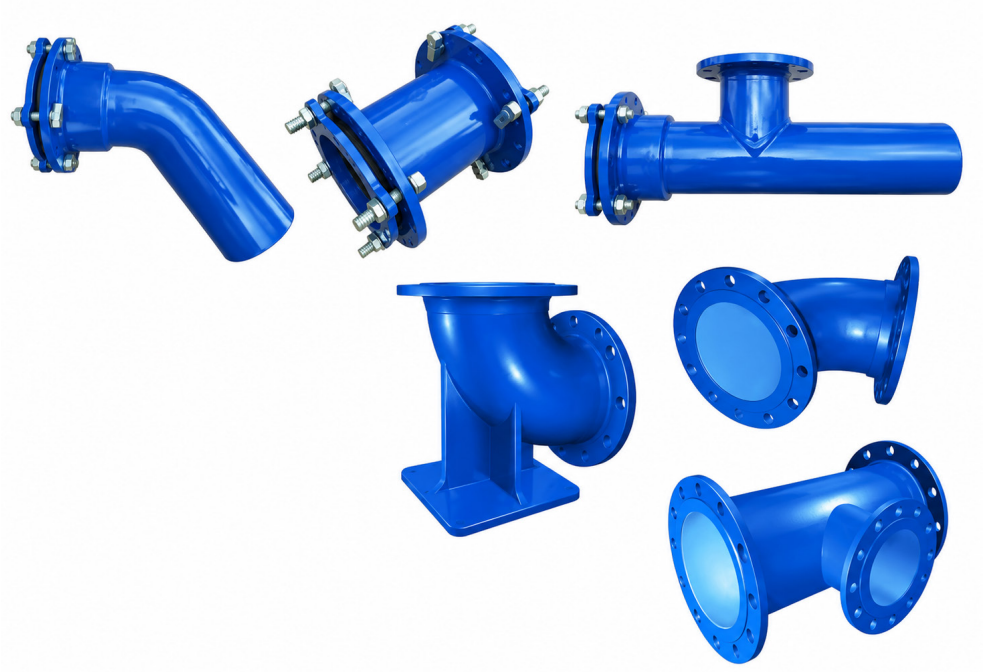
CHONG CHEONG
FOUNDRY WORKS PTE LTD

FUSION BONDED EPOXY DUCTILE IRON FITTINGS

BS EN 545:2010 BS EN 14901:2014 JIS G 5528:2014



Updated on: 2026.04.23

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SOCOTEC ISO 9001

SAC Accredited Certification Body QS-1999-05

Fusion Bonded Epoxy (FBE) Ductile Iron Fittings

Fusion Bonded Epoxy Coated Ductile Iron Fittings:

FBE coating is a thermosetting polymer and it is categorised as a protective coatings because once it has set, it remains permanent. The crosslinking of the polymers forms the resin used to coat the ductile iron fitting. FBE is referred to as a fusion bonding process, which is irreversible on the application of heat. The coating is produced by applying epoxy powder on a previously shot-peened and heated fitting. The powder can be applied by spray gun.

Application of Fusion Bonded Epoxy Coating on Ductile Iron Fittings:

FBE coated fitting being a permanent and irreversible coating, is able to offer protection from certain mechanical damage. Furthermore, the FBE coated fitting perform well even at elevated temperatures, while exhibiting resistance to issues such as wear, abrasion, compression, as well as cavitation. Fittings with this type of coating can be used buried in corrosive or highly corrosive soils or to transport aggressive or corrosive water.

Fusion Bonded Epoxy Coating Characteristics:

The FBE coating has an average thickness of at least 250 microns and minimum thickness at any point no less than 200 microns according to BS EN 14901:2014. The adhesion should be tested in accordance to BS EN14901:2014.

Colour Code:

RAL 5005 Signal Blue, other colour available upon request.

Drinking Water Compatibility:

The FBE coating is compatible with drinking water and conform to SS 375:2015

Limit Deviations on Thickness of Fittings:

(Other dimensions refer to BS EN545:2010)

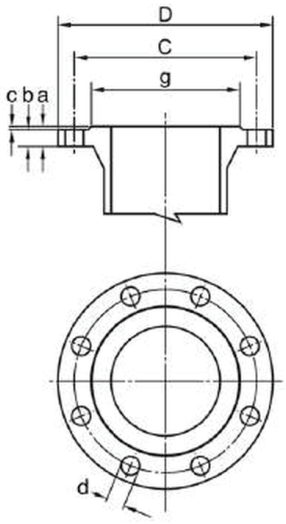
Nominal Iron Wall Thickness e & e1 (mm)	Limit Deviations on the Nominal Wall Thickness[a] (mm)
≤ 7.0	-2.3
> 7.0	- (2.3 + 0.001 DN)
[a] The lower limit only is given so as to ensure sufficient resistance to internal pressure.	





