

FIBERSTRONG®
PRODUCT INFORMATION



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OVERVIEW

Future Pipe Industries, member of Future Pipe Group, is a leading manufacturer of high performance, anti-corrosive pipe systems for Oil & Gas, Petrochemical, Power Generation, Desalination and Civil Industries, in addition to the municipal applications. The group was founded in 1973, and since then, has evolved into the leading provider of composite thermosetting pipe systems and technologies in Europe, Africa and the Middle East.

ACCREDITATIONS

Future Pipe Group is accredited for the Quality Management System (BS EN ISO 9001:2000) and Environmental Management System (BS EN ISO 14001:1996). In addition, certificates of the suitability to transmit potable water from the Water Regulation Advisory Scheme (WRAS) Great Britain and the National Sanitation Foundation (NSF) USA.



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1. DESCRIPTION

A. GENERAL

FIBERSTRONG® non-restrained pipe and joint are Fiberglass Reinforced Plastic (FRP) flexible corrosion resistant pipe system intended for underground use*. It consists of a Thermosetting Chemical resistant polyester resin, Fiberglass Reinforcements and fine Silica sand aggregates to BS EN 1796 / BS EN 14364 / AWWA C-950.

Large diameter pipes are available in nominal diameters ranging from 80 to 4000 mm.

Available standard pressure classes are PN1, 3, 6, 10, 12, 16, 20 and 25 and stiffness classes of 2,500, 5,000 and 10,000 N/m².

* With special engineering procedures the pipes can also be used for above ground installation.


B. CONSTRUCTION

The pipe consists of a resin-rich reinforced liner, structural wall and a resin-rich exterior layer. "C" glass is used at the internal and external pipe surfaces.

C. APPLICABLE CODES/STANDARDS

Standards	Main Applications
ASTM D-3262	Standard Specification for "Fiberglass" (Fiber Reinforced Thermosetting-Resin) Sewer Pipe
ASTM D-3517	Standard Specification for "Fiberglass" (Fiber Reinforced Thermosetting-Resin) Pressure Pipe
ASTM D-3754	Standard Specification for "Fiberglass" (Fiber Reinforced Thermosetting-Resin) Sewer and Industrial Pressure Pipe
AWWA C-950	Fiberglass Pressure Pipe
AWWA M-45	Fiberglass Pipe Design Manual
BS EN 1796	Plastics Piping Systems for Water Supply With or Without Pressure – Fiber-Reinforced Thermosetting Plastics (FRP) Based on Unsaturated Polyester Resin (UP).
BS EN 14364	Plastics Piping Systems for Drainage and Sewerage With or Without Pressure – Fiber-Reinforced Thermosetting Plastics (FRP) Based on Unsaturated Polyester Resin (UP) – Specifications for Pipes, Fittings and Joints.

2. FEATURES AND BENEFITS

Features	Benefits
<p>Manufactured with corrosion resistant composite material.</p> 	<ul style="list-style-type: none"> • Long, effective service life. • No need for expensive cathodic protection. • No need for costly pipe coating, wrapping, lining, painting, or use of polyethylene wraps. • Low maintenance costs. • Hydraulic characteristics essentially remain unchanged over time.
<p>Double bell coupling joints manufactured with corrosion resistant glass fiber and sealed with elastomeric gaskets.</p>	<ul style="list-style-type: none"> • Ease of jointing helps reduce installation time. Tight, efficient joints designed to eliminate infiltration and ex-filtration. • Costly joint diapers are not required. • Allows for flexible alignment, accommodating changes in line direction with fewer fittings.
<p>Light weight. 1/4 the weight of ductile iron and 1/10 of concrete pipe.</p>	<ul style="list-style-type: none"> - Easy to install. - Low delivery costs. No need for expensive handling equipment.
<p>Manufactured in long sections up to 12m.</p>	<ul style="list-style-type: none"> - Fewer joints reduce installation time.
<p>Extremely smooth bore.</p>	<ul style="list-style-type: none"> - Low friction loss means less pumping energy needed. - Minimum slime build up can help lower cleaning costs.
<p>Pipe specifications meet or exceed worldwide standards.</p>	<ul style="list-style-type: none"> - Assures high quality product specifications. Easy for engineers to specify FIBERSTRONG® pipe with confidence.
<p>High technology pipe manufacturing system.</p>	<ul style="list-style-type: none"> - Helps ensure consistent product quality worldwide.

3. USE AND APPLICATION

FIBERSTRONG® FRP pipe is suitable for underground use in potable water, raw water, seawater and corrosive environments including sanitary sewage, and many industrial effluents with a temperature range of -40 ° C to +50 ° C. All industrial pipe applications must be approved by Future Pipe Industries.



4. PRESSURE AND LOADING RESTRICTIONS

A. PRESSURE RESTRICTIONS

Pipe manufactured per this specification will have the following pressure capabilities regardless of pipe stiffness.

Pressure Class (KPa)	PN1	PN3	PN6	PN10	PN12	PN16	PN20	PN25
Maximum operating pressure (KPa)	100	300	600	1,000	1,200	1,600	2,000	2,500
Maximum surge pressure (KPa)	140	420	840	1,400	1,680	2,240	2,800	3,500
Maximum field test pressure (KPa)	150	450	900	1,500	1,800	2,400	3,000	3,750
Maximum factory test pressure (KPa)	200	600	1,200	2,000	2,400	3,200	4,000	5,000



B. STIFFNESS CLASSES AND ALLOWABLE VACUUM

FRP pipes shall have the following characteristics regardless of pressure class.

Stiffness Class	SN 2500	SN 5000	SN 10000
Minimum Specific Tangential Initial Stiffness STIS = EI/D^3 (N/m ²)	2,500	5,000	10,000
Maximum allowable vacuum level in KPa at cover with hard soil & water table at grade and pipe installed in: Installation Type*			
(I) Full compacted gravel @maximum cover depth	-100	-100	-100
(II) Full Sand compacted to 90%standard proctor density (@depth shown in m)	-60 (4m)	-100 (6m)	-100 (13m)

*Maximum vacuum level varies with the type of installation and burial depth. Refer to the current Future Pipe Industries FIBERSTRONG® Installation Guide for Underground Pipe System for the allowable vacuum levels for other installation types.

5. JOINTS

A. DOUBLE BELL REKA COUPLINGS

FIBERSTRONG® pipes and fittings are jointed using Double Bell Reka Couplings. The sealing of the joints is achieved by the compression of two rubber gaskets when the joint is assembled.



B. ALTERNATIVE JOINTING SYSTEMS

a) In certain applications Pipe sections may be laminated* together utilizing an external (and internal) lay-up “butt-strap” consisting of layers of fiberglass mats and/or tapes impregnated with polyester resin. The strength of the lay-up exceeds the pipe wall strength.

b) Mechanical couplings manufactured by Straub, Teekay, Dresser, VJ or equivalent may be used for jointing to different pipe materials.

Refer to section SPIGOT OUTSIDE DIAMETER for **FIBERSTRONG®** pipe O.D’s.
c) FRP flanges drilled to any standard dimensions requested by client, such as ANSI, DIN, ISO, etc...



*Laminated pipes may have different design if lamination is intended to avoid thrust blocks.

6. PRODUCT QUALIFICATIONS

FIBERSTRONG® Pipes have been tested and qualified for the following tests:

ASTM D 3681:	Chemical resistance of “Fiberglass” (Fiber Reinforced Thermosetting - Resin) pipe in deflected condition (Strain corrosion performance).
BS 5480: 1990 (Appendix L):	British standard specification for fiberglass reinforced plastics (FRP) pipes, joints and fittings for use for water supply or sewerage - method for determination of long term specific ring stiffness and creep factor under ring deflection.
ASTM D 4161:	Standard specification for “Fiberglass” (Fiber Reinforced Thermosetting - Resin) pipe joint using flexible elastomeric seals.
ASTM D 1599	Short time Hydraulic failure pressure of pipes, fittings and prefabricated spools
BS 5480:1990 (Appendix J):	British standard specification for Fiberglass reinforced plastics (FRP) pipes, joints and fittings for use for water supply or sewerage - method for determination of Impact Resistance
ASTM D 2992:	Standard practice for obtaining hydrostatic or pressure design basis for “Fiberglass” (Fiber Reinforced Thermosetting - Resin) pipe and fittings. (Hydrostatic Design Basic (HDB)).
ASTM D 5365:	Standard Test Method for Long-Term Ring-Bending Strain of “Fiberglass” Pipe

7. QUALITY CONTROL

Quality Control testing will include thorough checks for all incoming raw materials and finished products against Future Pipe Industries strict written standards. The following physical and dimensional checks will be made:

Type of Test	Each Pipe	Once per LOT*	Standard Reference
Visual Inspection	x		FPI
Wall Thickness	x		FPI
Spigot end Outside diameter	x		FPI
Length	x		FPI
Hydrostatic Pressure**	x		FPI
Barcol Hardness	x		ASTM D 2583
Stiffness		x	ASTM D 2412
Constituents by Wt % (LOI)		x	ASTM D 2584
Axial Tensile Strength		x	ASTM D 638/ BS 5480
Circumferential Tensile Strength		x	ASTM D2290/D638/ BS5480
Impact Resistance		x	BS 5480 Ap. J
Deflection to crack		x	ASTM D 2412

Records of all testing on pipe sections will be maintained by Future Pipe Industries and provided upon request.

* 1 in 100 pipes or as required by the project specifications

** As per AWWA C950 section 5.1.2.1

8. PHYSICAL / MECHANICAL PROPERTIES

A. SPIGOT OUTSIDE DIAMETER

Nominal Diameter: DN (mm)	DOS** _{MIN} (mm)	Nominal Diameter: DN (mm)	DOS** _{MIN} (mm)
300	313.5*	2100	2146.0
350	365.5*	2200	2248.0
400	412.0*	2300	2350.0
450	463.0*	2400	2452.0
500	514.0*	2500	2554.0
600	616.0*	2600	2656.0
700	718.0	2700	2758.0
800	820.0	2800	2860.0
900	922.0	2900	2962
1000	1024.0	3000	3064.0
1100	1126.0	3100	3166
1200	1228.0	3200	3268.0
1300	1330.0	3300	3370
1400	1432.0	3400	3472
1500	1534.0	3500	3574.0
1600	1636.0	3600	3676
1700	1738.0	3700	3778.0
1800	1840.0	3800	3880
1900	1942.0	3900	3982
2000	2044.0	4000	4084.0

* Check with your local Future Pipe Industries sales office for the applicable spigot OD values.

** For High pressure pipes i.e. PN20 and PN25, an additional 0.5 mm to be added to the tabulated values of DOSMIN, DOSNOM and DOSMAX.

B. DIMENSIONS

Dimensions	Specifications	Tolerances
Standard Pipe Length (L)	Standard Lengths 12m. Random Length or factory jointed lengths supplied shall not exceed 10% of the order.	±25mm
End Squareness/ End Planeness	Ends shall be square to both axis of the pipe plane.	Not to exceed $2+0.005D$ (mm) where D is the nominal diameter of the pipe or 10mm, whichever is smaller.
Straightness	Pipes shall be straight.	Not to exceed 0.3% of the effective length of the pipe or 15mm, whichever is smaller.
Thickness	As per FPI design values.	Single point 87.5% of minimum average.
Roundness Deviation *	Pipes shall be round.	±1%

C. SPECIFIC TANGENTIAL INITIAL STIFFNESS (STIS)

Stiffness Class	Minimum STIS*	Minimum Pipe Stiffness (PS**)
	(EI/D ³) Pa	F/AY=EI/(0.149 r ³) KPa
SN 2500	2500	124
SN 5000	5000	248
SN 10000	10000	496

* Specific Tangential Initial Stiffness determined as per ASTM D-2412 or BS 5480

** As per ASTM D-2412

D. MECHANICAL PROPERTIES

All Pipes will exhibit the following properties

Linear Coefficient of thermal expansion (mm/mm/°C)	25 to 30 × 10 ⁻⁶
Poisson's Ratio	0.25 to 0.3

E. Approximate Pipe and Joint Weights for Handling Purposes Only-(Based on PN6)

DN	SN 2500	SN 5000	SN 10000	Couplings
	(Kg/m)	(Kg/m)	(Kg/m)	(Kg)
80	2	3	6	5
100	3	4	7	6
150	4	5	8	7
200	5	7	9	8
250	6	8	10	9
300	7	9	11	10
350	10	12	15	12
400	13	16	20	13
450	16	20	25	15
500	19	24	31	18
600	27	34	44	24
700	36	46	59	30
800	47	60	76	36
900	59	75	96	42
1000	73	92	119	49
1100	87	111	142	56
1200	103	131	170	63
1300	120	153	199	70
1400	138	177	230	77
1500	159	203	265	83
1600	178	230	300	90
1700	203	260	337	97
1800	228	291	379	104

DN	SN 2500	SN 5000	SN 10000	Couplings
	(Kg/m)	(Kg/m)	(Kg/m)	(Kg)
1900	253	323	421	111
2000	280	361	466	118
2100	307	396	513	125
2200	335	435	564	132
2300	368	474	615	139
2400	398	517	669	146
2500	434	559	723	153
2600	469	604	783	162
2700	505	652	844	172
2800	541	700	904	183
2900	595	760	965	195
3000	650	830	1030	210
3100	662	858	1102	230
3200	704	913	1175	235
3300	750	970	1248	245
3400	794	1031	1326	255
3500	841	1091	1403	265
3600	890	1156	1483	275
3700	940	1218	1570	285
3800	991	1283	1657	295
3900	1041	1353	1743	305
4000	1095	1420	1832	315

9. FITTINGS

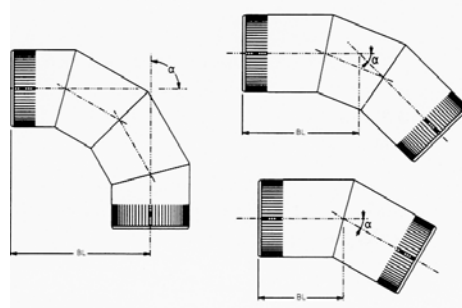
Future Pipe Industries has established a standardized line of FRP fittings. The most common fittings are (Elbows, Reducers, Tees, Wyes and Flanges) and can be supplied either as standard pieces or custom designed spools making it easier for the erection contractor to install.

Fittings are jointed to FRP pipes with standard double bell couplings and require thrust blocks for pressure systems. Please refer to “**FIBERSTRONG®** Installation Guide for Underground Pipe System” for further details on proper construction of thrust blocks.

The method of fabrication of all FRP fittings is essentially the same. Pipes, after plant hydro-testing, are cut to the required dimensions. Pipe sections are then jointed together by lamination. The thickness and width of the lamination is designed to exceed the pipe performance.



A. ELBOWS



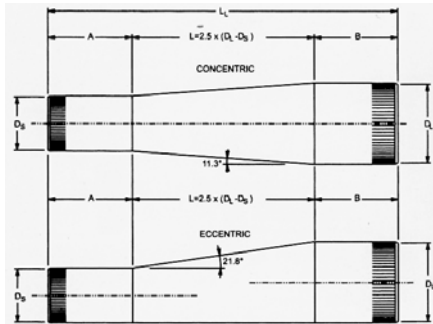
Mitered Elbows. Effective Laying Length (mm) = BL

The below dimensions are valid for all pressure classes

Angle α	1° to 15°	16 ° to 30°	31° to 45°	46° to 60°	61° to 90°
DN	# of Mitres	# of Mitres	# of Mitres	# of Mitres	# of Mitres
(mm)	1	1	2	2	3
80	250	250	250	300	350
100	250	250	250	300	350
150	250	250	300	300	400
200	300	300	350	400	500
250	300	300	400	450	600
300	375	425	500	550	725
350	400	450	525	600	825
400	425	475	575	625	900
450	450	525	600	700	975
500	450	525	625	700	1,025
600	450	525	650	750	1,175
700	475	525	725	850	1,350
800	500	575	800	950	1,500
900	550	625	875	1,025	1,675
1000	600	650	950	1,125	1,825
1100	625	700	1,025	1,225	2,000
1200	675	750	1,100	1,300	2,175
1300	700	800	1,175	1,400	2,325
1400	750	850	1,250	1,500	2,475
1500	750	850	1,250	1,500	2,475
1600	750	850	1,250	1,500	2,625
1700	750	850	1,275	1,575	2,775
1800	750	850	1,325	1,650	2,925
1900	750	875	1,400	1,725	3,075
2000	750	900	1,450	1,825	3,225

Angle α	1° to 15°	16° to 30°	31° to 45°	46° to 60°	61° to 90°
DN	# of Mitres	# of Mitres	# of Mitres	# of Mitres	# of Mitres
(mm)	1	1	2	2	3
2100	775	925	1,525	1,900	3,375
2200	800	950	1,575	1,975	3,525
2300	825	1,000	1,650	2,050	3,700
2400	850	1,025	1,700	2,125	3,850
2500	850	1,075	1,700	2,150	3,925
2600	850	1,125	1,775	2,225	4,075
2700	850	1,150	1,825	2,300	4,225
2800	900	1,175	1,900	2,400	4,400
2900	900	1,225	1,900	2,400	4,425
3000	900	1,250	1,900	2,450	4,575
3100	900	1,250	1,975	2,525	4,725
3200	900	1,250	2,025	2,600	4,850
3300	900	1,250	2,075	2,675	5,000
3400	925	1,250	2,125	2,750	5,150
3500	950	1,250	2,200	2,825	5,300
3600	975	1,250	2,250	2,900	5,450
3700	975	1,250	2,300	2,950	5,575
3800	1,000	1,275	2,375	3,025	5,725
3900	1,025	1,300	2,425	3,100	5,875
4000	1,050	1,325	2,475	3,175	6,025

B. REDUCERS



Concentric and Eccentric Reducers. Taper Length (L) = $2.5 \times (D_L - D_S)$

The below dimensions are valid for all pressure classes

DN Large End	DN Small End	Pipe length	Taper Length	Pipe Length	Laying Length
DL(mm)	Ds(mm)	A (mm)	L(mm)	B (mm)	LL(mm)
150	80	200	175	200	575
150	100	200	125	200	525
200	80	300	300	200	800
200	100	300	250	200	750
200	150	300	125	200	625
250	80	300	425	200	925
250	100	300	375	200	875
250	150	300	250	200	750
250	200	300	125	300	725
300	100	300	500	200	1,000
300	150	300	375	200	875
300	200	300	250	300	850
300	250	300	125	300	725
350	100	400	625	200	1,225
350	150	400	500	200	1,100
350	200	400	375	300	1,075
350	250	400	250	300	950
350	300	400	125	300	825
400	100	400	750	200	1,350
400	150	400	625	200	1,225
400	200	400	500	300	1,200
400	250	400	375	300	1,075
400	300	400	250	300	950
400	350	400	125	400	925
450	150	400	750	200	1,350
450	200	400	625	300	1,325

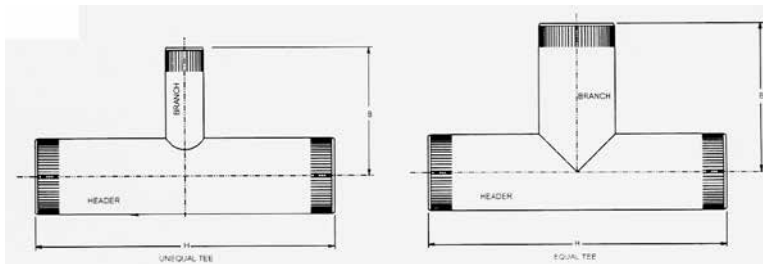
DN Large End	DN Small End	Pipe length	Taper Length	Pipe Length	Laying Length
DL(mm)	Ds(mm)	A (mm)	L(mm)	B (mm)	LL(mm)
450	250	400	500	300	1,200
450	300	400	375	300	1,075
450	350	400	250	400	1,050
450	400	400	125	400	925
500	200	400	750	300	1,450
500	250	400	625	300	1,325
500	300	400	500	300	1,200
500	350	400	375	400	1,175
500	400	400	250	400	1,050
500	450	400	125	400	925
600	300	500	750	300	1,550
600	400	500	500	400	1,400
600	450	500	375	400	1,275
600	500	500	250	400	1,150
700	300	500	1,000	300	1,800
700	400	500	750	400	1,650
700	450	500	625	400	1,525
700	500	500	500	400	1,400
700	600	500	250	500	1,250
800	500	500	750	400	1,650
800	600	500	500	500	1,500
800	700	500	250	500	1,250
900	600	600	750	500	1,850
900	700	600	500	500	1,600
900	800	600	250	500	1,350
1,000	700	600	750	500	1,850
1,000	800	600	500	500	1,600
1,000	900	600	250	600	1,450
1,100	800	600	750	500	1,850
1,100	900	600	500	600	1,700
1,100	1,000	600	250	600	1,450
1,200	900	650	750	600	2,000
1,200	1,000	650	500	600	1,750
1,200	1,100	650	250	600	1,500
1,300	1,000	650	750	600	2,000
1,300	1,100	650	500	600	1,750

