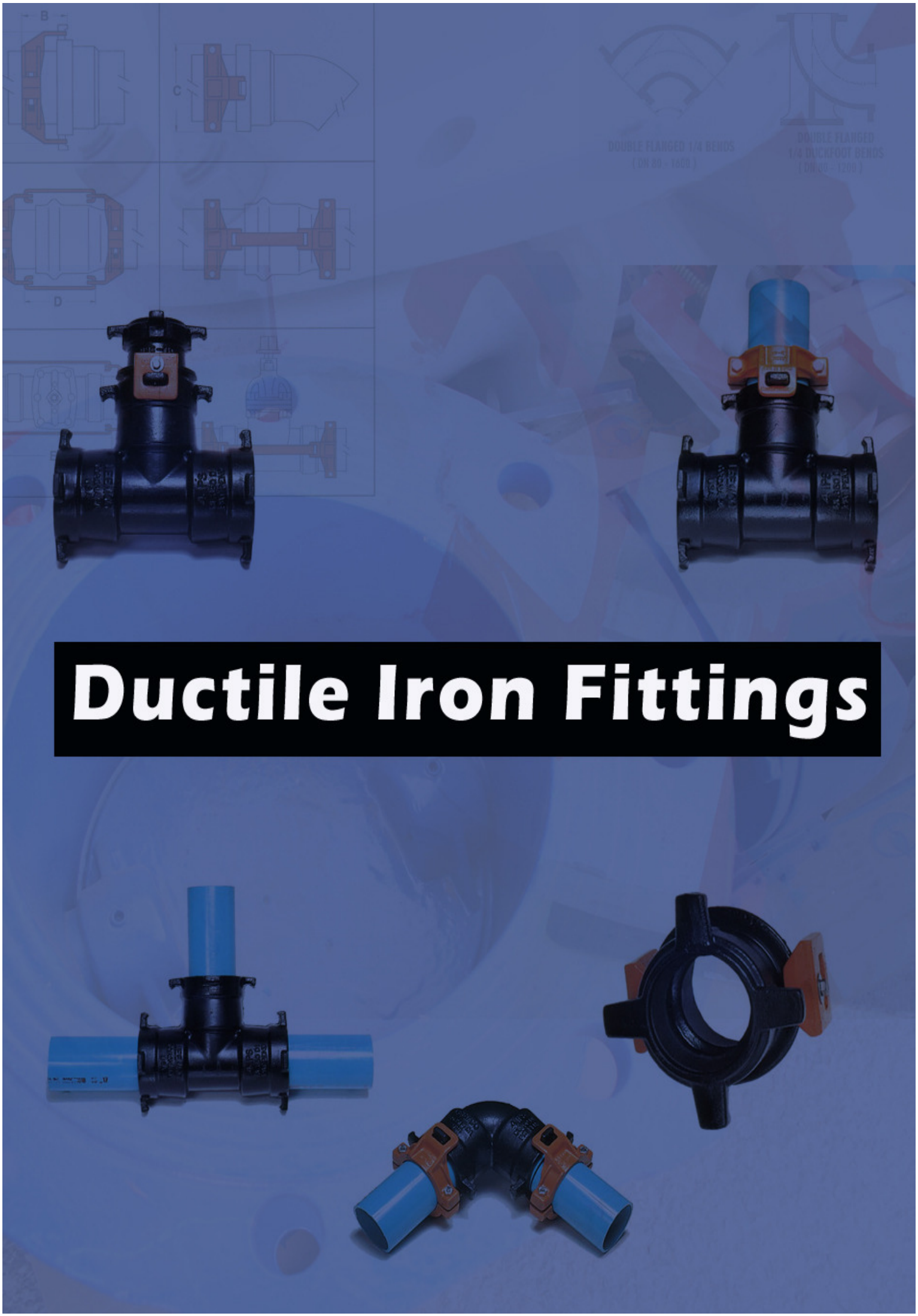
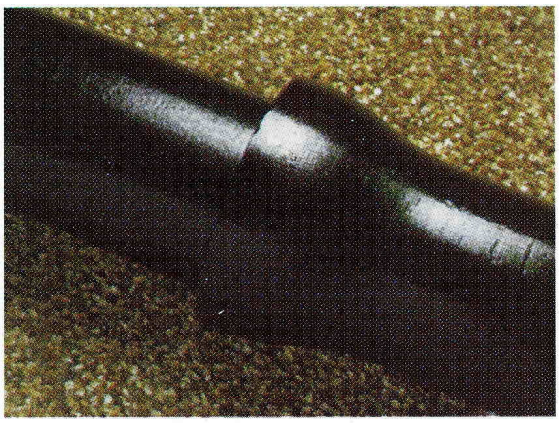
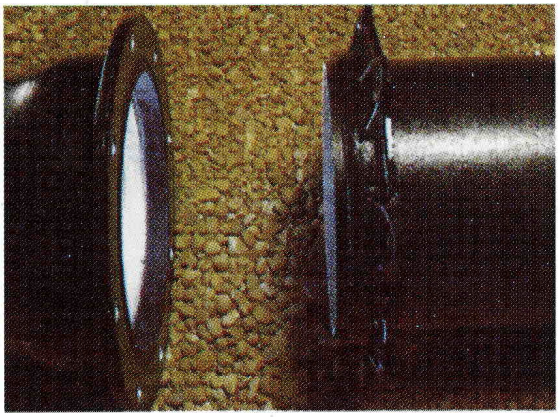
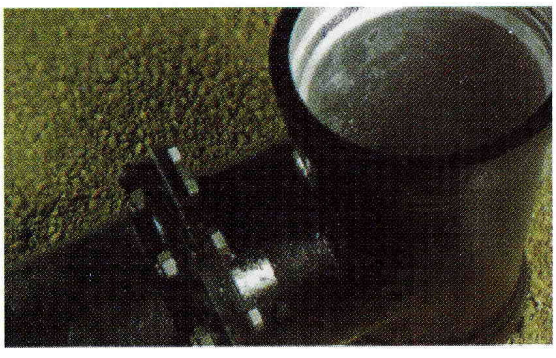


Ductile Iron Fittings







شركة رضايات التجارية

تهدف رضايات إلى تقديم منتجات ذات جودة وخدمات متميزة من خلال خبراتها العالمية في مجال التجارة والأعمال.

يقع المركز الرئيسي للقسم التجاري بمدينة الخبر بالإضافة إلى مكاتبه الفرعية في كل من جدة والرياض, ويضم القسم في مجال المبيعات فريق من المهندسين متعددي الجنسيات المتخصصين في الهندسة المدنية الميكانيكية والكهربائية والكيماوية والرياضيات يدعمهم فروع دولية للشركة في كل من الولايات المتحدة الأمريكية والمملكة المتحدة ودولة الكويت ودولة الإمارات العربية المتحدة وهونج كونج والصين ، وتقوم شركة رضايات بنشاط تجاري مكثف لتلبية متطلبات عملائها في مختلف قطاعات الإقتصاد بالمملكة العربية السعودية.

ويقدم القسم التجاري في رضايات. من خلال وكالاته التجارية لمجموعة من الشركات الصناعية العالمية ذات السمعة العريقة. خدمات توريد وتأمين يعتمد عليها لمجموعة متنوعة من المعدات في مجالات حقول النفط ، المعدات البحرية ، معدات اختبار الإنتاج ، منع التآكل ، الخطوط السلكية ، هندسة طين الحفر ، فحص الأنابيب ، التثبيت بالإسمنت ، الحفر الإنبوبي ، شبكات الأنابيب التقليدية ، خدمات التحميض والتكسير والنيتروجين ، معدات منع التلوث والمعدات الميكانيكية والكهربائية والمعمارية والمدنية وتكنولوجيا المياه ، مع الإحتفاظ بمخزون من مواد مختارة في مستودعات بكل من المنطقة الشرقية والمنطقة الغربية من المملكة.

REZAYAT TRADING COMPANY

Rezayat's objective is to provide quality products and services of the highest standard from its network of world-wide offices, through principals who are market leaders in their sector.

Rezayat's Commercial Division is based in Al-Khobar with branch office in Riyadh and Jeddah. The offices are staffed by an experienced multi-national sales team of civil, electrical, mechanical and chemical engineers, supported by branch offices in the USA, UK, Kuwait, UAE and the Far East. Rezayat undertakes the vital role of representing principals in trading activities to meet the requirements of our clients in various sectors of the Saudi Arabian market place.

Rezayat's Commercial Division possesses wide and varied experience in the representation of reputable manufacturers and service providers and can offer a complete procurement and supply service for a wide range of oilfield equipment and materials including marine protection testing, corrosion protection, wire line and completion, mud engineering, pipe inspection, cementing, coil tubing drilling, conventional coil tubing, acid sing, fracturing, nitrogen services, pollution control, mechanical, electrical, architectural, civil and water technology products.

Stocks of selected materials are maintained in facilities in the Eastern and Western Provinces of the Kingdom.

DUCTILE IRON PIPE FITTINGS

Ductile Iron has proven itself to be the most suitable material pipelines. Reliability in service, durability, and its ability to withstand high pressures and impact loads are some of the many advantages ductile iron obtains.

Fittings are produced according to ISO 2531 Standards. Our production in fittings ranges in size from 8mm to 1800mm. we produce all types of fittings from standard to non-standard types according to your needs.

Standard fittings include FLANGED AND SOCKET tees, bends, duck foot bend, collars, tapers, bell mouth, dismantling pieces. We also produce puddle flanges, loose flanges and drilled flanges PN 10, 16, 25, 40.

In addition we have the privilege of being able to quickly manufacture non-standard fittings with non-standard dimensions. Our potential to offer this service to our clients so as to ensure that the assembly works in the construction sites are not delayed.
We take into consideration contractors face dilemmas in the sites, where non-standard fittings are needed as fast as possible.

We also offer our clients pipes with welded flanges. Our welding division is highly qualified where our welders and our welding technique has been certified and approved by an internationally approved body of inspection after a series of strict and tough qualifying measures have been taken. The welding of flanges to centrifugally cast pipes offers a speedy and reliable delivery of any desired size of flanged pipes to clients.

After casting, fittings are machined if they are of flanged type in our own workshop, which contains some of the largest equipment to accommodate the large size fittings that we offer our clients . The fittings then pass a hydrostatic test to ensure that no leakage will ever occur in sites. A testing and quality certificate is attached to all the fittings leaving our premises. We also welcome clients to invite any approved international body of certification to do their own tests and provide their own certificate. Clients most often do not require such certificate and they are well satisfied with our own quality control.

Cement Mortar Linings

We apply cement mortar linings to protect the internal surface of DIP fittings from corrosion. The lining is applied in accordance with the ISO 8179 standards.
The cement mortar lining consists of Portland cement or any other cement that has high resistance to sulfur, or high alumina cement according to the type of water transported.

In order to make sure the cement is in good shape, it is tested 28 days after it is mixed the cement lining compressive strength should not be less than 35 N/mm at by that time.

The cement mortar lining shall be smooth with a minimum surface roughness to minimize the head loss encountered by friction.

For more information on the standard thickness of the different fittings sizes please check the following table.

Thickness of linings

Nominal size	Thickness	Min. Arithmetic Mean Value	Max. Crack Width
100 to 300 mm	3.0 mm	2.5 mm	0.8-1.0 mm
350 to 600 mm	5.0 mm	4.5 mm	1.2 mm
700 to 1200 mm	6.0 mm	5.5 mm	1.5 mm
1400 and above	8.0 mm	7.5 mm	1.8 mm

Table 1.1

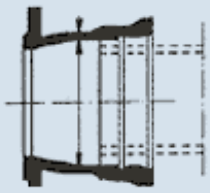
COATING

We provides coating of the fittings supplied using metallic zinc as a protective layer, then a bituminous paint follows. The thickness of both the metallic zinc and the bitumen paint usually depends on the type of the soil aggressiveness in which fittings will be mounted. Usually we apply 70 microns of metallic zinc on the fitting followed by 70 – 100 microns of bitumen.

