भारतीय मानक **IS 1729 : 2023**

Indian Standard

रेत ढलवाँ लोहे की स्पाईगट एवं सॉकेट पाइप, फ़िटिंगें एवं सहायक उपकरण — विशिष्टि

(तीसरा पुनरीक्षण)

Sand Cast Iron Spigot and Socket Pipes, Fittings and Accessories — Specification

(Third Revision)

ICS 23.040.10

भारतीय मानक ब्यूरो
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Pig Iron and Cast Iron Sectional Committee, MTD 06

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Pig Iron and Cast Iron Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1964 and subsequently revised in 1979 and 2002, respectively. While reviewing this standard, the Committee felt it necessary to revise this Indian Standard with following modifications:

a) Title of the standard has been modified to avoid confusion among end users/customers since manufacturing process and method for pipes, fittings and accessories is sand casting process;
b) As per the current practice of manufacturing of the pipes, fittings and accessories, deleted "ductile iron" from the title and the related clauses have been modified accordingly;
c) Amendments issued to second revision have been incorporated;
d) Word 'accessories or accessory' is inserted along with pipes and fittings; and
e) Clause **9** 'MASSES' have been deleted and related clauses and tables modified suitably.

The composition of the Committee responsible for formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SAND CAST IRON SPIGOT AND SOCKET PIPES, FITTINGS AND ACCESSORIES — SPECIFICATION

(Third Revision)

1 SCOPE

This standard covers the requirements of sand cast iron pipes, fittings and accessories used for discharge of waste water, sewage, rain water and for ventilation.

1.1 These pipes, fittings and accessories covered in this standard are to be used for above ground and for non-pressure applications.

1.2 This standard is applicable to cast iron pipes, fittings and accessories with either Type A or Type B sockets and having spigots as specified in this standard. Double socketed pipe lengths have also been included and these should comply with the requirements of sockets and barrel pipe section specified in the standard. In case of other type of socket/spigot joint the design should be based on the dimensions given in the standard, for reasons of safety and interchangeability.

2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

IS No.	*Title*
IS 210 : 2009	Grey iron castings — Specification (*fifth revision*)
IS 1387 : 1993	General requirements for the supply of metallurgical materials (*second revision*)
IS 1500 (Part 1) : 2019/ISO 6506-1 : 2014	Metallic materials — Brinell hardness test: Part 1 Test method (*fifth revision*)
IS 5519 : 1979	Deviations for untoleranced dimensions and mass of grey iron castings (*first revision*)

3 DEFINITIONS

3.1 The distinctive character of discharge pipeline is that products flow through them in a single direction under the force of gravity, they are thus, laid on a single slope in the direction of flow. As a result, they include descending, vertical, oblique or slightly sloping components, but excluding any horizontal or ascending components.

3.2 For the purpose of this standard the following definitions shall apply.

3.2.1 *Above Ground*

Pipeline within or external to a building including basements but excluding pipeline which has entered the ground (*see* Fig. 1 c).

3.2.2 *Right Hand Fittings*

A bend or branch so constructed that when it is viewed with the access door facing the observer, the arm of the bend or branch projects to the right in the ascending direction (*see* Fig. 1 a).

3.2.3 *Left Hand Fittings*

A bend or branch so constructed that when it is viewed with the access door facing the observer, the arm of bend or branch projects to the left in the ascending direction (*see* Fig. 1 b).

3.2.4 *Type A Socket*

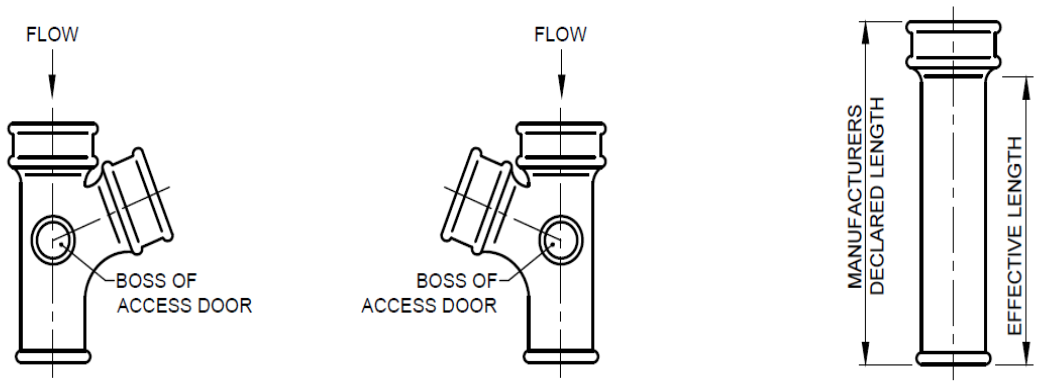
A socket with two beads. An example of a Type A socket is illustrated under Table 1.

3.2.5 *Type B Socket*

A socket of any type other than Type A, an example of Type B socket is illustrated under Table 1.

4 SUPPLY OF MATERIAL

General requirements relating to the supply of material shall be laid down in IS 1387.



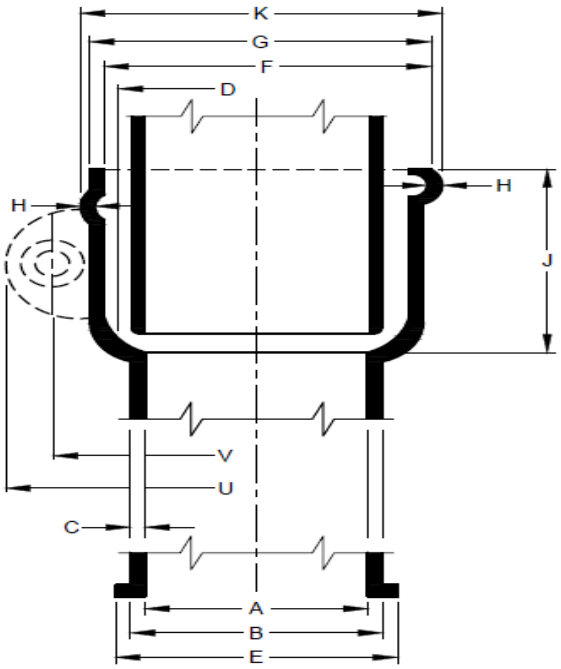
1 a) RIGHT HAND FITTING 1 b) LEFT HAND FITTING 1 c) ABOVE GROUND

FIG. 1 TYPES OF SOCKETS

Table 1 Straight Pipe, Fitting, Sockets (Type A and Type B) and Spigots

(*Clauses* 3.2.4, 3.2.5, 5.2, 8.1 *and* 9.1)

All dimensions in millimeters.



(a) '_____' Type A (profile)
(b) '_ _ _' Type B (profile)

Sl No.	Dimensions	Nominal Size			
		50	75	100	150
(1)	(2)	(3)	(4)	(5)	(6)
a)	Pipe				
	i) Internal dia (*Min*), *A*	48	74	99	150
	ii) External dia (*Max*), *B*	63	89	114	165
	iii) Wall thickness, *C*	5	5	5	5
	iv) Tolerance on, *C*	-2	-2	-2	-2
	iv) Dia of spigot bead (*Max*), *E*	70	97	122	175
b)	Socket				
	i) Internal dia (*Min*), *F*	73	100	127	181
	ii) External dia (*Max*), *G*	89	116	143	197
	iii) Thickness, *H*	6.5	6.5	6.5	6.5
	iv) Tolerance on, *H*	-2	-2	-2	-2
	v) Internal depth, *J*	64	70	76	89
	vi) Outside dia over beads (*Min*), *K*	100	129	157	213
	vii) Ears length of flange, *U*	145	178	213	273
	viii) Centre to centre hole, *V*	114	146	181	235

NOTES

1 Spigot bead is optional.

2 Double socket on the above dimensions can be made on demand.

5 MANUFACTURE

5.1 The metal used for manufacture of cast iron drainage pipes, fittings and accessories shall be suitable for the method of manufacture and shall be of a quality not less than Grade FG 150 as specified in IS 210.

5.2 Screws, bolts and fittings shall comply with the requirements specified in the Table 1 to Table 33.

5.3 The pipes, fittings and accessories shall be stripped with all precautions necessary to avoid warping or shrinking defects. The pipes and fittings shall be free from defects other than any unavoidable surface imperfections which may result from the method of manufacture and which do not affect the use of fittings. By agreement between the purchaser and the manufacturer minor defects may be rectified.

5.4 The pipes and fittings shall be capable of being cut with the tools normally used for installation. The hardness of the external unmachined surface of the pipe and fittings should not exceed 230 HBW when tested in accordance with IS 1500 (Part 1).

5.4.1 In case of hardness is more than 230 HBW, fracture test shall be carried out and if fracture is grey (without showing any chilling effect) such pipes, fittings and accessories shall be accepted.

5.5 Alternatively the brinell hardness test shall be carried out on the test bar, cast from the same metal and of thickness not exceeding 10 mm.

6 HAMMER TEST

Each pipe, fitting and accessory when tested for soundness by striking with a light hand hammer shall emit a clear ringing sound.

7 LEAKAGE TEST

7.1 Pipes and fittings shall be capable of withstanding for at least 15 s an internal hydrostatic pressure of at least 0.7 kg/cm^2 without leakage.

7.2 Pressure testing may also be carried pneumatically. In air testing, safety valves should be fitted to prevent any pressure developing in excess of 6 kg/cm^2 and the test should be carried out under water.

NOTE — Testing may preferably be carried out on uncoated pipes and fittings.

8 RANGE OF NOMINAL DIAMETERS

8.1 The range of nominal diameters, DN, for cast iron drainage pipes, fittings and accessories for non-pressure above ground pipelines socket and spigot series would be as follows:

50 mm, 75 mm, 100 mm and 150 mm.

NOTE — Nominal Diameter, DN, is a number used to classify pipes and corresponds approximately to their internal diameter.

8.2 Dimensions of socket and spigot pipes and fittings for all nominal diameter as specified are given in Table 1 to Table 33.

9 TOLERANCES

9.1 Tolerance on wall thickness is as per provision in Table 1.

9.2 No limit to the positive tolerances of wall thickness have been specified.

9.3 The tolerance on length shall be applicable as follows:

Sl No.	*Product*	*Tolerance* (mm)
(1)	(2)	(3)
i)	Pipes	± 20
ii)	Fittings	± 10

9.4 The tolerance on the angles of the bends and branches is fixed at ± 1º 30' throughout.

9.5 Tolerances for dimensions other than specified above shall be as specified in IS 5519. Untoleranced dimensions given in the standard are for guidance only.

9.6 The tolerance on the internal depth of socket for all nominal diameters is fixed at ± 10.0 mm.

10 COATINGS

10.1 Each pipe, fitting and accessory shall be coated in accordance with **10.1** to **10.7**.

10.2 Coating shall not be applied to any pipe or fitting or accessory unless its surfaces are clean, dry and free from rust.

10.3 Unless otherwise agreed between the purchaser and the manufacturer all pipes, fittings and accessories shall be supplied coated externally and internally with the same material by dipping in a tar or suitable base bath. The pipes may be either preheated before dipping or the bath may be uniformly heated. Alternatively, if mutually agreed between the purchaser and the manufacturer, the pipes, fittings and accessories may be coated by spraying or brush painting.

10.4 The coating material shall set rapidly with good adherence and shall not scale off.

10.5 Where the coating material has a tar or similar base, it shall be smooth and tenacious and hard enough not to flow when exposed to a temperature of 65 ºC, but not so brittle at a temperature of 0 ºC as to chip off when scribed lightly with a penknife. The retention period of sample at above temperature shall be up to 5 min.

10.6 The coating test shall be conducted on a sample size not less than 10 cm^2 in area cut from a pipe or fitting or accessory.

10.7 Pipes or fittings or accessories which are imperfectly coated or where the coating does not set or conform to the required quality, specified in **10.1** to **10.7**, the coating shall be removed and the pipe, fitting or accessory be re-coated.

11 MARKING

11.1 Each pipe, fitting and accessory shall have cast or stamped or indelibly painted on it by the following:

a) Manufacturer's name, initials or identification mark;
b) The nominal diameter;
c) The last two digits of the year of manufacture; and
d) Any other mark required by the purchaser.

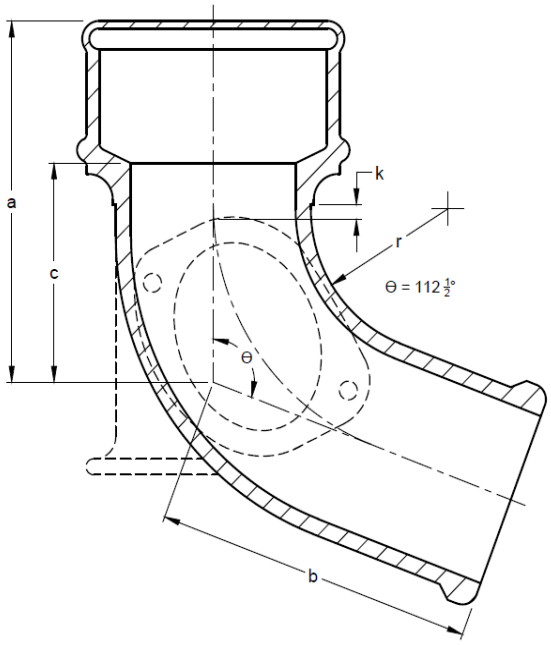
11.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

Table 2 Short Radius Bends with and without Access Doors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Angle	Dimensions				
		θ	a	b	c	k	r
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	50	92.5°	149	140	89	8	38
ii)	75		170	162	105	10	38
iii)	100		187	181	117	10	38
iv)	150		218	206	143	10	38
v)	50	95°	146	140	86	8	38
vi)	75		167	162	102	10	38
vii)	100		186	181	116	10	38
viii)	150		213	206	138	10	38
ix)	50	100°	139	140	79	6	38
x)	75		160	162	95	10	38
xi)	100		178	181	108	10	38
xii)	150		204	206	129	10	38
xiii)	50	104°	—	—	—	—	—
xiv)	75		—	—	—	—	—
xv)	100		169	181	99	6	38
xvi)	150		—	—	—	—	—
xvii)	50	112.5°	130	143	70	8	38
xviii)	75		144	168	79	8	38
xix)	100		181	168	111	10	70
xx)	150		204	200	129	10	70
xxi)	50	120°	124	146	61	8	38
xxii)	75		138	168	73	8	38
xxiii)	100		181	165	111	10	89
xxiv)	150		202	194	127	11	89

Table 2 (*Concluded*)

Sl No.	Nominal Size (DN)	Angle	Dimensions				
		θ	*a*	*b*	*c*	*k*	*r*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
xxv)	50	135°	124	143	64	6	70
xxvi)	75		138	162	73	8	70
xxvii)	100		172	165	102	10	121
xxviii)	150		185	194	110	8	121

NOTES

1 For details of oval access doors *see* Table 11. The centre of an access door, when fitted, should be approximately symmetrical with the centre line of the fitting and as near the intersection of the two aces as possible.