DUCTILE IRON Fusion Bonded Epoxy FLANGE JOINT / MECHANICAL JOINT

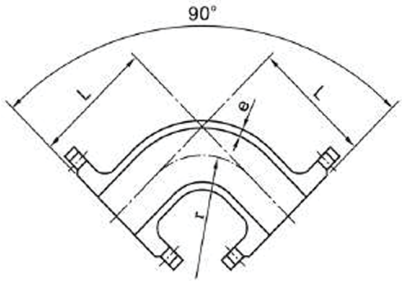
Flange drilled to BS EN 1092-2 PN16



Nominal ø DN	D mm	C mm	g mm	a mm	b mm	c mm	Bolt		
							Size Length (mm)	No. bolt	d mm
80	200	160	132	19.0	16.0	3	M16 x 65	8	19
100	220	180	156	19.0	16.0	3	M16 x 65	8	19
150	285	240	211	19.0	16.0	3	M20 x 70	8	23
200	340	295	266	20.0	17.0	3	M20 x 70	12	23
250	400	355	319	22.0	19.0	3	M24 x 85	12	28
300	455	410	370	24.5	20.5	4	M24 x 85	12	28
350	520	470	429	26.5	22.5	4	M24 x 85	16	28
400	580	525	480	28.0	24.0	4	M27 x 100	16	31
450	640	585	548	30.0	26.0	4	M27 x 100	20	31
500	715	650	609	31.5	27.5	4	M30 x 110	20	34
600	840	770	720	36.0	31.0	5	M33 x 120	20	37
700	910	840	794	39.5	34.5	5	M33 x 130	24	37
800	1025	950	901	43.0	38.0	5	M36 x 140	24	40
900	1125	1050	1001	46.5	41.5	5	M36 x 140	28	40
1000	1255	1170	1112	50.0	45.0	5	M39 x 160	28	43
1100	1355	1270	1218	53.5	48.5	5	M39 x 160	32	43
1200	1485	1390	1328	57.0	52.0	5	M45 x 180	32	49

90° Double Flanged Bend

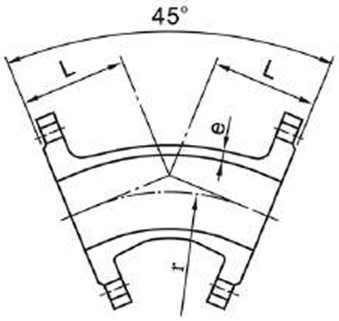




Nominal ø DN	e mm	L mm	r mm	Mass kg
80	7.0	165	115	9.7
100	7.2	180	120	11.9
150	7.8	220	155	20.0
200	8.4	260	190	30.5
250	9.0	350	275	49.0
300	9.6	400	315	69.0
350	10.2	450	360	96.0
400	10.8	500	405	126
450	11.4	550	450	160
500	12.0	600	490	210
600	13.2	700	580	324
700	14.4	800	685	423
800	15.6	900	785	571
900	16.8	1000	875	750
1000	18.0	1100	965	990
1100	19.2	1200	1055	1233
1200	20.4	1300	1145	1573

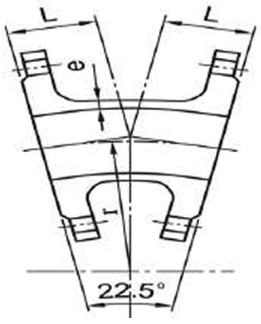
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45° Double Flanged Bend



Nominal ø DN	e mm	L mm	R mm	Mass kg
80	7.0	130	190	9.3
100	7.2	140	200	11.3
150	7.8	160	230	18.5
200	8.4	180	265	27.0
250	9.0	350	660	54.0
300	9.6	400	765	76.0
350	10.2	298	505	82.0
400	10.8	324	550	106
450	11.4	350	595	132
500	12.0	375	645	174
600	13.2	426	735	264
700	14.4	478	875	335
800	15.6	529	1000	444
900	16.8	581	1100	576
1000	18.0	632	1200	757
1100	19.2	694	1300	931
1200	20.4	750	1400	1187