DN Large End	DN Small End	Pipe length	Taper Length	Pipe Length	Laying Length
DL(mm)	Ds(mm)	A (mm)	L(mm)	B (mm)	LL(mm)
1,300	1,200	650	250	650	1,550
1,400	1,100	650	750	600	2,000
1,400	1,200	650	500	650	1,800
1,400	1,300	650	250	650	1,550
1,500	1,200	650	750	650	2,050
1,500	1,300	650	500	650	1,800
1,500	1,400	650	250	650	1,550
1,600	1,300	650	750	650	2,050
1,600	1,400	650	500	650	1,800
1,600	1,500	650	250	650	1,550
1,700	1,400	650	750	650	2,050
1,700	1,500	650	500	650	1,800
1,700	1,600	650	250	650	1,550
1,800	1,500	650	750	650	2,050
1,800	1,600	650	500	650	1,800
1,800	1,700	650	250	650	1,550
1,900	1,600	650	750	650	2,050
1,900	1,700	650	500	650	1,800
1,900	1,800	650	250	650	1,550
2,000	1,700	650	750	650	2,050
2,000	1,800	650	500	650	1,800
2,000	1,900	650	250	650	1,550
2,100	1,800	750	750	650	2,150
2,100	1,900	750	500	650	1,900
2,100	2,000	750	250	650	1,650
2,200	1,900	750	750	650	2,150
2,200	2,000	750	500	650	1,900
2,200	2,100	750	250	750	1,750
2,300	2,000	750	750	650	2,150
2,300	2,100	750	500	750	2,000
2,300	2,200	750	250	750	1,750
2,400	2,100	750	750	750	2,250
2,400	2,200	750	500	750	2,000
2,400	2,300	750	250	750	1,750
2,500	2,200	750	750	750	2,250
2,500	2,300	750	500	750	2,000

DN Large End	DN Small End	Pipe length	Taper Length	Pipe Length	Laying Length
DL(mm)	Ds(mm)	A (mm)	L(mm)	B (mm)	LL(mm)
2,500	2,400	750	250	750	1,750
2,600	2,300	750	750	750	2,250
2,600	2,400	750	500	750	2,000
2,600	2,500	750	250	750	1,750
2,800	2,500	800	750	750	2,300
2,800	2,600	800	500	750	2,050
2,800	2,700	800	250	750	1,800
3,000	2,700	800	750	750	2,300
3,000	2,800	800	500	800	2,100
3,000	2,900	800	250	800	1,850
3,100	2,800	800	750	800	2,350
3,100	2,900	800	500	800	2,100
3,100	3,000	800	250	800	1,850
3,200	2,900	900	750	800	2,450
3,200	3,000	900	500	800	2,200
3,200	3,100	900	250	800	1,950
3,300	3,000	900	750	800	2,450
3,300	3,100	900	500	800	2,200
3,300	3,200	900	250	900	2,050
3,400	3,100	900	750	800	2,450
3,400	3,200	900	500	900	2,300
3,400	3,300	900	250	900	2,050
3,500	3,200	900	750	900	2,550
3,500	3,300	900	500	900	2,300
3,500	3,400	900	250	900	2,050
3,600	3,300	900	750	900	2,550
3,600	3,400	900	500	900	2,300
3,600	3,500	900	250	900	2,050
3,700	3,400	900	750	900	2,550
3,700	3,500	900	500	900	2,300
3,700	3,600	900	250	900	2,050
3,800	3,500	900	750	900	2,550
3,800	3,600	900	500	900	2,300
3,800	3,700	900	250	900	2,050
3,900	3,600	900	750	900	2,550
3,900	3,700	900	500	900	2,300

DN Large End	DN Small End	Pipe length	Taper Length	Pipe Length	Laying Length
DL(mm)	Ds(mm)	A (mm)	L(mm)	B (mm)	LL(mm)
3,900	3,800	900	250	900	2,050
4,000	3,700	900	750	900	2,550
4,000	3,800	900	500	900	2,300
4,000	3,900	900	250	900	2,050

C. TEES



TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
80	80	520	260	520	260	520	260	520	260
100	80	520	270	520	270	520	270	520	270
100	100	540	270	540	270	540	270	540	270
150	80	520	290	520	290	520	290	520	290
150	100	540	290	540	290	540	290	540	290
150	150	580	290	580	290	580	290	580	290
200	80	520	320	520	320	520	320	520	320
200	100	540	320	540	320	540	320	540	320
200	150	580	320	580	320	580	320	580	320
200	200	640	320	640	320	660	330	660	330
250	100	540	340	540	340	540	340	540	340
250	150	580	340	580	340	580	340	580	340
250	200	640	340	640	340	660	350	660	360
250	250	680	340	700	350	740	370	760	380
300	150	580	370	580	370	580	370	580	370
300	200	640	370	640	370	660	380	660	390
300	250	680	370	700	380	740	400	760	410
300	300	740	370	780	390	820	410	840	420
350	150	720	400	720	400	720	400	720	400
350	200	780	400	780	400	800	410	800	410
350	250	820	400	840	400	880	420	900	430
350	300	880	400	900	410	960	440	980	450

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
350	350	940	470	980	490	1,040	520	1,060	530
400	150	720	420	720	420	720	420	720	420
400	200	780	420	780	420	800	430	800	440
400	250	820	420	840	430	880	450	900	460
400	300	880	420	900	440	960	460	980	470
400	350	940	490	980	510	1,040	540	1,060	550
400	400	1,000	500	1,040	520	1,100	550	1,140	570
450	200	780	450	780	450	800	460	800	460
450	250	820	450	840	450	880	470	900	480
450	300	880	450	900	460	960	490	980	500
450	350	940	520	980	540	1,040	570	1,060	580
450	400	1,000	530	1,040	550	1,100	580	1,140	600
450	450	1,080	540	1,140	570	1,200	600	1,240	620
500	200	780	470	780	470	800	480	800	490
500	250	820	470	840	480	880	500	900	510
500	300	880	470	900	490	960	510	980	520
500	350	940	550	980	570	1,040	600	1,060	610
500	400	1,000	560	1,040	580	1,100	610	1,140	620
500	450	1,080	570	1,140	590	1,200	620	1,240	640
500	500	1,140	570	1,200	600	1,280	640	1,320	660
600	250	880	530	900	530	940	550	960	560
600	300	940	530	960	540	1,020	570	1,040	580
600	350	1,000	600	1,040	620	1,100	650	1,120	660
600	400	1,060	610	1,100	630	1,160	660	1,200	670
600	450	1,140	620	1,200	640	1,260	670	1,300	690
600	500	1,200	620	1,260	650	1,340	690	1,380	710
600	600	1,340	670	1,400	700	1,500	750	1,540	770
700	300	940	580	960	590	1,020	620	1,040	630
700	350	1,000	650	1,040	670	1,100	700	1,120	710
700	400	1,060	660	1,100	680	1,160	710	1,200	730
700	450	1,140	670	1,200	700	1,260	730	1,300	750
700	500	1,200	680	1,260	710	1,340	740	1,380	760
700	600	1,340	720	1,400	760	1,500	800	1,540	820
700	700	1,480	740	1,560	780	1,660	830	1,720	860
800	300	940	630	960	650	1,020	670	1,040	680

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
800	350	1,000	700	1,040	720	1,100	750	1,120	760
800	400	1,060	710	1,100	730	1,160	760	1,200	780
800	450	1,140	720	1,200	750	1,260	780	1,300	800
800	500	1,200	730	1,260	760	1,340	790	1,380	810
800	600	1,340	770	1,400	810	1,500	850	1,540	870
800	700	1,480	790	1,560	830	1,660	880	1,720	910
800	800	1,600	800	1,700	850	1,820	910	1,880	940
900	300	940	680	960	700	1,020	720	1,040	730
900	350	1,000	750	1,040	770	1,100	800	1,120	810
900	400	1,060	760	1,100	780	1,160	810	1,200	830
900	450	1,140	770	1,200	800	1,260	830	1,300	850
900	500	1,200	780	1,260	810	1,340	840	1,380	860
900	600	1,340	820	1,400	860	1,500	900	1,540	920
900	700	1,480	840	1,560	880	1,660	930	1,720	960
900	800	1,600	850	1,700	900	1,820	960	1,880	990
900	900	1,740	870	1,840	920	1,980	990	2,040	1,020
1000	300	1,040	730	1,060	750	1,120	770	1,140	780
1000	350	1,100	810	1,140	830	1,200	860	1,220	870
1000	400	1,160	820	1,200	840	1,260	870	1,300	880
1000	450	1,240	830	1,300	850	1,360	880	1,400	900
1000	500	1,300	830	1,360	860	1,440	900	1,480	920
1000	600	1,440	880	1,500	910	1,600	960	1,640	980
1000	700	1,580	890	1,660	930	1,760	990	1,820	1,010
1000	800	1,700	910	1,800	950	1,920	1,010	1,980	1,040
1000	900	1,840	930	1,940	980	2,080	1,040	2,140	1,080
1000	1000	1,980	990	2,100	1,050	2,240	1,120	2,320	1,160
1100	300	1,040	790	1,060	800	1,120	830	1,140	840
1100	350	1,100	860	1,140	880	1,200	910	1,220	920
1100	400	1,160	870	1,200	890	1,260	920	1,300	930
1100	450	1,240	880	1,300	900	1,360	930	1,400	950
1100	500	1,300	880	1,360	910	1,440	950	1,480	970
1100	600	1,440	930	1,500	960	1,600	1,010	1,640	1,030
1100	700	1,580	940	1,660	980	1,760	1,040	1,820	1,060
1100	800	1,700	960	1,800	1,000	1,920	1,060	1,980	1,090
1100	900	1,840	980	1,940	1,030	2,080	1,090	2,140	1,130

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1100	1000	1,980	1,040	2,100	1,100	2,240	1,170	2,320	1,210
1100	1100	2,120	1,060	2,240	1,120	2,400	1,200	2,480	1,240
1200	300	1,040	840	1,060	850	1,120	880	1,140	890
1200	350	1,100	910	1,140	930	1,200	960	1,220	970
1200	400	1,160	920	1,200	940	1,260	970	1,300	990
1200	450	1,240	930	1,300	960	1,360	990	1,400	1,010
1200	500	1,300	940	1,360	970	1,440	1,000	1,480	1,020
1200	600	1,440	980	1,500	1,020	1,600	1,060	1,640	1,080
1200	700	1,580	1,000	1,660	1,040	1,760	1,090	1,820	1,120
1200	800	1,700	1,010	1,800	1,060	1,920	1,120	1,980	1,150
1200	900	1,840	1,030	1,940	1,080	2,080	1,150	2,140	1,180
1200	1000	1,980	1,100	2,100	1,150	2,240	1,230	2,320	1,260
1200	1100	2,120	1,110	2,240	1,170	2,400	1,260	2,480	1,300
1200	1200	2,260	1,130	2,380	1,190	2,560	1,280	2,660	1,330
1300	300	1,040	890	1,060	910	1,120	930	1,140	940
1300	350	1,100	960	1,140	980	1,200	1,010	1,220	1,020
1300	400	1,160	970	1,200	990	1,260	1,020	1,300	1,040
1300	450	1,240	980	1,300	1,010	1,360	1,040	1,400	1,060
1300	500	1,300	990	1,360	1,020	1,440	1,050	1,480	1,070
1300	600	1,440	1,030	1,500	1,070	1,600	1,110	1,640	1,130
1300	700	1,580	1,050	1,660	1,090	1,760	1,140	1,820	1,170
1300	800	1,700	1,060	1,800	1,110	1,920	1,170	1,980	1,200
1300	900	1,840	1,080	1,940	1,130	2,080	1,200	2,140	1,230
1300	1000	1,980	1,150	2,100	1,200	2,240	1,280	2,320	1,310
1300	1100	2,120	1,160	2,240	1,220	2,400	1,310	2,480	1,350
1300	1200	2,260	1,180	2,380	1,240	2,560	1,330	2,660	1,380
1300	1300	2,380	1,190	2,540	1,270	2,720	1,360	2,820	1,410
1400	300	1,040	940	1,060	960	1,120	980	1,140	990
1400	350	1,100	1,010	1,140	1,030	1,200	1,060	1,220	1,070
1400	400	1,160	1,020	1,200	1,040	1,260	1,070	1,300	1,090
1400	450	1,240	1,030	1,300	1,060	1,360	1,090	1,400	1,110
1400	500	1,300	1,040	1,360	1,070	1,440	1,100	1,480	1,120
1400	600	1,440	1,080	1,500	1,120	1,600	1,160	1,640	1,180
1400	700	1,580	1,100	1,660	1,140	1,760	1,190	1,820	1,220
1400	800	1,700	1,110	1,800	1,160	1,920	1,220	1,980	1,250

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1400	900	1,840	1,130	1,940	1,180	2,080	1,250	2,140	1,280
1400	1000	1,980	1,200	2,100	1,250	2,240	1,330	2,320	1,360
1400	1100	2,120	1,210	2,240	1,270	2,400	1,360	2,480	1,400
1400	1200	2,260	1,230	2,380	1,290	2,560	1,380	2,660	1,430
1400	1300	2,380	1,240	2,540	1,320	2,720	1,410	2,820	1,460
1400	1400	2,520	1,260	2,680	1,340	2,880	1,440	2,980	1,490
1500	300	1,040	990	1,060	1,010	1,120	1,030	1,140	1,040
1500	350	1,100	1,070	1,140	1,090	1,200	1,120	1,220	1,130
1500	400	1,160	1,080	1,200	1,100	1,260	1,130	1,300	1,140
1500	450	1,240	1,090	1,300	1,110	1,360	1,140	1,400	1,160
1500	500	1,300	1,090	1,360	1,120	1,440	1,160	1,480	1,180
1500	600	1,440	1,140	1,500	1,170	1,600	1,220	1,640	1,240
1500	700	1,580	1,150	1,660	1,190	1,760	1,250	1,820	1,270
1500	800	1,700	1,170	1,800	1,210	1,920	1,270	1,980	1,300
1500	900	1,840	1,190	1,940	1,240	2,080	1,300	2,140	1,340
1500	1000	1,980	1,250	2,100	1,310	2,240	1,380	2,320	1,420
1500	1100	2,120	1,270	2,240	1,330	2,400	1,410	2,480	1,450
1500	1200	2,260	1,280	2,380	1,350	2,560	1,440	2,660	1,480
1500	1300	2,380	1,300	2,540	1,370	2,720	1,470	2,820	1,520
1500	1400	2,520	1,310	2,680	1,390	2,880	1,500	2,980	1,550
1500	1500	2,660	1,330	2,820	1,410	3,060	1,530	3,160	1,580
1600	300	1,040	1,050	1,060	1,060	1,120	1,090	1,140	1,100
1600	350	1,100	1,120	1,140	1,140	1,200	1,170	1,220	1,180
1600	400	1,160	1,130	1,200	1,150	1,260	1,180	1,300	1,190
1600	450	1,240	1,140	1,300	1,160	1,360	1,190	1,400	1,210
1600	500	1,300	1,140	1,360	1,170	1,440	1,210	1,480	1,230
1600	600	1,440	1,190	1,500	1,220	1,600	1,270	1,640	1,290
1600	700	1,580	1,200	1,660	1,240	1,760	1,300	1,820	1,320
1600	800	1,700	1,220	1,800	1,260	1,920	1,320	1,980	1,350
1600	900	1,840	1,240	1,940	1,290	2,080	1,350	2,140	1,390
1600	1000	1,980	1,300	2,100	1,360	2,240	1,430	2,320	1,470
1600	1100	2,120	1,320	2,240	1,380	2,400	1,460	2,480	1,500
1600	1200	2,260	1,330	2,380	1,400	2,560	1,490	2,660	1,530
1600	1300	2,380	1,350	2,540	1,420	2,720	1,520	2,820	1,570
1600	1400	2,520	1,360	2,680	1,440	2,880	1,550	2,980	1,600

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1600	1500	2,660	1,380	2,820	1,460	3,060	1,580	3,160	1,630
1600	1600	2,780	1,390	2,960	1,480	3,200	1,600	3,320	1,660
1700	300	1,040	1,100	1,060	1,110	1,120	1,140	1,140	1,150
1700	350	1,100	1,170	1,140	1,190	1,200	1,220	1,220	1,230
1700	400	1,160	1,180	1,200	1,200	1,260	1,230	1,300	1,250
1700	450	1,240	1,190	1,300	1,220	1,360	1,250	1,400	1,270
1700	500	1,300	1,200	1,360	1,230	1,440	1,260	1,480	1,280
1700	600	1,440	1,240	1,500	1,280	1,600	1,320	1,640	1,340
1700	700	1,580	1,260	1,660	1,300	1,760	1,350	1,820	1,380
1700	800	1,700	1,270	1,800	1,320	1,920	1,380	1,980	1,410
1700	900	1,840	1,290	1,940	1,340	2,080	1,410	2,140	1,440
1700	1000	1,980	1,360	2,100	1,410	2,240	1,490	2,320	1,520
1700	1100	2,120	1,370	2,240	1,430	2,400	1,520	2,480	1,560
1700	1200	2,260	1,390	2,380	1,450	2,560	1,540	2,660	1,590
1700	1300	2,380	1,400	2,540	1,480	2,720	1,570	2,820	1,620
1700	1400	2,520	1,420	2,680	1,500	2,880	1,600	2,980	1,650
1700	1500	2,660	1,430	2,820	1,520	3,060	1,630	3,160	1,690
1700	1600	2,780	1,450	2,960	1,540	3,200	1,660	3,320	1,720
1700	1700	2,940	1,470	3,120	1,560	3,380	1,690	3,500	1,750
1800	300	1,040	1,150	1,060	1,170	1,120	1,190	1,140	1,200
1800	350	1,100	1,220	1,140	1,240	1,200	1,270	1,220	1,280
1800	400	1,160	1,230	1,200	1,250	1,260	1,280	1,300	1,300
1800	450	1,240	1,240	1,300	1,270	1,360	1,300	1,400	1,320
1800	500	1,300	1,250	1,360	1,280	1,440	1,310	1,480	1,330
1800	600	1,440	1,290	1,500	1,330	1,600	1,370	1,640	1,390
1800	700	1,580	1,310	1,660	1,350	1,760	1,400	1,820	1,430
1800	800	1,700	1,320	1,800	1,370	1,920	1,430	1,980	1,460
1800	900	1,840	1,340	1,940	1,390	2,080	1,460	2,140	1,490
1800	1000	1,980	1,410	2,100	1,460	2,240	1,540	2,320	1,570
1800	1100	2,120	1,420	2,240	1,480	2,400	1,570	2,480	1,610
1800	1200	2,260	1,440	2,380	1,500	2,560	1,590	2,660	1,640
1800	1300	2,380	1,450	2,540	1,530	2,720	1,620	2,820	1,670
1800	1400	2,520	1,470	2,680	1,550	2,880	1,650	2,980	1,700
1800	1500	2,660	1,480	2,820	1,570	3,060	1,680	3,160	1,740
1800	1600	2,780	1,500	2,960	1,590	3,200	1,710	3,320	1,770

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1800	1700	2,940	1,520	3,120	1,610	3,380	1,740	3,500	1,800
1800	1800	3,060	1,530	3,260	1,630	3,540	1,770	3,660	1,830
1900	300	1,040	1,200	1,060	1,220	1,120	1,240	1,140	1,250
1900	350	1,100	1,270	1,140	1,290	1,200	1,320	1,220	1,330
1900	400	1,160	1,280	1,200	1,300	1,260	1,330	1,300	1,350
1900	450	1,240	1,290	1,300	1,320	1,360	1,350	1,400	1,370
1900	500	1,300	1,300	1,360	1,330	1,440	1,360	1,480	1,380
1900	600	1,440	1,340	1,500	1,380	1,600	1,420	1,640	1,440
1900	700	1,580	1,360	1,660	1,400	1,760	1,450	1,820	1,480
1900	800	1,700	1,370	1,800	1,420	1,920	1,480	1,980	1,510
1900	900	1,840	1,390	1,940	1,440	2,080	1,510	2,140	1,540
1900	1000	1,980	1,460	2,100	1,510	2,240	1,590	2,320	1,620
1900	1100	2,120	1,470	2,240	1,530	2,400	1,620	2,480	1,660
1900	1200	2,260	1,490	2,380	1,550	2,560	1,640	2,660	1,690
1900	1300	2,380	1,500	2,540	1,580	2,720	1,670	2,820	1,720
1900	1400	2,520	1,520	2,680	1,600	2,880	1,700	2,980	1,750
1900	1500	2,660	1,530	2,820	1,620	3,060	1,730	3,160	1,790
1900	1600	2,780	1,550	2,960	1,640	3,200	1,760	3,320	1,820
1900	1700	2,940	1,570	3,120	1,660	3,380	1,790	3,500	1,850
1900	1800	3,060	1,580	3,260	1,680	3,540	1,820	3,660	1,880
1900	1900	3,200	1,600	3,400	1,700	3,700	1,850	3,840	1,920
2000	300	1,140	1,250	1,160	1,270	1,220	1,290	1,240	1,300
2000	350	1,200	1,330	1,240	1,350	1,300	1,380	1,320	1,390
2000	400	1,260	1,340	1,300	1,360	1,360	1,390	1,400	1,400
2000	450	1,340	1,350	1,400	1,370	1,460	1,400	1,500	1,420
2000	500	1,400	1,350	1,460	1,380	1,540	1,420	1,580	1,440
2000	600	1,540	1,400	1,600	1,430	1,700	1,480	1,740	1,500
2000	700	1,680	1,410	1,760	1,450	1,860	1,510	1,920	1,530
2000	800	1,800	1,430	1,900	1,470	2,020	1,530	2,080	1,560
2000	900	1,940	1,450	2,040	1,500	2,180	1,560	2,240	1,600
2000	1000	2,080	1,510	2,200	1,570	2,340	1,640	2,420	1,680
2000	1100	2,220	1,530	2,340	1,590	2,500	1,670	2,580	1,710
2000	1200	2,360	1,540	2,480	1,610	2,660	1,700	2,760	1,740
2000	1300	2,480	1,560	2,640	1,630	2,820	1,730	2,920	1,780
2000	1400	2,620	1,570	2,780	1,650	2,980	1,760	3,080	1,810

