sahara emirates

Ductile Iron Pipe & Fittings



Product Information

Features and Benefits of Ductile Cast Iron

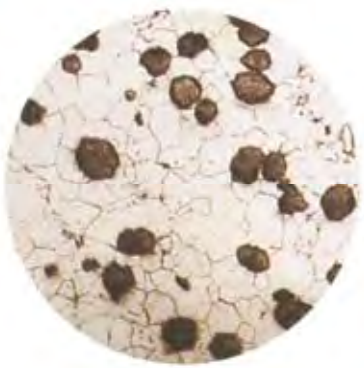
Ductile cast iron, also called ductile iron, spheroidal graphite iron, or nodular cast iron, is a type of cast iron invented in 1943. While most varieties of cast iron are brittle, ductile cast iron is much more flexible and elastic, due to its nodular graphite inclusions.

Graphite particles exist in the form of sphericity in ductile cast iron. Sizes graphite particles are restricted to 6-7 class and spheroidizing rate should not be less than 80%. Thus after the spheroidizing process, ductile iron will be endowed with mechanical properties of both cast iron and steel.

Much of the production of ductile iron is in the form of ductile cast iron pipe, used for water and sewer lines. Ductile cast iron pipe is stronger and easier to tap, requires less support and provides greater flow area compared with pipes made from other materials like PVC, concrete, polyethylene, or steel.

Grey cast iron metallographic

Ductile cast iron metallographic
(as cast)



Ductile cast iron metallographic
(after annealing)

Quality and Standards of Ductile Iron Pipe and Fittings

Corrosion protection of pipeline

Pipelines transferring potable/sewage water or gas will be greatly influenced by the chemical and physical property of soil. Things will become more serious when pipes are joined to be a long and continuous electrify entity. Thanks to its joint sealed by insulating rubber gasket every 4-6 meters, ductile cast iron pipe obtained a high resistance to corrosion caused by electric current.

Plenty of cast iron pipelines which have been laying underground for over 100 years are still working in good condition nowadays.

ISO 2531:1998

Other properties of pipeline

CNBM ductile cast iron pipe are made in strict accordance with the relevant international standard and European standard. Zinc coating of CNBM pipes conforms to ISO8179, the minimum zinc coating per square meter should be 130g, and the thickness of bitumen paint shouldn't be less than 70 μm. Cement lining conforms to ISO 4179 with thickness listed as follows:

Nominal diameter (mm)	Minimum wall thickness of cement lining (mm)
80≤DN≤300	3
350≤DN≤600	5
700≤DN≤1600	6

EN545:2002

Applicable standard

Specifications	Standards	
	European	International
General technical specification for ductile iron pressure pipelines	EN 545	ISO 2531
Socket pipes	EN 545	ISO 2531
Flanged pipes	EN 545	ISO 2531
Socket fittings	EN 545	ISO 2531
Flanged fittings	EN 545	ISO 2531
Flange dimensions (fixed and loose)	-	ISO 7005-2
Joint gaskets. Material specifications	EN 681-1	ISO 4633
Pipe zinc coating	EN 545	ISO 8179-1
Polyethylene sleeving	EN 545	ISO 8180
Polyethylene external coating for pipes	EN 545	ISO 2531
Polyurethane external coating for pipes	EN 545	ISO 2531
Cement mortar pipe lining	EN 545	ISO 4179
Model for quality assurance in design/development, production, Installation and serving	EN 29001	ISO 9001
Model for quality assurance in production and installation	EN 29002	ISO 9002

ISO 9001:2000

ISO 9001:2008

Production Process

Pig iron

Molten iron

Spheroidization agent

Furnace refining

Centrifugal casting

Annealing

Hydraulic test

Cement lining

Curing of cement

Zinc coating

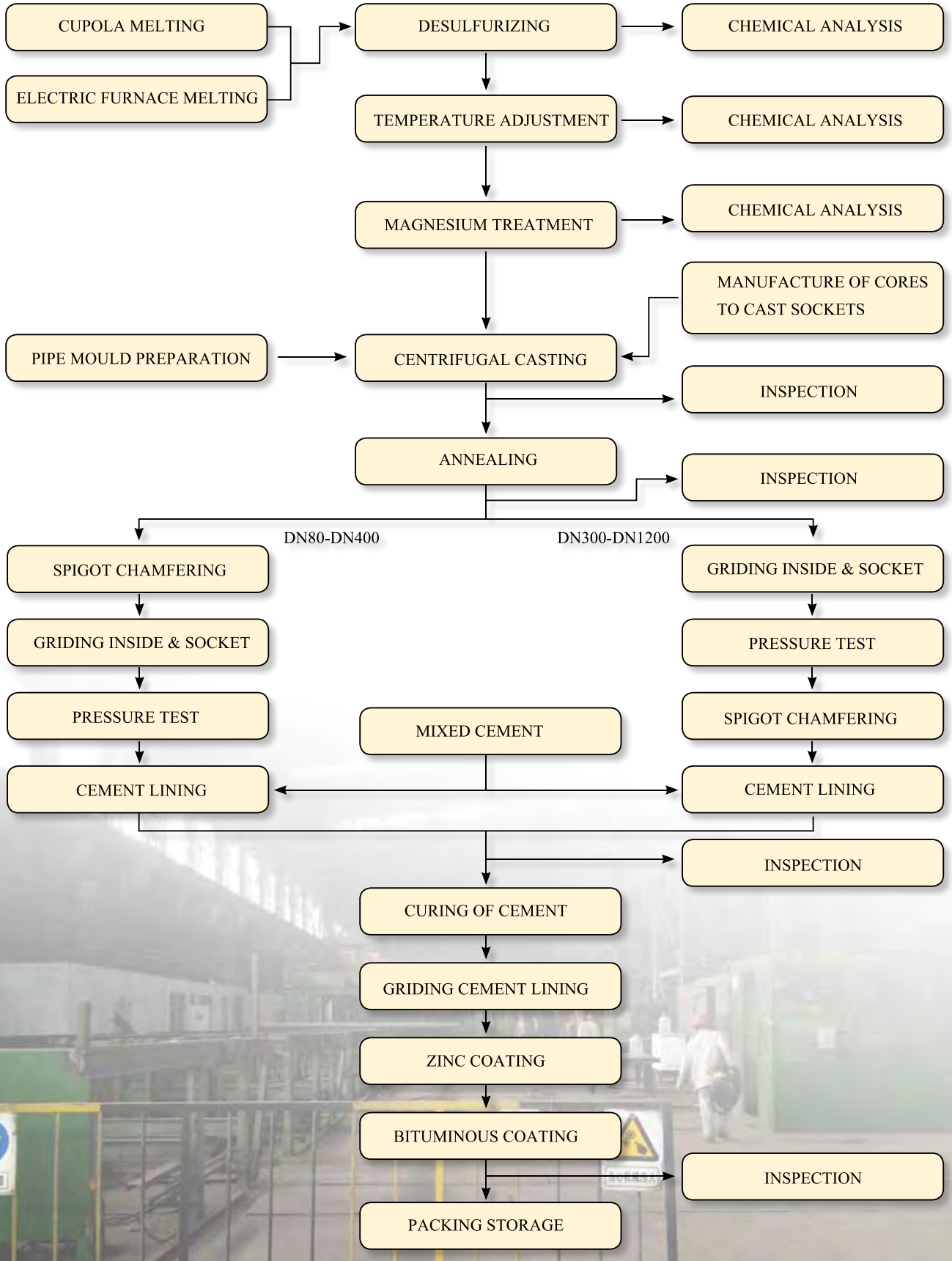
Bitumen coating

Finished product test

Finished product stacking

Oversea shipping

Production Flow Chart



Specifications

Standard Wall Thickness

Nominal wall thickness of pipes:

e=K (0.5+0.001*DN)

Where, DN: Nominal diameter; K: Coefficient (K=7, 8, 9, 10, 11, 12…)

Nominal wall thickness of pipe fittings:

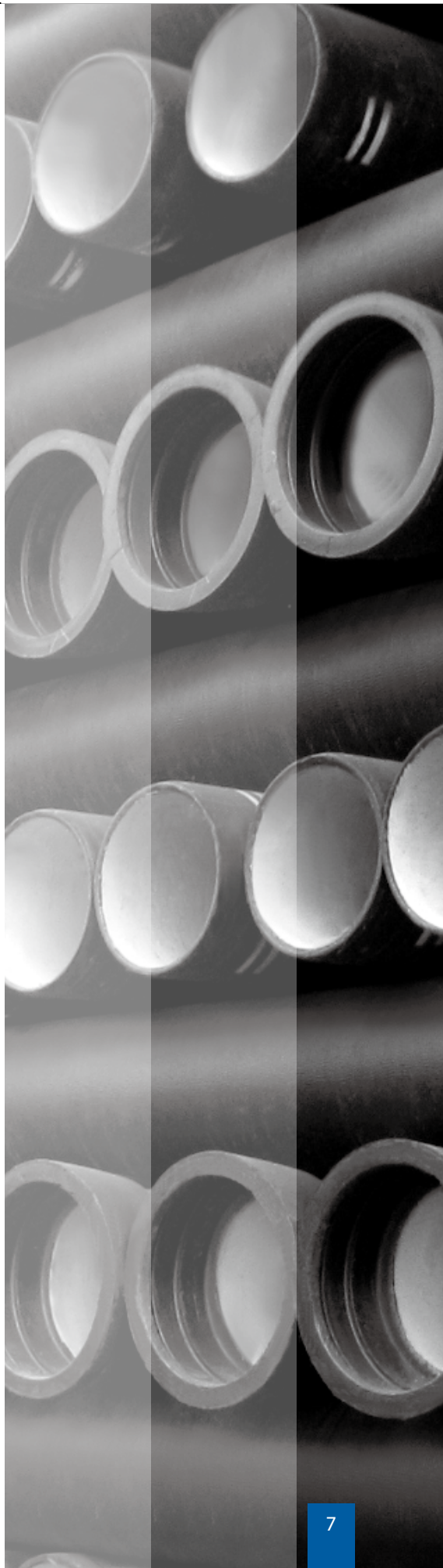
e=7+0.014*DN (K=14)

e=6+0.012*DN (K=12)

Nominal Diameter	Wall Thickness (mm)					
DN	Pipe				Fittings	
	K8	K9	K10	K12	K12	K14
80	6.0	6.0			7.0	8.1
100		6.1			7.2	8.4
150		6.3			7.8	9.1
200		6.4			8.4	9.8
250		6.8	7.5	9.0	9.0	10.5
300	6.4	7.2	8.0	9.6	9.6	11.2
350	6.8	7.7	8.5	10.2	10.2	11.9
400	7.2	8.1	9.0	10.8	10.8	12.6
450	7.6	8.6	9.5	11.4	11.4	13.3
500	8.0	9.0	10.0	12.0	12.0	14.0
600	8.8	9.9	11.0	13.2	13.2	15.4
700	9.6	10.8	12.0	14.4	14.4	16.8
800	10.4	11.7	13.0	15.6	15.6	18.2
900	11.2	12.6	14.0	16.8	16.8	19.6
1000	12.0	13.5	15.0	18.0	18.0	21.0
1200	13.6	15.3	17.0	20.4	22.8	23.8

Works Hydraulic Test Pressure

Nominal Diameter	Works Test Pressure (bar)					
	Pipe (K9)	Fittings	Pipes With Weld-on or Screwed-on Flange			
DN			PN10	PN16	PN25	PN40
80 to 300	50	25	16	25	32	40
350 to 600	40	16				
700 to 1000	32	10				
1100 to 2000	25	10				



Mechanical Properties

Item	Tensile Strength N/mm²	Elongation %		Proof Stress N/mm²		Hardness HB
	DN80 TO DN2600	DN80 TO DN1000	DN1100 TO DN2000	DN80 TO DN1000	DN1100 TO DN2000	
Pipe	≥420	≥10	≥7	≥270	≥300	≤230
Fittings	≥420	≥5		≥300		≤250

* Proof stress shall be measured upon agreement only.

Chemical analysis

Metallographic test

Mechanical performance test

Samples

Standard Lining and Coating

Internal Lining

Internal Lining	Pipe & Fittings
Standard Coating	Blast furnace cement mortar
Reinforced Protections	High alumina cement mortar
Special Coatings	Please consult us

External Coating

External Coating	Pipe & Fittings
Standard Coating	Metallic zinc + Bituminous paint
Reinforced Protections	Polyethylene sleeve applied
Special Coatings	Polyurethane or polyethylene coating

* Other types of coating or lining may be applied upon request.