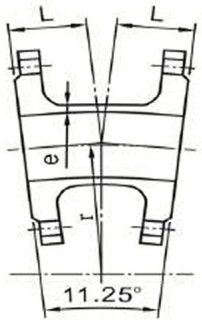
22.5° Double Flanged Bend



Nominal ø DN	e mm	L mm	r mm	Mass kg
80	7.0	105	395	9.2
100	7.2	110	410	11.5
150	7.8	109	480	18.6
200	8.4	131	555	27.0
250	9.0	190	1370	54.5
300	9.6	210	1595	77.5
350	10.2	210	1050	83.0
400	10.8	239	1145	107
450	11.4	253	1240	135
500	12.0	272	1340	176
600	13.2	320	1535	267
700	14.4	300	1825	342
800	15.6	529	2080	448
900	16.8	581	2295	588
1000	18.0	631	2500	773
1100	19.2	683	2705	952
1200	20.4	735	2915	1213

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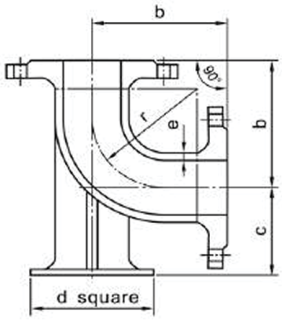
11.25° Double Flanged Bend



Nominal ø DN	e mm	L mm	r mm	Mass kg
80	7.0	113	800	9.2
100	7.2	115	830	11.5
150	7.8	113	975	18.6
200	8.4	132	1115	27.5
250	9.0	165	2770	55.0
300	9.6	175	3220	78.0
350	10.2	191	2120	83.5
400	10.8	205	2315	108
450	11.4	220	2505	135
500	12.0	233	2710	177
600	13.2	274	3095	268
700	14.4	230	3685	343
800	15.6	529	4200	451
900	16.8	581	4630	592
1000	18.0	632	5045	778
1100	19.2	683	5460	957
1200	20.4	735	5890	1220

Double Flanged Duckfoot Bend



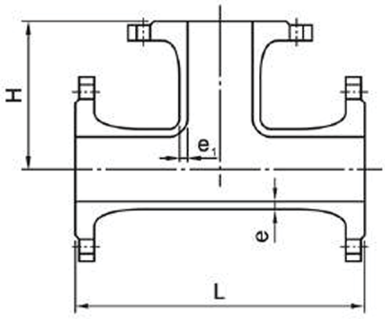


Nominal ø DN	e mm	b mm	c mm	d mm	r mm	Mass kg
80	7.0	165	110	180	115	14.0
100	7.2	180	125	200	120	17.7
150	7.8	220	160	250	155	30.5
200	8.4	260	190	300	190	47.0
250	9.0	350	225	350	275	76.0
300	9.6	400	255	400	315	108
350	10.2	450	290	450	360	147
400	10.8	500	320	500	405	196
450	11.4	550	355	550	450	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
1100	19.2	1200	775	1200	1055	1656
1200	20.4	1300	840	1300	1145	2063

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All Flanged Tee





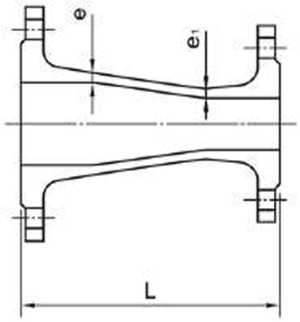
Nominal ø		e	e1	L	H	Mass
DN Body	dn Branch	mm	mm	mm	mm	kg
80	50	8.1	7.7	330	160	13.6
80	80	8.1	8.1	330	165	15.6
100	50	8.4	8.1	360	170	17.6
100	80	8.4	8.1	360	175	18.4
100	100	8.4	8.4	360	180	19.3
150	80	9.1	8.1	440	205	28.5
150	100	9.1	8.4	440	210	29.5
150	150	9.1	9.1	440	220	32.5
200	80	9.8	8.1	520	235	41.4
200	100	9.8	8.4	520	240	42.5
200	150	9.8	9.1	520	250	45.5
200	200	9.8	9.8	520	260	49.0
250	80	10.5	8.1	700	265	65
250	100	10.5	8.4	700	275	67
250	150	10.5	9.1	700	300	70
250	200	10.5	9.8	700	325	75
250	250	10.5	10.5	700	350	81
300	80	11.2	8.1	800	290	91
300	100	11.2	8.4	800	300	93
300	150	11.2	9.1	800	325	96
300	200	11.2	9.8	800	350	101
300	250	11.2	10.5	800	375	106
300	300	11.2	11.2	800	400	115
350	80	11.9	8.1	850	325	120
350	100	11.9	8.4	850	325	139
350	150	11.9	9.1	850	325	142
350	200	11.9	9.8	850	325	146
350	250	11.9	10.5	850	325	154
350	300	11.9	11.2	850	425	160
350	350	11.9	11.9	850	425	176
400	80	12.6	8.1	900	350	152
400	100	12.6	8.4	900	350	154
400	150	12.6	9.1	900	350	156

