Designation: D3311 – 17

An American National Standard

Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns[1]

This standard is issued under the fixed designation D3311; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification provides standard fitting geometries and laying lengths for plastic fittings intended for use in drain, waste, and vent applications. (See Specifications D2661 and D2665.)

1.2 Fittings meeting the requirements of this standard specification are designed for use with outside diameter controlled pipe. The inside diameter can vary significantly as the wall thickness and outside diameter varies and therefore is not suitable for use as a fitting socket.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D2661 Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings

D2665 Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings

F1498 Specification for Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings

3. Requirements

3.1 Fittings shall conform to the geometries and laying lengths as shown in Tables 1-45 and Figs. 1-5. Tolerances shall be ±1⁄16 in. unless otherwise specified.

3.2 Spigot and hub dimensions shall conform to the requirements of the referencing standard.

3.3 The exact outside shape of a fitting is not determined by the outline drawings shown in this specification but rather by the socket dimensions, wall thickness requirements, waterway, laying lengths, and any other critical dimensions that may be specified.

3.4 The pitch of sockets for patterns with 90° angles (except vent fittings) shall be ¼ in./ft or 1° 12 min.

3.5 On double reducing sanitary tees, the *G2* dimension on branches will be calculated on the larger size and centerlines shall remain the same for both branches.

3.6 All other dimensions, materials and property requirements shall be in conformance with the referencing standard.

4. Keywords

4.1 DWV; fittings; plastic; Schedule 40; thermoplastic

[1] This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.63 on DWV.

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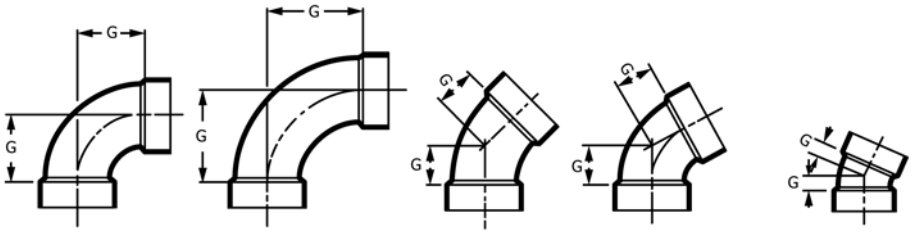
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

TABLE 1 Bends, in. (mm)

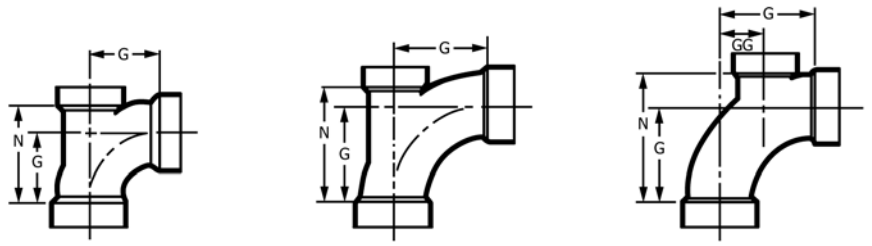


1/4 BEND | LONG SWEEP 1/4 BEND | 1/8 BEND | 1/6 BEND | 1/16 BEND

Nominal Pipe Size	¼ Bend	Long Sweep ¼ Bend	⅛ Bend	⅙ Bend	1/16 Bend
	G	*G*	*G*	*G*	*G*
1¼	1 9/16 (40)	2¼ (57)	1 (25)	⅞ (22)	7/16 (11)
1½	1¾ (44)	2¾ (70)	1⅛ (29)	1 (25)	½ (13)
2	2 5/16 (59)	3¼ (83)	1½ (38)	1 5/16 (33)	11/16 (17)
3	3 1/16 (78)	4 1/16 (103)	1¾ (44)	1 11/16 (43)	13/16 (21)
4	3⅞ (98)	4 15/16 (125)	2 3/16 (56)	2 1/16 (52)	1 (25)
6	5 (min) (127)	9 (229)	2 (min) (51)	3⅜ (86)	1½ (38)
8	6 (152)	. . .	2 1/16 (52)	. . .	1½ (38)
10	9 ¼ (235)[A]	. . .	2⅝ (67)[A]	. . .	2 3/16 (56)[A]
12	10 11/16 [A]	. . .	3⅛ (79)[A]	. . .	2⅜ (60)[A]

[A] 10 in. and 12 in. fittings dimensions are minimum

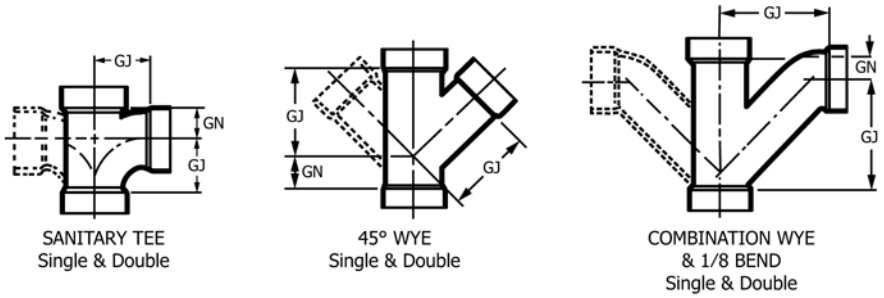
TABLE 2 Bends with Inlets, in. (mm)



1/4 BEND With Low Heel Inlet | LONG SWEEP 1/4 BEND With Low Heel Inlet | LONG SWEEP 1/4 BEND With High Heel Inlet

Nominal Pipe Size	¼ Bend with Low Heel Inlet		Long-Sweep ¼ Bend with Low Heel Inlet		Long-Sweep ¼ Bend with High Heel Inlet		
	G	*N*	*G*	*N*	*G*	*N*	*GG*
3 by 3 by 1½	3 1/16 (78)	4 3/16 (106)	4 1/16 (103)	4¾ (121)	. . .	. . .	. . .
3 by 3 by 2	3 1/16 (78)	4 7/16 (113)	4 1/16 (103)	4 15/16 (125)	4 1/16 (103)	5⅝ (143)	2¼ (57)
4 by 4 by 2	3⅞ (98)	5 7/16 (138)	4 15/16 (125)	6 (152)	. . .	. . .	. . .

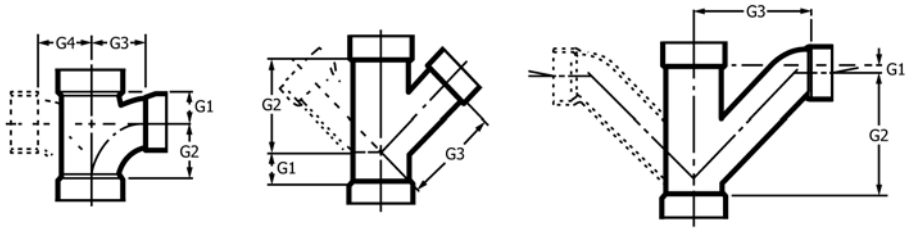
TABLE 3 Sanitary Tees, 45° Wyes, Combination Wyes and ⅛ Bends, in. (mm)



Nominal Pipe Size	Sanitary Tee Single and Double[A]		45° Wye, Single and Double		Combination Wye and ⅛ Bend Single and Double	
	GN	*GJ*	*GN*	*GJ*	*GN*	*GJ*
1¼	¾ (19)	1⁹⁄₁₆ (40)	1¹⁄₁₆ (27)	2⁹⁄₁₆ (65)	⁷⁄₁₆ (11)	2¹⁵⁄₁₆ (75)
1½	1 (25)	1¾ (44)	1⅛ (29)	2⅞ (73)	½ (13)	3⅜ (86)
2	1⅜ (35)	2⁵⁄₁₆ (59)	1⅜ (35)	3⅝ (92)	1 (25)	4½ (114)
3	1¹³⁄₁₆ (46)	3¹⁄₁₆ (78)	1⅝ (41)	5 (127)	1⅛ (29)	6⁵⁄₁₆ (160)
4	2¼ (57)	3⅞ (98)	1⅞ (48)[D]	6⅜ (162)	1¹³⁄₁₆ (46)	8⅝ (219)
6	3½ (89)	5 (127)	1¾ (44)	8⁷⁄₁₆ (214)	[B]	[B]
8	4½ (114)	6 (152)	2⅜ (60)	11¾ (298)	[B]	[B]
10	5½ (140)[C]	9¹¹⁄₁₆ (246)[C]	2⁷⁄₁₆ (62)[C]	13 (330)[C]	[B]	[B]
12	6⁹⁄₁₆ (167)[C]	11 (279)[C]	2⅞ (73)[C]	15⅜ (391)[C]	[B]	[B]

[A] Non-reducing double sanitary tees are for vent use only.
[B] Combination wye and ⅛ bend is assembled from two standard fittings.
[C] 10 in. and 12 in. fittings dimensions are minimum.
[D] This dimension is a minimum with no upper maximum limit.