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2000	1500	2,760	1,590	2,920	1,670	3,160	1,790	3,260	1,840
2000	1600	2,880	1,600	3,060	1,690	3,300	1,810	3,420	1,870
2000	1700	3,040	1,620	3,220	1,720	3,480	1,840	3,600	1,910
2000	1800	3,160	1,640	3,360	1,740	3,640	1,870	3,760	1,940
2000	1900	3,300	1,650	3,500	1,760	3,800	1,900	3,940	1,970
2000	2000	3,440	1,720	3,660	1,830	3,960	1,980	4,100	2,050
2100	300	1,140	1,310	1,160	1,320	1,220	1,350	1,240	1,360
2100	350	1,200	1,380	1,240	1,400	1,300	1,430	1,320	1,440
2100	400	1,260	1,390	1,300	1,410	1,360	1,440	1,400	1,450
2100	450	1,340	1,400	1,400	1,420	1,460	1,450	1,500	1,470
2100	500	1,400	1,400	1,460	1,430	1,540	1,470	1,580	1,490
2100	600	1,540	1,450	1,600	1,480	1,700	1,530	1,740	1,550
2100	700	1,680	1,460	1,760	1,500	1,860	1,560	1,920	1,580
2100	800	1,800	1,480	1,900	1,520	2,020	1,580	2,080	1,610
2100	900	1,940	1,500	2,040	1,550	2,180	1,610	2,240	1,650
2100	1000	2,080	1,560	2,200	1,620	2,340	1,690	2,420	1,730
2100	1100	2,220	1,580	2,340	1,640	2,500	1,720	2,580	1,760
2100	1200	2,360	1,590	2,480	1,660	2,660	1,750	2,760	1,790
2100	1300	2,480	1,610	2,640	1,680	2,820	1,780	2,920	1,830
2100	1400	2,620	1,620	2,780	1,700	2,980	1,810	3,080	1,860
2100	1500	2,760	1,640	2,920	1,720	3,160	1,840	3,260	1,890
2100	1600	2,880	1,650	3,060	1,740	3,300	1,860	3,420	1,920
2100	1700	3,040	1,670	3,220	1,770	3,480	1,890	3,600	1,960
2100	1800	3,160	1,690	3,360	1,790	3,640	1,920	3,760	1,990
2100	1900	3,300	1,700	3,500	1,810	3,800	1,950	3,940	2,020
2100	2000	3,440	1,770	3,660	1,880	3,960	2,030	4,100	2,100
2100	2100	3,560	1,780	3,800	1,900	4,120	2,060	4,280	2,140
2200	300	1,140	1,360	1,160	1,370	1,220	1,400	1,240	1,410
2200	350	1,200	1,430	1,240	1,450	1,300	1,480	1,320	1,490
2200	400	1,260	1,440	1,300	1,460	1,360	1,490	1,400	1,510
2200	450	1,340	1,450	1,400	1,480	1,460	1,510	1,500	1,530
2200	500	1,400	1,460	1,460	1,490	1,540	1,520	1,580	1,540
2200	600	1,540	1,500	1,600	1,540	1,700	1,580	1,740	1,600
2200	700	1,680	1,520	1,760	1,560	1,860	1,610	1,920	1,640
2200	800	1,800	1,530	1,900	1,580	2,020	1,640	2,080	1,670

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2200	900	1,940	1,550	2,040	1,600	2,180	1,670	2,240	1,700
2200	1000	2,080	1,620	2,200	1,670	2,340	1,750	2,420	1,780
2200	1100	2,220	1,630	2,340	1,690	2,500	1,780	2,580	1,820
2200	1200	2,360	1,650	2,480	1,710	2,660	1,800	2,760	1,850
2200	1300	2,480	1,660	2,640	1,740	2,820	1,830	2,920	1,880
2200	1400	2,620	1,680	2,780	1,760	2,980	1,860	3,080	1,910
2200	1500	2,760	1,690	2,920	1,780	3,160	1,890	3,260	1,950
2200	1600	2,880	1,710	3,060	1,800	3,300	1,920	3,420	1,980
2200	1700	3,040	1,730	3,220	1,820	3,480	1,950	3,600	2,010
2200	1800	3,160	1,740	3,360	1,840	3,640	1,980	3,760	2,040
2200	1900	3,300	1,760	3,500	1,860	3,800	2,010	3,940	2,080
2200	2000	3,440	1,820	3,660	1,930	3,960	2,080	4,100	2,160
2200	2100	3,560	1,840	3,800	1,960	4,120	2,110	4,280	2,190
2200	2200	3,700	1,850	3,960	1,980	4,280	2,140	4,440	2,220
2300	300	1,140	1,410	1,160	1,430	1,220	1,450	1,240	1,460
2300	350	1,200	1,480	1,240	1,500	1,300	1,530	1,320	1,540
2300	400	1,260	1,490	1,300	1,510	1,360	1,540	1,400	1,560
2300	450	1,340	1,500	1,400	1,530	1,460	1,560	1,500	1,580
2300	500	1,400	1,510	1,460	1,540	1,540	1,570	1,580	1,590
2300	600	1,540	1,550	1,600	1,590	1,700	1,630	1,740	1,650
2300	700	1,680	1,570	1,760	1,610	1,860	1,660	1,920	1,690
2300	800	1,800	1,580	1,900	1,630	2,020	1,690	2,080	1,720
2300	900	1,940	1,600	2,040	1,650	2,180	1,720	2,240	1,750
2300	1000	2,080	1,670	2,200	1,720	2,340	1,800	2,420	1,830
2300	1100	2,220	1,680	2,340	1,740	2,500	1,830	2,580	1,870
2300	1200	2,360	1,700	2,480	1,760	2,660	1,850	2,760	1,900
2300	1300	2,480	1,710	2,640	1,790	2,820	1,880	2,920	1,930
2300	1400	2,620	1,730	2,780	1,810	2,980	1,910	3,080	1,960
2300	1500	2,760	1,740	2,920	1,830	3,160	1,940	3,260	2,000
2300	1600	2,880	1,760	3,060	1,850	3,300	1,970	3,420	2,030
2300	1700	3,040	1,780	3,220	1,870	3,480	2,000	3,600	2,060
2300	1800	3,160	1,790	3,360	1,890	3,640	2,030	3,760	2,090
2300	1900	3,300	1,810	3,500	1,910	3,800	2,060	3,940	2,130
2300	2000	3,440	1,870	3,660	1,980	3,960	2,130	4,100	2,210
2300	2100	3,560	1,890	3,800	2,010	4,120	2,160	4,280	2,240

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2300	2200	3,700	1,900	3,960	2,030	4,280	2,190	4,440	2,270
2300	2300	3,840	1,920	4,100	2,050	4,440	2,220	4,620	2,310
2400	300	1,140	1,460	1,160	1,480	1,220	1,500	1,240	1,510
2400	350	1,200	1,530	1,240	1,550	1,300	1,580	1,320	1,590
2400	400	1,260	1,540	1,300	1,560	1,360	1,590	1,400	1,610
2400	450	1,340	1,550	1,400	1,580	1,460	1,610	1,500	1,630
2400	500	1,400	1,560	1,460	1,590	1,540	1,620	1,580	1,640
2400	600	1,540	1,600	1,600	1,640	1,700	1,680	1,740	1,700
2400	700	1,680	1,620	1,760	1,660	1,860	1,710	1,920	1,740
2400	800	1,800	1,630	1,900	1,680	2,020	1,740	2,080	1,770
2400	900	1,940	1,650	2,040	1,700	2,180	1,770	2,240	1,800
2400	1000	2,080	1,720	2,200	1,770	2,340	1,850	2,420	1,880
2400	1100	2,220	1,730	2,340	1,790	2,500	1,880	2,580	1,920
2400	1200	2,360	1,750	2,480	1,810	2,660	1,900	2,760	1,950
2400	1300	2,480	1,760	2,640	1,840	2,820	1,930	2,920	1,980
2400	1400	2,620	1,780	2,780	1,860	2,980	1,960	3,080	2,010
2400	1500	2,760	1,790	2,920	1,880	3,160	1,990	3,260	2,050
2400	1600	2,880	1,810	3,060	1,900	3,300	2,020	3,420	2,080
2400	1700	3,040	1,830	3,220	1,920	3,480	2,050	3,600	2,110
2400	1800	3,160	1,840	3,360	1,940	3,640	2,080	3,760	2,140
2400	1900	3,300	1,860	3,500	1,960	3,800	2,110	3,940	2,180
2400	2000	3,440	1,920	3,660	2,030	3,960	2,180	4,100	2,260
2400	2100	3,560	1,940	3,800	2,060	4,120	2,210	4,280	2,290
2400	2200	3,700	1,950	3,960	2,080	4,280	2,240	4,440	2,320
2400	2300	3,840	1,970	4,100	2,100	4,440	2,270	4,620	2,360
2400	2400	3,960	1,980	4,240	2,120	4,600	2,300	4,780	2,390
2500	300	1,140	1,510	1,160	1,530	1,220	1,550	1,240	1,560
2500	350	1,200	1,590	1,240	1,610	1,300	1,640	1,320	1,650
2500	400	1,260	1,600	1,300	1,620	1,360	1,650	1,400	1,660
2500	450	1,340	1,610	1,400	1,630	1,460	1,660	1,500	1,680
2500	500	1,400	1,610	1,460	1,640	1,540	1,680	1,580	1,700
2500	600	1,540	1,660	1,600	1,690	1,700	1,740	1,740	1,760
2500	700	1,680	1,670	1,760	1,710	1,860	1,770	1,920	1,790
2500	800	1,800	1,690	1,900	1,730	2,020	1,790	2,080	1,820
2500	900	1,940	1,710	2,040	1,760	2,180	1,820	2,240	1,860

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2500	1000	2,080	1,770	2,200	1,830	2,340	1,900	2,420	1,940
2500	1100	2,220	1,790	2,340	1,850	2,500	1,930	2,580	1,970
2500	1200	2,360	1,800	2,480	1,870	2,660	1,960	2,760	2,000
2500	1300	2,480	1,820	2,640	1,890	2,820	1,990	2,920	2,040
2500	1400	2,620	1,830	2,780	1,910	2,980	2,020	3,080	2,070
2500	1500	2,760	1,850	2,920	1,930	3,160	2,050	3,260	2,100
2500	1600	2,880	1,860	3,060	1,950	3,300	2,070	3,420	2,130
2500	1700	3,040	1,880	3,220	1,980	3,480	2,100	3,600	2,170
2500	1800	3,160	1,900	3,360	2,000	3,640	2,130	3,760	2,200
2500	1900	3,300	1,910	3,500	2,020	3,800	2,160	3,940	2,230
2500	2000	3,440	1,980	3,660	2,090	3,960	2,240	4,100	2,310
2500	2100	3,560	1,990	3,800	2,110	4,120	2,270	4,280	2,350
2500	2200	3,700	2,010	3,960	2,130	4,280	2,300	4,440	2,380
2500	2300	3,840	2,020	4,100	2,150	4,440	2,330	4,620	2,410
2500	2400	3,960	2,040	4,240	2,170	4,600	2,350	4,780	2,440
2500	2500	4,120	2,060	4,400	2,200	4,760	2,380	4,960	2,480
2600	300	1,140	1,570	1,160	1,580	1,220	1,610	1,240	1,620
2600	350	1,200	1,640	1,240	1,660	1,300	1,690	1,320	1,700
2600	400	1,260	1,650	1,300	1,670	1,360	1,700	1,400	1,710
2600	450	1,340	1,660	1,400	1,680	1,460	1,710	1,500	1,730
2600	500	1,400	1,660	1,460	1,690	1,540	1,730	1,580	1,750
2600	600	1,540	1,710	1,600	1,740	1,700	1,790	1,740	1,810
2600	700	1,680	1,720	1,760	1,760	1,860	1,820	1,920	1,840
2600	800	1,800	1,740	1,900	1,780	2,020	1,840	2,080	1,870
2600	900	1,940	1,760	2,040	1,810	2,180	1,870	2,240	1,910
2600	1000	2,080	1,820	2,200	1,880	2,340	1,950	2,420	1,990
2600	1100	2,220	1,840	2,340	1,900	2,500	1,980	2,580	2,020
2600	1200	2,360	1,850	2,480	1,920	2,660	2,010	2,760	2,050
2600	1300	2,480	1,870	2,640	1,940	2,820	2,040	2,920	2,090
2600	1400	2,620	1,880	2,780	1,960	2,980	2,070	3,080	2,120
2600	1500	2,760	1,900	2,920	1,980	3,160	2,100	3,260	2,150
2600	1600	2,880	1,910	3,060	2,000	3,300	2,120	3,420	2,180
2600	1700	3,040	1,930	3,220	2,030	3,480	2,150	3,600	2,220
2600	1800	3,160	1,950	3,360	2,050	3,640	2,180	3,760	2,250
2600	1900	3,300	1,960	3,500	2,070	3,800	2,210	3,940	2,280

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2600	2000	3,440	2,030	3,660	2,140	3,960	2,290	4,100	2,360
2600	2100	3,560	2,040	3,800	2,160	4,120	2,320	4,280	2,400
2600	2200	3,700	2,060	3,960	2,180	4,280	2,350	4,440	2,430
2600	2300	3,840	2,070	4,100	2,200	4,440	2,380	4,620	2,460
2600	2400	3,960	2,090	4,240	2,220	4,600	2,400	4,780	2,490
2600	2500	4,120	2,110	4,400	2,250	4,760	2,430	4,960	2,530
2600	2600	4,240	2,120	4,540	2,270	4,920	2,460	5,120	2,560
2700	300	1,140	1,620	1,160	1,630	1,220	1,660	1,240	1,670
2700	350	1,200	1,690	1,240	1,710	1,300	1,740	1,320	1,750
2700	400	1,260	1,700	1,300	1,720	1,360	1,750	1,400	1,770
2700	450	1,340	1,710	1,400	1,740	1,460	1,770	1,500	1,790
2700	500	1,400	1,720	1,460	1,750	1,540	1,780	1,580	1,800
2700	600	1,540	1,760	1,600	1,800	1,700	1,840	1,740	1,860
2700	700	1,680	1,780	1,760	1,820	1,860	1,870	1,920	1,900
2700	800	1,800	1,790	1,900	1,840	2,020	1,900	2,080	1,930
2700	900	1,940	1,810	2,040	1,860	2,180	1,930	2,240	1,960
2700	1000	2,080	1,880	2,200	1,930	2,340	2,010	2,420	2,040
2700	1100	2,220	1,890	2,340	1,950	2,500	2,040	2,580	2,080
2700	1200	2,360	1,910	2,480	1,970	2,660	2,060	2,760	2,110
2700	1300	2,480	1,920	2,640	2,000	2,820	2,090	2,920	2,140
2700	1400	2,620	1,940	2,780	2,020	2,980	2,120	3,080	2,170
2700	1500	2,760	1,950	2,920	2,040	3,160	2,150	3,260	2,210
2700	1600	2,880	1,970	3,060	2,060	3,300	2,180	3,420	2,240
2700	1700	3,040	1,990	3,220	2,080	3,480	2,210	3,600	2,270
2700	1800	3,160	2,000	3,360	2,100	3,640	2,240	3,760	2,300
2700	1900	3,300	2,020	3,500	2,120	3,800	2,270	3,940	2,340
2700	2000	3,440	2,080	3,660	2,190	3,960	2,340	4,100	2,420
2700	2100	3,560	2,100	3,800	2,220	4,120	2,370	4,280	2,450
2700	2200	3,700	2,110	3,960	2,240	4,280	2,400	4,440	2,480
2700	2300	3,840	2,130	4,100	2,260	4,440	2,430	4,620	2,520
2700	2400	3,960	2,140	4,240	2,280	4,600	2,460	4,780	2,550
2700	2500	4,120	2,160	4,400	2,300	4,760	2,490	4,960	2,580
2700	2600	4,240	2,180	4,540	2,320	4,920	2,520	5,120	2,610
2700	2700	4,380	2,190	4,680	2,340	5,100	2,550	5,300	2,650
2800	300	1,140	1,670	1,160	1,690	1,220	1,710	1,240	1,720

TEE		PN 3		PN 6		PN 10		PN 12	
Header	Branch	H	B	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2800	350	1,200	1,740	1,240	1,760	1,300	1,790	1,320	1,800
2800	400	1,260	1,750	1,300	1,770	1,360	1,800	1,400	1,820
2800	450	1,340	1,760	1,400	1,790	1,460	1,820	1,500	1,840
2800	500	1,400	1,770	1,460	1,800	1,540	1,830	1,580	1,850
2800	600	1,540	1,810	1,600	1,850	1,700	1,890	1,740	1,910
2800	700	1,680	1,830	1,760	1,870	1,860	1,920	1,920	1,950
2800	800	1,800	1,840	1,900	1,890	2,020	1,950	2,080	1,980
2800	900	1,940	1,860	2,040	1,910	2,180	1,980	2,240	2,010
2800	1000	2,080	1,930	2,200	1,980	2,340	2,060	2,420	2,090
2800	1100	2,220	1,940	2,340	2,000	2,500	2,090	2,580	2,130
2800	1200	2,360	1,960	2,480	2,020	2,660	2,110	2,760	2,160
2800	1300	2,480	1,970	2,640	2,050	2,820	2,140	2,920	2,190
2800	1400	2,620	1,990	2,780	2,070	2,980	2,170	3,080	2,220
2800	1500	2,760	2,000	2,920	2,090	3,160	2,200	3,260	2,260
2800	1600	2,880	2,020	3,060	2,110	3,300	2,230	3,420	2,290
2800	1700	3,040	2,040	3,220	2,130	3,480	2,260	3,600	2,320
2800	1800	3,160	2,050	3,360	2,150	3,640	2,290	3,760	2,350
2800	1900	3,300	2,070	3,500	2,170	3,800	2,320	3,940	2,390
2800	2000	3,440	2,130	3,660	2,240	3,960	2,390	4,100	2,470
2800	2100	3,560	2,150	3,800	2,270	4,120	2,420	4,280	2,500
2800	2200	3,700	2,160	3,960	2,290	4,280	2,450	4,440	2,530
2800	2300	3,840	2,180	4,100	2,310	4,440	2,480	4,620	2,570
2800	2400	3,960	2,190	4,240	2,330	4,600	2,510	4,780	2,600
2800	2500	4,120	2,210	4,400	2,350	4,760	2,540	4,960	2,630
2800	2600	4,240	2,230	4,540	2,370	4,920	2,570	5,120	2,660
2800	2700	4,380	2,240	4,680	2,390	5,100	2,600	5,300	2,700
2800	2800	4,520	2,260	4,820	2,410	5,240	2,620	5,460	2,730
2900	300	1,180	1,720	1,200	1,740				
2900	350	1,240	1,790	1,280	1,810				
2900	400	1,300	1,800	1,340	1,820				
2900	450	1,380	1,810	1,440	1,840				
2900	500	1,440	1,820	1,500	1,850				
2900	600	1,580	1,860	1,640	1,900				
2900	700	1,720	1,880	1,800	1,920				
2900	800	1,840	1,890	1,940	1,940				

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
2900	900	1,980	1,910	2,080	1,960
2900	1000	2,120	1,980	2,240	2,030
2900	1100	2,260	1,990	2,380	2,050
2900	1200	2,400	2,010	2,520	2,070
2900	1300	2,520	2,020	2,680	2,100
2900	1400	2,660	2,040	2,820	2,120
2900	1500	2,800	2,050	2,960	2,140
2900	1600	2,920	2,070	3,100	2,160
2900	1700	3,080	2,090	3,260	2,180
2900	1800	3,200	2,100	3,400	2,200
2900	1900	3,340	2,120	3,540	2,220
2900	2000	3,480	2,180	3,700	2,290
2900	2100	3,600	2,200	3,840	2,320
2900	2200	3,740	2,210	4,000	2,340
2900	2300	3,880	2,230	4,140	2,360
2900	2400	4,000	2,240	4,280	2,380
2900	2500	4,160	2,260	4,440	2,400
2900	2600	4,280	2,280	4,580	2,420
2900	2700	4,420	2,290	4,720	2,440
2900	2800	4,560	2,310	4,860	2,460
2900	2900	4,680	2,340	5,020	2,510
3000	300	1,180	1,770	1,200	1,790
3000	350	1,240	1,850	1,280	1,870
3000	400	1,300	1,860	1,340	1,880
3000	450	1,380	1,870	1,440	1,890
3000	500	1,440	1,870	1,500	1,900
3000	600	1,580	1,920	1,640	1,950
3000	700	1,720	1,930	1,800	1,970
3000	800	1,840	1,950	1,940	1,990
3000	900	1,980	1,970	2,080	2,020
3000	1000	2,120	2,030	2,240	2,090
3000	1100	2,260	2,050	2,380	2,110
3000	1200	2,400	2,060	2,520	2,130
3000	1300	2,520	2,080	2,680	2,150
3000	1400	2,660	2,090	2,820	2,170