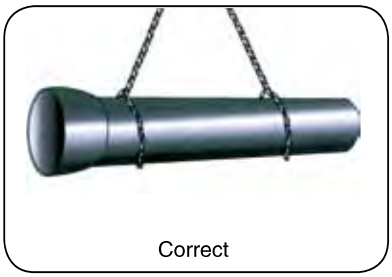
Dimensions of Push-on Joint T Type Ductile Iron Pipe K9

DN (mm)	DE (mm)	Wall Thickness (mm)	Approximate Weight of Socket (kg)	Weight of Straight Section (kg/m)	Weight of Each Unit (kg/6m)
Nominal Diameter	Outside Diameter				
80	98	6.0	3.4	12.2	77
100	118	6.1	4.3	15.1	95
150	170	6.3	7.1	22.8	144
200	222	6.4	10.3	30.6	194
250	274	6.8	14.2	40.2	255
300	326	7.2	18.6	50.8	323
350	378	7.7	23.7	63.2	403
400	429	8.1	29.3	75.5	482
450	480	8.6	38.3	89.7	577
500	532	9.0	42.8	104.3	669
600	635	9.9	59.3	137.3	883
700	738	10.8	79.1	173.9	1123
800	842	11.7	102.6	215.2	1394
900	945	12.6	129.0	260.2	1690
1000	1048	13.5	161.3	309.3	2017
1100	1152	14.4	194.7	362.8	2372
1200	1255	15.3	237.3	420.1	2758
1400	1462	17.1	385.8	547.2	3669
1600	1668	18.9	375.4	690.3	4517

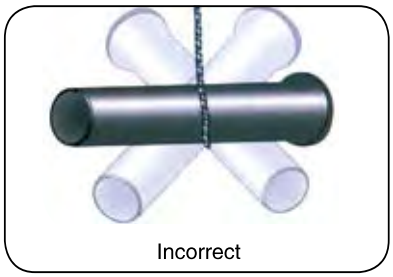
* Any other questions, please feel free to consult us.

Lifting, Transport, Stacking and Assembly

Lifting

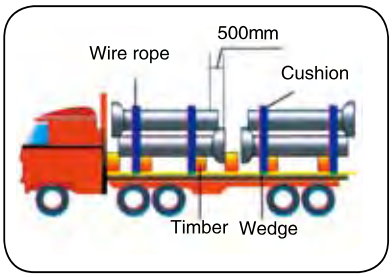


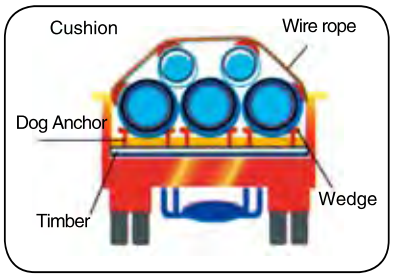
Correct



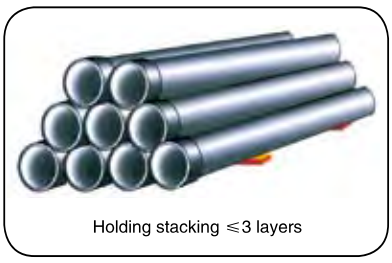
Incorrect

Transport

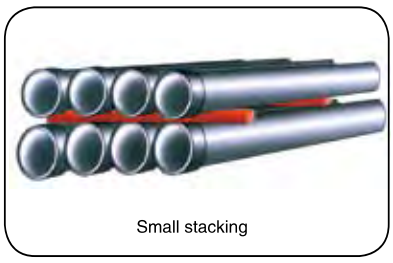




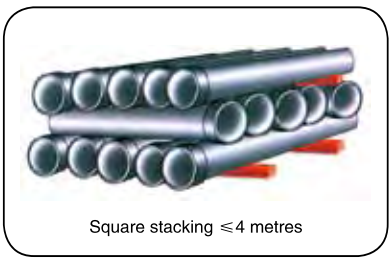
Stacking



Holding stacking ≤3 layers



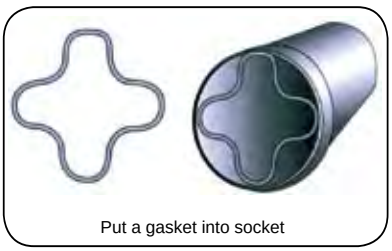
Small stacking



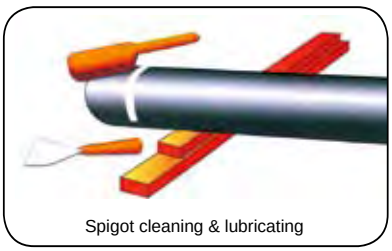
Square stacking ≤4 metres

Assembly

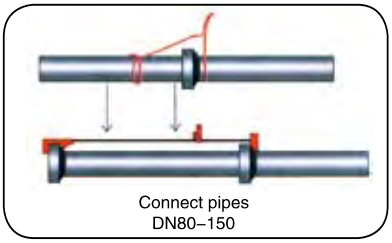
Socket cleaning: especially the gasket placing position should be well cleaned



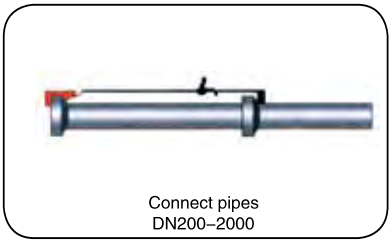
Put a gasket into socket



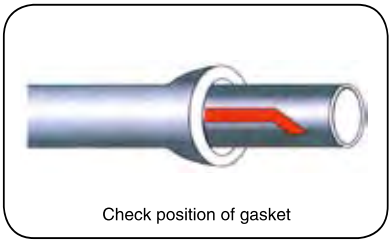
Spigot cleaning & lubricating



Connect pipes
DN80–150



Connect pipes
DN200–2000



Check position of gasket

Ductile Iron Pipe Fittings

Ductile Iron Pipe Fittings

Generally speaking, the design of ductile iron pipe fittings is similar to cast iron pipe fittings. Their ends are usually flanged or preferably, sockets.

The greater strength and flexibility of ductile iron make it possible to improve the design of fittings and to reduce their dimensions, which is very helpful to lay water main pipelines in congested urban areas. It also helps to reduce the size of valve chambers, which mainly depends on the space occupied by fittings.

Deviation and tolerances on length

The permissible deviation on the standard working length of fittings with sockets and fittings with flanges are given in table as follows:

Type of fitting	Length	Deviation (mm)
Flanged socket Flanged spigot Collar Taper	L	DN80 to DN1200 ± 25 DN1400 to DN2000 ± 35
Bend90°	T	± (15 + 0.03DN)
Bend45°	T	± (10 + 0.25DN)
Bend22.5° and11.25°	T	DN80 to DN1000 ± (10 + 0.02DN) DN1200 to DN2000 ± (10 + 0.25DN)
Tee	L and h	DN80 to DN1000 $^{+50}_{-25}$ DN1400 to DN2000 $^{+75}_{-35}$

Tolerances on manufacturing working lengths

The standard tolerance on the manufacturing working lengths of all fittings with flanges in all nominal size is ± 10mm On request in the order and by agreement between the manufacurer and the purchaser, smaller tolerances can be accepted but not less than:

± 3mm for DN≤600; and

± 4mm for DN≤700

Works leak-tightness test

The fittings shall be submitted at the works to a leak-tightness test, carried out either with air at a pressure of 1 bar or with water at the pressure given in table as following:

Nominal size DN	Hydrostatic leak–tightness test pressure bar				
	Fittings	DI. Pipe with weld–on or screwed–on flange			
		PN10	PN16	PN25	PN40
80≤DN≤300 350≤DN≤600 700≤DN≤2000	25 16 10	16	25	32	40

Internal protection

Spun the blast furnace cement mortar lining complying with the standard ISO 4179, we may offer special protective coating according to customers requirements.

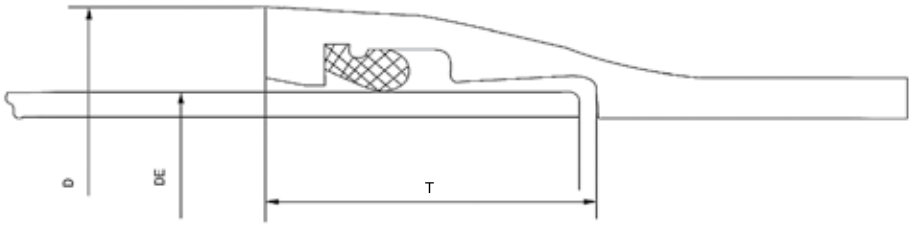
External Protection

Metallic zinc complying with the standard ISO8179, and bitumen, or special protective coating according to the customer's requirement.

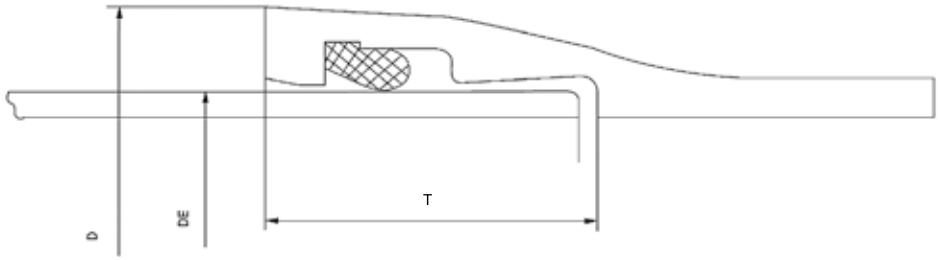
Notes: 1. Pipes and fittings conform to the requirements of International Standard ISO 2531, British European Standard BS EN545, and their extensions. If information given in English and Chinese differs, the English version prevails.
2. Dimensions and masses of pipes and fittings are approximate and are for references only; accurate dimensions and masses should be confirmed with us at the time of placing order. Flanged joint pipes and fittings are generally available with PN10, PN16 and PN25. Socketed joint pipes and fittings generally available with T type and K type joints.

Push-on Joint Type

DN80–DN1400

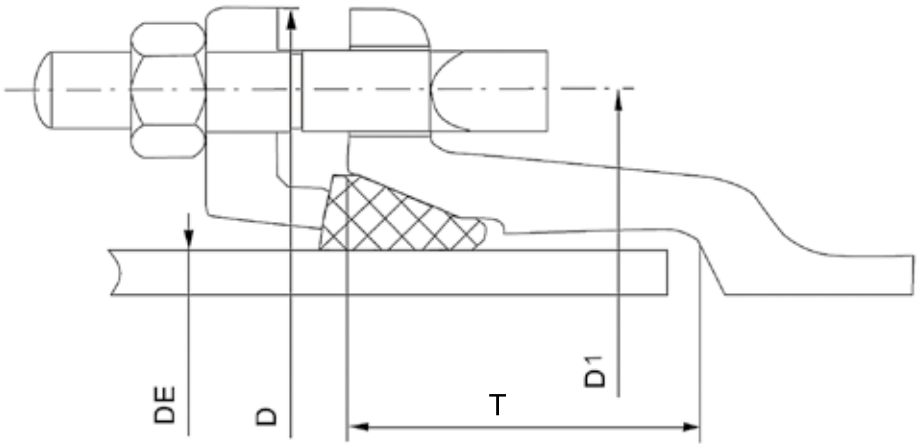


DN1600–DN2000



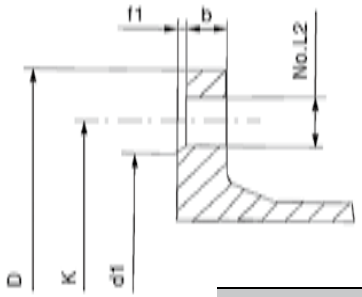
Nominal Diameter DN	mm		
	DE	D	T
80	98	142	84
100	118	163	88
150	170	217	94
200	222	278	100
250	274	336	105
300	326	393	110
350	378	448	110
400	429	500	110
500	532	604	120
600	635	713	120
700	738	824	150
800	842	943	160
900	945	1052	175
1000	1048	1158	185
1200	1255	1377	215
1400	1462	1632	239
1600	1668	1850	265
1800	1875	2049	275
2000	2082	2231	285

Mechnical Joint K Type



Nominal Diameter DN	mm				Holes No.
	DE	D1	D	T	
100	118	186	232	80	4
150	170	241	287	80	6
200	222	292	338	80	6
250	274	348	394	80	8
300	326	399	445	110	8
350	378	458	504	110	10
400	429	512	558	110	12
500	532	618	664	110	14
600	635	725	771	110	14
700	738	839	893	120	16
800	842	942	996	120	20
900	945	1052	1118	120	20
1000	1048	1160	1226	130	20
1200	1255	1372	1438	130	28
1400	1462	1591	1657	130	28
1600	1668	1790	1856	160	30
1800	1675	1996	2062	170	34
2000	2082	2216	2282	180	36

Dimensions of Flange



NOTE: Bolt holes shall be arranged symmetrically about the horizontal centerline through the flange faces.
As for tees, this horizontal centerline is defined with the face of the brance flange held parallel to the vertical plane

PN10 Flange

Nominal Diameter	d1	D	b	f1	k	L2	Bolt		Mass (kg)
							Size	No.	
80	132	200	16.0	3	160	19	M16	8	2.9
100	156	220	16.0	3	180	19	M16	8	3.3
150	211	285	16.0	3	240	23	M20	8	5.1
200	266	340	17.0	3	295	23	M20	8	7.1
250	319	400	19.0	3	350	23	M20	12	9.8
300	370	455	20.5	4	400	23	M20	12	12.9
350	429	505	20.5	4	460	23	M20	16	14.7
400	480	565	20.5	4	515	28	M24	16	17.7
450	530	615	21.5	4	565	28	M24	20	20.2
500	582	670	22.5	4	620	28	M24	20	24.3
600	682	780	25.0	5	725	31	M27	20	33.7
700	794	895	27.5	5	840	31	M27	24	46.3
800	901	1015	30.0	5	950	34	M30	24	62.1
900	1001	1115	32.5	5	1050	34	M30	28	73.0
1000	1112	1230	35.0	5	1160	37	M33	28	92.9
1200	1328	1455	40.0	5	1380	40	M36	32	138.0
1400	1530	1675	41.0	5	1590	43	M39	36	174.7
1600	1750	1915	44.0	5	1820	49	M45	40	241.8
1800	1950	2115	47.0	5	2020	49	M45	44	281.9
2000	2150	2325	50.0	5	2230	49	M45	48	336.5