Nominal ø		e	e1	L	H	Mass
DN Body	dn Branch	mm	mm	mm	mm	kg
400	200	12.6	9.8	900	350	159
400	250	12.6	10.5	900	350	161
400	300	12.6	11.2	900	450	184
400	350	12.6	11.9	900	450	183
400	400	12.6	12.6	900	450	191
450	150	13.3	9.1	950	375	190
450	300	13.3	11.2	950	475	213
450	450	13.3	13.3	950	475	237
500	150	14.0	9.1	1000	400	241
500	300	14.0	11.2	1000	500	258
500	500	14.0	14.0	1000	500	304
600	150	15.4	9.1	1100	450	352
600	300	15.4	11.2	1100	550	369
600	450	15.4	13.3	1100	550	404
600	600	15.4	15.4	1100	550	447
700	400	16.8	12.6	870	555	379
700	700	16.8	16.8	1200	600	548
800	300	18.2	11.2	820	585	435
800	500	18.2	14.0	1030	620	538
800	800	18.2	18.2	1350	675	741
900	300	19.6	11.2	880	650	550
900	500	19.6	14.0	1080	680	662
900	900	19.6	19.6	1500	750	974
1000	400	21.0	12.6	990	735	746
1000	600	21.0	15.4	1650	765	1107
1000	1000	21.0	21.0	1650	825	1289
1100	400	22.4	12.6	1050	770	895
1100	600	22.4	15.4	1250	800	1066
1100	1100	22.4	22.4	1780	890	1642
1200	400	23.8	12.6	1070	855	1099
1200	600	23.8	15.4	1250	885	1259
1200	1200	23.8	23.8	1950	975	2055

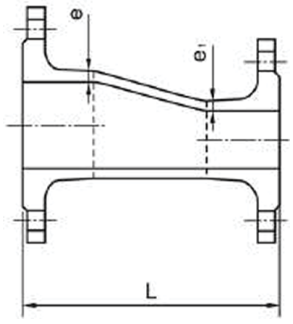
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Double Flanged Concentric Taper / Eccentric Taper







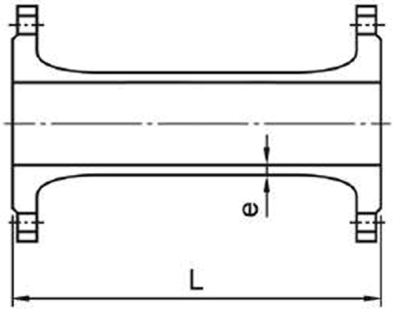


Nominal ø		e	e1	L	Mass
DN Large	dn Small	mm	mm	mm	kg
80	50	7.0	7.0	200	7.3
80	65	7.0	7.0	200	7.9
100	50	7.2	7.0	200	9.4
100	80	7.2	7.0	200	9.3
150	80	7.8	7.0	400	16.1
150	100	7.8	7.2	300	15.0
200	80	8.4	7.0	600	25.5
200	100	8.4	7.2	600	27.0
200	150	8.4	7.8	300	21.5
250	150	9.0	7.8	600	38.0
250	200	9.0	8.4	300	29.5
300	100	9.6	7.2	600	41.5
300	150	9.6	7.8	600	46.0
300	200	9.6	8.4	600	51.0
300	250	9.6	9.0	300	39.5
350	200	10.2	8.4	600	60.5
350	250	10.2	9.0	600	67.0
350	300	10.2	9.6	300	52.0
400	200	10.8	8.4	600	71.0
400	250	10.8	9.0	600	77.0
400	300	10.8	9.6	600	84.0
400	350	10.8	10.2	300	67.0
450	250	11.4	9.0	600	87.5
450	300	11.4	9.6	600	95.0
450	350	11.4	10.2	600	104.0
450	400	11.4	10.8	300	81.0
500	250	12.0	9.0	700	114.0
500	300	12.0	9.6	600	111.0
500	350	12.0	10.2	600	121.0
500	400	12.0	10.8	600	130.0
500	450	12.0	11.4	300	102.0
600	300	13.2	9.6	800	171.0
600	350	13.2	10.2	700	167.0
600	400	13.2	10.8	600	164.0
600	450	13.2	11.4	600	175.0
600	500	13.2	12.0	600	190.0
700	350	14.4	10.2	900	225.0
700	400	14.4	10.8	800	220.0
700	450	14.4	11.4	700	213.0
700	500	14.4	12.0	600	208.0
700	600	14.4	13.2	600	243.0

