

DUCTILE IRON FITTINGS



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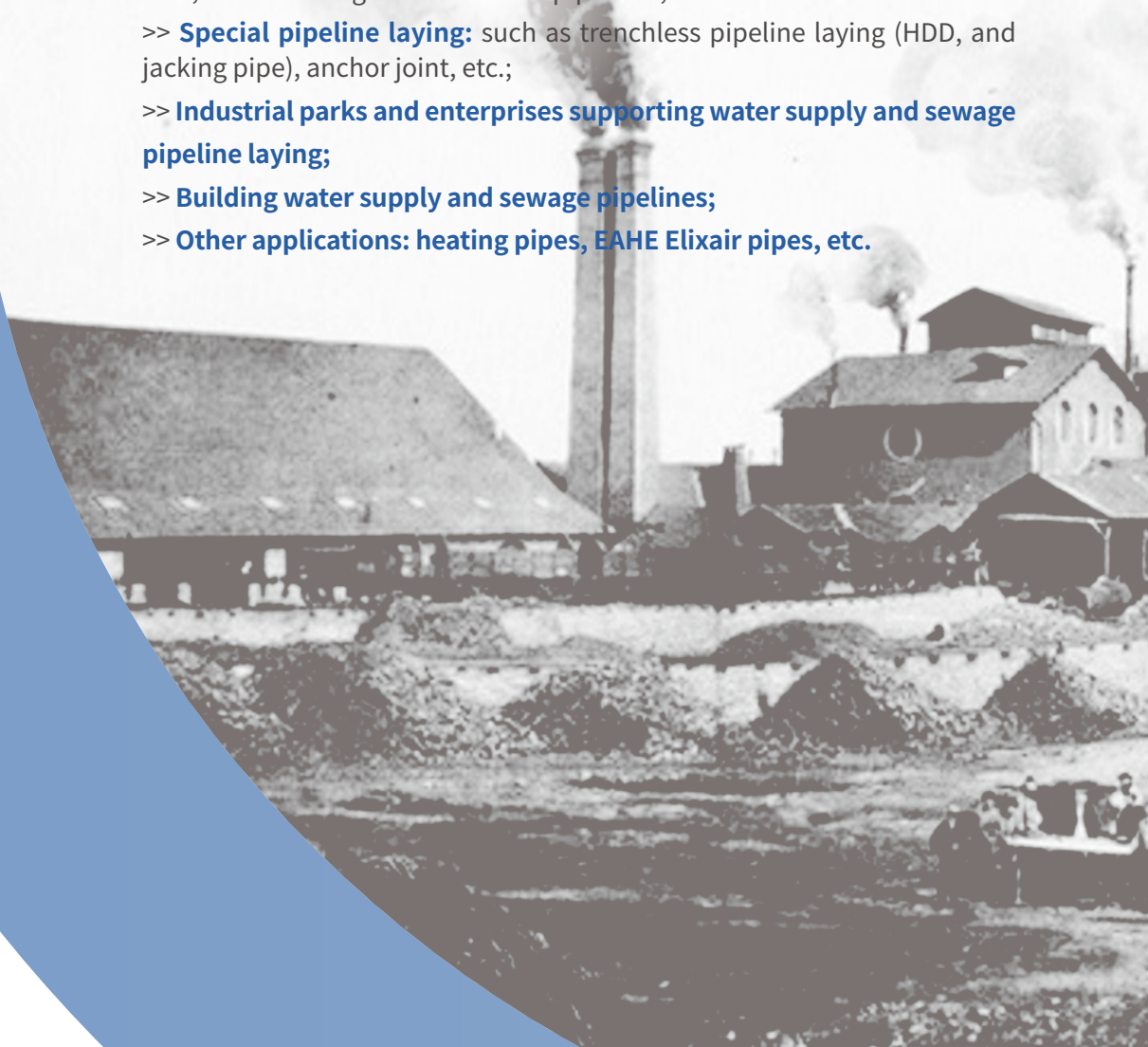
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COMPANY PROFILE

PAM **PAM** originates from the pipeline business of the Saint Gobain, which is one of the world's top 500 companies. Founded in 1856, PAM is a world renowned brand of ductile iron pipes, dedicated to providing a complete and adapted high quality solutions for water supply and drainage network systems.

PAM's **PAM** ductile iron water supply and drainage pipes and fittings, valves, stainless steel pipes and fittings can be applied in:

- >> **Municipal water supply and sewage pipe network construction:** covering rain and sewage diversion, recycled water pipelines, integrated pipe galleries, subway supporting pipelines and other application scenarios;
- >> **Water conservancy pipe network construction:** covering long distance water diversion pipelines such as water sources, reservoirs, rivers and hydraulic hubs, as well as small hydropower, agricultural water conversion, farmland irrigation and other pipelines;
- >> **Special pipeline laying:** such as trenchless pipeline laying (HDD, and jacking pipe), anchor joint, etc.;
- >> **Industrial parks and enterprises supporting water supply and sewage pipeline laying;**
- >> **Building water supply and sewage pipelines;**
- >> **Other applications: heating pipes, EAHE Elixair pipes, etc.**



With proprietary technology, quality products, and a high level of service to our customers, PAM **PAM** enjoys a high reputation in the field of ductile iron pipe systems.

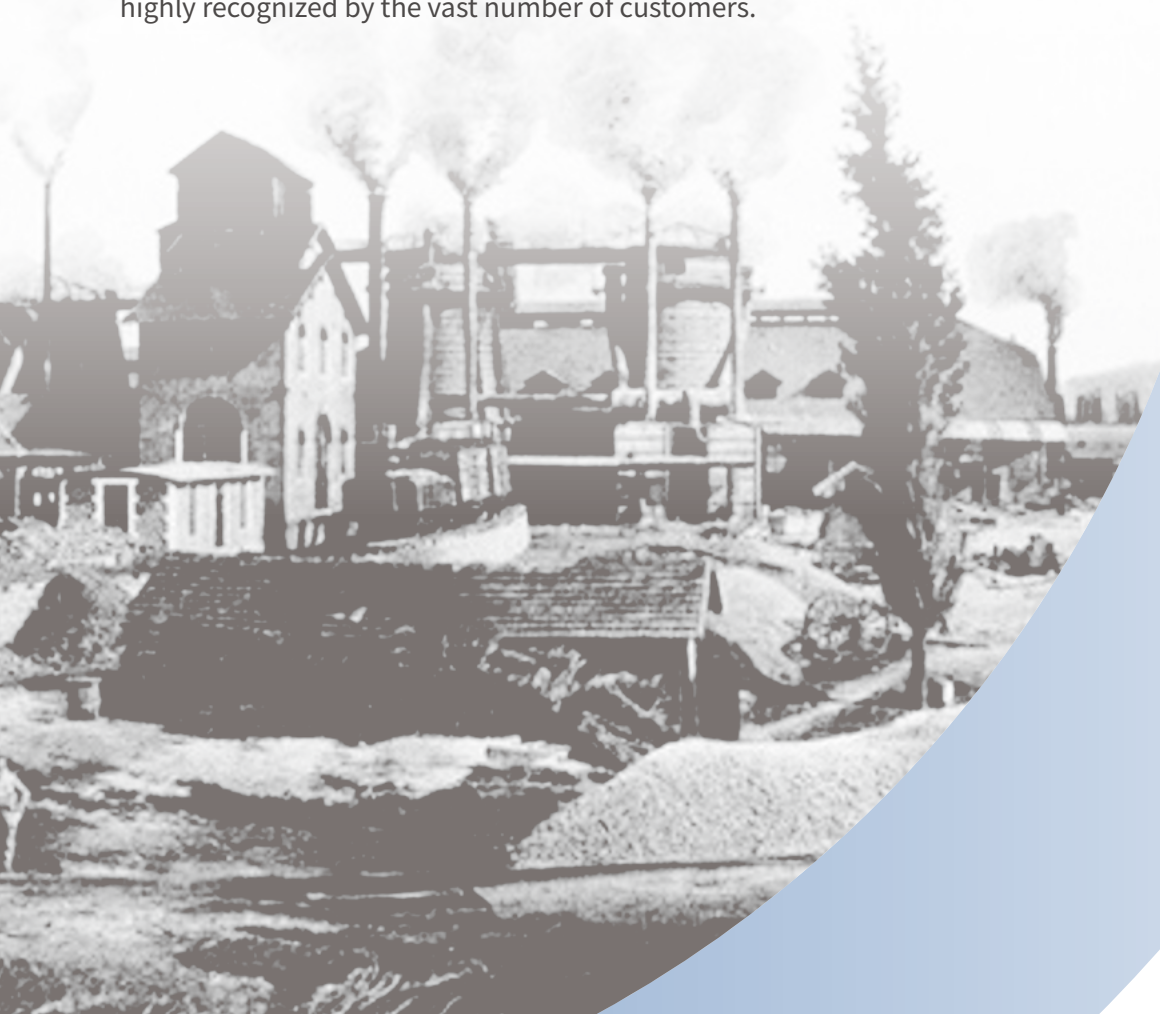
100 >> With business covering 100 capitals and 10,000 cities

50000 >> 50,000 project cases

160 >> Over 160 years of experience in production and application of cast pipes

1500 >> Over 1,500 patents

In 1997 PAM **PAM** appointed experienced management teams and technical specialists from France to take charge of the construction, operation and technical guidance of the plant in China. The process requirements and quality standards of Chinese plants are consistent with those of European plants. Thanks to PAM's more than 160 years of experience in cast pipe production, PAM China has a more advanced ductile iron pipe production line in the world, and its high quality products and services are highly recognized by the vast number of customers.



EVENTS AND ADVANTAGES

Fittings account for a small proportion of investment in an entire pipeline network or system, but they play a pivotal role. According to the wooden barrel theory, the improper selection of fittings may easily endanger the safe operation of the entire pipeline. Bearing the concept of "Quality First" in mind, Saint-Gobain PAM is committed to providing high-quality ductile iron fittings (DN80-DN2200) to ensure the safety of pipeline networks.



The foundry was officially put into production



The fluidized-bed process was officially adopted for epoxy

2003

Construction of the foundry commenced

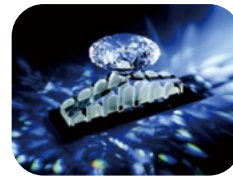


2004



2007

The foundry won Saint-Gobain Group Safety Diamond Award



2010

生产任务	生产任务	生产任务	生产任务	生产任务
制芯	造型	熔化	修整	机加工
外涂	质量	模具	维修	环氧涂膜
环氧涂膜	环氧涂膜	环氧涂膜	环氧涂膜	环氧涂膜

今日影响时长	今日异常总数	待处理	待关闭
824分钟	4	3	1
报警	报警	报警	报警

报警	报警	报警	报警
报警	报警	报警	报警
报警	报警	报警	报警

WORLD-CLASS MANUFACTURING

For better development and in order to offer first-class products and services, Saint-Gobain PAM strives to achieve a win-win result in operational excellence and customer satisfaction by using WCM (world-class manufacturing) management methods.



Saint-Gobain PAM China's foundry has pioneered the WCM journey within the Company since 2009. Through the total employee involvement in the WCM program, a management system and approach focused on reducing waste, increasing efficiency and improving quality and safety, Saint-Gobain PAM China has automatically and intelligently achieved energy consumption reduction, and improvement of production efficiency and product quality, in order to achieve excellent operation and customer satisfaction.



The automatic grinding process for foundries was realized

2022

A new fluidized-bed production line was built



2018

The Z8 Cold-box core making automatic production line was put into use



2021

INTELLIGENT MANUFACTURING

Saint-Gobain PAM China carried out the production and operation information technology project in the foundry

RESULTS

- A digital production and operation management system has been built to achieve transparent control of the entire production process through real-time, on-site data entry;
- Combined with the Company's WCM program into consideration, foundation has been preliminarily established for a manufacturing operation management system, and efficient on-site management tools have been put into effect through exception-driven and mission-driven management models, providing greater value for managers;
- A prevention mechanism in quality control and a product traceability system have been established to reduce quality costs and risks by setting up quality control plans and defining processes, and to have the ability to trace key materials, quality, and processes in case of any quality problems;
- Intelligent decision support and continuous improvement have been achieved through efficient hierarchical meetings and by using big data analytics, and accurate and real-time inventory data are ensured, and the efficient collaboration between planning, manufacturing and finished goods yard has been realized.

PRODUCTION PROCESS

Molten iron smelting:

- Comprehensive inspection of all raw materials;
- Monitor the chemical composition of molten iron for each batch;
- Measure the temperature of molten iron for each batch immediately before the molten iron runs out of the furnace;
- All monitoring data are interconnected and shared online.

Spheroidization:

- Monitor the chemical composition of each spheroidized molten iron ladle;
- Measure the temperature of each molten iron ladle before casting.
- Adopt tundish-cover spheroidizing.