This thickness is according to the ISO 4179 standards, and it takes care of non-aggressive to moderately aggressive soils, however in the case of aggressive to very aggressive soils, a thicker layer of both zinc and bitumen is applied.

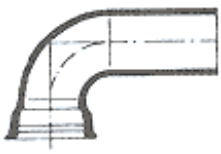
We also provide some of our clients with Epoxy painting upon their request. We do not however provide any other type of extra coating such as polyethylene wrapping or tape wrapping.

FITTINGS

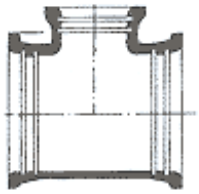


FLANGED SOCKETS
(DN 80 - 1600)

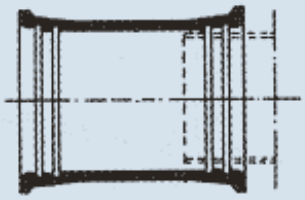
DOUBLE SOCKET 1/4 BENDS
(1/32, 1/16, 1/8, 1/4)
(DN 80 - 1600)



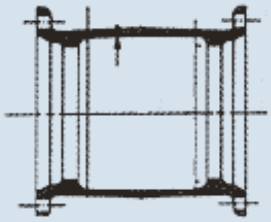
SINGLE SOCKET BENDS
(1/32, 1/16, 1/8, 1/4)
(DN 80 - 300)



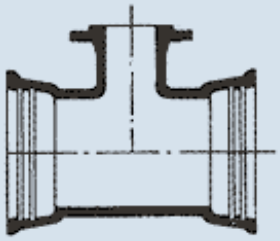
ALL SOCKET TEES
(DN 80 - 800)



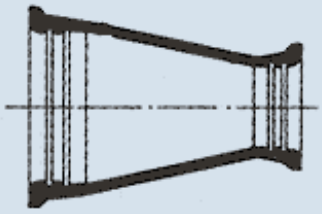
COLLARS "S" TYPE
(DN 80 - 1600)



COLLARS "K" TYPE
(DN 80 - 1600)

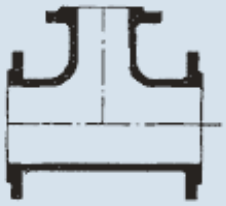


DOUBLE SOCKET TEES WITH
FLANGED BRANCH
(DN 80 - 1600)

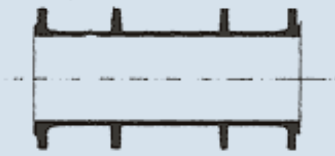


DOUBLE SOCKET TAPERS
(DN 80 - 1600)

ALL FLANGED TEES
(DN 80 - 1600)

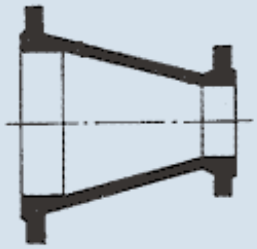


ALL FLANGED TEES (SHORT)
(DN 80 - 600)

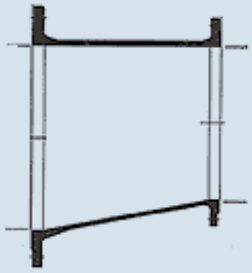


ANCHORING PIPES
(DN 80 - 1600 , L=1000, 1500 mm)

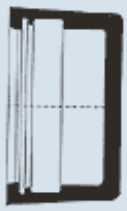
DOUBLE FLANGED SHORT PIPES
(DN 80 - 1000 , L=250, 500 mm)



DOUBLE FLANGED TAPERS
(DN 80 - 1600)



DOUBLE FLANGED
FLAT TAPERS
(DN 80 -1000)



PLUG
(DN 80 - 1600)

BLANK FLANGES
(DN 80 - 1600)

FLANGED BELL MOUTHS
(DN 80 - 1600)

CAP
(DN 80 - 600)

DOUBLE FLANGED 1/4 BENDS
(DN 80 - 1600)

DOUBLE FLANGED
1/4 DUCKFOOT BENDS
(DN 80 - 1200)

FLANGED SPIGOTS
(DN 80 - DN 1600)

REDUCING FLANGES
(DN 200 - DN 1000)

TECHNICAL SPECIFICATIONS

Technical specifications of the SMS fittings are commonly based on the International Standard ISO 2531 , or its extensions. Those not specified in ISO 2531 are in conformity with British Standard BS 4772 or German Standard DIN 28604-48. The product range also covers some special fittings and the joint accessories.

MANUFACTURING METHOD

Fittings and ductile iron accessories are made of good quality materials using proper techniques to result in a casting in compliance with the requirements of international standards. They are cast in metal or in sand moulds, and may be subjected, if necessary to suitable heat treatment to give them the required mechanical characteristics. Special grades of ductile iron can be developed for the transport of certain particularly aggressive chemicals.

WALL THICKNESS AND DIMENSIONS

The wall thickness and the dimensions of the fittings are calculated as a function of their nominal diameter, DN, by the formula established in ISO 2531. The wall thickness may be adjusted to the mechanical stresses induced by internal pressure. Fittings with special wall thickness and dimensions may be supplied under agreement between the purchaser and the manufacturer.

TOLERANCES ON DIMENSIONS AND WEIGHT

The tolerances on wall thickness, dimensions and mass of the ductile iron fittings is in accordance with ISO 2531 at the purchaser's or manufacturer's option. The masses indicated for the SMS fittings have been calculated by taking the density of cast iron as 7050 kg/m3 in conformity with the standards.

JOINTS

Flexible Joints

Flexible joints, either of the push-on type the mechanical type, used to connect the socket of one component to the spigot of the other, will be in accordance with manufacturer's standard dimensions and tolerances. The standart push-on joint, Type S, has a deep recess with angular seating faces for the gasket. The long cavity in the socket allows for angular and longitudinal movements of the adjoining pipes.

The mechanical joint, Type K, is secured by means of a gland compressing the gasket located in the socket. For being used as a dismantling component in pipe lines, mainly the sliding collars of SMS have K- Type joints. On request mechanical joints can be applied to other fittings.

General-Fittings

In general,ductile iron fittings are of designs similar to those of grey iron fittings and their ends are flanged or preferably,socket.

The greater mechanical strength of ductile iron has made it posseble to improve the design of fittings and to reduce their imensions.This makes easier to lay mains in congested urban areas of large towns,and resets in a reduction in the size of valve chanbers,the dimensions of which depend mainly on the space occupied by the fittings.

Flanged socket pieces and straight collars have an internal diameter enlared sufficiently to allow the adjacent pipes to slide through,facilitating and the longitudinal adjustment of pipeline sections.

The double-socket bends have lengths in creasing in proportion to their angle of deviation,their bearing surface on the thrust blocks thes being adjusted to the size of the lateral forces which they exert on these thrust blocks.

The use of reducing flanges and double-flanged tapers has made it possible to simplify the range of flanged-branch tees the use of a combination of these fittings makes it possible to provide users with the greatest number of possibilities with the smallest number of types of castings.

The effect of this arrangement based on market statisties is to reduce stores both at the manufacture's works and at the customer's premises and also to make supply easier.

Double-socket tapers,used mainly for a reduction in diameter,have the shortest practicable lengths.

Double-flanged tapers,generally placed between two successive diameters,have a length in preportion to the variation in diameter,each side being sioped at 5 to the centreline,and chosen so as to reduce the pressure loss when the tapers are used to increase the diameter.

This catalogue is only for the reference,not for the base of any examination.

Thickness

The thickness of fittings has been calculated as a function of the nominal size DN by using the formula with the following values for k.

k=14 for tees,thus

e=7+0.014DN

k=12 for other fittings,thus

e=6+0.012DN

The thickness of the fittings has been limited to 7mm.

Dimensions in millimeters

NOMINAL DIAMETER DN	WALL THICKNESS		
	K=9	K=12	K=14
80	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	9.0	10.5
300	7.2	9.6	11.2
350	7.7	10.2	11.9
400	8.1	10.8	12.6
450	8.6	11.4	13.3
500	9.0	12.0	14.0
600	9.9	13.2	15.4
700	10.8	14.4	16.8
800	11.7	15.6	18.2
900	12.6	16.8	19.6
1000	13.5	18.0	21.0
1200	15.3	20.4	23.8
1400	17.1	22.8	26.6
1600	18.9	25.2	29.4
1800	20.7	27.6	32.2
2000	22.5	30.0	35.0

Deviation and tolerances on length

Deviation on strandard working lengths

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

Type of fitting	Length	Deviation mm
Flanged socket Flanged spigot collar Taper	L	DN80toDN1200±25 DN1400toDN2000±35
Bend 90°	t	±(15+0.03DN)
Bend45°	t	±(10+0.25DN)
Bend22.5° and 11.25°	t	DN80toDN1000 ±(10+0.02DN) DN1200toDN2000 ±(10+0.025DN)
Tee	L and h	DN80toDN1200 +50 -25 DN1400toDN200 +75 -35

Tolerances on manufacturing working lengths

The standard telerance 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 manufacturer and the purchaser,smaller tolerances can be accepted but not less than:

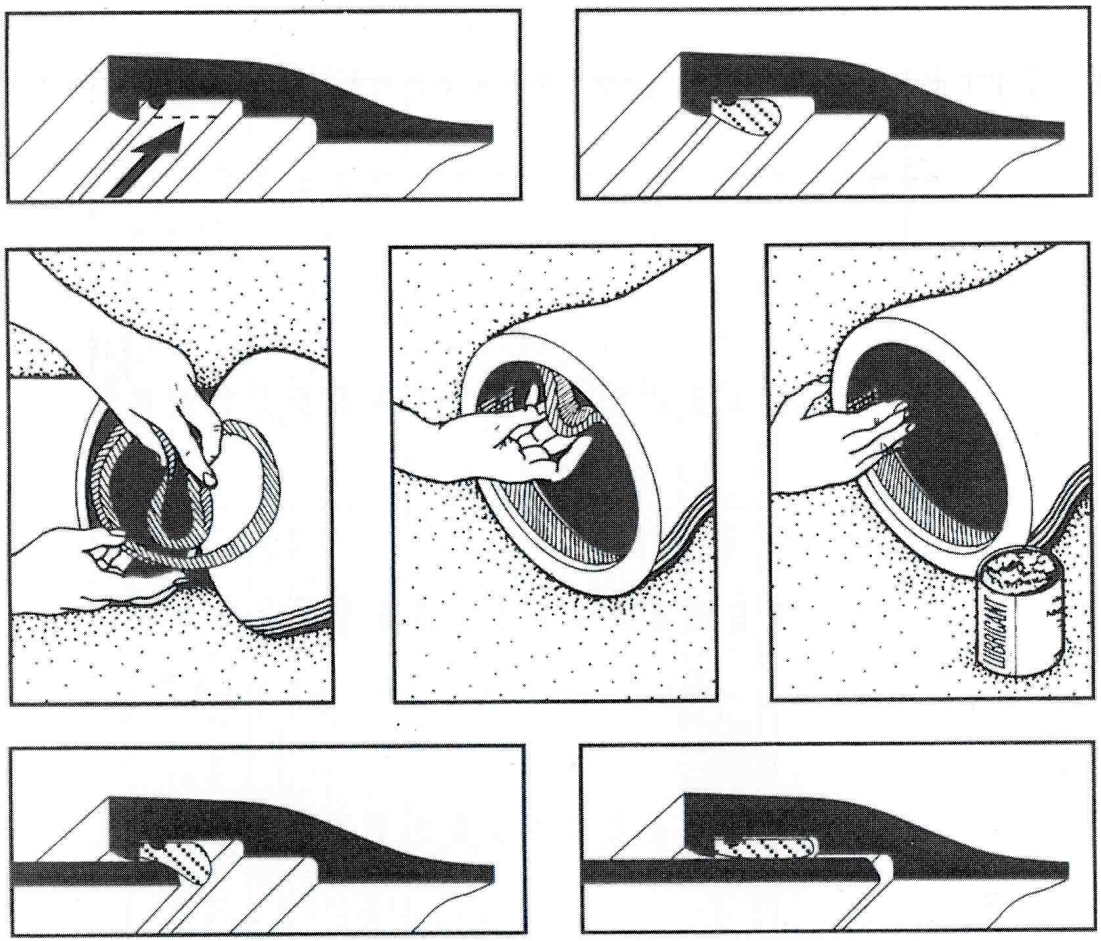
± 3mm for DN ⩽ 600;and

± 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	Hydrostatie 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

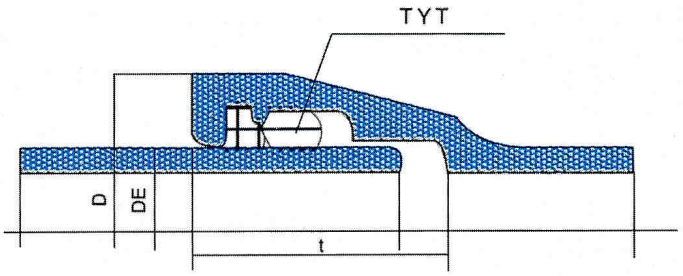


Lubricating grease must be handled in accordance with the health and safety data issued by the manufacturer.

