanges	Nominal Size		e	e ₁	L	Mass with PN 16 flanges
DN	dn					DN	dn				
		mm	mm	mm	Kg			mm	mm	mm	Kg
80	40	7.0	7.0	200	7.0	500	250	12.0	9.0	700	114
80	50	7.0	7.0	200	7.3	500	300	12.0	9.6	600	111
80	65	7.0	7.0	200	7.9	500	350	12.0	10.2	600	121
100	50	7.2	7.0	200	9.4	500	400	12.0	10.8	600	130
100	80	7.2	7.0	200	9.3	500	450	12.0	11.4	300	102
150	80	7.8	7.0	400	16.1	600	300	13.2	9.6	800	171
150	100	7.8	7.2	300	15.0	600	350	13.2	10.2	700	167
200	100	8.4	7.2	600	27.0	600	400	13.2	10.8	600	164
200	150	8.4	7.8	300	21.5	600	450	13.2	11.4	600	175
250	150	9.0	7.8	600	38.0	600	500	13.2	12.0	600	190
250	200	9.0	8.4	300	29.5	700	450	14.4	11.4	700	213
300	150	9.6	7.8	600	46.0	700	500	14.4	12.0	600	208
300	200	9.6	8.4	600	51.0	700	600	14.4	13.2	600	243
300	250	9.6	9.0	300	39.5	800	500	15.6	12.0	800	285
350	200	10.2	8.4	600	60.5	800	600	15.6	13.2	600	275
350	250	10.2	9.0	600	67.0	800	700	15.6	14.4	600	295
350	300	10.2	9.6	300	52.0	900	450	16.8	11.4	1100	380
400	200	10.8	8.4	600	71.0	900	500	16.8	12.0	1000	377
400	250	10.8	9.0	600	77.0	900	600	16.8	13.2	800	366
400	300	10.8	9.6	600	84.0	900	700	16.8	14.4	600	333
400	350	10.8	10.2	300	67.0	900	800	16.8	15.6	600	364
450	250	11.4	9.0	600	87.5	1000	500	18.0	12.0	1200	501
450	300	11.4	9.6	600	95	1000	600	18.0	13.2	1000	487
450	350	11.4	10.2	600	104	1000	700	18.0	14.4	800	452
450	400	11.4	10.8	300	81	1000	800	18.0	15.6	600	418
						1000	900	18.0	16.8	600	454

TYTON JOINT ACCESSORIES

- RUBBER RING



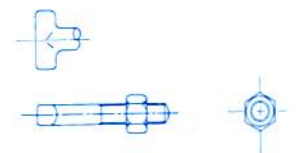
BOLTED GLAND JOINT ACCESSORIES

- RUBBER V-RING



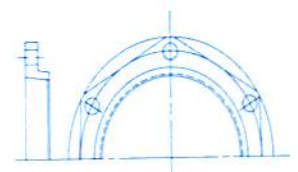
- DUCTILE IRON BOLTS & NUTS

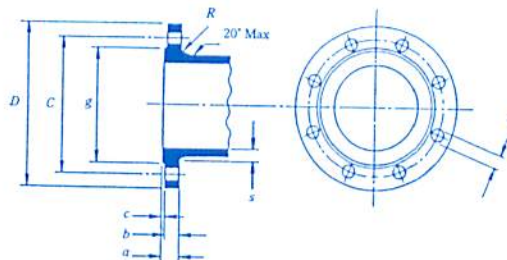
Nominal diameter DN	Size and Length	No. of Bolts
80	M20 X 80	3
100	M20 X 80	3
150	M20 X 90	4
200	M20 X 90	5
250	M20 X 100	6
300	M20 X 100	8



- DIMENSION OF BOLTED GLAND

Nominal Size	PCD ± 2 MM	No. of Holes	Dia. of Holes
100mm	198mm	3	23mm
150mm	258mm	4	23mm
200mm	310mm	5	23mm
250mm	362mm	6	23mm
300mm	422mm	8	23mm
4"	200mm	3	23mm
6"	260mm	4	23mm
8"	314mm	5	23mm
10"	367mm	6	23mm
12"	422mm	8	23mm