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3000	1500	2,800	2,110	2,960	2,190
3000	1600	2,920	2,120	3,100	2,210
3000	1700	3,080	2,140	3,260	2,240
3000	1800	3,200	2,160	3,400	2,260
3000	1900	3,340	2,170	3,540	2,280
3000	2000	3,480	2,240	3,700	2,350
3000	2100	3,600	2,250	3,840	2,370
3000	2200	3,740	2,270	4,000	2,390
3000	2300	3,880	2,280	4,140	2,410
3000	2400	4,000	2,300	4,280	2,430
3000	2500	4,160	2,320	4,440	2,460
3000	2600	4,280	2,330	4,580	2,480
3000	2700	4,420	2,350	4,720	2,500
3000	2800	4,560	2,360	4,860	2,520
3000	2900	4,680	2,400	5,020	2,560
3000	3000	4,820	2,410	5,160	2,580
3100	300	1,180	1,830	1,200	1,840
3100	350	1,240	1,900	1,280	1,920
3100	400	1,300	1,910	1,340	1,930
3100	450	1,380	1,920	1,440	1,940
3100	500	1,440	1,920	1,500	1,950
3100	600	1,580	1,970	1,640	2,000
3100	700	1,720	1,980	1,800	2,020
3100	800	1,840	2,000	1,940	2,040
3100	900	1,980	2,020	2,080	2,070
3100	1000	2,120	2,080	2,240	2,140
3100	1100	2,260	2,100	2,380	2,160
3100	1200	2,400	2,110	2,520	2,180
3100	1300	2,520	2,130	2,680	2,200
3100	1400	2,660	2,140	2,820	2,220
3100	1500	2,800	2,160	2,960	2,240
3100	1600	2,920	2,170	3,100	2,260
3100	1700	3,080	2,190	3,260	2,290
3100	1800	3,200	2,210	3,400	2,310
3100	1900	3,340	2,220	3,540	2,330

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3100	2000	3,480	2,290	3,700	2,400
3100	2100	3,600	2,300	3,840	2,420
3100	2200	3,740	2,320	4,000	2,440
3100	2300	3,880	2,330	4,140	2,460
3100	2400	4,000	2,350	4,280	2,480
3100	2500	4,160	2,370	4,440	2,510
3100	2600	4,280	2,380	4,580	2,530
3100	2700	4,420	2,400	4,720	2,550
3100	2800	4,560	2,410	4,860	2,570
3100	2900	4,680	2,450	5,020	2,610
3100	3000	4,820	2,460	5,160	2,630
3100	3100	4,960	2,480	5,300	2,650
3200	300	1,180	1,880	1,200	1,890
3200	350	1,240	1,950	1,280	1,970
3200	400	1,300	1,960	1,340	1,980
3200	450	1,380	1,970	1,440	2,000
3200	500	1,440	1,980	1,500	2,010
3200	600	1,580	2,020	1,640	2,060
3200	700	1,720	2,040	1,800	2,080
3200	800	1,840	2,050	1,940	2,100
3200	900	1,980	2,070	2,080	2,120
3200	1000	2,120	2,140	2,240	2,190
3200	1100	2,260	2,150	2,380	2,210
3200	1200	2,400	2,170	2,520	2,230
3200	1300	2,520	2,180	2,680	2,260
3200	1400	2,660	2,200	2,820	2,280
3200	1500	2,800	2,210	2,960	2,300
3200	1600	2,920	2,230	3,100	2,320
3200	1700	3,080	2,250	3,260	2,340
3200	1800	3,200	2,260	3,400	2,360
3200	1900	3,340	2,280	3,540	2,380
3200	2000	3,480	2,340	3,700	2,450
3200	2100	3,600	2,360	3,840	2,480
3200	2200	3,740	2,370	4,000	2,500
3200	2300	3,880	2,390	4,140	2,520

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3200	2400	4,000	2,400	4,280	2,540
3200	2500	4,160	2,420	4,440	2,560
3200	2600	4,280	2,440	4,580	2,580
3200	2700	4,420	2,450	4,720	2,600
3200	2800	4,560	2,470	4,860	2,620
3200	2900	4,680	2,500	5,020	2,670
3200	3000	4,820	2,520	5,160	2,690
3200	3100	4,960	2,530	5,300	2,710
3200	3200	5,100	2,550	5,460	2,730
3300	300	1,180	1,930	1,200	1,950
3300	350	1,240	2,000	1,280	2,020
3300	400	1,300	2,010	1,340	2,030
3300	450	1,380	2,020	1,440	2,050
3300	500	1,440	2,030	1,500	2,060
3300	600	1,580	2,070	1,640	2,110
3300	700	1,720	2,090	1,800	2,130
3300	800	1,840	2,100	1,940	2,150
3300	900	1,980	2,120	2,080	2,170
3300	1000	2,120	2,190	2,240	2,240
3300	1100	2,260	2,200	2,380	2,260
3300	1200	2,400	2,220	2,520	2,280
3300	1300	2,520	2,230	2,680	2,310
3300	1400	2,660	2,250	2,820	2,330
3300	1500	2,800	2,260	2,960	2,350
3300	1600	2,920	2,280	3,100	2,370
3300	1700	3,080	2,300	3,260	2,390
3300	1800	3,200	2,310	3,400	2,410
3300	1900	3,340	2,330	3,540	2,430
3300	2000	3,480	2,390	3,700	2,500
3300	2100	3,600	2,410	3,840	2,530
3300	2200	3,740	2,420	4,000	2,550
3300	2300	3,880	2,440	4,140	2,570
3300	2400	4,000	2,450	4,280	2,590
3300	2500	4,160	2,470	4,440	2,610
3300	2600	4,280	2,490	4,580	2,630

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3300	2700	4,420	2,500	4,720	2,650
3300	2800	4,560	2,520	4,860	2,670
3300	2900	4,680	2,550	5,020	2,720
3300	3000	4,820	2,570	5,160	2,740
3300	3100	4,960	2,580	5,300	2,760
3300	3200	5,100	2,600	5,460	2,780
3300	3300	5,240	2,620	5,600	2,800
3400	300	1,180	1,980	1,200	2,000
3400	350	1,240	2,050	1,280	2,070
3400	400	1,300	2,060	1,340	2,080
3400	450	1,380	2,070	1,440	2,100
3400	500	1,440	2,080	1,500	2,110
3400	600	1,580	2,120	1,640	2,160
3400	700	1,720	2,140	1,800	2,180
3400	800	1,840	2,150	1,940	2,200
3400	900	1,980	2,170	2,080	2,220
3400	1000	2,120	2,240	2,240	2,290
3400	1100	2,260	2,250	2,380	2,310
3400	1200	2,400	2,270	2,520	2,330
3400	1300	2,520	2,280	2,680	2,360
3400	1400	2,660	2,300	2,820	2,380
3400	1500	2,800	2,310	2,960	2,400
3400	1600	2,920	2,330	3,100	2,420
3400	1700	3,080	2,350	3,260	2,440
3400	1800	3,200	2,360	3,400	2,460
3400	1900	3,340	2,380	3,540	2,480
3400	2000	3,480	2,440	3,700	2,550
3400	2100	3,600	2,460	3,840	2,580
3400	2200	3,740	2,470	4,000	2,600
3400	2300	3,880	2,490	4,140	2,620
3400	2400	4,000	2,500	4,280	2,640
3400	2500	4,160	2,520	4,440	2,660
3400	2600	4,280	2,540	4,580	2,680
3400	2700	4,420	2,550	4,720	2,700
3400	2800	4,560	2,570	4,860	2,720

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3400	2900	4,680	2,600	5,020	2,770
3400	3000	4,820	2,620	5,160	2,790
3400	3100	4,960	2,630	5,300	2,810
3400	3200	5,100	2,650	5,460	2,830
3400	3300	5,240	2,670	5,600	2,850
3400	3400	5,360	2,680	5,740	2,870
3500	300	1,180	2,030	1,200	2,050
3500	350	1,240	2,110	1,280	2,130
3500	400	1,300	2,120	1,340	2,140
3500	450	1,380	2,130	1,440	2,150
3500	500	1,440	2,130	1,500	2,160
3500	600	1,580	2,180	1,640	2,210
3500	700	1,720	2,190	1,800	2,230
3500	800	1,840	2,210	1,940	2,250
3500	900	1,980	2,230	2,080	2,280
3500	1000	2,120	2,290	2,240	2,350
3500	1100	2,260	2,310	2,380	2,370
3500	1200	2,400	2,320	2,520	2,390
3500	1300	2,520	2,340	2,680	2,410
3500	1400	2,660	2,350	2,820	2,430
3500	1500	2,800	2,370	2,960	2,450
3500	1600	2,920	2,380	3,100	2,470
3500	1700	3,080	2,400	3,260	2,500
3500	1800	3,200	2,420	3,400	2,520
3500	1900	3,340	2,430	3,540	2,540
3500	2000	3,480	2,500	3,700	2,610
3500	2100	3,600	2,510	3,840	2,630
3500	2200	3,740	2,530	4,000	2,650
3500	2300	3,880	2,540	4,140	2,670
3500	2400	4,000	2,560	4,280	2,690
3500	2500	4,160	2,580	4,440	2,720
3500	2600	4,280	2,590	4,580	2,740
3500	2700	4,420	2,610	4,720	2,760
3500	2800	4,560	2,620	4,860	2,780
3500	2900	4,680	2,660	5,020	2,820

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3500	3000	4,820	2,670	5,160	2,840
3500	3100	4,960	2,690	5,300	2,860
3500	3200	5,100	2,700	5,460	2,880
3500	3300	5,240	2,720	5,600	2,910
3500	3400	5,360	2,740	5,740	2,930
3500	3500	5,500	2,750	5,900	2,950
3600	300	1,180	2,090	1,200	2,100
3600	350	1,240	2,160	1,280	2,180
3600	400	1,300	2,170	1,340	2,190
3600	450	1,380	2,180	1,440	2,200
3600	500	1,440	2,180	1,500	2,210
3600	600	1,580	2,230	1,640	2,260
3600	700	1,720	2,240	1,800	2,280
3600	800	1,840	2,260	1,940	2,300
3600	900	1,980	2,280	2,080	2,330
3600	1000	2,120	2,340	2,240	2,400
3600	1100	2,260	2,360	2,380	2,420
3600	1200	2,400	2,370	2,520	2,440
3600	1300	2,520	2,390	2,680	2,460
3600	1400	2,660	2,400	2,820	2,480
3600	1500	2,800	2,420	2,960	2,500
3600	1600	2,920	2,430	3,100	2,520
3600	1700	3,080	2,450	3,260	2,550
3600	1800	3,200	2,470	3,400	2,570
3600	1900	3,340	2,480	3,540	2,590
3600	2000	3,480	2,550	3,700	2,660
3600	2100	3,600	2,560	3,840	2,680
3600	2200	3,740	2,580	4,000	2,700
3600	2300	3,880	2,590	4,140	2,720
3600	2400	4,000	2,610	4,280	2,740
3600	2500	4,160	2,630	4,440	2,770
3600	2600	4,280	2,640	4,580	2,790
3600	2700	4,420	2,660	4,720	2,810
3600	2800	4,560	2,670	4,860	2,830
3600	2900	4,680	2,710	5,020	2,870

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3600	3000	4,820	2,720	5,160	2,890
3600	3100	4,960	2,740	5,300	2,910
3600	3200	5,100	2,750	5,460	2,930
3600	3300	5,240	2,770	5,600	2,960
3600	3400	5,360	2,790	5,740	2,980
3600	3500	5,500	2,800	5,900	3,000
3600	3600	5,640	2,820	6,040	3,020
3700	300	1,180	2,140	1,200	2,150
3700	350	1,240	2,210	1,280	2,230
3700	400	1,300	2,220	1,340	2,240
3700	450	1,380	2,230	1,440	2,260
3700	500	1,440	2,240	1,500	2,270
3700	600	1,580	2,280	1,640	2,320
3700	700	1,720	2,300	1,800	2,340
3700	800	1,840	2,310	1,940	2,360
3700	900	1,980	2,330	2,080	2,380
3700	1000	2,120	2,400	2,240	2,450
3700	1100	2,260	2,410	2,380	2,470
3700	1200	2,400	2,430	2,520	2,490
3700	1300	2,520	2,440	2,680	2,520
3700	1400	2,660	2,460	2,820	2,540
3700	1500	2,800	2,470	2,960	2,560
3700	1600	2,920	2,490	3,100	2,580
3700	1700	3,080	2,510	3,260	2,600
3700	1800	3,200	2,520	3,400	2,620
3700	1900	3,340	2,540	3,540	2,640
3700	2000	3,480	2,600	3,700	2,710
3700	2100	3,600	2,620	3,840	2,740
3700	2200	3,740	2,630	4,000	2,760
3700	2300	3,880	2,650	4,140	2,780
3700	2400	4,000	2,660	4,280	2,800
3700	2500	4,160	2,680	4,440	2,820
3700	2600	4,280	2,700	4,580	2,840
3700	2700	4,420	2,710	4,720	2,860
3700	2800	4,560	2,730	4,860	2,880
3700	2900	4,680	2,760	5,020	2,930

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3700	3000	4,820	2,780	5,160	2,950
3700	3100	4,960	2,790	5,300	2,970
3700	3200	5,100	2,810	5,460	2,990
3700	3300	5,240	2,830	5,600	3,010
3700	3400	5,360	2,840	5,740	3,030
3700	3500	5,500	2,860	5,900	3,050
3700	3600	5,640	2,870	6,040	3,070
3700	3700	5,780	2,890	6,200	3,100
3800	300	1,180	2,190	1,200	2,210
3800	350	1,240	2,260	1,280	2,280
3800	400	1,300	2,270	1,340	2,290
3800	450	1,380	2,280	1,440	2,310
3800	500	1,440	2,290	1,500	2,320
3800	600	1,580	2,330	1,640	2,370
3800	700	1,720	2,350	1,800	2,390
3800	800	1,840	2,360	1,940	2,410
3800	900	1,980	2,380	2,080	2,430
3800	1000	2,120	2,450	2,240	2,500
3800	1100	2,260	2,460	2,380	2,520
3800	1200	2,400	2,480	2,520	2,540
3800	1300	2,520	2,490	2,680	2,570
3800	1400	2,660	2,510	2,820	2,590
3800	1500	2,800	2,520	2,960	2,610
3800	1600	2,920	2,540	3,100	2,630
3800	1700	3,080	2,560	3,260	2,650
3800	1800	3,200	2,570	3,400	2,670
3800	1900	3,340	2,590	3,540	2,690
3800	2000	3,480	2,650	3,700	2,760
3800	2100	3,600	2,670	3,840	2,790
3800	2200	3,740	2,680	4,000	2,810
3800	2300	3,880	2,700	4,140	2,830
3800	2400	4,000	2,710	4,280	2,850
3800	2500	4,160	2,730	4,440	2,870
3800	2600	4,280	2,750	4,580	2,890
3800	2700	4,420	2,760	4,720	2,910

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3800	2800	4,560	2,780	4,860	2,930
3800	2900	4,680	2,810	5,020	2,980
3800	3000	4,820	2,830	5,160	3,000
3800	3100	4,960	2,840	5,300	3,020
3800	3200	5,100	2,860	5,460	3,040
3800	3300	5,240	2,880	5,600	3,060
3800	3400	5,360	2,890	5,740	3,080
3800	3500	5,500	2,910	5,900	3,100
3800	3600	5,640	2,920	6,040	3,120
3800	3700	5,780	2,940	6,200	3,150
3800	3800	5,900	2,950	6,340	3,170
3900	300	1,180	2,240	1,200	2,260
3900	350	1,240	2,310	1,280	2,330
3900	400	1,300	2,320	1,340	2,340
3900	450	1,380	2,330	1,440	2,360
3900	500	1,440	2,340	1,500	2,370
3900	600	1,580	2,380	1,640	2,420
3900	700	1,720	2,400	1,800	2,440
3900	800	1,840	2,410	1,940	2,460
3900	900	1,980	2,430	2,080	2,480
3900	1000	2,120	2,500	2,240	2,550
3900	1100	2,260	2,510	2,380	2,570
3900	1200	2,400	2,530	2,520	2,590
3900	1300	2,520	2,540	2,680	2,620
3900	1400	2,660	2,560	2,820	2,640
3900	1500	2,800	2,570	2,960	2,660
3900	1600	2,920	2,590	3,100	2,680
3900	1700	3,080	2,610	3,260	2,700
3900	1800	3,200	2,620	3,400	2,720
3900	1900	3,340	2,640	3,540	2,740
3900	2000	3,480	2,700	3,700	2,810
3900	2100	3,600	2,720	3,840	2,840
3900	2200	3,740	2,730	4,000	2,860
3900	2300	3,880	2,750	4,140	2,880
3900	2000	3,480	2,700	3,700	2,810

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
3900	2500	4,160	2,780	4,440	2,920
3900	2600	4,280	2,800	4,580	2,940
3900	2700	4,420	2,810	4,720	2,960
3900	2800	4,560	2,830	4,860	2,980
3900	2900	4,680	2,860	5,020	3,030
3900	3000	4,820	2,880	5,160	3,050
3900	3100	4,960	2,890	5,300	3,070
3900	3200	5,100	2,910	5,460	3,090
3900	3300	5,240	2,930	5,600	3,110
3900	3400	5,360	2,940	5,740	3,130
3900	3500	5,500	2,960	5,900	3,150
3900	3600	5,640	2,970	6,040	3,170
3900	3700	5,780	2,990	6,200	3,200
3900	3800	5,900	3,000	6,340	3,220
3900	3900	6,040	3,020	6,480	3,240
4000	300	1,180	2,290	1,200	2,310
4000	350	1,240	2,370	1,280	2,390
4000	400	1,300	2,380	1,340	2,400
4000	450	1,380	2,390	1,440	2,410
4000	500	1,440	2,390	1,500	2,420
4000	600	1,580	2,440	1,640	2,470
4000	700	1,720	2,450	1,800	2,490
4000	800	1,840	2,470	1,940	2,510
4000	900	1,980	2,490	2,080	2,540
4000	1000	2,120	2,550	2,240	2,610
4000	1100	2,260	2,570	2,380	2,630
4000	1200	2,400	2,580	2,520	2,650
4000	1300	2,520	2,600	2,680	2,670
4000	1400	2,660	2,610	2,820	2,690
4000	1500	2,800	2,630	2,960	2,710
4000	1600	2,920	2,640	3,100	2,730
4000	1700	3,080	2,660	3,260	2,760
4000	1800	3,200	2,680	3,400	2,780
4000	1900	3,340	2,690	3,540	2,800
4000	2000	3,480	2,760	3,700	2,870

TEE		PN 3		PN 6	
Header	Branch	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm
4000	2100	3,600	2,770	3,840	2,890
4000	2200	3,740	2,790	4,000	2,910
4000	2300	3,880	2,800	4,140	2,930
4000	2400	4,000	2,820	4,280	2,950
4000	2500	4,160	2,840	4,440	2,980
4000	2600	4,280	2,850	4,580	3,000
4000	2700	4,420	2,870	4,720	3,020
4000	2800	4,560	2,880	4,860	3,040
4000	2900	4,680	2,920	5,020	3,080
4000	3000	4,820	2,930	5,160	3,100
4000	3100	4,960	2,950	5,300	3,120
4000	3200	5,100	2,960	5,460	3,140
4000	3300	5,240	2,980	5,600	3,170
4000	3400	5,360	3,000	5,740	3,190
4000	3500	5,500	3,010	5,900	3,210
4000	3600	5,640	3,030	6,040	3,230
4000	3700	5,780	3,040	6,200	3,250
4000	3800	5,900	3,060	6,340	3,270
4000	3900	6,040	3,070	6,480	3,290
4000	4000	6,180	3,090	6,620	3,310

TEE		PN 16		PN 20		PN 25	
Header	Branch	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm
80	80	520	260	520	260	520	260
100	80	520	270	520	270	520	270
100	100	540	270	540	270	560	280
150	80	520	290	520	290	520	290
150	100	540	290	540	290	560	300
150	150	600	300	640	320	660	330
200	80	520	320	520	320	520	320
200	100	540	320	540	320	560	330
200	150	600	330	640	340	660	360
200	200	700	350	720	360	760	380
250	100	540	340	540	340	560	350
250	150	600	350	640	370	660	380