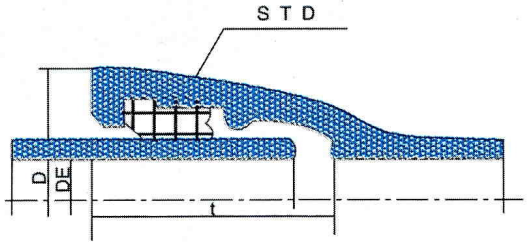
Joint

Push-on joint T.Type

DN80-DN1400



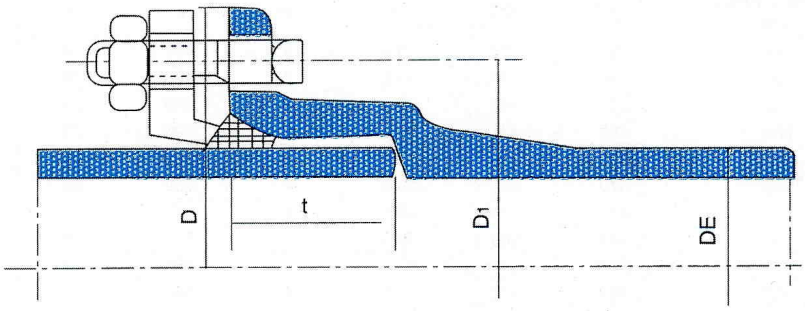
DN1600-DN2000



⩽DN300=5°
⩽DN400=4°
>DN400=3°

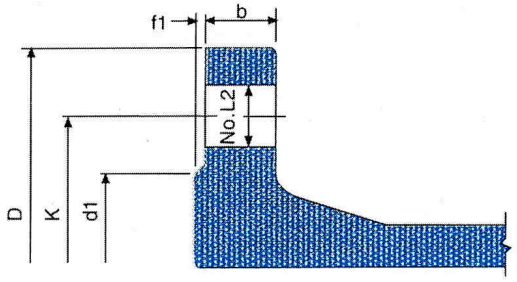
DN	mm			mass Rubber ring kg
	DE	D	t	
80	98	142	84	0.13
100	118	163	88	0.16
150	170	217	94	0.22
200	222	278	100	0.37
250	271	336	105	0.18
300	326	393	110	0.68
350	378	448	110	0.78
400	429	500	110	1.1
500	532	604	120	1.6
600	635	713	120	2.3
700	738	824	150	4.0
800	842	943	160	5.2
900	945	1052	175	6.5
1000	1048	1158	185	8.0
1200	1255	1377	215	13.3
1400	1462	1632	215	17.5
1600	1668	1850	265	21.6
1800	1875	2049	275	28.5
2000	2082	2231		

Mechanical Joint K Type



DN	mm				Holes No.
	DE	D_1	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	1875	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.

In the case of tees,this horizontal centerline is defined with the face of the brance flange held parallel to the vertical plane.

Dimensions in millimeters

PN10 Flange

NOMINAL DIAMETER DN	d_1	D	b	f_1	K	L_2	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	9.9
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

Dimensions in millimeters

PN16 Flange

NOMINAL DIAMETER DN	d_1	D	b	f_1	K	L_2	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

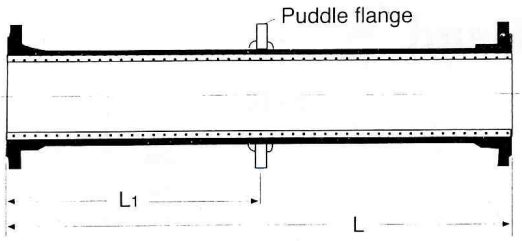
Dimensions in millimeters

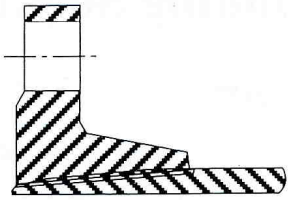
PN25 Flange

NOMINAL DIAMETER DN	d_1	D	b	f_1	K	L_2	BOLT		MASS(kg)
							SIZE	No.	
80	132	200	200	3	160	19	M16	8	2.9
100	156	235	235	3	190	23	M20	8	3.8
150	211	300	300	3	250	28	M24	8	6.1
200	274	360	360	3	310	28	M24	12	8.9
250	330	425	425	3	370	31	M27	12	13.2
300	389	485	485	4	430	31	M27	16	18.0
350	448	555	555	4	490	34	M30	16	25.3
400	503	620	620	4	550	37	M33	16	33.2
450	548	670	670	4	600	37	M33	20	39.0
500	609	730	730	4	660	37	M33	20	48.3
600	720	845	845	5	770	40	M36	20	69.2

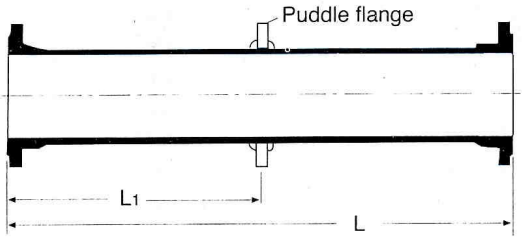
Flanged Pipes

Flanged pipes with
screwed-on flanges,k9.k12
DN80-DN600
L,L_1 to be specified

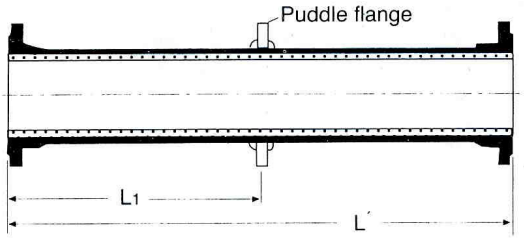


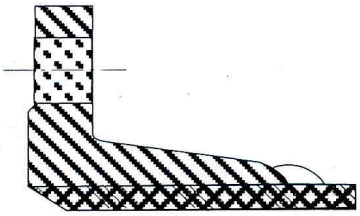


Flanged pipes with
cast-on flanges,k12
DN1200-2000
L ⩽ 4000mm



Flanged pipes with
welded-on flanges,k9
DN80-DN1000
L,$L_1$to be specified



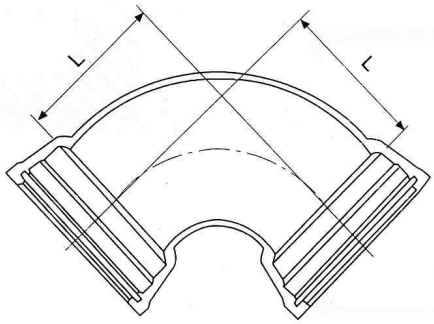


DN	Body						Mass kg				
	k=9		k=10		k=12		Flange,each				Puddle Flange
	e mm	kg/m	e mm	kg/m	e mm	kg/m	PN10	PN16	PN25	PN40	
80	6	12.2	6	12.2	7	14.1	3.5	3.5	3.5	3.5	1.9
100	6.1	15.1	6.1	15.1	7.2	17.7	4.0	4.0	4.5	4.5	2.1
150	6.3	22.8	6.5	23.5	7.8	28	6.1	6.1	7.1	9.2	2.8
200	6.4	30.6	7	33.3	8.4	39.7	8.5	8.3	10.4	15.7	4
250	6.8	40.2	7.5	44.3	9	52.8	11.8	11.4	15.3	25.4	5.7
300	7.2	50.8	8	56.3	9.6	67.3	15.6	15.2	20.8	36.3	6.3
350	7.7	63.2	8.5	69.6	10.2	83.1	17.6	20.7	29.0	-	8.1
400	8.1	75.5	9	83.7	10.8	100	20.5	26.1	37.4	-	10.7
500	9	104.3	10	115.6	12	138.2	27.6	42.8	54.5	-	13.9
600	9.9	137.1	11	152	13.2	181.8	38.4	64.9	79.1	-	18.2
700	10.8	173.9	12	193	14.4	230.8	50.2	65.3	-	-	26.2
800	11.7	215.2	13	238.7	15.6	285.5	66.7	85.9	-	-	34.7
900	12.6	260.2	14	288.7	16.8	345.4	78.7	102.6	-	-	41
1000	13.5	309.3	15	343.2	18	410.6	98.6	140.1	-	-	51.7
1200	15.3	420.1	17	466.1	20.4	557.8	144.2	208.5	-	-	77.1
1400	17.1	547.2	19	607.2	22.8	726.8	178.2	246.3	-	-	90
1600	18.9	690.3	21	766	25.2	916.9	244.7	346.7	-	-	110
1800	20.7	850.1	23	943.4	27.6	1129.3	283.5	409.4	-	-	125
2000	22.5	1026.3	25	1139	30	1363.4	336.4	489.2	-	-	145

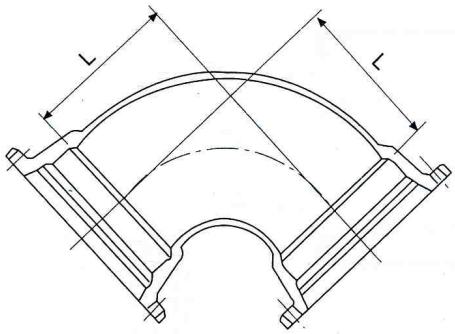
Fittings

Double Socket 90° Bend

T Type



K Type



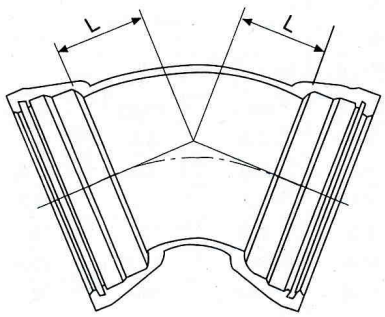
K=12

Dimensions in millimeters

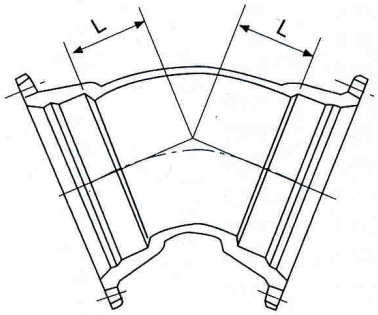
NOMINAL DIAMETER DN	L	MASS(kg)	
		T Type	K Type
80	100	9.0	12.0
100	120	12.1	15.6
150	170	22.0	27.5
200	220	36.5	40.0
250	270	51.5	55.5
300	320	70.5	81.5
350	370	97.5	105
400	420	124	134
450	470	156	166
500	520	193	202
600	620	280	290
700	720	408	408
800	820	554	544
900	920	733	720
1000	1020	947	935
1200	1220	1508	1444
1400	1220	2419	1918
1600	1290	3382	2543
1800	1320	-	3229
2000	1360	-	4033