FLANGE PN 10

Nominal Size DN	D	Pitch circle Diameter, C	g	a	b	C	Bolt holes		s	R	Mass	Bolt size
							Number	d				
40	150	110	84	19.0	16.0	3	4	19	15.0	6	1.7	M16
50	165	125	99	19.0	16.0	3	4	19	15.0	6	2.1	M16
65	185	145	118	19.0	16.0	3	4	19	15.0	6	2.5	M16
80	200	160	132	19.0	16.0	3	8	19	15.0	6	2.9	M16
100	220	180	156	19.0	16.0	3	8	19	15.0	6	3.3	M16
150	285	240	211	19.0	16.0	3	8	23	15.0	8	4.9	M20
200	340	295	266	20.0	17.0	3	8	23	16.0	8	6.8	M20
250	400	350	319	22.0	19.0	3	12	23	17.5	10	9.6	M20
300	455	400	370	24.5	20.5	4	12	23	19.5	10	12.8	M20
350	505	460	429	24.5	20.5	4	16	23	19.5	10	14.1	M20
400	565	515	480	24.5	20.5	4	16	28	19.5	10	16.3	M24
450	615	565	530	25.5	21.5	4	20	28	20.5	12	18.1	M24
500	670	620	582	26.5	22.5	4	20	28	21.0	12	21.8	M24
600	780	725	682	30.0	25.0	5	20	31	24.0	12	30.8	M27
700	895	840	794	32.5	27.5	5	24	31	23.0	12	42	M27
800	1015	950	901	35.0	30.0	5	24	34	24.5	12	57	M30
900	1115	1050	1001	37.5	32.5	5	28	34	26.5	12	65	M30
1000	1230	1160	1112	40.0	35.0	5	28	37	28.0	12	88	M33

FLANGE PN 16

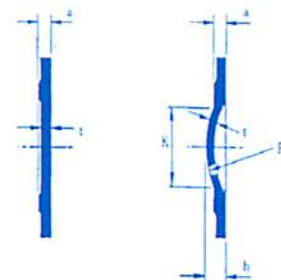
Nominal Size DN	D	Pitch circle Diameter, C	g	a	b	C	Bolt holes		s	R	Mass	Bolt size
							Number	d				
40	150	110	84	19.0	16.0	3	4	19	15.0	6	1.7	M16
50	165	125	99	19.0	16.0	3	4	19	15.0	6	2.1	M16
65	185	145	118	19.0	16.0	3	4	19	15.0	6	2.5	M16
80	200	160	132	19.0	16.0	3	8	19	15.0	6	2.9	M16
100	220	180	156	19.0	16.0	3	8	19	15.0	6	3.3	M16
150	285	240	211	19.0	16.0	3	8	23	15.0	8	4.9	M20
200	340	295	266	20.0	17.0	3	12	23	16.0	8	6.6	M20
250	400	355	319	22.0	19.0	3	12	28	17.5	10	9.2	M24
300	455	410	370	24.5	20.5	4	12	28	19.5	10	12.4	M24
350	520	470	429	26.5	22.5	4	16	28	21.0	10	17.2	M24
400	580	525	480	28.0	24.0	4	16	31	22.5	10	21.9	M27
450	640	585	548	30.0	26.0	4	20	31	24.0	12	26.7	M27
500	715	650	609	31.5	27.5	4	20	34	25.0	12	37	M33
600	840	770	720	36.0	31.5	5	20	37	29.0	12	57.3	M33
700	910	840	794	39.5	34.5	5	24	37	27.5	12	57	M33
800	1025	950	901	43.0	38.0	5	24	40	30.0	12	72	M36
900	1125	1050	1001	46.5	41.5	5	28	40	32.5	12	90	M36
1000	1255	1170	1112	50.0	45.0	5	28	43	35.0	12	122	M39

