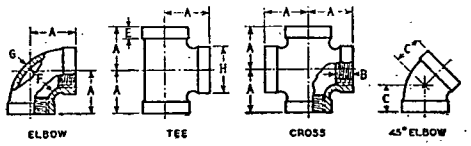
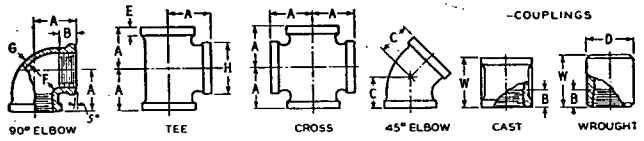
TABLE 14. DIMENSIONS OF MALLEABLE 90-DEG ELBOWS, TEES, CROSSES, AND 45-DEG ELBOWS (STRAIGHT SIZES, 150 LB)



Nominal Pipe Size	Center to End, Elbows, Tees, and Crosses A	Center to End, 45-Deg Elbows C	Length of Thread, Min B	Width of Band, Min E	Inside Diameter of Fitting F Min	Inside Diameter of Fitting F Max	Metal Thickness G	Outside Diameter of Band, Min H
⅛	0.69	....	0.25	0.200	0.405	0.435	0.090	0.693
¼	0.81	0.73	0.32	0.215	0.540	0.584	0.095	0.844
⅜	0.95	0.80	0.36	0.230	0.675	0.719	0.100	1.015
½	1.12	0.88	0.43	0.249	0.840	0.897	0.105	1.197
¾	1.31	0.98	0.50	0.273	1.050	1.107	0.120	1.458
1	1.50	1.12	0.58	0.302	1.315	1.385	0.134	1.771
1¼	1.75	1.29	0.67	0.341	1.660	1.730	0.145	2.153
1½	1.94	1.43	0.70	0.368	1.900	1.970	0.155	2.427
2	2.25	1.68	0.75	0.422	2.375	2.445	0.173	2.963
2½	2.70	1.95	0.92	0.478	2.875	2.975	0.210	3.589
3	3.08	2.17	0.98	0.548	3.500	3.600	0.231	4.285
3½	3.42	2.39	1.03	0.604	4.000	4.100	0.248	4.843
4	3.79	2.61	1.08	0.661	4.500	4.600	0.265	5.401
5	4.50	3.05	1.18	0.780	5.563	5.663	0.300	6.583
6	5.13	3.46	1.28	0.900	6.625	6.725	0.336	7.767

From American Standard for Malleable-Iron Screwed Fittings, 150 Lb. *ASA* B16.3-1951.
All dimensions given in inches.

TABLE 15. DIMENSIONS OF BRASS OR BRONZE SCREWED 90-DEG ELBOWS, TEES, CROSSES, 45-DEG ELBOWS, AND COUPLINGS (STRAIGHT SIZES 125 LB)



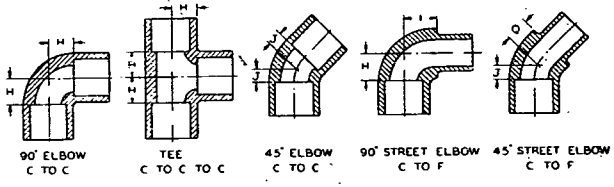
Nominal Pipe Size	Center to End Elbows, Tees, Crosses A	Length of Thread, Min B	Center to End 45-Deg Elbows C	Diameter Wrought Coupling D	Band Length, Min E	Inside Diameter of Cast Fitting F Min	Inside Diameter of Cast Fitting F Max	Metal Thickness, Min G	Band Diameter, Min H	End to End Straight Coupling W Cast	End to End Straight Coupling W Wrought
⅛	0.54	0.25	0.42	9/16	0.14	0.41	0.44	0.08	0.67	0.80	0.83
¼	0.71	0.32	0.56	11/16	0.16	0.54	0.58	0.08	0.81	0.97	1.03
⅜	0.82	0.36	0.63	27/32	0.17	0.68	0.72	0.09	1.00	1.05	1.11
½	1.01	0.43	0.78	1 1/16	0.19	0.84	0.90	0.09	1.17	1.29	1.36
¾	1.18	0.50	0.89	1 5/16	0.23	1.05	1.11	0.10	1.42	1.43	1.50
1	1.43	0.58	1.06	....	0.27	1.32	1.39	0.11	1.73	1.68	....
1¼	1.69	0.67	1.22	....	0.31	1.66	1.73	0.12	2.10	1.86	....
1½	1.84	0.70	1.30	....	0.34	1.90	1.97	0.13	2.38	1.92	....
2	2.12	0.75	1.45	....	0.41	2.38	2.45	0.15	2.92	2.20	....
2½	2.70	0.92	1.95	....	0.48	2.88	2.98	0.17	3.49	2.88	....
3	3.08	0.98	2.17	....	0.55	3.50	3.60	0.19	4.20	3.18	....
4	3.79	1.08	2.61	....	0.66	4.50	4.60	0.22	5.31	3.69	....

From American Standard for Brass or Bronze Screwed Fittings, 125 Lb. *ASA* B16.15-1947.
All dimensions given in inches.

except that the outlet face is at an angle of 90 deg from the inlet face. An angle valve takes the place of a globe valve and an elbow.

3. *Checking flow:* Preventing back flow is called checking, hence, a *check* valve is used. The basic principle of all check valves is that a reversal of flow will close the valve. Check valves are either *swing check* or *lift check*. With a swing check the fluid presses on a hinged flap. If the flow stops or reverses, the flap swings down and seats itself to close the valve. A lift check operates similarly except that the flap is replaced by a plug that is lifted—through guides—by the force of the fluid flow. The fluid changes direction of flow, as in a globe valve, and transmits a vertical thrust. If the flow stops, gravity pulls the plug downward and closes the valve A reversal of flow will close the valve.

TABLE 16. DIMENSIONS OF CAST BRASS SOLDER-JOINT ELBOWS, TEES AND 45-DEG ELBOWS
(*Straight Sizes*)



Standard Water Tube Size	Laying Length* Tee and Elbow H	Center to External Shoulder 90-Deg Street Elbow I	Laying Length 45-Deg Elbow J	Center to External Shoulder 45-Deg Street Elbow Q
¼	¼	3/8	....	....
⅜	5/16	7/16	3/16	9/16
½	7/16	9/16	3/16	5/16
¾	9/16	1 1/16	¼	3/8
1	¾	⅞	5/16	7/16
1¼	⅞	1	7/16	9/16
1½	1	1⅛	½	⅝
2	1¼	1⅜	9/16	¾
2½	1½	1⅝	⅝	....
3	1¾	1⅞	¾	....
3½	2	....	⅞	....
4	2¼	2⅜	1 5/16	....
5	3⅛	....	1 7/16	....
6	3⅝	....	1⅝	....
8	4⅛	....	2⅛	....

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.

Two other types of valves are the relief valve and the pressure regulating valve. Relief valves are usually spring loaded in order that some predetermined pressure can force the valve to open and relieve the pressure. Pressure regulators are used to reduce a high incoming pressure to a required service pressure. These valves are designed to eliminate a fluctuation in the incoming pressure and thereby maintain a steady, lower service pressure (see Chapter 20).

Table 18 contains data on the dimensions of flanged and welding end valves. Dimensions of other type valves can be obtained by writing to the *Manufacturers Standardization Society of the Valve and Fitting Industry*.