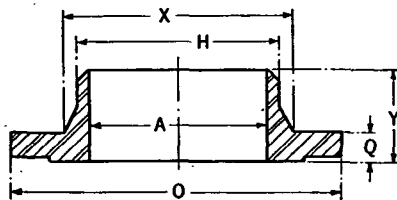


handles are often supplied to indicate the relative opening of the valve in any position. Standard roughing-in dimensions for angle-type valves are given in Table 12.

Automatic control of steam supply to individual radiators can be

TABLE 11. PROPOSED DIMENSIONS OF STEEL WELDING NECK FLANGES FOR MAXIMUM STEAM SERVICE PRESSURE OF 300 LB PER SQ IN. (GAGE) AT A TEMPERATURE OF 750 F



| NOMINAL PIPE SIZE | DIAM. OF FLANGE | THICKNESS OF FLANGE MIN. | DIAM. OF HUB | HUB DIAM. BEGINNING OF CHAMFER | LENGTH THRU HUB | DIAM. FOR STANDARD PIPE | DIAM. FOR EXTRA STRONG PIPE | DIAM. OF BOLT CIRCLE | No. OF BOLTS | SIZE OF BOLTS |
|-------------------|-----------------|--------------------------|--------------|--------------------------------|-----------------|-------------------------|-----------------------------|----------------------|--------------|---------------|
|                   | O               | Q                        | X            | H                              | Y               | A                       | A                           |                      |              |               |
| *2                | 6½              | ⅞                        | 3⅝           | 2.38                           | 2¾              | 2.07                    | 1.94                        | 5                    | 8            | ⅝             |
| 2½                | 7½              | 1                        | 3⅝           | 2.88                           | 3               | 2.47                    | 2.32                        | 5⅞                   | 8            | ¾             |
| 3                 | 8¼              | 1⅛                       | 4⅝           | 3.50                           | 3⅞              | 3.07                    | 2.90                        | 6⅝                   | 8            | ¾             |
| 3½                | 9               | 1⅜                       | 5¼           | 4.00                           | 3⅞              | 3.55                    | 3.36                        | 7¼                   | 8            | ¾             |
| 4                 | 10              | 1½                       | 5¼           | 4.50                           | 3⅞              | 4.03                    | 3.83                        | 7⅞                   | 8            | ¾             |
| 5                 | 11              | 1⅝                       | 7            | 5.56                           | 3⅞              | 5.05                    | 4.81                        | 9¼                   | 8            | ¾             |
| 6                 | 12½             | 1⅞                       | 8¼           | 6.63                           | 3⅞              | 6.07                    | 5.76                        | 10⅝                  | 12           | ¾             |
| 8                 | 15              | 1⅞                       | 10¼          | 8.63                           | 4⅝              | 7.98                    | 7.63                        | 13                   | 12           | ¾             |
| 10                | 17½             | 1⅞                       | 12⅝          | 10.75                          | 4⅝              | 10.02                   | 9.75                        | 15¼                  | 16           | 1             |
| 12                | 20½             | 2                        | 14¾          | 12.75                          | 5¼              | 12.00                   | 11.75                       | 17¾                  | 16           | 1⅛            |
| 14 O. D.          | 23              | 2¼                       | 16¾          | 14.00                          | 5⅝              | 13.25                   | -----                       | 20¼                  | 20           | 1⅞            |
| 16 O. D.          | 25½             | 2¼                       | 19           | 16.00                          | 5¾              | 15.25                   | -----                       | 22½                  | 20           | 1⅞            |
| 18 O. D.          | 28              | 2⅝                       | 21           | 18.00                          | 6¼              | 17.25                   | -----                       | 24¾                  | 24           | 1⅞            |
| 20 O. D.          | 30½             | 2⅝                       | 23¼          | 20.00                          | 6⅝              | 19.25                   | -----                       | 27                   | 24           | 1⅞            |
| 24 O. D.          | 36              | 2¾                       | 27⅝          | 24.00                          | 6⅝              | 23.25                   | -----                       | 32                   | 24           | 1⅞            |

\*For sizes below 2 in. use dimensions of 600 lb flanges.