TEE		PN 16		PN 20		PN 25	
Header	Branch	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm
250	200	700	370	720	390	760	410
250	250	780	390	820	410	880	440
300	150	600	380	640	400	660	410
300	200	700	400	720	420	760	440
300	250	780	420	820	440	880	470
300	300	880	440	940	470	1,000	500
350	150	740	410	760	420	800	440
350	200	840	430	860	440	900	460
350	250	920	450	960	470	1,020	490
350	300	1,020	470	1,060	490	1,120	520
350	350	1,100	550	1,160	580	1,220	610
400	150	740	430	760	450	800	460
400	200	840	450	860	470	900	490
400	250	920	470	960	490	1,020	520
400	300	1,020	490	1,060	520	1,120	550
400	350	1,100	580	1,160	610	1,220	640
400	400	1,200	600	1,260	630	1,340	670
450	200	840	480	860	490	900	510
450	250	920	500	960	520	1,020	540
450	300	1,020	520	1,060	540	1,120	570
450	350	1,100	610	1,160	640	1,220	670
450	400	1,200	630	1,260	660	1,340	700
450	450	1,300	650	1,360	680	1,460	730
500	200	840	500	860	520	900	540
500	250	920	520	960	540	1,020	570
500	300	1,020	540	1,060	570	1,120	600
500	350	1,100	630	1,160	660	1,220	690
500	400	1,200	650	1,260	680	1,340	720
500	450	1,300	670	1,360	710	1,460	750
500	500	1,380	690	1,460	730	1,560	780
600	250	980	580	1,020	600	1,080	620
600	300	1,080	600	1,120	620	1,180	650
600	350	1,160	680	1,220	710	1,280	740
600	400	1,260	700	1,320	730	1,400	770
600	450	1,360	720	1,420	760	1,520	800

TEE		PN 16		PN 20		PN 25	
Header	Branch	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm
600	500	1,440	740	1,520	780	1,620	830
600	600	1,620	810	1,720	860	1,840	920
700	300	1,080	650	1,120	670	1,180	700
700	350	1,160	740	1,220	770	1,280	800
700	400	1,260	760	1,320	790	1,400	830
700	450	1,360	780	1,420	810	1,520	860
700	500	1,440	800	1,520	840	1,620	880
700	600	1,620	870	1,720	910	1,840	970
700	700	1,820	910	1,920	960	2,060	1,030
800	300	1,080	700	1,120	730	1,180	760
800	350	1,160	790	1,220	820	1,280	850
800	400	1,260	810	1,320	840	1,400	880
800	450	1,360	830	1,420	860	1,520	910
800	500	1,440	850	1,520	890	1,620	930
800	600	1,620	920	1,720	960	1,840	1,020
800	700	1,820	960	1,920	1,010	2,060	1,080
800	800	2,000	1,000	2,120	1,060	2,260	1,130
900	300	1,080	750	1,120	780	1,180	810
900	350	1,160	840	1,220	870	1,280	900
900	400	1,260	860	1,320	890	1,400	930
900	450	1,360	880	1,420	910	1,520	960
900	500	1,440	900	1,520	940	1,620	980
900	600	1,620	970	1,720	1,010	1,840	1,070
900	700	1,820	1,010	1,920	1,060	2,060	1,130
900	800	2,000	1,050	2,120	1,110	2,260	1,180
900	900	2,180	1,090	2,320	1,160	2,480	1,240
1000	300	1,180	800	1,220	830	1,280	860
1000	350	1,260	890	1,320	920	1,380	950
1000	400	1,360	910	1,420	940	1,500	980
1000	450	1,460	930	1,520	970	1,620	1,010
1000	500	1,540	950	1,620	990	1,720	1,040
1000	600	1,720	1,020	1,820	1,070	1,940	1,130
1000	700	1,920	1,060	2,020	1,120	2,160	1,180
1000	800	2,100	1,100	2,220	1,160	2,360	1,240
1000	900	2,280	1,140	2,420	1,210	2,580	1,300

TEE		PN 16		PN 20		PN 25	
Header	Branch	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm
1000	1000	2,460	1,230	2,620	1,310	2,800	1,400
1100	300	1,180	860	1,220	880	1,280	910
1100	350	1,260	940	1,320	970	1,380	1,000
1100	400	1,360	960	1,420	990	1,500	1,030
1100	450	1,460	980	1,520	1,020	1,620	1,060
1100	500	1,540	1,000	1,620	1,040	1,720	1,090
1100	600	1,720	1,070	1,820	1,120	1,940	1,180
1100	700	1,920	1,110	2,020	1,170	2,160	1,230
1100	800	2,100	1,150	2,220	1,210	2,360	1,290
1100	900	2,280	1,190	2,420	1,260	2,580	1,350
1100	1000	2,460	1,280	2,620	1,360	2,800	1,450
1100	1100	2,640	1,320	2,820	1,410	3,020	1,510
1200	300	1,180	910	1,220	930	1,280	960
1200	350	1,260	1,000	1,320	1,030	1,380	1,060
1200	400	1,360	1,020	1,420	1,050	1,500	1,090
1200	450	1,460	1,040	1,520	1,070	1,620	1,120
1200	500	1,540	1,060	1,620	1,100	1,720	1,140
1200	600	1,720	1,130	1,820	1,170	1,940	1,230
1200	700	1,920	1,170	2,020	1,220	2,160	1,290
1200	800	2,100	1,210	2,220	1,270	2,360	1,340
1200	900	2,280	1,250	2,420	1,320	2,580	1,400
1200	1000	2,460	1,340	2,620	1,410	2,800	1,510
1200	1100	2,640	1,380	2,820	1,460	3,020	1,570
1200	1200	2,840	1,420	3,020	1,510	3,240	1,620
1300	300	1,180	960	1,220	990	1,280	1,020
1300	350	1,260	1,050	1,320	1,080	1,380	1,110
1300	400	1,360	1,070	1,420	1,100	1,500	1,140
1300	450	1,460	1,090	1,520	1,120	1,620	1,170
1300	500	1,540	1,110	1,620	1,150	1,720	1,190
1300	600	1,720	1,180	1,820	1,220	1,940	1,280
1300	700	1,920	1,220	2,020	1,270	2,160	1,340
1300	800	2,100	1,260	2,220	1,320	2,360	1,390
1300	900	2,280	1,300	2,420	1,370	2,580	1,450
1300	1000	2,460	1,390	2,620	1,460	2,800	1,560
1300	1100	2,640	1,430	2,820	1,510	3,020	1,620

TEE		PN 16		PN 20		PN 25	
Header	Branch	H	B	H	B	H	B
DN mm	DN mm	mm	mm	mm	mm	mm	mm
1300	1200	2,840	1,470	3,020	1,560	3,240	1,670
1300	1300	3,020	1,510	3,220	1,610	3,460	1,730
1400	300	1,180	1,010	1,220	1,040	1,280	1,070
1400	350	1,260	1,100	1,320	1,130	1,380	1,160
1400	400	1,360	1,120	1,420	1,150	1,500	1,190
1400	450	1,460	1,140	1,520	1,170	1,620	1,220
1400	500	1,540	1,160	1,620	1,200	1,720	1,240
1400	600	1,720	1,230	1,820	1,270	1,940	1,330
1400	700	1,920	1,270	2,020	1,320	2,160	1,390
1400	800	2,100	1,310	2,220	1,370	2,360	1,440
1400	900	2,280	1,350	2,420	1,420	2,580	1,500
1400	1000	2,460	1,440	2,620	1,510	2,800	1,610
1400	1100	2,640	1,480	2,820	1,560	3,020	1,670
1400	1200	2,840	1,520	3,020	1,610	3,240	1,720
1400	1300	3,020	1,560	3,220	1,660	3,460	1,780
1400	1400	3,200	1,600	3,400	1,700	3,680	1,840
1500	300	1,180	1,060				
1500	350	1,260	1,150				
1500	400	1,360	1,170				
1500	450	1,460	1,190				
1500	500	1,540	1,210				
1500	600	1,720	1,280				
1500	700	1,920	1,320				
1500	800	2,100	1,360				
1500	900	2,280	1,400				
1500	1000	2,460	1,490				
1500	1100	2,640	1,530				
1500	1200	2,840	1,570				
1500	1300	3,020	1,610				
1500	1400	3,200	1,650				
1500	1500	3,380	1,690				
1600	300	1,180	1,120				
1600	350	1,260	1,200				
1600	400	1,360	1,220				
1600	450	1,460	1,240				

TEE		PN 16	
Header	Branch	H	B
DN mm	DN mm	mm	mm
1600	500	1,540	1,260
1600	600	1,720	1,330
1600	700	1,920	1,370
1600	800	2,100	1,410
1600	900	2,280	1,450
1600	1000	2,460	1,540
1600	1100	2,640	1,580
1600	1200	2,840	1,620
1600	1300	3,020	1,660
1600	1400	3,200	1,700
1600	1500	3,380	1,740
1600	1600	3,560	1,780
1700	300	1,180	1,170
1700	350	1,260	1,260
1700	400	1,360	1,280
1700	450	1,460	1,300
1700	500	1,540	1,320
1700	600	1,720	1,390
1700	700	1,920	1,430
1700	800	2,100	1,470
1700	900	2,280	1,510
1700	1000	2,460	1,600
1700	1100	2,640	1,640
1700	1200	2,840	1,680
1700	1300	3,020	1,720
1700	1400	3,200	1,760
1700	1500	3,380	1,800
1700	1600	3,560	1,840
1700	1700	3,760	1,880
1800	300	1,180	1,220
1800	350	1,260	1,310
1800	400	1,360	1,330
1800	450	1,460	1,350
1800	500	1,540	1,370
1800	600	1,720	1,440

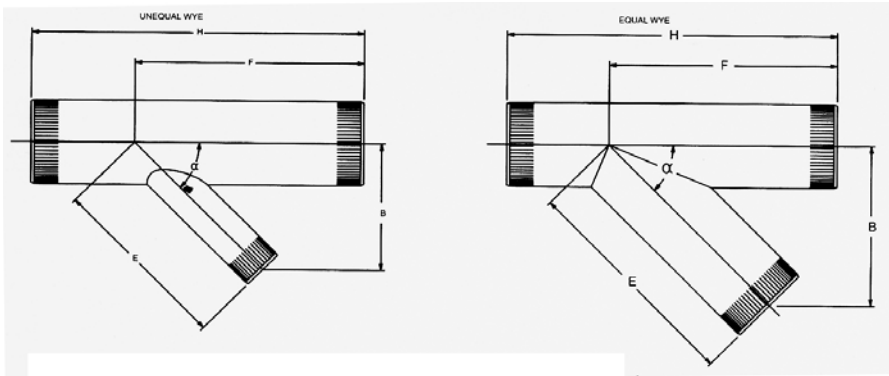
TEE		PN 16	
Header	Branch	H	B
DN mm	DN mm	mm	mm
1800	700	1,920	1,480
1800	800	2,100	1,520
1800	900	2,280	1,560
1800	1000	2,460	1,650
1800	1100	2,640	1,690
1800	1200	2,840	1,730
1800	1300	3,020	1,770
1800	1400	3,200	1,810
1800	1500	3,380	1,850
1800	1600	3,560	1,890
1800	1700	3,760	1,930
1800	1800	3,940	1,970
1900	300	1,180	1,270
1900	350	1,260	1,360
1900	400	1,360	1,380
1900	450	1,460	1,400
1900	500	1,540	1,420
1900	600	1,720	1,490
1900	700	1,920	1,530
1900	800	2,100	1,570
1900	900	2,280	1,610
1900	1000	2,460	1,700
1900	1100	2,640	1,740
1900	1200	2,840	1,780
1900	1300	3,020	1,820
1900	1400	3,200	1,860
1900	1500	3,380	1,900
1900	1600	3,560	1,940
1900	1700	3,760	1,980
1900	1800	3,940	2,020
1900	1900	4,120	2,060
2000	300	1,280	1,320
2000	350	1,360	1,410
2000	400	1,460	1,430
2000	450	1,560	1,450

TEE		PN 16	
Header	Branch	H	B
DN mm	DN mm	mm	mm
2000	500	1,640	1,470
2000	600	1,820	1,540
2000	700	2,020	1,580
2000	800	2,200	1,620
2000	900	2,380	1,660
2000	1000	2,560	1,750
2000	1100	2,740	1,790
2000	1200	2,940	1,830
2000	1300	3,120	1,870
2000	1400	3,300	1,910
2000	1500	3,480	1,950
2000	1600	3,660	1,990
2000	1700	3,860	2,030
2000	1800	4,040	2,070
2000	1900	4,220	2,110
2000	2000	4,400	2,200
2100	300	1,280	1,380
2100	350	1,360	1,460
2100	400	1,460	1,480
2100	450	1,560	1,500
2100	500	1,640	1,520
2100	600	1,820	1,590
2100	700	2,020	1,630
2100	800	2,200	1,670
2100	900	2,380	1,710
2100	1000	2,560	1,800
2100	1100	2,740	1,840
2100	1200	2,940	1,880
2100	1300	3,120	1,920
2100	1400	3,300	1,960
2100	1500	3,480	2,000
2100	1600	3,660	2,040
2100	1700	3,860	2,080
2100	1800	4,040	2,120
2100	1900	4,220	2,160

TEE		PN 16	
Header	Branch	H	B
DN mm	DN mm	mm	mm
2100	2000	4,400	2,250
2100	2100	4,580	2,290
2200	300	1,280	1,430
2200	350	1,360	1,520
2200	400	1,460	1,540
2200	450	1,560	1,560
2200	500	1,640	1,580
2200	600	1,820	1,650
2200	700	2,020	1,690
2200	800	2,200	1,730
2200	900	2,380	1,770
2200	1000	2,560	1,860
2200	1100	2,740	1,900
2200	1200	2,940	1,940
2200	1300	3,120	1,980
2200	1400	3,300	2,020
2200	1500	3,480	2,060
2200	1600	3,660	2,100
2200	1700	3,860	2,140
2200	1800	4,040	2,180
2200	1900	4,220	2,220
2200	2000	4,400	2,310
2200	2100	4,580	2,350
2200	2200	4,780	2,390
2300	300	1,280	1,480
2300	350	1,360	1,570
2300	400	1,460	1,590
2300	450	1,560	1,610
2300	500	1,640	1,630
2300	600	1,820	1,700
2300	700	2,020	1,740
2300	800	2,200	1,780
2300	900	2,380	1,820
2300	1000	2,560	1,910
2300	1100	2,740	1,950

TEE		PN 16	
Header	Branch	H	B
DN mm	DN mm	mm	mm
2300	1200	2,940	1,990
2300	1300	3,120	2,030
2300	1400	3,300	2,070
2300	1500	3,480	2,110
2300	1600	3,660	2,150
2300	1700	3,860	2,190
2300	1800	4,040	2,230
2300	1900	4,220	2,270
2300	2000	4,400	2,360
2300	2100	4,580	2,400
2300	2200	4,780	2,440
2300	2300	4,960	2,480
2400	300	1,280	1,530
2400	350	1,360	1,620
2400	400	1,460	1,640
2400	450	1,560	1,660
2400	500	1,640	1,680
2400	600	1,820	1,750
2400	700	2,020	1,790
2400	800	2,200	1,830
2400	900	2,380	1,870
2400	1000	2,560	1,960
2400	1100	2,740	2,000
2400	1200	2,940	2,040
2400	1300	3,120	2,080
2400	1400	3,300	2,120
2400	1500	3,480	2,160
2400	1600	3,660	2,200
2400	1700	3,860	2,240
2400	1800	4,040	2,280
2400	1900	4,220	2,320
2400	2000	4,400	2,410
2400	2100	4,580	2,450
2400	2200	4,780	2,490
2400	2300	4,960	2,530
2400	2400	5,140	2,570

D. GRAVITY WYES



WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
80	80	540	310	225	310	530	290	275	290
100	80	550	330	250	330	520	290	275	300
100	100	580	340	250	340	560	310	275	310
150	80	550	350	250	370	530	310	275	330
150	100	580	370	275	380	550	320	300	340
150	150	650	400	300	400	610	350	325	350
200	80	550	380	275	400	520	320	300	360
200	100	570	390	300	410	550	340	300	370
200	150	650	430	325	440	620	370	325	380
200	200	730	470	350	470	680	400	350	400
250	80	540	400	300	440	530	340	300	390
250	100	580	420	300	450	550	350	325	400
250	150	660	460	350	480	610	380	350	410
250	200	720	490	350	500	670	410	375	430
250	250	800	530	375	530	730	440	400	440
300	100	570	440	325	490	550	370	325	430
300	150	650	480	350	510	610	400	350	440

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
300	200	730	520	375	540	680	430	375	460
300	250	790	550	400	570	740	460	400	470
300	300	870	590	425	590	800	490	425	490
350	100	710	540	400	520	690	450	400	460
350	150	780	570	425	550	750	480	425	470
350	200	860	610	450	580	810	510	450	490
350	250	930	650	475	600	870	540	475	500
350	300	1000	680	500	630	930	570	500	520
350	350	1100	730	525	730	1010	610	550	610
400	100	710	560	400	560	680	460	400	490
400	150	780	600	425	590	740	490	425	500
400	200	860	640	475	610	800	520	475	520
400	250	930	670	475	640	860	550	500	530
400	300	1000	710	525	670	920	580	525	550
400	350	1100	760	550	770	1000	620	550	640
400	400	1190	800	575	800	1080	660	575	660
450	100	710	590	425	600	690	480	425	520
450	150	790	630	450	620	750	510	450	530
450	200	860	660	475	650	810	540	475	550
450	250	930	700	500	680	870	570	500	560
450	300	1010	740	525	700	930	600	525	580
450	350	1100	780	575	800	1010	640	575	670
450	400	1190	830	600	840	1090	680	600	690
450	450	1270	870	625	870	1150	710	625	710
500	100	720	620	450	630	680	490	425	550
500	150	780	650	475	660	740	520	475	560
500	200	860	690	500	690	800	550	500	580
500	250	940	730	525	710	860	580	525	590
500	300	1000	760	550	740	920	610	550	610
500	350	1100	810	575	840	1000	650	575	700
500	400	1200	860	625	880	1080	690	600	720
500	450	1280	900	650	910	1160	730	650	740
500	500	1360	940	675	940	1240	770	675	770
600	300	1060	840	600	810	980	670	600	670
600	400	1250	940	675	950	1140	750	650	780

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
600	450	1340	980	700	980	1220	790	700	800
600	500	1430	1030	750	1,020	1300	830	725	830
600	600	1610	1120	800	1,120	1440	900	800	900
700	300	1070	900	650	890	980	700	625	730
700	400	1250	990	725	1,020	1140	780	700	840
700	450	1330	1030	750	1,060	1220	820	725	860
700	500	1430	1080	775	1,090	1300	860	750	890
700	600	1610	1170	850	1,190	1440	930	825	960
700	700	1790	1260	900	1,260	1600	1010	875	1,010
800	300	1070	950	675	960	980	730	650	790
800	400	1250	1040	750	1,100	1140	810	725	900
800	450	1330	1080	775	1,130	1220	850	750	920
800	500	1430	1130	800	1,170	1300	890	775	950
800	600	1610	1220	875	1,260	1440	960	850	1,020
800	700	1790	1310	950	1,330	1600	1040	925	1,070
800	800	1970	1400	1000	1,400	1760	1120	975	1,120
900	300	1060	1000	725	1,030	980	760	675	850
900	400	1250	1090	775	1,170	1140	840	750	960
900	450	1340	1140	825	1,200	1220	880	775	980
900	500	1430	1180	850	1,240	1300	920	800	1,010
900	600	1610	1270	900	1,340	1440	990	875	1,080
900	700	1790	1360	975	1,410	1600	1070	950	1,130
900	800	1970	1450	1050	1,470	1760	1150	1000	1,180
900	900	2150	1540	1100	1,540	1900	1220	1075	1,220
1,000	300	1160	1100	800	1,110	1080	840	750	910
1,000	400	1360	1200	850	1,250	1240	920	800	1,020
1,000	450	1440	1240	900	1,280	1320	960	850	1,040
1,000	500	1520	1280	925	1,310	1400	1000	875	1,070
1,000	600	1700	1370	975	1,410	1540	1070	950	1,140
1,000	700	1900	1470	1050	1,480	1700	1150	1000	1,190
1,000	800	2080	1560	1125	1,550	1860	1230	1075	1,240
1,000	900	2240	1640	1175	1,620	2000	1300	1150	1,280
1,000	1,000	2440	1740	1250	1,740	2160	1380	1200	1,380
1,100	300	1160	1150	825	1,180	1080	870	775	970
1,100	400	1350	1250	900	1,320	1240	950	825	1,080