Moulding:

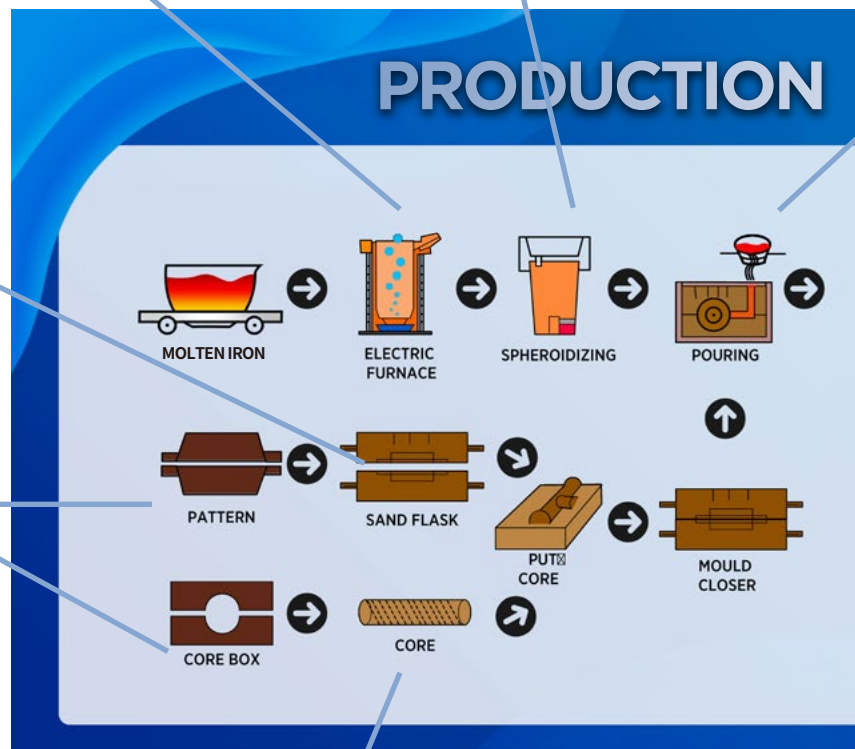
- Static-pressure horizontal molding
- Monitor sand preparation performance

Pattern and core box preparation:

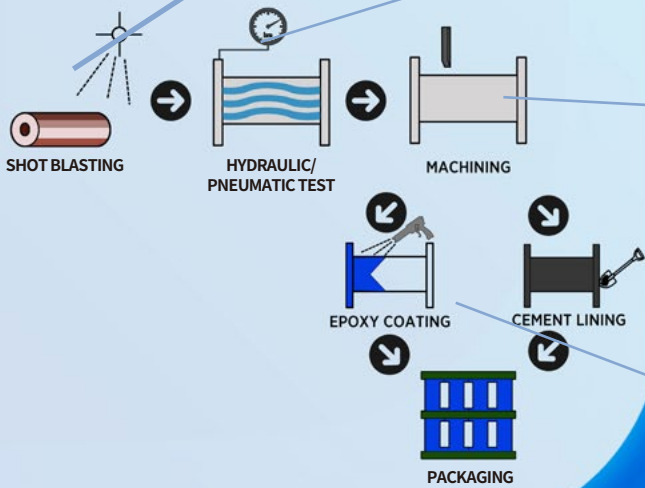
- Select full-metal patterns;
- The patterns can be quickly changed to realize one die for multiple varieties

Core Making:

- Triethylamine cold-box resin catalysis
- Monitor core strength



PROCESS



Pouring:

- Adopt automatic stream inoculation
- Monitor metallographic structure and mechanical properties

Shot blasting for finishing:

- Suspension frame for shot blasting
- High-strength steel shot blasting
- Automatic polishing robot

Hydraulic/pneumatic test:

- 100% inspection
- The only water-tank-type pneumatic test machine in China

Machining:

- Special CNC machines

Epoxy/cement:

- PAM provides both cement lining and epoxy coating for anti-corrosion protection. For high corrosive conditions, we recommend choosing epoxy coating.
- High-strength steel sand + steel shot blasting
- Monitor surface dustiness, degree of rusting, roughness, etc
- Automatic monitoring of heating temperatures
- Automatic spraying and fluidized-bed production processes
- Monitor epoxy coating thickness and performance

Finished goods yard:

- Customized packaging solutions

PRODUCT INTRODUCTION

Product standards for ductile iron fittings

COUNTRY/MARKET	SYSTEM/PRODUCT	HEALTH	COATING
China	Standard for Water Supply GB/T 13295 Standard for Sewage Supply GB/T 26081	Issued by the Provincial Center for Disease Control and Prevention	Epoxy coating GB/T 34202
Europe	Standard for Water Supply ISO2531/EN545 Standard for Sewage Supply ISO7186/EN598	WRAS	EN14901
Italy	Accredia		
Oceania	AS/NZS2280		



Anti-corrosion protection

○ PAM PROVIDES SEVERAL OPTIONS FOR INTERNAL LINING AND EXTERNAL COATING



>> Internal lining

- Epoxy lining (average thickness $\geq 250 \mu\text{m}$)
- Cement mortar lining



>> External coating

- Epoxy coating (average thickness $\geq 250 \mu\text{m}$)
- Zinc rich paint + finishing layer (for zinc rich paint, average density $\geq 150\text{g}/\text{m}^2$, for finishing layer, average thickness $\geq 70 \mu\text{m}$)

For highly corrosive conditions, PAM recommends fittings with both epoxy lining and coating for a better anti-corrosion protection.

○ ADVANTAGES OF EPOXY COATING



>> PAM fittings' epoxy coating complies with the EN14901 standard.

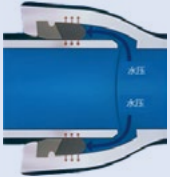
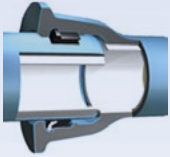
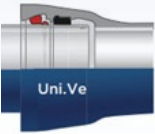

>> PAM utilizes electrostatic spray technology to apply the epoxy coating.

>> Before the coating process, the fittings undergo a high-intensity steel shot blasting to ensure the coating's effectiveness. The blasted fittings become as smooth as new, meeting the Sa 2.5 level specified in ISO8501-1.

>> PAM carries out a lot of tests to ensure that the epoxy coating meets the EN14901 standard:

- Adhesion strength test: This test checks the epoxy layer's adhesion strength, which must be no less than 8 MPa.
- Epoxy thickness measurement: Using an electromagnetic thickness gauge, the average thickness of the epoxy coating should be no less than 250 μm , with a minimum thickness of 200 μm .
- Holiday testing: This detects any missed spots in the epoxy coating.
- Impact test: Evaluates the epoxy coating's impact resistance.
- MIBK test: Assesses the cross-linking properties of the epoxy coating.
- Cathodic disbondment test and water bath aging test (70°C for 7 days): These tests verify the epoxy coating's adhesion strength.







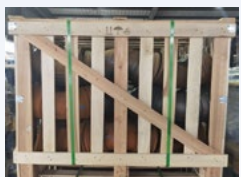

Types of joints for ductile iron fittings

Types of joints for ductile iron fittings	Graphics	Accessories	Description
Tyton joint		Tyton joint gasket	A conventional joint for water and sewage fittings. It is a push-in flexible joint, which is assembled by pushing the spigot through the gasket into the socket of the mating component. At the same time, the joint provides significant angular deflection, which can adapt to land subsidence.
Standard joint		Standard joint gasket	A conventional joint for water and sewage pipe fittings. Compared to the Tyton joint, it has better leaktightness and greater angular deflection, and can be installed faster during construction.
K joint		Gland, rubber gasket, bolt, nut	The joint is sealed by gland and gasket. It's easy for repair and maintenance.
Restrained joint		Standard joint gasket, locking ring	It is used to prevent joint separation for pipes and fittings. It can prevent disconnection in the pipeline caused due to the thrust generated by the water pressure within the pipeline, and reduce the use of concrete anchor blocks at bends, tees, blank flanges, and tapers, etc.
Flange joint		Rubber gasket, bolt, nut	It is used to connect other components with flange joints, such as valves. Place a rubber gasket that serves as a seal between two flanges and fasten them together with bolts and nuts to complete the connection.

QUALITY SERVICE

CUSTOMIZED PACKAGING PLAN

PAM provides customized packaging solutions for fittings to ensure that fittings would not be damaged during transportation.

Packaging method	Pallet packaging			Crates
	The surface of fittings is not protected	Fittings are wrapped in bubble film	Joints for fittings are wrapped with bubble film	Fittings are wrapped in bubble film
Relevant packaging materials involved	Pallets, dividers, stretch wrap film	Pallets, dividers, bubble film, stretch wrap film	Pallets, dividers, bubble film, anti-UV stretch wrap film	Crates, bubble film
Packaging Benefits	1. The fittings will not collide after packaging	1. The fittings will not collide after packaging 2. The dust will not enter the fittings 3. After wrapping with bubble film, avoid surface quality problems caused by slight collision of fittings	1. The fittings will not collide after packaging 2. The dust will not enter the package 3. Using anti-UV stretch wrap film can prevent ultraviolet rays from fading the fittings after exposure to sunlight	1. Bubble film reduce and buffer the collision of fittings in the crate 2. The dust will not enter the fittings
	Pallets, dividers, stretch wrap film  	Pallets, dividers, bubble film, stretch wrap film  	Pallets, dividers, bubble film, anti-UV stretch wrap film  	Crates, bubble film  

Note: Real packaging plan depends on real project and situation.

PROJECT REFERENCES



>> Sri Lanka HEMMATHAGAMA Water Supply Project
>> Ductile Iron Epoxy-coated Fittings
DN100-DN450, 210 tons



>> Qatar Roads & Infrastructure in Al Egda, Al Heedan and Al Khor Project
>> Ductile Iron Epoxy-coated Fittings
DN100-DN150, 452pcs, 6tons



>> Jamaica SPANISH TOWN ROAD Project
>> Ductile Iron Epoxy-coated Fittings
DN200-DN600, 95 pcs, 16 tons



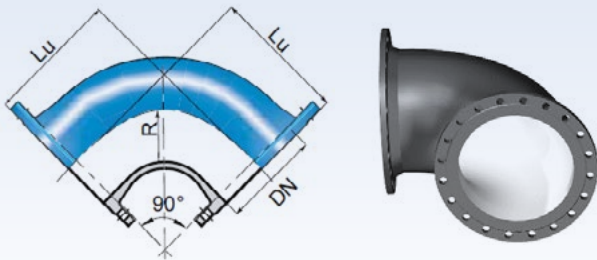
>> Sri Lanka Ballast Nedam Project
>> Ductile Iron Epoxy-coated Fittings
1180 pcs, 137 tons

PARAMETER

FIXED FLANGE FITTING

Fixed Flanged Bend Fittings

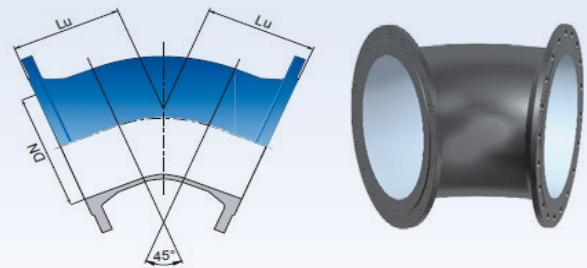
Bend 90° (1/4) with 2 Fixed Flanges DN80-DN2000



Angle	DN mm	Lu mm
90°	80	165
90°	100	180
90°	150	220
90°	200	260
90°	250	350
90°	300	400
90°	350	450
90°	400	500
90°	450	550
90°	500	600
90°	600	700
90°	700	800
90°	800	900
90°	900	1000
90°	1000	1100
90°	1200	1300
90°	1400	1350
90°	1600	1450
90°	1800	1500
90°	2000	1650

Note: For DN2200 and above, please consult PAM.

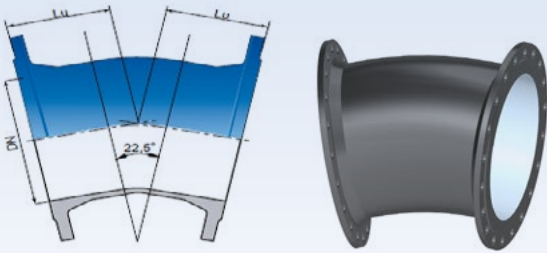
Bend 45° (1/8) with 2 Fixed Flanges DN80-DN2000



Angle	DN mm	Lu mm
45°	80	130
45°	100	140
45°	125	150
45°	150	160
45°	200	180
45°	250	350
45°	300	400
45°	350	298
45°	400	324
45°	450	349
45°	500	375
45°	600	426
45°	700	478
45°	800	529
45°	900	581
45°	1000	632
45°	1100	695
45°	1200	750
45°	1400	775
45°	1500	810
45°	1600	845
45°	1800	910
45°	2000	980

Note: For DN2200 and above, please consult PAM.

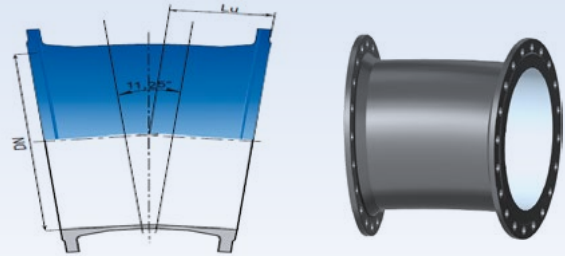
Bend 22.5° (1/16) with 2 Fixed Flanges DN80-DN2000



Angle	DN mm	Lu mm
22.5°	80	105
22.5°	100	110
22.5°	125	95
22.5°	150	109
22.5°	200	131
22.5°	250	190
22.5°	300	210
22.5°	350	210
22.5°	400	239
22.5°	450	180
22.5°	500	190
22.5°	600	220
22.5°	700	300
22.5°	800	330
22.5°	900	360
22.5°	1000	390
22.5°	1100	420
22.5°	1200	450
22.5°	1400	460
22.5°	1600	470
22.5°	1800	480
22.5°	2000	520

Note: For DN2200 and above, please consult PAM.