PN16 Flange

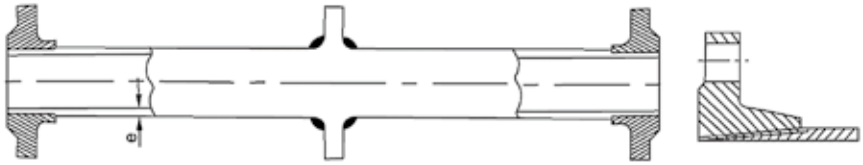
Nominal Diameter	d1	D	b	f1	k	L2	Bolt		Mass (kg)
							Size	No.	
80	132	200	16.0	3	160	19	M16	8	2.9
100	156	220	16.0	3	180	19	M16	8	3.3
150	211	285	16.0	3	240	23	M20	8	5.1
200	266	340	17.0	3	295	23	M20	12	6.9
250	319	400	19.0	3	355	28	M24	12	9.6
300	370	455	20.5	4	410	28	M24	12	12.6
350	429	520	22.5	4	470	28	M24	16	17.4
400	480	580	24.0	4	525	31	M27	16	22.2
450	548	640	26.0	4	585	31	M27	20	28.1
500	609	715	27.5	4	650	34	M30	20	37.7
600	720	840	31.0	5	770	37	M33	20	57.4
700	794	910	34.5	5	840	37	M33	24	58.0
800	901	1025	38.0	5	950	40	M36	24	77.0
900	1001	1125	41.5	5	1050	40	M36	28	92.0
1000	1112	1255	45.0	5	1170	43	M39	28	127.4
1200	1328	1485	52.0	5	1390	49	M45	32	192.9
1400	1530	1685	55.0	5	1590	49	M45	36	231.5
1600	1750	1930	60.0	5	1820	56	M52	40	331.1
1800	1950	2130	65.0	5	2020	56	M52	44	393.7
2000	2150	2345	70.0	5	2230	62	M62	48	474.5

PN25 Flange

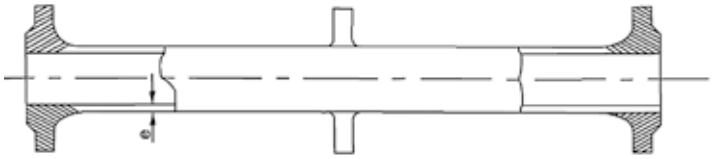
Nominal Diameter	d1	D	b	f1	k	L2	Bolt		Mass (kg)
							Size	No.	
80	132	200	16	3	160	19	M16	8	2.9
100	156	235	16	3	190	23	M20	8	3.8
150	211	300	17	3	250	28	M24	8	6.1
200	274	360	19	3	310	31	M24	12	8.9
250	330	425	21.5	3	370	31	M27	12	13.2
300	389	485	23.5	4	430	34	M27	16	18.0
350	448	555	26.5	4	490	37	M30	16	25.3
400	503	620	28	4	550	37	M33	16	33.2
450	548	670	30.5	4	600	37	M33	20	39.0
500	609	730	32.5	4	660	37	M33	20	48.3
600	720	845	37	5	770	40	M36	20	69.2

Dimensions of Flanged Pipe

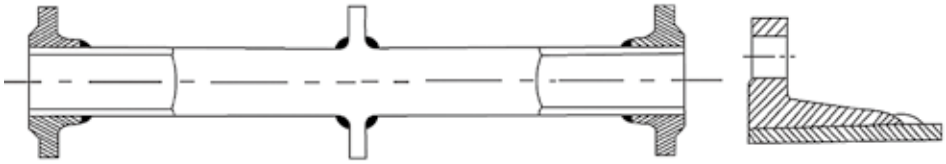
Flanged pipes with
screwed–on flanges, k9, k10
DN80–DN600
Length to be specified



Flanged pipes with
cast–on flanges, k12
DN 1200–2000
L≤4000mm



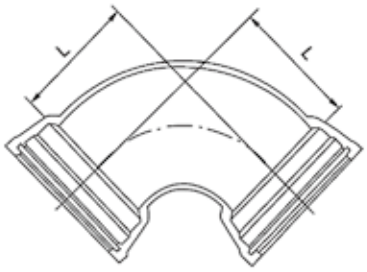
Flanged pipes with
welded–on flanges, k9, k10
DN 80–DN 1000
Length to be specified



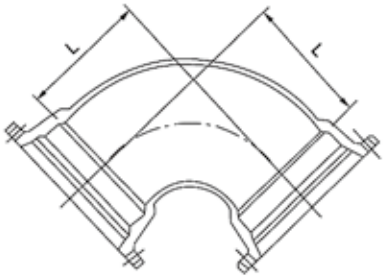
公称口径 Nominal Diameter DN	管体 Body						单重 Each Flange			
	k=9		k=10		k=12					
	e mm	kg/m	e mm	kg/m	e mm	kg/m	PN10	PN16	PN25	PN40
80	6	12.2	6	12.2	7	14.1	3.6	3.6	3.5	3.5
100	6.1	15.1	6.1	15.1	7.2	17.7	4.2	4.2	4.5	4.5
150	6.3	22.8	6.5	23.5	7.8	28	6.3	6.3	7.1	9.2
200	6.4	30.6	7	33.3	8.4	39.7	8.8	8.6	10.4	15.7
250	6.8	40.2	7.5	44.3	9	52.8	12	11.8	15.3	25.4
300	7.2	50.8	8	56.3	9.6	67.3	16.8	16.6	20.8	36.3
350	7.7	63.2	8.5	69.6	10.2	83.1	23	25.5	29.0	–
400	8.1	75.5	9	83.7	10.8	100	26.5	31	37.4	–
500	9	104.3	10	115.6	12	138.2	41	54	54.5	–
600	9.9	137.1	11	152	13.2	181.8	56	79.8	79.1	–
700	10.8	173.9	12	193	14.4	230.8	72.5	84.2	–	–
800	11.7	215.2	13	238.7	15.6	285.5	102	117	–	–
900	12.6	260.2	14	288.7	16.8	345.4	118.5	137.5	–	–
1000	13.5	309.3	15	343.2	18	410.6	135	169.4	–	––
1200	15.3	420.1	17	466.1	20.4	557.8	180	235	–	–
1400	17.1	547.2	19	607.2	22.8	726.8	253	301	–	–
1600	18.9	690.3	21	766	25.2	916.9	–	–	–	–
1800	20.7	850.1	23	943.4	27.6	1129.3	–	–	–	–
2000	22.5	1026.3	25	1139	30	1363.4	–	–	–	–

Double Socket 90° Bend

T Type



K Type

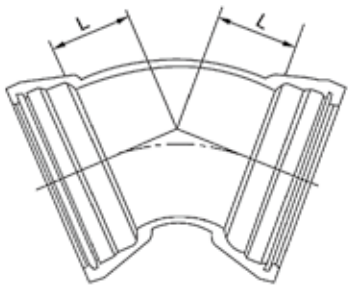


K = 12

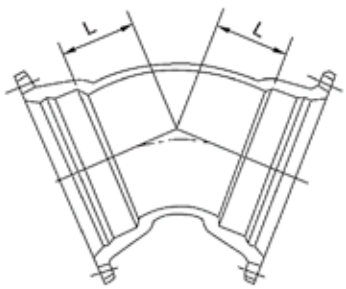
Nominal Diameter DN	L	Mass (kg)	
		T Type	K Type
80	100	8.6	12.0
100	120	11.5	15.6
150	170	20.5	27.5
200	220	33	40.0
250	270	48.5	55.5
300	320	68	81.5
350	370	83	105
400	420	143	134
450	470	156	166
500	520	183	202
600	620	273	290
700	720	455	408
800	820	605	544
900	920	813	720
1000	1020	1045	935
1200	1220	1508	1444
1400	1220	2419	1918
1600	1290	3382	2543
1800	1320	3616	3229
2000	1360	4516	4033

Double Socket 45° Bend

T Type



K Type

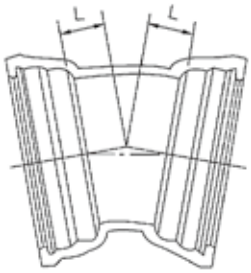


K = 12

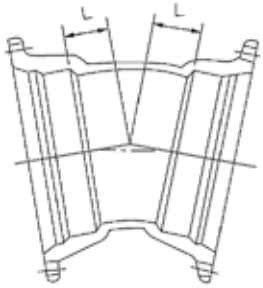
Nominal Diameter DN	L	Mass (kg)	
		T Type	K Type
80	55	7.7	11.1
100	65	10.1	14.3
150	85	17.5	24.0
200	110	27	34.0
250	130	38.5	45.5
300	150	53	66.0
350	175	70	83.5
400	195	89	104
450	220	117	127
500	240	139	150
600	285	202	209
700	330	282	289
800	370	378	373
900	415	496	488
1000	460	635	628
1200	550	986	943
1400	515	1273	1223
1600	565	1740	1647
1800	610	2296	2166
2000	660	2970	2791

Double Socket 22.5° Bend

T Type



K Type

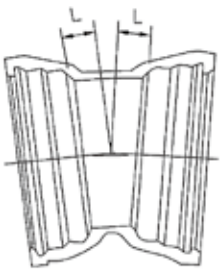


K = 12

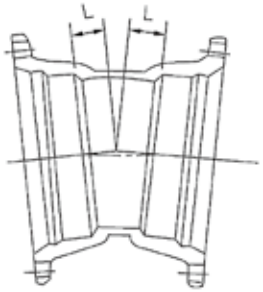
Nominal Diameter DN	L	Mass (kg)	
		T Type	K Type
80	40	7.5	10.7
100	40	9.5	13.5
150	55	15.9	22.5
200	65	24	30.5
250	75	33.5	40.5
300	85	44.5	58.0
350	95	58	71.0
400	110	74	88.0
450	120	95.0	105
500	130	111	123
600	150	157	164
700	175	217	223
800	195	287	281
900	220	373	364
1000	240	470	463
1200	285	716	671
1400	260	933	882
1600	280	1259	1167
1800	305	1663	1533
2000	330	2114	1965

Double Socket 11.25° Bend

T型接口
T Type



K型接口
K Type

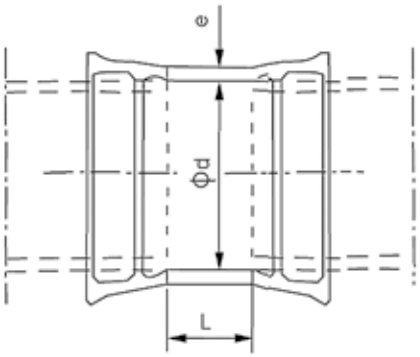


K = 12

Nominal Diameter DN	L	Mass (kg)	
		T Type	K Type
80	30	7.1	10.5
100	30	8.9	13.1
150	35	14.8	21.5
200	40	22	29.0
250	50	30.5	37.5
300	55	40.5	54.0
350	60	52	65.5
400	65	65	79.0
450	70	83.5	93.5
500	75	96	108
600	85	134	141
700	95	181	187
800	110	239	234
900	120	305	297
1000	130	381	375
1200	150	568	524
1400	130	747	697
1600	140	1007	914
1800	155	1331	1200
2000	165	1702	1522

Collar

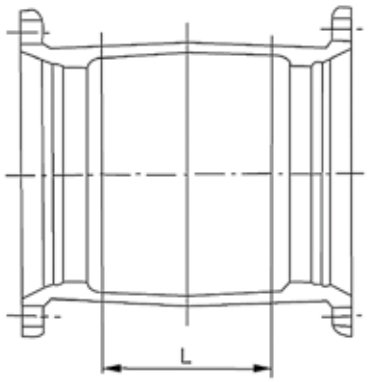
T Type



K=12

Nominal Diameter DN	e	d	L	Mass (kg)
80	7	109	160	7.9
100	7.2	130	160	9.9
150	7.8	183	165	15.9
200	8.4	235	170	23
250	9	288	175	31.5
300	9	340	180	41
350	10.2	393	185	52
400	10.8	445	190	64
450	11.4	498	195	91
500	12	550	200	93
600	13.2	655	210	129
700	14.4	760	220	172
800	15.6	865	230	223
900	16.8	970	240	282
1000	18	1075	250	349
1200	20.4	1285	270	560
1400	22.8	1477	340	816
1600	25.2	1683	360	1094
1800	27.6	1889	380	1427
2000	30	2095	400	1818

K Type

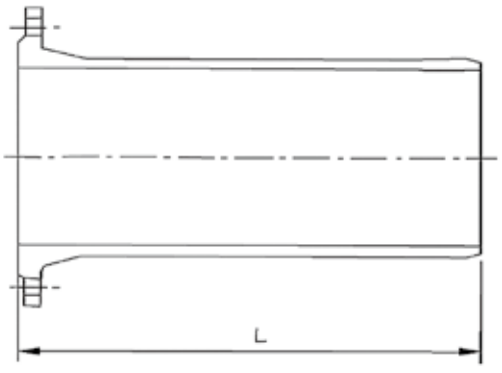


K=12

Nominal Diameter DN	L	Mass (kg)
80	160	12.9
100	160	15.8
150	165	23.5
200	170	30.0
250	175	38.5
300	180	54.0
350	185	67.5
400	190	81.0
450	195	96.0
500	200	109
600	210	140
700	220	185
800	230	225
900	240	278
1000	250	348
1200	270	472
1400	340	701
1600	360	920
1800	380	1172
2000	400	1461