Double Socket 45° Bend

T Type



K Type



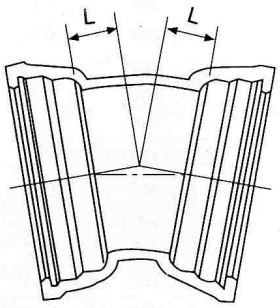
K=12

Dimensions in millimeters

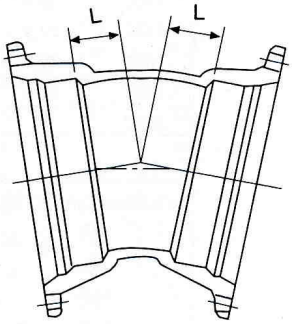
NOMINAL DIAMETER DN	L	MASS(kg)	
		T Type	K Type
80	55	8.1	11.1
100	65	10.8	14.3
150	85	18.8	24.0
200	110	31.0	34.0
250	130	41.5	45.5
300	150	55.0	66.0
350	175	76.0	83.5
400	195	94.0	104
450	220	117	127
500	240	141	150
600	285	199	209
700	330	288	289
800	370	382	373
900	415	501	488
1000	460	640	628
1200	550	1007	943
1400	515	1273	1223
1600	565	1740	1647
1800	610	2296	2166
2000	660	2970	2791

Double Socket 22½° Bend

T Type



K Type

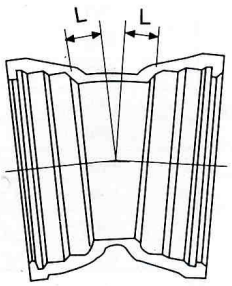


K=12 Dimensions in millimeters

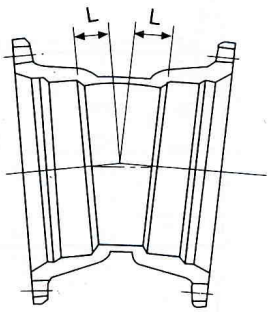
NOMINAL DIAMETER DN	L	MASS(kg)	
		T Type	k Type
80	40	7.7	10.7
100	40	10.0	13.5
150	55	17.3	22.5
200	65	27.5	30.5
250	75	36.0	40.5
300	85	47.0	58.0
350	95	64.0	71.0
400	110	78.5	88.0
450	120	95.0	105
500	130	113	123
600	150	154	164
700	175	223	223
800	195	291	281
900	220	377	364
1000	240	474	463
1200	285	736	671
1400	260	933	882
1600	280	1259	1167
1800	305	1663	1533
2000	330	2144	1965

Double Socket 11¼° Bend

T Type



K Type

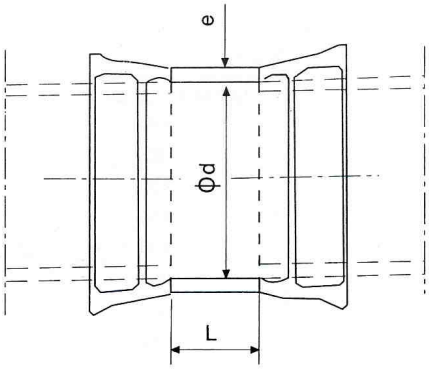


K=12 Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)	
		T Type	k Type
80	30	7.4	10.5
100	30	9.7	13.1
150	35	16.2	21.5
200	40	25.5	29.0
250	50	33.5	37.5
300	55	43.0	54.0
350	60	58.0	65.5
400	65	70.0	79.0
450	70	83.5	93.5
500	75	98.5	108
600	85	131	141
700	95	186	187
800	110	243	234
900	120	309	297
1000	130	386	375
1200	150	588	524
1400	130	747	697
1600	140	1007	914
1800	155	1331	1200
2000	165	1702	1522

Collar

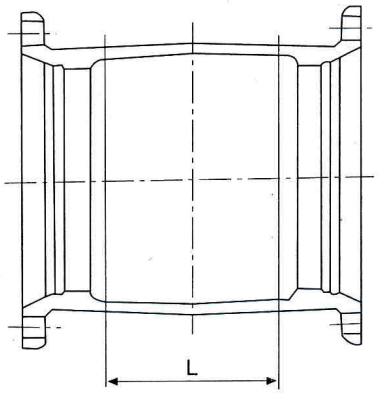
T Type



K=12 Dimensions in millimeters

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	9.6	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	566
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



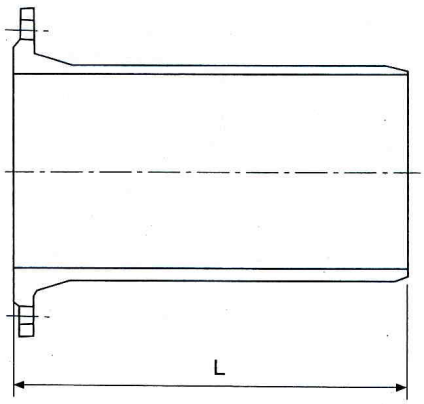
K=12 Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)		
		PN10	PN16	PN25
80	350	7.8	7.8	7.8
100	360	9.7	9.7	10.2
150	380	15.8	15.8	16.7
200	400	23.0	23.0	25.0
250	420	32.0	32.0	35.5
300	440	42.5	42.5	47.5
350	460	53.0	53.0	63.5
400	480	65.5	65.5	81.0
450	500	78.5	78.5	98.0
500	520	96.0	96.0	120
600	560	136	136	171
700	600	185	185	-
800	600	233	233	-
900	600	280	280	-
1000	600	339	339	-
1200	600	473	473	-
1400	710	691	691	-
1600	180	957	957	-
1800	850	1242	1242	-
2000	920	1591	1591	-

K=12 Dimensions in millimeters

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

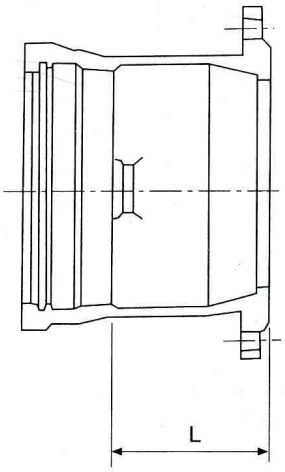
Flanged Spigot



Flanged Socket

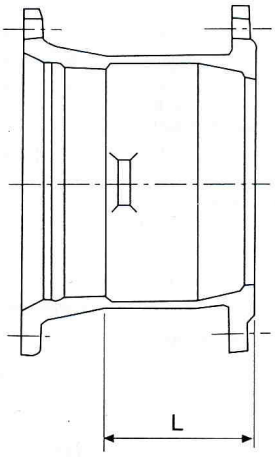
T Type

DN 80 to DN 2000



K Type

DN 80 to DN 2000



K=12

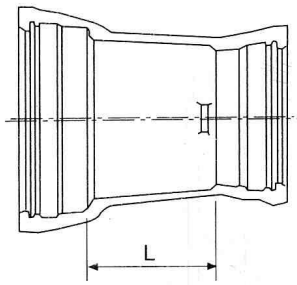
Dimensions in millimeters

NOMIŃAL DIAMETER DN	L	MASS(kg)					
		T Type			K Type		
		PN10	PN16	PN25	PN10	PN16	PN25
80	130	8.3	8.3	8.3	9.3	9.3	9.3
100	130	10.2	10.2	10.7	11.3	11.3	12.5
150	135	16.4	16.4	17.3	18.0	18.0	19.0
200	140	24.5	24.5	26.0	24.5	24.0	26.0
250	145	32.0	32.0	35.5	32.5	32.0	35.5
300	150	39.0	39.0	44.0	44.5	44.0	49.5
350	155	47.0	47.0	60.0	53.0	55.5	63.0
400	160	60.0	60.0	75.0	64.0	68.0	78.5
450	165	70.5	70.5	88.5	74.5	82.0	92.5
500	170	84.0	84.0	107	87.0	100	110
600	180	112	112	146	115	138	149
700	190	161	161	-	162	174	-
800	200	209	209	-	205	220	-
900	210	259	259	-	252	271	-
1000	220	323	323	-	317	351	-
1200	240	482	482	-	450	505	-
1400	310	654	654	-	654	711	-
1600	330	887	887	-	873	963	-
1800	350	1125	1125	-	1103	1214	-
2000	370	1414	1414	-	1378	1516	-

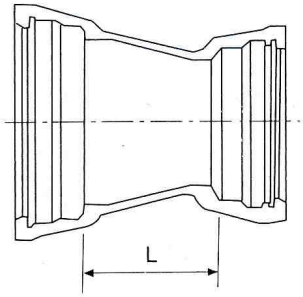
Double Socket Taper

T Type

DN 80 to DN 600



DN 700 to DN 1200



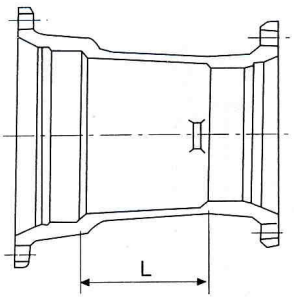
K=12

Dimensions in millimeters

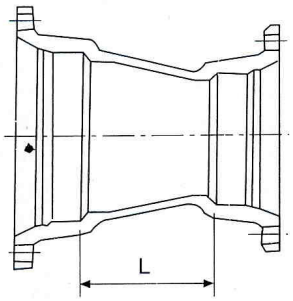
NOMINAL DIAMETER		L	MASS(kg)	
DN	dn		T Type	K Type
100	80	90	9.2	11.9
150	80	190	14.9	18.6
150	100	150	15.3	19.1
200	100	250	23.5	26.0
200	150	150	24.0	27.0
250	150	250	32.5	36.0
250	200	150	33.0	35.0
300	150	350	43.0	50.0
300	200	250	43.5	49.0
300	250	150	41.5	47.5
350	200	360	59.0	62.5
350	250	260	57.0	61.0
350	300	160	52.5	61.5
400	200	460	73.5	78.0
400	250	360	72.0	76.5
400	300	260	67.5	77.0
400	350	160	66.0	73.0
450	250	460	89.0	94.0
450	300	360	84.0	94.5
450	350	260	83.0	91.0
450	400	160	77.5	86.5
500	300	460	104	114
500	350	360	103	110
500	400	260	97.0	106
500	450	160	90.5	99.0
600	350	560	149	157
600	400	460	143	152
600	450	360	137	146
600	500	260	129	137
700	400	680	210	215
700	450	580	205	210
700	500	480	198	203
700	600	280	179	184
800	450	780	278	278
800	500	680	271	271
800	600	480	252	252
800	700	280	234	230

K Type

DN 80 to DN 600



DN 700 to DN 2600



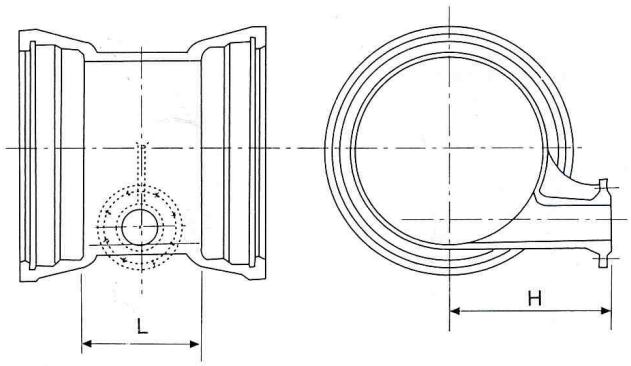
K=12

Dimensions in millimeters

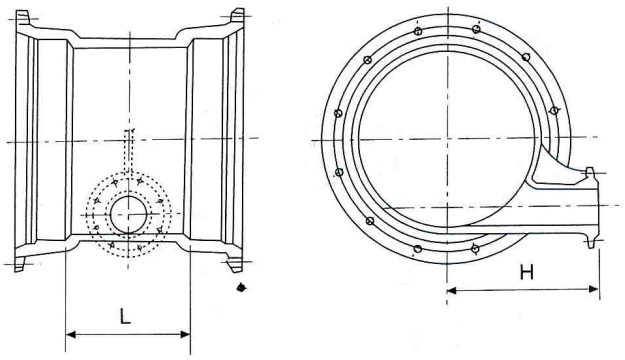
NOMINAL DIAMETER		L	MASS(kg)	
DN	dn		T Type	K Type
900	500	880	360	358
900	600	680	341	339
900	700	480	323	316
900	800	280	292	281
1000	600	880	446	445
1000	700	680	427	422
1000	800	480	397	386
1000	900	280	359	346
1200	700	1080	699	667
1200	800	880	668	631
1200	900	680	630	591
1200	1000	480	582	544
1400	800	760	-	716
1400	900	660	-	170
1400	1000	560	1015	704
1400	1200	360	973	663
1600	1000	760	1427	960
1600	1200	560	1355	919
1600	1400	360	1316	879
1800	1200	760	-	1238
1800	1400	560	-	1198
1800	1600	360	-	1123
2000	1200	960	-	1620
2000	1400	160	-	1579
2000	1600	560	-	1503
2000	1800	360	-	1411

