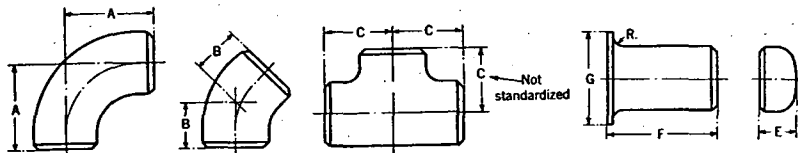


be included in the American Standard. Larger sizes also are available in some types of fittings. The welding bevel which is a straight $37\frac{1}{2}$ -deg V for wall thicknesses $\frac{3}{4}$ in. and below, and a U-bevel for thicknesses heavier than $\frac{3}{4}$ in., conforms to the recommended practice of ASA Standard B16-1939, American Standard for Steel Pipe Flanges and Flanged Fittings. The latter also contains dimensions for steel welding-neck flanges for pressures up to 2500 lb per square inch. Tables 11 and 12 give these dimensions for welding-neck flanges suitable for 150 and 300 lb per square inch gage pressure.

Socket welding fittings are also commercially available. These fittings have a machined recess into which the pipe slips. A fillet weld between the pipe and socket edge provides a pressure-tight joint. This type of fitting has gained rapid acceptance due to its ease of installation, low cost, and ability to make a pressure tight joint without weakening the pipe as is the case with threading. Standard dimensions for socket welding fittings are being formulated under the procedure of the *American Standards Association*.

TABLE 10. PROPOSED AMERICAN STANDARD DIMENSIONS FOR BUTT-WELDING ELBOWS, TEES, CAPS, AND LAPPED-JOINT STUB ENDS



NOMINAL PIPE SIZE	OUTSIDE DIAMETER	CENTER-TO-END			CAPS E _{b-a}	LAPPED-JOINT STUB ENDS		
		90-Deg Elbows A	45-Deg Elbows B	Of Run Tee C _a		Length F _b	Radius of Fillet R	Diam. of Lap G _d
1	1.315	1 $\frac{1}{2}$	$\frac{1}{8}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4	$\frac{1}{8}$	2
1 $\frac{1}{4}$	1.660	1 $\frac{7}{8}$	$\frac{1}{8}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4	$\frac{3}{16}$	2 $\frac{1}{2}$
1 $\frac{1}{2}$	1.900	2 $\frac{1}{4}$	1 $\frac{1}{8}$	2 $\frac{1}{4}$	1 $\frac{1}{2}$	4	$\frac{1}{4}$	2 $\frac{7}{8}$
2	2.375	3	1 $\frac{3}{8}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$	6	$\frac{5}{16}$	3 $\frac{3}{8}$
2 $\frac{1}{2}$	2.875	3 $\frac{3}{4}$	1 $\frac{3}{4}$	3	1 $\frac{1}{2}$	6	$\frac{3}{8}$	4 $\frac{1}{8}$
3	3.500	4 $\frac{1}{2}$	2	3 $\frac{3}{8}$	2	6	$\frac{7}{8}$	5
3 $\frac{1}{2}$	4.000	5 $\frac{1}{4}$	2 $\frac{1}{2}$	3 $\frac{3}{4}$	2 $\frac{1}{2}$	6	$\frac{7}{8}$	5 $\frac{1}{2}$
4	4.500	6	2 $\frac{1}{2}$	4 $\frac{1}{8}$	2 $\frac{1}{2}$	6	$\frac{7}{8}$	6 $\frac{3}{16}$
5	5.563	7 $\frac{1}{2}$	3 $\frac{1}{8}$	4 $\frac{7}{8}$	3	8	$\frac{7}{8}$	7 $\frac{1}{2}$
6	6.625	9	3 $\frac{3}{4}$	5 $\frac{5}{8}$	3 $\frac{1}{2}$	8	$\frac{1}{2}$	8 $\frac{1}{2}$
8	8.625	12	5	7	4	8	$\frac{1}{2}$	10 $\frac{5}{8}$
10	10.750	15	6 $\frac{1}{4}$	8 $\frac{1}{2}$	5	10	$\frac{1}{2}$	12 $\frac{3}{4}$
12	12.750	18	7 $\frac{1}{2}$	10	6	10	$\frac{1}{2}$	15

All dimensions given in inches.

^aThe 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.

^bDimensions E and F are applicable only to these fittings in schedules up to and including Schedule 80, ASA Standard B36.10-1939.

^cThe shape of these caps shall be ellipsoidal and shall conform to the requirements of the ASME Boiler Construction Code.

^dThis dimension is for a regular lapped joint in accordance with ASA Standard B16-1939. For ring-joint facing dimensions, see B16e-1939.

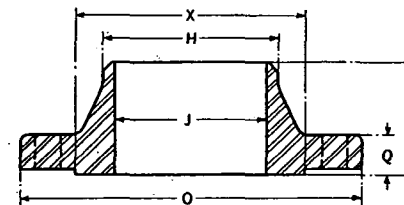
VALVES

Valves are made with both threaded and flanged ends for screwed and bolted connections just as are pipe fittings.

The material used for valves of small size is generally brass or bronze for low pressures and forged steel for high pressures, while in the larger sizes either cast-iron, cast-steel or some of the steel alloys are employed. Practically all iron or steel valves intended for steam or water work are bronze-mounted or trimmed.