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1,100	450	1440	1290	925	1,350	1320	990	875	1,100
1,100	500	1530	1340	950	1,390	1400	1030	900	1,130
1,100	600	1710	1430	1025	1,480	1540	1100	975	1,200
1,100	700	1890	1520	1075	1,550	1700	1180	1025	1,250
1,100	800	2070	1610	1150	1,620	1860	1260	1100	1,300
1,100	900	2250	1700	1225	1,690	2000	1330	1175	1,340
1,100	1,000	2440	1790	1275	1,810	2160	1410	1225	1,440
1,100	1,100	2610	1880	1350	1,880	2320	1490	1300	1,490
1,200	300	1170	1210	875	1,250	1080	900	800	1,030
1,200	400	1350	1300	925	1,390	1240	980	850	1,140
1,200	450	1430	1340	950	1,420	1320	1020	900	1,160
1,200	500	1530	1390	1000	1,460	1400	1060	925	1,190
1,200	600	1710	1480	1050	1,560	1540	1130	1000	1,260
1,200	700	1890	1570	1125	1,630	1700	1210	1050	1,310
1,200	800	2070	1660	1175	1,700	1860	1290	1125	1,360
1,200	900	2250	1750	1250	1,760	2000	1360	1200	1,400
1,200	1,000	2430	1840	1325	1,880	2160	1440	1250	1,500
1,200	1,100	2610	1930	1375	1,950	2320	1520	1325	1,550
1,200	1,200	2790	2020	1450	2,020	2460	1590	1400	1,590
1,300	300	1170	1260	900	1,330	1080	930	825	1,090
1,300	400	1350	1350	975	1,470	1240	1010	875	1,200
1,300	450	1430	1390	1000	1,500	1320	1050	925	1,220
1,300	500	1530	1440	1025	1,530	1400	1090	950	1,250
1,300	600	1710	1530	1100	1,630	1540	1160	1025	1,320
1,300	700	1890	1620	1150	1,700	1700	1240	1075	1,370
1,300	800	2070	1710	1225	1,770	1860	1320	1150	1,420
1,300	900	2250	1800	1275	1,840	2000	1390	1225	1,460
1,300	1,000	2430	1890	1350	1,960	2160	1470	1275	1,560
1,300	1,100	2610	1980	1425	2,030	2320	1550	1350	1,610
1,300	1,200	2790	2070	1475	2,090	2460	1620	1425	1,650
1,300	1,300	2970	2160	1550	2,160	2620	1700	1475	1,700
1,400	300	1160	1310	950	1,400	1080	960	850	1,150
1,400	400	1350	1400	1000	1,540	1240	1040	925	1,260
1,400	450	1440	1450	1050	1,570	1320	1080	950	1,280
1,400	500	1530	1490	1075	1,610	1400	1120	975	1,310

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1,400	600	1710	1580	1125	1,700	1540	1190	1050	1,380
1,400	700	1890	1670	1200	1,780	1700	1270	1100	1,430
1,400	800	2070	1760	1250	1,840	1860	1350	1175	1,480
1,400	900	2250	1850	1325	1,910	2000	1420	1250	1,520
1,400	1,000	2440	1950	1400	2,030	2160	1500	1300	1,620
1,400	1,100	2610	2030	1450	2,100	2320	1580	1375	1,670
1,400	1,200	2790	2120	1500	2,170	2460	1650	1450	1,710
1,400	1,300	2980	2220	1575	2,240	2620	1730	1500	1,760
1,400	1,400	3150	2300	1650	2,300	2780	1810	1575	1,810
1,500	300	1160	1360	975	1,470	1080	990	875	1,210
1,500	400	1360	1460	1050	1,610	1240	1070	950	1,320
1,500	450	1440	1500	1075	1,640	1320	1110	975	1,340
1,500	500	1520	1540	1100	1,680	1400	1150	1000	1,370
1,500	600	1700	1630	1175	1,780	1540	1220	1075	1,440
1,500	700	1900	1730	1225	1,850	1700	1300	1150	1,490
1,500	800	2080	1820	1300	1,920	1860	1380	1200	1,540
1,500	900	2240	1900	1350	1,980	2000	1450	1275	1,580
1,500	1,000	2440	2000	1425	2,110	2160	1530	1350	1,680
1,500	1,100	2620	2090	1500	2,170	2320	1610	1400	1,730
1,500	1,200	2780	2170	1550	2,240	2460	1680	1475	1,770
1,500	1,300	2980	2270	1625	2,310	2620	1760	1525	1,820
1,500	1,400	3160	2360	1675	2,380	2780	1840	1600	1,870
1,500	1,500	3340	2450	1750	2,450	2920	1910	1675	1,910
1,600	300	1160	1410	1000	1,550	1080	1020	900	1,270
1,600	400	1350	1510	1075	1,690	1240	1100	975	1,380
1,600	450	1440	1550	1100	1,720	1320	1140	1000	1,400
1,600	500	1530	1600	1150	1,750	1400	1180	1025	1,430
1,600	600	1710	1690	1200	1,850	1540	1250	1100	1,500
1,600	700	1890	1780	1275	1,920	1700	1330	1175	1,550
1,600	800	2070	1870	1325	1,990	1860	1410	1225	1,600
1,600	900	2250	1960	1400	2,060	2000	1480	1300	1,640
1,600	1,000	2440	2050	1450	2,180	2160	1560	1375	1,740
1,600	1,100	2610	2140	1525	2,250	2320	1640	1425	1,790
1,600	1,200	2790	2230	1600	2,310	2460	1710	1500	1,830
1,600	1,300	2980	2320	1650	2,380	2620	1790	1575	1,880

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1,600	1,400	3150	2410	1725	2,450	2780	1870	1625	1,930
1,600	1,500	3330	2500	1775	2,520	2920	1940	1700	1,970
1,600	1,600	3510	2590	1850	2,590	3080	2020	1750	2,020
1,700	300	1170	1470	1050	1,620	1080	1050	925	1,330
1,700	400	1350	1560	1125	1,760	1240	1130	1000	1,440
1,700	450	1430	1600	1150	1,790	1320	1170	1025	1,460
1,700	500	1530	1650	1175	1,830	1400	1210	1050	1,490
1,700	600	1710	1740	1250	1,920	1540	1280	1125	1,560
1,700	700	1890	1830	1300	2,000	1700	1360	1200	1,610
1,700	800	2070	1920	1375	2,060	1860	1440	1250	1,660
1,700	900	2250	2010	1425	2,130	2000	1510	1325	1,700
1,700	1,000	2430	2100	1500	2,250	2160	1590	1400	1,800
1,700	1,100	2610	2190	1550	2,320	2320	1670	1450	1,850
1,700	1,200	2790	2280	1625	2,390	2460	1740	1525	1,890
1,700	1,300	2970	2370	1700	2,460	2620	1820	1600	1,940
1,700	1,400	3150	2460	1750	2,530	2780	1900	1650	1,990
1,700	1,500	3330	2550	1825	2,590	2920	1970	1725	2,030
1,700	1,600	3510	2640	1875	2,660	3080	2050	1800	2,080
1,700	1,700	3690	2730	1950	2,730	3240	2130	1850	2,130
1,800	300	1170	1520	1075	1,690	1080	1080	950	1,390
1,800	400	1350	1610	1150	1,830	1240	1160	1025	1,500
1,800	450	1430	1650	1175	1,860	1320	1200	1050	1,520
1,800	500	1530	1700	1225	1,900	1400	1240	1075	1,550
1,800	600	1710	1790	1275	2,000	1540	1310	1150	1,620
1,800	700	1890	1880	1350	2,070	1700	1390	1225	1,670
1,800	800	2070	1970	1400	2,140	1860	1470	1275	1,720
1,800	900	2250	2060	1475	2,200	2000	1540	1350	1,760
1,800	1,000	2430	2150	1525	2,330	2160	1620	1425	1,860
1,800	1,100	2610	2240	1600	2,390	2320	1700	1475	1,910
1,800	1,200	2790	2330	1650	2,460	2460	1770	1550	1,950
1,800	1,300	2970	2420	1725	2,530	2620	1850	1625	2,000
1,800	1,400	3150	2510	1775	2,600	2780	1930	1675	2,050
1,800	1,500	3330	2600	1850	2,670	2920	2000	1750	2,090
1,800	1,600	3510	2690	1925	2,730	3080	2080	1825	2,140
1,800	1,700	3690	2780	1975	2,800	3240	2160	1875	2,190

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
1,800	1,800	3870	2870	2050	2,870	3380	2230	1950	2,230
1,900	300	1160	1570	1125	1,770	1080	1110	975	1,450
1,900	400	1350	1660	1175	1,910	1240	1190	1050	1,560
1,900	450	1440	1710	1225	1,940	1320	1230	1075	1,580
1,900	500	1530	1750	1250	1,970	1400	1270	1100	1,610
1,900	600	1710	1840	1325	2,070	1540	1340	1175	1,680
1,900	700	1890	1930	1375	2,140	1700	1420	1250	1,730
1,900	800	2070	2020	1450	2,210	1860	1500	1300	1,780
1,900	900	2250	2110	1500	2,280	2000	1570	1375	1,820
1,900	1,000	2440	2210	1575	2,400	2160	1650	1450	1,920
1,900	1,100	2610	2290	1625	2,470	2320	1730	1500	1,970
1,900	1,200	2790	2380	1700	2,530	2460	1800	1575	2,010
1,900	1,300	2980	2480	1775	2,610	2620	1880	1650	2,060
1,900	1,400	3150	2560	1825	2,670	2780	1960	1700	2,110
1,900	1,500	3330	2650	1875	2,740	2920	2030	1775	2,150
1,900	1,600	3510	2740	1950	2,810	3080	2110	1850	2,200
1,900	1,700	3700	2840	2025	2,880	3240	2190	1900	2,250
1,900	1,800	3870	2920	2075	2,950	3380	2260	1975	2,290
1,900	1,900	4050	3010	2150	3,010	3540	2340	2050	2,340
2,000	300	1260	1670	1200	1,840	1180	1190	1050	1,510
2,000	400	1460	1770	1275	1,980	1340	1270	1100	1,620
2,000	450	1540	1810	1300	2,010	1420	1310	1150	1,640
2,000	500	1620	1850	1325	2,050	1500	1350	1175	1,670
2,000	600	1800	1940	1375	2,140	1640	1420	1250	1,740
2,000	700	2000	2040	1450	2,220	1800	1500	1300	1,790
2,000	800	2180	2130	1525	2,280	1960	1580	1375	1,840
2,000	900	2340	2210	1575	2,350	2100	1650	1450	1,880
2,000	1,000	2540	2310	1650	2,470	2260	1730	1500	1,980
2,000	1,100	2720	2400	1700	2,540	2420	1810	1575	2,030
2,000	1,200	2880	2480	1775	2,610	2560	1880	1650	2,070
2,000	1,300	3080	2580	1825	2,680	2720	1960	1700	2,120
2,000	1,400	3260	2670	1900	2,750	2880	2040	1775	2,170
2,000	1,500	3440	2760	1975	2,810	3020	2110	1850	2,210
2,000	1,600	3600	2840	2025	2,880	3180	2190	1900	2,260
2,000	1,700	3800	2940	2100	2,950	3340	2270	1975	2,310

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2,000	1,800	3980	3030	2150	3,020	3480	2340	2050	2,350
2,000	1,900	4140	3110	2200	3,090	3640	2420	2100	2,400
2,000	2,000	4340	3210	2275	3,210	3800	2500	2175	2,500
2,100	300	1260	1720	1225	1,920	1180	1220	1075	1,570
2,100	400	1450	1820	1300	2,050	1340	1300	1150	1,680
2,100	450	1540	1860	1325	2,090	1420	1340	1175	1,700
2,100	500	1630	1910	1375	2,120	1500	1380	1200	1,730
2,100	600	1810	2000	1425	2,220	1640	1450	1275	1,800
2,100	700	1990	2090	1500	2,290	1800	1530	1350	1,850
2,100	800	2170	2180	1550	2,360	1960	1610	1400	1,900
2,100	900	2350	2270	1625	2,420	2100	1680	1475	1,940
2,100	1,000	2540	2360	1675	2,550	2260	1760	1525	2,040
2,100	1,100	2710	2450	1750	2,610	2420	1840	1600	2,090
2,100	1,200	2890	2540	1800	2,680	2560	1910	1675	2,130
2,100	1,300	3080	2630	1875	2,750	2720	1990	1725	2,180
2,100	1,400	3250	2720	1925	2,820	2880	2070	1800	2,230
2,100	1,500	3430	2810	2000	2,890	3020	2140	1875	2,270
2,100	1,600	3610	2900	2075	2,950	3180	2220	1925	2,320
2,100	1,700	3800	2990	2125	3,030	3340	2300	2000	2,370
2,100	1,800	3970	3080	2200	3,090	3480	2370	2075	2,410
2,100	1,900	4150	3170	2250	3,160	3640	2450	2125	2,460
2,100	2,000	4340	3260	2325	3,280	3800	2530	2200	2,560
2,100	2,100	4510	3350	2375	3,350	3940	2600	2275	2,600
2,200	300	1270	1780	1275	1,990	1180	1250	1100	1,630
2,200	400	1450	1870	1325	2,130	1340	1330	1175	1,740
2,200	450	1530	1910	1375	2,160	1420	1370	1200	1,760
2,200	500	1630	1960	1400	2,190	1500	1410	1225	1,790
2,200	600	1810	2050	1450	2,290	1640	1480	1300	1,860
2,200	700	1990	2140	1525	2,360	1800	1560	1375	1,910
2,200	800	2170	2230	1600	2,430	1960	1640	1425	1,960
2,200	900	2350	2320	1650	2,500	2100	1710	1500	2,000
2,200	1,000	2530	2410	1725	2,620	2260	1790	1575	2,100
2,200	1,100	2710	2500	1775	2,690	2420	1870	1625	2,150
2,200	1,200	2890	2590	1850	2,750	2560	1940	1700	2,190
2,200	1,300	3070	2680	1900	2,830	2720	2020	1750	2,240

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2,200	1,400	3250	2770	1975	2,890	2880	2100	1825	2,290
2,200	1,500	3430	2860	2025	2,960	3020	2170	1900	2,330
2,200	1,600	3610	2950	2100	3,030	3180	2250	1950	2,380
2,200	1,700	3790	3040	2150	3,100	3340	2330	2025	2,430
2,200	1,800	3970	3130	2225	3,170	3480	2400	2100	2,470
2,200	1,900	4150	3220	2300	3,230	3640	2480	2150	2,520
2,200	2,000	4330	3310	2350	3,350	3800	2560	2225	2,620
2,200	2,100	4510	3400	2425	3,420	3940	2630	2300	2,660
2,200	2,200	4690	3490	2475	3,490	4100	2710	2350	2,710
2,300	300	1270	1830	1300	2,060	1180	1280	1125	1,690
2,300	400	1450	1920	1375	2,200	1340	1360	1200	1,800
2,300	450	1530	1960	1400	2,230	1420	1400	1225	1,820
2,300	500	1630	2010	1425	2,270	1500	1440	1250	1,850
2,300	600	1810	2100	1500	2,370	1640	1510	1325	1,920
2,300	700	1990	2190	1550	2,440	1800	1590	1400	1,970
2,300	800	2170	2280	1625	2,500	1960	1670	1450	2,020
2,300	900	2350	2370	1700	2,570	2100	1740	1525	2,060
2,300	1,000	2530	2460	1750	2,690	2260	1820	1600	2,160
2,300	1,100	2710	2550	1825	2,760	2420	1900	1650	2,210
2,300	1,200	2890	2640	1875	2,830	2560	1970	1725	2,250
2,300	1,300	3070	2730	1950	2,900	2720	2050	1800	2,300
2,300	1,400	3250	2820	2000	2,970	2880	2130	1850	2,350
2,300	1,500	3430	2910	2075	3,030	3020	2200	1925	2,390
2,300	1,600	3610	3000	2125	3,100	3180	2280	1975	2,440
2,300	1,700	3790	3090	2200	3,170	3340	2360	2050	2,490
2,300	1,800	3970	3180	2250	3,240	3480	2430	2125	2,530
2,300	1,900	4150	3270	2325	3,310	3640	2510	2175	2,580
2,300	2,000	4330	3360	2400	3,430	3800	2590	2250	2,680
2,300	2,100	4510	3450	2450	3,500	3940	2660	2325	2,720
2,300	2,200	4690	3540	2525	3,560	4100	2740	2375	2,770
2,300	2,300	4870	3630	2575	3,630	4260	2820	2450	2,820
2,400	300	1260	1880	1350	2,140	1180	1310	1150	1,750
2,400	400	1450	1970	1400	2,270	1340	1390	1225	1,860
2,400	450	1540	2020	1450	2,310	1420	1430	1250	1,880
2,400	500	1630	2060	1475	2,340	1500	1470	1275	1,910

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2,400	600	1810	2150	1525	2,440	1640	1540	1350	1,980
2,400	700	1990	2240	1600	2,510	1800	1620	1425	2,030
2,400	800	2170	2330	1650	2,580	1960	1700	1475	2,080
2,400	900	2350	2420	1725	2,640	2100	1770	1550	2,120
2,400	1,000	2540	2520	1800	2,770	2260	1850	1625	2,220
2,400	1,100	2710	2600	1850	2,830	2420	1930	1675	2,270
2,400	1,200	2890	2690	1925	2,900	2560	2000	1750	2,310
2,400	1,300	3080	2790	1975	2,970	2720	2080	1825	2,360
2,400	1,400	3250	2870	2050	3,040	2880	2160	1875	2,410
2,400	1,500	3430	2960	2100	3,110	3020	2230	1950	2,450
2,400	1,600	3610	3050	2175	3,170	3180	2310	2025	2,500
2,400	1,700	3800	3150	2250	3,250	3340	2390	2075	2,550
2,400	1,800	3970	3230	2300	3,310	3480	2460	2150	2,590
2,400	1,900	4150	3320	2350	3,380	3640	2540	2200	2,640
2,400	2,000	4340	3420	2425	3,500	3800	2620	2275	2,740
2,400	2,100	4510	3500	2475	3,570	3940	2690	2350	2,780
2,400	2,200	4690	3590	2550	3,640	4100	2770	2400	2,830
2,400	2,300	4880	3690	2625	3,710	4260	2850	2475	2,880
2,400	2,400	5050	3770	2675	3,770	4400	2920	2550	2,920
2,500	300	1260	1930	1375	2,210	1180	1340	1175	1,810
2,500	400	1460	2030	1450	2,350	1340	1420	1250	1,920
2,500	450	1540	2070	1475	2,380	1420	1460	1275	1,940
2,500	500	1620	2110	1500	2,420	1500	1500	1300	1,970
2,500	600	1800	2200	1575	2,510	1640	1570	1375	2,040
2,500	700	2000	2300	1650	2,580	1800	1650	1450	2,090
2,500	800	2180	2390	1700	2,650	1960	1730	1500	2,140
2,500	900	2340	2470	1750	2,720	2100	1800	1575	2,180
2,500	1,000	2540	2570	1825	2,840	2260	1880	1650	2,280
2,500	1,100	2720	2660	1900	2,910	2420	1960	1700	2,330
2,500	1,200	2880	2740	1950	2,970	2560	2030	1775	2,370
2,500	1,300	3080	2840	2025	3,050	2720	2110	1850	2,420
2,500	1,400	3260	2930	2075	3,110	2880	2190	1900	2,470
2,500	1,500	3440	3020	2150	3,180	3020	2260	1975	2,510
2,500	1,600	3600	3100	2200	3,250	3180	2340	2050	2,560
2,500	1,700	3800	3200	2275	3,320	3340	2420	2100	2,610

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2,500	1,800	3980	3290	2350	3,390	3480	2490	2175	2,650
2,500	1,900	4140	3370	2400	3,450	3640	2570	2250	2,700
2,500	2,000	4340	3470	2475	3,580	3800	2650	2300	2,800
2,500	2,100	4520	3560	2525	3,640	3940	2720	2375	2,840
2,500	2,200	4680	3640	2575	3,710	4100	2800	2425	2,890
2,500	2,300	4880	3740	2650	3,780	4260	2880	2500	2,940
2,500	2,400	5060	3830	2725	3,850	4400	2950	2575	2,980
2,500	2,500	5240	3920	2775	3,920	4560	3030	2625	3,030
2,600	300	1260	1980	1425	2,280	1180	1370	1200	1,870
2,600	400	1450	2080	1475	2,420	1340	1450	1275	1,980
2,600	450	1540	2120	1500	2,450	1420	1490	1300	2,000
2,600	500	1630	2170	1550	2,490	1500	1530	1350	2,030
2,600	600	1810	2260	1600	2,590	1640	1600	1400	2,100
2,600	700	1990	2350	1675	2,660	1800	1680	1475	2,150
2,600	800	2170	2440	1750	2,730	1960	1760	1525	2,200
2,600	900	2350	2530	1800	2,790	2100	1830	1600	2,240
2,600	1,000	2540	2620	1875	2,910	2260	1910	1675	2,340
2,600	1,100	2710	2710	1925	2,980	2420	1990	1725	2,390
2,600	1,200	2890	2800	2000	3,050	2560	2060	1800	2,430
2,600	1,300	3080	2890	2050	3,120	2720	2140	1875	2,480
2,600	1,400	3250	2980	2125	3,190	2880	2220	1925	2,530
2,600	1,500	3430	3070	2175	3,250	3020	2290	2000	2,570
2,600	1,600	3610	3160	2250	3,320	3180	2370	2075	2,620
2,600	1,700	3800	3250	2300	3,390	3340	2450	2125	2,670
2,600	1,800	3970	3340	2375	3,460	3480	2520	2200	2,710
2,600	1,900	4150	3430	2450	3,530	3640	2600	2275	2,760
2,600	2,000	4340	3520	2500	3,650	3800	2680	2325	2,860
2,600	2,100	4510	3610	2575	3,720	3940	2750	2400	2,900
2,600	2,200	4690	3700	2625	3,780	4100	2830	2475	2,950
2,600	2,300	4880	3790	2700	3,860	4260	2910	2525	3,000
2,600	2,400	5050	3880	2750	3,920	4400	2980	2600	3,040
2,600	2,500	5230	3970	2825	3,990	4560	3060	2675	3,090
2,600	2,600	5420	4060	2875	4,060	4720	3140	2725	3,140
2,700	300	1270	2040	1450	2,360	1180	1400	1225	1,930
2,700	400	1450	2130	1525	2,500	1340	1480	1300	2,040