Double Socket Level Invert Tee With Flanged Branch

T Type



K Type



K=14

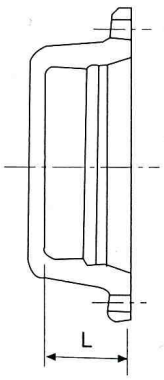
Dimensions in millimeters

NOMINAL DIAMETER		L	H	MASS(kg)					
				T Type			K Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
200	80	245	250	39.5	39.5	39.5	43.0	43.0	43.0
250	80	250	275	49.5	49.5	49.5	54.0	54.0	54.0
300	80	255	300	62.0	62.0	62.0	73.5	73.5	73.5
350	100	280	325	83.0	83.0	83.5	90.5	90.5	91.0
400	100	280	350	97.5	97.5	98.0	107	107	108
450	100	285	375	115	115	116	125	125	126
500	100	290	400	134	134	134	143	143	144
600	100	295	450	173	173	173	183	183	183
700	150	360	500	255	255	256	255	255	256
800	150	365	550	-	-	-	310	310	311
900	150	370	600	-	-	-	382	382	383
1000	200	435	650	-	-	-	501	501	503
1200	200	445	750	-	-	-	679	679	681
1400	200	460	850	-	-	-	939	939	940
1600	400	700	950	-	-	-	1472	1476	1487
1800	400	715	1050	-	-	-	1872	1876	1887
2000	400	725	1150	-	-	-	2320	2325	2336

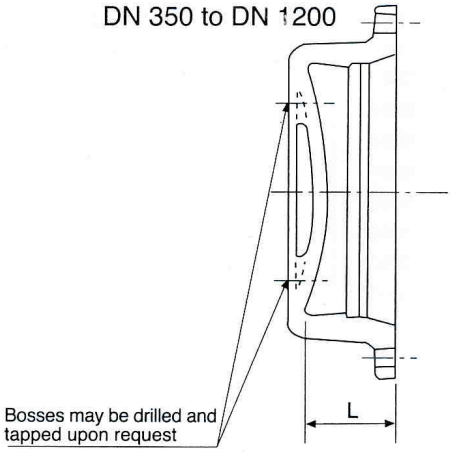
Cap

K Type

DN 80 to DN 300



DN 350 to DN 1200



Bosses may be drilled and tapped upon request

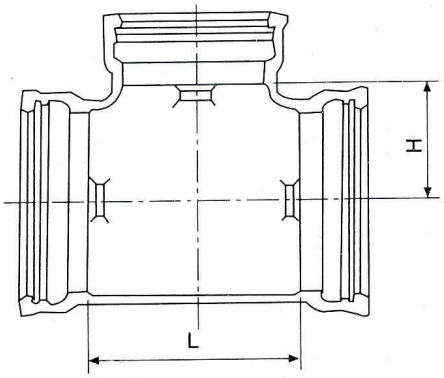
Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)
80	80	5.8
100	80	7.5
150	90	12.6
200	90	17.5
250	90	24.5
300	110	36.0
350	110	49.5
400	110	62.0
450	110	76.0
500	110	90.5
600	110	127
700	120	175
800	120	227
900	120	295
1000	130	379
1200	130	567

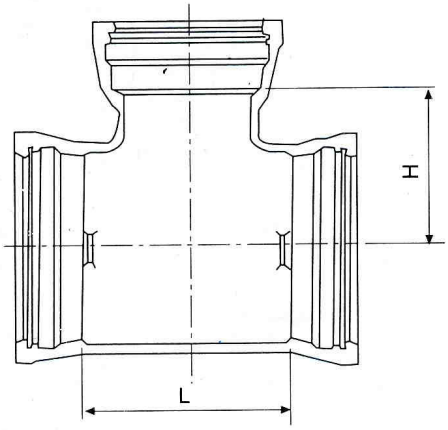
All Socket Tee

T Type

DN 80 to DN 250



DN 300 to DN 600



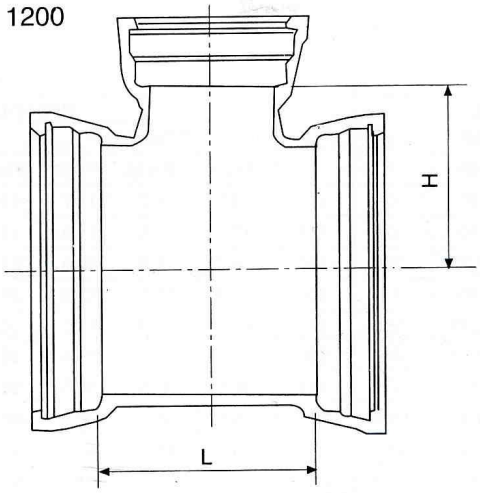
K=14

Dimensions in millimeters

NOMINAL DIAMETER		L	H	MASS(kg)	
DN	dn			T Type	K Type
80	80	170	85	13.8	16.8
100	80	170	95	16.7	19.9
100	100	190	95	18.2	21.5
150	80	170	120	24.5	28.5
150	100	195	120	26.5	30.5
150	150	255	125	31.5	36.5
200	80	175	145	35.0	36.0
200	100	200	145	37.5	38.5
200	150	255	150	43.0	45.0
200	200	315	155	50.5	50.5
250	100	200	210	48.0	49.0
250	150	315	220	59.0	61.0
250	200	315	220	63.5	63.5
250	250	375	230	71.5	71.5
300	100	205	235	54.5	66.5
300	150	320	245	68.0	80.5
300	200	320	245	72.0	84.0
300	300	435	260	90.5	106
350	100	205	260	70.5	78.0
350	150	325	270	86.5	95.0
350	200	325	270	90.5	98.0
350	300	440	285	111	122
350	350	495	290	124	133
400	100	210	285	83.0	92.0
400	150	325	295	101	111
400	200	325	295	105	114
400	300	440	310	127	140
400	400	560	320	155	167
450	150	330	320	117	128
450	200	330	320	121	131
450	300	445	335	146	160
450	400	560	345	175	188
450	450	620	350	190	203
500	150	330	345	135	145
500	200	330	345	139	148
500	300	450	360	167	179
500	400	565	370	198	210
500	500	680	380	231	242
600	150	340	395	175	184
600	200	340	395	178	187
600	300	455	410	211	223
600	400	570	420	248	259
600	600	800	440	325	337

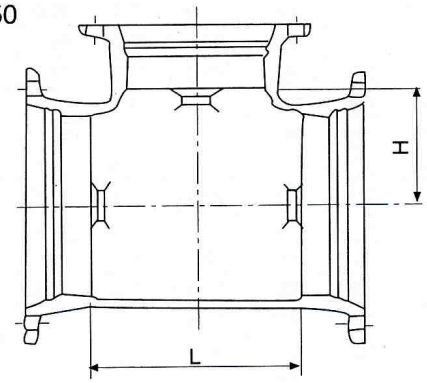
T Type

DN 700 to DN 1200

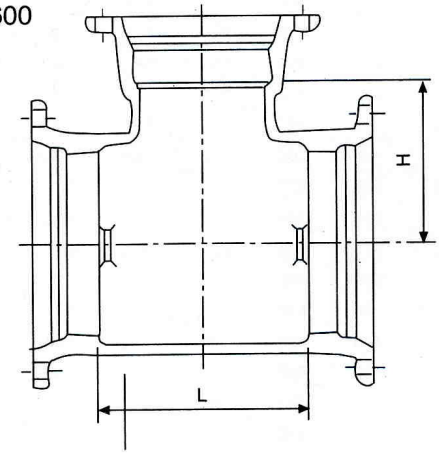


K Type

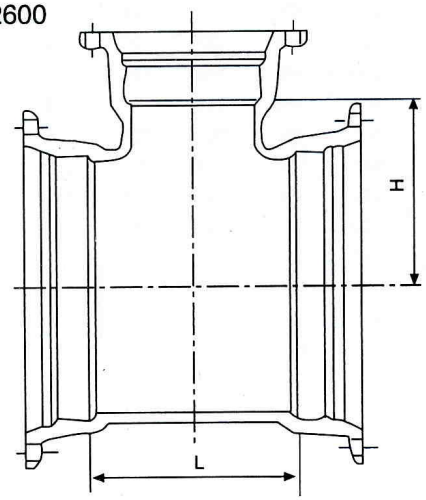
DN 80 to DN 250



DN 300 to DN 600



DN 700 to DN 2600



K=14

Dimensions in millimeters

NOMINAL DIAMETER		L	H	MASS(kg)	
DN	dn			T Type	K Type
700	200	345	445	248	250
700	300	460	460	286	292
700	400	575	470	328	333
700	600	810	490	416	422
700	700	925	500	474	475
800	200	350	495	309	301
800	300	465	510	354	350
800	400	580	520	403	398
800	600	1045	540	580	576
800	800	1045	565	632	618
900	200	355	545	382	370
900	400	590	570	493	484
900	600	1170	590	747	739
900	800	1170	615	795	777
900	900	1170	625	826	806
1000	200	360	595	464	453
1000	400	595	620	592	584
1000	600	1290	640	943	936
1000	800	1290	665	988	971
1000	1000	1290	685	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