2 The heel rests shall be located where the centre line through the socket strikes the outside edge of the pipe and extends outwards the same distance as the beads round the socket.

3 Width of access door 1/2 diameter of pipe. Thickness not less than 8 mm.

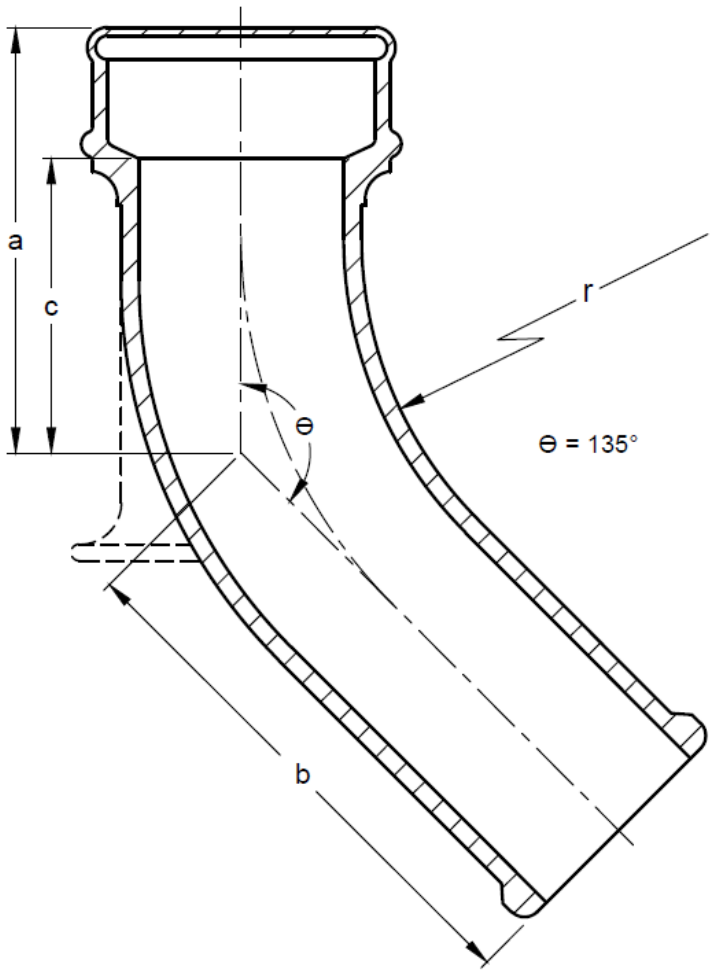
4 Thickness of web not less than 6 mm from outside edge of pipe.

5 Spigot, sockets and ears of short radius bends shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 3A Large Radius Bends

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Angle	Dimensions			
		θ	a	b	c	r
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	75	92.5°	275	292	210	152
ii)	100		292	305	222	152
iii)	150		323	330	248	152
iv)	75	95°	271	292	206	159
v)	100		289	305	219	159
vi)	150		316	330	241	159
vii)	75	100°	268	236	203	171
viii)	100		286	238	216	171
ix)	150		319	324	235	171
x)	75	112°	249	279	184	203
xi)	100		260	292	190	197
xii)	150		285	318	210	197
xiii)	75	120°	243	273	178	229
xiv)	100		254	286	184	222
xv)	150		272	311	197	216
xvi)	75	135°	224	260	159	286
xvii)	100		229	273	159	273
xviii)	150		234	296	159	248

NOTES

1 The heel rests shall be located where the centre line through the socket meets the outside edge of the pipe and shall extends outwards the same distance as the beads round the socket.

2 Width of plate 2/3 diameter of pipe. Thickness not less than 8 mm.

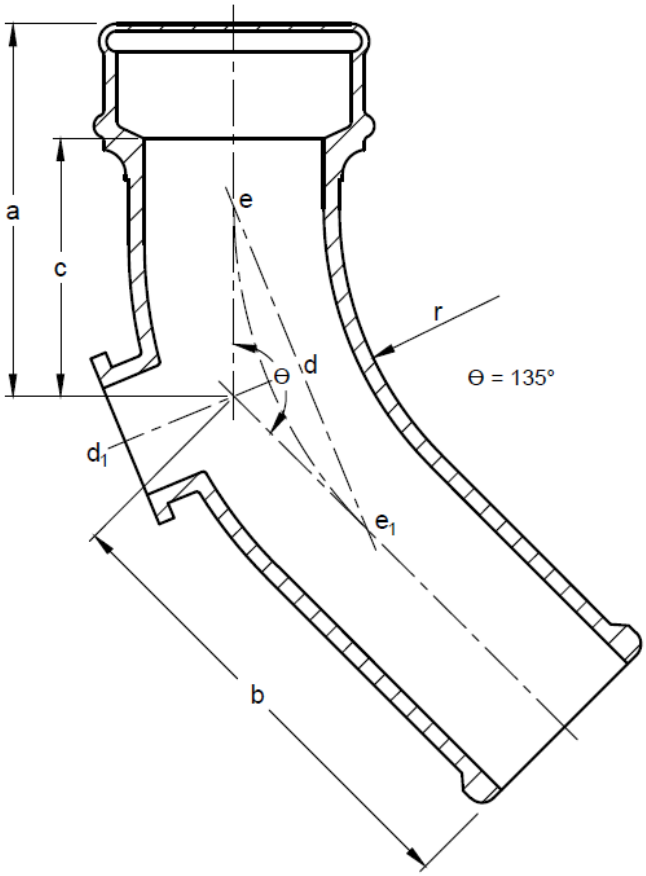
3 Thickness of web not less than 6 mm from outside edge of pipe.

4 Spigot, sockets and ears of large radius bends shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 3B Large Radius Bends with Access Doors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Angle θ	Dimensions			
			a	*b*	*c*	*r*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	75	92.5°	275	292	210	152
ii)	100		292	305	222	152
iii)	150		323	330	248	152
iv)	75	95°	271	292	206	159
v)	100		289	305	219	159
vi)	150		316	330	241	159
vii)	75	100°	268	236	203	171
viii)	100		286	238	216	171
ix)	150		319	324	235	171
x)	75	112°	249	279	184	203
xi)	100		260	292	190	197
xii)	150		285	318	210	197
xiii)	75	120°	243	273	178	229
xiv)	100		254	286	184	222
xv)	150		272	311	197	216

Table 3B (*Concluded*)

Sl No.	Nominal Size (DN)	Angle θ	Dimensions			
			a	*b*	*c*	*r*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
xvi)	75	135°	224	260	159	286
xvii)	100		229	273	159	273
xviii)	150		234	296	159	248

NOTES

1 The heel rests shall be located where the centre line through the socket meets the outside edge of the pipe and shall extends outwards the same distance as the beads round the socket.

2 Width of plate 2/3 diameter of pipe. Thickness not less than 8 mm.

3 Thickness of web not less than 6 mm from outside edge of pipe.

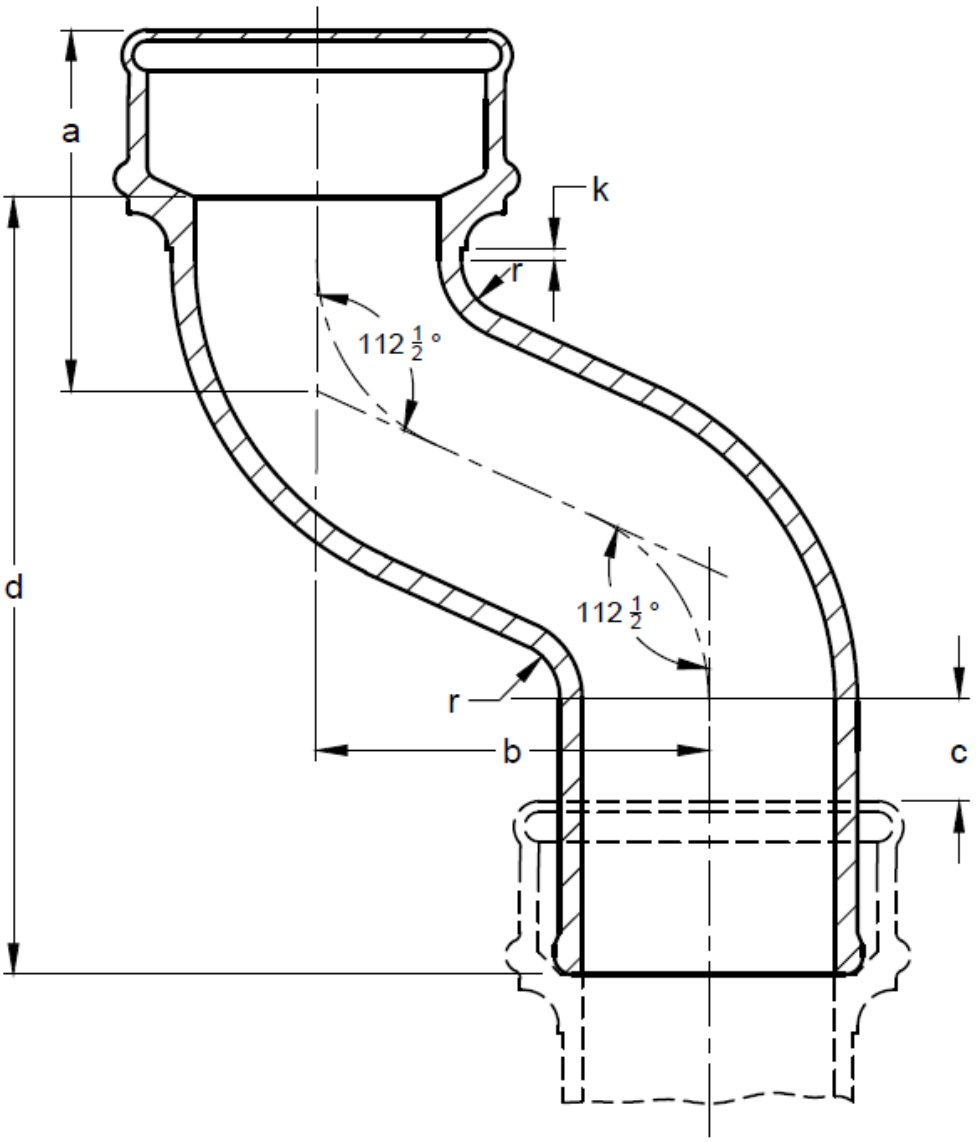
4 Spigot, sockets and ears of large radius bends shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

5 For door dimensions *see* Table 11.

Table 4 Off-Sets

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Projection	Dimensions				
		b	*a*	*r*	*c*	*k*	*d*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	50	76	121	25	55	6	246
ii)	75		135	25	55	6	267
iii)	100		148	25	55	6	285
iv)	150		171	25	55	6	319
v)	50	114	121	25	55	6	263
vi)	75		135	25	55	6	284
vii)	100		148	25	55	6	304
viii)	150		171	25	55	6	843
ix)	50	152	121	25	55	6	279
x)	75		135	25	55	6	300
xi)	100		148	25	55	6	322
xii)	150		171	25	55	6	360
xiii)	50	229	121	25	55	6	311
xiv)	75		135	25	55	6	330
xv)	100		148	25	55	6	352
xvi)	150		171	25	55	6	393
xvii)	50	305	121	25	55	6	342
xviii)	75		135	25	55	6	361
xix)	100		148	25	55	6	385
xx)	150		171	25	55	6	423

NOTES

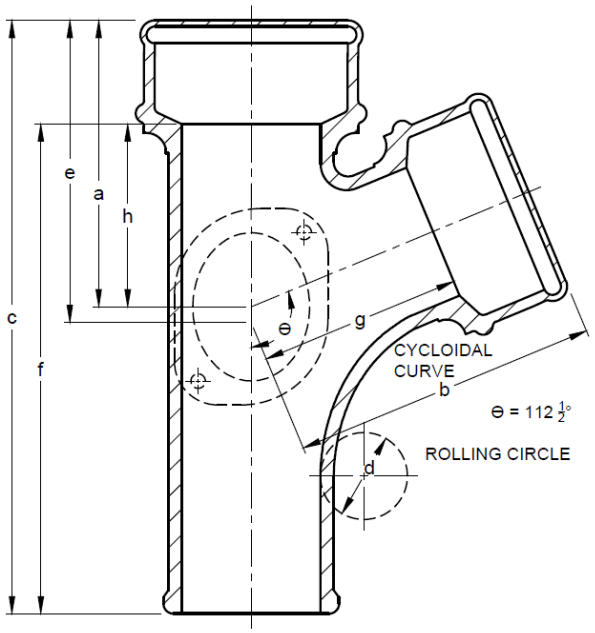
1 In the case of fittings, in which the projection *b* is equal to 76 mm, the two radii at the centre of the pipe will be tangential to each other at a point slightly above the sloping centre line of the fitting, owing to the small projection.