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2,700	450	1530	2170	1550	2,530	1420	1520	1325	2,060
2,700	500	1630	2220	1575	2,560	1500	1560	1375	2,090
2,700	600	1810	2310	1650	2,660	1640	1630	1425	2,160
2,700	700	1990	2400	1700	2,730	1800	1710	1500	2,210
2,700	800	2170	2490	1775	2,800	1960	1790	1575	2,260
2,700	900	2350	2580	1825	2,870	2100	1860	1625	2,300
2,700	1,000	2530	2670	1900	2,990	2260	1940	1700	2,400
2,700	1,100	2710	2760	1975	3,050	2420	2020	1750	2,450
2,700	1,200	2890	2850	2025	3,120	2560	2090	1825	2,490
2,700	1,300	3070	2940	2100	3,190	2720	2170	1900	2,540
2,700	1,400	3250	3030	2150	3,260	2880	2250	1950	2,590
2,700	1,500	3430	3120	2225	3,330	3020	2320	2025	2,630
2,700	1,600	3610	3210	2275	3,390	3180	2400	2100	2,680
2,700	1,700	3790	3300	2350	3,470	3340	2480	2150	2,730
2,700	1,800	3970	3390	2400	3,530	3480	2550	2225	2,770
2,700	1,900	4150	3480	2475	3,600	3640	2630	2300	2,820
2,700	2,000	4330	3570	2525	3,720	3800	2710	2350	2,920
2,700	2,100	4510	3660	2600	3,790	3940	2780	2425	2,960
2,700	2,200	4690	3750	2675	3,860	4100	2860	2500	3,010
2,700	2,300	4870	3840	2725	3,930	4260	2940	2550	3,060
2,700	2,400	5050	3930	2800	4,000	4400	3010	2625	3,100
2,700	2,500	5230	4020	2850	4,060	4560	3090	2700	3,150
2700	2600	5420	4110	2925	4,130	4720	3170	2750	3,200
2700	2700	5590	4200	2975	4,200	4860	3240	2825	3,240
2800	300	1270	2090	1500	2,430	1180	1430	1250	1,990
2800	400	1450	2180	1550	2,570	1340	1510	1325	2,100
2800	450	1530	2220	1575	2,600	1420	1550	1350	2,120
2800	500	1630	2270	1625	2,640	1500	1590	1400	2,150
2800	600	1810	2360	1675	2,730	1640	1660	1450	2,220
2800	700	1990	2450	1750	2,810	1800	1740	1525	2,270
2800	800	2170	2540	1800	2,870	1960	1820	1600	2,320
2800	900	2350	2630	1875	2,940	2100	1890	1650	2,360
2800	1000	2530	2720	1925	3,060	2260	1970	1725	2,460
2800	1100	2710	2810	2000	3,130	2420	2050	1800	2,510
2800	1200	2890	2900	2075	3,200	2560	2120	1850	2,550

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2800	1300	3070	2990	2125	3,270	2720	2200	1925	2,600
2800	1400	3250	3080	2200	3,330	2880	2280	1975	2,650
2800	1500	3430	3170	2250	3,400	3020	2350	2050	2,690
2800	1600	3610	3260	2325	3,470	3180	2430	2125	2,740
2800	1700	3790	3350	2375	3,540	3340	2510	2175	2,790
2800	1800	3970	3440	2450	3,610	3480	2580	2250	2,830
2800	1900	4150	3530	2500	3,670	3640	2660	2325	2,880
2800	2000	4330	3620	2575	3,800	3800	2740	2375	2,980
2800	2100	4510	3710	2625	3,860	3940	2810	2450	3,020
2800	2200	4690	3800	2700	3,930	4100	2890	2525	3,070
2800	2300	4870	3890	2775	4,000	4260	2970	2575	3,120
2800	2400	5050	3980	2825	4,070	4400	3040	2650	3,160
2800	2500	5230	4070	2900	4,140	4560	3120	2725	3,210
2800	2600	5420	4170	2950	4,210	4720	3200	2775	3,260
2800	2700	5590	4250	3025	4,280	4860	3270	2850	3,300
2800	2800	5770	4340	3075	4,340	5020	3350	2925	3,350
2900	300	1300	2160	1550	2,500	1220	1480	1300	2,050
2900	400	1490	2250	1600	2,640	1380	1560	1375	2,160
2900	450	1580	2300	1650	2,670	1460	1600	1400	2,180
2900	500	1670	2340	1675	2,710	1540	1640	1425	2,210
2900	600	1850	2430	1725	2,810	1680	1710	1500	2,280
2900	700	2030	2520	1800	2,880	1840	1790	1575	2,330
2900	800	2210	2610	1850	2,950	2000	1870	1625	2,380
2900	900	2390	2700	1925	3,010	2140	1940	1700	2,420
2900	1000	2580	2800	2000	3,130	2300	2020	1750	2,520
2900	1100	2750	2880	2050	3,200	2460	2100	1825	2,570
2900	1200	2930	2970	2125	3,270	2600	2170	1900	2,610
2900	1300	3120	3070	2175	3,340	2760	2250	1950	2,660
2900	1400	3290	3150	2250	3,410	2920	2330	2025	2,710
2900	1500	3470	3240	2300	3,470	3060	2400	2100	2,750
2900	1600	3650	3330	2375	3,540	3220	2480	2150	2,800
2900	1700	3840	3430	2450	3,610	3380	2560	2225	2,850
2900	1800	4010	3510	2500	3,680	3520	2630	2300	2,890
2900	1900	4190	3600	2550	3,750	3680	2710	2350	2,940
2900	2000	4380	3700	2625	3,870	3840	2790	2425	3,040

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
2900	2100	4550	3780	2675	3,940	3980	2860	2500	3,080
2900	2200	4730	3870	2750	4,000	4140	2940	2550	3,130
2900	2300	4920	3970	2825	4,080	4300	3020	2625	3,180
2900	2400	5090	4050	2875	4,140	4440	3090	2700	3,220
2900	2500	5270	4140	2950	4,210	4600	3170	2750	3,270
2900	2600	5460	4240	3000	4,280	4760	3250	2825	3,320
2900	2700	5640	4330	3075	4,350	4900	3320	2900	3,360
2900	2800	5810	4410	3125	4,420	5060	3400	2950	3,410
2900	2900	6000	4510	3200	4,510	5220	3480	3025	3,480
3000	300	1300	2210	1575	2,580	1220	1510	1325	2,110
3000	400	1500	2310	1650	2,720	1380	1590	1400	2,220
3000	450	1580	2350	1675	2,750	1460	1630	1425	2,240
3000	500	1660	2390	1700	2,780	1540	1670	1450	2,270
3000	600	1840	2480	1775	2,880	1680	1740	1525	2,340
3000	700	2040	2580	1825	2,950	1840	1820	1600	2,390
3000	800	2220	2670	1900	3,020	2000	1900	1650	2,440
3000	900	2380	2750	1950	3,090	2140	1970	1725	2,480
3000	1000	2580	2850	2025	3,210	2300	2050	1800	2,580
3000	1100	2760	2940	2100	3,280	2460	2130	1850	2,630
3000	1200	2920	3020	2150	3,340	2600	2200	1925	2,670
3000	1300	3120	3120	2225	3,410	2760	2280	1975	2,720
3000	1400	3300	3210	2275	3,480	2920	2360	2050	2,770
3000	1500	3480	3300	2350	3,550	3060	2430	2125	2,810
3000	1600	3640	3380	2400	3,620	3220	2510	2175	2,860
3000	1700	3840	3480	2475	3,690	3380	2590	2250	2,910
3000	1800	4020	3570	2525	3,750	3520	2660	2325	2,950
3000	1900	4180	3650	2600	3,820	3680	2740	2375	3,000
3000	2000	4380	3750	2675	3,940	3840	2820	2450	3,100
3000	2100	4560	3840	2725	4,010	3980	2890	2525	3,140
3000	2200	4720	3920	2775	4,080	4140	2970	2575	3,190
3000	2300	4920	4020	2850	4,150	4300	3050	2650	3,240
3000	2400	5100	4110	2925	4,220	4440	3120	2725	3,280
3000	2500	5280	4200	2975	4,280	4600	3200	2775	3,330
3000	2600	5460	4290	3050	4,360	4760	3280	2850	3,380
3000	2700	5640	4380	3100	4,420	4900	3350	2925	3,420

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3000	2800	5820	4470	3175	4,490	5060	3430	2975	3,470
3000	2900	6000	4560	3225	4,580	5220	3510	3050	3,540
3000	3000	6180	4650	3300	4,650	5360	3580	3125	3,580
3100	300	1300	2260	1600	2,650	1220	1540	1350	2,170
3100	400	1490	2360	1675	2,790	1380	1620	1425	2,280
3100	450	1580	2400	1700	2,820	1460	1660	1450	2,300
3100	500	1670	2450	1750	2,860	1540	1700	1475	2,330
3100	600	1850	2540	1800	2,950	1680	1770	1550	2,400
3100	700	2030	2630	1875	3,030	1840	1850	1625	2,450
3100	800	2210	2720	1925	3,090	2000	1930	1675	2,500
3100	900	2390	2810	2000	3,160	2140	2000	1750	2,540
3100	1000	2580	2900	2075	3,280	2300	2080	1825	2,640
3100	1100	2750	2990	2125	3,350	2460	2160	1875	2,690
3100	1200	2930	3080	2200	3,420	2600	2230	1950	2,730
3100	1300	3120	3170	2250	3,490	2760	2310	2025	2,780
3100	1400	3290	3260	2325	3,550	2920	2390	2075	2,830
3100	1500	3470	3350	2375	3,620	3060	2460	2150	2,870
3100	1600	3650	3440	2450	3,690	3220	2540	2200	2,920
3100	1700	3840	3530	2500	3,760	3380	2620	2275	2,970
3100	1800	4010	3620	2575	3,830	3520	2690	2350	3,010
3100	1900	4190	3710	2625	3,890	3680	2770	2400	3,060
3100	2000	4380	3800	2700	4,020	3840	2850	2475	3,160
3100	2100	4550	3890	2775	4,080	3980	2920	2550	3,200
3100	2200	4730	3980	2825	4,150	4140	3000	2600	3,250
3100	2300	4920	4070	2900	4,220	4300	3080	2675	3,300
3100	2400	5090	4160	2950	4,290	4440	3150	2750	3,340
3100	2500	5270	4250	3025	4,360	4600	3230	2800	3,390
3100	2600	5460	4340	3075	4,430	4760	3310	2875	3,440
3100	2700	5640	4430	3150	4,500	4900	3380	2950	3,480
3100	2800	5810	4520	3200	4,560	5060	3460	3000	3,530
3100	2900	6000	4610	3275	4,650	5220	3540	3075	3,600
3100	3000	6180	4700	3325	4,720	5360	3610	3150	3,640
3100	3100	6350	4790	3400	4,790	5520	3690	3200	3,690
3200	300	1310	2320	1650	2,720	1220	1570	1375	2,230
3200	400	1490	2410	1725	2,860	1380	1650	1450	2,340

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3200	450	1570	2450	1750	2,890	1460	1690	1475	2,360
3200	500	1670	2500	1775	2,930	1540	1730	1500	2,390
3200	600	1850	2590	1850	3,030	1680	1800	1575	2,460
3200	700	2030	2680	1900	3,100	1840	1880	1650	2,510
3200	800	2210	2770	1975	3,170	2000	1960	1700	2,560
3200	900	2390	2860	2025	3,230	2140	2030	1775	2,600
3200	1000	2570	2950	2100	3,360	2300	2110	1850	2,700
3200	1100	2750	3040	2150	3,420	2460	2190	1900	2,750
3200	1200	2930	3130	2225	3,490	2600	2260	1975	2,790
3200	1300	3110	3220	2300	3,560	2760	2340	2050	2,840
3200	1400	3290	3310	2350	3,630	2920	2420	2100	2,890
3200	1500	3470	3400	2425	3,700	3060	2490	2175	2,930
3200	1600	3650	3490	2475	3,760	3220	2570	2250	2,980
3200	1700	3830	3580	2550	3,830	3380	2650	2300	3,030
3200	1800	4010	3670	2600	3,900	3520	2720	2375	3,070
3200	1900	4190	3760	2675	3,970	3680	2800	2425	3,120
3200	2000	4370	3850	2725	4,090	3840	2880	2500	3,220
3200	2100	4550	3940	2800	4,160	3980	2950	2575	3,260
3200	2200	4730	4030	2850	4,220	4140	3030	2625	3,310
3200	2300	4910	4120	2925	4,300	4300	3110	2700	3,360
3200	2400	5090	4210	3000	4,360	4440	3180	2775	3,400
3200	2500	5270	4300	3050	4,430	4600	3260	2825	3,450
3200	2600	5460	4390	3125	4,500	4760	3340	2900	3,500
3200	2700	5630	4480	3175	4,570	4900	3410	2975	3,540
3200	2800	5810	4570	3250	4,640	5060	3490	3025	3,590
3200	2900	6000	4660	3300	4,730	5220	3570	3100	3,660
3200	3000	6170	4750	3375	4,800	5360	3640	3175	3,700
3200	3100	6350	4840	3425	4,860	5520	3720	3225	3,750
3200	3200	6530	4930	3500	4,930	5660	3790	3300	3,790
3300	300	1310	2370	1700	2,800	1220	1600	1400	2,290
3300	400	1490	2460	1750	2,940	1380	1680	1475	2,400
3300	450	1570	2500	1775	2,970	1460	1720	1500	2,420
3300	500	1670	2550	1825	3,000	1540	1760	1525	2,450
3300	600	1850	2640	1875	3,100	1680	1830	1600	2,520
3300	700	2030	2730	1950	3,170	1840	1910	1675	2,570

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3300	800	2210	2820	2000	3,240	2000	1990	1725	2,620
3300	900	2390	2910	2075	3,310	2140	2060	1800	2,660
3300	1000	2570	3000	2125	3,430	2300	2140	1875	2,760
3300	1100	2750	3090	2200	3,500	2460	2220	1925	2,810
3300	1200	2930	3180	2250	3,560	2600	2290	2000	2,850
3300	1300	3110	3270	2325	3,630	2760	2370	2075	2,900
3300	1400	3290	3360	2400	3,700	2920	2450	2125	2,950
3300	1500	3470	3450	2450	3,770	3060	2520	2200	2,990
3300	1600	3650	3540	2525	3,840	3220	2600	2275	3,040
3300	1700	3830	3630	2575	3,910	3380	2680	2325	3,090
3300	1800	4010	3720	2650	3,970	3520	2750	2400	3,130
3300	1900	4190	3810	2700	4,040	3680	2830	2475	3,180
3300	2000	4370	3900	2775	4,160	3840	2910	2525	3,280
3300	2100	4550	3990	2825	4,230	3980	2980	2600	3,320
3300	2200	4730	4080	2900	4,300	4140	3060	2675	3,370
3300	2300	4910	4170	2950	4,370	4300	3140	2725	3,420
3300	2400	5090	4260	3025	4,440	4440	3210	2800	3,460
3300	2500	5270	4350	3100	4,500	4600	3290	2850	3,510
3300	2600	5460	4450	3150	4,580	4760	3370	2925	3,560
3300	2700	5630	4530	3225	4,640	4900	3440	3000	3,600
3300	2800	5810	4620	3275	4,710	5060	3520	3050	3,650
3300	2900	6000	4720	3350	4,800	5220	3600	3125	3,720
3300	3000	6170	4800	3400	4,870	5360	3670	3200	3,760
3300	3100	6350	4890	3475	4,940	5520	3750	3250	3,810
3300	3200	6530	4980	3525	5,000	5660	3820	3325	3,850
3300	3300	6710	5070	3600	5,070	5820	3900	3400	3,900
3400	300	1300	2420	1725	2,870	1220	1630	1425	2,350
3400	400	1490	2510	1775	3,010	1380	1710	1500	2,460
3400	450	1580	2560	1825	3,040	1460	1750	1525	2,480
3400	500	1670	2600	1850	3,080	1540	1790	1575	2,510
3400	600	1850	2690	1925	3,170	1680	1860	1625	2,580
3400	700	2030	2780	1975	3,250	1840	1940	1700	2,630
3400	800	2210	2870	2050	3,310	2000	2020	1750	2,680
3400	900	2390	2960	2100	3,380	2140	2090	1825	2,720
3400	1000	2580	3060	2175	3,500	2300	2170	1900	2,820

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3400	1100	2750	3140	2225	3,570	2460	2250	1950	2,870
3400	1200	2930	3230	2300	3,640	2600	2320	2025	2,910
3400	1300	3120	3330	2375	3,710	2760	2400	2100	2,960
3400	1400	3290	3410	2425	3,780	2920	2480	2150	3,010
3400	1500	3470	3500	2475	3,840	3060	2550	2225	3,050
3400	1600	3650	3590	2550	3,910	3220	2630	2300	3,100
3400	1700	3840	3690	2625	3,980	3380	2710	2350	3,150
3400	1800	4010	3770	2675	4,050	3520	2780	2425	3,190
3400	1900	4190	3860	2750	4,120	3680	2860	2500	3,240
3400	2000	4380	3960	2825	4,240	3840	2940	2550	3,340
3400	2100	4550	4040	2875	4,300	3980	3010	2625	3,380
3400	2200	4730	4130	2925	4,370	4140	3090	2700	3,430
3400	2300	4920	4230	3000	4,440	4300	3170	2750	3,480
3400	2400	5090	4310	3050	4,510	4440	3240	2825	3,520
3400	2500	5270	4400	3125	4,580	4600	3320	2900	3,570
3400	2600	5460	4500	3200	4,650	4760	3400	2950	3,620
3400	2700	5640	4590	3250	4,720	4900	3470	3025	3,660
3400	2800	5810	4670	3325	4,780	5060	3550	3075	3,710
3400	2900	6000	4770	3375	4,880	5220	3630	3150	3,780
3400	3000	6180	4860	3450	4,940	5360	3700	3225	3,820
3400	3100	6350	4940	3500	5,010	5520	3780	3275	3,870
3400	3200	6530	5030	3575	5,080	5660	3850	3350	3,910
3400	3300	6720	5130	3650	5,150	5820	3930	3425	3,960
3400	3400	6900	5220	3700	5,220	5980	4010	3475	4,010
3500	300	1300	2470	1750	2,940	1220	1660	1450	2,410
3500	400	1500	2570	1825	3,080	1380	1740	1525	2,520
3500	450	1580	2610	1850	3,110	1460	1780	1550	2,540
3500	500	1660	2650	1875	3,150	1540	1820	1600	2,570
3500	600	1840	2740	1950	3,250	1680	1890	1650	2,640
3500	700	2040	2840	2025	3,320	1840	1970	1725	2,690
3500	800	2220	2930	2075	3,390	2000	2050	1800	2,740
3500	900	2380	3010	2150	3,450	2140	2120	1850	2,780
3500	1000	2580	3110	2200	3,580	2300	2200	1925	2,880
3500	1100	2760	3200	2275	3,640	2460	2280	1975	2,930
3500	1200	2920	3280	2325	3,710	2600	2350	2050	2,970

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3500	1300	3120	3380	2400	3,780	2760	2430	2125	3,020
3500	1400	3300	3470	2475	3,850	2920	2510	2175	3,070
3500	1500	3480	3560	2525	3,920	3060	2580	2250	3,110
3500	1600	3640	3640	2575	3,980	3220	2660	2325	3,160
3500	1700	3840	3740	2650	4,050	3380	2740	2375	3,210
3500	1800	4020	3830	2725	4,120	3520	2810	2450	3,250
3500	1900	4180	3910	2775	4,190	3680	2890	2525	3,300
3500	2000	4380	4010	2850	4,310	3840	2970	2575	3,400
3500	2100	4560	4100	2900	4,380	3980	3040	2650	3,440
3500	2200	4720	4180	2975	4,440	4140	3120	2725	3,490
3500	2300	4920	4280	3050	4,520	4300	3200	2775	3,540
3500	2400	5100	4370	3100	4,580	4440	3270	2850	3,580
3500	2500	5280	4460	3175	4,650	4600	3350	2925	3,630
3500	2600	5460	4550	3225	4,720	4760	3430	2975	3,680
3500	2700	5640	4640	3300	4,790	4900	3500	3050	3,720
3500	2800	5820	4730	3350	4,860	5060	3580	3125	3,770
3500	2900	6000	4820	3425	4,950	5220	3660	3175	3,840
3500	3000	6180	4910	3475	5,020	5360	3730	3250	3,880
3500	3100	6360	5000	3550	5,080	5520	3810	3300	3,930
3500	3200	6540	5090	3600	5,150	5660	3880	3375	3,970
3500	3300	6720	5180	3675	5,220	5820	3960	3450	4,020
3500	3400	6900	5270	3750	5,290	5980	4040	3500	4,070
3500	3500	7080	5360	3800	5,360	6120	4110	3575	4,110
3600	300	1300	2520	1800	3,020	1220	1690	1475	2,470
3600	400	1490	2620	1875	3,160	1380	1770	1550	2,580
3600	450	1580	2660	1900	3,190	1460	1810	1575	2,600
3600	500	1670	2710	1925	3,220	1540	1850	1625	2,630
3600	600	1850	2800	2000	3,320	1680	1920	1675	2,700
3600	700	2030	2890	2050	3,390	1840	2000	1750	2,750
3600	800	2210	2980	2125	3,460	2000	2080	1825	2,800
3600	900	2390	3070	2175	3,530	2140	2150	1875	2,840
3600	1000	2580	3160	2250	3,650	2300	2230	1950	2,940
3600	1100	2750	3250	2300	3,720	2460	2310	2025	2,990
3600	1200	2930	3340	2375	3,780	2600	2380	2075	3,030
3600	1300	3120	3430	2450	3,860	2760	2460	2150	3,080