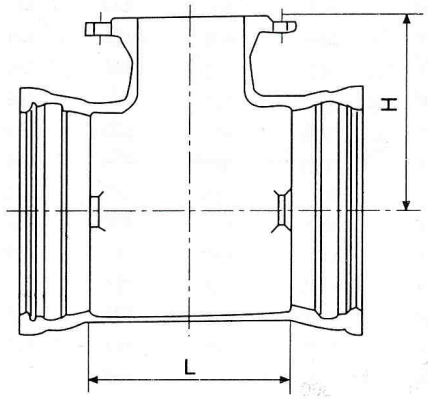
T Type

K=12

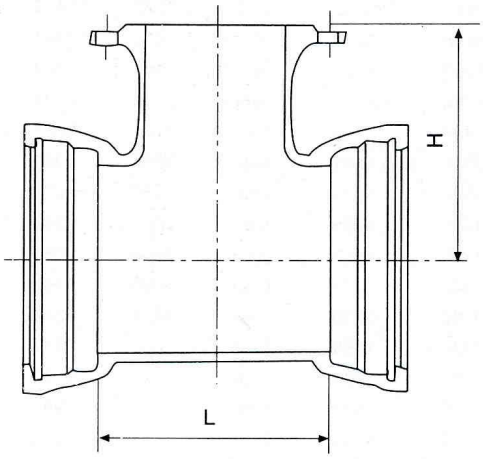
Dimensions in millimeters

NOMINAL DIAMETER		L	H	MASS(kg)					
				T Type			K Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
80	80	170	165	14.7	14.7	14.7	16.7	16.7	16.7
100	80	170	175	17.5	17.5	17.5	19.7	19.7	19.7
100	100	190	180	18.9	18.9	19.4	21.0	21.0	21.5
150	80	170	205	25.5	25.5	25.5	28.5	28.5	28.5
150	100	195	210	27.0	27.0	27.5	30.5	30.5	31.0
150	150	255	220	32.5	32.5	33.5	35.5	35.5	36.5
200	80	175	235	36.5	36.5	36.5	36.5	36.5	36.5
200	100	200	240	38.5	38.5	39.0	38.5	38.5	39.0
200	150	255	250	44.5	44.5	45.5	44.5	44.5	45.5
200	200	315	260	51.5	51.0	53.0	51.5	51.0	53.0
250	80	200	270	47.0	47.0	47.0	47.0	47.0	47.0
250	100	200	270	47.5	47.5	48.0	48.0	48.0	48.5
250	150	315	290	59.0	59.0	60.0	59.0	59.0	60.0
250	200	315	290	62.5	62.0	64.0	62.5	62.0	64.0
250	250	375	300	71.0	71.0	74.5	71.5	71.0	74.5
300	80	205	300	54.5	54.5	54.5	64.0	64.0	64.0
300	100	205	300	55.0	55.0	55.5	65.0	65.0	65.5
300	150	320	320	68.5	68.5	69.5	78.5	78.5	79.5
300	200	320	320	72.0	71.5	73.5	81.5	81.5	83.5
300	300	435	340	92.0	91.5	97.0	102	102	107
350	80	205	330	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	325	350	87.5	87.5	88.5	93.0	93.0	94.0
350	200	325	350	90.5	90.5	92.5	96.0	96.0	98.0
350	300	440	370	113	113	118	118	118	123
350	350	495	380	123	126	134	129	132	139
400	80	210	360	83.0	83.0	83.0	90.0	90.0	90.0
400	100	210	360	84.0	84.0	84.5	91.0	91.0	91.5
400	150	325	380	102	102	103	109	109	110
400	200	325	380	105	105	107	113	112	114
400	300	440	400	129	129	134	137	136	142
400	400	560	420	155	160	171	163	167	178
450	80	215	395	97.5	97.5	97.5	105	105	105
450	100	215	395	98.5	98.5	99.0	106	106	107
450	150	330	410	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	215	420	113	113	113	119	119	119
500	100	215	420	114	114	114	120	120	120
500	150	330	440	137	137	138	143	143	144
500	200	330	440	140	140	142	147	146	148
500	300	450	460	171	171	176	177	177	182
500	400	565	480	201	206	217	207	212	223
500	500	680	500	236	249	260	242	256	266
600	80	220	480	145	145	145	151	151	151
600	100	220	480	146	146	147	152	152	153
600	150	340	500	177	177	178	183	183	184
600	200	340	500	180	180	182	187	187	188
600	300	455	520	216	216	221	222	222	227
600	400	570	540	252	257	268	258	263	274
600	600	800	580	338	362	374	345	368	360

DN 80 to DN 600



DN 700 to DN 1200

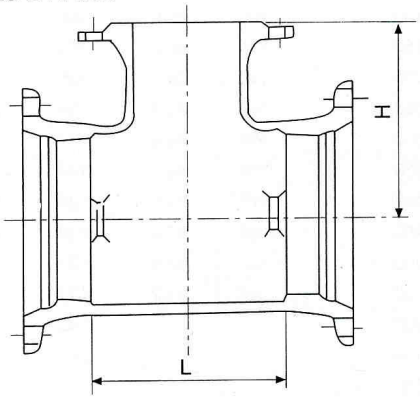


K Type

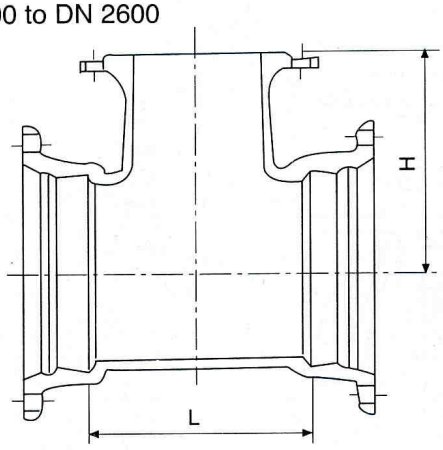
K=12

Dimensions in millimeters

DN 80 to DN 600



DN 700 to DN 2600

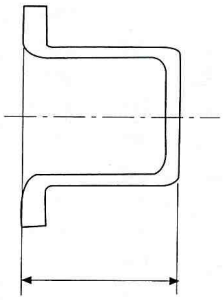


NOMINAL DIAMETER		L	H	MASS(kg)					
				T Type			K Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
700	100	345	525	242	242	243	243	243	244
700	150	345	525	246	246	247	246	246	247
700	200	345	525	249	249	251	250	249	251
700	400	575	555	329	333	344	329	334	345
700	600	810	585	421	445	456	422	445	457
700	700	925	600	476	487	-	476	488	-
800	100	350	585	304	304	305	295	295	295
800	150	350	585	308	308	309	298	298	299
800	200	350	585	311	311	313	302	301	303
800	400	580	615	405	410	421	396	401	412
800	600	1045	645	588	612	624	579	603	614
800	800	1045	675	640	655	-	631	646	-
900	150	355	645	381	381	382	368	368	369
900	200	355	645	385	384	386	371	371	373
900	400	590	675	497	502	513	484	488	499
900	600	1170	705	758	782	794	745	769	760
900	800	1170	735	808	823	-	795	810	-
900	900	1170	750	835	854	-	822	841	-
1000	150	360	705	464	464	465	451	451	452
1000	200	360	705	467	467	469	455	455	457
1000	400	595	735	598	603	614	586	591	602
1000	600	1290	765	958	982	994	946	970	981
1000	800	1290	795	1006	1021	-	994	1009	-
1000	1000	1290	825	1072	1106	-	1059	1094	-
1200	200	375	825	682	682	684	618	618	620
1200	400	605	855	852	856	867	787	792	803
1200	600	840	885	1031	1055	1067	967	991	1003
1200	800	1070	915	1227	1242	-	1162	1177	-
1200	1000	1300	945	1436	1470	-	1372	1406	-
1200	1200	1535	975	1682	1736	-	1617	1672	-
1400	400	800	950	-	1368	-	1221	1226	1237
1400	600	1030	980	1478	1505	-	1441	1464	1476
1400	800	1260	1010	1709	1728	-	1677	1692	-
1400	1000	1495	1040	1955	1996	-	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	1934	-	1831	1854	1866
1600	800	1275	1120	2192	2211	-	2121	2136	-
1600	1000	1505	1150	2480	2523	-	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	-	2302	2326	2337
1800	800	1285	1230	2748	2767	-	2642	2657	-
1800	1000	1520	1260	3095	3137	-	2998	3032	-
1800	1200	1750	1290	3460	3524	-	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	-	2830	2853	2865
2000	800	1300	1340	-	-	-	3239	3254	-
2000	1000	1530	1370	3790	3832	-	3648	3682	-
2000	1200	1760	1400	-	-	-	4079	4134	-
2000	1400	1995	1430	4645	4713	-	4523	4580	-
2000	1600	2225	1460	-	-	-	5007	5097	-
2000	1800	2460	1490	-	-	-	5497	5609	-
2000	2000	2690	1520	-	-	-	6030	6168	-

Plug

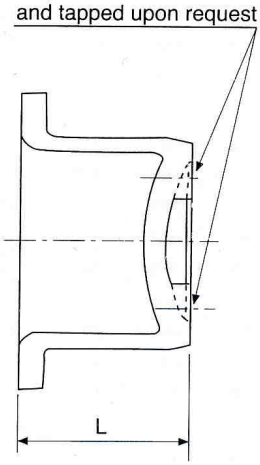
T Type

DN 80 to DN 300



DN 350 to DN 600

Bosses may be drilled and tapped upon request



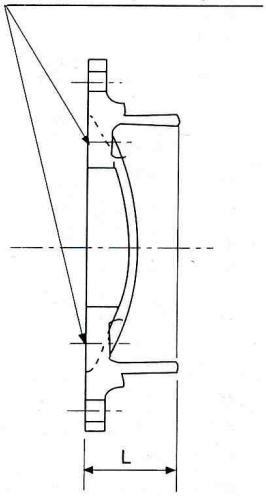
Dimensions in millimeters

NOMINAL DIAMETER DN	T Type		K Type	
	L	MASS(kg)	L	MASS(kg)
80	113	3.6	92	5.1
100	120	5.1	93	6.7
150	130	8.9	104	10.9
200	146	14.1	105	15.5
250	152	20.5	106	21.5
300	159	29.0	127	31.0
350	176	42.5	128	40.5
400	178	53.5	129	53.0
450	180	67.0	130	63.0
500	187	82.5	131	75.5
600	194	119	132	116
700	-	-	143	166
800	-	-	144	250
900	-	-	145	333
1000	-	-	156	434
1200	-	-	160	671

K Type

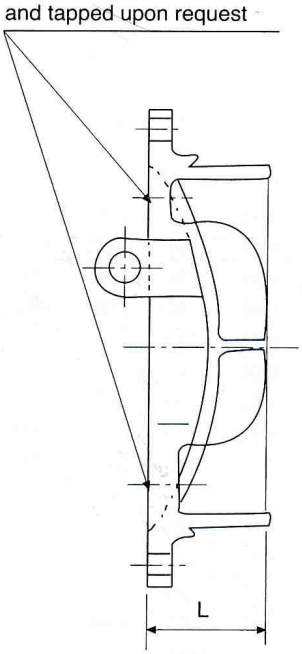
DN 80 to DN 250

Bosses may be drilled and tapped upon request



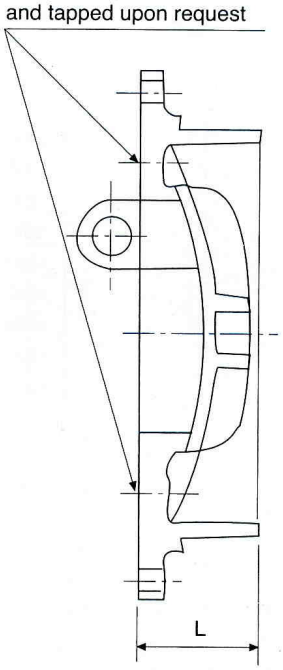
DN 300 to DN 350

Bosses may be drilled and tapped upon request

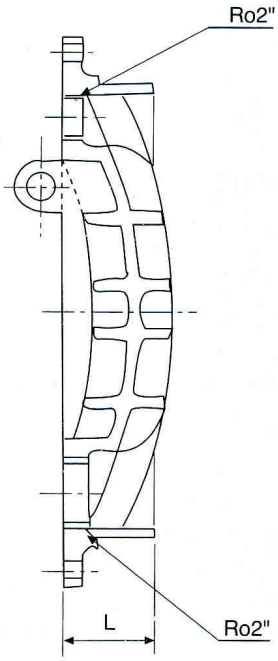


DN 400 to DN 500

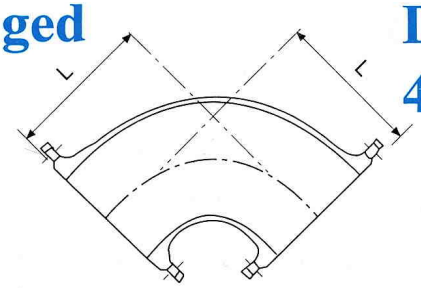
Bosses may be drilled and tapped upon request



DN 600 to DN 1200



Double Flanged 90° Bend

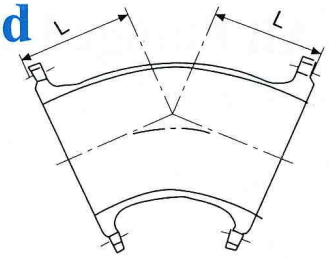


K=12

Dimensions in millimeters

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	20.5	20.5	22.5
200	260	31.5	31.0	35.0
250	350	50.5	49.5	57.0
300	400	70.0	69.5	80.0
350	450	90.5	96.0	112
400	500	117	126	148
450	550	147	163	184
500	600	184	211	232
600	700	277	324	348
700	800	394	418	-
800	900	543	573	-
900	1000	708	746	-
1000	1100	919	988	-
1200	1300	1452	1562	-
1400	1350	1948	2062	-
1600	1450	2663	2841	-
1800	1500	3348	3572	-