Bend 11.25° (1/32) with 2 Fixed Flanges DN80-DN2000



Angle	DN mm	Lu mm
11.25°	80	113
11.25°	100	115
11.25°	125	80
11.25°	150	113
11.25°	200	132
11.25°	250	165
11.25°	300	175
11.25°	350	191
11.25°	400	205
11.25°	450	135
11.25°	500	140
11.25°	600	160
11.25°	700	205
11.25°	800	230
11.25°	900	245
11.25°	1000	265
11.25°	1100	320
11.25°	1200	360
11.25°	1400	380
11.25°	1600	400
11.25°	1800	410
11.25°	2000	415

Note: For DN2200 and above, please consult PAM.

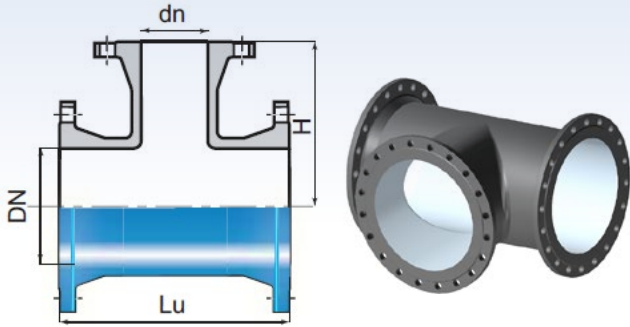
Bend 90° (1/4) Long Radius with 2 Fixed Flanges DN80-DN600



Angle	DN mm	Lu mm	R mm
90°	80	380	330
90°	100	400	340
90°	150	450	385
90°	200	500	430
90°	250	550	475
90°	300	600	515
90°	350	650	560
90°	400	700	605
90°	450	750	650
90°	500	800	690
90°	600	900	780

Fixed Flanged Tee Fittings

All Fixed Flange Tees DN80-DN2000



Body DN	Branch dn	Lu mm	H mm
80	80	330	165
100	80	360	175
	100	360	180
150	80	440	205
	100	440	210
200	150	440	220
	80	520	235
	100	520	240
	150	520	250
250	200	520	260
	80	700	265
	100	700	275
	150	700	300
	200	700	325
300	250	700	350
	100	800	300
	150	800	325
	200	800	350
	250	800	375
350	300	800	400
	100	850	325
	150	850	325
	200	850	325
	250	850	325
	300	850	425
400	350	850	425
	100	900	350
	150	900	350
	200	900	350
	250	900	350
	300	900	450
450	350	900	450
	400	900	450

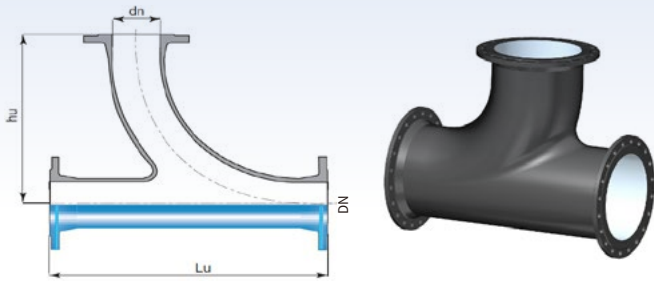
Body DN	Branch dn	Lu mm	H mm
450	100	950	375
	150	950	375
	200	950	375
	250	950	375
	300	950	475
	350	950	475
	400	950	475
	450	950	475
500	100	1000	400
	150	1000	400
	200	1000	400
	250	1000	400
	300	1000	500
	350	1000	500
	400	1000	500
	450	1000	500
600	500	1000	500
	100	1100	450
	150	1100	450
	200	1100	450
	250	1100	450
	300	1100	550
	350	1100	550
	400	1100	550
700	450	1100	550
	500	1100	550
	600	1100	550
	100	540	510
	150	595	515
	200	650	525
	250	705	530
	300	760	540
800	350	815	545
	400	870	555
	450	925	560
	500	980	570
	600	1090	585
	700	1200	600
900	100	580	570
	150	635	575
	200	690	585
	250	745	590
	300	800	600
	350	855	605
	400	910	615
	450	965	620
1000	500	1020	630
	600	1350	645
	700	1350	660
	800	1350	675

Body DN	Branch dn	Lu mm	H mm
900	100	620	630
	150	675	635
	200	730	645
	250	785	650
	300	840	660
	350	895	665
	400	950	675
	450	1005	680
	500	1060	690
	600	1500	705
	700	1500	720
	800	1500	735
	900	1500	750
1000	100	660	690
	150	715	695
	200	770	705
	250	825	710
	300	880	720
	350	935	725
	400	990	735
	450	1045	740
	500	1100	750
	600	1650	765
	700	1650	780
	800	1650	795
	900	1650	810
1000	1650	825	
1200	100	660	810
	150	715	815
	200	775	825
	250	830	830
	300	890	840
	350	950	845
	400	1005	855
	500	1120	870
	600	1240	885
	700	1355	900
	800	1470	915
	900	1585	930
	1000	1700	945
1200	1935	975	
1400	100	970	905
	200	1085	920
	400	1320	950
	600	1550	980
	800	1760	1010
	1000	2015	1040
	1200	2245	1070
1400	2480	1100	

Body DN	Branch dn	Lu mm	H mm
1600	100	1020	1015
	200	1140	1030
	400	1370	1060
	600	1600	1090
	800	1835	1120
	1000	2065	1150
	1200	2300	1180
	1400	2530	1210
	1600	2760	1240
	100	1075	1125
	200	1190	1140
1800	400	1420	1170
	600	1655	1200
	800	1885	1230
	1000	2120	1260
	1200	2350	1290
	1400	2580	1320
	1600	2815	1350
1800	3045	1380	
2000	100	1125	1235
	200	1240	1250
	400	1475	1280
	600	1705	1310
	800	1940	1340
	1000	2170	1370
	1400	2635	1430
	1600	2865	1460
	1800	3100	1490
2000	3330	1520	

Note: only PN10 & PN16 for DN700-2000

All Fixed Flange Radial Tee DN80-DN1200



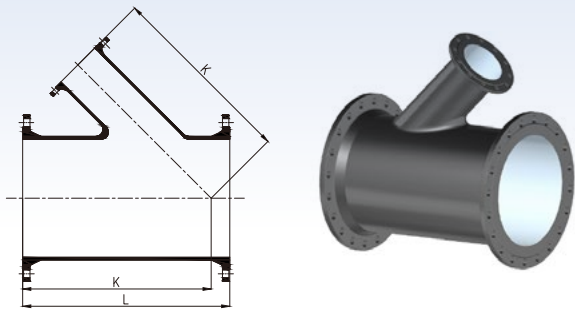
Body DN	Branch dn	Lu mm	hu mm
80	80	545	380
	100	570	390
100	80	615	415
	100	625	425
	150	670	450
150	80	620	440
	100	630	450
	150	715	475
200	200	760	500
	80	625	465
	100	635	475
250	150	760	500
	200	805	525
	250	900	550
	300	960	575
300	300	1000	600
	80	635	490
	100	725	500
	150	770	525
	200	915	550
350	250	965	600
	300	1005	625
	350	1100	650
	100	730	525
	150	775	550
	200	920	575
400	250	970	625
	300	1060	650
	350	1105	675
	400	1200	700

Body DN	Branch dn	Lu mm	hu mm
450	100	740	575
	150	785	600
	200	930	625
	250	1025	650
	300	1065	675
	350	1110	700
	400	1255	725
	450	1300	750
500	150	795	625
	200	940	650
	250	1035	675
	300	1075	700
	350	1120	725
	400	1265	750
	450	1410	775
	500	1400	800
600	150	835	675
	200	950	700
	250	1045	725
	300	1085	750
	350	1130	775
	400	1275	800
	450	1370	825
	500	1410	850
700	600	1600	900
	200	950	750
	250	1045	775
	300	1085	800
	350	1130	825
	400	1275	850
	450	1370	875
	500	1410	900
800	600	1600	950
	700	1800	1000
	250	1045	825
	300	1085	850
	350	1130	875
	400	1275	900
	450	1370	925
	500	1410	950
900	600	1600	1000
	700	1800	1050
	800	2000	1100
	300	1090	900
	350	1135	925
	400	1280	950
	450	1375	975
	500	1415	1000
900	600	1605	1050
	700	1805	1100
	800	2005	1150
	900	2200	1200

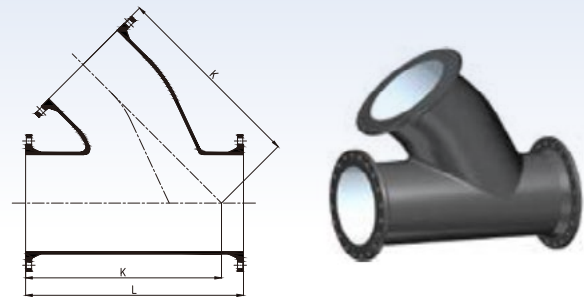
Body DN	Branch dn	Lu mm	hu mm
1000	350	1145	975
	400	1290	1000
	450	1385	1025
	500	1425	1050
	600	1615	1100
	700	1815	1150
	800	2015	1200
	900	2210	1250
	1000	2400	1300
1100	400	1300	1050
	450	1395	1075
	500	1435	1100
	600	1625	1150
	700	1825	1200

Body DN	Branch dn	Lu mm	hu mm
	800	2025	1250
	900	2220	1300
	1000	2410	1350
	1100	2600	1100
	1200	2800	1500
1200	450	1405	1125
	500	1445	1150
	600	1635	1200
	700	1835	1250
	800	2035	1300
	900	2230	1350
	1000	2420	1400
	1100	2610	1450
	1200	2800	1500

All Fixed Flange 45° (1/8) Angle Branch Tee DN80-DN1200



Type N



Type M

DN mm	dn mm	Type	L mm	K mm
80	80	N	500	375
	100	N	500	390
100	100	N	540	405
	150	N	590	480
150	100	N	640	480
	150	N	640	480
200	80	N	635	535
	100	N	635	535
	150	N	735	560
	200	N	735	560
250	80	N	660	585
	100	N	710	610
	150	N	830	640
	200	N	830	640
250	250	N	830	640

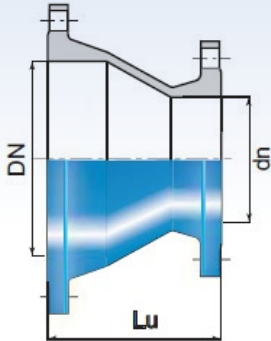
DN mm	dn mm	Type	L mm	K mm
300	80	N	685	610
	100	N	685	610
	150	N	790	660
	200	N	865	685
	250	N	930	715
350	300	N	930	715
	100	N	685	635
	150	N	740	660
	200	N	840	710
	250	N	880	740
400	300	M	880	790
	350	M	880	790
	100	N	760	710
	150	N	815	740
	200	N	865	760

DN mm	dn mm	Type	L mm	K mm
400	250	N	970	820
	300	M	970	870
	350	M	970	870
	400	M	970	870
450	100	N	740	710
	150	N	840	760
	200	N	890	790
	250	N	990	820
	300	M	1040	900
	350	M	1060	950
	400	M	1060	950
500	150	N	790	765
	200	N	890	810
	250	N	940	840
	300	M	990	865
	350	M	1065	950
	400	M	1140	1025
	450	M	1140	1025
600	500	M	1140	1025
	150	N	890	840
	200	N	940	890
	250	N	990	915
	300	M	1090	965
	350	M	1160	1000
	400	M	1230	1035
700	450	M	1295	1070
	500	M	1310	1180
	600	M	1310	1180
	200	N	1040	1015
	250	N	1070	1040
	300	N	1170	1090
	350	M	1240	1125
800	400	M	1310	1160
	450	M	1370	1195
	500	M	1440	1240
	600	M	1570	1370
	700	M	1570	1370
	250	N	1180	1150
	300	N	1200	1170
900	350	N	1270	1205
	400	M	1340	1240
	450	M	1400	1270
	500	M	1470	1305
	600	M	1600	1370
	700	M	1660	1450
	800	M	1720	1520
900	300	N	1270	1245
	350	N	1340	1280
	400	N	1410	1315

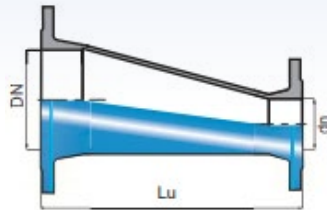
DN mm	dn mm	Type	L mm	K mm
900	450	M	1350	1350
	500	M	1560	1390
	600	M	1730	1475
	700	M	1780	1540
	800	M	1830	1610
	900	M	1880	1680
	1000	350	N	1415
400		N	1485	1415
450		N	1550	1450
500		M	1680	1510
600		M	1800	1575
700		M	1930	1640
800		M	2060	1700
1100	900	M	2180	1980
	1000	M	2180	1980
	400	N	1560	1515
	450	N	1625	1550
	500	M	1730	1600
	600	M	1830	1650
	700	M	1980	1790
1200	800	M	2120	1930
	900	M	2265	2065
	1000	M	2265	2065
	1100	M	2265	2065
	450	N	1780	1700
	500	N	1880	1750
	600	M	1980	1855
1200	700	M	2125	1920
	800	M	2270	1990
	900	M	2415	2060
	1000	M	2480	2280
	1100	M	2480	2280
	1200	M	2480	2280

Fixed Flanged Taper Fittings

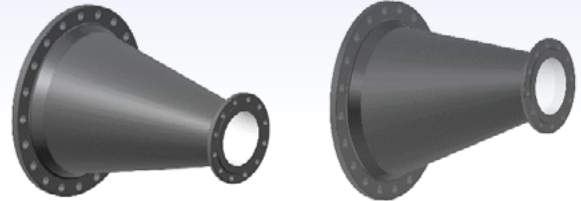
Fixed Flanged Taper Fittings DN100-DN1800