Brass, bronze, and iron valves are generally designed for standard or extra heavy service, the former being used up to 125 lb and the latter up

TABLE 11. AMERICAN STANDARD DIMENSIONS OF STEEL WELDING NECK FLANGES FOR STEAM SERVICE PRESSURE RATING OF 150 LB PER SQ IN. (GAGE) AT A TEMPERATURE OF 500 F, AND 100 LB PER SQ IN. (GAGE) AT 750 F



NOMINAL PIPE SIZE	DIAMETER OF FLANGE	THICKNESS OF FLANGE MIN.	DIAMETER OF HUB	HUB DIAM. BEGINNING OF CHAMFER ^{b-c}	LENGTH OF HUB ^a	INSIDE DIAM. OF PIPE SCHEDULE 40 ^a	DIAM. OF BOLT CIRCLE	NO. OF BOLTS	SIZE OF BOLTS
	O	Q	X	H	Y	J			
$\frac{1}{2}$	3 $\frac{1}{2}$	$\frac{1}{4}$	1 $\frac{1}{4}$	0.84	1 $\frac{1}{8}$	0.62*	2 $\frac{3}{8}$	4	$\frac{1}{2}$
$\frac{3}{4}$	3 $\frac{7}{8}$	$\frac{1}{2}$	1 $\frac{1}{2}$	1.05	2 $\frac{1}{16}$	0.82*	2 $\frac{3}{4}$	4	$\frac{1}{2}$
1	4 $\frac{1}{4}$	$\frac{5}{8}$	1 $\frac{5}{8}$	1.32	2 $\frac{3}{16}$	1.05*	3 $\frac{1}{8}$	4	$\frac{1}{2}$
1 $\frac{1}{4}$	4 $\frac{5}{8}$	$\frac{3}{4}$	2 $\frac{1}{16}$	1.66	2 $\frac{1}{4}$	1.38*	3 $\frac{1}{2}$	4	$\frac{1}{2}$
1 $\frac{1}{2}$	5	1 $\frac{1}{16}$	2 $\frac{1}{8}$	1.90	2 $\frac{1}{2}$	1.61*	3 $\frac{3}{8}$	4	$\frac{1}{2}$
2	6	$\frac{3}{4}$	3 $\frac{1}{16}$	2.38	2 $\frac{1}{2}$	2.07*	4 $\frac{1}{4}$	4	$\frac{5}{8}$
2 $\frac{1}{2}$	7	$\frac{7}{8}$	3 $\frac{3}{16}$	2.88	2 $\frac{3}{4}$	2.47*	5 $\frac{1}{2}$	4	$\frac{5}{8}$
3	7 $\frac{1}{2}$	1 $\frac{1}{16}$	4 $\frac{1}{4}$	3.50	2 $\frac{3}{4}$	3.07*	6	4	$\frac{5}{8}$
3 $\frac{1}{2}$	8 $\frac{1}{2}$	1 $\frac{1}{8}$	4 $\frac{1}{2}$	4.00	2 $\frac{1}{2}$	3.55*	7	8	$\frac{5}{8}$
4	9	1 $\frac{1}{4}$	5 $\frac{1}{16}$	4.50	3	4.03*	7 $\frac{1}{2}$	8	$\frac{5}{8}$
5	10	1 $\frac{3}{8}$	6 $\frac{1}{16}$	5.56	3 $\frac{1}{2}$	5.05*	8 $\frac{1}{2}$	8	$\frac{3}{4}$
6	11	1 $\frac{1}{2}$	7 $\frac{1}{16}$	6.63	3 $\frac{1}{2}$	6.07*	9 $\frac{1}{2}$	8	$\frac{3}{4}$
8	13 $\frac{1}{2}$	1 $\frac{3}{4}$	9 $\frac{1}{16}$	8.63	4	7.98*	11 $\frac{3}{4}$	8	$\frac{3}{4}$
10	16	1 $\frac{7}{8}$	12	10.75	4	10.02*	14 $\frac{1}{4}$	12	$\frac{7}{8}$
12	19	1 $\frac{1}{2}$	14 $\frac{3}{8}$	12.75	4 $\frac{1}{2}$	17	17	12	$\frac{7}{8}$
14 OD	21	1 $\frac{3}{4}$	15 $\frac{3}{4}$	14.00	5	To Be Specified by Purchaser	18 $\frac{3}{4}$	12	1
16 OD	23 $\frac{1}{2}$	1 $\frac{7}{8}$	18	16.00	5		21 $\frac{1}{4}$	16	1
18 OD	25	1 $\frac{15}{16}$	19 $\frac{7}{8}$	18.00	5 $\frac{1}{2}$		22 $\frac{3}{4}$	16	$\frac{1}{2}$
20 OD	27 $\frac{1}{2}$	1 $\frac{11}{16}$	22	20.00	5 $\frac{1}{2}$		25	20	$\frac{1}{2}$
24 OD	32	1 $\frac{1}{8}$	26 $\frac{1}{8}$	24.00	6		29 $\frac{1}{2}$	20	$\frac{1}{2}$

All dimensions given in inches.

^aA raised face of $\frac{1}{8}$ in. is included in thickness of flange minimum and in length through hub.

^bThe outside surface of the welding end of the hub shall be straight or tapered at not more than 6 deg.

^cDimensions H and J correspond to the outside and inside diameters of pipe as given in ASA B36.10-1939, Schedule 40.

^dThese diameters are identical with the diameters of what was formerly designated as *Standard Weight* Pipe of the corresponding sizes.