Double Flanged 45° Bend

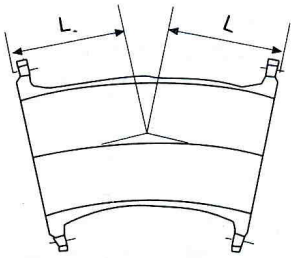


K=12

Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)		
		PN10	PN16	PN25
80	130	9.3	9.3	9.3
100	140	11.4	11.4	12.5
150	160	18.9	18.9	21.0
200	180	28.0	27.5	31.5
250	350	55.5	54.5	62.0
300	400	77.5	76.5	87.5
350	298	77.0	82.5	98.0
400	324	97.5	107	129
450	349	120	135	157
500	375	148	175	196
600	426	216	263	287
700	478	304	328	-
800	529	414	444	-
900	581	531	569	-
1000	632	684	753	-
1200	735	1062	1172	-
1400	775	1431	1544	-
1600	845	1972	2151	-
1800	910	2539	2763	-
2000	980	3243	3519	-

Double Flanged 22½° Bend

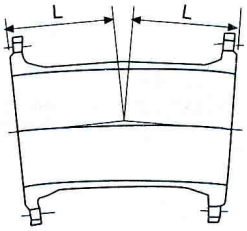


K=12

Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)		
		PN10	PN16	PN25
80	130	9.4	9.4	9.4
100	140	11.5	11.5	12.5
150	160	19.1	19.1	21.0
200	180	28.5	28.0	32.0
250	350	56.5	56.0	63.0
300	400	79.0	78.5	89.0
350	298	78.5	84.0	99.5
400	324	99.5	109	131
450	349	122	138	160
500	375	151	178	199
600	426	221	268	292
700	478	311	334	-
800	529	423	453	-
900	581	543	581	-
1000	632	700	769	-
1200	735	1088	1198	-
1400	835	1551	1664	-
1600	940	2190	2369	-
1800	480	1640	1864	-
2000	520	2081	2357	-

Double Flanged 11¼° Bend

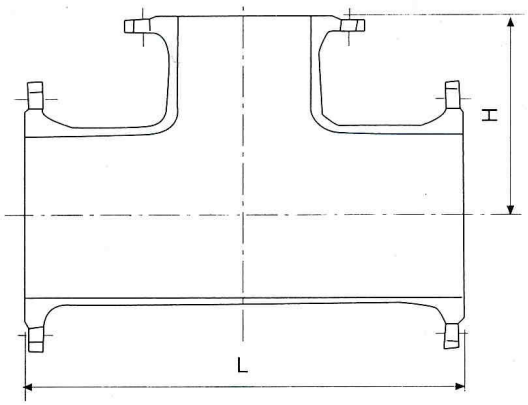


K=12

Dimensions in millimeters

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	19.1	19.1	21.0
200	180	28.5	28.0	32.0
250	350	56.5	56.0	63.5
300	400	79.5	79.0	89.5
350	298	79.0	84.0	100
400	324	100	109	131
450	349	123	139	160
500	375	152	179	200
600	426	222	269	294
700	478	313	336	-
800	529	426	455	-
900	581	546	584	-
1000	632	704	773	-
1200	735	1094	1204	-
1400	835	1560	1674	-
1600	940	2203	2382	-
1800	345	1342	1566	-
2000	375	1694	1970	-

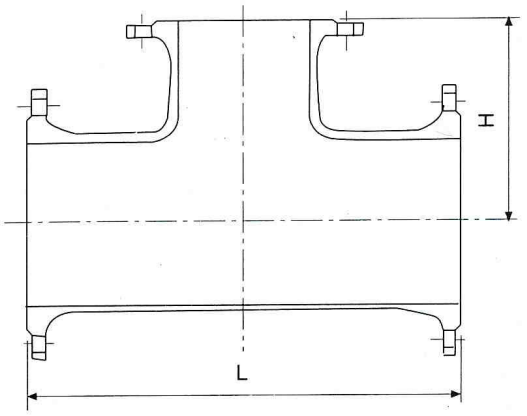
All Flanged Tee



K=14

Dimensions in millimeters

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	18.6	18.6	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	33.5	33.5	36.5
200	80	520	235	43.0	42.5	46.5
200	100	520	240	44.0	43.5	48.0
200	150	520	250	47.0	47.0	52.0
200	200	520	260	51.0	50.5	56.5
250	100	700	275	68.5	68.0	76.0
250	150	700	325	73.5	73.0	81.0
250	200	700	325	77.5	76.5	86.0
250	250	700	350	84.0	83.0	93.5
300	100	800	300	94.5	93.5	105
300	150	800	350	99.0	98.5	110
300	200	800	350	103	102	115
300	300	800	400	117	116	132
350	100	850	325	117	123	139
350	150	850	325	120	126	143
350	200	850	325	124	129	147
350	300	850	425	140	145	166
350	350	850	425	145	153	177
400	100	900	350	146	155	178
400	150	900	350	149	158	181
400	200	900	350	152	161	185
400	300	900	450	168	177	204
400	400	900	450	179	193	226
450	100	950	375	177	193	215
450	150	950	375	180	196	219
450	200	950	375	183	199	222
450	300	950	475	199	215	242
450	400	950	475	210	230	263
450	450	950	475	216	240	272
500	100	1000	400	215	242	264
500	150	1000	400	218	245	267
500	200	1000	400	221	248	271
500	300	1000	500	237	264	291
500	400	1000	500	248	279	311
500	500	1000	500	261	301	333
600	150	1100	450	309	356	381
600	200	1100	450	312	359	385
600	300	1100	550	328	375	404
600	400	1100	550	338	390	424
600	600	1100	550	367	438	473



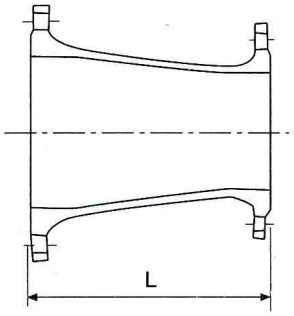
K=14

Dimensions in millimeters

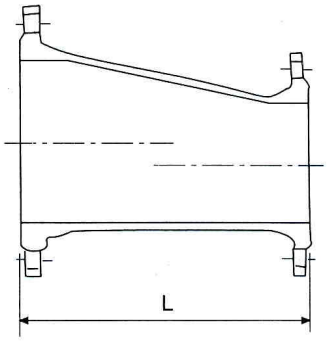
NOMINAL DIAMETER		L	H	MASS(kg)		
DN	dn			PN10	PN16	PN25
700	200	650	525	281	304	-
700	300	760	540	319	342	-
700	400	870	555	358	386	-
700	600	1200	585	476	523	-
700	700	1200	600	499	534	-
800	200	690	585	368	397	-
800	300	800	600	413	443	-
800	400	910	615	459	493	-
800	600	1350	645	633	687	-
800	800	1350	675	685	730	-
900	200	730	645	454	492	-
900	400	950	675	561	604	-
900	600	1500	705	810	872	-
900	800	1500	735	860	913	-
900	900	1500	750	887	944	-
1000	200	770	705	570	638	-
1000	400	990	735	694	767	-
1000	600	1650	765	1036	1129	-
1000	800	1650	795	1085	1168	-
1000	1000	1650	825	1150	1253	-
1200	400	1070	855	1008	1122	-
1200	600	1290	885	1178	1312	-
1200	800	1510	915	1367	1492	-
1200	1000	1730	945	1570	1714	-
1200	1200	1950	975	1806	1970	-
1400	600	1320	980	1527	1665	-
1400	800	1540	1010	1755	1884	-
1400	1000	1760	1040	1995	2143	-
1400	1200	1980	1070	2262	2431	-
1400	1400	2200	1100	2545	2715	-
1600	600	1380	1090	2019	2221	-
1600	800	1600	1120	2294	2487	-
1600	1000	1820	1150	2578	2791	-
1600	1200	2040	1180	2888	3122	-
1600	1400	2260	1210	3208	3444	-
1600	1600	2480	1240	3586	3854	-
1800	600	1440	1200	2521	2768	-
1800	800	1660	1230	2848	3087	-
1800	1000	1880	1260	3184	3442	-
1800	1200	2100	1290	3543	3822	-
1800	1400	2320	1320	3910	4190	-
1800	1600	2540	1350	4328	4641	-
1800	1800	2760	1380	4750	5086	-
2000	600	1500	1310	3119	3419	-
2000	800	1720	1340	3505	3796	-
2000	1000	1940	1370	3898	4209	-
2000	1200	2160	1400	4314	4644	-
2000	1400	2380	1430	4733	5066	-
2000	1600	2600	1460	5202	5567	-
2000	1800	2820	1490	5668	6055	-
2000	2000	3040	1520	6185	6599	-

Double Flanged Taper

Concentric Type



Flat Type



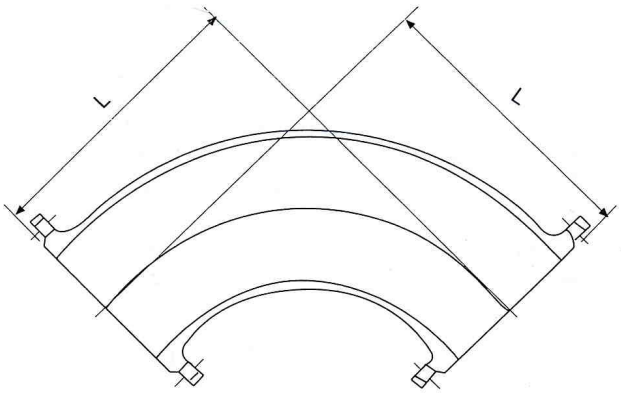
K=14 Dimensions in millimeters

NOMINAL DIAMETER		LENGTH	MASS(kg)		
DN	dn	L	PN10	PN16	PN25
100	80	200	9.4	9.4	9.9
150	80	400	16.4	16.4	17.4
150	100	300	15.3	15.3	16.8
200	100	600	27.5	27.5	30.0
200	150	300	22.5	22.0	25.0
250	150	600	39.0	39.0	43.5
250	200	300	31.0	30.5	36.0
300	150	650	48.5	48.5	55.0
300	200	600	52.0	51.5	59.0
300	250	300	41.0	40.0	49.0
350	200	650	61.5	64.0	74.0
350	250	600	65.5	67.5	79.0
350	300	300	50.0	52.5	66.0
400	200	700	73.5	77.5	90.5
400	250	650	77.0	81.5	96.0
400	300	600	80.5	85.0	101
400	350	300	60.0	67.0	86.0
450	250	700	89.5	97.0	112
450	300	650	93.5	101	117
450	350	600	95.5	106	125
450	400	300	70.5	83.0	105
500	300	700	109	122	138
500	350	650	111	127	145
500	400	600	113	131	153
500	450	300	83.0	104	126
600	350	750	147	174	193
600	400	700	150	178	201
600	450	650	151	183	206
600	500	600	154	191	214
700	400	800	196	212	-
700	450	750	197	217	-
700	500	700	200	225	-
700	600	600	204	239	-
800	450	900	263	286	-
800	500	800	256	284	-
800	600	700	260	298	-
800	700	600	263	290	-

K=14 Dimensions in millimeters

NOMINAL DIAMETER		LENGTH	MASS(kg)		
DN	dn	L	PN10	PN16	PN25
900	500	1000	338	370	-
900	600	800	318	360	-
900	700	700	321	352	-
900	800	600	325	358	-
1000	600	1000	422	480	-
1000	700	800	396	442	-
1000	800	700	399	448	-
1000	900	600	393	446	-
1200	700	1345	711	777	-
1200	800	1160	638	758	-
1200	900	975	652	726	-
1200	1000	790	614	703	-
1200	1100	605	566	655	-
1400	800	1590	1034	1105	-
1400	900	1405	998	1074	-
1400	1000	1220	961	1052	-
1400	1100	1035	914	1005	-
1400	1200	850	859	971	-
1600	1000	1650	1424	1547	-
1600	1100	1465	1377	1502	-
1600	1200	1280	1324	1468	-
1600	1400	910	1165	1311	-
1600	1500	725	1073	1250	-
1800	1200	1895	1910	2057	-
1800	1200	1710	1858	2024	-
1800	1400	1340	1701	1870	-
1800	1500	1155	1610	1810	-
1800	1600	970	1517	1718	-
2000	1200	2140	2512	2705	-
2000	1400	1770	2358	2553	-
2000	1500	1585	2268	2492	-
2000	1600	1400	2176	2404	-
2000	1800	1030	1903	2153	-