Concentric type



Flat type



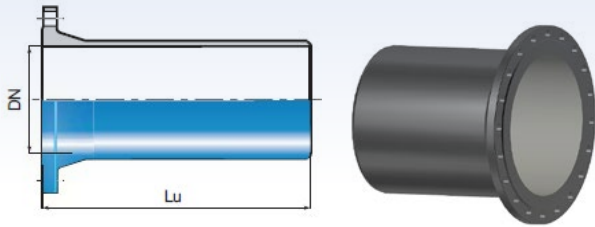
DN	dn	Lu mm
100	80	200
150	80	400
	100	300
200	80	600
	100	600
250	150	300
	100	600
300	150	600
	200	300
	100	600
350	150	750
	200	600
	250	600
	300	300
400	100	800
	150	750
	200	600
	250	600
	300	300
450	100	900
	150	800
	200	750
	250	600
	300	600
500	350	600
	400	300
	100	950
150	900	

DN	dn	Lu mm
500	200	800
	250	700
	300	600
	350	600
	400	600
600	450	300
	100	1050
	150	1000
	250	900
	300	800
700	350	700
	400	600
	450	600
	500	600
	200	1100
800	250	1050
	300	1100
	350	900
	400	800
	450	700
900	500	600
	600	600
	400	1030
	450	900
	500	800
1000	600	600
	700	600
	400	1100
1200	450	1100
	500	1000
	600	800
1400	700	850
	800	950
	900	1100
1600	1000	1000
	1200	850
	1000	1650
1800	1200	1000
	1400	910
	1000	1760
2000	1200	1710
	1400	1340
	1800	1030

DN	dn	Lu mm
1000	500	1200
	600	1000
	700	800
	800	600
	900	600
1200	600	1150
	700	1345
	800	1160
	900	975
	1000	790
1400	700	850
	800	950
	900	1100
	1000	1000
	1200	850
1600	1000	1650
	1200	1000
	1400	910
1800	1000	1760
	1200	1710
	1400	1340
2000	1800	1030

Fixed Flanged Spigot Fittings

Fixed Flanged Spigot Fittings DN80-DN2000

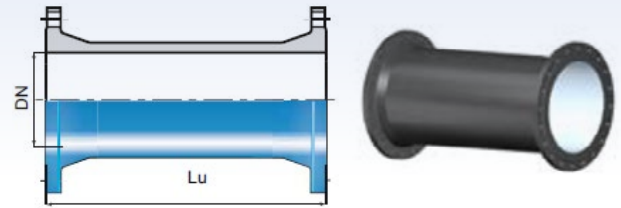


DN	Lu
mm	mm
80	350
100	360
150	380
200	400
250	420
300	440
350	460
400	480
450	500
500	520
600	560
700	600
800	600
900	600
1000	600
1200	600
1400	710
1600	780
1800	850
2000	920

Other lengths are also available, please consult us.

Short Double Fixed Flanged Pipe

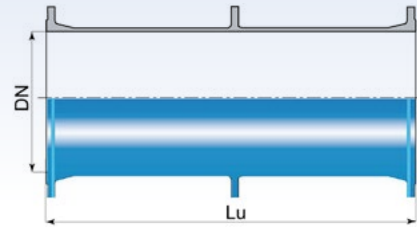
Short Double Fixed Flanged Pipe



DN	Lu	DN	Lu
mm	mm	mm	mm
80	200	200	300
	250		350
	300		400
	350		450
	400		500
	450		600
	500		700
	600		800
	700		900
	800		1000
100	200	250	200
	250		250
	300		300
	350		350
	400		400
	450		450
	500		500
	600		600
	700		700
	800		800
150	900	300	900
	1000		1000
	200		200
	250		250
	300		300
	350		350
	400		400
	450		450
	500		500
	600		600
200	700		700
	800		800
	900		900
	1000		1000
	200		1200
	250		1300

DN	Lu	DN	Lu		
mm	mm	mm	mm		
350	200	600	1000		
	250		1500		
	300		2000		
	350	700	300		
	400		400		
	500		500		
	600		600		
	700		700		
	800		800		
	900		900		
	1000		1000		
	1200		1500		
	1500		2000		
	400		300	800	300
			400		400
500			500		
600			600		
700			700		
800		800			
900		900			
1000		1000			
1200		1500			
1300		2000			
450	1500	900	300		
	1800		400		
	300		500		
	400		600		
	500		700		
	600		800		
	700		900		
	800		1000		
	900		1500		
	1000		2000		
500	1200	1000	300		
	1300		400		
	300		500		
	400		600		
	500		700		
	600		800		
	700		900		
	800		1000		
	900		1500		
	1000		2000		
600	1500	1100	1000		
	2000		1500		
	300		2000		
	400		1000		
	500		1400		
	600		1500		
	700		2000		
	800		1000		
	900		1600		
			1500		
	2000				

Short Double Fixed Flanged Pipe with Puddle



DN	Lu	DN	Lu
mm	mm	mm	mm
80	200	200	300
	250		350
	300		400
	350		450
	400		500
	450		600
	500		700
	600		800
	700		900
	800		1000
100	200	250	200
	250		250
	300		300
	350		350
	400		400
	450		450
	500		500
	600		600
	700		700
	800		800
150	900	300	900
	1000		1000
	200		200
	250		250
	300		300
	350		350
	400		400
	450		450
	500		500
	600		600
200	700	300	700
	800		800
	900		900
	1000		1000
	200		1200
250	1300		

DN	Lu
mm	mm
350	200
	250
	300
	350
	400
	500
	600
	700
	800
	900
	1000
400	1200
	1500
	300
	400
	500
	600
	700
450	800
	900
	1000
	1200
	1300
	300
	400
500	500
	600
	700
	800
	900
	1000
	1500
600	2000
	300
	400
	500
	600
	700
	800
450	300

DN	Lu
mm	mm
450	400
	500
	600
	700
	800
	900
	1000
	1200
	1300
	300
	400
500	500
	600
	700
	800
	900
	1000
	1500
600	2000
	300
	400
	500
	600
	700
	800
900	900

DN	Lu
mm	mm
600	1000
	1500
	2000
	300
700	400
	500
	600
	700
	800
	900
	1000
	1500
	2000
	300
	400
800	500
	600
	700
	800
	900
	1000
	1500
900	2000
	300
	400
	500

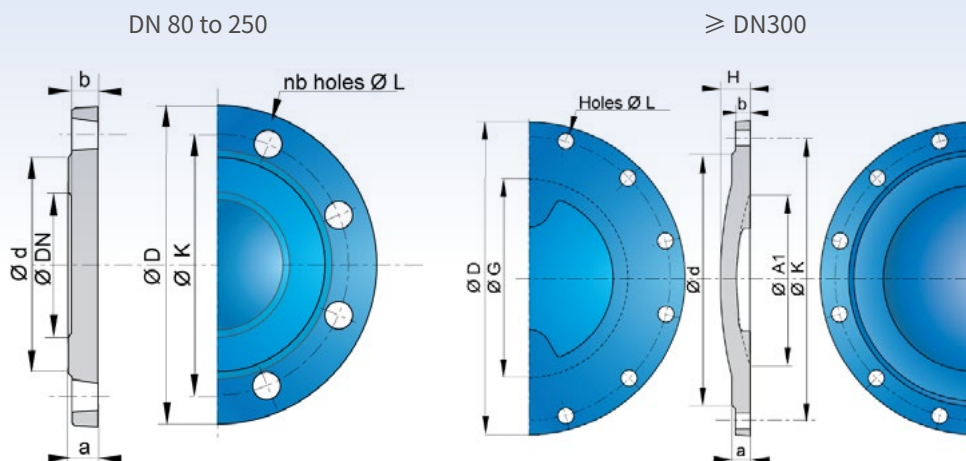
DN	Lu
mm	mm
900	600
	700
	800
	900
	1000
	1500
	2000
1000	300
	400
	500
	600
	700
	800
	900
1100	1000
	1500
	2000
	1000
	1400
	1500
	2000
1600	1000
	1500
	2000
	2000

Puddle in the middle of double flange pipe.
Other lengths are also available, please consult us.

Note: For DN1800 and above, please consult PAM.

Blank Flange

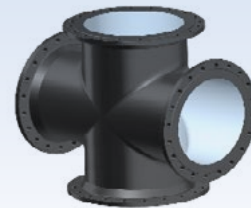
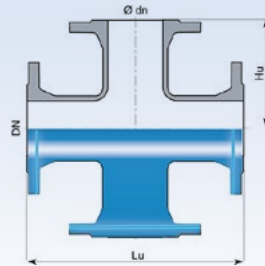
Blank Flange



DN mm	Blank Flange PN10			Blank Flange PN16			Blank Flange PN25			Blank Flange PN40		
	ØD	a	b	ØD	a	b	ØD	a	b	ØD	a	b
80	200	19	16	200	19	16	200	19	16	200	19	16
100	220	19	16	220	19	16	235	19	16	235	19	16
125	250	19	16	250	19	16	270	19	16	-	-	-
150	285	19	16	285	19	16	300	20	17	300	26	23
200	340	20	17	340	20	17	360	22	19	375	30	27
250	400	22	19	400	22	19	425	24.5	21.5	450	34.5	31.5
300	455	24.5	20.5	455	24.5	20.5	485	27.5	23.5	515	39.5	35.5
350	505	24.5	20.5	520	26.5	22.5	555	30	26	580	44	40
400	565	24.5	20.5	580	28	24	620	32	28	660	48	44
450	615	25.5	21.5	640	30	26	670	34.5	30.5	685	50	46
500	670	26.5	22.5	715	31.5	27.5	730	36.5	32.5	755	52	48
600	780	30	25	840	36	31	845	42	37	845	58	53
700	895	32.5	27.5	910	39.5	34.5	960	46.5	41.5	-	-	-
800	1015	35	30	1025	43	38	1085	51	46	-	-	-
900	1115	37.5	32.5	1125	46.5	41.5	1185	55.5	50.5	-	-	-
1000	1230	40	35	1255	50	45	1320	60	55	-	-	-
1200	1455	45	40	1485	57	52	1530	69	64	-	-	-
1400	1675	46	41	1685	60	55	1755	74	69	-	-	-
1600	1915	49	44	1930	65	60	1975	81	76	-	-	-
1800	2115	52	47	2130	70	65	2195	88	83	-	-	-
2000	2325	55	50	2345	75	70	2425	95	90	-	-	-

Cross with Fixed Flanges

Cross with Fixed Flanges



Body DN	Branch dn	Lu mm	Hu mm
80	80	330	165
	100	360	175
100	100	360	180
	150	440	205
150	100	440	210
	150	440	220
200	80	520	235
	100	520	240
	150	520	250
	200	520	260
250	80	700	265
	100	700	275
	150	700	300
	200	700	325
	250	700	350
300	100	800	300

Body DN	Branch dn	Lu mm	Hu mm
300	150	800	325
	200	800	350
	250	800	375
	300	800	400
350	100	850	325
	150	850	325
	200	850	325
	250	850	352
	300	850	425
400	350	850	425
	100	900	350
	150	900	350
	200	900	350
	250	900	350
	300	900	450
350	900	450	

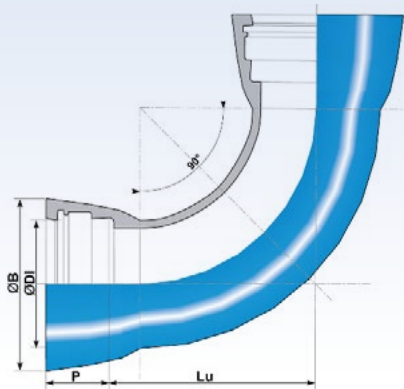
Body	Branch	Lu	H
DN	dn	mm	mm
400	400	900	450
450	100	950	375
	150	950	375
	200	950	375
	250	950	375
	300	950	475
	350	950	475
	400	950	475
	450	950	475
500	100	1000	400
	150	1000	400
	200	1000	400
	250	1000	400
	300	1000	500

Body	Branch	Lu	H
DN	dn	mm	mm
500	350	1000	500
	400	1000	500
	450	1000	500
	500	1000	500
	600	1000	500
600	100	1100	450
	150	1100	450
	200	1100	450
	250	1100	450
	300	1100	550
	350	1100	550
	400	1100	550
	450	1100	550
	500	1100	550
	600	1100	550

TYTON SOCKET FITTING

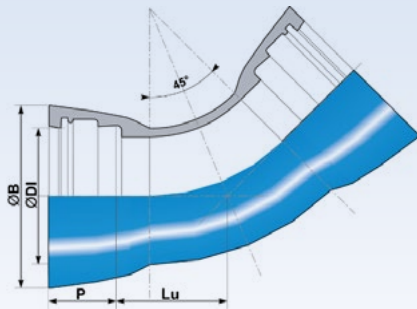
Socket Bend Fitting TYT

Double Socket Bend 90° (1/4) TYT



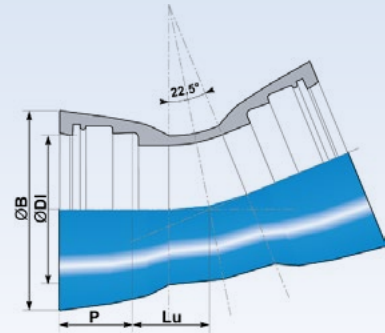
Angle	DN	Lu
	mm	mm
90°	80	100
90°	100	120
90°	150	170
90°	200	220
90°	250	270
90°	300	320
90°	350	370
90°	400	420
90°	450	470
90°	500	520
90°	600	620
90°	700	720
90°	800	820
90°	900	920
90°	1000	1020
90°	1200	1220
90°	1400	1220
90°	1600	1290
90°	1800	1320
90°	2000	1440
90°	2200	1560