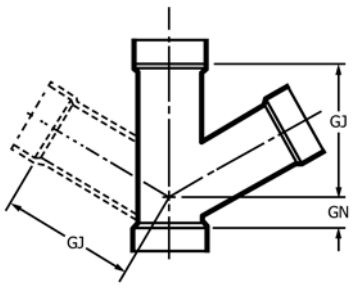
TABLE 4 Reducing Sanitary Tees, 45° Wyes, Combination Wyes, and ⅛ Bends, in. (mm)



Nominal Pipe Size	Sanitary Tee, Reducing Single and Double[A]				45° Wye, Reducing Single and Double			Combination Wye and ⅛ Bend Reducing Single and Double		
	G1	G2	G3	G4	G1	G2	G3	G1	G2	G3
1½ by 1¼ by 1¼	1 11/16 (17)[B]	1½ (38)[B]	1 11/16 (43)[B]	1 11/16 (43)[B]	—	—	—	—	—	—
1½ by 1¼ by 1½	1 (25)	1¾ (44)	1¾ (44)	1¾ (44)	—	—	—	—	—	—
1½ by 1½ by 1¼	13/16 (21)	1 11/16 (43)	1 13/16 (46)	1 13/16 (46)	—	—	—	½ (13)	3¼ (83)	3 3/16 (81)
2 by 1¼ by 1½	1 3/16 (30)	1 15/16 (49)	2 3/16 (56)	2 3/16 (56)	—	—	—	—	—	—
2 by 1½ by 1½	1 3/16 (30)	1 15/16 (49)	2 3/16 (56)	2 3/16 (56)	¾ (19)[B]	2 13/16 (71)[B]	2 15/16 (75)[B]	9/16 (14)	3 11/16 (94)	3 5/8 (92)
2 by 1½ by 2	1 3/8 (35)	2 5/16 (59)	2 5/16 (59)	2 5/16 (50)	1 (25)[B]	3½ (89)[B]	3 3/8 (86)[B]	1 (25)	4½ (114)	4½ (114)
2 by 2 by 1¼	1 3/16 (30)	1 15/16 (49)	2 3/16 (56)	2 3/16 (56)	—	—	—	—	—	—
2 by 2 by 1½	1 3/16 (30)	1 15/16 (49)	2 3/16 (56)	2 3/16 (56)	1 1/16 (27)	3 5/16 (84)	3 7/16 (87)	9/16 (14)	3 11/16 (170)	3 5/8 (92)
3 by 3 by 1½	15/16 (24)	1¾ (44)	2 9/16 (65)	2 9/16 (65)	½ (13)	3¾ (95)	4 5/16 (110)	⅛ (3)	3 7/16 (87)	4¼ (108)
3 by 3 by 2	1 3/16 (30)	2⅛ (54)	2 7/8 (73)	2 7/8 (73)	⅞ (22)	4⅛ (105)	4⅝ (117)	7/16 (11)	4¾ (121)	5 5/16 (135)
3 by 3 by 2 by 1½	15/16 (24)[B]	2 1/16 (52)[B]	2 7/16 (62)[B]	2½ (64)[B]	—	—	—	—	—	—
4 by 4 by 1½	1 1/16 (27)[B]	2 (51)[B]	3¼ (83)[B]	3¼ (83)[B]	0 (0)[B]	3 5/16 (84)[B]	3 15/16 (100)[B]	—	—	—
4 by 4 by 2	1⅛ (29)	2 1/16 (52)	3 5/16 (84)	3 5/16 (84)	⅜ (10)	4 1/16 (119)	5 9/16 (141)	5/16 (8)	4¾ (121)	5⅞ (149)
4 by 4 by 3	1¾ (44)	3 (76)	3 9/16 (90)	3 9/16 (90)	1 1/16 (27)[B]	5 9/16 (141)[B]	6 (152)[B]	1 1/16 (27)	6⅜ (162)	6⅞ (175)
6 by 6 by 3	—	—	—	—	3/16 (5)[B]	6 15/16 (176)[B]	7 7/16 (189)[B]	1 1/16 (17)[B]	7 13/16 (198)[B]	8 13/16 (224)[B]
6 by 6 by 4	2 3/16 (56)[B]	3 5/8 (92)[B]	4 5/16 (110)[B]	4 5/16 (110)[B]	3/16 (5)[B]	6 11/16 (170)[B]	7 7/16 (189)[B]	9/16 (14)[B]	7 13/16 (198)[B]	8 15/16 (227)[B]
8 by 8 by 4	2 5/8 (67)	4⅛ (105)	5¼ (133)	5¼ (133)	⅜ (10)	7 5/8 (194)	8 5/8 (219)	[C]	[C]	[C]
8 by 8 by 6	3 9/16 (90)	4 13/16 (122)	5½ (140)	5½ (140)	1 (25)	9½ (241)	9 13/16 (249)	[C]	[C]	[C]
10 by 10 by 4	...	...	...	...	-1½ (-38)[B]	8 11/16 (221)[B]	10⅜ (264)[B]	[C]	[C]	[C]
10 by 10 by 6	...	...	...	...	0	10⅛ (257)[B]	11¼ (286)[B]	[C]	[C]	[C]
10 by 10 by 8	...	...	...	...	1¼ (32)[B]	11½ (202)[B]	12 7/16 (316)[B]	[C]	[C]	[C]
12 by 12 by 4	...	...	...	...	-2 7/16 (-62)[B]	9¾ (248)[B]	11 13/16 (284)[B]	[C]	[C]	[C]
12 by 12 by 6	...	...	...	...	-¾ (-19)[B]	11 3/16 (284)[B]	11 11/16 (297)[B]	[C]	[C]	[C]
12 by 12 by 8	...	...	...	...	½ (13)[B]	12 9/16 (319)[B]	13⅞ (352)[B]	[C]	[C]	[C]
12 by 12 by 10	...	...	...	...	1⅛ (29)[B]	14 (356)[B]	14 15/16 (379)[B]	[C]	[C]	[C]

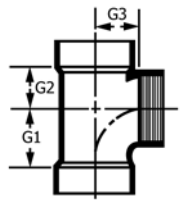
[A] Non-reducing double sanitary tees are for vent use only.
[B] This dimension is a minimum with no upper maximum limit.
[C] Combination Wye and ⅛ bend is assembled from two standard fittings.

TABLE 5 60° Wyes, Single, and Double, in. (mm)



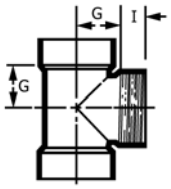
Nominal Pipe Size	GN	GJ
1½	1⅛ (40)	2⅞ (73)
2	1⅜ (37)	3⅝ (92)
3	1⅝ (37)	5 (127)

TABLE 6 Fixture Tees, in. (mm)



Nominal Pipe Size	G1	G2	G3
1½	1 9/16 (40)	1 3/16 (30)	1¼ (32)
2 by 1½ by 1½	1 7/16 (37)	1 3/16 (30)	1¼ (32)
2 by 2 by 1½	1 7/16 (37)	1 5/16 (33)	1¼ (32)

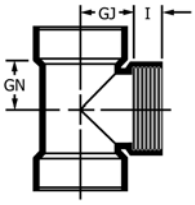
TABLE 7 Cleanout Tees, in. (mm)



Nominal Pipe Size	G	I
1½	1 3/16 (30)	5/8 (16)
2	1½ (38)	5/8 (16)
3	1 7/8 (48)	3/4 (19)
4	2½ (64)	7/8 (22)
6	3½ (89)[A]	15/16 (33)[A]
8	4 9/16 (102)[A]	1½ (38)[A]

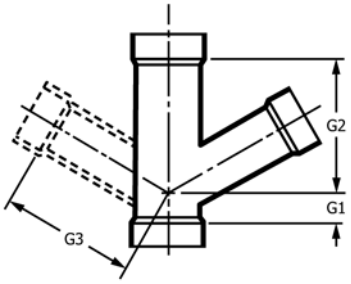
[A] 6 in. and 8 in. fittings dimensions are minimum.

TABLE 8 Reducing Cleanout Tees, in. (mm)



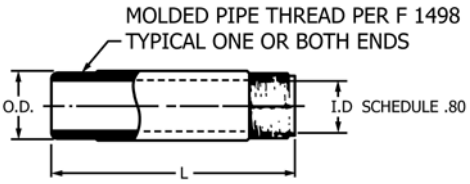
Nominal Pipe Size	GN, min	GJ, min	I, min
10 by 10 by 8	5 3/16 (132)	5½ (140)	1¾ (44)
12 by 12 by 8	6 (152)	5½	1 11/16 (43)

TABLE 9 60° Reducing Wyes, Single and Double, in. (mm)



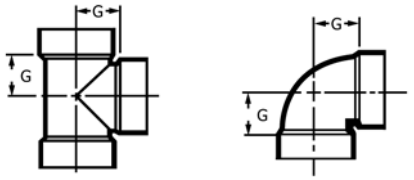
Nominal Pipe Size	G1	G2	G3
2 by 2 by 1½	1 1/16 (27)	3 7/16 (87)	3 7/16 (87)
3 by 3 by 1½	½ (13)	3¾ (95)	4 5/16 (110)
3 by 3 by 2	7/8 (22)	4 1/8 (105)	4 5/8 (117)

TABLE 10 Molded Nipples, in. (mm)



Nominal Pipe Size	OD	ID	Length
1½	1.900	1.500	½-in. increments from close to 18 in. long
2	2.375	1.939	
3	3.500	2.900	

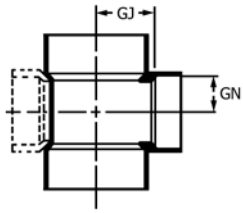
TABLE 11 Vent Tees and ¼ Bend Vents, in. (mm)



Nominal Pipe Size	Vent Tee	¼ Bend Vent
1¼	1 (25)	1 (25)
1½	1 3/16 (30)	1 3/16 (30)
2	1½ (38)	1½ (38)
3	1 7/8 (48)	1 7/8 (48)
4	2½ (64)	2½ (64)
6	3½ (89)[A]	3½ (89)[A]
8	4½ (114)[A]	4½ (89)[A]
10	5 13/16 (148)[A]	5 13/16 (148)[A]
12	6 7/8 (175)[A]	6 7/8 (175)[A]

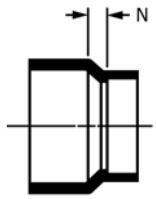
[A] 6 in., 8 in., 10 in., and 12 in. fitting dimensions are minimum.