BLANK FLANGE TYPE PN 10

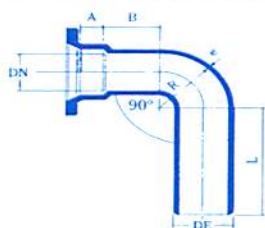
Nominal DN	a	t	K and R	h	Mass
mm	mm	mm	mm	mm	Kg
40	19.0	18.0	-	-	2
50	19.0	18.0	-	-	2.4
65	19.0	18.0	-	-	3.1
80	19.0	18.0	-	-	3.9
100	19.0	18.0	-	-	4.8
150	19.0	18.0	-	-	8.1
200	20.0	18.0	-	-	11.6
250	22.0	19.0	-	-	16.9
300	24.5	20.5	-	-	24
350	24.5	20.5	325	69	30.5
400	24.5	20.5	375	76	37.5
450	25.5	21.5	425	84	46.5
500†	26.5	22.5	475	92	58
600	30.0	25.0	575	108	88.5
700	32.5	27.5	675	124	128
800	35.0	30.0	775	140	180
900	37.5	32.0	875	156	234
1000	40.0	35.0	975	172	307

BLANK FLANGE TYPE PN 16

Nominal DN	a	t	K and R	h	Mass
mm	mm	mm	mm	mm	Kg
40	19.0	18.0	-	-	2
50	19.0	18.0	-	-	2.4
65	19.0	18.0	-	-	3.1
80	19.0	18.0	-	-	3.9
100	19.0	18.0	-	-	4.8
150	19.0	18.0	-	-	8.1
200	20.0	18.0	-	-	11.4
250	22.0	19.0	-	-	16.6
300	24.5	20.5	-	-	23.5
350	26.5	22.5	325	71	34.5
400	28.0	24.0	375	80	46
450†	30.0	26.0	425	88	60
500	31.5	27.5	475	97	79.5
600	36.0	31.0	575	114	125
700	39.5	34.5	675	131	163
800	43.0	38.0	775	148	228
900	46.5	41.5	875	165	299
1000	50.0	45.0	975	182	405

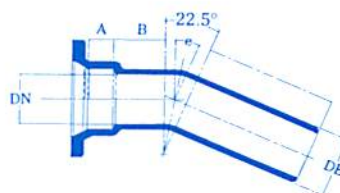


BOLTED GLAND SOCKET SPIGOT 90° BEND



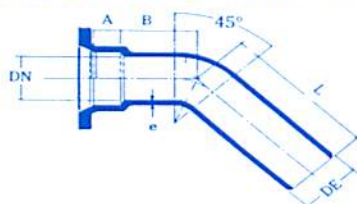
Nominal Pipe diameter DN	Outside diameter DE	e	R	L	B	A	Mass
mm	mm	mm	mm	mm	mm	mm	Kg
100	118	7.2	95	270	50	80	16
150	170	7.8	145	320	80	80	30
200	222	8.4	195	350	100	80	40
300	326	9.6	290	450	200	80	105

BOLTED GLAND SOCKET SPIGOT 22.5° BEND



Nominal Pipe diameter DN	Outside diameter DE	e	R	L	A	B	Mass
mm	mm	mm	mm	mm	mm	mm	Kg
100	118	7.2	110	270	50	80	14
150	170	7.8	155	320	80	80	28
200	222	8.4	195	350	100	80	38
300	326	9.6	305	450	200	80	100

BOLTED GLAND SOCKET SPIGOT 45° BEND



Nominal Pipe diameter DN	Outside diameter DE	e	R	L	B	A	Mass
mm	mm	mm	mm	mm	mm	mm	Kg
100	118	7.2	100	270	50	80	16
150	170	7.8	145	320	80	80	26
200	222	8.4	200	350	100	80	40
300	326	9.6	305	450	200	80	90