2 Spigots, sockets and ears of swan neck bends shall be same as for straight pipes of corresponding nominal dia given in Table 1.

Table 5 Equal Branches with and without Oval Access Doors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Angle θ	Dimensions							
			a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	50	92.5°	121	152	295	38	154	235	92	61
ii)	75		143	181	351	48	178	286	116	78
iii)	100		165	206	400	57	197	330	136	95
iv)	150		209	263	494	76	235	419	188	125
v)	50	112.5°	143	143	295	38	154	235	83	83
vi)	75		171	171	351	48	178	286	106	106
vii)	100		197	197	400	57	197	330	127	127
viii)	150		248	248	494	76	235	419	173	173
ix)	50	120°	149	149	295	38	154	235	89	89
x)	75		181	181	351	48	178	286	116	116
xi)	100		210	210	400	57	197	330	140	140
xii)	150		264	264	494	76	235	419	189	189
xiii)	50	135°	178	178	295	38	154	235	118	118
xiv)	75		222	222	351	48	178	286	157	157
xv)	100		260	260	400	57	197	330	190	190
xvi)	150		340	340	494	76	235	419	265	265

NOTES

1 For details of oval access doors *see* Table 11.

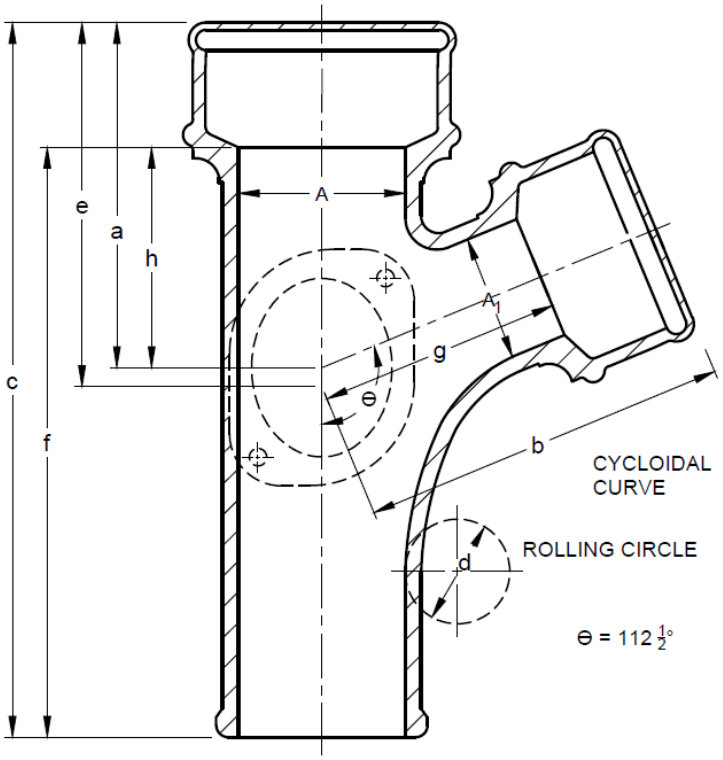
2 Spigot, sockets and ears of equal branches shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

3 When double branches are required, repeat above dimensions on other side.

Table 6 Unequal Branches with and without Oval Access Doors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)		Angle	Dimensions							
			θ	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	75	50	92.5°	132	165	325	38	165	260	105	67
ii)	100	50		137	178	349	58	179	279	118	67
iii)	100	75		152	194	362	48	186	292	129	82
iv)	150	100		179	232	418	57	222	343	162	104
v)	75	50	120°	165	165	325	38	165	260	105	100
vi)	100	50		178	179	349	38	179	279	119	108
vii)	100	75		195	195	362	48	186	292	130	125
viii)	150	100		238	241	418	57	222	343	171	163
ix)	75	50	135°	200	197	325	38	165	260	137	135
x)	100	50		217	216	349	38	179	279	156	147
xi)	100	75		241	241	362	48	186	292	176	171
xii)	150	100		298	295	418	57	222	345	225	223

NOTES

1 For details of over access doors *see* Table 11.

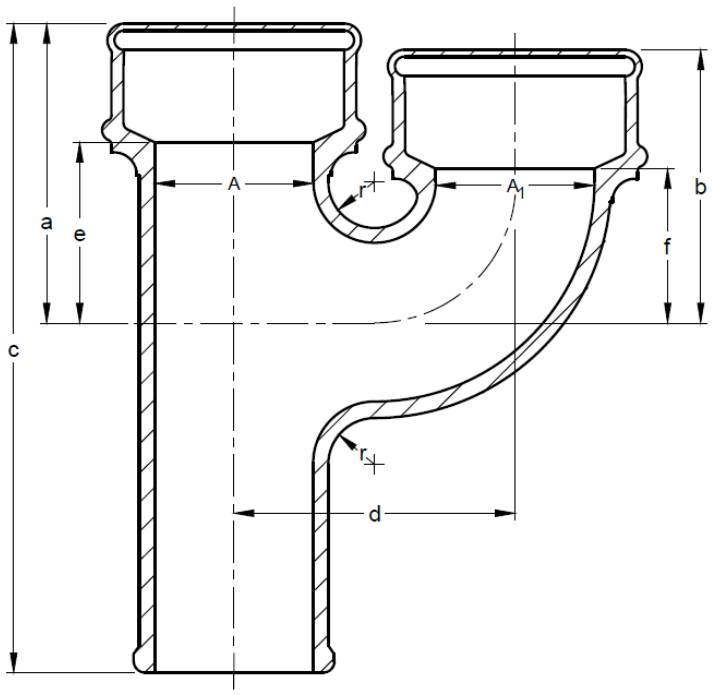
2 Spigot, sockets and ears of unequal branches shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

3 When double branches are required, repeat above dimensions on other side.

Table 7 Parallel Branches, Singles, Equal and Unequal

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)		Dimensions						
			a	*b*	*c*	*d*	*e*	*f*	*r*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	100	100	186	172	406	167	116	102	28.5
ii)	100	50	159	150	356	140	89	90	27.5

NOTES

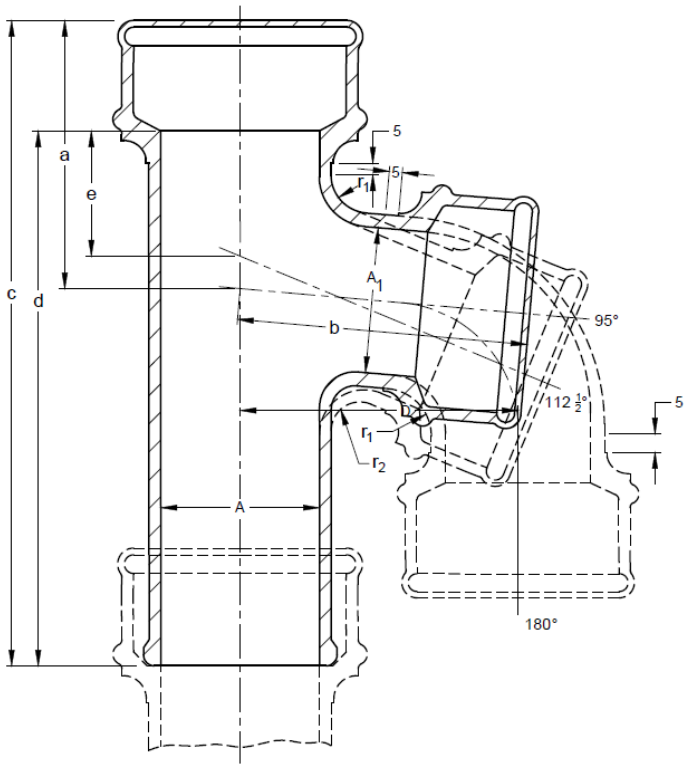
1 Spigot, sockets and ears of parallel branches shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

2 When double branches are required, repeat above dimensions on other side.

Table 8 Inverted Branches, Socket Type

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



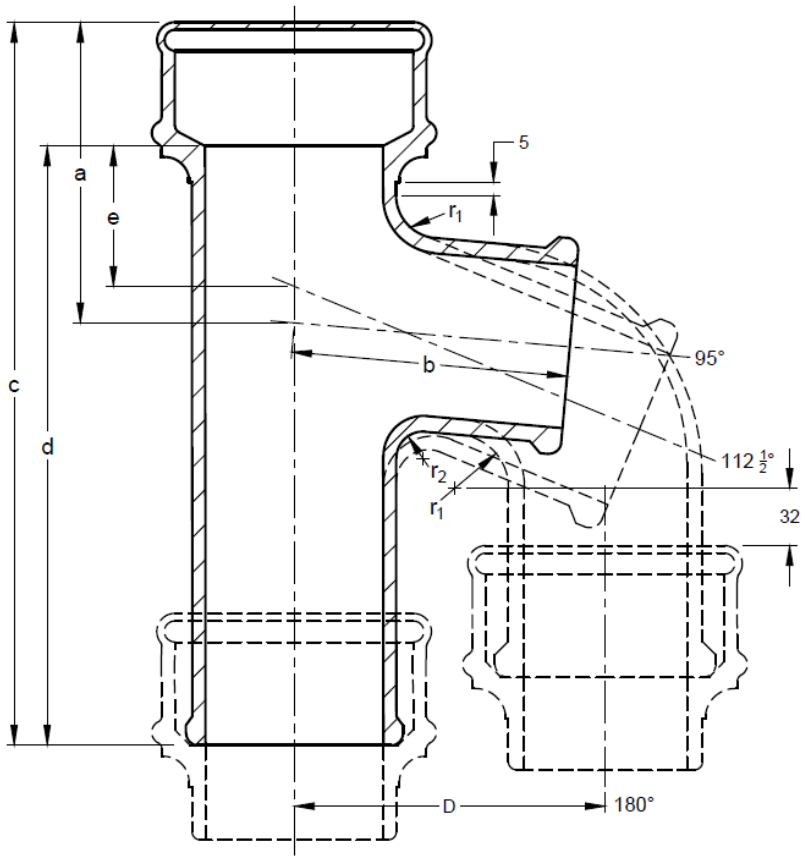
Sl No.	Nominal Size (DN)		Angle	Dimensions							
			θ	a	b	D	c	d	e	r_1	r_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	50	50	95°	133	137	—	300	240	73	25	13
ii)	100	100		168	178	—	400	330	98	25	13
iii)	100	50		143	162	—	350	270	73	25	13
iv)	50	50	112.5°	121	152	—	300	240	61	25	13
v)	100	100		149	205	—	400	330	79	25	13
vi)	100	50		124	178	—	350	270	54	25	13
vii)	50	50	180°	133	—	113	300	240	73	25	13
viii)	100	100		168	—	167	400	330	98	15	13
ix)	100	50		143	—	140	350	270	73	25	13

NOTE — Spigot and sockets shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 9 Inverted Branches, Spigot Type

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



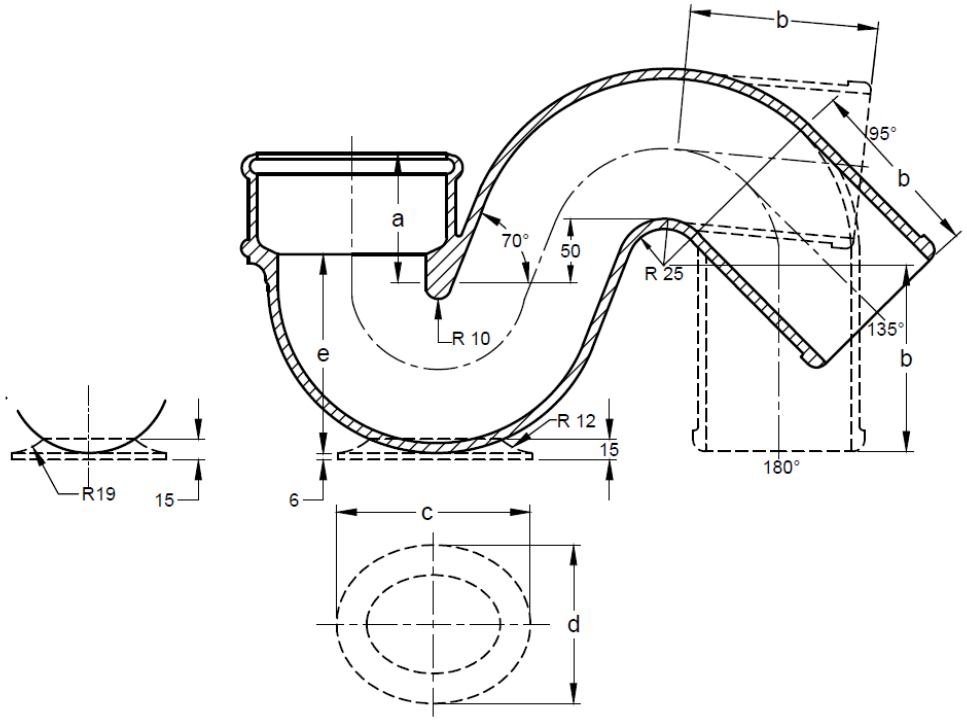
Sl No.	Nominal Size (DN)		Angle	Dimensions							
			θ	d	b	D	c	d	e	r_1	r_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	50	50	95º	133	146	—	300	240	73	25	13
ii)	100	100		168	136	—	400	330	98	25	13
iii)	100	50		143	171	—	350	270	73	25	13
iv)	50	50	112.5º	121	160	—	300	240	61	25	13
v)	100	100		149	210	—	400	330	79	25	13
vi)	100	50		124	187	—	350	270	54	25	13
vii)	50	50	180º	133	—	113	300	240	73	25	13
viii)	100	100		168	—	167	400	330	98	15	13
ix)	100	50		143	—	140	350	270	73	25	13