TABLE 12 Reducing Vent Tees, Single, and Double, in. (mm)



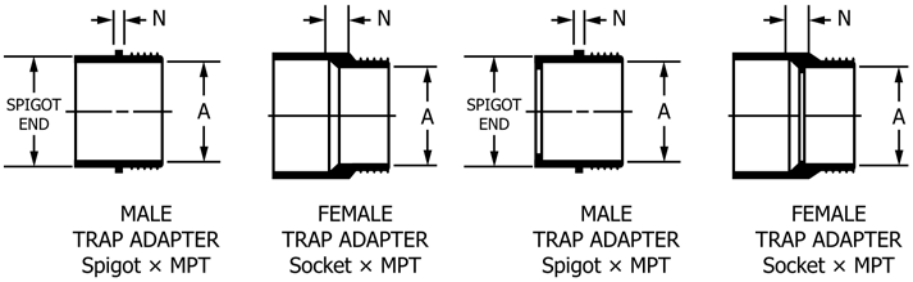
Nominal Pipe Size	GN, min	GJ, min
2 by 1½ by 1½	1 3/16 (30)	1½ (38)
2 by 2 by 1½	1 3/16 (30)	1½ (38)
3 by 3 by 1½	1 3/16 (30)	1 7/8 (48)
3 by 3 by 2	1½ (38)	1 7/8 (48)
6 by 6 by 4	2½ (64)	3 7/16 (87)
8 by 8 by 4	2½ (64)	4½ (114)
8 by 8 by 6	3 5/8 (92)	4½ (114)
10 by 10 by 4	3 5/16 (84)	5 7/8 (149)
10 by 10 by 6	3 15/16 (100)	5 7/8 (149)
10 by 10 by 8	3½ (89)	5 7/8 (140)
12 by 12 by 4	3½ (89)	6 15/16 (176)
12 by 12 by 6	4½ (114)	6 15/16 (176)
12 by 12 by 8	4 7/8 (124)	6 15/16 (176)
12 by 12 by 10	6½ (165)	7½ (190)

TABLE 13 Pipe Increasers, in. (mm)



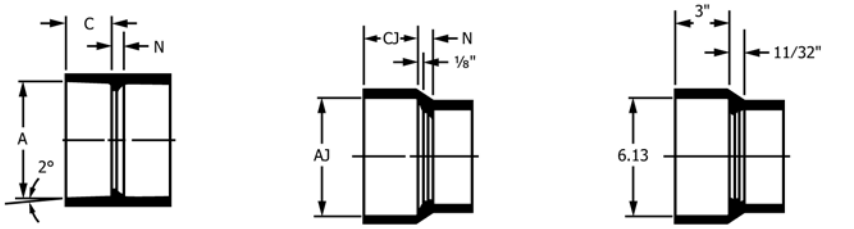
Nominal Pipe Size	*N*, min
1¼ by 1½	13/32 (10)
1½ by 2	17/32 (13)
1½ by 3	1 3/32 (28)
2 by 3	7/8 (22)
2 by 4	1 3/8 (35)
3 by 4	15/16 (24)
3 by 6	1 15/16 (49)
4 by 6	1 3/16 (30)
4 by 8	1 5/8 (41)
4 by 10	2 3/16 (56)
6 by 8	3/4 (19)
6 by 10	1 9/16 (40)
6 by 12	2 3/8 (60)
8 by 10	1 5/16 (33)
8 by 12	1 13/16 (46)
10 by 12	1¼ (32)

TABLE 14 Trap Adapters, in. (mm)



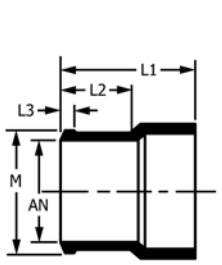
Without Stop		*With Stop*
Nominal Pipe Size	*N*, min	*A*, min
1¼	3/16 (5)	1.250 (32)
1½	3/16 (5)	1.500 (38)
2	3/16 (5)	2.000 (51)
1¼ by 1½	3/16 (5)	1.250 (32)

TABLE 15 Hubs, in. (mm)

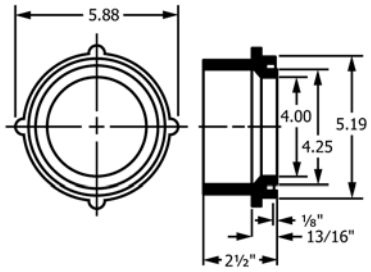


Nominal Pipe Size	A	C	N	AJ	CJ	N
2	. . .	. . .	. . .	2.94 (74.7)	2 3/8 (60)	3/8 (10)
3	3.448 (87.58)	1 11/16 (43)	5/16 (8)	3.94 (100.1)	2 5/8 (67)	7/16 (11)
4	4.493 (114.12)	1 15/16 (49)	11/32 (9)	4.94 (125.5)	2 7/8 (73)	1/2 (13)
Reducing 4 by 3	4.493 (114.12)	1 15/16 (49)	5/16 (8)	4.94 (125.5)	2 7/8 (73)	7/16 (11)

TABLE 16 Spigots, in. (mm)



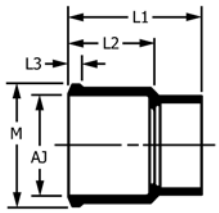
PLASTIC SPIGOT
Adapts Cast Iron Hub
to Plastic Pipe



PLASTIC SPIGOT
Adapts Clay Pipe Hub
to Plastic Pipe

Nominal Pipe Size	*L2*, min	*L1*, min	*L3*, min	*M*		*AN*
				max	min	
2	3½ (89)	4⅝ (117)	⅜ (10)	2.75 (69.9)	2.63 (66.8)	2.00 (50.8)
3	3¾ (95)	5⅝ (143)	⅜ (10)	3.88 (98.6)	3.63 (92.2)	3.00 (76.2)
4	4 (102)	6⅛ (156)	⅜ (10)	4.88 (124.0)	4.63 (117.6)	4.00 (101.6)

TABLE 17 Reducing Spigots, in. (mm)

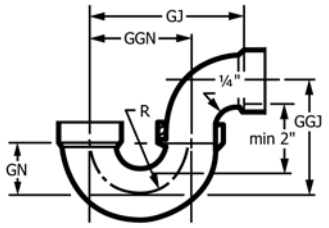


PLASTIC SPIGOT, Reducing
Adapts Cast Iron Hub
to Plastic Pipe

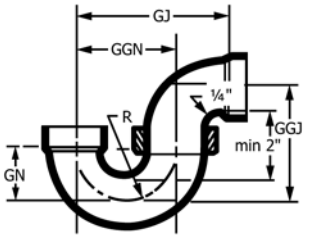
Nominal Pipe Size	*L2* min	*L1* min	*L3* min	*M*		*AJ*
				max	min	
2 by 1½	3½ (89)	4¼ (108)	⅜ (10)	2.75 (69.9)	2.63 (66.8)	2.00 (50.8)
3 by 1½	3¾ (95)	4½ (114)	⅜ (10)	3.88 (98.6)	3.63 (92.2)	3.00 (76.2)
3 by 2	3¾ (95)	4⅝ (117)	⅜ (10)	3.88 (98.6)	3.63 (92.2)	3.00 (76.2)
4 by 2	4 (102)	4⅞ (124)	⅜ (10)	4.88 (124.0)	4.63 (117.6)	4.00 (101.6)
4 by 3	4 (102)	5½ (140)	⅜ (10)	4.88 (124.0)	4.63 (117.6)	4.00 (101.6)

TABLE 18 P Traps, in. (mm)

'P' TRAP With Solvent Weld Joint

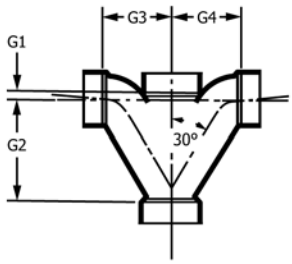


'P' TRAP With Union Seal



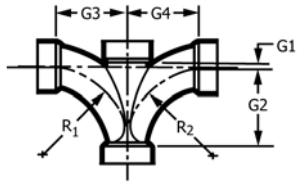
Nominal Pipe Size	min *GJ*	min *GGJ*	min *GGN*	min *GN*	min *R*
1¼	4⅛ (105)	3⅜ (86)	3 (76)	1⅜ (35)	1⅝ (41)
1½	4⁷⁄₃₂ (107)	3⅝ (92)	3 (76)	1⅜ (35)	1⅝ (41)
2	7¼ (184)	4¹⁄₁₆ (103)	5 (127)	2¼ (57)	2½ (64)
3	8⁷⁄₁₆ (214)	6⁵⁄₁₆ (160)	6¼ (159)	2⅝ (67)	3⅛ (79)
4	10¹³⁄₁₆ (275)	7⅞ (200)	8¹⁄₁₆ (205)	3⁷⁄₁₆ (87)	4¹⁄₁₆ (103)
6	17¾ (451)	12¾ (324)	11¾ (298)	4¾ (121)	6⅜ (162)

TABLE 19 Double Fixture Fitting, in. (mm)



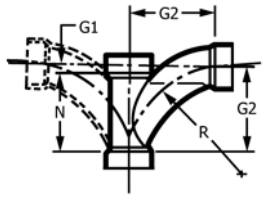
Nominal Pipe Size	G1	G2	G3	G4
1½	⅜ (10)	3⁹⁄₁₆ (90)	2⁷⁄₁₆ (62)	2⁷⁄₁₆ (62)
2	⅜ (10)	4⁹⁄₁₆ (116)	3¹⁄₁₆ (78)	3¹⁄₁₆ (78)
3	½ (13)	6¾ (171)	4½ (114)	4½ (114)
Reducing:				
2 by 1½ by 1½ by 1½	⅜ (10)	3⁹⁄₁₆ (90)	2⁷⁄₁₆ (62)	2⁷⁄₁₆ (62)
2 by 1½ by 2 by 2	⅜ (10)	4⁹⁄₁₆ (116)	3¹⁄₁₆ (78)	3¹⁄₁₆ (78)
2 by 1½ by 2 by 1½	⅜ (10)	4⁹⁄₁₆ (116)	3¹⁄₁₆ (78)	3¹⁄₁₆ (78)