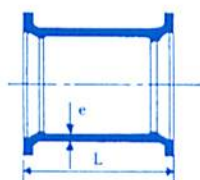
BOLTED GLAND SOCKET SPIGOT TEE WITH FLANGE BRANCH



Nominal Pipe Diameter		e	e ₁	L ₂	L ₁	H	Mass PN 10/16 flange
DN	dn	mm	mm	mm	mm	mm	Kg
Body	Branch	mm	mm	mm	mm	mm	Kg
100	100	8.4	8.4	180	380	180	19
150	100	9.1	8.4	180	430	210	40
150	150	9.1	9.1	210	460	220	47
200	100	9.8	8.4	180	460	240	53
200	150	9.8	9.1	210	490	250	60
200	200	9.8	9.8	240	520	260	68
300	100	11.2	8.4	180	560	300	100
300	150	11.2	9.1	210	590	330	105
300	200	11.2	9.8	240	620	350	113
300	300	11.2	11.2	270	670	400	195

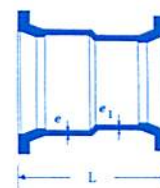
BOLTED GLAND COLLAR

Nominal Size DN	a	L	Mass
mm	mm	mm	Kg
80	7.0	230	12.2
100	7.2	230	12.9
150	7.8	260	19.7
200	8.4	290	27.5
250	9.0	355	36
300	9.6	360	48



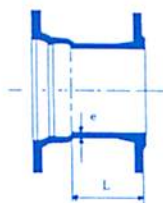
BOLTED GLAND CHANGE COLLAR

Nominal Pipe Diameter		e ₁	e	L	Mass
DN	dn	mm	mm	mm	Kg
mm	Inch	mm	mm	mm	Kg
100	3	7.2	7.0	250	12
100	4	7.2	7.2	250	13
150	5	7.8	7.8	250	20
150	6	7.8	7.8	250	18
200	8	8.4	8.4	290	27
200	9	8.4	8.4	310	28
300	12	9.6	9.6	360	46



FLANGE & BOLTED GLAND SOCKET PIECE

Nominal Size DN	e	L	Mass PN16 flanges
mm	mm	mm	Kg
100	8.4	130	11.3
150	9.1	135	17.3
200	9.8	140	24
250	10.5	145	32.5
300	11.2	150	44

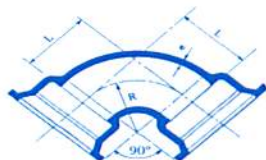


BOLTED GLAND CONCENTRIC TAPER

Nominal Size		e	e ₁	L	Mass
Large end DN	Small end dn	mm	mm	mm	Kg
mm	mm	mm	mm	mm	Kg
150	100	7.8	7.2	150	16.8
200	100	8.4	7.2	250	23.5
200	150	8.4	7.8	150	24.5
250	150	9.0	7.8	250	33
250	200	9.0	8.4	150	33
300	150	9.6	7.8	350	45.5
300	200	9.6	8.4	250	45
300	250	9.6	9.0	150	44

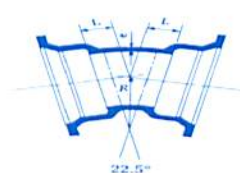


BOLTED GLAND 90° BEND



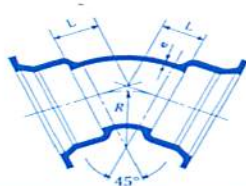
Nominal Size DN	e	L	R (approx)	Mass
mm	mm	mm	mm	Kg
100	7.2	120	95	14.4
150	7.8	170	145	24
200	8.4	220	195	37
250	9.0	270	245	53
300	9.6	320	290	75.5

BOLTED GLAND 22.5° BEND



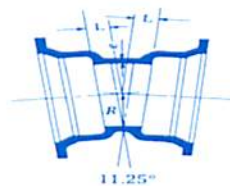
Nominal Size DN	e	L	R (approx)	Mass
mm	mm	mm	mm	Kg
100	7.2	45	110	12.5
150	7.8	55	155	19.3
200	8.4	65	195	27.5
250	9.0	75	240	37.5
300	9.6	90	305	53