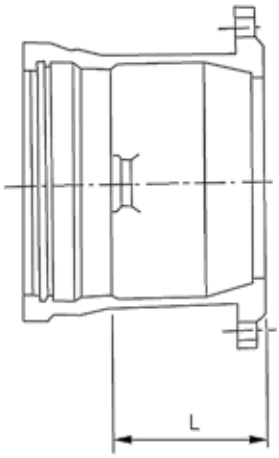
Flanged Spigot

公称口径 Nominal Diameter DN	L	重量Mass (kg)		
		PN10	PN16	PN25
80	350	7.8	7.8	7.8
100	360	9.7	9.7	10.2
150	380	15.6	15.6	16.6
200	400	23.0	23.0	25.0
250	420	32.0	32.0	35.5
300	440	43	42.5	47.5
350	460	52.0	55	64
400	480	64	70	81.0
450	500	78	88	98.0
500	520	94.0	109	121
600	560	133	159	173
700	600	179	194	225
800	600	226	245	294
900	600	272	295	356
1000	600	328	369	447
1200	600	456	520	620
1400	710	664	732	884
1600	780	922	1024	1201
1800	850	1196	1322	1562
2000	920	1534	1687	2040



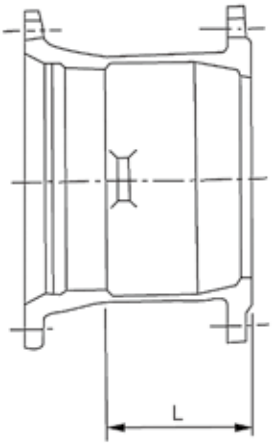
Flanged Socket

T Type



DN 80 to DN 2000

K Type



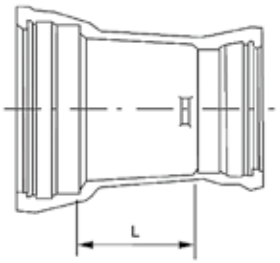
DN 80 to DN 2000

K=12

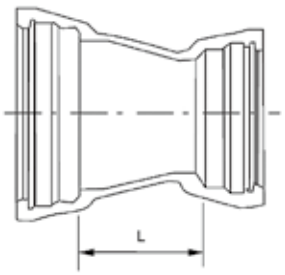
Nominal Diameter DN	L	Mass (kg)					
		T Type			K Type		
		PN10	PN16	PN25	PN10	PN16	PN25
80	130	7.5	7.5	7.5	9.3	9.3	9.3
100	130	9	9	9.5	11.3	11.3	12.5
150	135	14.5	14.5	15.5	18.0	18.0	19.0
200	140	20.5	20.5	22	24.5	24.0	16.0
250	145	28	28	31.5	32.5	32.0	35.5
300	150	37	37	42	44.5	44.0	49.5
350	155	45	48	56	53.0	55.5	63.0
400	160	55	60.0	71	64.0	68.0	78.5
450	165	80	80	88.5	74.5	82.0	92.5
500	170	78	93	104	87.0	100	110
600	180	108	135	149	115	138	149
700	190	144	159	191	162	174	–
800	200	189	208	257	205	220	–
900	210	235	258	319	252	271	–
1000	220	293	324	402	317	351	–
1200	240	456	524	321	450	505	–
1400	310	654	723	875	654	711	–
1600	330	887	989	1166	873	963	–
1800	350	1125	1251	1491	1103	1214	–
2000	370	1414	1567	1920	1378	1516	–

Double Socket Taper

T Type

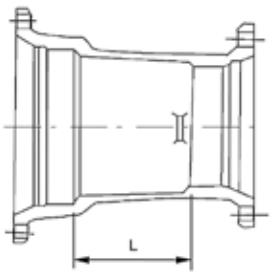


DN 80 to DN 600

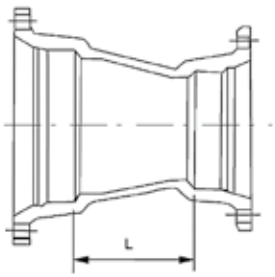


DN 700 to DN 1200

K Type



DN 80 to DN 600



DN 700 to DN 2600

K=12

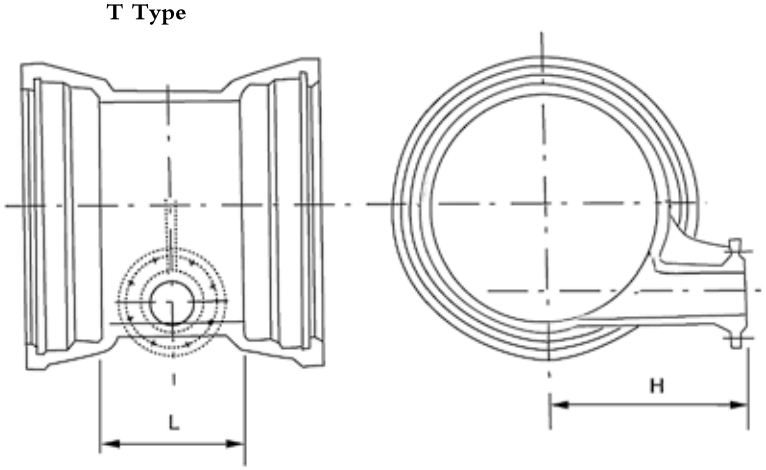
Nominal Diameter		L	Mass (kg)	
DN	dn		T Type	K Type
100	80	90	8.5	12.5
150	80	190	13.5	18.6
150	100	150	13.8	19.1
200	100	250	20.5	26.0
200	150	150	21	27.0
250	150	250	29	36.0
250	200	150	29	35.0
300	150	350	39.5	50.0
300	200	250	39.5	49.0
300	250	150	38.5	47.5
350	200	360	52	62.5
350	250	260	51	61.0
350	300	160	49.5	61.5
400	200	460	62	78.0
400	250	360	66	76.5
400	300	260	64	80.1
400	350	160	62	78
450	250	460	89.5	94.0
450	300	360	88.1	97.1
450	350	260	86	95
450	400	160	83.1	92
500	300	460	97	114
500	350	360	98	115
500	400	260	94	111
500	450	160	99.5	106
600	350	560	151	159
600	400	460	142	156
600	450	360	149	151
700	500	260	131	145
700	400	680	226	215
700	450	580	225	210
700	500	480	194	203
700	600	280	178	184
800	450	780	295	278
800	500	680	288	285
800	600	480	252	257
800	700	280	229	236

K=12

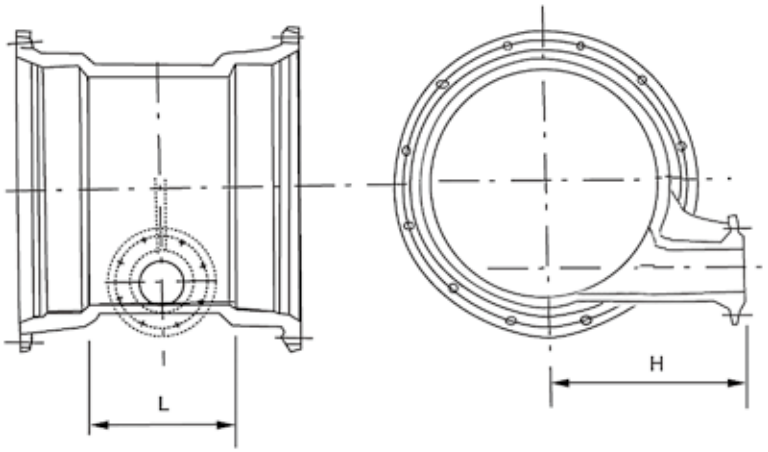
Nominal Diameter		L	Mass (kg)	
DN	dn		T Type	K Type
900	500	880	360	358
900	600	680	341	339
900	700	480	318	327
900	800	280	288	294
1000	600	880	446	445
1000	700	680	427	422
1000	800	480	392	403
1000	900	280	354	368
1200	700	1080	699	667
1200	800	880	668	631
1200	900	680	630	591
1200	1000	480	570	580
1400	800	760	877	716
1400	900	660	906	710
1400	1000	560	1015	704
1400	1200	360	711	698
1600	1000	760	1427	960
1600	1200	560	1355	919
1600	1400	360	951	936
1800	1200	760	–	1238
1800	1400	560	–	1198
1800	1600	360	1235	1234
2000	1200	960	–	1620
2000	1400	760	–	1579
2000	1600	560	–	1503
2000	1800	360	1566	1565

Double Socket Level Invert Tee With Flanged Branch

T Type

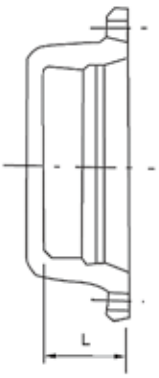


K Type

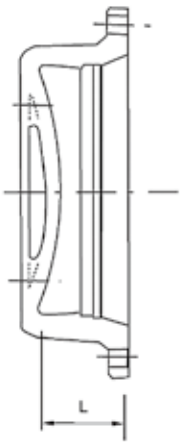


Cap

K Type
DN 80 to DN 300



DN 350 to DN 1200

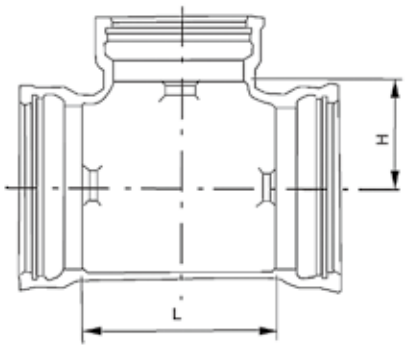


Nominal Diameter DN	L	Mass (kg)
80	80	6.2
100	88	7.5
150	94	12.6
200	100	17.5
250	105	24.5
300	110	38
350	110	54
400	110	68.5
450	120	83.5
500	120	96
600	120	127
700	150	175
800	160	227
900	175	300
1000	185	379
1200	215	580

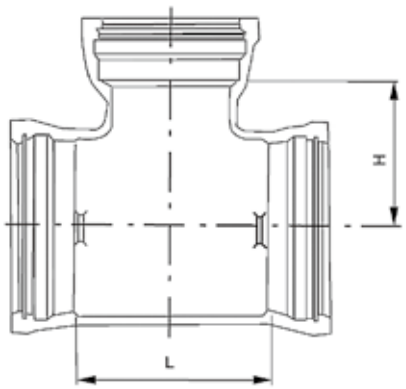
All Socket Tee

T Type

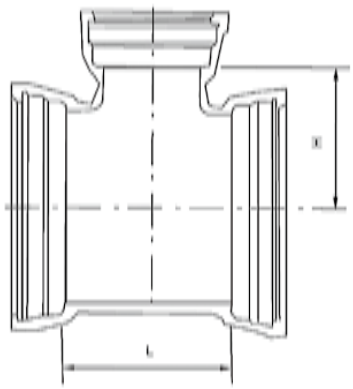
DN 80 to DN 250



DN 300 to DN 600



DN700 to DN 1200

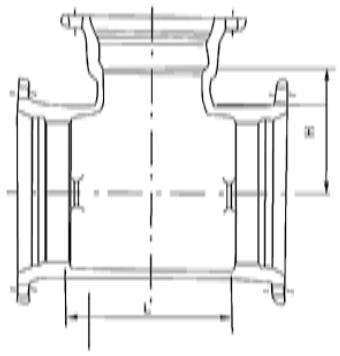


K=14

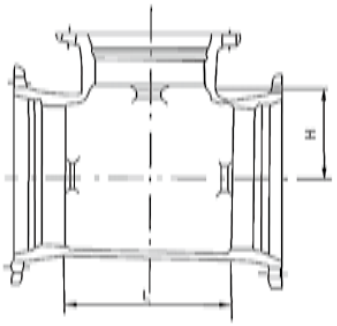
Nominal Diameter		L	H	Mass (kg)	
DN	dn			T Type	K Type
80	80	170	85	12.5	17.7
100	80	170	95	14.8	21.5
100	100	190	95	16.1	23.5
150	80	170	120	21.5	29.5
150	100	195	120	23.5	31
150	150	255	125	28	35.6
200	80	175	145	30	37.9
200	100	200	145	32	38.8
200	150	255	150	37	45.0
200	200	315	155	43	50.5
250	100	200	170	42	49.0
250	150	260	175	48	61.0
250	200	315	180	54	63.5
250	250	375	190	55	71.5
300	100	205	195	59	66.5
300	150	260	200	70	80.5
300	200	320	205	72	84.0
300	300	435	220	81	106
350	100	210	225	67.5	78.0
350	150	260	230	79.6	95.0
350	200	320	235	85	98.0
350	300	380	240	106	122
350	350	495	250	116	133
400	100	210	245	81	92.0
400	150	270	250	90	111
400	200	325	255	98	114
400	300	440	270	119	140
400	400	560	280	142	167
450	150	270	280	111	128
450	200	330	280	122	131
450	300	445	295	144	160
450	400	560	305	168	188
450	450	620	310	181	203
500	150	275	300	131	145
500	200	330	310	145	148
500	300	450	320	165	179
500	400	565	330	187	210
500	500	680	340	221	242
600	150	280	350	188	184
600	200	340	360	201	187
600	300	455	370	208	223
600	400	570	380	243	259
600	600	800	400	335	337