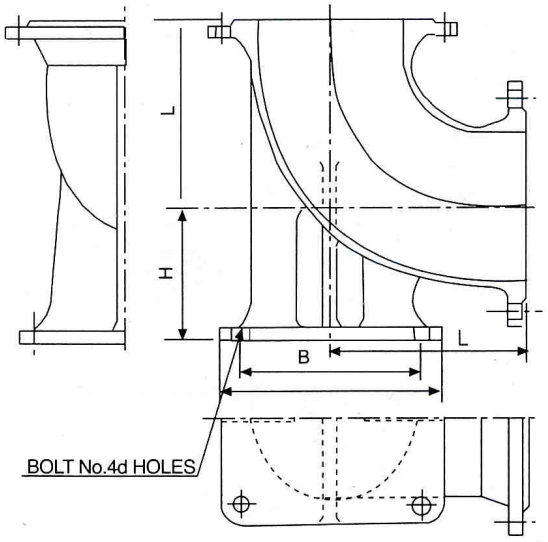
Double Flanged 90°
Long Radius Bend



K=12 Dimensions in millimeters

NOMINAL DIAMETER DN	L	MASS(kg)		
		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	-
800	1100	632	661	-
900	1200	816	854	-
1000	1300	1048	1117	-
1200	1500	1627	1737	-

Double Flanged 90°
Duckfoot Bend

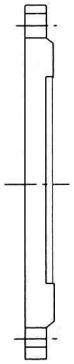


K=12 Dimensions in millimeters

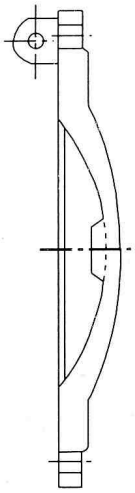
NOMINAL DIAMETER DN	L	H	A	B	d	MASS(kg)		
						PN10	PN16	PN25
80	165	110	180	120	19	14.8	14.8	14.8
100	180	125	200	130	23	18.2	18.2	19.2
150	220	160	250	165	28	31.5	31.5	33.5
200	260	190	300	215	28	49.0	48.5	52.5
250	350	225	350	250	31	78.5	77.5	85.0
300	400	255	400	300	31	111	111	121
350	450	290	450	350	34	147	153	168
400	500	320	500	390	37	192	201	223
450	550	350	550	440	37	245	261	283
500	600	385	600	490	37	309	336	357
600	700	450	700	580	40	475	522	546
700	800	515	800	680	43	684	708	-
800	900	580	900	770	49	944	974	-
900	1000	645	1000	870	49	1252	1290	-
1000	1100	710	1100	960	56	1629	1698	-
1200	1300	840	1300	1160	56	2599	2709	-

Blank Flange

DN 80 to DN 300



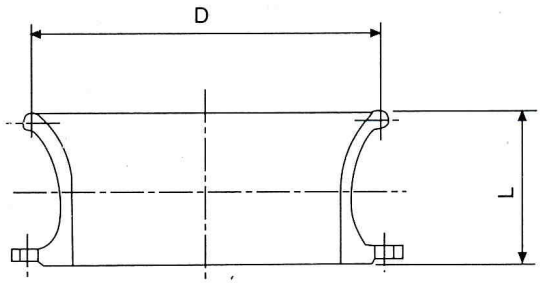
DN 350 to DN 2000



Dimensions in millimeters

NOMINALDIAMETER DN	MASS(kg)		
	PN10	PN16	PN25
80	3.5	3.5	3.5
100	4.3	4.3	4.8
150	7.2	7.2	8.3
200	11.0	10.8	13.3
250	16.9	16.6	21.0
300	24.0	23.0	30.0
350	32.5	37.0	46.5
400	40.5	48.5	62.5
450	50.0	63.5	79.0
500	62.0	83.0	100
600	94.0	130	154
700	136	169	-
800	189	235	-
900	244	307	-
1000	319	413	-
1200	504	659	-
1400	687	904	-
1600	955	1280	-
1800	1240	1687	-
2000	1630	2226	-

Flange Bellmouth



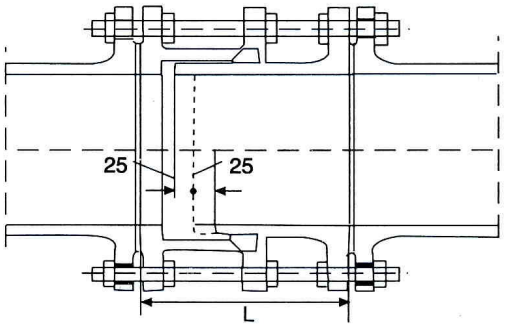
K=12

Dimensions in millimeters

NOMINAL DIAMETER DN	D	L	MASS(kg)		
			PN10	PN16	PN25
80	150	130	5.2	5.2	5.2
100	175	135	6.2	6.2	6.7
150	230	150	10.1	10.1	11.1
200	290	170	15.0	14.8	16.8
250	345	185	21.0	20.5	24.5
300	405	205	28.5	28.5	33.5
350	460	220	35.5	38.0	46.0
400	520	240	45.0	49.5	60.5
450	575	255	54.0	62.0	73.0
500	635	275	67.0	80.0	91.0
600	750	310	96.5	120	132
700	865	345	135	146	-
800	980	380	182	197	-
900	1095	415	231	250	-
1000	1210	450	297	331	-
1200	1440	520	457	512	-
1400	1670	590	646	702	-
1600	1900	660	906	995	-
1800	2130	730	1185	1297	-
2000	2360	800	1530	1668	-

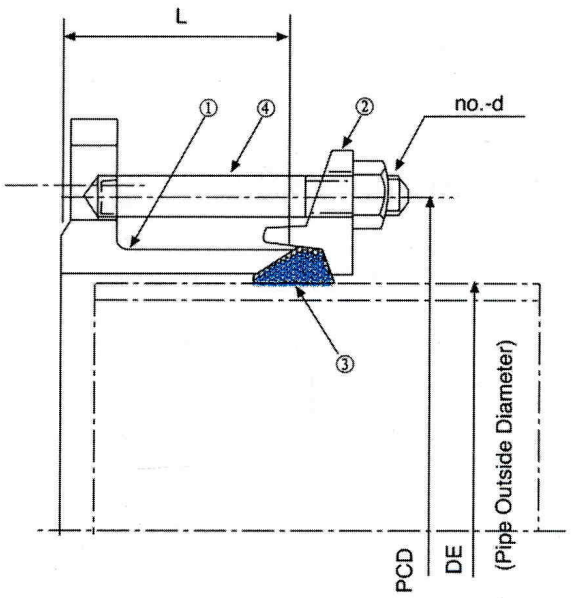
DN	Dimension L mm				MASS (kg)			
	PN				PN			
	10	16	25	40	10	16	25	40
100	200	200	220	220	20	20	33	33
150			220	230	25	25	42	42
200		220	230	240	34	34	53	53
250	220	230	230	260	48	48	74	90
300		250	250	280	65	74	102	140
350	230	260	250	290	72	92	131	192
400		270	270	340	94	126	193	253
450	250	270	280	340	122	162	246	362
500		280	300	380	140	190	280	433
600	260	300	320	390	162	240	324	504
700		300	340	420	205	330	432	761
800		320	360	450	256	366	571	915
900	290	320	380	480	352	482	801	1321
1000		340	400	500	405	546	886	1610
1200	320	360	450		484	715	1270	1804

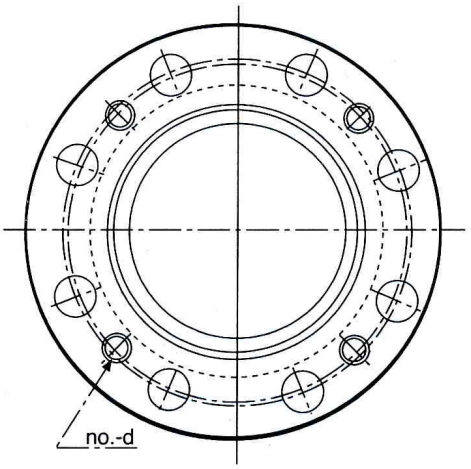
Dismantling Adaptor



Flange Adaptor

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





NOMINAL DIAMETER DN	PIPE OUTSIDE DIAMETER DE	L	PCD	STUD BOLT		MASS(kg)	
				SIZE d	no.	PN10	PN16
80	98	70	166	M16	4	3.6	3.6
100	118	70	187	M16	4	4.2	4.2
150	170	75	240	M16	4	6.4	6.4
200	222	75	293	M16	4	8.6	8.3
250	274	90	346	M16	6	12.4	12.1
300	326	90	410	M16	6	17.6	17.2
350	378	100	469	M20	8	21.0	23.5
400	429	100	521	M20	8	24.5	28.0
450	480	100	573	M20	10	27.0	34.0
500	532	100	626	M20	10	31.0	43.0
600	635	100	730	M20	10	40.0	61.5
700	738	100	837	M20	12	51.0	61.5
800	842	100	943	M20	12	65.5	78.0
900	945	100	1047	M20	14	75.0	89.5
1000	1048	105	1159	M20	14	100	128
1200	1255	115	1368	M20	16	144	188
1400	1462	145	1582	M24	18	194	235
1600	1668	165	1790	M24	20	271	337
1800	1875	185	1999	M24	22	321	400
2000	2082	205	2208	M24	24	389	483

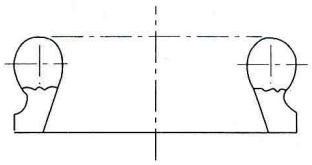
Mass does not include gland,stud bolt and nut.

Accessories

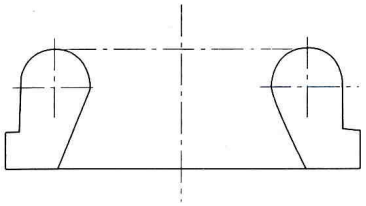
T Type Joint Accessories

Rubber Gasket

DN 80 to DN1400



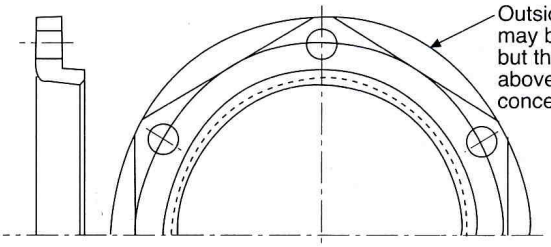
DN1600 to DN 2000



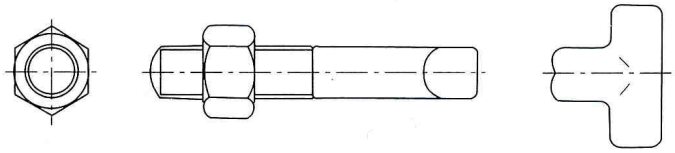
K Type Joint Accessories

Ductile Iron Gland

For gland of DN 800 or above follows dotted line.

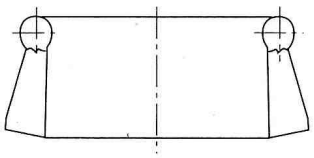


Ductile Iron T-Head Bolts and Nuts



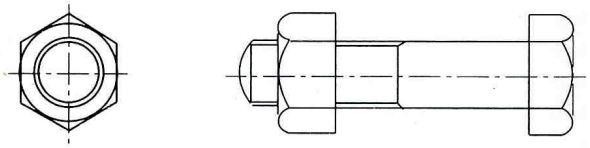
Rubber Gasket

DN 80 to DN 2000

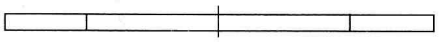


Flange Joint Accessories

Mild Steel Bolts and Nuts



Rubber Gasket for Raised Faced Flange



Ductile Iron T-Head Bolts and Nuts — Dimensions in millimeters

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	M30×160	36

Mild Steel Bolts and Nuts — Dimensions in millimeters

NOMINAL DIAMETER DN	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	M24×85	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	-	-