BOLTED GLAND 45° BEND



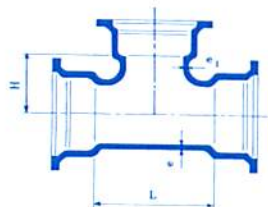
Nominal Size DN	e	L	R (approx)	Mass
mm	mm	mm	mm	Kg
100	7.2	65	100	13.1
150	7.8	85	145	21
200	8.4	110	200	30.5
250	9.0	130	245	43
300	9.6	155	305	61

BOLTED GLAND 11.25° BEND



Nominal Size DN	e	L	R (approx)	Mass
mm	mm	mm	mm	Kg
100	7.2	35	120	12.1
150	7.8	40	155	18.5
200	8.4	45	195	26
250	9.0	50	230	35
300	9.6	60	315	49

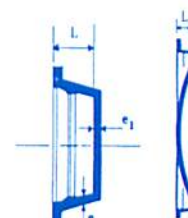
BOLTED GLAND TEE



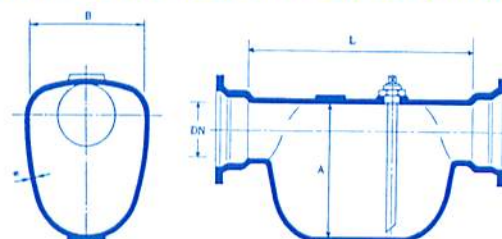
Nominal Size		e	e ₁	L	H	Mass
Body DN	Branch dn	mm	mm	mm	mm	Kg
100	100	8.4	8.4	210	125	21.5
150	100	9.1	8.4	210	150	29.5
150	150	9.1	9.1	270	155	34
200	100	9.8	8.4	215	180	38.5
200	150	9.8	9.1	270	180	44
200	200	9.8	9.8	330	180	50.5
250	100	10.5	8.4	220	205	49
250	150	10.5	9.1	335	210	59.5
250	200	10.5	9.8	335	210	62.5
250	250	10.5	10.5	390	210	70.5
300	100	11.2	8.4	220	235	63.5
300	150	11.2	9.1	335	235	75.5
300	200	11.2	9.8	335	235	79
300	250	11.2	10.5	450	240	92
300	300	11.2	11.2	450	240	99.5

BOLTED GLAND CAP

Nominal Size DN	e	e ₁	L	Mass
mm	mm	mm	mm	Kg
80	7.0	18.0	90	6.2
100	7.2	18.0	90	7
150	7.8	18.0	90	11.3
200	8.4	18.0	103	16.1
250	9.0	19.5	106	22.5
300	9.6	23.0	115	38



BOLTED GLAND CONDENSATE RECEIVER (SYPHON)

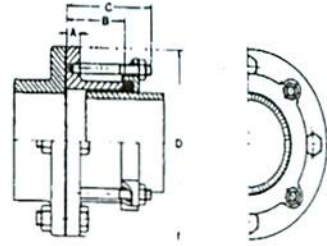


Nominal Size DN	e	A	B	L	Capacity	Mass
mm	mm	mm	mm	mm	Litres	Kg
100	10.2	325	265	610	18	52
150	10.9	370	305	660	22	69
200	11.7	405	355	710	24	93
250	12.4	455	381	810	29.5	136
300	13.5	510	431.8	860	34.1	167



Flange Adaptors

for METRIC DUCTILE IRON PIPE
Flange Drilled to PN10 and PN16
98mm to 2082mm O.D.