K Type

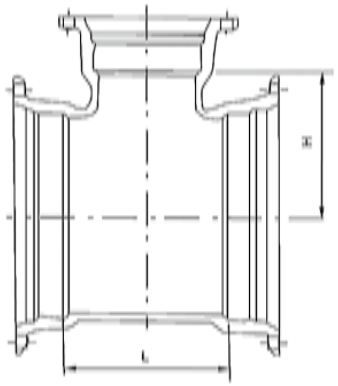
DN 80 to DN 250



DN 300 to DN 600



DN 700 to DN 2600



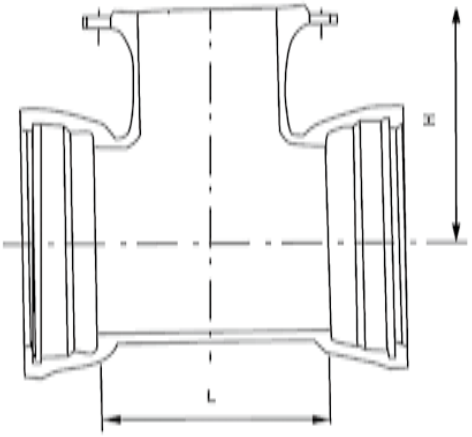
K=14

Nominal Diameter		L	H	Mass (kg)	
DN	dn			T Type	K Type
700	200	345	410	248	250
700	300	460	420	286	292
700	400	575	430	328	333
700	600	810	450	416	422
700	700	925	460	474	475
800	200	350	460	309	301
800	300	465	470	354	350
800	400	580	480	403	398
800	600	815	500	580	576
800	800	1045	525	632	618
900	200	355	510	382	370
900	400	590	530	493	484
900	600	820	550	747	739
900	800	1050	575	795	777
900	900	1170	585	826	806
1000	200	360	560	464	453
1000	400	595	580	592	584
1000	600	825	600	943	936
1000	800	1060	625	988	971
1000	1000	1290	645	1051	1033
1200	400	605	720	840	780
1200	600	840	740	1009	950
1200	800	1070	765	1198	1129
1200	1000	1300	785	1401	1331
1200	1200	1535	805	1644	1547
1400	600	1030	840	1679	1422
1400	800	1260	865	1910	1641
1400	1000	1495	885	2441	1886
1400	1200	1725	905	2795	2133
1400	1400	1960	930	3124	2436
1600	600	1040	940	2245	1806
1600	800	1275	965	2546	2073
1600	1000	1505	985	2851	2363
1600	1200	1740	1010	3663	2660
1600	1400	1970	1030	4066	2992
1600	1600	2200	1050	4474	3346
1800	600	1055	1040	–	2272
1800	800	1285	1065	–	2591
1800	1000	1520	1085	–	2933
1800	1200	1750	1110	–	3274
1800	1400	1980	1130	–	3652
1800	1600	2215	1150	–	4052
1800	1800	2445	1175	–	4498
2000	600	1065	1140	–	2793
2000	800	1300	1165	–	3179
2000	1000	1530	1185	–	3572
2000	1200	1760	1210	–	3968
2000	1400	1995	1230	–	4407
2000	1600	2225	1250	–	4850
2000	1800	2460	1275	–	5346
2000	2000	2690	1295	–	5873

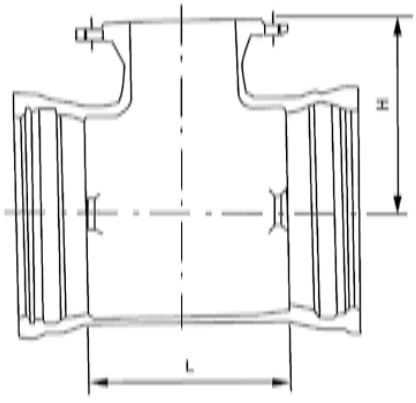
Double Socket Tee With Flanged Branch

T Type

DN 80 to DN 600



DN 700 to DN 1200

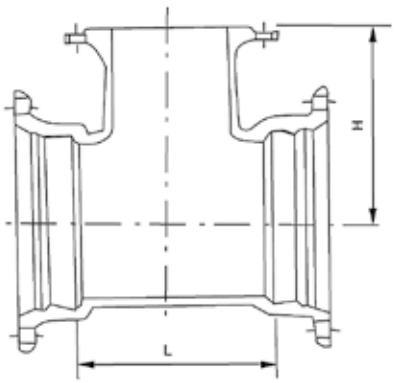


K=14

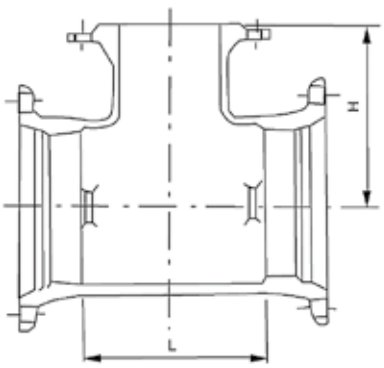
Nominal Diameter		L	H	Mass (kg)					
				T Type			K Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
80	80	170	165	13.5	13.5	13.5	16.7	16.7	16.7
100	80	170	175	15.8	15.8	15.8	19.7	19.7	19.7
100	100	190	180	17.5	17.5	18	21.0	21.0	21.5
150	80	170	205	23	23	23	28.5	28.5	28.5
150	100	195	210	24.5	24.5	25	30.5	30.5	31.5
150	150	255	220	29.5	29.5	30.5	35.5	35.5	36.5
200	80	175	235	31.5	31.5	31.5	36.5	36.5	36.5
200	100	200	240	33.5	33.5	34	38.5	38.5	39.0
200	150	255	250	39	39	40.5	44.5	44.5	45.5
200	200	315	260	45.6	46	47.5	51.5	51.0	51.0
250	80	175	270	44	44	44	47.0	47.0	47.0
250	100	200	270	43.5	43.5	44	48.0	48.0	48.5
250	150	260	280	56.5	56.5	57.6	59.0	59.0	60.0
250	200	315	290	57	57	59	62.5	62.0	64.0
250	250	375	300	65	66	69	71.5	71.0	74.5
300	80	180	295	53	53	53	64.0	64.0	64.0
300	100	205	300	55	55	56	65.0	65.0	65.5
300	150	260	310	64	64	69	78.5	78.5	79.5
300	200	320	320	71	70	73	81.5	81.5	83.5
300	300	435	340	89	91	95	102	102	107
350	80	185	325	70.5	70.5	70.5	76.0	76.0	76.0
350	100	205	330	71.0	71.0	71.5	76.5	76.5	77.0
350	150	265	340	87.5	87.5	89.5	93.0	93.0	94.0
350	200	325	350	90.5	86	88	96.0	96.0	98.0
350	300	440	370	113	118	129	118	118	123
350	350	495	380	117	120	129	129	132	139
400	80	185	360	80.0	80.0	80	90.0	90.0	90.0
400	100	210	360	83	83	83.5	91.0	91.0	91.5
400	150	265	370	88	88	90	109	109	110
400	200	325	380	103	102	104	113	112	114
400	300	440	400	129	128	137	137	136	142
400	400	560	420	150	156	167	163	167	178
450	80	190	385	97.5	97.5	97.5	105	105	105
450	100	215	395	106	106	107	106	106	106
450	150	270	400	119	119	120	127	127	128
450	200	330	410	122	122	124	130	130	132
450	300	445	430	149	149	154	157	157	162
450	400	560	450	177	181	192	185	189	200
450	450	620	460	192	200	211	200	208	219
500	80	195	420	110	110	110	119	119	119
500	100	215	420	116	116	117	120	120	120
500	150	275	430	126	126	131	143	143	144
500	200	330	440	142	141	143	147	146	148
500	300	450	460	165	165	169	177	177	182
500	400	565	480	199	205	216	207	212	223
500	500	680	500	232	247	259	242	256	266
600	80	200	480	150	150	150	151	151	151
600	100	220	480	159	159	161	152	152	153
600	150	280	500	170	170	172	183	183	184
600	200	340	500	189	189	191	187	187	188
600	300	455	520	235	235	240	222	222	277
600	400	570	540	258	263	274	258	263	274
600	600	800	580	340	366	380	345	368	360

K Type

DN 80 to DN 600



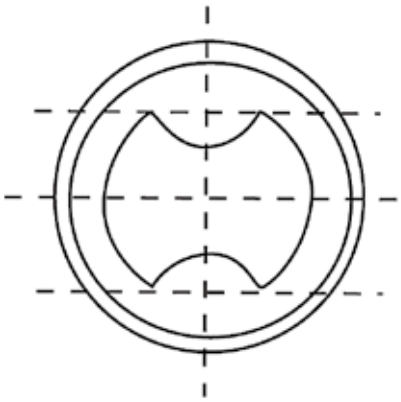
DN 700 to DN 2600



K=14

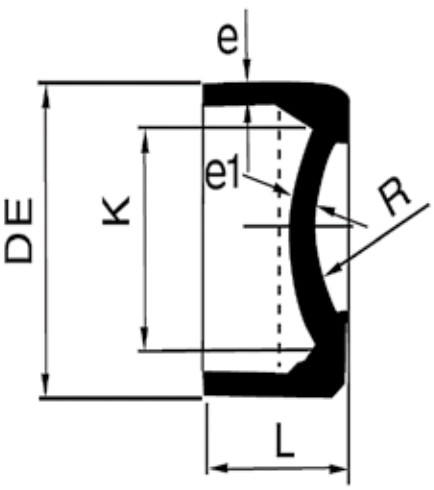
Nominal Diameter		L	H	Mass (kg)					
				T Type			K Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
700	100	230	510	240	240	241	243	243	244
700	150	285	520	241	242	242	246	246	247
700	200	345	525	242	242	244	250	249	251
700	400	575	555	320	325	336	329	334	345
700	600	810	585	421	445	460	422	445	457
700	700	925	600	460	475	506	476	488	521
800	100	235	570	304	304	305	295	295	295
800	150	290	580	305	308	306	298	298	299
800	200	350	585	306	306	308	302	301	303
800	400	580	615	398	403	414	396	401	412
800	600	815	645	579	605	620	579	603	614
800	800	1045	675	623	642	691	631	646	699
900	150	295	640	376	376	377	368	368	369
900	200	355	645	379	379	381	371	371	373
900	400	590	675	490	495	506	484	488	499
900	600	1170	705	748	774	789	745	769	760
900	800	1050	735	808	823	872	795	810	863
900	900	1170	750	814	838	899	822	841	907
1000	150	305	670	560	566	561	451	451	452
1000	200	360	705	462	462	464	455	455	457
1000	400	595	735	591	596	607	586	591	602
1000	600	1290	765	947	973	988	946	970	981
1000	800	1290	795	1006	1021	1070	994	1009	1062
1000	1000	1290	825	1044	1086	1164	1059	1094	1179
1200	200	375	825	836	838	840	618	618	620
1200	400	605	855	852	856	867	787	792	803
1200	600	840	885	1000	1027	1042	967	991	1003
1200	800	1070	915	1190	1210	1259	1162	1177	1250
1200	1000	1300	945	1406	1448	1526	1372	1406	1492
1200	1200	1535	975	1682	1736	1836	1617	1672	1781
1400	400	800	950	1341	1368	1379	1221	1226	1237
1400	600	1030	980	1478	1505	1520	1441	1464	1476
1400	800	1260	1010	1709	1728	1777	1677	1692	–
1400	1000	1495	1040	1955	1996	2074	1929	1964	–
1400	1200	1725	1070	–	–	–	2205	2260	–
1400	1400	1960	1100	–	–	–	2501	2557	–
1600	400	810	1060	–	–	–	1561	1565	1576
1600	600	1040	1090	1908	1936	1949	1831	1854	1866
1600	800	1275	1120	2192	2211	2261	2121	2136	–
1600	1000	1505	1150	2480	2523	2600	2416	2451	–
1600	1200	1740	1180	2799	2863	–	2743	2798	–
1600	1400	1970	1210	–	–	–	3073	3130	–
1600	1600	2200	1240	–	–	–	3461	3551	–
1800	600	1055	1200	2414	2440	2455	2302	2326	1337
1800	800	1285	1230	2748	2767	2817	2642	2657	–
1800	1000	1520	1260	3095	3137	3215	2998	3032	–
1800	1200	1750	1290	3460	3524	3624	3371	3426	–
1800	1400	1980	1320	–	–	–	3750	3807	–
1800	1600	2215	1350	–	–	–	4188	4277	–
1800	1800	2445	1380	–	–	–	4624	4735	–
2000	600	1065	1310	2988	3015	3030	2830	2853	2865
2000	800	1300	1340	–	–		3239	3254	–
2000	1000	1530	1370	3790	3832	3910	3648	3682	–
2000	1200	1760	1400	–	–		4079	4134	–
2000	1400	1995	1430	4645	4713	4865	4523	4580	–
2000	1600	2225	1460	–	–	–	5007	5097	–
2000	1800	2460	1490	–	–	–	5497	5609	–
2000	2000	2690	1520	–	–	–	6030	6168	–