NOTE — Spigot and sockets shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 10 Traps

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



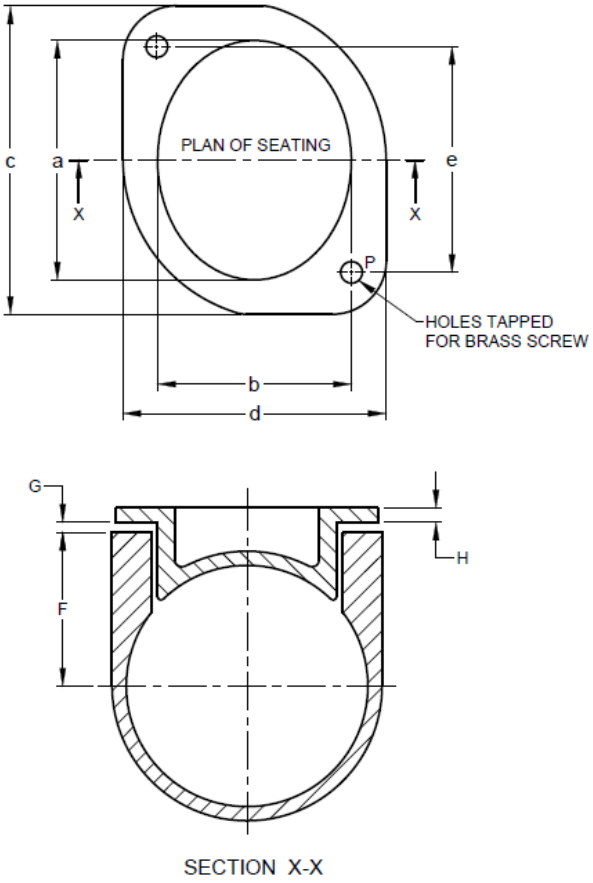
Sl No.	Nominal Size (DN)	Angle	Dimensions				
		θ	*a*	*b*	*c*	*d*	*e*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	50	95°	80	114	102	86	84
ii)	75		85	121	117	98	118
iii)	100		90	127	133	108	135
iv)	150		95	140	152	127	186
v)	50	135.5°	80	114	102	86	84
vi)	75		85	121	117	98	118
vii)	100		90	127	133	108	135
viii)	150		95	140	152	127	186
ix)	50	180°	80	114	102	86	84
x)	75		85	121	117	98	118
xi)	100		90	127	133	108	135
xii)	150		95	140	152	127	186

NOTE — Spigot and sockets shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 11 Oval Access Doors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimetres.



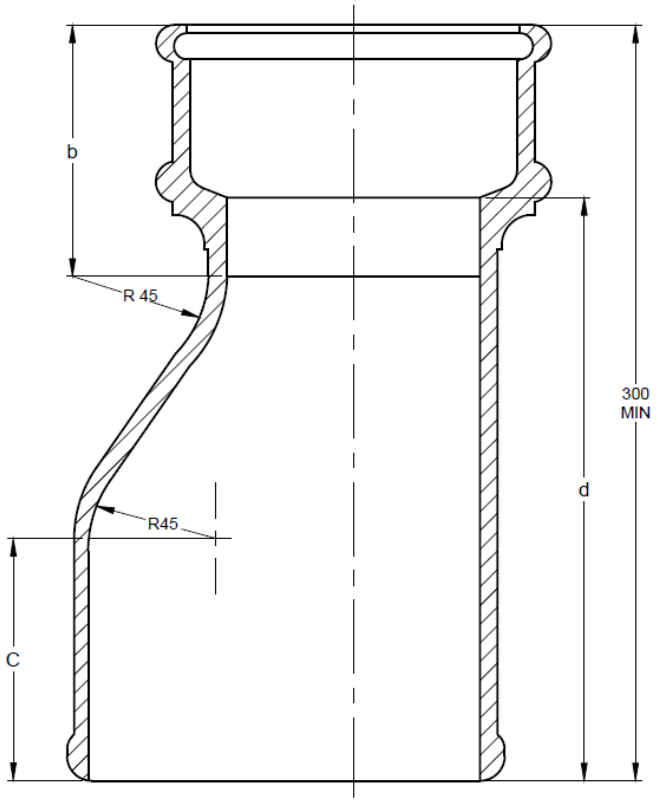
Sl No.	Nominal Size (DN)	Dimensions								
		a	*b*	*c*	*d*	*e*	*F*	*G*	*H*	*P*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	50	64	35	98	57	73	36	5	6	8
ii)	75	89	57	114	83	89	49	5	6	8
iii)	100	100	78	130	108	95	62	5	6	8
iv)	150	121	95	152	127	114	87	5	6	10

NOTE — Screws to be of brass or cadmium plated steel.

Table 12 Diminishing Pieces

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimetres.



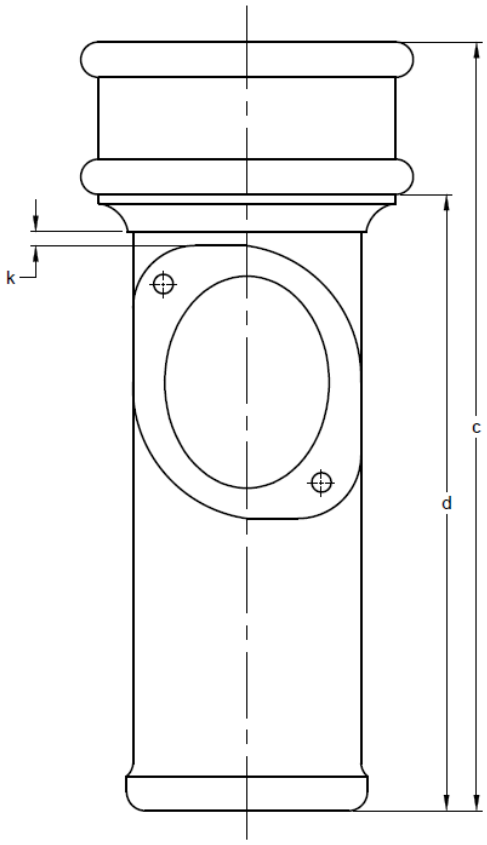
Sl No.	Nominal Size (DN)		Dimensions		
			b	*c*	*d*
(1)	(2)	(3)	(4)	(5)	(6)
i)	75	50	86	76	240
ii)	100	50	86	83	240
iii)	100	75	95	83	235
iv)	150	100	102	95	230

NOTE — Spigot, sockets and ears of diminishing pieces shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 13 Straight Inspection Pieces

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



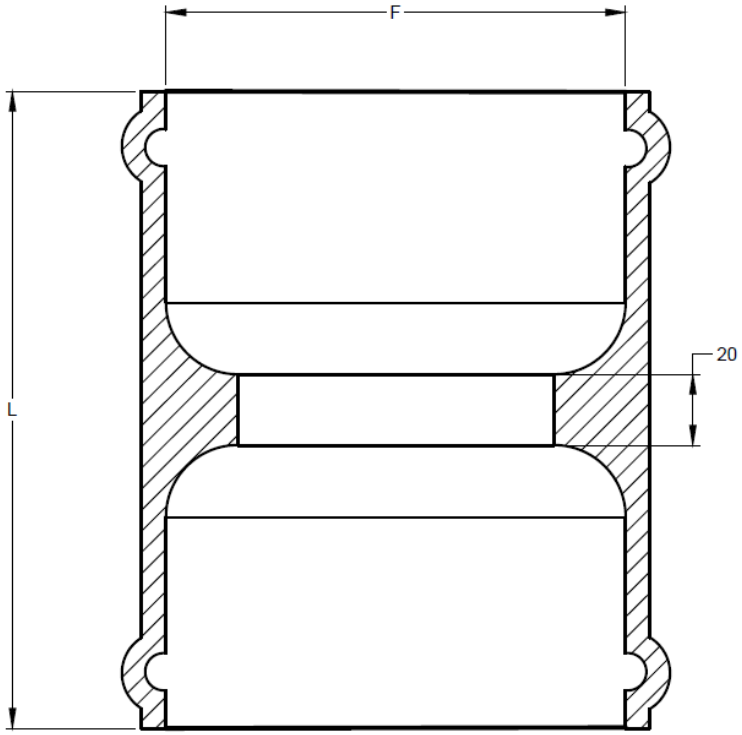
Sl No.	Nominal Size (DN)	Dimensions		
		c	*d*	*k*
(1)	(2)	(3)	(4)	(5)
i)	50	298	238	6
ii)	75	337	272	6
iii)	100	362	292	6
iv)	150	413	338	6

NOTE — Spigot, sockets and ears of inspection pieces shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

Table 14 Collars

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



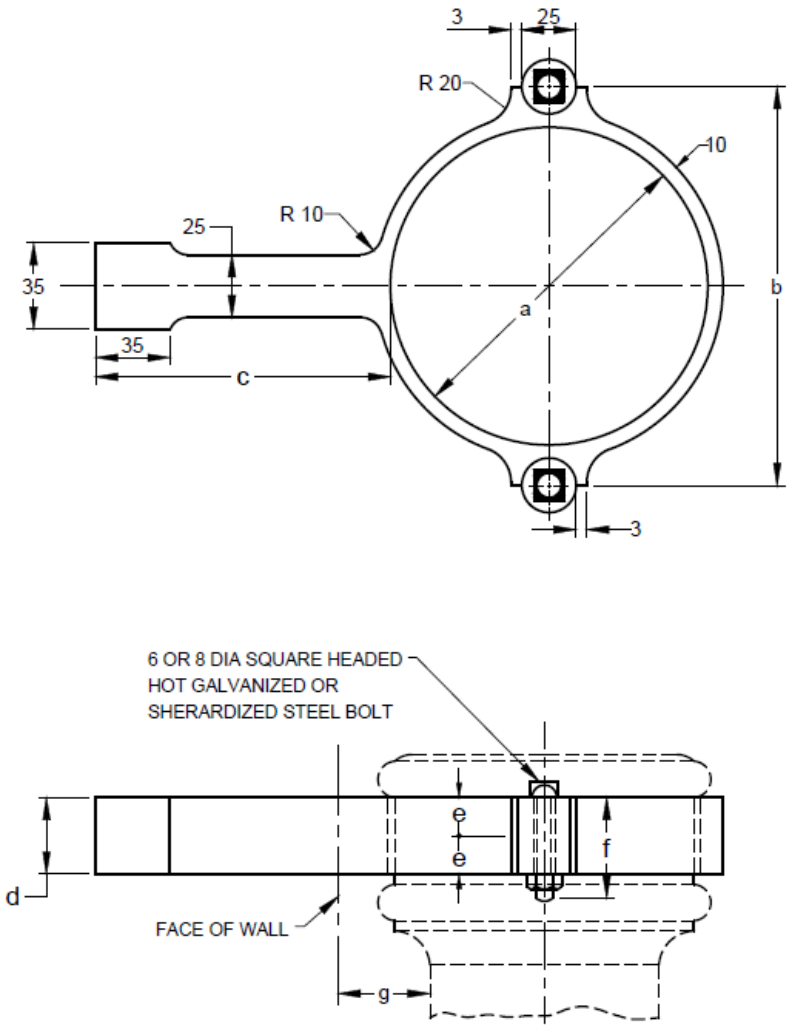
Sl No.	Nominal Size (DN)	Dimensions	
		F	*L*
(1)	(2)	(3)	(4)
i)	50	73	148
ii)	75	100	160
iii)	100	127	172
iv)	150	181	198

NOTE — The dimensions of collars shall correspond to those of the appropriate nominal dia of pipe given in Table 1.