TABLE 20 Double Fixture Fitting, in. (mm)



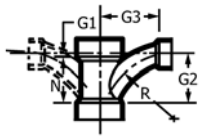
Nominal Pipe Size	Double Fixture Fitting					
	G1	*G2*	*G3*	*G4*	*R1*	*R2*
1½	⅜ (10)	3⅛ (79)	2 11/16 (68)	2 11/16 (68)	3⅝ (92)	3⅝ (92)
2	⅜ (10)	4¼ (108)	3½ (89)	3½ (89)	4½ (114)	4½ (114)
3	½ (13)	6¼ (159)	4 15/16 (125)	4 15/16 (125)	6⅝ (168)	6⅝ (168)
			Reducing			
2 by 1½ by 1½ by 1½	⅜ (10)	3⅛ (79)	2⅞ (73)	2⅞ (73)	3⅝ (92)	3⅝ (92)
2 by 1½ by 1½ by 2	⅜ (10)	4¼ (108)	2⅞ (73)	3½ (69)	3⅝ (92)	4½ (114)
2 by 1½ by 2 by 2	⅜ (10)	4¼ (108)	3½ (89)	3½ (89)	4½ (114)	4½ (114)
3 by 2 by 3 by 3	½ (13)	6¼ (159)	4 15/16 (125)	4 15/16 (125)	6⅝ (168)	6⅝ (168)

TABLE 21 Single and Double Long Turn Tee, in. (mm)



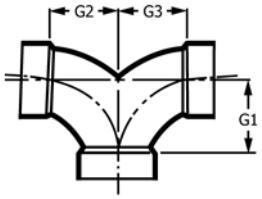
Nominal Pipe Size	Interchanges with Combination Wye ⅛ Bend			
	Single and Double Long Turn Tee			
	G1	*G2*	*N*	*R*
1¼	⅜ (10)	3 7/16 (87)	3 1/16 (78)	4¾ (121)
1½	7/16 (11)	3 15/16 (100)	3½ (89)	5⅞ (149)
2	11/16 (17)	5⅛ (130)	4 7/16 (113)	7 (178)
3	1 1/16 (27)	7 9/16 (192)	6½ (165)	10⅛ (257)
4	1½ (38)	10 (254)	8½ (216)	13¼ (337)
6	2½ (64)	15⅜ (391)	12⅞ (327)	19 (483)

TABLE 22 Single and Double Long Turn Tee Reducing, in. (mm)



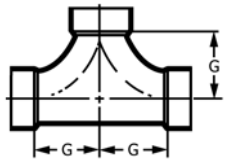
Nominal Pipe Size	Interchanges with Reducing Combination Wye ⅛ Bend				
	Single and Double Long Turn Tee Reducing				
	G1	*G3*	*N*	*G2*	*R*
1½ by 1¼ by 1¼	⅜ (10)	3⅝ (92)	3 1/16 (78)	3 7/16 (87)	4¾ (121)
1½ by 1½ by 1¼	⅜ (10)	3⅝ (92)	3 1/16 (78)	3 7/16 (87)	4¾ (121)
2 by 1½ by 1½	7/16 (11)	4 3/16 (107)	3½ (89)	3 15/16 (100)	5⅞ (200)
2 by 1½ by 2	11/16 (17)	5⅛ (130)	4 7/16 (113)	5⅛ (130)	7 (178)
2 by 2 by 1¼	⅜ (10)	3 13/16 (97)	3 1/16 (78)	3 7/16 (87)	4¾ (121)
2 by 2 by 1½	7/16 (11)	4 3/16 (102)	3½ (89)	3 15/16 (100)	5⅞ (149)
3 by 3 by 1½	7/16 (11)	4¾ (121)	3½ (89)	3 15/16 (100)	5⅞ (149)
3 by 3 by 2	11/16 (17)	5 11/16 (128)	4 7/16 (113)	5⅛ (130)	7 (178)
4 by 4 by 1½	⅜ (10)	5 3/16 (132)	3 9/16 (90)	3 15/16 (100)	5⅞ (149)
4 by 4 by 2	⅝ (16)	6⅛ (156)	4½ (114)	5⅛ (130)	7 (178)
4 by 4 by 3	1 1/16 (27)	8 1/16 (205)	6½ (165)	7 9/16 (192)	10⅛ (257)
6 by 6 by 2	9/16 (14)	7⅛ (181)	4 9/16 (116)	5⅛ (130)	7 (178)
6 by 6 by 3	15/16 (24)	9 1/16 (230)	6⅝ (168)	7 9/16 (192)	10⅛ (257)
6 by 6 by 4	1½ (38)	11 (279)	8½ (216)	10 (254)	13¼ (337)
6 by 6 by 5	2 (51)	13 5/16 (338)	10¾ (273)	12¾ (324)	16 (406)

TABLE 23 Three-Way Ell, in. (mm)



Nominal Pipe Size	*G1*	*G2*	*G3*
1½	1¾ (44)	1¾ (44)	1¾ (44)
2	2 5/16 (59)	2 5/16 (59)	2 5/16 (59)
3	3 1/16 (78)	3 1/16 (78)	3 1/16 (78)
4	3⅞ (98)	3⅞ (98)	3⅞ (98)
Reducing			
2 by 1½ by 1½ (short)	1⅝ (41)	1⅝ (41)	1⅝ (41)
3 by 2 by 3	3 1/16 (78)	2⅞ (73)	3 1/16 (78)
2 by 1½ by 1½ (long)	1 15/16 (49)	2 3/16 (56)	2 3/16 (56)

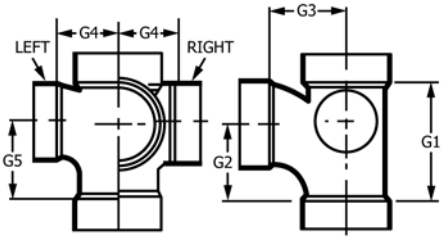
TABLE 24 Two Way Cleanout, in. (mm)



Nominal Pipe Size	*G*
3	4 1/16 (103)
4	4 15/16 (125)
6[A]	6 1/8 (156)[A]

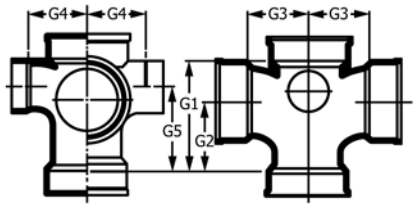
[A] 6 in. fittings dimensions are minimum

TABLE 25 Sanitary Tees, with Side Inlet, in. (mm)



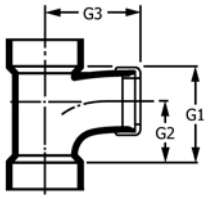
Nominal Pipe Size	*G1*	*G2*	*G3*	*G4*	*G5*
Left-Hand Side Inlet					
1½ by 1½ by 1½ by 1½	2¾ (70)	1¾ (44)	1¾ (44)	1¾ (44)	1¾ (44)
2 by 2 by 1½ by 1½	3 11/16 (94)	2 5/16 (59)	2 5/16 (59)	2 5/16 (59)	2 5/16 (59)
3 by 3 by 2 by 1½	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 9/16 (65)	2 1/8 (54)
3 by 3 by 2 by 2	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 7/8 (73)	2 1/8 (54)
3 by 3 by 3 by 1½	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 9/16 (65)	3 11/16 (94)
3 by 3 by 3 by 2	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 7/8 (73)	3 11/16 (94)
4 by 4 by 4 by 2	6 1/8 (156)	3 7/8 (98)	3 7/8 (98)	3 5/16 (84)	5 (127)
Right-Hand Side Inlet					
3 by 3 by 2 by 1½	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 9/16 (65)	2 1/8 (54)
3 by 3 by 2 by 2	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 7/8 (73)	2 1/8 (54)
3 by 3 by 3 by 1½	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 9/16 (65)	3 11/16 (94)
3 by 3 by 3 by 2	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 7/8 (73)	3 11/16 (94)
4 by 4 by 4 by 2	6 1/8 (156)	3 7/8 (98)	3 7/8 (98)	3 5/16 (84)	5 (127)
Side Inlet Both Sides					
3 by 3 by 2 by 1½ by 1½	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 9/16 (65)	2 1/8 (54)
3 by 3 by 2 by 2 by 2	3 5/16 (84)	2 1/8 (54)	2 7/8 (73)	2 7/8 (73)	2 1/8 (54)
3 by 3 by 3 by 1½ by 1½	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 9/16 (65)	3 11/16 (94)
3 by 3 by 3 by 2 by 2	4 7/8 (124)	3 1/16 (78)	3 1/16 (78)	2 7/8 (73)	3 11/16 (94)
4 by 4 by 4 by 2 by 2	6 1/8 (156)	3 7/8 (98)	3 7/8 (98)	3 5/16 (84)	5 (127)

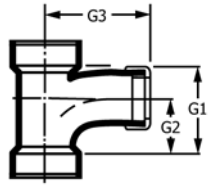
TABLE 26 Sanitary Tee, Double with Side Inlets, in. (mm)