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Double Flanged Lengthening Piece

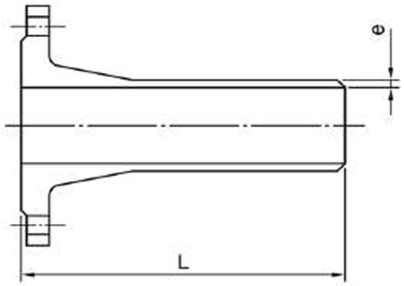




Nominal ø DN	e mm	L mm	Mass kg
100	7.2	100	8.3
100	7.2	150	9.2
100	7.2	200	10.1
100	7.2	300	11.9
100	7.2	500	15.4
100	7.2	700	19.1
150	7.8	100	12.7
150	7.8	150	14.0
150	7.8	200	15.3
150	7.8	300	18.1
150	7.8	500	24.1
150	7.8	700	29.4
200	8.4	300	25.0
200	8.4	500	31.0
200	8.4	700	40.9
300	9.6	300	44.8
300	9.6	500	58.6

Flanged Spigot



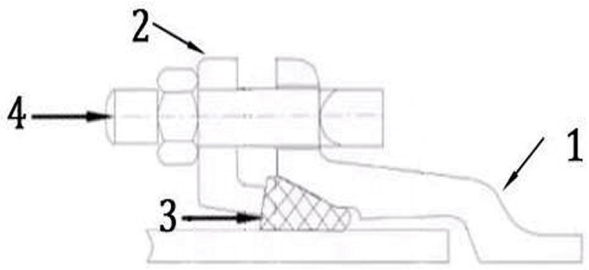


Nominal ø DN	e mm	L mm	Mass kg
80	7.0	350	7.9
100	7.2	360	9.7
150	7.8	380	15.6
200	8.4	400	22.5
250	9.0	420	31.5
300	9.6	440	42.0
350	10.2	460	55.5
400	10.8	480	70.0
450	11.4	500	86.0
500	12.0	520	109
600	13.2	560	159
700	14.4	600	206
800	15.6	600	254
900	16.8	600	320
1000	18.0	600	395
1100	19.2	600	473
1200	20.4	600	567

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DUCTILE IRON Fusion Bonded Epoxy BOLTED GLAND JOINT

Bolted Gland Joint

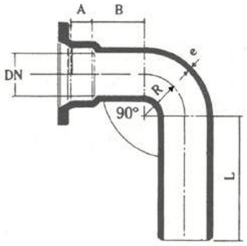


1) Fitting body
2) Bolted Gland
3) V-shape rubber ring
4) T-head bolt and nut

The bolted gland joint fitting is usually fitted with a bolted gland, V-shape rubber ring and T-head bolt and nut. When the bolt is tightened, it squeezes the rubber ring through the gland, thus making the connection to the socket end. The advantage of this type of connection is that it can be used without the need of welding or any other type of jointing. The joint fitting is a reliable and an efficient way to connect pipes.

