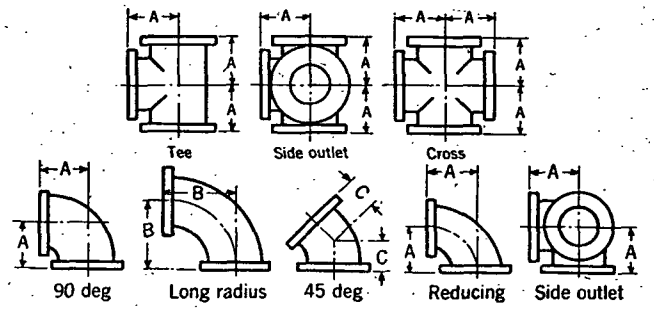
TABLE 7. AMERICAN STANDARD DIMENSIONS OF TEES, CROSSES[a] (STRAIGHT SIZES), AND ELBOWS FOR CLASS 125 CAST-IRON FLANGED FITTINGS, *A.S.A.* B16a-1939



Nominal Pipe Size[b-e]	A — Center to Face Tees, Crosses[c-d] and Elbows	AA — Face to Face Tees and Crosses[c-d]	B — Center to Face Long Radius Elbows[f,g]	C — Center to Face 45 Deg Elbows[e]	Diameter of Flange	Thickness of Flange, Min.	Metal[h] Thickness of Body
1	3½	7	5	1¾	4¼	7/16	5/16
1¼	3¾	7½	5½	2	4⅝	½	5/16
1½	4	8	6	2¼	5	9/16	5/16
2	4½	9	6½	2½	6	5/8	5/16
2½	5	10	7	3	7	11/16	5/16
3	5½	11	7¾	3	7½	¾	5/8
3½	6	12	8½	3½	8½	13/16	7/16
4	6½	13	9	4	9	15/16	½
5	7½	15	10¼	4½	10	15/16	½
6	8	16	11½	5	11	1	9/16
8	9	18	14	5½	13½	1⅛	5/8
10	11	22	16½	6½	16	1 5/16	¾
12	12	24	19	7½	19	1¼	13/16
14 O.D.	14	28	21½	7½	21	1⅜	⅞
16 O.D.	15	30	24	8	23½	1 7/16	1
18 O.D.	16½	33	26½	8½	25	1 9/16	1 1/16
20 O.D.	18	36	29	9½	27½	1 11/16	1⅛
24 O.D.	22	44	34	11	32	1⅞	1¼
30 O.D.	25	50	41½	15	38¾	2⅛	1 7/16
36 O.D.	28	56	49	18	46	2⅜	1⅝
42 O.D.	31	62	56½	21	53	2⅝	1 13/16
48 O.D.	34	68	64	24	59½	2¾	2

All dimensions given in inches.

[a]Crosses both straight and reducing sizes 18 in. and larger shall be reinforced to compensate for the inherent weakness in the casting design.

[b]Size of all fittings listed indicates nominal inside diameter of port.

[c]Tees, side outlet tees, and crosses, 16 in. and smaller, reducing on the outlet, have the same dimensions center to face, and face to face as straight size fittings corresponding to the size of the larger opening. Sizes 18 in. and larger, reducing on the outlet, are made in two lengths, depending on the size of the outlet.

[d]Tees and crosses, reducing on run only, carry same dimensions center to face and face to face as a straight size fitting of the larger opening.

[e]Reducing elbows and side outlet elbows carry same dimensions center to face as straight size elbows corresponding to the size of the larger opening.

[f]Special degree elbows, ranging from 1 to 45 deg, inclusive, have the same center to face dimensions as given for 45-deg elbows and those over 45 deg and up to 90 deg, inclusive, shall have the same center to face dimensions as given for 90-deg elbows. The angle designation of an elbow is its deflection from straight line flow and is the angle between the flange faces.