Table 15 Cast Iron Holder Bats

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

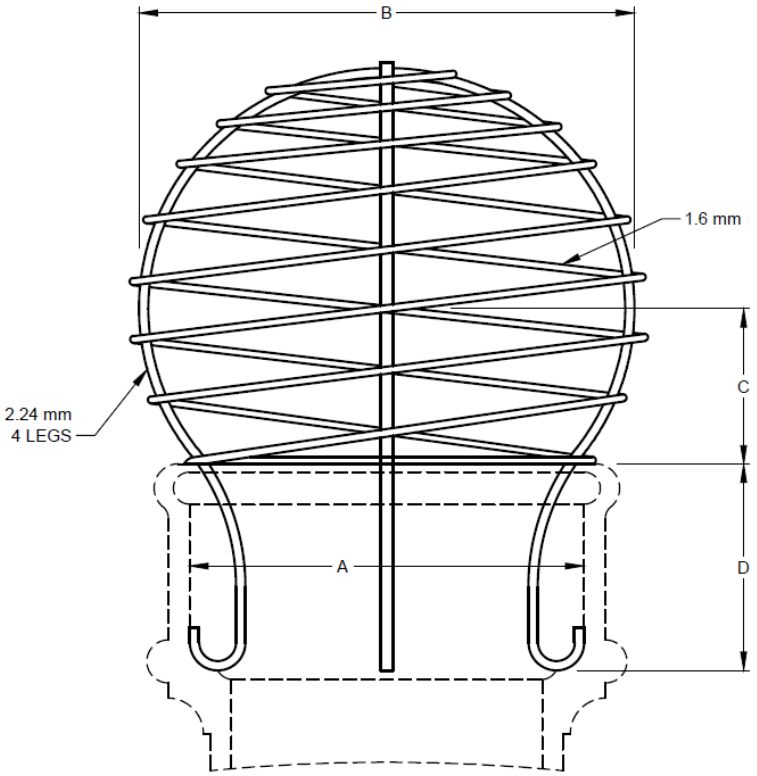


Sl No.	Nominal Size (DN)	Dimensions						
		a	*b*	*c*	*d*	*e*	*f*	*g*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	50	89	133	132	26	13	41	32
ii)	75	117	162	132	34	17	48	32
iii)	100	146	190	137	36	18	51	38
iv)	150	200	244	135	46	23	60	38

Table 16 Wire Balloons Galvanized Steel or Copper

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



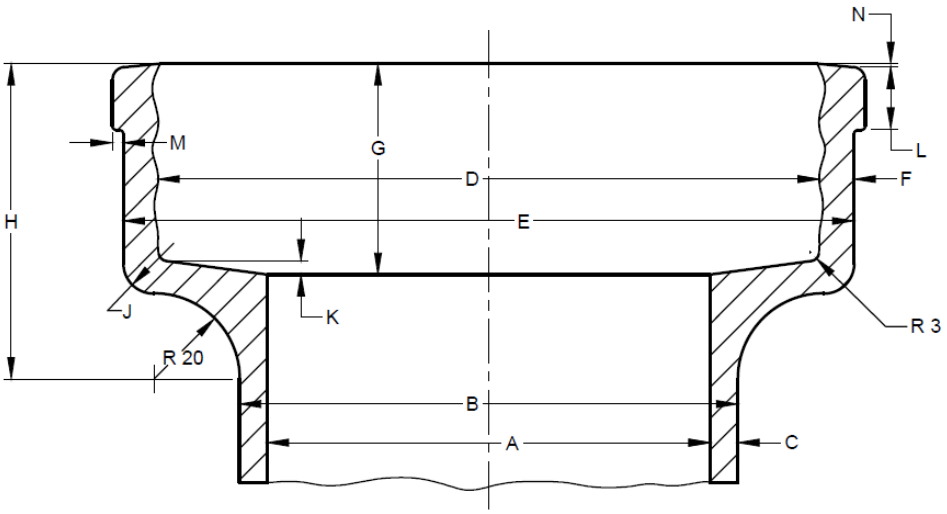
Sl No.	Nominal Size (DN)	Dimensions			
		A	*B*	*C*	*D*
(1)	(2)	(3)	(4)	(5)	(6)
i)	55	75	105	38	57
ii)	75	99	133	44	62
iii)	100	127	159	51	67
iv)	150	181	219	64	72

NOTE — The maximum mesh shall be 20 mm.

Table 17 Sanitary Connections — Socket to Fit WC Outlet

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

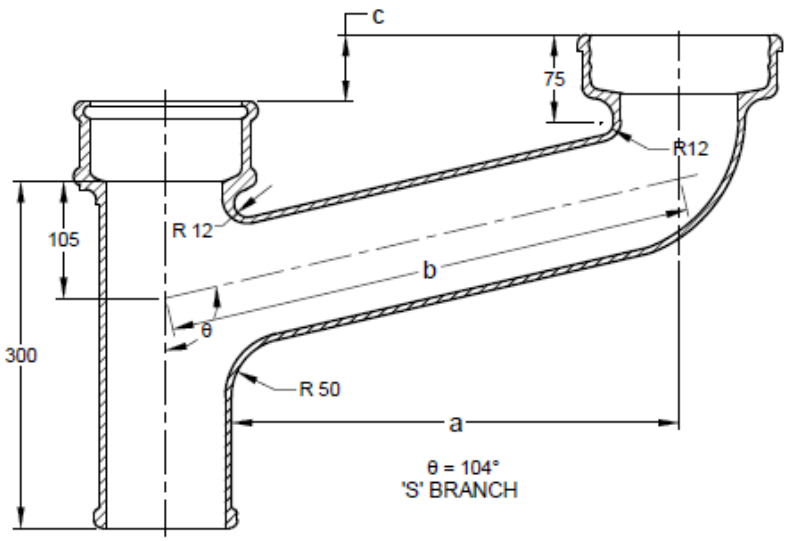


Sl No.	Dimensions	Nominal Size, DN = 100
(1)	(2)	(3)
i)	Internal Diameter, *A* (*Min*)	100
ii)	Pipe External Diameter, *B*	110
iii)	Thickness, *C*	5
iv)	Internal Diameter, *D* (*Min*)	150
v)	External Diameter, *E*	165
vi)	Thickness, *F*	8
vii)	Internal Depth of Socket, *G*	50
viii)	External Depth of Socket, *H*	75
ix)	Socket Internal Radius, *J*	10
x)	Depth of Bevel, *K*	3
xi)	Depth of Bead, *L*	14
xii)	Projection of Bead, *M*	3
xiii)	Taper of end, *N*	2

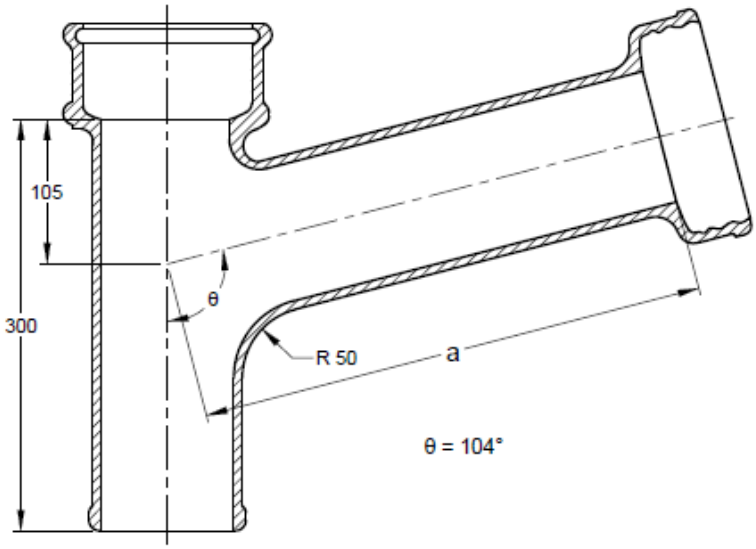
Table 18 Sanitary Connections — S and P Branches

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



'P' BRANCH

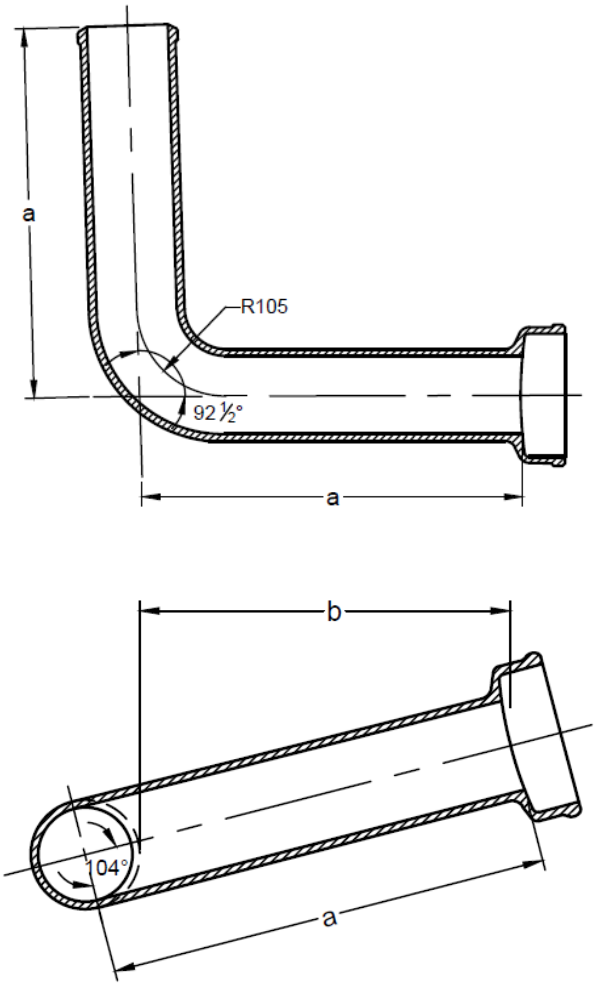


Sl No.	Dimensions		Nominal Size, DN = 100				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	'S' Branch	a	305	381	457	553	610
		b	371	450	529	607	679
		c	40	60	79	98	117
ii)	'P' Branch	a	375	456	504	559	—

Table 19 Sanitary Connections — Bends

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

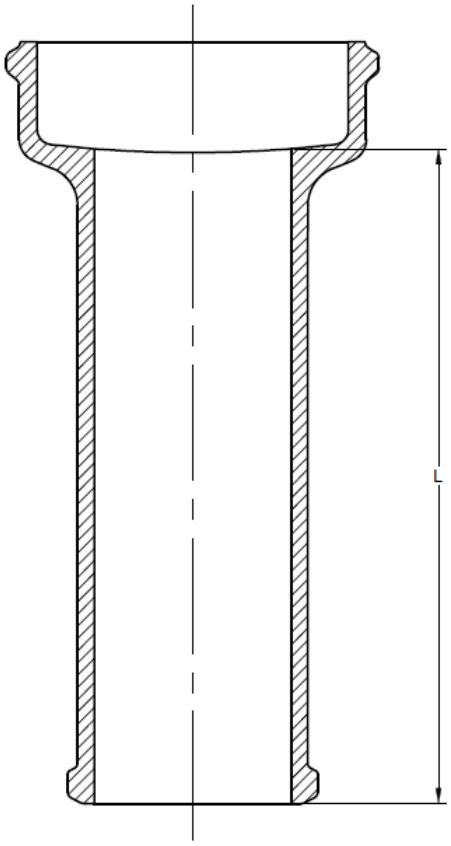


Sl No.	Dimensions	Nominal Size, DN = 100			
(1)	(2)	(3)	(4)	(5)	(6)
i)	a	381	457	508	559
ii)	b	318	387	435	485

Table 20 Sanitary Connections — Short Connection Pipe

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



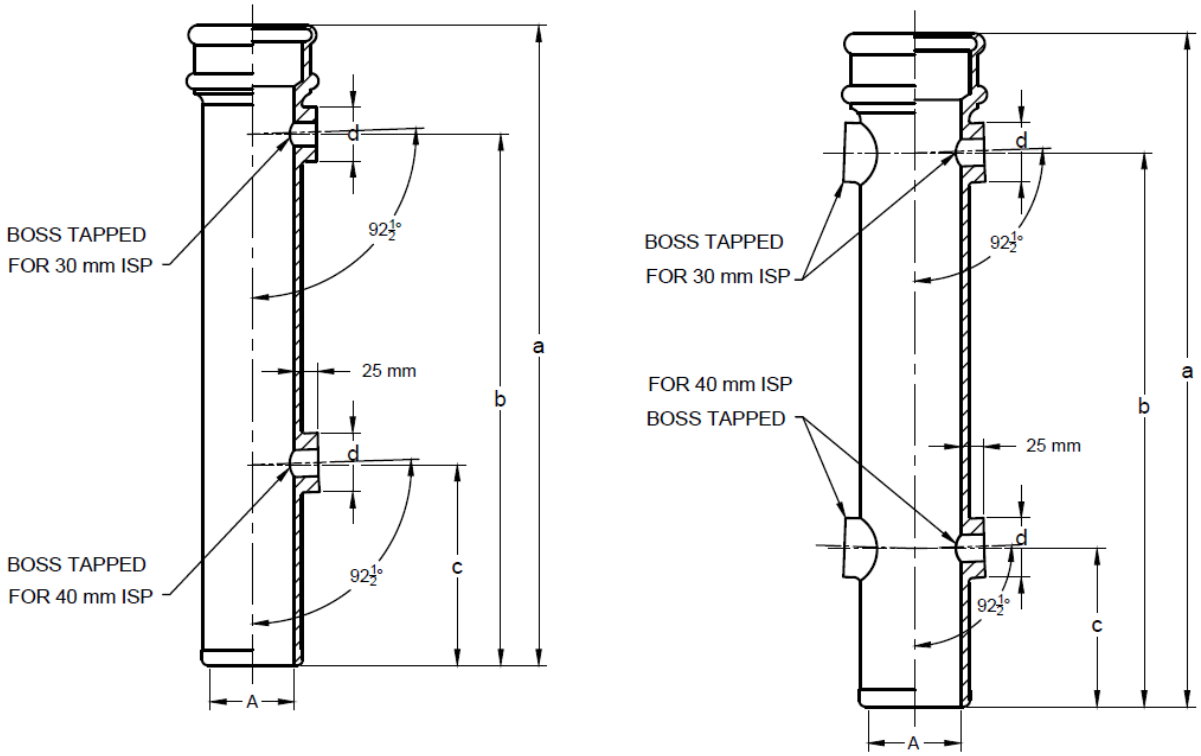
Sl No.	Dimension	Nominal Size, DN = 100				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Length, *L*	150	225	300	450	600

NOTE — When required, this fitting shall be supplied with a 50 mm socket outlet on the side at 135°, situated 150 mm from the base line of socket.