Double Socket Bend 45° (1/8) TYT



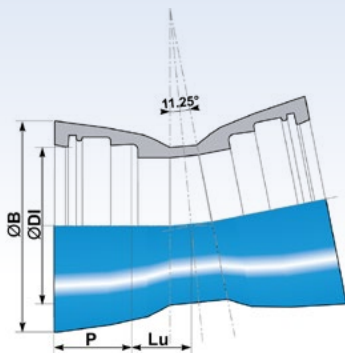
Angle	DN mm	Lu mm
45°	80	55
45°	100	65
45°	150	85
45°	200	110
45°	250	130
45°	300	150
45°	350	175
45°	400	195
45°	450	220
45°	500	240
45°	600	285
45°	700	330
45°	800	370
45°	900	415
45°	1000	460
45°	1200	550
45°	1400	515
45°	1600	565
45°	1800	610
45°	2000	660
45°	2200	710

Double Socket Bend 22.5° TYT



Angle	DN mm	Lu mm
22.5°	80	40
22.5°	100	40
22.5°	150	55
22.5°	200	65
22.5°	250	75
22.5°	300	85
22.5°	350	95
22.5°	400	110
22.5°	450	120
22.5°	500	130
22.5°	600	150
22.5°	700	175
22.5°	800	195
22.5°	900	220
22.5°	1000	240
22.5°	1200	285
22.5°	1400	260
22.5°	1600	280
22.5°	1800	305
22.5°	2000	330
22.5°	2200	355

Double Socket Bend 11.25° TYT

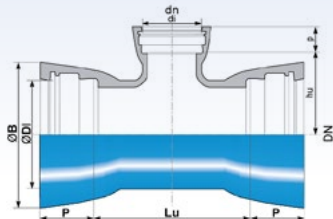


Angle	DN mm	Lu mm
11.25°	80	30
11.25°	100	30
11.25°	150	35
11.25°	200	40
11.25°	250	50
11.25°	300	55
11.25°	350	60
11.25°	400	65
11.25°	450	70
11.25°	500	75

Angle	DN mm	Lu mm
11.25°	600	85
11.25°	700	95
11.25°	800	110
11.25°	900	120
11.25°	1000	130
11.25°	1200	150
11.25°	1400	130
11.25°	1600	140
11.25°	1800	155
11.25°	2000	165
11.25°	2200	190

Socket Tee Fitting TYT

All Socket Tee Fittings TYT



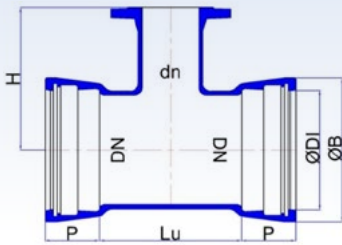
Body DN	Branch dn	Lu mm	hu mm
80	80	170	85
	100	170	95
100	100	190	95
	150	170	120
150	100	195	120
	150	255	125
200	80	180	145
	100	200	145
	150	255	150
	200	315	155
250	80	180	170
	100	200	170
	150	260	175
	200	315	180
300	250	375	190
	80	180	190
	100	205	195
	150	265	200
350	200	325	205
	250	380	210
	300	440	220
	80	180	215
	100	205	220
400	150	265	225
	200	320	230
	250	380	235
	300	435	240
	350	495	245
450	80	185	240
	100	210	245
	150	265	240
	200	325	255
	250	380	260
	300	440	265
	350	500	270
500	400	555	275
	80	190	290
	100	215	295
	150	270	300
	200	330	305
	250	390	310
	300	445	315
550	350	505	320
	400	560	325
	450	620	330
	500	680	340
	80	195	340
	100	220	345
	150	280	350
600	200	335	355
	250	395	360
	300	450	365
	350	510	370
	400	570	375
	450	625	380
	500	685	390
650	600	800	400
	80	205	395
	100	230	395
	150	285	400
	200	345	405
	250	400	410
	300	460	420
700	350	520	425
	400	575	430
	450	635	435
	500	690	440
	600	810	450
	700	925	460
	80	210	445
750	100	235	445
	150	290	450
	200	350	455
	250	410	460
	300	465	470
	350	525	475
	400	580	480
800	450	640	485

Body DN	Branch dn	Lu mm	hu mm
450	80	185	265
	100	210	270
	150	270	275
	200	325	280
	250	385	285
	300	445	290
	350	500	295
	400	560	300
	450	615	305
500	80	190	290
	100	215	295
	150	270	300
	200	330	305
	250	390	310
	300	445	315
	350	505	320
	400	560	325
	450	620	330
550	500	680	340
	80	195	340
	100	220	345
	150	280	350
	200	335	355
	250	395	360
	300	450	365
	350	510	370
	400	570	375
600	450	625	380
	500	685	390
	600	800	400
	80	205	395
	100	230	395
	150	285	400
	200	345	405
	250	400	410
	300	460	420
650	350	520	425
	400	575	430
	450	635	435
	500	690	440
	600	810	450
	700	925	460
	80	210	445
	100	235	445
	150	290	450
700	200	350	455
	250	410	460
	300	465	470
	350	525	475
	400	580	480
	450	640	485

Body	Branch	Lu	hu
DN	dn	mm	mm
800	500	700	490
	600	815	500
	700	930	510
	800	1045	525
900	80	215	495
	100	240	495
	150	300	500
	200	355	505
	250	415	510
	300	470	515
	350	530	525
	400	590	530
	450	645	535
	500	705	540
	600	820	550
	700	935	560
	800	1050	570
	900	1170	585
1000	80	225	545
	100	245	545
	150	305	550
	200	360	555
	250	420	560
	300	480	570
	350	535	575
	400	595	580
	450	650	585
	500	710	590
	600	825	600
	700	940	610
	800	1060	625
	900	1175	635
1000	1290	645	
1200	80	235	645
	100	260	645
	150	315	650
	200	375	655
	250	430	660
	300	490	670
	350	550	675
	400	605	680
	450	665	685
	500	720	690
	600	840	700
	700	955	710
	800	1070	725
	900	1185	735
1000	1300	745	
1200	1535	765	
1400	80	250	745
	100	270	745

Body	Branch	Lu	hu
DN	dn	mm	mm
1400	150	330	750
	200	385	755
	250	445	760
	300	500	770
	350	560	775
	400	620	780
	450	675	785
	500	735	790
	600	850	800
	700	965	810
	800	1080	825
	900	1200	835
	1000	1315	845
	1200	1545	865
1400	1780	890	
1600	80	260	845
	100	280	845
	150	340	850
	200	400	855
	250	455	860
	300	515	870
	350	570	875
	400	630	880
	450	690	885
	500	745	890
	600	860	900
	700	980	910
	800	1095	925
	900	1210	935
1000	1325	945	
1200	1560	965	
1400	1790	990	
1600	2020	1010	
1800	80	270	945
	100	295	945
	150	350	950
	200	410	955
	250	470	960
	300	525	970
	350	585	975
	400	640	980
	450	700	985
	500	760	990
	600	875	1000
	700	990	1010
	800	1105	1025
	900	1220	1035
1000	1340	1045	
1200	1570	1065	
1400	1800	1090	
1600	2035	1110	
1800	2265	1135	

Double Socket Tee with Fixed Flanged Branch



Body DN	Branch dn	Lu mm	H mm
80	80	170	165
	100	170	175
100	80	170	205
	100	195	210
150	80	175	235
	100	200	240
200	150	255	250
	200	315	260
250	80	180	265
	100	200	270
	150	260	280
	200	315	290
	250	375	300
300	100	205	300
	150	260	310
	200	320	320
	250	380	330
	300	435	340
350	100	205	330
	150	270	340
	200	325	350
	250	385	360
	300	435	370
400	350	495	380
	100	210	360
	150	270	370
	200	325	380
	250	385	390
450	300	445	400
	350	500	410
	400	560	420
	100	215	390
	150	270	400
450	200	330	410
	250	390	420

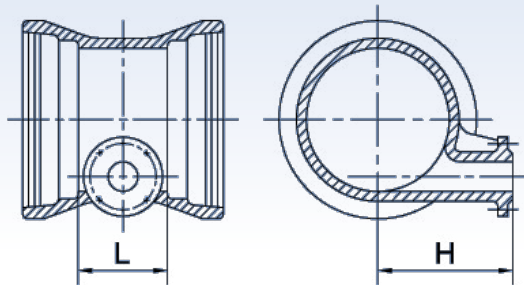
Body DN	Branch dn	Lu mm	H mm
450	300	445	430
	350	500	440
	400	560	450
	450	620	460
500	100	215	420
	150	270	430
	200	330	440
	250	390	450
	300	445	460
	350	505	470
	400	565	480
	450	620	490
	500	680	500
	600	100	220
150		280	490
200		340	500
250		395	510
300		450	520
350		510	530
400		570	540
450		625	550
500		685	560
600		800	580
700	100	230	510
	150	285	515
	200	345	525
	300	460	540
	350	520	545
	400	575	555
	450	635	560
	500	690	570
	600	810	585
	700	925	600
800	100	235	570
	150	290	580
	200	350	585
	250	410	590
	300	465	600
	400	580	615
	500	700	630
	600	1045	645
	700	930	660
	800	1045	675
900	100	240	630
	150	300	635
	200	355	645
	300	470	660
	400	590	675
	500	705	690
	600	1170	705
700	935	720	

Body DN	Branch dn	Lu mm	H mm
900	800	1050	735
	900	1170	750
1000	100	245	690
	150	305	695
	200	360	705
	250	420	710
	300	480	720
	400	595	735
	500	710	750
	600	1290	765
	700	940	780
	800	1060	795
	900	1175	810
1200	1000	1290	825
	100	260	810
	200	375	825
	300	490	840
	400	605	855
	500	720	870
	600	840	885
	700	955	900
	800	1070	915
	900	1185	930
	1000	1300	945
1400	1200	1535	975
	100	450	905
	200	565	920
	300	680	935
	400	800	950

Body DN	Branch dn	Lu mm	H mm
1400	500	915	965
	600	1030	980
	800	1260	1010
	1000	1495	1040
	1200	1725	1070
	1400	1960	1100
1600	200	580	1030
	250	635	1040
	300	695	1045
	400	810	1060
	500	925	1075
	600	1040	1090
	800	1275	1120
	1000	1505	1150
	1200	1740	1180
	1400	1970	1210
	1600	2200	1240
1800	200	595	1150
	250	650	1150
	300	705	1155
	400	820	1170
	500	940	1185
	600	1055	1200
	800	1285	1230
	1000	1520	1260
	1200	1750	1290
	1400	1980	1320
	1600	2215	1350
1800	2445	1380	

Note: For DN2000 and above, please consult PAM.

Double Socket Level Invert Tee with Flange Branch



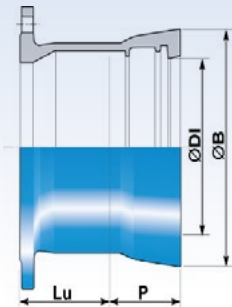
Body DN	Branch dn	L mm	H mm
200	100	200	240
	150	250	250
250	100	200	270
	150	255	280
300	200	315	290
	100	205	300
	150	260	310
350	200	320	320
	100	205	330
	150	265	340
400	200	325	350
	100	210	360
	150	265	370
	200	325	380
	250	380	390

Body DN	Branch dn	L mm	H mm
450	100	210	400
	150	270	400
	200	325	410
	250	385	420
	300	445	430
500	100	215	420
	150	274	430
	200	330	440
	250	390	450
	300	445	460
600	100	220	480
	150	280	490
	200	340	500
	250	395	510
	300	450	520
	350	510	530
	400	570	540
700	100	230	510
	150	285	515
	200	345	525
	300	460	540

Body DN	Branch dn	L mm	H mm
800	100	235	570
	150	290	575
	200	350	585
	250	410	590
	300	465	630
900	150	300	635
	200	355	645
	300	470	660
	400	590	675
1000	100	245	690
	150	305	695
	200	360	705
	300	480	720
1200	200	375	825
	400	605	855
	200	565	920
1400	400	800	950
	600	1030	980
1600	400	810	1060
1800	400	820	1170

Flange Socket Fitting TYT

Fixed Flange Socket Fittings

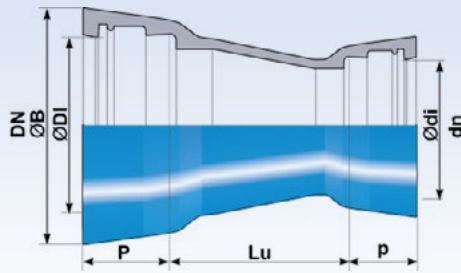


DN mm	Lu mm
80	130
100	130
150	135
200	140
250	145
300	150
350	155
400	160
450	165
500	170

DN mm	Lu mm
600	180
700	190
800	200
900	210
1000	220
1200	240
1400	310
1600	330
1800	350
2000	370
2200	390

Double Socket Taper Fitting TYT

Double Socket Taper TYT



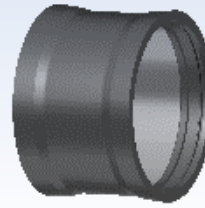
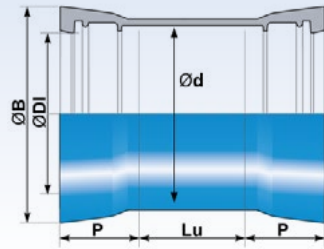
DN	dn	Lu
mm	mm	mm
100	80	90
150	80	190
	100	150
200	80	290
	100	250
	150	150
250	80	390
	100	300
	150	250
	200	150
300	80	490
	100	450
	150	350
	200	250
	250	150
350	80	600
	100	560
	150	460
	200	360
	250	260
	300	160
400	80	700
	100	660
	150	560
	200	460
	250	360
	300	260
	350	160
450	80	760
	100	760
	150	660
	200	560
	250	460
300	360	