Nominal Pipe Size	*G1*	*G2*	*G3*	*G4*	*G5*
Single Side Inlet					
3 by 3 by 3 by 3 by 1½	4⅞ (124)	3 1/16 (78)	3 1/16 (78)	2 9/16 (65)	3 11/16 (94)
3 by 3 by 3 by 3 by 2	4⅞ (124)	3 1/16 (78)	3 1/16 (78)	2⅞ (73)	3 11/16 (94)
4 by 4 by 4 by 4 by 2	6⅛ (156)	3⅞ (98)	3⅞ (98)	3 5/16 (84)	3⅞ (min) (98)
Inlet Both Sides					
3 by 3 by 3 by 3 by 1½ by 1½	4⅞ (124)	3 1/16 (78)	3 1/16 (78)	2 9/16 (65)	3 11/16 (94)
3 by 3 by 3 by 3 by 2 by 2	4⅞ (124)	3 1/16 (78)	3 1/16 (78)	2⅞ (73)	3 11/16 (94)
4 by 4 by 4 by 4 by 2 by 2	6⅛ (156)	3⅞ (98)	3⅞ (98)	3 5/16 (84)	5 (127)

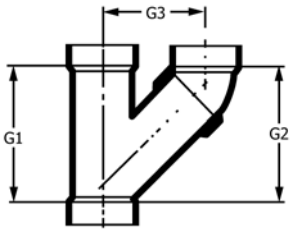
TABLE 27 Sanitary Tees, with Slip Joint, in. (mm)





Nominal Pipe Size	Sanitary Tee			Sanitary Tee Through Wall		
	G1	*G2*	*G3*, min	*G1*	*G2*	*G3, min*
1¼	2¼ (57)	1½ (38)	2 3/16 (56)	2¼ (57)	1½ (38)	3 (76)
1½	2¾ (70)	1¾ (44)	2 7/16 (62)	2¾ (70)	1¾ (44)	3 (76)
1½ by 1¼ by 1½	2½ (64)	1¾ (44)	2 7/16 (62)	2½ (64)	1¾ (44)	3 (76)

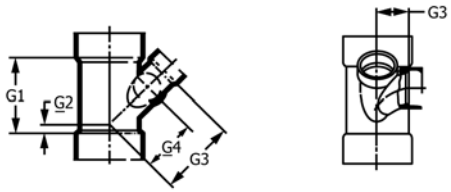
TABLE 28 Upright Wye, in. (mm)



Nominal Pipe Size	*G1* min	*G2* min	*G3* min
2 by 2 by 2	5½ (140)	5 3/16 (132)	3¾ (95)
3 by 3 by 3	7½ (191)	7⅜ (187)	5¼ (133)
Reducing			
2 by 2 by 1½	4¼ (108)	4⅛ (105)	3 1/16 (78)
3 by 3 by 2	5 3/16 (132)	5 5/16 (135)	4 9/16 (116)

TABLE 29 Single 45° Wye, with Auxiliary Inlet, in. (mm)

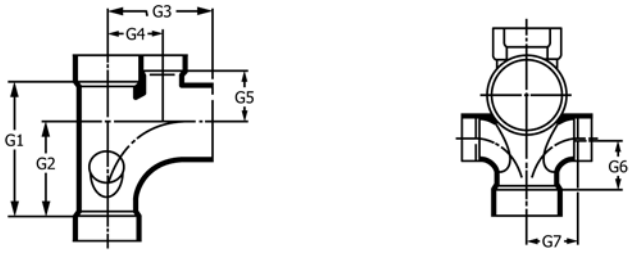
NOTE 1—RH.AI = Right Hand Auxiliary Inlet
LH.AI = Left Hand Auxiliary Inlet
DBL.AI = Double Auxiliary Inlets
V = Vent



Nominal Pipe Size	G1	G2	G3	G4	G5
3 by 3 by 1½ V by 1½ RH.AI	4¼ (108)	½ (13)	4⁵⁄₁₆ (110)	3³⁄₁₆ (81)	1¾ (44)
3 by 3 by 1½ V by 1½ LH.AI	4¼ (108)	½ (13)	4⁵⁄₁₆ (110)	3³⁄₁₆ (81)	1¾ (44)
3 by 3 by 2 V by 2 RH.AI	5 (127)	⅞ (22)	4⅝ (117)	3¼ (83)	2⁵⁄₁₆ (59)
3 by 3 by 2 V by 2 LH.AI	5 (127)	⅞ (22)	4⅝ (117)	3¼ (83)	2⁵⁄₁₆ (59)

TABLE 30 Vertical Closet Bend, with Auxiliary Inlets, in. (mm)

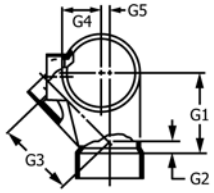
NOTE 1—RH.AI = Right Hand Auxiliary Inlet
LH.AI = Left Hand Auxiliary Inlet
DBL.AI = Double Auxiliary Inlets
V = Vent

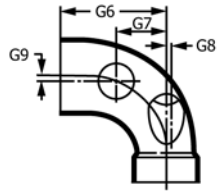


Nominal Pipe Size	G1	G2	G3	G4	G5	G6	G7
3 by 3 by 4 by 2V by 2 RH.AI	7½ (191)	5⅜ (137)	6⅛ (156)	3⁵⁄₃₂ (80)	2¾ (70)	2⅞ (73)	2⅞ (73)
3 by 3 by 4 by 2V by 2 LH.AI	7½ (191)	5⅜ (137)	6⅛ (156)	5⁵⁄₃₂ (80)	2¾ (70)	2⅞ (73)	2⅞ (73)
3 by 3 by 4 by 2V by 2 by 2 DBL.AI	7½ (191)	5⅜ (137)	6⅛ (156)	3⁵⁄₃₂ (80)	2¾ (70)	2⅞ (73)	2⅞ (73)

TABLE 31 Horizontal Closet Bend, with Auxiliary Inlets, in. (mm)

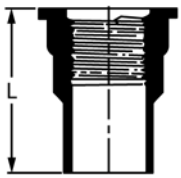
NOTE 1—RH.AI = Right Hand Auxiliary Inlet
LH.AI = Left Hand Auxiliary Inlet
DBL.AI = Double Auxiliary Inlets
V = Vent



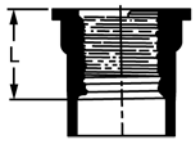


Nominal Pipe Size	G1	G2	G3	G4	G5	G6	G7	G8	G9
3 by 4 by 2V by 2 RH.AI	4⅝ (117)	9/16 (14)	4½ (114)	2⁵/16 (59)	15/32 (12)	6³/16 (157)	2⅞ (73)	9/32 (7)	¼ (6)
3 by 4 by 2V by 2 LH.AI	4⅝ (117)	9/16 (14)	4½ (114)	2⁵/16 (59)	15/32 (12)	6³/16 (157)	2⅞ (73)	9/32 (7)	¼ (6)

TABLE 32 Strainer Adapter, in. (mm)



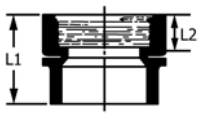
TRAY PLUG ADAPTER
Fem. NPSM × Spigot



TRAY PLUG ADAPTER
Fem. NPSM × Hub

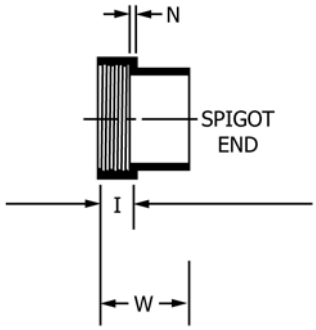
Nominal Pipe Size	Fem. NPSM × Spigot	Fem. NPSM ×Hub
	L	*L*, min
1½	3⅜ (86)	1⅞ (48)

TABLE 33 Swivel Strainer, Adapter, in. (mm)



Nominal Pipe Size	Short		Long	
	L1	*L2*	*L1*	*L2*
1½	1¹¹/16 (43)	⅝ (16)	2⁷/16 (62)	⅝ (16)

TABLE 34 Cleanout Female Fitting Adapter, in. (mm)



Nominal Pipe Size	*N*, min	*I*, min	*W*, min
1¼	5⁄32 (4)	½ (13)	1 11⁄32 (34)
1½	5⁄32 (4)	5⁄8 (16)	1 15⁄32 (37)
2	5⁄32 7⁄32 (4)	5⁄8 (16)	1 17⁄32 (39)
3	(6)	¾ (19)	2 15⁄32 (63)
4	¼ (6)	7⁄8 (22)	2¾ (70)
6	¼ (6)	7⁄8 (22)	4 3⁄16 (106)
8	5⁄16 (8)	1½ (38)	6⅛ (156)

TABLE 35 Reducing Cleanout Female Fitting Adapter, in. (mm)

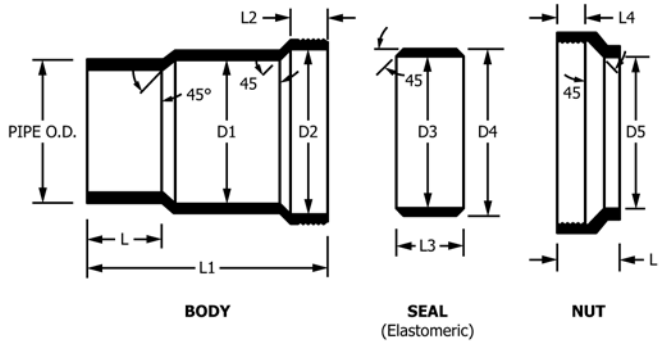
Nominal Pipe Size	*N*, min	*I*, min	*W*, min
10 by 8	...	3½ (89)	5 (127)
12 by 8	...	3½ (89)	6 (152)

TABLE 36 Cut-In Adapter

NOTE 1—Adjustable plastic ring optional.