Table 21 Bossed Pipes and Connections for one Pipe System

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Basin and Bath Connector (Single)

Sl No.	Nominal Size (DN)	Dimensions			
		a	*b*	*c*	*d*
(1)	(2)	(3)	(4)	(5)	(6)
i)	100	762	629	171	64

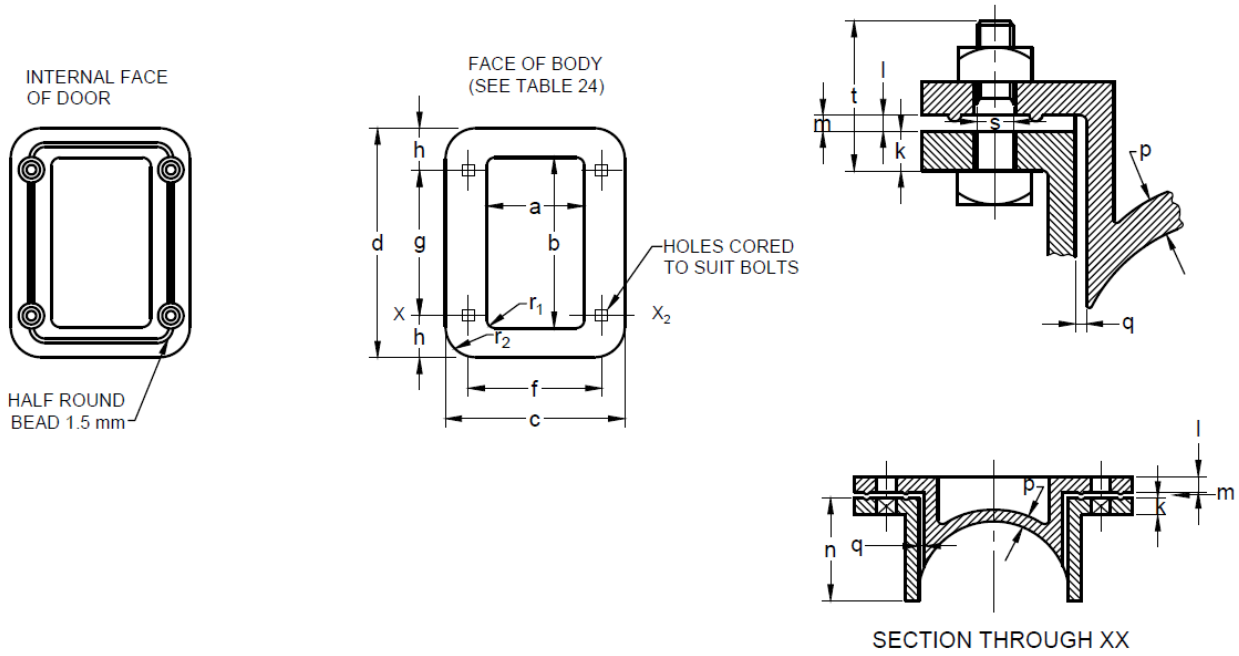
Basin and Bath Connector (Double)

Sl No.	Nominal Size (DN)	Dimensions			
		a	*b*	*c*	*d*
(1)	(2)	(3)	(4)	(5)	(6)
i)	100	762	629	171	64

Table 22 Rectangular Access Door [For Straight Pipes]

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



The interior surface of the door in all cases shall conform to the interior surface of the fitting to which the door is supplied.

Sl No.	Nominal Size, (DN)	Dimensions																	
		a	*b*	*c*	*d*	*f*	*g*	*k*	*j*	*k*	*l*	*m*	*n*	*p*	*q*	r_1	r_2	*s*	*t*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
i)	90	90	165	172	229	133	140	45	19	9.5	8.0	5.0	60	6.5	3.0	13	22	9.5	38
ii)	100	102	178	184	241	146	152	45	19	9.5	8.0	5.0	67	6.5	3.0	13	22	9.5	38
iii)	125	127	216	210	279	172	191	45	19	9.5	8.0	5.0	79	6.5	3.0	13	22	9.5	38
iv)	150	152	254	235	316	197	229	45	19	9.5	8.0	5.0	92	6.5	3.0	13	22	9.5	38

NOTES

1 Bolt shall be square headed hot-pressed brass or cadmium steel.

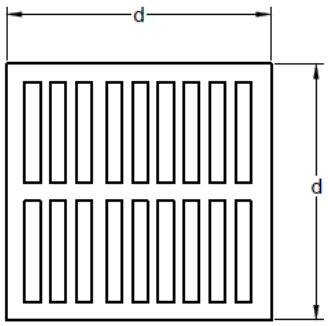
2 Washers shall be minimum of 3 mm thick in a material not less suitable than rubber of shore hardness between 50° and 55°.

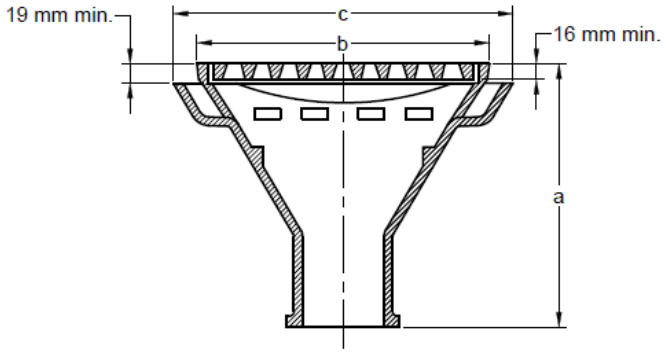
[1)] Similar type doors may be available in large radius bends (*see* Table 3).

Table 23A Roof Outlet [Square Grating]

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.





Sl No.	Dimensions			
	a	*b*	*c*	*d*
(1)	(2)	(3)	(4)	(5)
i)	305	337	387	305

NOTES

1 Spigot of roof outlets to be the same as for straight pipes of 100 mm nominal dia given in Table 1.

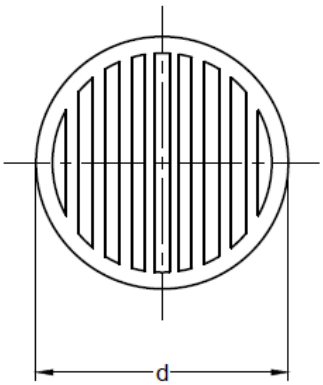
2 Flat grating shall be supplied with two screws to order.

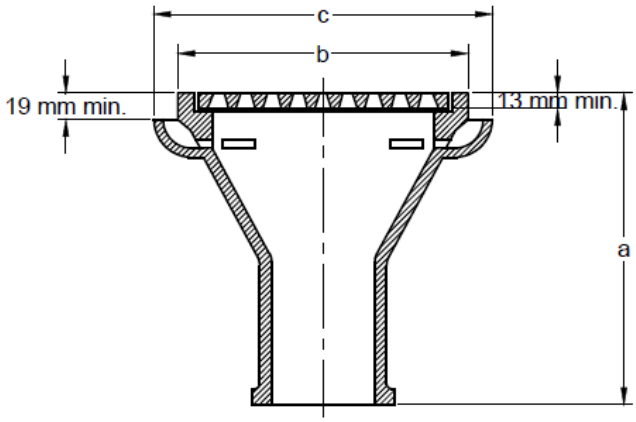
3 Domical grating shall be supplied, if required.

Table 23B Roof Outlet [Circular Grating]

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.





Sl No.	Nominal Size (DN)	Dimensions			
		a	*b*	*c*	*d*
(1)	(2)	(3)	(4)	(5)	(6)
i)	50	178	149	178	127
ii)	65	178	175	203	127
iii)	75	305	273	305	254
iv)	90	305	273	305	254
v)	100	305	273	305	254

NOTES

1 Spigot of roof outlets to be the same as for straight pipes of nominal dia given in Table 1.

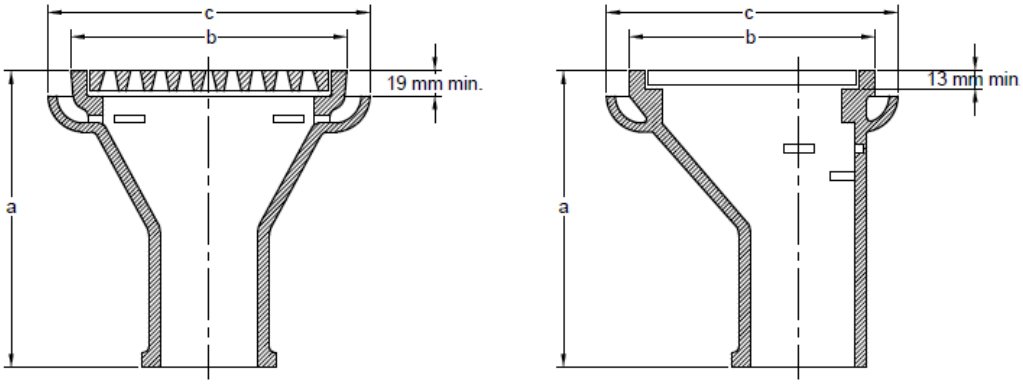
2 Flat grating shall be supplied with two screws to order.

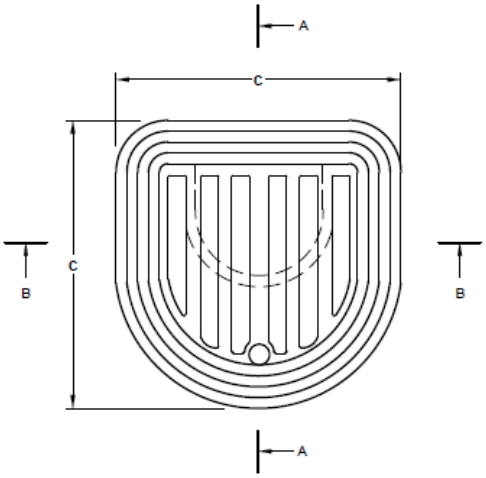
3 Domical grating shall be supplied, if required.

Table 23C Roof Outlet [‘D’ Grating]

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.





Sl No.	Nominal Size (DN)	Dimensions		
		a	*b*	*c*
(1)	(2)	(3)	(4)	(5)
i)	65	229	165	191
ii)	75	229	178	203
iii)	90	229	229	254
iv)	100	229	229	254

NOTES

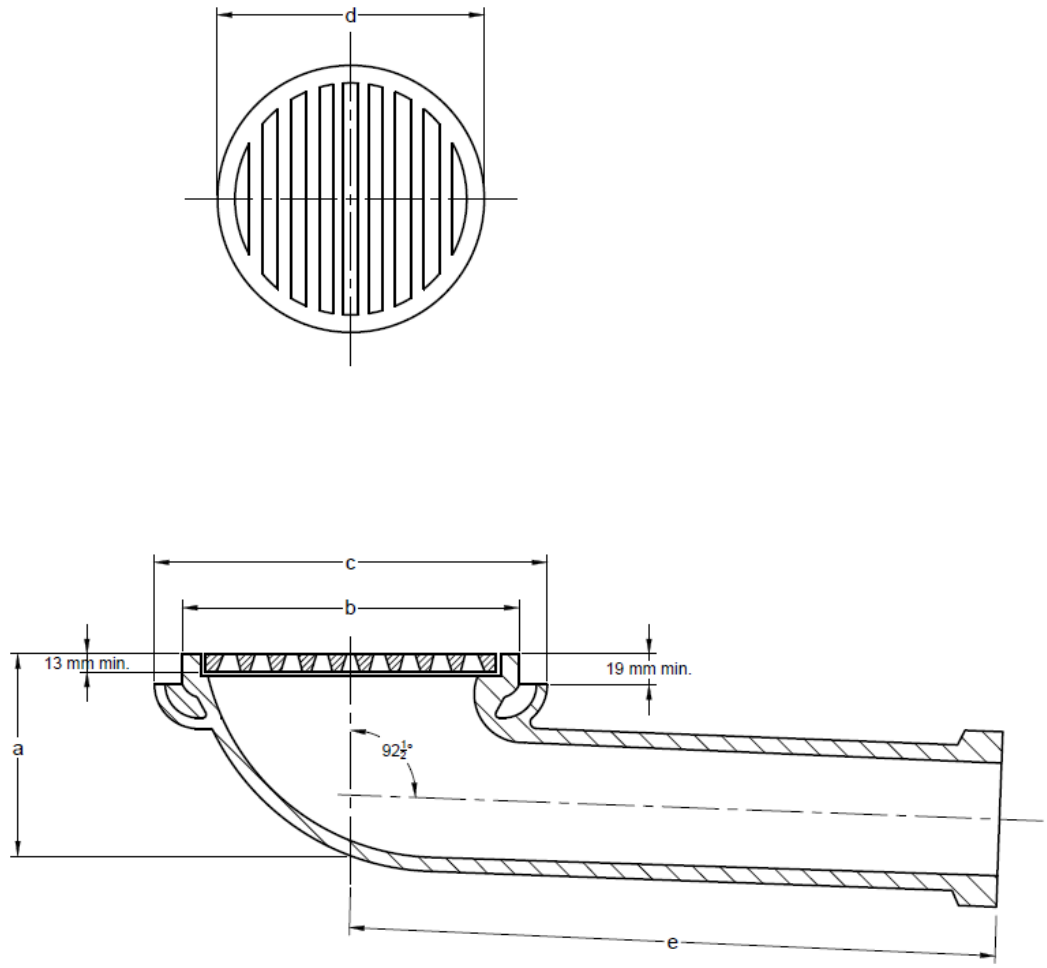
1 Spigot of roof outlets to be the same as for straight pipes of nominal dia given in Table 1.