DN	dn	Lu
mm	mm	mm
450	350	260
500	400	160
	80	900
	100	860
500	150	760
	200	660
	250	560
	300	460
	350	360
	400	260
	450	160
600	80	1100
	100	1060
	150	960
	200	860
	250	760
	300	660
700	350	560
	400	460
	450	360
	500	260
	200	1080
	250	980
	300	880
800	350	780
	400	680
	450	580
	500	480
	600	280
800	400	880
	450	780
	500	680
	600	480
	700	280

DN	dn	Lu
mm	mm	mm
900	400	1080
	450	980
	500	880
	600	680
1000	700	480
	800	280
	600	880
	700	680
1000	800	480
	900	280
	600	1280
	700	1080
1200	800	880
	900	680
	1000	480
1400	600	960
	700	860
	800	760
	900	660
	1000	560
1600	1200	360
	800	960
	900	860
	1000	760
1800	1200	560
	1400	360
	1000	960
	1200	760
2000	1400	560
	1600	360
	1000	1160
	1200	960
2200	1400	760
	1600	560
	1800	360
2000	2000	360

Double Socket Collar Fitting TYT

Double Socket Collar TYT

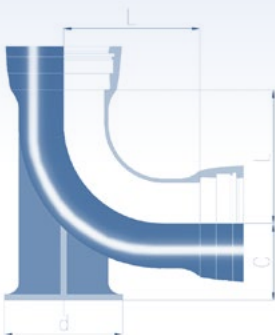


DN	Lu	Ød
mm	mm	mm
80	160	109
100	160	130
150	165	183
200	170	235
250	175	288
300	180	340
350	185	393
400	190	445
450	195	498
500	200	550

DN	Lu	Ød
mm	mm	mm
600	210	655
700	220	760
800	230	865
900	240	970
1000	250	1075
1200	270	1285
1400	340	1477
1600	360	1683
1800	380	1889
2000	400	2095
2200	420	2301

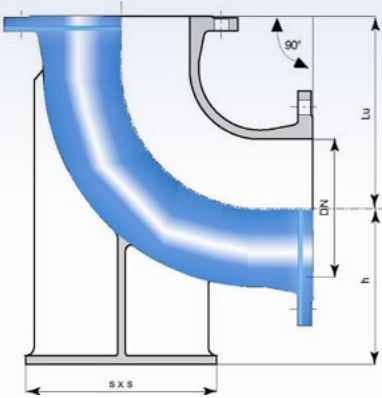
Duckfoot 90° Bend Fitting TYT

Duckfoot Double Socket Bend90° (1/4) DN100-DN1200



DN	L	c	d
mm	mm	mm	mm
100	120	125	200
150	170	160	250
200	220	190	300
250	270	225	350
300	320	255	400
350	370	290	450
400	420	320	500
450	470	355	550
500	520	385	600
600	620	450	700
700	720	515	800
800	820	580	900
900	920	645	1000
1000	1020	710	1100
1200	1220	840	1300

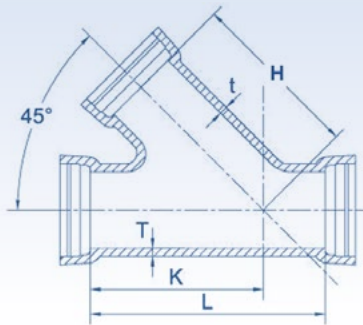
Duckfoot Double Finxed Flange Bend90° (1/4) DN100-DN1200



DN	Lu	h	s
mm	mm	mm	mm
100	180	125	200
150	220	160	250
200	260	190	300
250	350	225	350
300	400	255	400
350	450	290	450
400	500	320	500
450	550	355	550
500	600	385	600
600	700	450	700
700	800	515	800
800	900	580	900
900	1000	645	1000
1000	1100	710	1100
1200	1300	840	1300

All Socket 45° Angle Branch TYT

All Socket 45° (1/8) Angle Branch TYT DN80-DN1200



Body DN	Branch dn	L mm	K mm	H mm
80	80	290	215	215
100	80	290	225	230
	100	320	240	240
150	80	290	250	265
	100	320	265	275
	150	390	300	300
	80	290	275	300
200	100	320	290	310
	150	390	325	335
	200	460	360	360
250	80	290	300	335
	100	320	315	345
	150	390	350	370
	200	460	385	395
	250	530	420	420

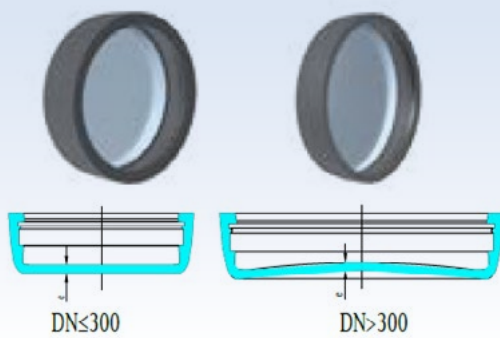
Body DN	Branch dn	L mm	K mm	H mm
300	80	290	325	370
	100	320	340	380
	150	390	375	405
	200	460	410	430
	250	530	445	455
350	300	600	480	480
	100	380	405	455
	150	450	440	480
	200	520	475	505
	250	690	510	530
400	300	660	545	555
	350	730	580	580
	100	380	430	490
	150	450	465	515
	200	520	500	540

Body	Branch	L	K	H
DN	dn	mm	mm	mm
400	250	590	535	565
	300	660	570	590
	350	730	605	615
	400	800	640	640
450	100	380	455	525
	150	450	490	550
	200	520	525	575
	250	590	560	600
	350	730	630	650
500	400	800	665	675
	450	870	700	700
	100	380	480	560
	150	450	515	585
	200	520	550	610
500	250	590	585	635
	300	660	620	660
	350	730	655	685
	400	800	690	710

Body	Branch	L	K	H
DN	dn	mm	mm	mm
500	450	870	725	735
	500	940	760	760
600	100	380	565	655
	150	450	600	680
	200	520	635	705
	250	590	670	730
	300	660	705	755
	350	730	740	780
	400	800	775	805
	450	870	810	830
700	500	940	845	855
	600	1080	880	880
700	700	1220	1000	1000
800	800	1360	1120	1120
900	900	1500	1240	1240
1000	1000	1640	1360	1360
1200	1200	1780	1480	1480

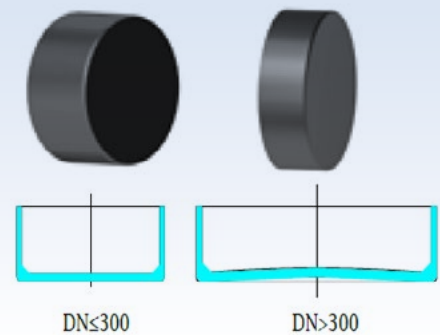
Cap and Plug

Cap



DN	e (mm)
mm	T-type
100	7.2
150	7.8
200	8.4
250	9.0
300	9.6
350	10.2
400	10.8
450	11.4
500	12.0
600	13.2
700	14.4
800	15.6
900	16.8
1000	18.0
1200	20.4
1400	22.8
1600	25.2
1800	27.6

Plug

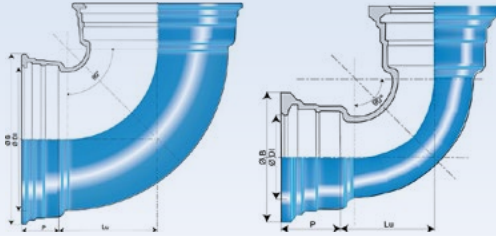


DN	e (mm)
mm	T-type
100	7.2
150	7.8
200	8.4
250	9.0
300	9.6
350	10.2
400	10.8
450	11.4
500	12.0
600	13.2
700	14.4
800	15.6
900	16.8
1000	18.0
1200	20.4
1400	22.8
1600	25.2
1800	27.6

STD SOCKET FITTINGS

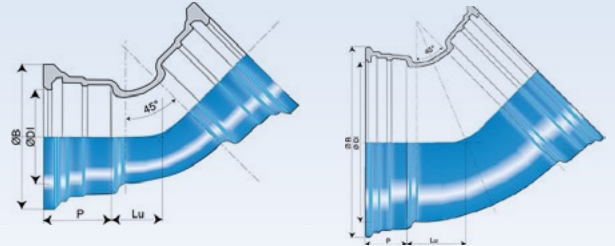
Socket Bend Fitting STD

Double Socket Bend 90° (1/4) STANDARD



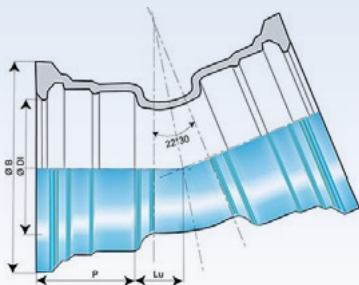
Angle	DN mm	Lu mm
90°	60	75
90°	100	121
90°	150	152.5
90°	200	200
90°	250	262
90°	300	314
90°	350	355
90°	400	399
90°	450	445
90°	500	485
90°	600	600

Double Socket Bend 45° (1/8) STANDARD



Angle	DN mm	Lu mm
45°	60	76
45°	100	63
45°	125	83.5
45°	150	92.5
45°	200	100
45°	250	145
45°	300	167
45°	350	168
45°	400	165
45°	450	189
45°	500	207.5
45°	600	250

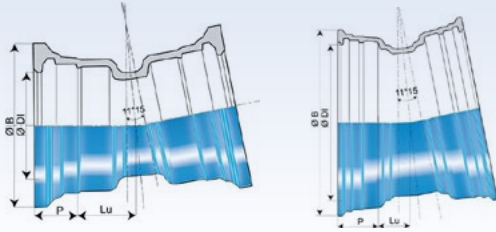
Double Socket Bend 22.5° (1/16) STANDARD



Angle	DN mm	Lu mm
22.5°	60	30
22.5°	100	41
22.5°	125	38
22.5°	150	42
22.5°	200	51
22.5°	250	60
22.5°	300	69
22.5°	350	72
22.5°	400	92
22.5°	450	93
22.5°	500	100
22.5°	600	118

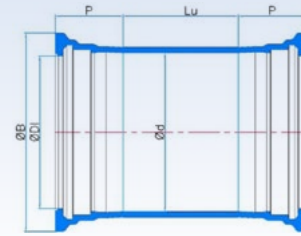
Double sockets collar

Double Socket Bend 11.25° (1/32) STANDARD



Angle	DN	Lu
	mm	mm
11.25°	60	35
11.25°	100	31
11.25°	125	45
11.25°	150	46
11.25°	200	52
11.25°	250	45
11.25°	300	50
11.25°	350	50
11.25°	400	58
11.25°	450	65
11.25°	500	60
11.25°	600	70

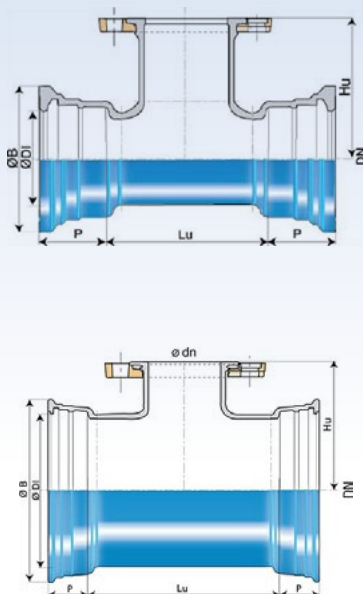
Double sockets collar STANDARD



DN	Lu
mm	mm
80	160
100	160
125	165
150	165
200	170
250	175
300	180
350	185
400	190
450	195
500	200
600	210

Double Socket Tee with Rotatable Flanged Branch STD

Double Socket Tee with Rotatable Flanged Branch STANDARD



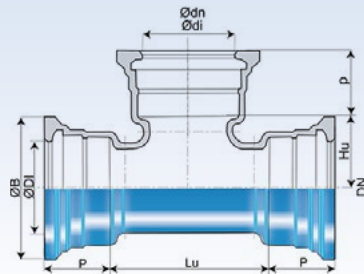
Body DN	Branch Ø dn	Lu mm	Hu mm
60	40	154	141
	60	154	161
80	40	145	149
	60	145	169
100	40	150	161
	60	150	181
	80	185	177
125	40	150	164
	60	150	184
	80	165	195
	100	190	200
150	125	267	200
	40	154	176
	60	154	196
	80	165	210
	100	190	215
	150	305	220

Body DN	Branch Ø dn	Lu mm	Hu mm
200	40	159	209
	60	159	229.5
	80	170	240
	100	195	245
	150	250	245
	200	360	260
250	60	165	260
	80	155	265
	150	235	265
	200	290	265
	250	350	275
300	60	165	290
	80	155	295
	100	180	275
	150	235	285
	200	295	295
	250	380	330
	300	410	315
350	60	170	320
	80	185	325
	150	270	340

Body DN	Branch Ø dn	Lu mm	Hu mm
350	200	300	325
	250	385	360
	300	410	345
400	80	175	330
	150	245	345
	200	300	355
	250	385	390
	300	415	375
450	400	535	395
	150	270	400
	450	600	460
500	150	325	430
	200	305	415
	250	443	450
	300	443	460
	400	540	455
600	500	655	475
	150	340	490
	300	452	520
	400	545	515
600	800	580	