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3600	1400	3290	3520	2500	3,920	2920	2540	2200	3,130
3600	1500	3470	3610	2575	3,990	3060	2610	2275	3,170
3600	1600	3650	3700	2625	4,060	3220	2690	2350	3,220
3600	1700	3840	3790	2700	4,130	3380	2770	2400	3,270
3600	1800	4010	3880	2750	4,200	3520	2840	2475	3,310
3600	1900	4190	3970	2825	4,260	3680	2920	2550	3,360
3600	2000	4380	4060	2875	4,380	3840	3000	2600	3,460
3600	2100	4550	4150	2950	4,450	3980	3070	2675	3,500
3600	2200	4730	4240	3000	4,520	4140	3150	2750	3,550
3600	2300	4920	4330	3075	4,590	4300	3230	2800	3,600
3600	2400	5090	4420	3150	4,660	4440	3300	2875	3,640
3600	2500	5270	4510	3200	4,720	4600	3380	2950	3,690
3600	2600	5460	4600	3275	4,800	4760	3460	3000	3,740
3600	2700	5640	4690	3325	4,860	4900	3530	3075	3,780
3600	2800	5810	4780	3400	4,930	5060	3610	3150	3,830
3600	2900	6000	4870	3450	5,020	5220	3690	3200	3,900
3600	3000	6180	4960	3525	5,090	5360	3760	3275	3,940
3600	3100	6350	5050	3575	5,160	5520	3840	3350	3,990
3600	3200	6530	5140	3650	5,220	5660	3910	3400	4,030
3600	3300	6720	5230	3700	5,300	5820	3990	3475	4,080
3600	3400	6900	5320	3775	5,360	5980	4070	3525	4,130
3600	3500	7070	5410	3850	5,430	6120	4140	3600	4,170
3600	3600	7260	5500	3900	5,500	6280	4220	3675	4,220
3700	300	1310	2580	1825	3,090	1220	1720	1500	2,530
3700	400	1490	2670	1900	3,230	1380	1800	1575	2,640
3700	450	1570	2710	1925	3,260	1460	1840	1600	2,660
3700	500	1670	2760	1975	3,300	1540	1880	1650	2,690
3700	600	1850	2850	2025	3,390	1680	1950	1700	2,760
3700	700	2030	2940	2100	3,470	1840	2030	1775	2,810
3700	800	2210	3030	2150	3,530	2000	2110	1850	2,860
3700	900	2390	3120	2225	3,600	2140	2180	1900	2,900
3700	1000	2570	3210	2275	3,720	2300	2260	1975	3,000
3700	1100	2750	3300	2350	3,790	2460	2340	2050	3,050
3700	1200	2930	3390	2400	3,860	2600	2410	2100	3,090
3700	1300	3110	3480	2475	3,930	2760	2490	2175	3,140

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3700	1400	3290	3570	2525	4,000	2920	2570	2250	3,190
3700	1500	3470	3660	2600	4,060	3060	2640	2300	3,230
3700	1600	3650	3750	2675	4,130	3220	2720	2375	3,280
3700	1700	3830	3840	2725	4,200	3380	2800	2425	3,330
3700	1800	4010	3930	2800	4,270	3520	2870	2500	3,370
3700	1900	4190	4020	2850	4,340	3680	2950	2575	3,420
3700	2000	4370	4110	2925	4,460	3840	3030	2625	3,520
3700	2100	4550	4200	2975	4,520	3980	3100	2700	3,560
3700	2200	4730	4290	3050	4,590	4140	3180	2775	3,610
3700	2300	4910	4380	3100	4,660	4300	3260	2825	3,660
3700	2400	5090	4470	3175	4,730	4440	3330	2900	3,700
3700	2500	5270	4560	3225	4,800	4600	3410	2975	3,750
3700	2600	5460	4650	3300	4,870	4760	3490	3025	3,800
3700	2700	5630	4740	3375	4,940	4900	3560	3100	3,840
3700	2800	5810	4830	3425	5,000	5060	3640	3175	3,890
3700	2900	6000	4920	3500	5,100	5220	3720	3225	3,960
3700	3000	6170	5010	3550	5,160	5360	3790	3300	4,000
3700	3100	6350	5100	3625	5,230	5520	3870	3375	4,050
3700	3200	6530	5190	3675	5,300	5660	3940	3425	4,090
3700	3300	6710	5280	3750	5,370	5820	4020	3500	4,140
3700	3400	6890	5370	3800	5,440	5980	4100	3575	4,190
3700	3500	7070	5460	3875	5,500	6120	4170	3625	4,230
3700	3600	7260	5550	3925	5,570	6280	4250	3700	4,280
3700	3700	7430	5640	4000	5,640	6440	4330	3750	4,330
3800	300	1310	2630	1875	3,170	1220	1750	1525	2,590
3800	400	1490	2720	1925	3,300	1380	1830	1600	2,700
3800	450	1570	2760	1975	3,340	1460	1870	1625	2,720
3800	500	1670	2810	2000	3,370	1540	1910	1675	2,750
3800	600	1850	2900	2075	3,470	1680	1980	1725	2,820
3800	700	2030	2990	2125	3,540	1840	2060	1800	2,870
3800	800	2210	3080	2200	3,610	2000	2140	1875	2,920
3800	900	2390	3170	2250	3,670	2140	2210	1925	2,960
3800	1000	2570	3260	2325	3,800	2300	2290	2000	3,060
3800	1100	2750	3350	2375	3,860	2460	2370	2075	3,110
3800	1200	2930	3440	2450	3,930	2600	2440	2125	3,150

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3800	1300	3110	3530	2500	4,000	2760	2520	2200	3,200
3800	1400	3290	3620	2575	4,070	2920	2600	2275	3,250
3800	1500	3470	3710	2625	4,140	3060	2670	2325	3,290
3800	1600	3650	3800	2700	4,200	3220	2750	2400	3,340
3800	1700	3830	3890	2775	4,280	3380	2830	2475	3,390
3800	1800	4010	3980	2825	4,340	3520	2900	2525	3,430
3800	1900	4190	4070	2900	4,410	3680	2980	2600	3,480
3800	2000	4370	4160	2950	4,530	3840	3060	2675	3,580
3800	2100	4550	4250	3025	4,600	3980	3130	2725	3,620
3800	2200	4730	4340	3075	4,670	4140	3210	2800	3,670
3800	2300	4910	4430	3150	4,740	4300	3290	2850	3,720
3800	2400	5090	4520	3200	4,800	4440	3360	2925	3,760
3800	2500	5270	4610	3275	4,870	4600	3440	3000	3,810
3800	2600	5460	4710	3350	4,940	4760	3520	3050	3,860
3800	2700	5630	4790	3400	5,010	4900	3590	3125	3,900
3800	2800	5810	4880	3475	5,080	5060	3670	3200	3,950
3800	2900	6000	4980	3525	5,170	5220	3750	3250	4,020
3800	3000	6170	5060	3600	5,240	5360	3820	3325	4,060
3800	3100	6350	5150	3650	5,300	5520	3900	3400	4,110
3800	3200	6530	5240	3725	5,370	5660	3970	3450	4,150
3800	3300	6710	5330	3775	5,440	5820	4050	3525	4,200
3800	3400	6890	5420	3850	5,510	5980	4130	3600	4,250
3800	3500	7070	5510	3900	5,580	6120	4200	3650	4,290
3800	3600	7260	5610	3975	5,650	6280	4280	3725	4,340
3800	3700	7430	5690	4025	5,720	6440	4360	3800	4,390
3800	3800	7610	5780	4100	5,780	6580	4430	3850	4,430
3900	300	1300	2680	1900	3,240	1220	1780	1550	2,650
3900	400	1490	2770	1975	3,380	1380	1860	1625	2,760
3900	450	1580	2820	2000	3,410	1460	1900	1650	2,780
3900	500	1670	2860	2025	3,450	1540	1940	1700	2,810
3900	600	1850	2950	2100	3,540	1680	2010	1750	2,880
3900	700	2030	3040	2150	3,610	1840	2090	1825	2,930
3900	800	2210	3130	2225	3,680	2000	2170	1900	2,980
3900	900	2390	3220	2300	3,750	2140	2240	1950	3,020
3900	1000	2580	3320	2350	3,870	2300	2320	2025	3,120

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
3900	1100	2750	3400	2425	3,940	2460	2400	2100	3,170
3900	1200	2930	3490	2475	4,000	2600	2470	2150	3,210
3900	1300	3120	3590	2550	4,080	2760	2550	2225	3,260
3900	1400	3290	3670	2600	4,140	2920	2630	2300	3,310
3900	1500	3470	3760	2675	4,210	3060	2700	2350	3,350
3900	1600	3650	3850	2725	4,280	3220	2780	2425	3,400
3900	1700	3840	3950	2800	4,350	3380	2860	2500	3,450
3900	1800	4010	4030	2850	4,420	3520	2930	2550	3,490
3900	1900	4190	4120	2925	4,480	3680	3010	2625	3,540
3900	2000	4380	4220	3000	4,610	3840	3090	2700	3,640
3900	2100	4550	4300	3050	4,670	3980	3160	2750	3,680
3900	2200	4730	4390	3125	4,740	4140	3240	2825	3,730
3900	2300	4920	4490	3175	4,810	4300	3320	2900	3,780
3900	2400	5090	4570	3250	4,880	4440	3390	2950	3,820
3900	2500	5270	4660	3300	4,950	4600	3470	3025	3,870
3900	2600	5460	4760	3375	5,020	4760	3550	3075	3,920
3900	2700	5640	4850	3450	5,080	4900	3620	3150	3,960
3900	2800	5810	4930	3500	5,150	5060	3700	3225	4,010
3900	2900	6000	5030	3575	5,240	5220	3780	3275	4,080
3900	3000	6180	5120	3625	5,310	5360	3850	3350	4,120
3900	3100	6350	5200	3700	5,380	5520	3930	3425	4,170
3900	3200	6530	5290	3750	5,440	5660	4000	3475	4,210
3900	3300	6720	5390	3825	5,520	5820	4080	3550	4,260
3900	3400	6900	5480	3875	5,580	5980	4160	3625	4,310
3900	3500	7070	5560	3950	5,650	6120	4230	3675	4,350
3900	3600	7260	5660	4025	5,720	6280	4310	3750	4,400
3900	3700	7440	5750	4075	5,790	6440	4390	3825	4,450
3900	3800	7610	5830	4125	5,860	6580	4460	3875	4,490
3900	3900	7800	5930	4200	5,930	6740	4540	3950	4,540
4000	300	1300	2730	1950	3,310	1220	1810	1575	2,710
4000	400	1500	2830	2025	3,450	1380	1890	1650	2,820
4000	450	1580	2870	2050	3,480	1460	1930	1675	2,840
4000	500	1660	2910	2075	3,520	1540	1970	1725	2,870
4000	600	1840	3000	2125	3,620	1680	2040	1775	2,940
4000	700	2040	3100	2200	3,690	1840	2120	1850	2,990

WYE		Standard Dimensions for 45° Wyes				Standard Dimensions for 60° Wyes			
Header	Branch	H	E	B	F	H	E	B	F
DN mm	DN mm	mm	mm	mm	mm	mm	mm	mm	mm
4000	800	2220	3190	2275	3,750	2000	2200	1925	3,040
4000	900	2380	3270	2325	3,820	2140	2270	1975	3,080
4000	1000	2580	3370	2400	3,940	2300	2350	2050	3,180
4000	1100	2760	3460	2450	4,010	2460	2430	2125	3,230
4000	1200	2920	3540	2525	4,080	2600	2500	2175	3,270
4000	1300	3120	3640	2575	4,150	2760	2580	2250	3,320
4000	1400	3300	3730	2650	4,220	2920	2660	2325	3,370
4000	1500	3480	3820	2725	4,280	3060	2730	2375	3,410
4000	1600	3640	3900	2775	4,350	3220	2810	2450	3,460
4000	1700	3840	4000	2850	4,420	3380	2890	2525	3,510
4000	1800	4020	4090	2900	4,490	3520	2960	2575	3,550
4000	1900	4180	4170	2950	4,560	3680	3040	2650	3,600
4000	2000	4380	4270	3025	4,680	3840	3120	2725	3,700
4000	2100	4560	4360	3100	4,750	3980	3190	2775	3,740
4000	2200	4720	4440	3150	4,810	4140	3270	2850	3,790
4000	2300	4920	4540	3225	4,880	4300	3350	2925	3,840
4000	2400	5100	4630	3275	4,950	4440	3420	2975	3,880
4000	2500	5280	4720	3350	5,020	4600	3500	3050	3,930
4000	2600	5460	4810	3425	5,090	4760	3580	3125	3,980
4000	2700	5640	4900	3475	5,160	4900	3650	3175	4,020
4000	2800	5820	4990	3550	5,220	5060	3730	3250	4,070
4000	2900	6000	5080	3600	5,320	5220	3810	3300	4,140
4000	3000	6180	5170	3675	5,380	5360	3880	3375	4,180
4000	3100	6360	5260	3725	5,450	5520	3960	3450	4,230
4000	3200	6540	5350	3800	5,520	5660	4030	3500	4,270
4000	3300	6720	5440	3850	5,590	5820	4110	3575	4,320
4000	3400	6900	5530	3925	5,660	5980	4190	3650	4,370
4000	3500	7080	5620	3975	5,720	6120	4260	3700	4,410
4000	3600	7260	5710	4050	5,800	6280	4340	3775	4,460
4000	3700	7440	5800	4125	5,860	6440	4420	3850	4,510
4000	3800	7620	5890	4175	5,930	6580	4490	3900	4,550
4000	3900	7800	5980	4250	6,000	6740	4570	3975	4,600
4000	4000	7980	6070	4300	6,070	6900	4650	4050	4,650

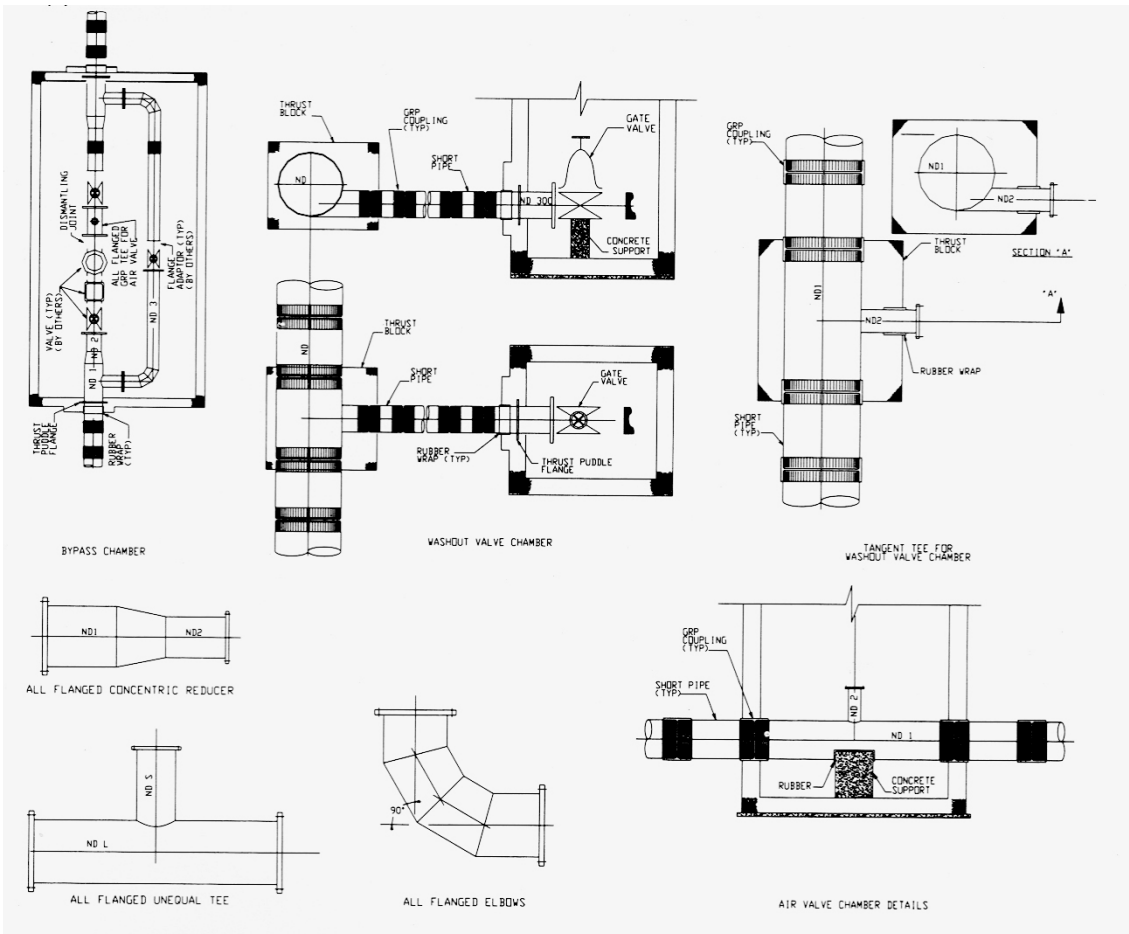
E. FLANGES

Flanges and blinds could be provided for the complete range of diameters with drilling pattern to match any international standard required such as DIN, ISO, ANSI, AWWA, JIS etc... or to client requirements.



F. CUSTOM DESIGNED FITTINGS

Future Pipe Industries can provide custom designed fittings for Air Valve Chambers, Wash-Out Chambers, By-Pass Chambers, in addition to all flanged fittings for specific applications.



10. VISUAL PROPERTIES

A. EXTERIOR VISUAL PROPERTIES

The exterior surface of **FIBERSTRONG®** pipe, joints and fittings shall be commercially free of the following visual irregularities:

Fuzz	Glass fibers loosely adhering to the pipe that are not wet out with resin.
Protruding fibers	Glass fibers sticking out from face that are wet out with resin.
Resin runs	Runs of resin and sand on surface of pipe.
Dry area	Area in laminate with glass not wet out with resin.
Hand lay-up ragged edges	Ragged edges, areas at the edge of hand lay-up that are not rolled down properly or that are rough.

B. VISUAL DEFECTS LIMITS

The following visual limits apply:

Visual defect	Definition	Allowable Limits	
		External Surface	Internal Surface
Delamination	Separation in the laminate.	None	None
Blisters	Light straw colored areas resulting from too hot a cure.	None to exceed 13mm in Dia.	None to exceed 4mm in Dia.
Crazes	Cracks on inner surface usually star shaped; caused by sharp impact.	N/A	None
Surface pits and voids	Small air pockets on the surface or directly beneath are solid. Surface mat can be broken by finger nail.	N/A	None greater than 2mm deep and 20mm Dia. Or greater than 4mm deep of any Dia.
Wrinkles, grooves and band depressions	Smooth Irregularities on liner surface.	N/A	None greater than 3mm deep
Haystacks	Accumulations of glass, resin and sand on exterior surface.	None greater than 30mm Dia.	N/A
Torn edges, end delamination and end gouges	Tears and rips in the edges of cuts.	N/A	None that will effect the integrity of the joints.
Ground area	Area around lay-up which has been abraded but lay-up does not cover or has not been coated.	Permitted	None

11. REPAIR WORK

Repairs to the internal and external layers shall not exceed 5% of the total surface area. No Structural repair work is allowed.

The number of repairs will not exceed an average of one (1) per one (1) meter length of pipe in each surface.

Pipe sections may contain factory lay-up joints which shall not be considered as repairs.

12. MARKING AND IDENTIFICATION

Each pipe section and coupling shall be marked with the following information:

- 1) Company name
- 2) Manufacturing standard
- 3) Pipe diameter
- 4) Pressure class
- 5) Stiffness class
- 6) Pipe serial number
- 7) Manufacturing date

Specific marking requirement by customers could be arranged; Future Pipe Industries marks the product accordingly while maintaining traceability.