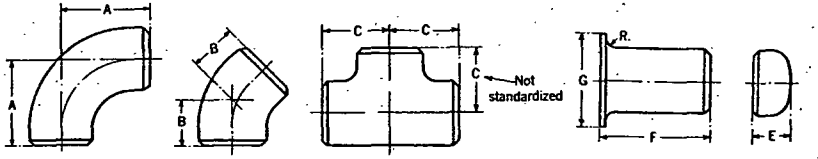
[g]Side outlet elbows shall have all openings on intersecting center-lines.

[h]Body thickness at no point shall be less than 87½ per cent of the dimensions given in the table.

embraces gas welding and electric arc welding, both of which are commonly used to produce acceptable welds.

Welding application requires the same basic knowledge of design as do the other types of assembly, but in addition, requires a generous knowledge of the sciences involved, particularly as to welding qualities of metal, their reaction to extremely high temperatures, and the ability to determine and use only the best quality welding rods. This requirement applies equally to employer and employee with the employer accepting

TABLE 8 AMERICAN STANDARD DIMENSIONS FOR BUTT-WELDING ELBOWS, TEES, CAPS, AND LAPPED-JOINT STUB ENDS, *A.S.A.* B16.9-1940



Nominal Pipe Size	Outside Diameter	Center-to-End: 90-Deg Elbows A	Center-to-End: 45-Deg Elbows B	Center-to-End: Of Run Tee C[a]	Caps E[b-c]	Lapped-Joint Stub Ends: Length Pb	Lapped-Joint Stub Ends: Radius of Fillet R	Lapped-Joint Stub Ends: Diam. of Lap Gd
1	1.315	1½	⅞	1½	1½	4	⅛	2
1¼	1.660	1⅞	1	1⅞	1½	4	3/16	2½
1½	1.900	2¼	1⅛	2¼	1½	4	¼	2⅞
2	2.375	3	1⅝	2½	1½	6	5/16	3⅝
2½	2.875	3¾	1¾	3	1½	6	5/16	4⅛
3	3.500	4½	2	3⅜	2	6	⅜	5
3½	4.000	5¼	2¼	3¾	2½	6	⅜	5½
4	4.500	6	2½	4⅛	2½	6	7/16	6 3/16
5	5.563	7½	3⅛	4⅞	3	8	7/16	7 5/16
6	6.625	9	3¾	5⅝	3½	8	½	8½
8	8.625	12	5	7	4	8	½	10 5/8
10	10.750	15	6¼	8½	5	10	½	12¾
12	12.750	18	7½	10	6	10	½	15

All dimensions given in inches.

[a]The dimensions of welding tees cover those which have side outlets from one size less than half the size of the run-way opening of the tees to full size.

[b]Dimensions *E* and *F* are applicable only to these fittings in schedules up to and including Schedule 80, *A.S.A.* Standard B36.10-1939.

[c]The shape of these caps shall be ellipsoidal and shall conform to the requirements of the *A.S.M.E.* Boiler Construction Code.

[d]This dimension is for standard machined facings in accordance with American Standard for Steel Pipe Flanges and Flanged Fittings (*A.S.A.* B16e-1939). The back face of the lap shall be machined to conform to the surface of the flange on which it seats. Where ring joint facings are to be applied, use dimension *K* as given in *A.S.A.* B16e-1939.

all of the responsibility. Thus the employer should select his welding mechanics with good judgment, provide them with first-class equipment and tools, arrange for their training and use of acceptable workmanship standards, and at regular intervals subject their work to prescribed tests. Industry will not accept the employment of mechanics of undetermined ability nor on the basis of past experience. Neither does industry accept the statement that a weld is only as good as the workman who makes it.

For piping which is to be operated at pressures in excess of 15 psi, rules for fusion welding of pipe joints and the qualification of welders and welding procedures as contained in the *American Standard Code for Pressure Piping* should be observed. For pressures 15 psi or below, the foregoing rules or those set forth in the *Standard Manual on Pipe Welding*