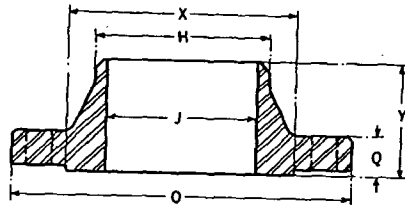


set forth in the *Standard Manual on Pipe Welding of the Heating, Piping and Air Conditioning Contractors National Association*.

A complete line of manufactured steel welding fittings is now available

TABLE 12. AMERICAN STANDARD DIMENSIONS OF STEEL WELDING NECK FLANGES FOR STEAM SERVICE PRESSURE RATING OF 300 LB PER SQ IN. (GAGE) AT A TEMPERATURE OF 750 F, A.S.A. B16e-1939



| NOMINAL PIPE SIZE | DIAM. OF FLANGE | THICKNESS OF FLANGE MIN. | DIAM. OF HUB | HUB DIAM. BEGINNING OF CHAMFERED C-D | LENGTH THRU HUB | INSIDE DIAM. OF PIPE SCHEDULE 40e-d | INSIDE DIAM. OF PIPE SCHEDULE 80e-d | DIAM. OF BOLT CIRCLE | NO. OF BOLTS | SIZE OF BOLTS |
|-------------------|-----------------|--------------------------|--------------|--------------------------------------|-----------------|-------------------------------------|-------------------------------------|----------------------|--------------|---------------|
|                   | O               | Q                        | X            | H                                    | Y               | J                                   | J                                   |                      |              |               |
| 1/2               | 3 3/4           | 3/16                     | 1 1/2        | 0.84                                 | 2 1/16          | 0.62*                               | 0.55†                               | 2 5/8                | 4            | 1/2           |
| 3/4               | 4 5/8           | 5/16                     | 1 7/8        | 1.05                                 | 2 1/4           | 0.82*                               | 0.74†                               | 3 1/4                | 4            | 5/8           |
| 1                 | 4 7/8           | 1 1/16                   | 2 1/8        | 1.32                                 | 2 7/16          | 1.05*                               | 0.96†                               | 3 1/2                | 4            | 5/8           |
| 1 1/4             | 5 1/4           | 3/4                      | 2 1/2        | 1.66                                 | 2 9/16          | 1.38*                               | 1.28†                               | 3 7/8                | 4            | 5/8           |
| 1 1/2             | 6 1/8           | 1 1/8                    | 2 3/4        | 1.90                                 | 2 11/16         | 1.61*                               | 1.50†                               | 4 1/2                | 4            | 5/8           |
| 2                 | 6 1/2           | 7/8                      | 3 5/16       | 2.38                                 | 2 3/4           | 2.07*                               | 1.94†                               | 5                    | 8            | 5/8           |
| 2 1/2             | 7 1/2           | 1                        | 3 11/16      | 2.88                                 | 3               | 2.47*                               | 2.32†                               | 5 7/8                | 8            | 5/8           |
| 3                 | 8 1/4           | 1 1/8                    | 4 5/8        | 3.50                                 | 3 1/8           | 3.07*                               | 2.90†                               | 6 5/8                | 8            | 5/8           |
| 3 1/2             | 9               | 1 3/16                   | 5 1/4        | 4.00                                 | 3 3/8           | 3.55*                               | 3.36†                               | 7 1/4                | 8            | 5/8           |
| 4                 | 10              | 1 1/4                    | 5 3/4        | 4.50                                 | 3 7/8           | 4.03*                               | 3.83†                               | 7 7/8                | 8            | 5/8           |
| 5                 | 11              | 1 3/8                    | 7            | 5.56                                 | 3 7/8           | 5.05*                               | 4.81†                               | 9 1/4                | 8            | 5/8           |
| 6                 | 12 1/2          | 1 1/2                    | 8 1/8        | 6.63                                 | 3 7/8           | 6.07*                               | 5.76†                               | 10 5/8               | 12           | 3/4           |
| 8                 | 15              | 1 5/8                    | 10 1/4       | 8.63                                 | 4 3/8           | 7.98*                               | 7.63†                               | 13                   | 12           | 3/4           |
| 10                | 17 1/2          | 1 7/8                    | 12 3/8       | 10.75                                | 4 5/8           | 10.02*                              |                                     | 15 1/4               | 16           | 1             |
| 12                | 20 1/2          | 2                        | 14 3/4       | 12.75                                | 5 1/8           |                                     |                                     | 17 3/4               | 16           | 1 1/8         |
| 14 O.D.           | 23              | 2 1/8                    | 16 3/4       | 14.00                                | 5 3/8           | To Be Specified by Purchaser        | To Be Specified by Purchaser        | 20 1/4               | 20           | 1 1/8         |
| 16 O.D.           | 25 1/2          | 2 1/4                    | 19           | 16.00                                | 5 7/8           |                                     |                                     | 22 1/2               | 20           | 1 1/4         |
| 18 O.D.           | 28              | 2 3/8                    | 21           | 18.00                                | 6 1/4           |                                     |                                     | 24 3/4               | 24           | 1 1/4         |
| 20 O.D.           | 30 1/2          | 2 1/2                    | 23 3/8       | 20.00                                | 6 3/8           |                                     |                                     | 27                   | 24           | 1 1/2         |
| 24 O.D.           | 36              | 2 3/4                    | 27 3/8       | 24.00                                | 6 5/8           |                                     |                                     | 32                   | 24           | 1 1/2         |

All dimensions given in inches.

\*A raised face of 1/4 in. is included in thickness of flange minimum and in length through hub.