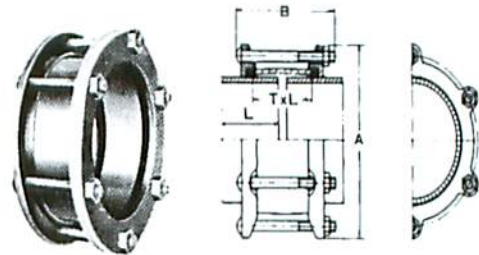


NOM DIA	PIPE O.D	TABLE PN	A	B	C	D	PCD	BH		STUDS		APPROX WEIGHT
								NO	DIA	NO	DIA X L	
mm	mm		mm	mm	mm	mm	mm		mm		In X mm	Kg
80	98	10,16	19	73	108	200	160	8	18	4	1/2 x 102	5.8
100	118	10,16	19	76	115	220	180	8	18	4	1/2 x 110	6.4
150	170	10,16	19	76	115	285	240	8	22	4	1/2 x 110	10.5
200	222	10	20	76	115	340	295	8	22	4	1/2 x 110	14.3
200	222	16	20	76	115	340	295	12	22	6	1/2 x 110	14.3
250	274	10	22	90	127	400	350	12	22	6	1/2 x 120	19.2
250	274	16	22	90	127	400	355	12	26	6	1/2 x 120	19.2
300	326	10	22	90	127	455	400	12	22	6	1/2 x 120	23
300	326	16	22	90	127	455	410	12	26	6	1/2 x 120	23
350	378	10	25	108	152	505	460	16	22	8	5/8 x 146	33
350	378	16	25	108	152	520	470	16	26	8	5/8 x 146	34.8
400	429	10	25	108	152	565	515	16	26	8	5/8 x 146	40
400	429	16	25	108	152	580	525	16	30	8	5/8 x 146	42.8
450	480	10	25	108	152	615	565	20	26	10	5/8 x 146	44.5
450	480	16	25	108	152	640	585	20	30	10	5/8 x 146	48
500	532	10	26	114	160	670	620	20	26	10	5/8 x 152	50
500	532	16	26	114	160	715	650	20	33	10	5/8 x 152	58



COUPLINGS

for DUCTILE IRON PIPE
up to 2082mm O.D.



* Middle Ring of Ductile to BS 2789 Grade 420/12

NOM DIA	PIPE	O.D	O.D TOL	L	A	B	SLEEVE		PLUGS NO	BOLTS		Max TEST PRESS	APPROX WEIGHT
							T	L		NO	DIA X L		
mm	mm	In	mm	mm	mm	mm	mm	mm			In mm	bar	Kg
*80	98	3.86	+2.1/-2.6	100	178	168	7.1	102	1	4	1/2x160	70	4.7
80	98	3.86	+2.1/-2.6	100	178	168	6.4	102	1	4	1/2x160	70	4.5
*100	118	4.65	+2.1/-3.0	100	200	168	7.4	102	1	4	1/2x160	70	5.4
100	118	4.65	+2.2/-3.0	100	200	168	6.4	102	1	4	1/2x160	70	5.2
*150	170	6.69	+2.3/-3.0	100	262	173	7.6	102	1	4	1/2x165	60	8.8
150	170	6.69	+2.3/-3.0	100	262	173	6.4	102	1	4	1/2x165	60	8.6
*200	222	8.74	+2.4/-3.5	100	314	173	7.6	102	1	6	1/2x165	58	11.7
200	222	8.74	+2.4/-3.5	100	314	173	6.4	102	1	6	1/2x165	58	11.5
*250	274	10.79	+2.5/-3.5	100	368	173	8.0	102	2	6	1/2x165	50	17.2
250	274	10.79	+2.5/-3.5	100	368	173	6.4	102	2	6	1/2x165	50	16.5
*300	326	12.83	+2.6/-3.5	100	420	173	8.5	102	2	6	1/2x165	50	18.5
300	326	12.83	+2.6/-3.5	100	420	173	6.4	102	2	6	1/2x165	44	17.8
350	378	14.88	+2.7/-3.5	125	488	252	9.5	152	2	8	5/8x240	40	27.5
400	429	16.89	+2.8/-4.0	125	539	252	9.5	152	2	8	5/8x240	38	32
450	480	18.89	+2.9/-4.0	125	590	252	9.5	152	3	10	5/8x240	35	37.8
500	532	20.94	+3.0/-4.0	125	642	252	9.5	152	3	10	5/8x240	35	420



DUCTILE PTE LTD

No.5 Defu Lane 6, Singapore 539367

Office Tel: (65) 6284 5511 Fax: (65) 6285 1930

Email: ductile@singnet.com.sg

Website: <http://www.ductile.com.sg>