All sockets tee STD

All sockets tee STD



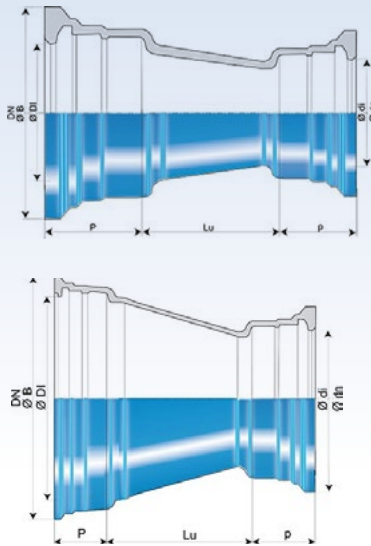
Body DN	Branch dn	Lu mm	Hu mm
60	60	154	77
80	80	183	91.5
100	60	150	97
	100	210	105
125	60	150	100
	80	165	121.5
	100	190	125
150	125	267	133.5
	60	154	112
	100	190	140
200	150	305	152.5
	100	195	170
	125	220	173.5
150	250	177.5	
200	315	155	

Body DN	Branch dn	Lu mm	Hu mm
250	200	315	180
	250	375	185
300	200	320	205
	250	375	210
350	300	435	215
	200	320	230
	250	380	235
400	300	435	240
	350	495	245
	200	325	255
450	250	380	260
	300	440	265
	350	500	270
400	555	275	
450	200	325	280

Body DN	Branch dn	Lu mm	Hu mm
450	250	385	285
	300	445	290
	350	500	295
	400	560	300
	450	615	305
500	200	330	305
	250	390	310
	300	445	315
	350	505	320
	400	560	325
600	450	620	330
	500	680	340
	200	335	355
	250	395	360
	300	450	365
600	350	510	370
	400	570	375
	450	625	380
	500	685	390
	600	800	400

Double Socket Taper STD

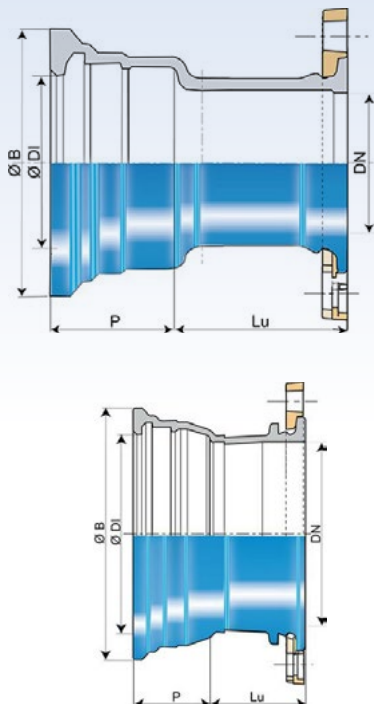
Double Socket Taper STANDARD



DN	Ø dn	Lu
mm	mm	mm
100	80	104.5
150	100	130
200	100	250
	150	125
250	200	125
300	250	125
350	200	335
	250	235
	300	135
400	250	335
	300	235
450	300	335
	400	166
500	400	235
600	400	460
	500	235

Flange socket

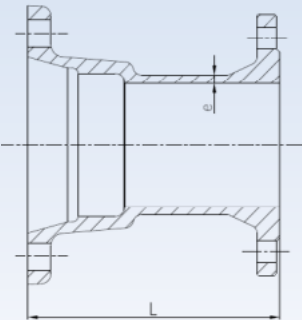
Flange Socket with STANDARD joint and Rotatable Flange



DN	Lu
mm	mm
60	142
80	110
100	110
125	110
150	115
200	120
250	135
300	130
350	130
400	135
450	140
500	145
600	155

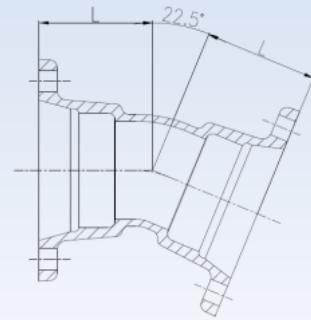
K TYPE FITTING

Flange Socket with K type joint



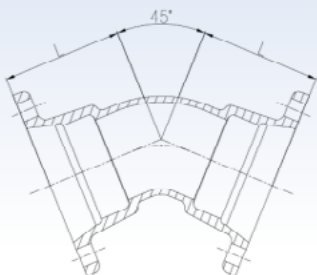
DN	L mm	e mm
100	210	7.2
125	215	7.5
150	215	7.8
200	220	8.4
250	255	9
300	260	9.6
350	265	10.2
400	270	10.8
450	275	11.4
500	280	12
600	290	13.2
700	310	14.4
800	320	15.6
900	330	16.8
1000	350	18
1200	370	20.4
1400	440	22.8
1600	490	25.2
1800	520	27.6
2000	550	30

Double Socket Bend 22.5 degree with K type joint



Angle	DN	L	e
	mm	mm	mm
22.5°	100	120	7.2
22.5°	125	130	7.5
22.5°	150	135	7.8
22.5°	200	145	8.4
22.5°	250	185	9
22.5°	300	195	9.6
22.5°	350	205	10.2
22.5°	400	220	10.8
22.5°	450	230	11.4
22.5°	500	240	12
22.5°	600	260	13.2
22.5°	700	295	14.4
22.5°	800	315	15.6
22.5°	900	340	16.8
22.5°	1000	370	18
22.5°	1200	415	20.4
22.5°	1400	390	22.8
22.5°	1600	440	25.2
22.5°	1800	475	27.6
22.5°	2000	510	30

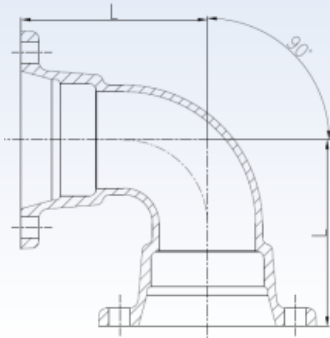
Double Socket Bend 45 degree with K type joint



Angle	DN	L	e
	mm	mm	mm
45°	100	145	7.2
45°	125	155	7.5
45°	150	165	7.8
45°	200	190	8.4
45°	250	240	9
45°	300	260	9.6
45°	350	285	10.2
45°	400	305	10.8
45°	450	330	11.4
45°	500	350	12

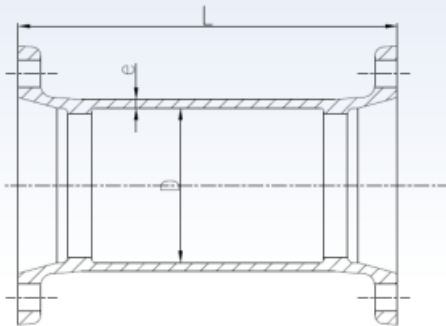
Angle	DN	L	e
	mm	mm	mm
45°	600	395	13.2
45°	700	450	14.4
45°	800	490	15.6
45°	900	535	16.8
45°	1000	590	18
45°	1200	680	20.4
45°	1400	645	22.8
45°	1600	725	25.2
45°	1800	780	27.6
45°	2000	840	30

Double Socket Bend 90 degree with K type joint



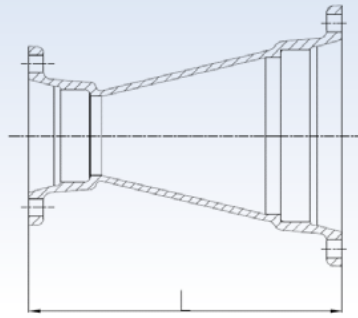
Angle	DN	L	e
	mm	mm	mm
90°	100	200	7.2
90°	125	225	7.5
90°	150	250	7.8
90°	200	300	8.4
90°	250	380	9
90°	300	430	9.6
90°	350	480	10.2
90°	400	530	10.8
90°	450	580	11.4
90°	500	630	12
90°	600	730	13.2
90°	700	840	14.4
90°	800	940	15.6
90°	900	1040	16.8
90°	1000	1150	18
90°	1200	1350	20.4
90°	1400	1350	22.8
90°	1600	1450	25.2
90°	1800	1490	27.6
90°	2000	1620	30

Double Socket Collar with K type joint



DN	L	D	e
mm	mm	mm	mm
100	320	130	7.2
150	325	183	7.8
200	330	235	8.4
250	395	288	9
300	400	340	9.6
350	405	393	10.2
400	410	445	10.8
450	415	498	11.4
500	420	550	12
600	430	655	13.2
700	460	760	14.4
800	470	865	15.6
900	480	970	16.8
1000	510	1075	18
1200	530	1285	20.4
1400	600	1477	22.8
1600	680	1683	25.2
1800	720	1889	27.6
2000	760	2095	30

Double Socket Taper with K type joint

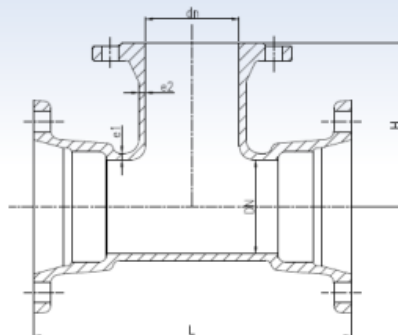


DN	dn	L
mm	mm	mm
150	100	310
200	100	410
	150	310
250	100	490
	150	440
	200	340
300	100	640
	150	540
	200	440
	250	370
350	100	750
	150	650
	200	550
	250	480
	300	380
400	100	850
	150	750
	200	650
	250	580
	300	480
	350	380
450	100	950
	150	850
	200	750
	250	680
	300	580
350	480	

DN	dn	L
mm	mm	mm
450	400	380
500	100	1050
	150	950
	200	850
	250	780
600	300	680
	350	580
	400	480
	450	380
	100	1250
700	150	1150
	200	1050
	250	980
	300	880
	350	780
	400	680
800	450	580
	500	480
	200	1280
	250	1210
	300	1110

DN	dn	L
mm	mm	mm
800	450	1010
	500	910
	600	710
	700	520
900	400	1310
	450	1210
	500	1110
	600	910
	700	720
	800	520
	600	1120
1000	700	930
	800	730
	900	530
1200	600	1520
	700	1330
	800	1130
	900	930
1400	1000	740
	600	1200
	700	1110
	800	1010
	900	910
1600	1000	820
	1200	620
	800	1240
	900	1140
1800	1000	1050
	1200	850
	1400	650
	1000	1260
2000	1200	1060
	1400	860
	1600	690
2000	1000	1470
	1200	1270
	1400	1070
	1600	900
1800	710	

Double Socket Tee with Flange branch K-type



Body	Branch	L	H	e1	e2
DN	dn	mm	mm	mm	mm
100	100	350	180	7.2	7.2
150	100	355	210	7.8	7.2
	150	415	220	7.8	7.8
200	100	360	240	8.4	7.2
	150	415	250	8.4	7.8
	200	475	260	8.4	8.4
250	100	390	270	9	7.2
	150	450	280	9	7.8
	200	505	290	9	8.4
	250	595	300	9	9
300	100	395	300	9.6	7.2
	150	450	310	9.6	7.8
	200	510	320	9.6	8.4
	250	600	330	9.6	9
350	300	655	340	9.6	9.6
	100	395	330	10.2	7.2
	150	460	340	10.2	7.8
	200	515	350	10.2	8.4
	250	605	360	10.2	9
400	300	655	370	10.2	9.6
	350	715	380	10.2	10.2
	100	400	360	10.8	7.2
	150	460	370	10.8	7.8
	200	515	380	10.8	8.4
450	250	605	390	10.8	9
	300	665	400	10.8	9.6
	350	720	410	10.8	10.2
	400	780	420	10.8	10.8
	100	405	390	11.4	7.2
500	150	460	400	11.4	7.8
	200	520	410	11.4	8.4
	250	610	420	11.4	9
	300	665	430	11.4	9.6
	350	720	440	11.4	10.2
	400	780	450	11.4	10.8
600	450	840	460	11.4	11.4
	100	405	420	12	7.2
	150	460	430	12	7.8
	200	520	440	12	8.4
	250	610	450	12	9
	300	665	460	12	9.6
	350	725	470	12	10.2
	400	785	480	12	10.8
700	450	840	490	12	11.4
	500	900	500	12	12
	100	410	480	13.2	7.2
	150	470	490	13.2	7.8
	200	530	500	13.2	8.4
	250	615	510	13.2	9
	300	670	520	13.2	9.6
	350	730	530	13.2	10.2
800	400	790	540	13.2	10.8
	450	845	550	13.2	11.4

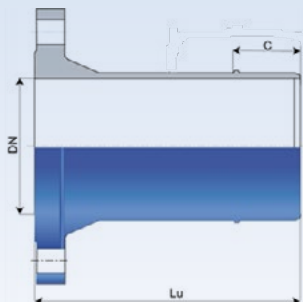
Body	Branch	L	H	e1	e2
DN	dn	mm	mm	mm	mm
600	500	905	560	13.2	12
	600	1020	580	13.2	13.2
700	100	430	510	14.4	7.2
	150	485	515	14.4	7.8
	200	545	525	14.4	8.4
	300	690	540	14.4	9.6
	350	750	545	14.4	10.2
	400	805	555	14.4	10.8
	450	865	560	14.4	11.4
	500	920	570	14.4	12
	600	1040	585	14.4	13.2
	700	1165	600	14.4	14.4
800	100	435	570	15.6	7.2
	150	490	580	15.6	7.8
	200	550	585	15.6	8.4
	250	640	590	15.6	9
	300	695	600	15.6	9.6
	400	810	615	15.6	10.8
	500	930	630	15.6	12
	600	1275	645	15.6	13.2
	700	1170	660	15.6	14.4
	800	1285	675	15.6	15.6
900	100	440	630	16.8	7.2
	150	500	635	16.8	7.8
	200	555	645	16.8	8.4
	300	700	660	16.8	9.6
	400	820	675	16.8	10.8
	500	935	690	16.8	12
	600	1400	705	16.8	13.2
	700	1175	720	16.8	14.4
	800	1290	735	16.8	15.6
	900	1410	750	16.8	16.8
1000	100	455	690	18	7.2
	150	515	695	18	7.8
	200	570	705	18	8.4
	250	660	710	18	9
	300	720	720	18	9.6
	400	835	735	18	10.8
	500	950	750	18	12
	600	1530	765	18	13.2
	700	1190	780	18	14.4
	800	1310	795	18	15.6
1200	900	1425	810	18	16.8
	1000	1550	825	18	18
	100	470	810	20.4	7.2
	200	585	825	20.4	8.4
	300	730	840	20.4	9.6
	400	845	855	20.4	10.8
	500	960	870	20.4	12
	600	1080	885	20.4	13.2
	700	1205	900	20.4	14.4
	800	1320	915	20.4	15.6
900	1435	930	20.4	16.8	