Bolted Gland Socket Spigot 90° Bend

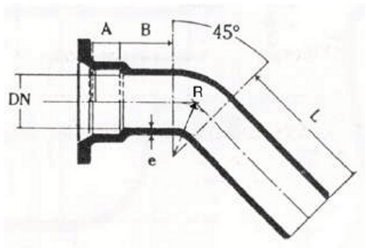




Nominal ø DN	e mm	R mm	L mm	B mm	A mm	Mass kg
100	7.2	95	270	50	80	16
150	7.8	145	320	80	80	30
200	8.4	195	350	100	80	40
300	9.6	290	450	200	80	105

Bolted Gland Socket Spigot 45° Bend



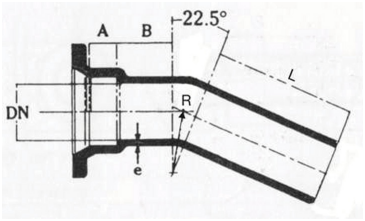


Nominal ø DN	e mm	R mm	L mm	B mm	A mm	Mass kg
100	7.2	100	270	50	80	16
150	7.8	145	320	80	80	26
200	8.4	200	350	100	80	40
300	9.6	305	450	200	80	90

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Bolted Gland Socket Spigot 22.5° Bend

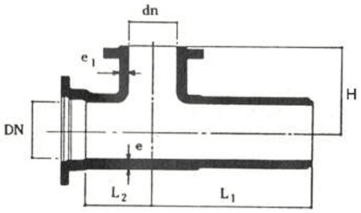




Nominal ø DN	e mm	R mm	L mm	B mm	A mm	Mass kg
100	7.2	110	270	50	80	14
150	7.8	155	320	80	80	28
200	8.4	195	350	100	80	38
300	9.6	305	450	200	80	100

Bolted Gland Socket Spigot with Flange Tee (Flange drilled to BS EN 1092-2 PN16)

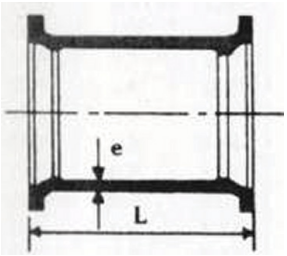




Nominal ø		e	e1	L2	L1	H	Mass
DN	dn	mm	mm	mm	mm	mm	kg
100	100	8.4	8.4	180	380	180	19
150	100	9.1	8.4	180	430	210	40
150	150	9.1	9.1	210	460	220	47
200	100	9.8	8.4	180	460	240	53
200	150	9.8	9.1	210	490	250	60
200	200	9.8	9.8	240	520	260	68
300	100	11.2	8.4	180	560	300	100
300	150	11.2	9.1	210	590	330	105
300	200	11.2	9.8	240	620	350	113
300	300	11.2	11.2	270	670	400	195

Bolted Gland Collar



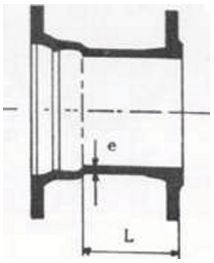


Nominal ø DN	e mm	L mm	Mass kg
100	7.2	230	12.9
150	7.8	260	19.7
200	8.4	290	27.5
250	9.0	355	36.0
300	9.6	360	48.0
350	10.2	380	62.0
400	10.8	400	76.5
450	11.4	410	91.0
500	12.0	425	96.0
600	13.2	450	130.0

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Bolted Gland Flange Socket (Flange drilled to BS EN 1092-2 PN16)

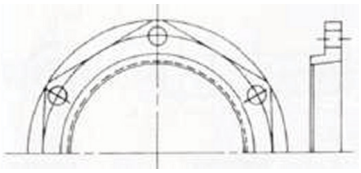




Nominal ø DN	e mm	L mm	Mass kg
100	8.4	130	11.3
150	9.1	135	17.3
200	9.8	140	24.0
250	10.5	145	32.5
300	11.2	150	44.0
400	12.6	160	73.0
450	13.3	165	88.0
600	15.4	180	143.0

Bolted Gland



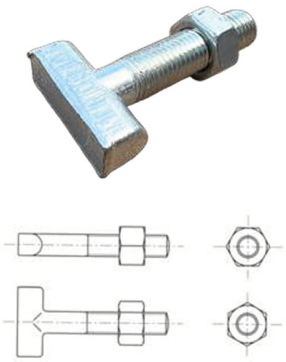


Nominal ø DN	Pitch Circle ø	No. holes	ø of Holes	Mass kg
100	198	3	23	4.5
150	258	4	23	6.1
200	310	5	23	8.2
250	362	6	23	10.5
300	422	8	23	13.0

Accessories



V-Shape Rubber Ring
(EPDM)



T-Head bolt and nut (GI)

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Pipe Threading



CHONG CHEONG FOUNDRY WORKS PTE LTD

Contact Us

Please feel free to contact us via e-mail or phone. We will be glad to answer your questions, concerns and/or feedback.

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Sun & PH: Closed

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