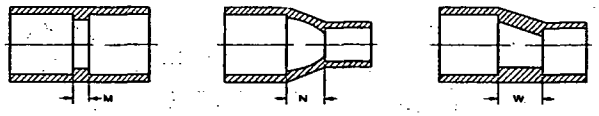
WELDING

Erection of piping in heating and ventilating installations by means of fusion welding has been commonly accepted in the past few years as an alternate method to the screwed and flanged joint. Since the question of economy of welding as against the use of screwed and flanged fittings is dependent on the individual job, the use of welding is generally recommended on the basis of: greatly reduced cost of maintenance and repair;

TABLE 17. DIMENSIONS OF CAST BRASS SOLDER-JOINT COUPLINGS
(*Straight, Reducing and Eccentric Sizes*)



COUPLING C TO C — REDUCING COUPLING — ECCENTRIC COUPLING C TO C

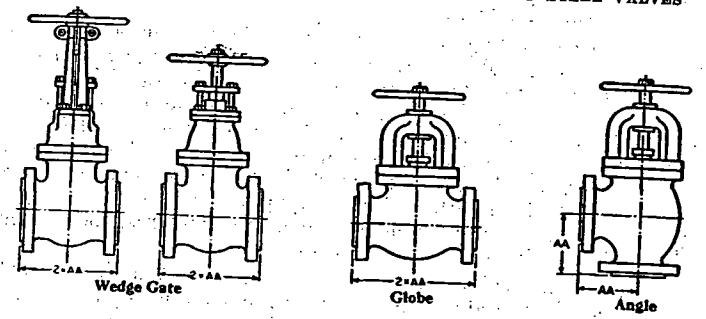
STRAIGHT		REDUCING		ECCENTRIC	
STANDARD WATER TUBE SIZE	LAYING LENGTH* M	STANDARD WATER TUBE SIZE	LAYING LENGTH* N	STANDARD WATER TUBE SIZE	LAYING LENGTH* W
¼	1/16	¾ x ½	5/16	¾ x ½	5/8
3/8	1/16	1 x ¾	3/8	1 x ¾	1 1/16
½	1/8	1¼ x 1	3/8	1¼ x 1	¾
¾	1/8	1¼ x ¾	3/8	1¼ x ¾	¾
1	1/8	1½ x 1¼	5/8	1½ x 1¼	1 1/16
1¼	1/8	1½ x 1	5/8	1½ x 1	1 1/16
1½	1/8	1½ x ¾	7/16	2 x 1½	1⅜
2	3/16	2 x 1½	½	2 x 1¼	1 5/16
2½	3/16	2 x 1¼	½	2½ x 2	1 5/16
3	3/16	2 x 1	½	3 x 2½	1¼
3½	¼	2 x ¾	½	3 x 2	1 9/16
4	¼	2½ x 2	9/16	4 x 3	2
5	¼	2½ x 1½	9/16	....	....
6	¼	2½ x 1¼	5/8	....	....
8	5/16	2½ x 1	5/8	....	....
....	....	3 x 2½	5/8	....	....
....	....	3 x 2	3/8	....	....
....	....	4 x 3	1 1/16	....	....
....	....	4 x 2½	1⅜	....	....
....	....	4 x 2	1 3/16	....	....
....	....	6 x 4	1 5/16	....	....
....	....	8 x 6	1⅝	....	....

From American Standard for Cast-Brass Solder-Joint Fittings, *ASA* B16.18-1950.
All dimensions given in inches.
* Not standardized for *wrought* fittings. Consult manufacturer for dimensions.

reduced weight resulting from the use of a lighter-weight pipe; or increased economy in pipe insulation, hangers, and supports rather than any economy that might be effected in actual erection by welding on low to medium pressure heating jobs.

Fusion welding, commonly used in erection of piping, is defined as the process of joining metal parts in the molten, or molten and vapor states, without the application of mechanical pressure or blows. Fusion welding embraces gas welding and electric arc welding, both of which are commonly

TABLE 18. DIMENSIONS OF FLANGED CAST-IRON AND STEEL VALVES



Wedge Gate — Globe — Angle

	NOMINAL PIPE SIZE	CONTACT SURFACE TO CONTACT SURFACE DIMENSIONS, (2 × AA)									
		CAST-IRON				STEEL					
		125	175[1, 2]	250[1]	800[1] Hydraulic	150[1]	300[1]	400[1]	600[1]	900[1]	1500[1]
WEDGE GATE VALVES	1	....	....	....	....	....	....	*8½	8½	*10	10
	1¼	....	....	....	....	....	....	*9	9	*11	11
	1½	....	....	....	....	....	7½	*9½	9½	*12	12
	2	7	7¼	8½	11½	7	8½	*11½	11½	*14½	14½
	2½	7½	8	9½	13	7½	9½	*13	13	*16½	16½
	3	8	9¼	11⅛	14	8	11⅛	*14	14	15	18½
	3½	8½	10	11⅞	....	8½	11⅞	....	....	....	....
	4	9	10½	12	17	9	12	16	17	18	21½
	5	10	11½	15	....	10	15	18	20	22	26½
	6	10½	13	15⅞	22	10½	15⅞	19½	22	24	27¾
	8	11½	14¼	16½	26	11½	16½	23½	26	29	32¾
	10	13	16¾	18	31	13	18	26½	31	33	39
	12	14	17½	19¾	33	14	19¾	30	33	36	44½
	14 OD	15	....	22½	....	15	30	32½	35	40½	....
	16 OD	16	....	24	....	16	33	35½	39	44½	....
	18 OD	17	....	26	....	17	36	38½	43	48	....
	20 OD	18	....	28	....	18	39	41½	47	52	....
	24 OD	20	....	31	....	20	45	48½	55	61	....
GLOBE & ANGLE VALVES	½	....	....	....	....	....	....	....	....	....	....
	¾	....	....	....	....	....	....	....	....	....	....
	1	....	....	....	....	....	....	7½	7½	....	....
	1¼	....	....	....	....	....	....	8½	8½	10	10
	1½	....	....	....	....	....	....	9	9	11	11
	2	8	....	10½	....	....	....	9½	9½	12	12
	2½	8½	....	11½	....	8	10½	11½	11½	14½	14½
	3	9½	....	12½	....	8½	11½	13	13	16½	16½
	3½	10½	....	13¾	....	9½	12½	14	14	15	18¾
	4	11½	....	14	....	10½	13¾	....	....	....	....
	5	13	....	15¾	....	11½	14	16	17	18	21½
	6	14	....	17½	....	14	15¾	18	20	22	26½
	8	19½	....	21	....	16	17½	19½	22	24	27¾
						19½	22	23½	26	29	32¾

From American Standard for Face-to-Face Dimensions of Ferrous Flanged and Welding End Valves, *ASA* B16.10-1939.
All dimensions given in inches.
Where dimensions are not given, the sizes either are not made or there is insufficient demand to warrant the expense of unification.
Female and groove joint facings have bottom of groove in same plane as *flange edge*, and center to contact surface dimensions for these facings are reduced by the amount of the raised face.
[1] These are pressure designations which refer to the primary service ratings in lb per sq in. of the connecting end flanges.
[2] The connecting end flanges of 175 lb valves are the same as those on 250 lb valves.
* The contact surface to contact surface dimensions and connecting end flanges for 400 lb valves 3 in. size and smaller, are identical with those of 600 lb valves; and the contact surface to contact surface dimensions and connecting end flanges for 900 lb valves 2½ in. size and smaller, are identical with those of 1500 lb valves.