Body	Branch	L	H	e1	e2
DN	dn	mm	mm	mm	mm
1200	1000	1560	945	20.4	18
	1200	1795	975	20.4	20.4
1400	100	660	905	22.8	7.2
	200	775	920	22.8	8.4
	300	920	935	22.8	9.6
	400	1040	950	22.8	10.8
	500	1155	965	22.8	12
	600	1270	980	22.8	13.2
	800	1510	1010	22.8	15.6
	1000	1755	1040	22.8	18
	1200	1985	1070	22.8	20.4
	1400	2220	1100	22.8	22.8
1600	200	820	1030	25.2	8.4
	250	905	1040	25.2	9
	300	965	1045	25.2	9.6
	400	1080	1060	25.2	10.8
	500	1195	1075	25.2	12
	600	1310	1090	25.2	13.2

Body	Branch	L	H	e1	e2
DN	dn	mm	mm	mm	mm
1600	800	1555	1120	25.2	15.6
	1000	1795	1150	25.2	18
	1200	2030	1180	25.2	20.4
	1400	2260	1210	25.2	22.8
	1600	2520	1240	25.2	25.2
1800	200	845	1150	27.6	8.4
	250	930	1150	27.6	9
	300	985	1155	27.6	9.6
	400	1100	1170	27.6	10.8
	500	1220	1185	27.6	12
	600	1335	1200	27.6	13.2
	800	1575	1230	27.6	15.6
	1000	1820	1260	27.6	18
	1200	2050	1290	27.6	20.4
	1400	2280	1320	27.6	22.8
	1600	2545	1350	27.6	25.2
	1800	2785	1380	27.6	27.6

UNI STD FITTING

Flanged Spigot with weld bead



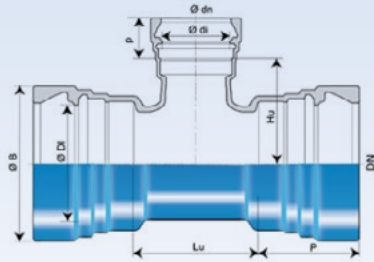
DN	Lu	c
mm	mm	mm
100	360	90
150	380	95
200	400	100
300	440	115
350	460	115
400	480	113
450	500	120
500	520	125
600	560	135
800	600	150
1000	600	165
1200	600	170

UNIVERSAL Standard Flanged Socket



DN	Lu
mm	mm
100	130
150	135
200	140
250	145
300	150
400	160
500	170
600	180
700	190
800	200
1000	220
1200	240

TEE with UNIVERSAL Standard Joint DN100-1200



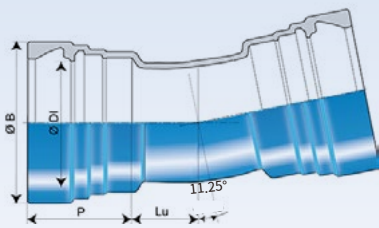
DN	dn	Lu	Hu
mm	mm	mm	mm
100	100	190	95
	150	195	120
150	150	255	125
	200	200	145
200	150	255	150
	200	315	155
300	100	205	195
	150	260	200
	200	320	205
400	300	435	220
	100	210	245
	150	270	250
400	200	330	255
	300	440	270
	400	560	280

DN	dn	Lu	Hu
mm	mm	mm	mm
500	100	220	295
	150	270	300
	200	330	310
500	300	450	320
	400	560	330
	500	680	340
600	100	220	345
	150	280	350
	200	340	360
	300	450	370
600	400	570	380
	500	690	390
	600	800	400
	800	1000	445
800	100	230	445
	150	290	450

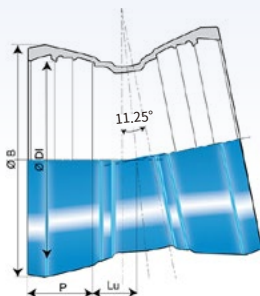
DN	dn	Lu	Hu
mm	mm	mm	mm
800	200	350	460
	300	470	470
	400	580	480
	500	700	490
	600	810	500
	800	1045	520
1000	100	250	550
	150	300	550
	200	360	560
	300	480	570
	400	590	580
	500	710	590
1200	600	830	600
	800	1060	620
	1000	1290	645
	100	260	650
	150	320	650
	200	370	660
1200	250	430	660
	300	490	670
	400	610	680
	500	720	690
	600	840	700
	800	1070	720
1200	1000	1300	745
	1200	1530	770

UNIVERSAL Standard 11.25° Bend DN100-1200

DN100-300



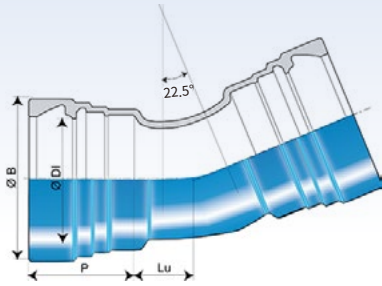
DN400-1200



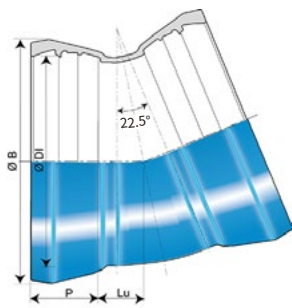
Angle	DN	Lu
degree	mm	mm
11.25°	100	30
11.25°	150	35
11.25°	200	40
11.25°	250	50
11.25°	300	55
11.25°	400	65
11.25°	500	75
11.25°	600	85
11.25°	700	95
11.25°	800	110
11.25°	1000	130
11.25°	1200	150

UNIVERSAL Standard 22.5° Bend DN100-1200

DN100-300



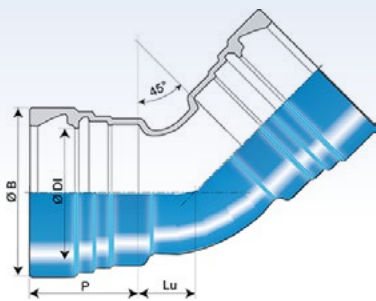
DN400-1200



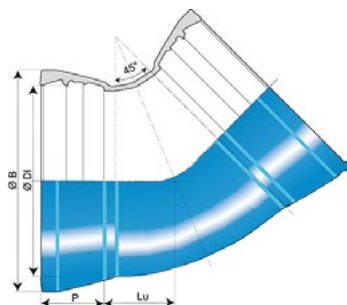
Angle degree	DN mm	Lu mm
22.5°	100	40
22.5°	150	55
22.5°	200	65
22.5°	250	75
22.5°	300	85
22.5°	400	110
22.5°	500	130
22.5°	600	150
22.5°	700	175
22.5°	800	195
22.5°	1000	240
22.5°	1200	285

UNIVERSAL Standard 45° Bend DN100-1200

DN100-300



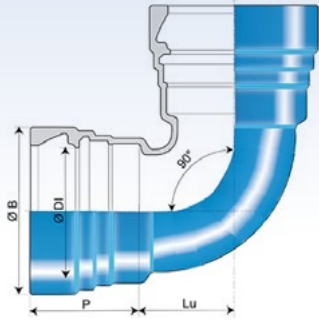
DN400-1200



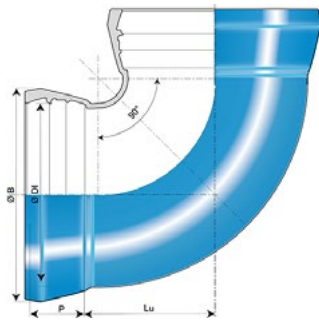
Angle degree	DN mm	Lu mm	P mm	Ø DI mm	Ø B mm
45°	100	65	140	121.4	188
45°	150	85	148	173.4	230
45°	200	110	155	225.5	290
45°	250	130	166	276.8	350
45°	300	150	180	328.8	408
45°	400	195	176	432.0	510
45°	500	240	200	535.0	625
45°	600	285	209	638.0	740
45°	700	330	250	741.7	855
45°	800	370	261	845.8	980
45°	1000	460	279.5	1052.0	1191
45°	1200	550	279.5	1260.0	1415

UNIVERSAL Standard 90° Bend DN100-1200

DN100-300

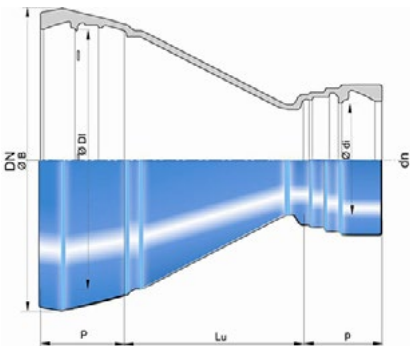
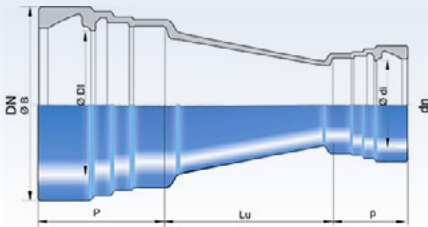


DN400-1200



Angle degree	DN mm	Lu mm
90°	100	120
90°	150	170
90°	200	220
90°	250	270
90°	300	320
90°	400	420
90°	500	520
90°	600	620
90°	700	720
90°	800	820
90°	1000	1020
90°	1200	1220

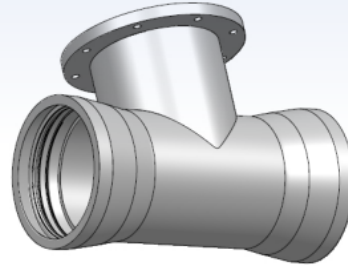
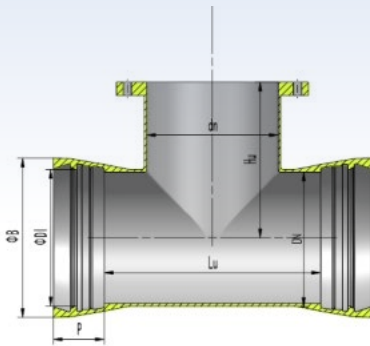
UNIVERSAL Standard Taper DN100-1200



DN mm	Ø dn mm	Lu mm
150	100	150
200	100	250
	150	150
250	100	300
	150	250
300	150	350
	200	250
400	100	660
	150	560
	200	460
500	250	360
	300	260
	100	860
	200	660

DN mm	Ø dn mm	Lu mm
600	200	860
	300	660
	400	460
800	500	260
	300	880
	400	880
1000	500	880
	600	880
	800	480
1200	600	1280
	800	880
	1000	480

UNIVERSAL Standard Double Socket Tee with Flanged Branch DN100-1200



DN	Ø dn	Lu	Hu
mm	mm	mm	mm
100	100	190.0	180.0
	150	255.0	220.0
200	100	200.0	240.0
	150	255.0	250.0
250	200	315.0	260.0
	100	200.0	270.0
	150	260.0	280.0
	200	315.0	290.0
300	250	375.0	300.0
	100	205.0	300.0
	150	260.0	310.0
	200	320.0	320.0
350	250	380.0	330.0
	300	435.0	340.0
	100	205.0	330.0
	150	265.0	340.0
400	200	320.0	350.0
	300	435.0	370.0
	100	210.0	360.0
	150	270.0	370.0
500	200	325.0	380.0
	250	385.0	390.0
	300	440.0	400.0
	400	560.0	420.0
	100	215.0	420.0
	150	280.0	420.0
500	200	330.0	440.0
	250	380.0	440.0
	300	440.0	440.0
	400	565.0	480.0
500	680.0	500.0	

DN	Ø dn	Lu	Hu
mm	mm	mm	mm
600	100	200.0	460.0
	150	260.0	470.0
	200	340.0	500.0
	250	380.0	500.0
	300	430.0	500.0
	400	570.0	540.0
	500	670.0	540.0
	600	800.0	580.0
800	100	260.0	550.0
	150	310.0	560.0
	200	350.0	585.0
	300	480.0	585.0
	400	580.0	615.0
	500	690.0	615.0
	600	810.0	645.0
	800	1045.0	675.0
1000	100	260.0	670.0
	150	310.0	680.0
	200	360.0	705.0
	300	480.0	710.0
	400	595.0	735.0
	500	690.0	750.0
	600	825.0	765.0
	800	1040.0	795.0
	1000	1290.0	825.0
1200	100	260.0	790.0
	150	310.0	800.0
	200	360.0	805.0
	300	480.0	820.0
	400	590.0	835.0
	500	710.0	850.0
	600	840.0	885.0
	800	1070.0	915.0
	1000	1300.0	945.0
	1200	1520.0	955.0



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