2 Grating shall be supplied notched to receive pipe, if required.

Table 23D Bent Roof Outlet

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Dimensions				
		a	*b*	*c*	*d*	*e*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	50	95	149	178	127	381
ii)	75	146	225	267	203	457
iii)	100	159	225	267	203	457

NOTES

1 Spigot of roof outlets to be the same as for straight pipes of nominal dia given in Table 1.

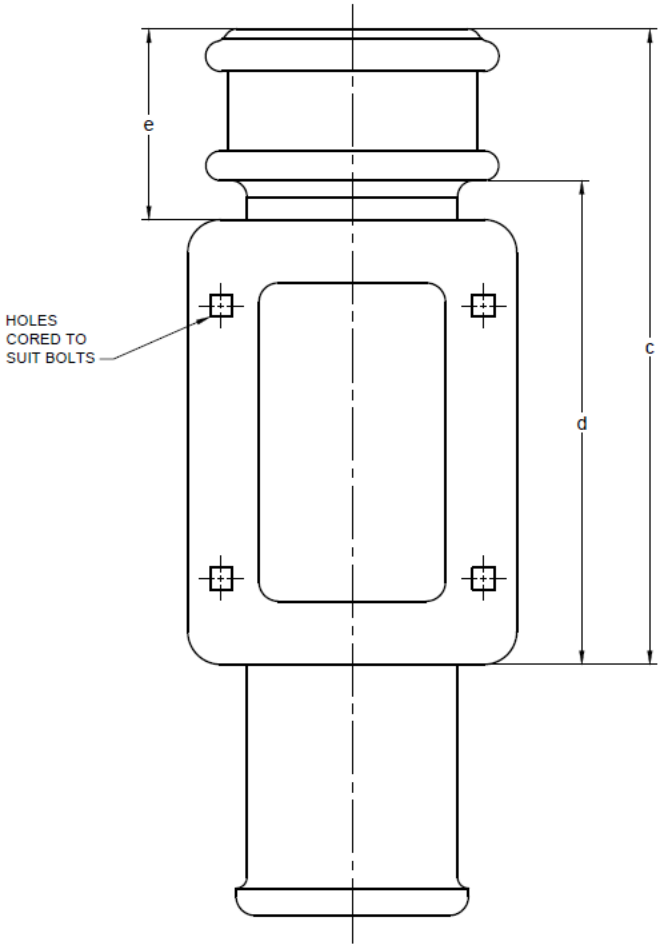
2 Flat grating shall be supplied with two screws to order.

3 Domical grating shall be supplied, if required.

Table 24 Straight Inspection Pieces with Rectangular Access Door

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Dimensions		
		c	*d*	*e*
(1)	(2)	(3)	(4)	(5)
i)	90	470	394	114
ii)	100	482	406	114
iii)	125	571	489	135
iv)	150	597	509	133

NOTES

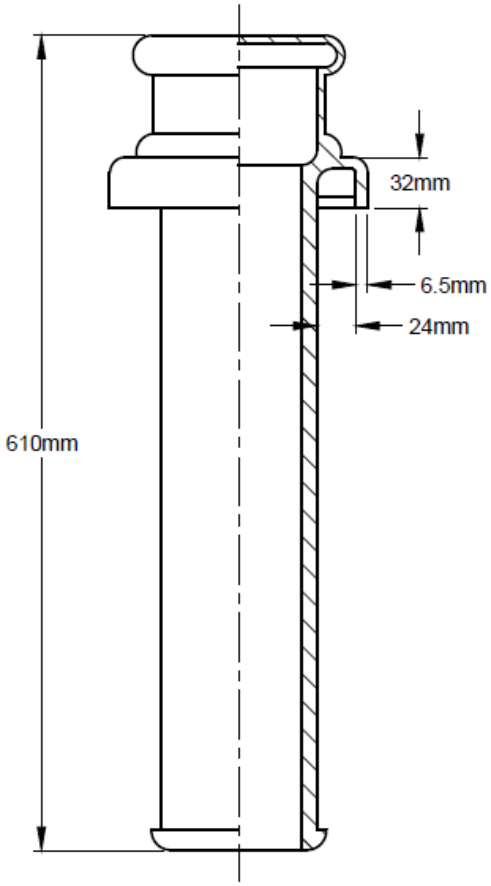
1 Spigot and sockets of inspection pieces shall be the same as for straight pipes of corresponding nominal dia given in Table 1.

2 For details of oval access door, *see* Table 11; rectangular access doors, *see* Table 22.

Table 25 Vent Pipe Roof Connectors

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

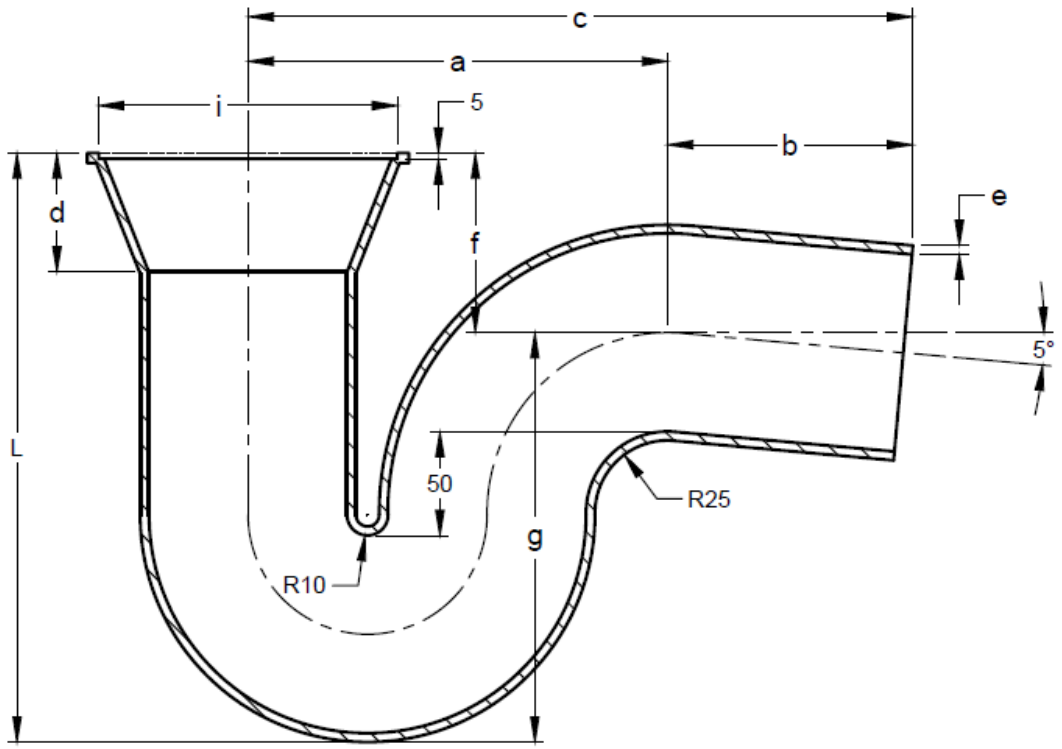


Sl No.	**Nominal Size,** (DN) Mass, kg	**Dimensions**					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	50	65	75	90	100	125	150
ii)	5.0	6.3	7.2	8.4	9.2	11.1	13.6

Table 26 Floor Trap

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size (DN)	Dimensions								
		i	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*L*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	50	75	137	99	236	30	3.5	45	133	175
ii)	75	100	170	105	275	40	3.5	60	165	225
iii)	100	125	214	116	330	60	4.0	90	206	296

NOTES

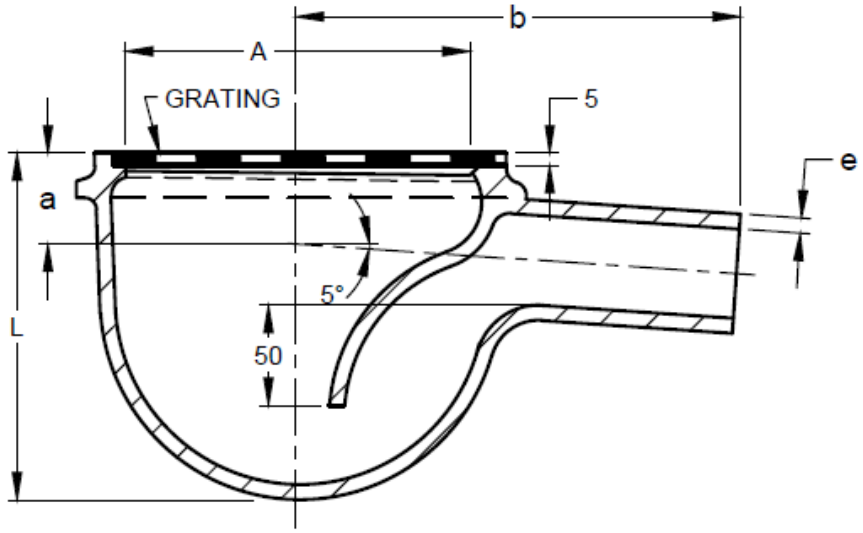
1 For socket and spigot dimensions, *see* Table 1.

2 Thickness of fittings higher than that specified above may be agreed upon at the time of enquiry and order.

Table 27 Floor Trap (Nahani)

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Nominal Size, DN of outlet	Dimensions				
		L	*A*	*a*	*b*	*e*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	50	175	165	45	205	4.0
ii)	75	225	165	60	215	4.0

NOTES

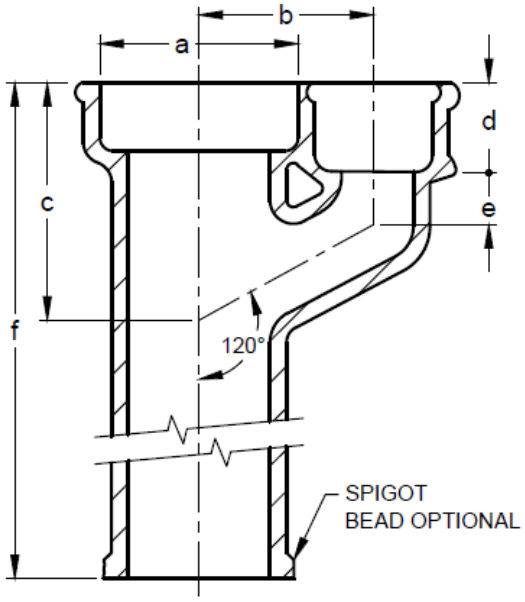
1 Thickness of fittings higher than that specified above may be agreed upon at the time of enquiry and order.

2 For multiple pipe system, seal and dimensions may be reduced by 15 mm both for DN-50 and DN-75.

Table 28A 90 mm and 100 mm W.C. Connectors with Anti-Syphon Socket for Caulking

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

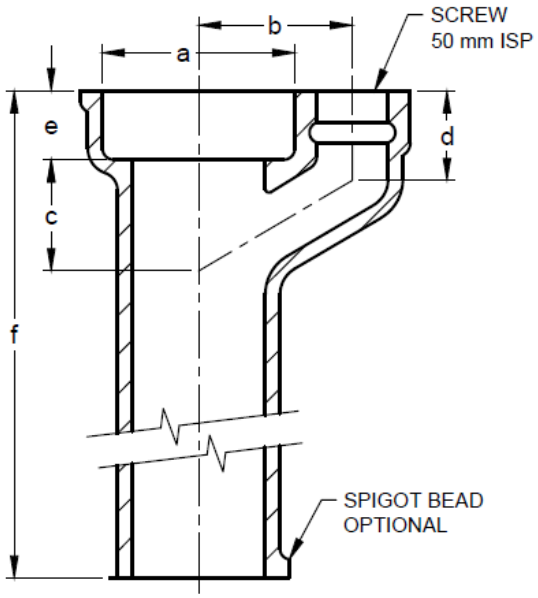


Sl No.	Dimensions	Nominal Size, DN = 90 mm			Nominal Size, DN = 100 mm		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	*a*	140	140	140	140	140	140
ii)	*b*	118	118	118	118	118	118
iii)	*c*	119	119	119	119	119	119
iv)	*d*	64	64	64	64	64	64
v)	*e*	38	38	38	38	38	38
vi)	*f*	308	457	610	308	457	610