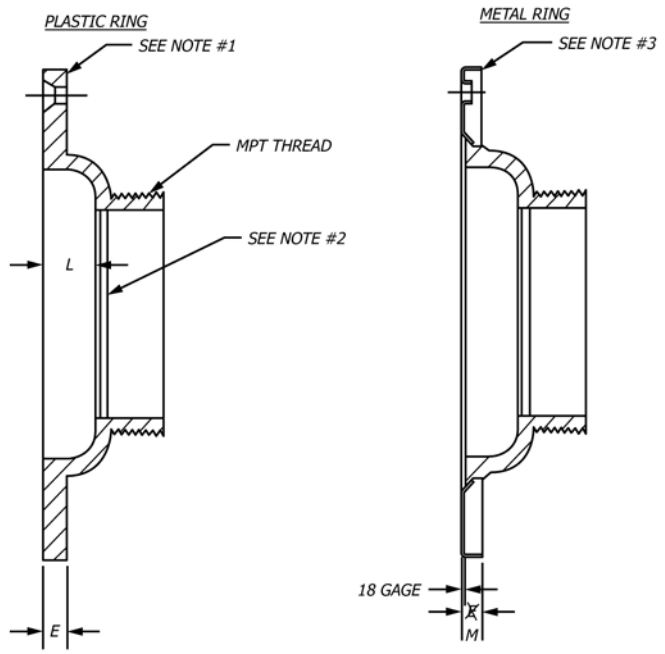
NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional and must be protected by a corrosion-resistant coating.



	Minimum Dimensions, in. (mm)			
	1½	2	3	4
L	. . .	1¼ (32)	. . .	. . .
L1	. . .	2½ (64)	. . .	. . .
L2	. . .	0.60 (15.2)	. . .	. . .
L3	. . .	1 (25)	. . .	. . .
L4	. . .	0.53 (13.5)	. . .	. . .
L5	. . .	1¼ (32)	. . .	. . .
D1	. . .	2.385 (60.58)	. . .	. . .
D2	. . .	2.940 (74.69)	. . .	. . .
D3	. . .	2.380 (60.45)	. . .	. . .
D4	. . .	2.577 (65.46)	. . .	. . .
D5	. . .	2.385 (60.58)	. . .	. . .

TABLE 37 4 by 3 in. Closet Flange (MPT)



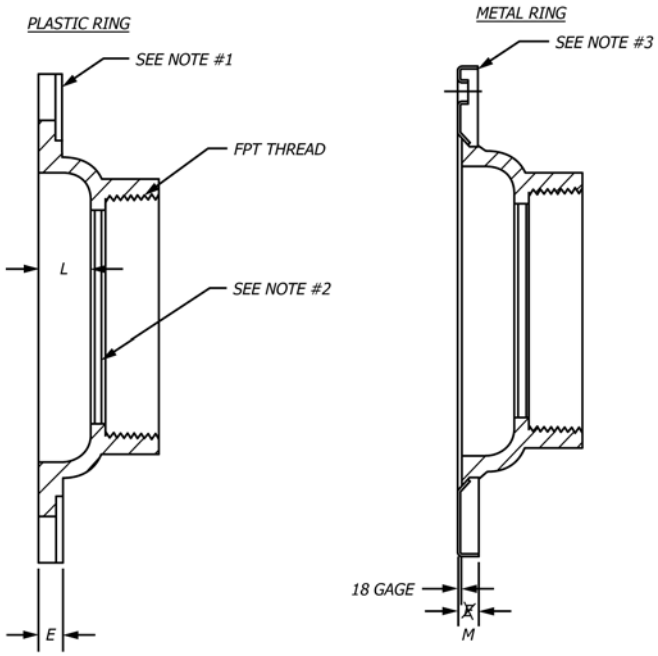
M (min)	E (min)	L (min)	TH'D (min)
1 7/32 (5½)	¼ (6)	¾ (18)	3″–8

TABLE 38 4 by 3 in. Threaded Closet Flange (FPT)

NOTE 1—Adjustable plastic ring optional.

NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional and must be protected by a corrosion-resistant coating.



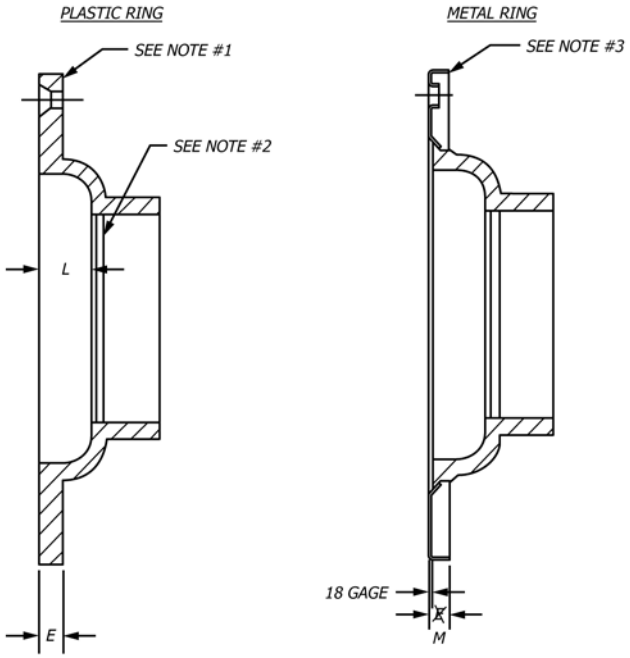
M (min)	E (min)	L (min)	TH'D (min)
7/32 (5½)	¼ (6)	¾ (18)	3″–8

TABLE 39 4 by 3 in. Closet Flange (Spigot)

NOTE 1—Adjustable plastic ring optional.

NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional and must be protected by a corrosion-resistant coating.



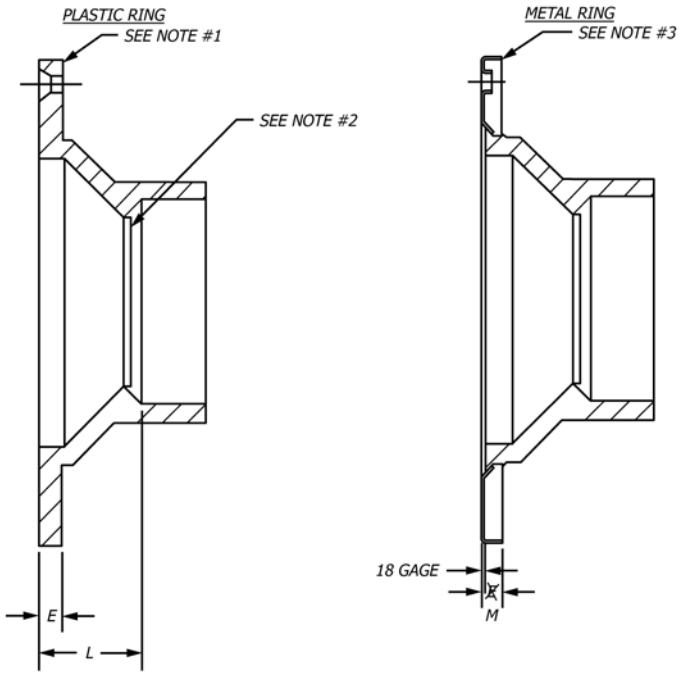
M (min)	E (min)	L (min)
7/32 (5½)	¼ (6)	¾ (18)

TABLE 40 4 by 3 in. Closet Flange (HUB)

NOTE 1—Adjustable plastic ring optional.

NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional and must be protected by a corrosion-resistant coating.



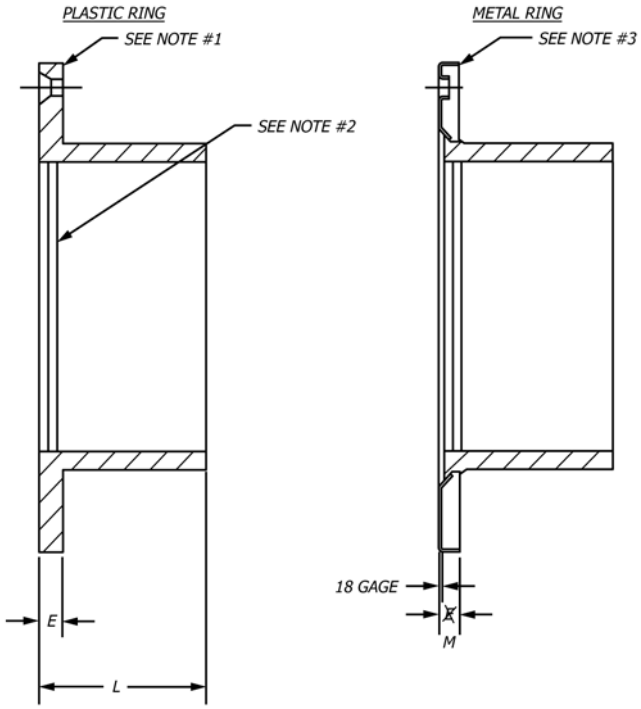
M (min)	E (min)	L (min)
7/32 (5½)	¼ (6)	1¼ (32)

TABLE 41 4 by 4 in. Closet Flange (HUB)

NOTE 1—Adjustable plastic ring optional.

NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional and must be protected by a corrosion-resistant coating.