Plugs



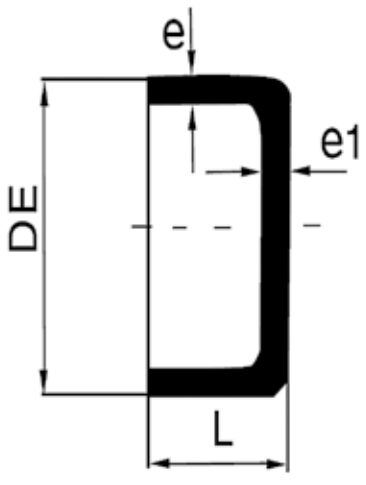
K=12

Nominal Diameter DN	T Type		K Type	
	L	Mass (kg)	L	Mass (kg)
80	200	3.8	92	5.1
100	200	5.1	93	6.7
150	225	9.5	104	10.9
200	250	14.8	105	15.5
250	250	21.5	106	21.5
300	275	33.5	127	31.0
350	275	45.5	128	40.4
400	275	56	129	53.0
450	275	69	130	63.0
500	275	82.5	131	75.5
600	300	119	132	116
700	300	175	143	166
800	300	230	144	250
900	325	314	145	333
1000	350	349	156	434
1200	400	602	160	671



Over DN300

DN 300以上

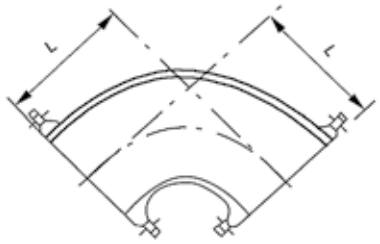


Up to and including DN300

DN 300以下

Double Flanged Bend

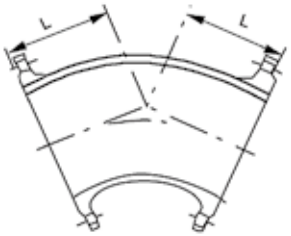
90°



K=12

Nominal Diameter DN	L	Mass (kg)		
		PN10	PN16	PN25
80	165	9.6	9.6	9.6
100	180	12.0	12.0	13.0
150	220	20	20	22
200	260	31.5	31.0	35.0
250	350	50.5	49.5	57.0
300	400	70.0	70	81
350	450	90	96.0	113
400	500	116	127	149
450	550	148	164	184
500	600	181	211	235
600	700	272	325	353
700	800	386	416	479
800	900	533	572	671
900	1000	698	745	866
1000	1100	907	990	1146
1200	1300	1452	1568	1767
1400	1350	1948	2068	2373
1600	1450	2663	2852	3206
1800	1500	3348	3580	4060

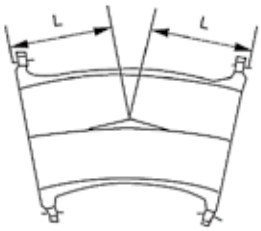
45°



K=12

Nominal Diameter DN	L	Mass (kg)		
		PN10	PN16	PN25
80	130	9.5	9.5	9.5
100	140	11.5	11.5	12.5
150	160	18.5	18.5	21.0
200	180	28.0	27	31
250	350	55	54	62.0
300	400	78	77	88
350	298	76	83	98.0
400	324	96	107	129
450	349	120	135	157
500	375	145	175	198
600	426	212	268	294
700	478	296	326	389
800	529	403	442	541
900	581	519	567	688
1000	630	668	751	907
1200	750	1080	1178	1377
1400	775	1388	1584	1829
1600	845	1915	2119	2473
1800	910	2465	2717	3197
2000	980	3149	3455	4161

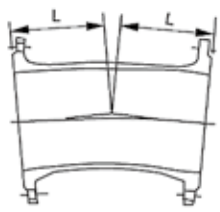
22.5°



K=12

Nominal Diameter DN	L	Mass (kg)		
		PN10	PN16	PN25
80	130	9.5	9.5	9.5
100	140	12	12	13
150	160	19.7	19.7	21.0
200	180	29	27.5	32.0
250	350	56.5	56	63.0
300	400	79	78.5	89.0
350	298	78.5	84	100
400	324	98.5	108	131
450	349	122	138	160
500	375	151	178	199
600	426	221	269	292
700	478	311	334	397
800	529	423	453	552
900	581	543	581	702
1000	632	700	769	925
1200	735	1088	1198	1397
1400	835	1551	1664	1969
1600	940	2190	2369	2723
1800	480	1640	1864	2344
2000	520	2081	2357	3063

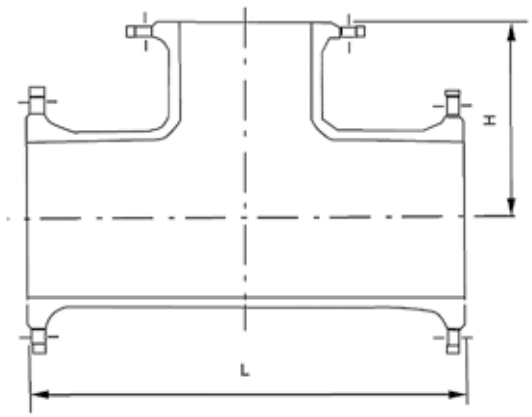
11.25°



K=12

Nominal Diameter DN	L	Mass (kg)		
		PN10	PN16	PN25
80	130	9.5	9.5	9.4
100	140	12	12	13
150	160	19.7	19.7	21.0
200	180	29	28	32.0
250	350	55	54	63.5
300	400	79.5	79	89.5
350	298	79.0	84.5	100
400	324	100	109	131
450	349	123	129	160
500	375	150	178	200
600	426	196	257	294
700	478	313	336	399
800	529	426	455	554
900	581	546	584	705
1000	632	704	773	929
1200	735	1094	1204	1403
1400	835	1560	1674	1975
1600	940	2203	2382	2736
1800	345	1342	1566	2046
2000	375	1694	1970	2176

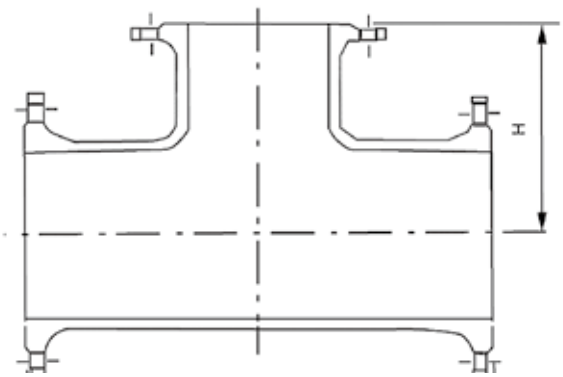
All Flanged Tee



K=14

Nominal Diameter		L	H	Mass (kg)		
DN	dn			PN10	PN16	PN25
80	80	330	165	15.8	15.8	15.8
100	80	360	175	18.4	18.4	19.6
100	100	360	180	19.5	19.5	21.0
150	80	440	205	29.0	29.0	31.0
150	100	440	210	30.0	30.0	32.5
150	150	440	220	32.5	32.5	36.5
200	80	520	235	42	41.5	46
200	100	520	240	43	42	47.5
200	150	520	250	46	45.5	51
200	200	520	260	49.5	49	56
250	100	700	275	68	67	75
250	150	700	300	68	67	74.8
250	200	700	325	76	75	85
250	250	700	350	82	81	93
300	100	800	300	94	93	105
300	150	800	325	97	96	109
300	200	800	350	102	101	114
300	300	800	400	116	115	131
350	100	850	325	116	122	139
350	150	850	325	118	125	143
350	200	850	325	121	128	146
350	300	850	425	138	147	170
350	350	850	425	142	151	176
400	100	900	350	143	154	177
400	150	900	350	148	157	181
400	200	900	350	148	159	184
400	300	900	450	167	176	204
400	400	900	450	174	191	225
450	100	950	375	177	193	216
450	150	950	375	180	196	220
450	200	950	375	183	199	224
450	300	950	475	199	215	244
450	400	950	475	210	230	264
450	450	950	475	216	240	275
500	100	1000	400	210	241	265
500	150	1000	400	215	244	268
500	200	1000	400	242	245	271
500	300	1000	500	235	263	292
500	400	1000	500	242	276	311
500	500	1000	500	252	297	332
600	150	1100	450	307	356	386
600	200	1100	450	305	358	388
600	300	1100	550	326	375	410
600	400	1100	550	329	387	427
600	600	1100	550	355	434	477

All Flanged Tee

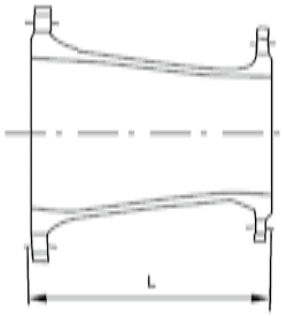


K=14

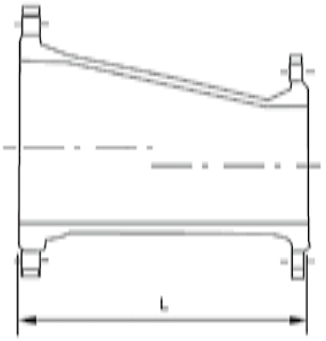
Nominal Diameter		L	H	Mass (kg)		
DN	dn			PN10	PN16	PN25
700	200	650	525	258	298	363
700	300	760	540	344	370	439
700	400	870	555	343	379	453
700	600	1200	585	468	519	596
700	700	1200	600	477	523	617
800	200	690	585	352	390	491
800	300	800	600	440	478	582
800	400	910	615	441	484	593
800	600	1350	645	613	678	790
800	800	1350	675	657	715	862
900	200	730	645	436	484	607
900	400	950	675	541	594	726
900	600	1500	705	787	862	996
900	800	1500	735	835	901	1071
900	900	1500	750	853	924	1106
1000	200	770	705	546	629	787
1000	400	990	735	668	755	922
1000	600	1650	765	1007	1116	1287
1000	800	1650	795	1072	1191	1396
1000	1000	1650	825	1105	1229	1463
1200	400	1005	855	1008	1131	1302
1200	600	1240	885	1101	1256	1470
1200	800	1470	915	1291	1492	1687
1200	1000	1700	945	1494	1714	1941
1200	1200	1935	975	1806	1970	2269
1400	600	1550	980	1555	1818	2138
1400	800	1760	1010	1886	2041	2395
1400	1000	2015	1040	2131	2309	2692
1400	1200	2245	1070	2262	2431	2836
1400	1400	2475	1100	2545	2715	3173
1600	600	1600	1090	2167	2398	2767
1600	800	1835	1120	2452	2675	3079
1600	1000	2065	1150	2740	2986	3418
1600	1200	2300	1180	3058	3327	3781
1600	1400	2530	1210	3208	3444	3950
1600	1600	2760	1240	3586	3854	4385
1800	600	1655	1200	2694	2972	3467
1800	800	1885	1230	3023	3299	3828
1800	1000	2120	1260	3375	3699	4227
1800	1200	2350	1290	3740	4056	4636
1800	1400	2580	1320	3910	4190	4822
1800	1600	2815	1350	4328	4641	5298
1800	1800	3045	1380	4750	5086	5806
2000	600	1705	1310	3309	3642	4362
2000	800	1720	1340	3505	3796	4551
2000	1000	1940	1370	4112	4459	5243
2000	1200	2160	1400	4314	4644	5450
2000	1400	2380	1430	4966	5340	6198
2000	1600	2600	1460	5202	5567	6450
2000	1800	2820	1490	5668	6055	7001
2000	2000	3040	1520	6185	6599	7658

Double Flanged Taper

Concentric Type



Flat Type



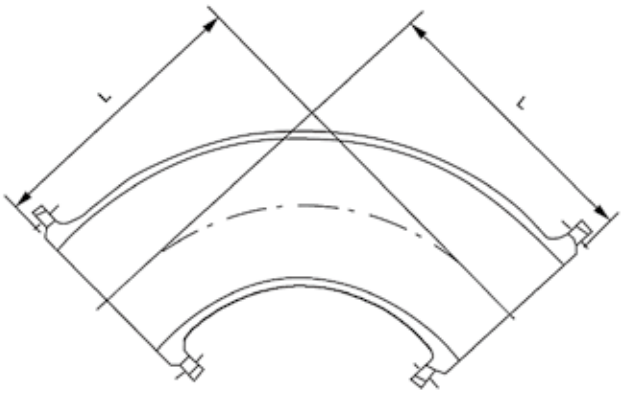
K=12

Nominal Diameter		Length	Mass (kg)		
DN	dn	L	PN10	PN16	PN25
100	80	200	9.5	9.5	9.8
150	80	400	15.2	15.2	16.2
150	100	300	15.5	15.5	17
200	100	600	29.5	28	30.8
200	150	300	22	21.5	25.0
250	150	600	43	42.5	46.7
250	200	300	30	29.5	35.5
300	150	600	56	55	62
300	200	600	58.5	57	65
300	250	300	40.5	39.5	49.5
350	200	600	60.5	63.5	74.0
350	250	600	67	70	82.5
350	300	300	49.5	52	66.0
400	200	600	74.5	73	86.5
400	250	600	77.0	83	98.5
400	300	600	82	90	107
400	350	300	58	67.0	86.0
450	250	600	82	87	103
450	300	600	87	92	110
450	350	600	96	106	125
450	400	300	81	85	101
500	300	600	126	134	152
500	350	600	117	125	150
500	400	600	110	130	153
500	450	300	83.0	104	127
600	350	700	167	188	226
600	400	600	164	191	229
600	450	600	167	193	221
600	500	600	195	210	216
700	400	800	196	212	255
700	450	700	197	217	259
700	500	600	200	256	268
700	600	600	195	236	282
800	450	900	263	286	347
800	500	800	256	284	346
800	600	600	260	298	363
800	700	600	263	290	371