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

\*Dimensions H and J correspond to the outside and inside diameters of pipe as given in A.S.A. B36.10-1939, Schedules 40 and 80. Purchaser's order must specify which of these two inside diameters is desired.

†These flanges are regularly bored to match inside diameter of Schedule 40 pipe, but are bored to Schedule 80 pipe when so ordered.

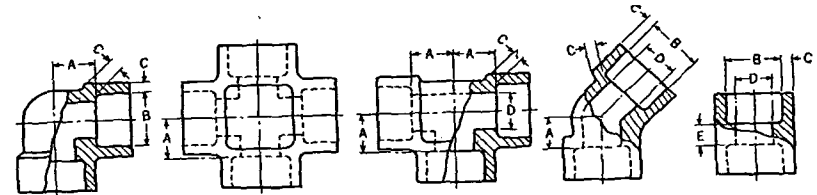
\*These diameters are identical with the diameters of what was formerly designated as Standard-Weight Pipe of the corresponding sizes.

†These diameters are identical with the diameters of what was formerly designated as Extra-Strong Pipe of the corresponding sizes.

and a dimensional standard has been prepared under the procedure of the American Standards Association to unify heretofore divergent dimensions for the same type welding fittings as produced by different manufacturers. Standard dimensions for elbows, tees, caps, and lapped-joint stub ends

are given in Table 10. Dimensions for eccentric and concentric reducers, and 180-deg return bends are not shown in Table 10 but are included in the American Standard. Larger sizes also are available in some types of fittings. The welding bevel which is a straight 37 1/2-deg V for wall thicknesses 3/4 in. and below, and a U-bevel for thicknesses heavier than 3/4 in., conforms to the recommended practice of A.S.A. Standard B16e-1939, American Standard for Steel Pipe Flanges and Flanged Fittings. The latter also contains dimensions for steel welding-neck flanges for pressures

TABLE 13. PROPOSED AMERICAN STANDARD DIMENSIONS OF SOCKET-WELDING ELBOWS, TEES, CROSSES, 45-DEG ELBOWS, AND COUPLINGS



| NOMINAL<br>PIPE<br>SIZE | MINIMUM<br>DEPTH<br>OF<br>SOCKET | CENTER TO BOTTOM OF SOCKET    |               |                   |               | COUPLINGS<br>DISTANCE<br>BETWEEN<br>BOTTOMS<br>SOCKETS | BORE<br>DIAMETER OF<br>SOCKET,<br>MINIMUM | MINIMUM SOCKET<br>WALL THICKNESS |                |               | BORE DIAMETER OF<br>FITTINGS |                |               |
|-------------------------|----------------------------------|-------------------------------|---------------|-------------------|---------------|--------------------------------------------------------|-------------------------------------------|----------------------------------|----------------|---------------|------------------------------|----------------|---------------|
|                         |                                  | 90-Deg Elbs,<br>Tees, Crosses |               | 45-Deg Elbs       |               |                                                        |                                           | Sched.<br>40                     | Sched.<br>80   | Sched.<br>160 | Sched.<br>40                 | Sched.<br>80   | Sched.<br>160 |
|                         |                                  | Sched.<br>40 & 80             | Sched.<br>160 | Sched.<br>40 & 80 | Sched.<br>160 |                                                        |                                           |                                  |                |               |                              |                |               |
|                         |                                  |                               |               |                   |               |                                                        |                                           |                                  |                |               |                              |                |               |
|                         |                                  |                               |               |                   |               |                                                        |                                           |                                  |                |               |                              |                |               |
| A                       |                                  | A                             |               | E                 | B             | Ca                                                     |                                           |                                  | D              |               |                              |                |               |
| 1/4                     | 3/8                              | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8<br>1 1/8                                         | 0.555b<br>0.690b                          | 0.156<br>0.156                   | 0.156<br>0.156 |               | 0.364<br>0.493               | 0.302<br>0.423 |               |
| 3/8                     | 1/2                              | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 0.855                                     | 0.156                            | 0.184          | 0.234         | 0.622                        | 0.546          | 0.466         |
| 1/2                     | 5/8                              | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 1.065                                     | 0.156                            | 0.193          | 0.273         | 0.824                        | 0.742          | 0.614         |
| 3/4                     | 3/4                              | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 1.330                                     | 0.166                            | 0.224          | 0.313         | 1.049                        | 0.957          | 0.815         |
| 1                       | 1 1/4                            | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 1.675                                     | 0.175                            | 0.239          | 0.313         | 1.380                        | 1.278          | 1.160         |
| 1 1/4                   | 1 3/4                            | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 1.915                                     | 0.181                            | 0.250          | 0.351         | 1.610                        | 1.500          | 1.338         |
| 1 1/2                   | 1 7/8                            | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 2.406                                     | 0.193                            | 0.273          | 0.429         | 2.067                        | 1.939          | 1.689         |
| 2                       | 2                                | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 2.906                                     | 0.254                            | 0.345          | 0.469         | 2.469                        | 2.323          | 2.125         |
| 2 1/2                   | 2 1/4                            | 1 1/8                         | 1 1/8         | 3/8               | 3/8           | 1 1/8                                                  | 3.535                                     | 0.270                            | 0.375          | 0.546         | 3.068                        | 2.900          | 2.626         |

All dimensions are given in inches.

aDimensions C is 1 1/4 times the nominal pipe thickness, minimum, but not less than 1/2 in.

bThis dimension applies to Schedules 40 and 80 only.

Reducing sizes have same center to bottom of socket dimension as the largest size of reducing fitting.

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.