Table 28B 90 mm and 100 mm W.C. Connectors with Anti-Syphon Sock Threaded

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

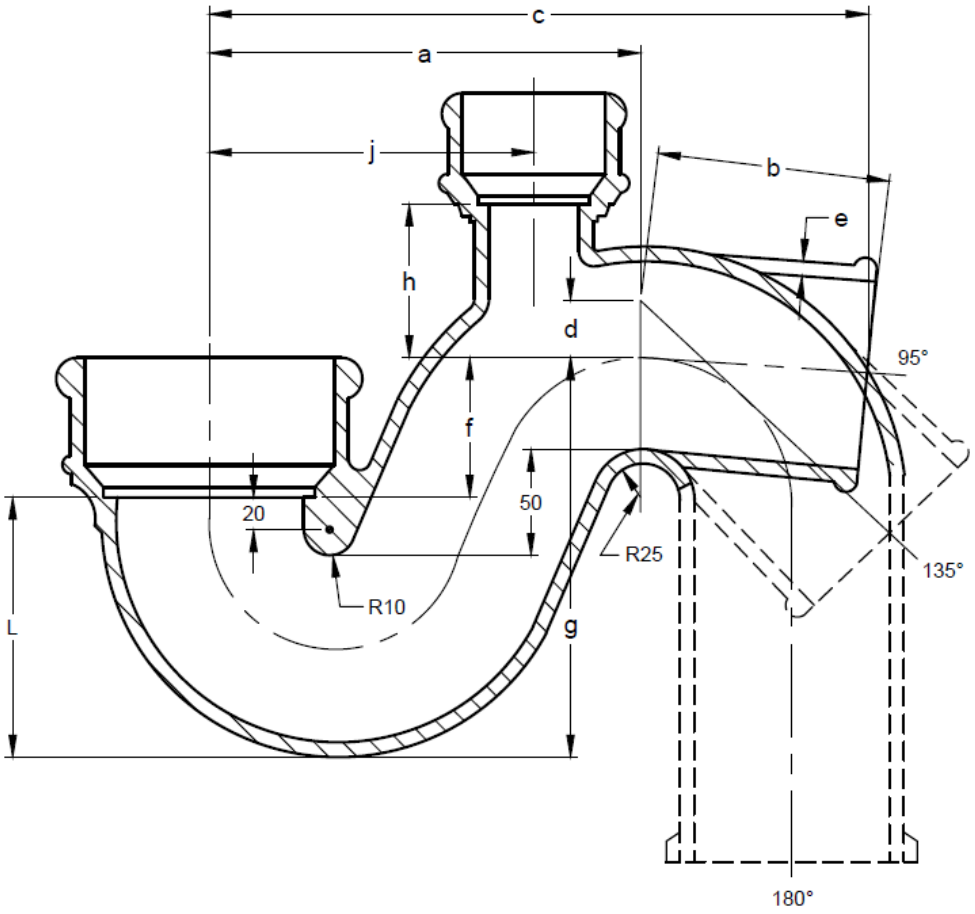


Sl No.	Dimensions	Nominal Size, DN = 90 mm			Nominal Size, DN = 100 mm		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	*a*	140	140	140	140	140	140
ii)	*b*	118	118	118	118	118	118
iii)	*c*	119	119	119	119	119	119
iv)	*d*	64	64	64	64	64	64
v)	*e*	38	38	38	38	38	38
vi)	*f*	308	457	610	308	457	610

Table 29 Trap with Vent

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



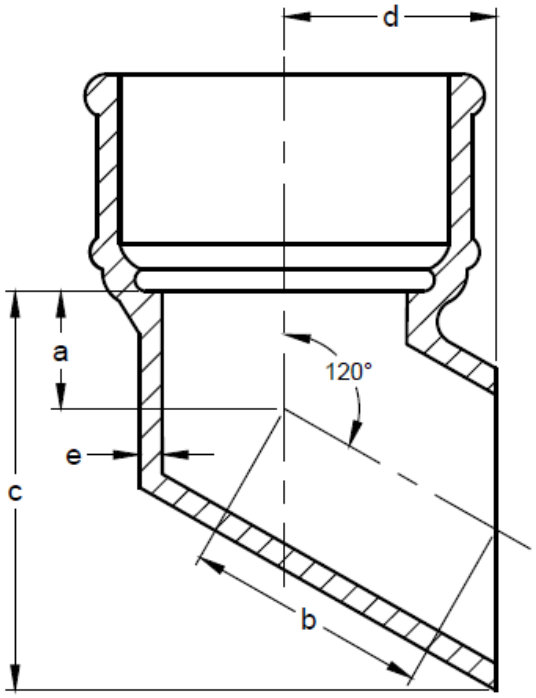
Sl No.	Angle	Nominal Size		Dimensions									
	θ	Body DN	Vent DN	*a*	*b*	*c*	*d*	*e*	*L*	*f*	*h*	*j*	*g*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
i)	95°	100	50	214	116	330	--	5	135	71	80	165	206
ii)	135°	100	50	214	175	388	32	5	135	71	80	165	206
iii)	180°	100	50	214	184	291	--	5	135	71	80	165	206

NOTE — For socket and spigot dimensions of body and vent *see* Table 1.

Table 30 Shoe Bend

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



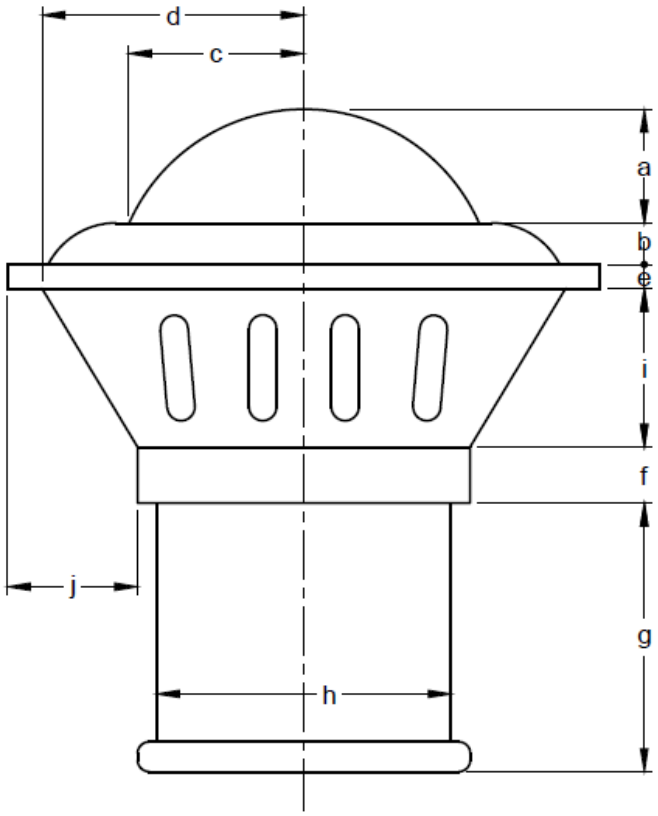
Sl No.	Nominal Size	Dimensions				
	(DN)	*a*	*b*	*c*	*d*	*e*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	50	36	66	100	54	5
ii)	75	28	75	117	64	5
iii)	100	52	92	161	80	5
iv)	150	55	123	200	105	5

NOTE — For socket and spigot dimensions *see* Table 1.

Table 31 Cowel

(*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.

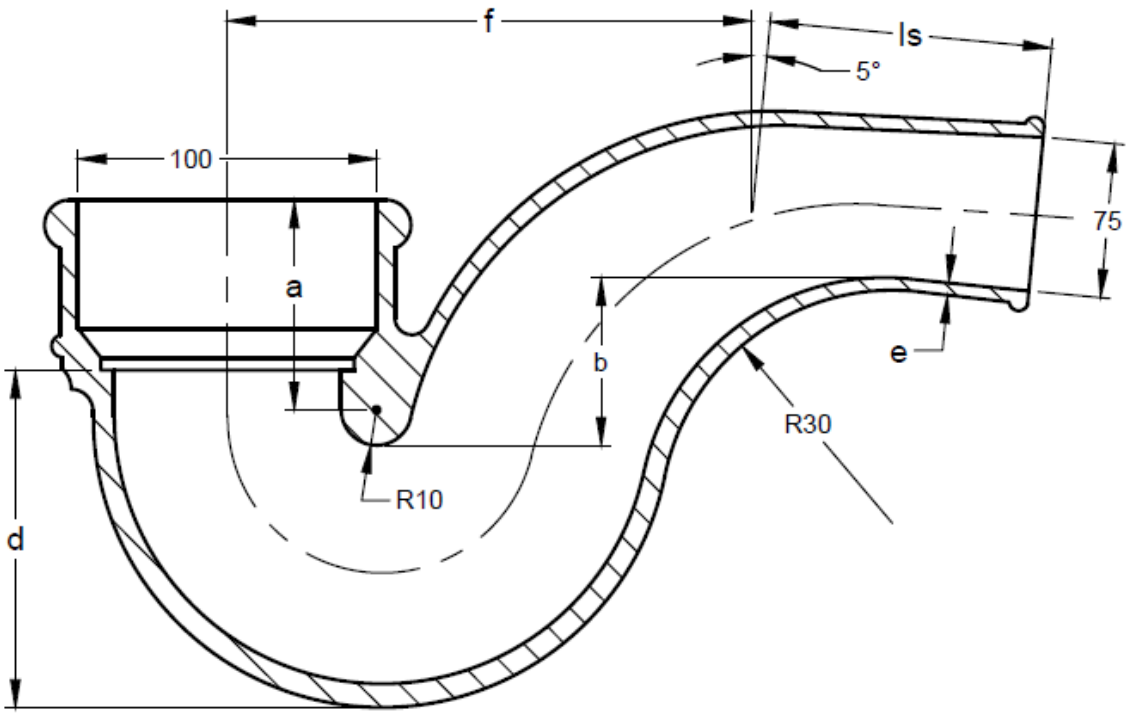


Sl No.	Nominal Size	Dimensions									
	(DN)	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	75	30	10	45	70	7	15	70	75	45	30
ii)	100	35	20	55	85	7	15	90	100	55	30
iii)	150	40	30	65	100	7	15	125	150	65	30

Table 32 Unequal Trap

(*Clauses* 5.2 *and* 8.2)

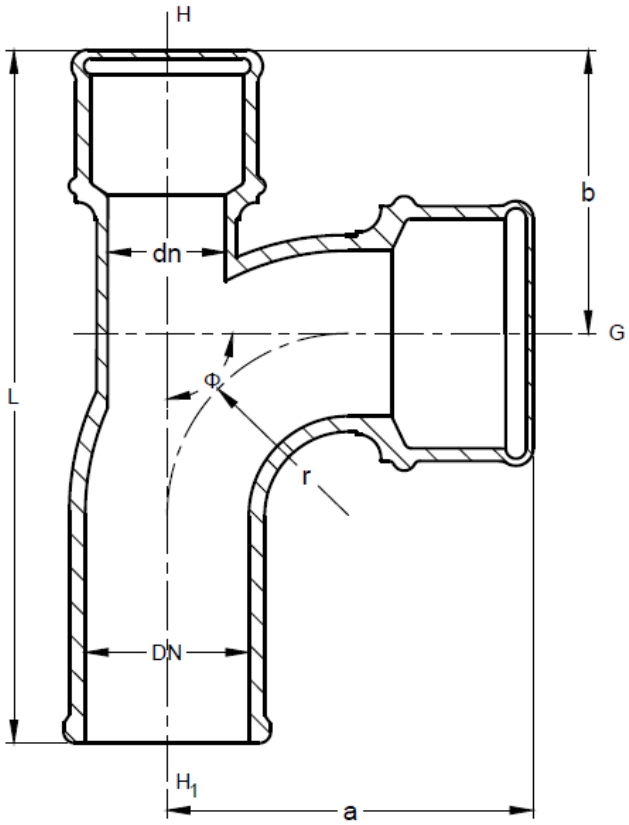
All dimensions in millimeters.



Sl No.	Angle	Nominal Size	Dimensions						
	θ	(DN)	*a*	*b*	*c*	*d*	*e*	*ls*	*f*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	95º	100 × 75	90	50	—	135	5	121	214

Table 33 Horn Bend with and without Access Door (*Clauses* 5.2 *and* 8.2)

All dimensions in millimeters.



Sl No.	Angle	Nominal Size		Dimensions		
	θ	Body DN	Vent DN	*a*	*b*	*L*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	92.5°	100	50	187	130	330

NOTE — For socket and spigot dimensions of body and vent *see* Table 1.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Pig Iron and Cast Iron Sectional Committee, MTD 06

Organization	*Representative(s)*
Metal and Steel Factory, Kolkata	SHRI A. K. HAZRA **(*Chairperson*)**
Central Public Works Department, New Delhi	SHRI SEETARAMA RAO MANTRALA SHRI CHANDRA SHEKHAR AZAD (*Alternate*)
CSIR - National Metallurgical Laboratory, Jamshedpur	DR SATADAL GHORAI
Electrosteel Castings Limited, Kolkata	SHRI ATINDRA NARAYAN DEY SHRI SUDIPTO LAHIRI (*Alternate* I) SHRI G. NATRAJAN (*Alternate* II)
Electrotherm Private Limited, Gandhidham	SHRI TEJAS PATEL
Indian Ordnance Factory, Grey Iron Foundry, Jabalpur	SHRI A. K. LALA SHRI RAM ACHAL (*Alternate*)
Jai Balaji Group, Kolkata	SHRI BIVASH CHAKRABORTY
Jayaswal Neco Industires Limited, Nagpur	SHRI PRAVEEN BHALMEY SHRI K. K. SINGH (*Alternate*)
Jindal Saw Limited, New Delhi	SHRI MANEESH KUMAR SHRI ULHAS NAIK (*Alternate* I) SHRI RAJEEV RANJAN (*Alternate* II)
Kejriwal Casting Limited, Kolkata	SHRI SANDEEP KEJRIWAL SHRI RAJEEV KEJRIWAL (*Alternate*)
Kiswok Industries Private Limited, Kolkata	SHRI RAJ KEJRIWAL
Kolkata Metropolitan and Development Authority, Kolkata	SHRI A. N. BASAK
Lokesh Industries Limited, Vijayawada	SHRI B. LOKESH PATRUDU SHRI R. L. DUBEY (*Alternate*)
Military Engineer Services, New Delhi	SHRI RAM VERMA
Ministry of Commerce and Industry, Department of Commerce, New Delhi	SHRI K. K. SINHA SHRI M. Z. KHAN (*Alternate*)
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Rural Water Supply and Sanitation Department, Government of Andhra Pradesh, Vijayawada	SHRI YEDLA GOVINDA RAO SHRI A. SRINIVASA RAO (*Alternate*)

Organization	*Representative(s)*
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Steel Authority of India Limited, New Delhi	SHRI R. P. BHALOTIA
Tata Consulting Engineers Limited, Navi Mumbai	SHRI G. S. RAVISHANKAR SHRI BRATINDRA NARAYAN DEY (*Alternate*)
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Member Secretary
SHRI SACHIN CHOUDHARY
SCIENTIST 'C'/DEPUTY DIRECTOR
(METALLURGICAL ENGINEERING), BIS

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