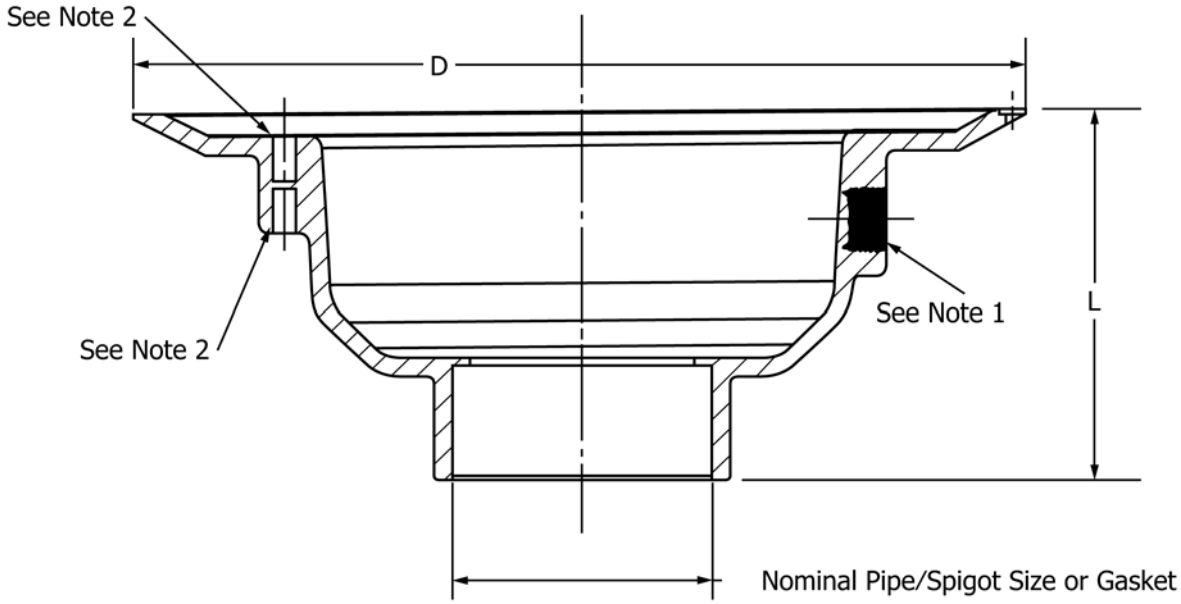


M (min)	E (min)	L (min)
7/32 (5½)	¼ (6)	2 (51)

TABLE 42 Drain Base Hub/Spigot for Roof, Floor and Sediment Drains

NOTE 1—½ in. FPT Primer Tap, Optional in All Configurations with Optional Knockout.

NOTE 2—Inserts Used in Securing Clamping Collars or Underdeck Clamp, Optional in all Configurations Nominal Pipe/Spigot or Gasket Sizes: 1½ in., 2 in., 3 in., 4 in., 6 in.



Nominal Pipe Size	L	D
2	5.25 ± 0.10	12
	(13.3 ± 0.25)	(30.5)
3	5.00 ± 0.10	12
	(12.7 ± 0.25)	(30.5)
4	5.25 ± 0.10	12
	(13.3 ± 0.25)	(30.5)
6	6.00 ± 0.10	12
	(15.2 ± 0.25)	(30.5)

TABLE 43 4 by 3 in. Offset Closet Flange (Hub)

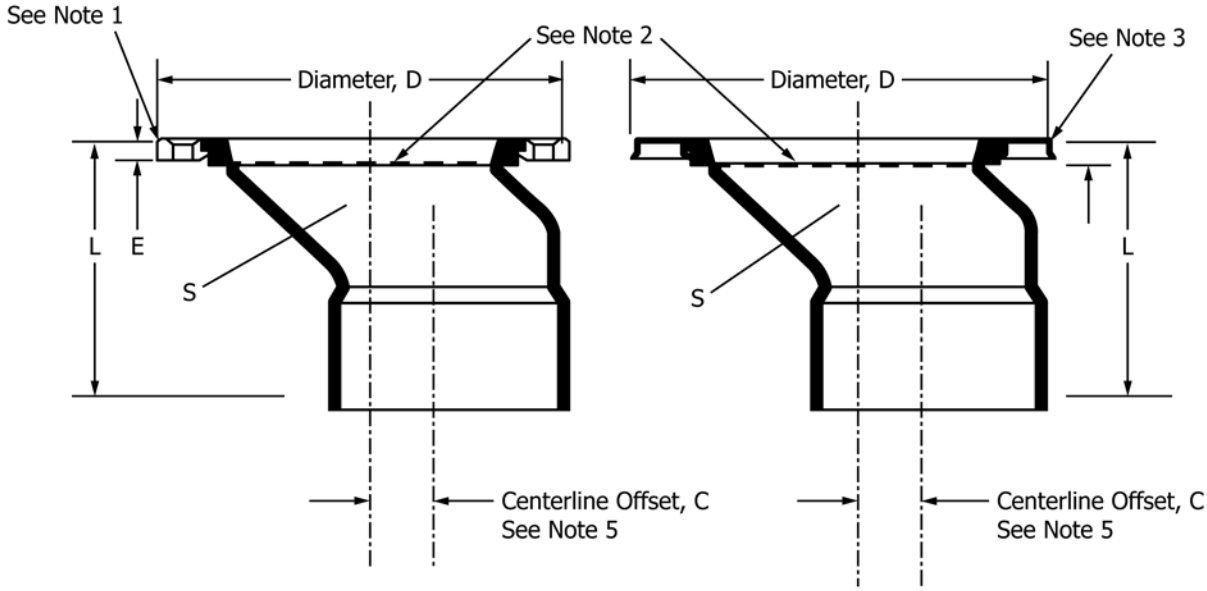
NOTE 1—Adjustable plastic ring optional.

NOTE 2—Knockout optional in all configurations.

NOTE 3—Adjustable metal ring optional; Cylinder B must be free of ledges and corners and must be protected by a corrosion-resistant coating.

NOTE 4—Cylinder S must be free of ledges and corners.

NOTE 5—Offset, centerline to centerline.

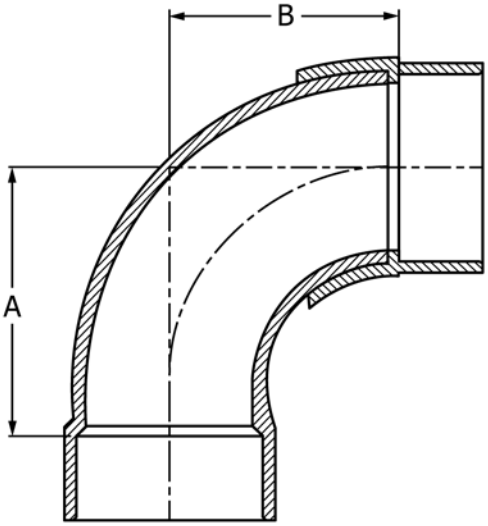


L, Typical Height	C, Offset	D, Diameter	E, Flange Thickness
4.5 ± -⅛ (11.4 ± 0.32)	2 ± -¼ (5.1 ± 0.64)	7 ± -¼ (17.8 ± 0.64)	¼ min. (0.64)

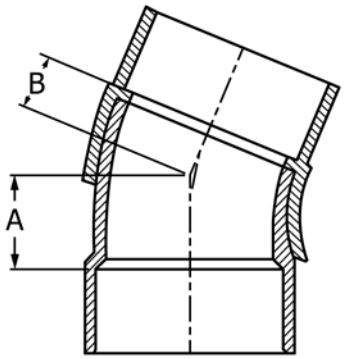
TABLE 44 Selectable Angle Bends, in. (mm)

NOTE 1—Use interpolation for angles between those shown.

NOTE 2—The selectable angle bend is covered by a patent. Interested parties are invited to submit information regarding the identification of an alternative(s) to this patented item to the ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.