K=12

Nominal Diameter		Length	Mass (kg)		
DN	dn	L	PN10	PN16	PN25
900	500	1000	338	370	443
900	600	800	318	360	436
900	700	600	321	352	444
900	800	600	308	352	462
1000	600	1000	422	490	583
1000	700	800	396	442	551
1000	800	600	399	448	575
1000	900	600	376	438	577
1200	700	1260	711	777	908
1200	800	1070	688	758	908
1200	900	880	652	726	887
1200	1000	790	586	692	879
1200	1100	600	566	655	850
1400	800	1590	1034	1105	1308
1400	900	1405	998	1074	1288
1400	1000	1220	961	1052	1236
1400	1100	1035	914	1005	1253
1400	1200	850	817	947	1199
1600	1000	1650	1424	1547	1802
1600	1100	1460	1377	1502	1774
1600	1200	1280	1324	1468	1745
1600	1400	910	1103	1273	1602
1600	1500	725	1073	1250	1594
1800	1100	1895	1910	2057	2392
1800	1200	1710	1858	2024	2363
1800	1400	1340	1701	1870	2263
1800	1500	1155	1610	1810	2216
1800	1600	970	1436	1664	2081
2000	1200	2140	2512	2705	3068
2000	1400	1770	2358	2553	3059
2000	1500	1585	2268	2494	3014
2000	1600	1400	2176	2404	2934
2000	1800	1030	1800	2079	2671

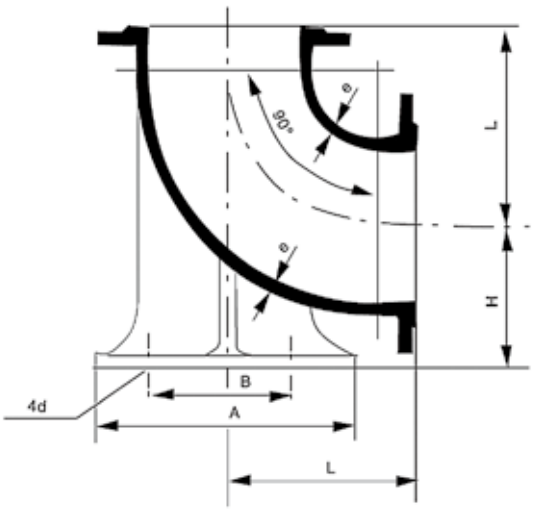
Double Flanged 90° Long Radius Bend



K=12

Nominal Diameter DN	Length	Mass (kg)		
	L	PN10	PN16	PN25
80	380	14.5	14.5	14.5
100	400	18.0	18.0	19.0
150	450	30.5	30.5	32.5
200	500	46.5	46.0	50.0
250	550	67.0	66.0	73.5
300	600	91.0	90.5	101
350	650	117	122	138
400	700	149	158	180
450	750	184	200	221
500	800	227	254	275
600	900	332	379	403
700	1000	466	489	552
800	1100	632	661	759
900	1200	816	854	975
1000	1300	1048	1117	1272
1200	1500	1627	1737	1936

Double Flanged 90° Duckfoot Bend



K=12

Nominal Diameter DN	L	H	A	B	e	Mass (kg)		
						PN10	PN16	PN25
80	165	110	180	120	19	14.1	14.1	14.8
100	180	125	200	130	23	17.8	17.8	19.2
150	220	160	250	165	28	30	30	32
200	250	190	300	215	28	46.5	46	52.5
250	350	225	350	250	31	75	75	82
300	400	255	400	300	31	106	105	116
350	450	290	450	350	34	139	145	162
400	500	320	500	390	37	178	189	212
450	550	350	550	440	37	245	261	283
500	600	385	600	490	37	283	313	337
600	700	450	700	580	40	428	481	509
700	800	515	800	680	43	620	620	683
800	900	580	900	770	49	901	901	1000
900	1000	645	1000	870	49	1252	1290	1411
1000	1100	710	1100	960	56	1629	1698	1854
1200	1300	840	1300	1160	56	2599	2709	2908

Blind Flange

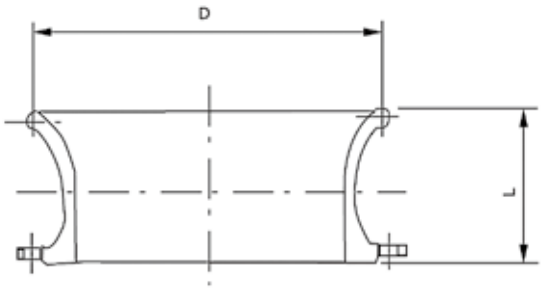
DN 80 to DN 300

DN 350 to DN 2000

K=12

Nominal Diameter DN	Mass (kg)		
	PN10	PN16	PN25
80	3.9	3.9	3.9
100	4.8	4.8	5.1
150	8.1	8.1	8.8
200	11.6	11.4	13.3
250	16.9	16.6	21.0
300	24.0	23.5	30.0
350	32.5	37.0	46.5
400	40.5	48.5	62.5
450	50.0	63.5	80.5
500	62.0	83.0	100
600	94.0	130	154
700	136	169	–
800	189	235	–
900	244	307	–
1000	309	413	–
1200	504	662	–
1400	739	993	–
1600	1239	1409	–
1800	1240	1858	–
2000	1630	2407	–

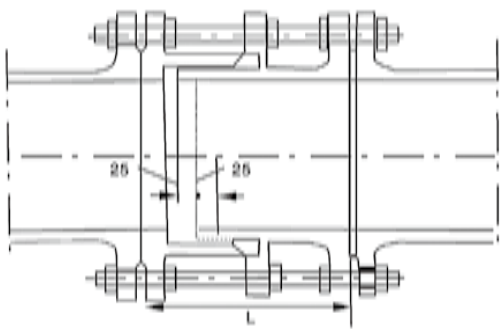
Flange Bellmouth



K=12

Nominal Diameter DN	D	L	Mass (kg)		
			PN10	PN16	PN25
80	160	135	5.2	5.2	5.2
100	185	140	6.2	6.2	6.7
150	245	155	10.1	10.1	11.1
200	310	170	15.0	14.8	16.8
250	370	190	21.5	21	25
300	435	210	29.8	29	35
350	495	225	36.1	39	47.5
400	560	245	45.0	51	62.2
450	620	260	55.0	63.0	73.0
500	685	280	67.0	82.5	94.2
600	810	300	96.5	122	137
700	945	340	136	154	186
800	1055	380	184	203	252
900	1165	420	240	263	324
1000	1290	440	298	339	417
1200	1515	490	457	512	612
1400	1725	515	646	702	854
1600	1725	540	906	995	1172
1800	1945	730	1185	1297	1537
2000	2360	800	1530	1668	2021

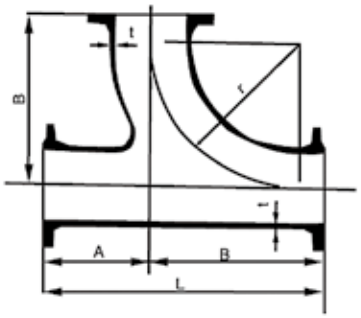
Dismantling Adaptor



K=12

Nominal Diameter DN	Mass(kg)	
	PN	
	10	16
100	18	18
150	28	28
200	39	38.5
250	52	51.5
300	68	67.5
350	80	85
400	97	106
450	124	132
500	154	162
600	178	225.5
700	246	270
800	314	344
900	376	414
1000	496	565
1200	670	780

All Flanged Radial Tees

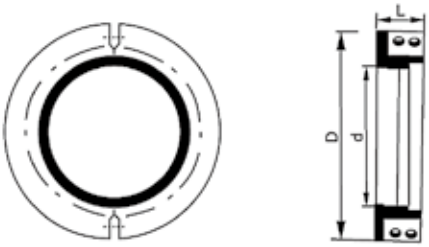


K=14

Nominal Diameter		L	A	B	r	Mass (kg) PN16
DN	dn					
80	80	545	165	380	330	23.0
100	100	580	180	400	340	30
150	150	670	220	450	385	52
200	200	760	260	500	430	80
250	250	900	350	550	475	121
300	300	1000	400	600	515	163
350	350	1100	450	650	560	222
400	400	1200	500	700	605	299
450	450	1300	550	750	650	394
500	500	1400	600	800	690	489
600	600	1600	700	900	780	739

Split Puddle Flanges of Ductile Iron

(Designed for use on spun ductile iron pipes only)



K=12

Nominal Diameter	D	L	d	Mass (kg)
80	260	110	100	11.5
100	305	110	120	14.5
150	390	130	172	23.0
200	430	130	224	28.0
250	490	130	276	37.0
300	555	130	329	46.0
350	610	130	381	50.0
400	660	150	432	62.0
450	725	150	483	73.0
500	790	150	535	85.0
600	900	165	638	120.0
700	1000	165	746	144.0
800	1100	185	850	189.0
900	1200	185	953	221.0
1000	1340	200	1056	309.0
1100	1440	200	1160	345.0
1200	1570	225	1263	441.0
1400	1780	225	1470	540.0
1600	1996	225	1686	608.0

Split puddle flanges are designed for use on the bodies.

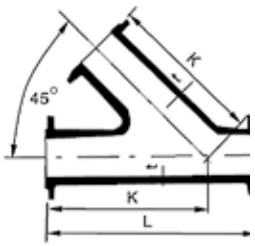
If pipes are produced by the centrlfugal casting method, i. e., spigot and socket spun pipes or flanged spun pipes, they are not suitable for use on the bodies of sand cast items.

Split puddle flanges are used to provide a water bar where a pipe passes through a wall. They should not be used to provide an anchorage for the pipe.

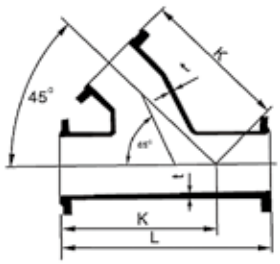
The flange is fitted to the pipe using sheeting of lead, asbestos fibre, rubber, roofing felt or similar to provide a packing between the flange and the pipe body.

After the flange is bolted around the pipe, the circular chamber formed on one side of the flange is caulked with lead and yarn. Lead wool or lead substitute to effect the watertight seal. The caulked side of the flange should be towards the waterlogged side of the structure.

All Flanged 45° Angle Branches



Type N

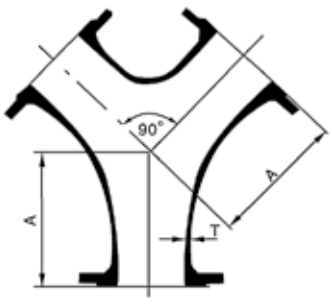


Type M

K=14

Nominal Diameter		Type	L	K	Mass (kg) PN16
DN	dn				
80	80	N	500	375	21.0
100	100	N	540	405	27.0
150	150	N	640	480	46.4
200	200	N	735	560	71
250	250	N	830	640	105
300	300	N	930	715	147
350	350	N	–	–	168
400	400	N	–	–	315
450	450	N	–	–	338
500	500	N	–	–	425
600	600	N	–	–	624
700	700	–	–	–	876
800	800	–	–	–	1200

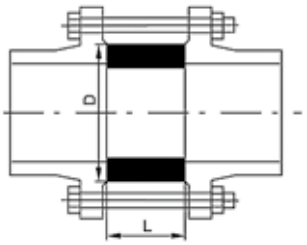
All Flanged "Y" Tees



K=14

Nominal Diameter	T	A	Mass (kg) PN16
80	8.1	165	15.6
100	8.4	180	19.3
150	9.1	220	32.5
200	9.8	260	49
250	10.5	350	81
300	11.2	400	115
350	11.9	450	166
400	12.6	500	235
450	13.3	550	280.0
500	14.0	600	378
600	15.4	700	620
700	16.8	800	810

Pipe Blocks

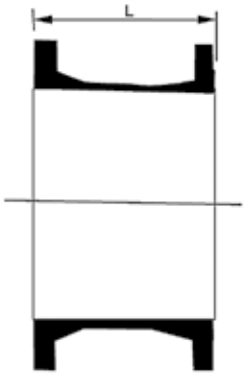


K=12

Nominal Diameter DN	Actual int dia.	L		D			Mass (kg/m)		
		Min	Max	PN10	PN16	PN25	PN10	PN16	PN25
80	76	15	105	133	133	133	66.0	66.0	66.0
100	100	15	120	153	153	159	74.2	74.2	84.6
150	150	15	130	209	209	214	117.3	117.3	129.0
200	200	15	140	264	264	274	164.4	164.4	194.2
250	250	20	155	319	319	331	217.4	217.4	260.6
300	300	20	170	367	367	389	247.4	247.4	339.5
350	350	20	180	427	432	446	331.3	355.1	423.1
400	400	20	195	477	484	503	373.9	411.2	515.0
450	450	20	205	527	544	553	416.5	517.4	572.0
500	500	20	220	582	606	613	491.3	649.1	696.4
600	600	30	245	682	721	718	582.1	885.1	861.2
700	704	30	230	794	794	820	746.0	746.0	979.0
800	802	30	230	901	901	928	934.0	934.0	1207.0
900	897	30	250	1001	1001	1028	1093.0	1093.0	1396.0
1000	1003	35	270	1112	1112	1140	1276.0	1276.0	1626.0
1100	1100	35	290	1218	1218	1240	1515.0	1515.0	1814.0
1200	1203	35	310	1328	1328	1350	1752.0	1752.0	2078.0
1400	1404	40	375	1530	1530	–	2047.0	2047.0	–
1600	1604	40	375	1750	1750	–	2711.0	2711.0	–

Double Flanged Pipes

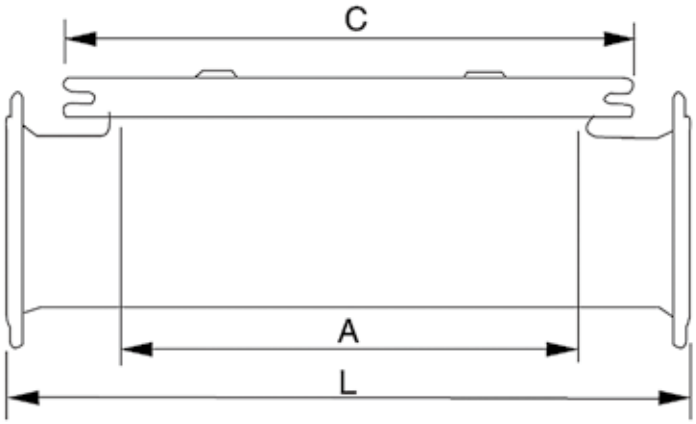
Inch size end with BS 10 Table E flange
Metric size end with PN16 flange to BS EN545. Other flanges are available on request.