All dimensions given in inches.

A raised face of ⅛ in. is included in thickness of flange minimum.

It is recommended that the taper of the hub should not exceed 6 deg for a reasonable distance back of the chamfer in order to reduce the heat transfer while welding.

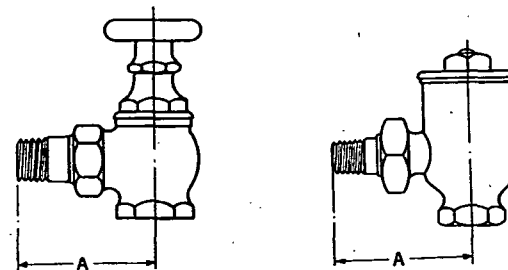
effected by use of direct-acting radiator valves having a thermostatic element at the valve, or near to it. The direct-acting valve is usually an angle-type valve containing a thermostatic element which permits the flow of steam in accordance with room temperature requirements. These valves usually are capable of adjustment to permit variation in room temperature to suit individual taste.

Ordinary steam valves may be used for hot water service by drilling a ⅛-in. hole through the web forming the seat to insure sufficient circulation to prevent freezing when the valve is closed. Valves made particularly

for use in hot water heating systems are of less complex design, one type consisting of a simple butterfly valve, and another of a quick opening type in which a part in the valve mechanism matches up with an opening in the valve body.

In one-pipe steam-heating systems, automatic air valves are required at the radiators. Two common types of air valves available are the vacuum type and the straight-pressure type. Vacuum valves permit the expulsion of air from the radiators when the steam pressure rises and, in addition, act as checks to prevent the return of air into the radiator when

TABLE 12. STANDARD ROUGHING-IN DIMENSIONS ANGLE TYPE VALVES



| SIZE OF VALVE | DIMENSION A<br>STEAM AND<br>HOT WATER ANGLE VALVES<br>AND UNION ELBOWS<br>EFFECTIVE JANUARY 1, 1926 | DIMENSION A<br>MODULATING VALVES<br>EFFECTIVE JANUARY 1, 1926 | DIMENSION A<br>RETURN LINE VACUUM<br>VALVES EFFECTIVE<br>JANUARY 1, 1925 |
|---------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------|
| ½             | 2¼                                                                                                  | 2¾                                                            | 3¼                                                                       |
| ¾             | 2¾                                                                                                  | 2¾                                                            | -----                                                                    |
| 1             | 3                                                                                                   | 3                                                             | -----                                                                    |
| 1¼            | 3½                                                                                                  | 3½                                                            | -----                                                                    |
| 1½            | 3¾                                                                                                  | 3¾                                                            | -----                                                                    |
| 2             | 4¼                                                                                                  | 4¼                                                            | -----                                                                    |
| Tolerance     | +⅛                                                                                                  | +⅛                                                            | -----                                                                    |

All dimensions given in inches.

Connecting ends shall be threaded and gaged as to threading according to the American (Taper) Pipe Thread Standard, A.S.A. No. B2—1919.

The standardization of the Roughing-in Dimensions of Angle Steam and Hot Water, and Modulating Radiator Valves was made possible by the cooperation of the Manufacturers Standardization Society of the Valves and Fittings Industry.

a vacuum is formed by the condensation of steam after the supply pressure has dropped. Ordinary air valves permit the expulsion of air from the radiator when steam is supplied under pressure, but when the pressure dies down and a vacuum tends to be formed the air is drawn back into the radiator.

A system operating continuously or intermittently and supplied with vacuum valves will generally heat more quickly than one provided with non-vacuum air valves; thus, it will effect considerable economy of fuel because the idle period during which no heat is delivered is shortened. In those cases, where a system is equipped with vacuum air valves and which has been cold for several days, the system will probably have an