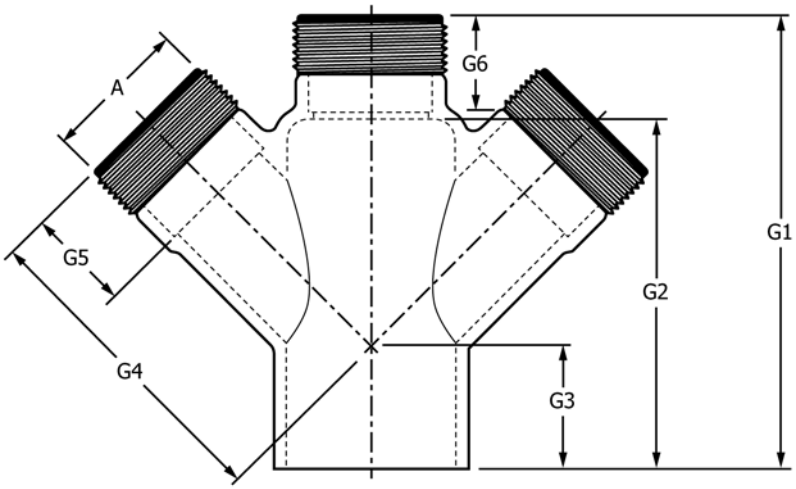
MAXIMUM ANGLE



MINIMUM ANGLE

	NOMINAL PIPE SIZE							
	1½		2		3		4	
	DIMENSIONS							
ANGLE, degrees	A	B	A	B	A	B	A	B
11¼ (1/32 bend)	0.96 (24)	0.42 (11)	1.01 (26)	0.46 (12)	–	–	–	–
15	1.05 (27)	0.51 (13)	1.11 (28)	0.56 (14)	1.71 (43)	0.84 (21)	–	–
20	1.16 (30)	0.63 (16)	1.24 (31)	0.69 (18)	1.92 (49)	1.04 (26)	2.16 (55)	1.19 (30)
22½ (1/16 bend)	1.22 (31)	0.69 (18)	1.31 (33)	0.76 (19)	2.02 (51)	1.15 (29)	2.27 (58)	1.31 (33)
25	1.28 (33)	0.75 (19)	1.38 (35)	0.83 (21)	2.13 (54)	1.25 (32)	2.39 (61)	1.43 (36)
30	1.40 (36)	0.87 (22)	1.52 (39)	0.97 (25)	2.34 (59)	1.47 (37)	2.64 (67)	1.67 (42)
35	1.53 (39)	0.99 (25)	1.66 (42)	1.11 (28)	2.56 (65)	1.69 (43)	2.89 (73)	1.92 (49)
40	1.66 (42)	1.12 (28)	1.80 (46)	1.26 (32)	2.79 (71)	1.91 (49)	3.14 (80)	2.17 (55)
45 (⅛ bend)	1.79 (45)	1.25 (32)	1.95 (50)	1.41 (36)	3.02 (77)	2.14 (54)	3.40 (86)	2.44 (62)
50	1.92 (49)	1.39 (35)	2.11 (54)	1.56 (40)	3.26 (83)	2.39 (61)	3.68 (93)	2.71 (69)
55	2.07 (52)	1.53 (39)	2.27 (58)	1.73 (44)	3.51 (89)	2.64 (67)	3.96 (101)	2.99 (76)
60 (⅙ bend)	2.22 (56)	1.68 (43)	2.44 (62)	1.90 (48)	3.78 (96)	2.90 (74)	4.26 (108)	3.29 (84)
65	2.37 (60)	1.84 (47)	2.62 (67)	2.08 (53)	4.05 (103)	3.18 (81)	4.57 (116)	3.61 (92)
70	2.54 (64)	2.00 (51)	2.81 (71)	2.27 (58)	4.34 (110)	3.47 (88)	4.91 (125)	3.94 (100)
75	2.71 (69)	2.18 (55)	3.01 (77)	2.47 (63)	4.65 (118)	3.78 (96)	5.26 (134)	4.29 (109)
80	2.90 (74)	2.37 (60)	3.23 (82)	2.68 (68)	4.99 (127)	4.11 (104)	5.64 (143)	4.67 (119)
85	3.11 (79)	2.57 (65)	3.46 (88)	2.91 (74)	5.34 (136)	4.47 (113)	6.04 (153)	5.07 (129)
88.8 (pitch 1° 12 min)	3.27 (83)	2.74 (70)	3.65 (93)	3.10 (79)	5.63 (143)	4.76 (121)	6.37 (162)	5.40 (137)
90 (¼ bend)	3.33 (84)	2.79 (71)	3.71 (94)	3.17 (81)	5.74 (146)	4.86 (123)	6.48 (165)	5.51 (140)

TABLE 45 45° Slip Joint Double Y



Nominal Pipe Size	G1	G2	G3	G4	G5	G6	A
2 by 1½ by 1½ by 1½	5½	4¼	1½	3⅞	1¼	1$^{3}/_{16}$	1½

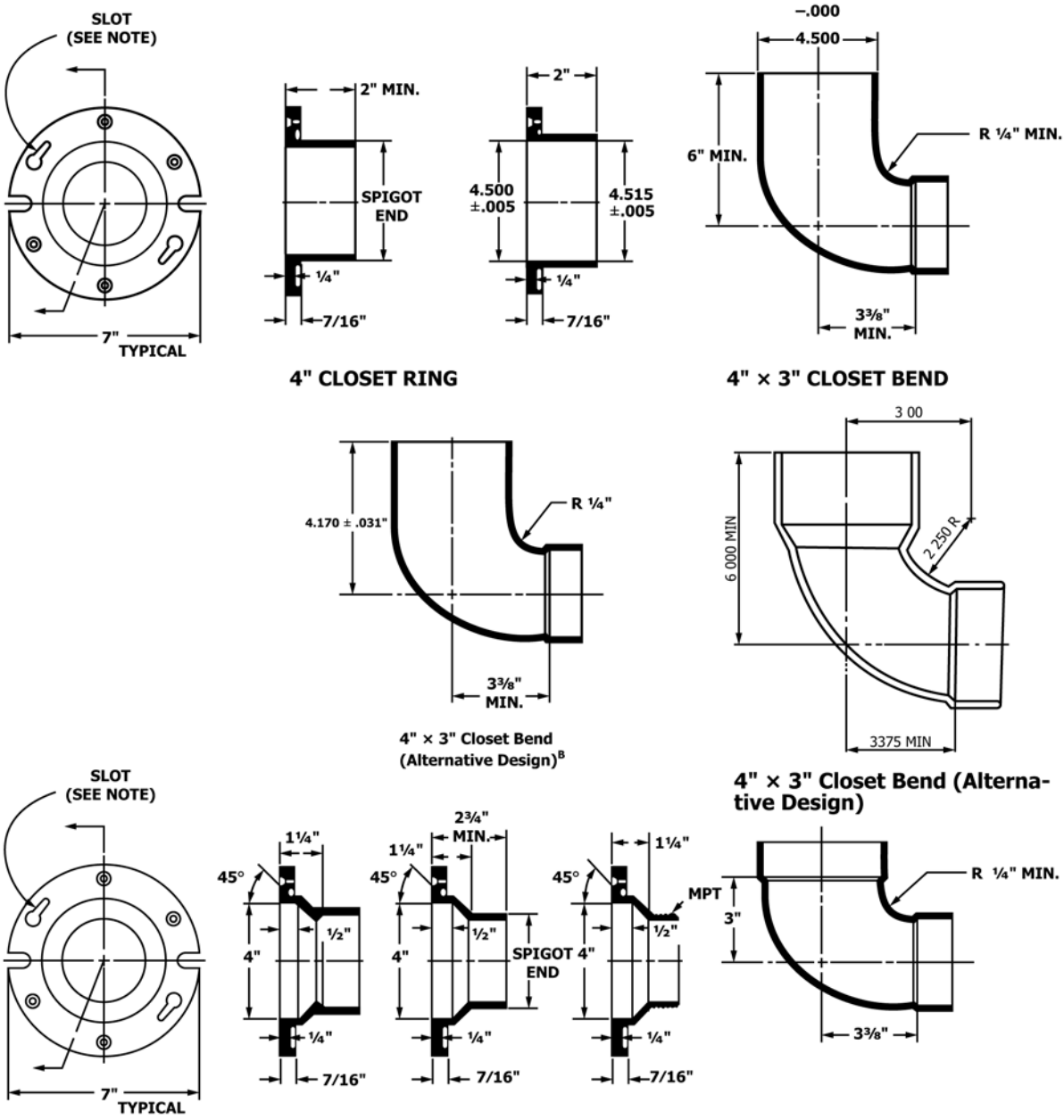


FIG. 1 Closet Rings and Closet Bends,[A] in.

NOTE-Slot is optional if fully reinforced with a corrosion-resistant material.

[A] All dimensions minimum, unless otherwise noted.

[B] Shorter rise length is optional for limited floor crawl space of manufactured housing.

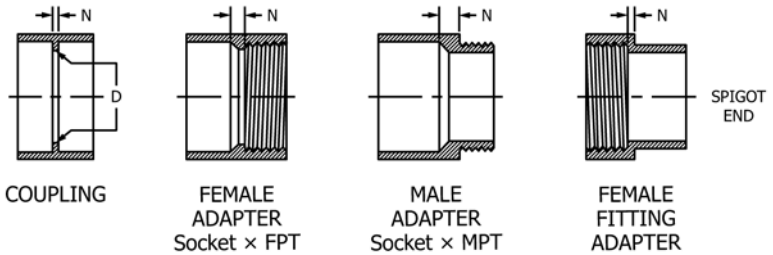


FIG. 2 Couplings, Adapters

Drawings for Reference Only

Fittings produced in these patterns will have a pipe stop at least 0.030 high but no higher than the wall thickness of the corresponding size Schedule 40 pipe and a minimum width (N) of ⅛ in.

Fitting socket “D” and thread dimensions shall conform to ASTM Specifications D2661, D2665, and F1498.

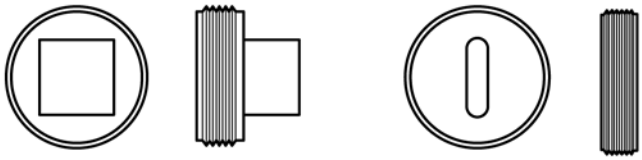


FIG. 3 Pipe Plugs
Drawings for Reference Only
Plugs may have raised or countersunk top
Thread dimensions shall conform to ASTM Specification F1498

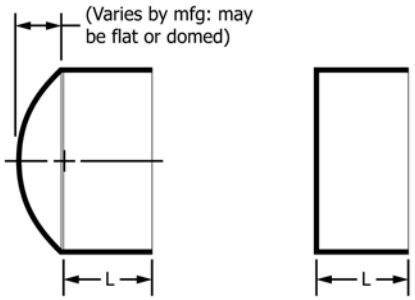


FIG. 4 Caps
Drawings for Reference Only
Caps may have flat or domed top
"L" Dimension shall comply with the requirements of ASTM Specifications D2661 and D2665

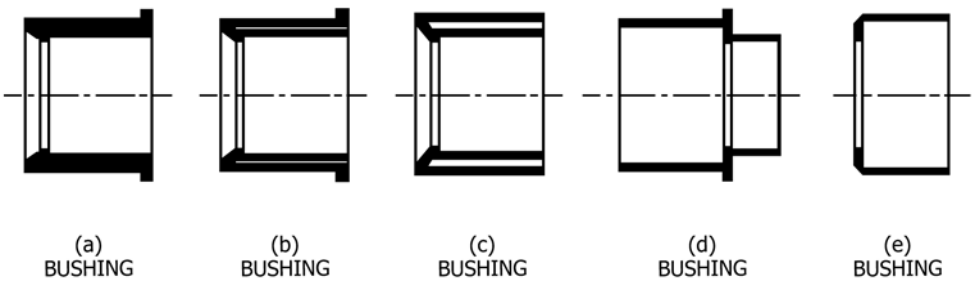


FIG. 5 Bushings
Drawings for Reference Only
Dimensions shall comply with the requirements of ASTM Specifications D2661 and D2665

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (D3311–16) that may impact the use of this standard.

(1) Footnote B in Fig. 1 was revised
(2) In Table 3, added a subscript letter "D" to the GN dimension for the 4 inch 45° Wye to represent that this dimension is to be a minimum with no upper maximum limit. A note "D" was also added to the bottom of table.

(3) In Table 4, added a subscript letter "B" to G1, G2, and G3 dimensions for a 4 by 4 by 3 45° Wye to represent that these dimensions are to be a minimum with no upper maximum limit.