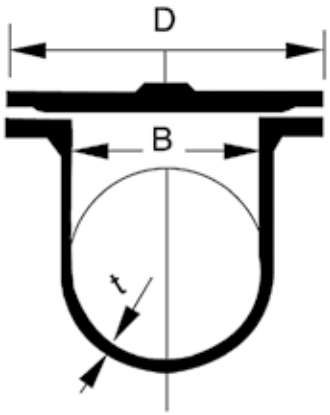


K=12

Nominal Diameter		L	Mass (kg/m)
Inch size end	Metric size end		
3	80	150	6.8
3	80	200	7.5
3	80	250	8.2
4	100	250	10.8
5	150	250	15.4
6	150	250	16.3
7	200	250	21.5
8	200	250	23.0
9	250	250	30.0
10	250	250	34.5
12	300	250	44.0
14	350	250	59.0
15	400	250	65.0
16	400	250	71.0
18	450	250	89.5
20	500	250	115.0
21	500	350	133.0
24	600	300	178.0
27	700	500	261.8
30	700	500	289.0
30	800	500	317.0
33	800	500	356.0
36	900	500	420.0
42	1000	500	514.0
42	1100	500	575.0
48	1200	500	718.0

Double Flanged Hatchboxes



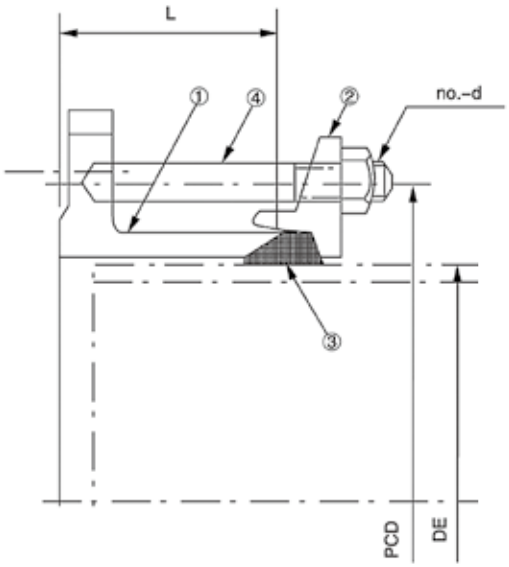


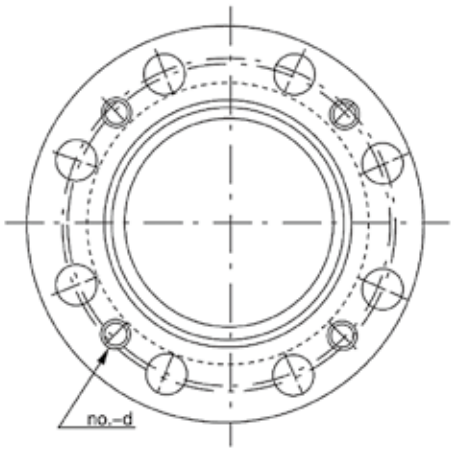
Nominal Diameter DN	t	L	Clear opening		Cover		Number and size of studs	Number and size of studs	Mass (kg) PN16
			A	B	C	D			
80	8.1	800	400	80	520	200	–	10 × M16	65.0
100	8.4	800	400	100	535	235	–	10 × M20	70.0
150	9.1	800	400	150	550	300	4 × M24	10 × M24	85.0
200	9.8	800	400	200	560	360	4 × M24	12 × M24	98.5
250	10.5	950	500	250	675	425	4 × M27	14 × M27	140.0
300	11.2	950	500	300	685	485	6 × M27	18 × M27	188.0
350	11.9	950	500	350	705	555	6 × M30	18 × M30	252.0
400	12.6	1100	600	400	820	620	6 × M33	18 × M33	310.0
450	13.3	1100	600	450	820	670	6 × M33	20 × M33	367.0
500	14.0	1200	600	500	830	730	4 × M33	22 × M33	422.0
600	15.4	1200	600	600	845	845	4 × M36	22 × M36	474.0

Maximum hydraulic working pressure rating 10 bar.
Recommended maximum site hydraulic test pressure 16 bar.
Hatchboxes in sizes less than 250 mm have flat covers as shown.
Sizes above 300mm and larger have ribbed covers.

Flange Adaptor

NO.	DESCRIPTION	MATERIAL
①	FLANGE ADAPTOR	DUCTILE IRON
②	GLAND	DUCTILE IRON
③	GASKET	RUBBER
④	BLOT & NUT	MILD STEEL

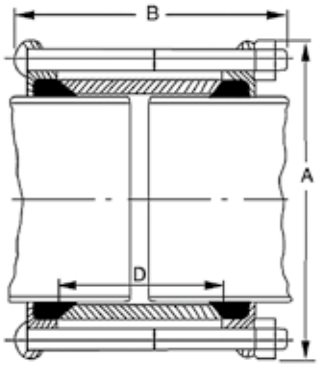




K = 12

Nominal Diameter DN	PIPE O.D. DE	L	PCD	Stud Bolt		Mass (kg)	
				SIZE	no	PN10	PN16
80	98	73	166	M12	4	10	10
100	118	76	187	M12	4	10.6	10.6
150	170	76	240	M12	4	16.8	16.8
200	222	76	293	M12	4	23	22.5
250	274	76	346	M12	6	30	29.5
300	326	90	410	M12	6	40	39.5
350	378	90	469	M16	8	46	49
400	429	110	521	M16	8	58	62.5
450	480	110	573	M16	10	68	76
500	532	110	626	M16	10	80	93
600	635	115	730	M16	10	104	127.5
700	738	115	837	M16	12	142	153.5
800	842	115	943	M16	12	180	195
900	945	115	1047	M16	14	216	235
1000	1048	115	1159	M16	14	278.5	313
1200	1255	130	1368	M16	16	413.5	468.5
1400	1462	130	1582	M20	18	470	580
1600	1668	190	1790	M20	20	–	–
1800	1875	190	1999	M20	22	–	–
2000	2082	190	2208	M20	24	–	–

Flexible Coupling

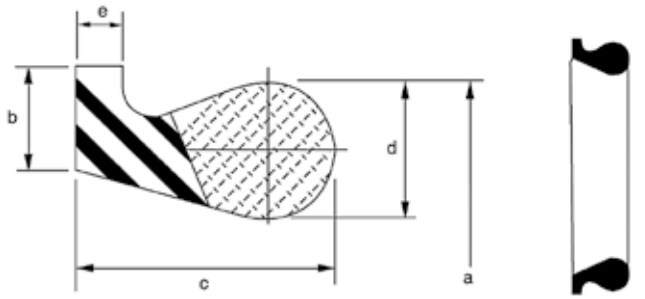


K=12

Nominal Diameter DN	Pipe O.D.	A	B	D	Hole No.	Bolts	Mass (kg)
80	98	187	166	102	4	M12 × 165	8
100	118	209	166	102	4	M12 × 165	10
150	170	264	173	102	4	M12 × 175	15
200	222	319	173	1102	6	M12 × 175	23
250	274	373	173	102	6	M12 × 175	27
300	326	430	173	102	6	M12 × 175	37
350	378	492	252	152	8	M16 × 240	45
400	429	547	252	152	8	M16 × 240	53
450	480	599	252	152	10	M16 × 240	59
500	532	653	252	152	10	M16 × 240	67
600	635	758	252	152	10	M16 × 240	110
700	738	867	252	152	12	M16 × 240	159
800	842	973	252	152	12	M16 × 240	181
900	945	1083	278	178	14	M16 × 275	250
1000	1048	1187	278	178	14	M16 × 275	315
1100	1152	1306	290	178	16	M16 × 285	–
1200	1255	1410	290	178	16	M16 × 285	380

Accessories

Gasket



DN	a	b	c	d	e
80	126	10.0	26	15.0	6.5
100	146	10.0	26	16.0	6.5
150	200	10.0	26	16.0	6.5
200	256	11.0	30	18.0	6.5
250	310	11.0	32	18.0	6.5
300	366	12.0	34	19.5	7.0
350	420	12.0	34	19.5	8.0
400	475	13.0	36	21.0	8.0
450	528	13.0	38	21.5	8.0
500	583	14.5	44	24.0	9.0
600	692	14.5	47	26.0	10.0

PE Sleeving

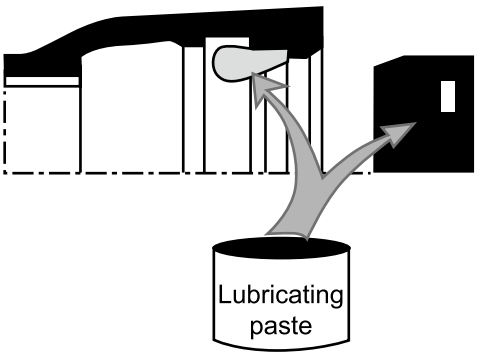
Polyethylene sleeving is a tubular film of low density polyethylene slipped over and snugly to a pipe at the time of laying. It is used to supplement the basic pipe coating (metallic zinc + bituminous paint) in certain cases of highly corrosive soils, or in the presence of stray currents.

Standards: EN 545, ISO8180

Lubricating Paste

The lubricating paste:

- reduces jointing force,
- is easily applied on site,
- is water-resistant,
- can be used over a wide temperature range (−20℃ to +60℃),
- Translucent and odourless, it:
  * does not affect drinking water quality,
  * inhibits bacterial growth.



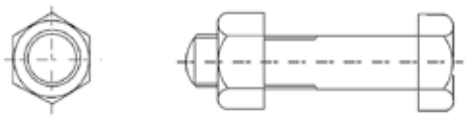
Bolts and Nuts

Ductile Iron T-Head Bolts and Nuts

Ductile Iron T-Head Bolts and Nuts

Nominal Diameter DN	Size and Length	No.of Bolts
80	M16 × 85	4
100	M20 × 90	4
150	M20 × 90	6
200	M20 × 90	6
250	M20 × 90	8
300	M20 × 100	8
350	M20 × 100	10
400	M20 × 110	12
450	M20 × 110	12
500	M20 × 110	14
600	M20 × 120	14
700	M24 × 120	16
800	M24 × 120	20
900	M30 × 130	20
1000	M30 × 130	20
1200	M30 × 140	28
1400	M30 × 150	28
1600	M30 × 150	30
1800	M30 × 150	34
2000	M30 × 150	36

Mild Steel Bolts and Nuts



Mild Steel Bolts and Nuts

Nominal Diameter	PN10 Flange		PN16 Flange		PN25 Flange	
	Size and Length	NO.of Bolts	Size and Length	NO.of Bolts	Size and Length	NO.of Bolts
80	M16 × 65	8	M16 × 65	8	M16 × 65	8
100	M16 × 65	8	M16 × 65	8	M20 × 70	8
150	M20 × 70	8	M20 × 70	8	M24 × 80	8
200	M20 × 70	8	M20 × 70	12	M24 × 80	12
250	M20 × 80	12	M20 × 85	12	M27 × 90	12
300	M20 × 80	12	M24 × 85	12	M27 × 90	16
350	M20 × 80	16	M24 × 85	16	M30 × 110	16
400	M24 × 85	16	M27 × 100	16	M33 × 120	16
450	M24 × 85	20	M27 × 100	20	M33 × 120	20
500	M24 × 85	20	M30 × 110	20	M33 × 120	20
600	M27 × 100	20	M33 × 120	20	M36 × 140	20
700	M27 × 100	24	M33 × 120	24	–	–
800	M30 × 110	24	M36 × 140	24	–	–
900	M30 × 120	28	M36 × 140	28	–	–
1000	M33 × 130	28	M39 × 150	28	–	–
1200	M36 × 140	32	M45 × 170	32	–	–
1400	M39 × 150	36	M45 × 180	36	–	–
1600	M45 × 160	40	M52 × 190	40	–	–
1800	M45 × 160	44	M52 × 200	44	–	–
2000	M45 × 170	48	M56 × 230	48	–	–