

the maximum capacities for different parts of the system as given in the tables.

Tables 15 and 16 are for sizing pipe for vapor systems where the equivalent length of run exceeds 200 ft. Table 15 is for systems up to 400 ft. equivalent length and is based upon a total pressure drop of 2 oz. from the source of steam supply to the farthest heating unit. Table 16 is for larger systems where the equivalent length of run from the boiler or source of steam supply does not exceed 600 ft. It is based upon a total pressure drop of 4 oz. Risers and branches to risers and heating units should not be loaded above their maximum capacity as given in Columns *F* and *G*.

Table 17 is a pipe sizing table for small vacuum pump systems where the equivalent length of run from the boiler or source of steam supply to the farthest heating unit ranges from 100 to 600 ft. The table is based

TABLE 10. PIPE SIZES FOR ONE-PIPE, GRAVITY, LOW PRESSURE STEAM HEATING SYSTEM, WHERE EQUIVALENT LENGTH OF RUN FROM BOILER OR SOURCE OF SUPPLY TO THE FARTHEST RADIATOR DOES NOT EXCEED 200 FT.

Capacity in Sq. Ft. of Equivalent Radiation  
Based on Total Pressure Drop of 1 oz. per 100 ft.

| PIPE SIZE INCHES | SUPPLY MAIN DRIPPED AND BRANCHES TO RISERS DRIPPED Steam and Condensate flowing in the same direction. | SUPPLY RISERS Up-Feed | BRANCHES TO SUPPLY RISERS AND RADIATORS NOT DRIPPED | WET RETURN MAIN | DRY RETURN MAIN | RADIATOR VALVE SIZES AND VERTICAL CONNECTIONS |
|------------------|--------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------|-----------------|-----------------|-----------------------------------------------|
| A                | B                                                                                                      | C                     | D*                                                  | E               | F               | G                                             |
| 3/4              | 56                                                                                                     | 25<br>45              | 20                                                  | 700             | 320             | 20                                            |
| 1 1/4            | 122<br>190                                                                                             | 98<br>152             | 55<br>81                                            | 1200<br>1900    | 670<br>1058     | 55<br>81                                      |
| 2                | 386<br>635                                                                                             | 288<br>464            | 165<br>260                                          | 4000<br>6700    | 2300<br>3800    | 165                                           |
| 3                | 1163<br>1737                                                                                           | 799<br>1144           | 475<br>745                                          | 10,700          | 7000<br>10,000  | -----                                         |
| 4                | 2457                                                                                                   | 1520                  | 1110                                                | -----           | -----           | -----                                         |
| 5                | 4546                                                                                                   | -----                 | 2180                                                | -----           | -----           | -----                                         |
| 6                | 7462                                                                                                   | -----                 | -----                                               | -----           | -----           | -----                                         |

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\*Radiator branches more than 8 ft. in length should be one size larger than shown in Col. *D*.

Note 1.—These tables apply where pipes are properly reamed. No allowances for defective material or workmanship have been made. (Also see Tables 8 and 9).

Note 2.—Capacities based on 1/4 lb. condensation per square foot per hour equivalent radiation and actual diameter of standard pipe.

Note 3.—Extra length to be added to straight run of pipe, for various fittings and valves to determine equivalent length. (See Table 4).

Note 4.—Where it is necessary to drip a steam main, branch to riser or riser, same should be dripped separately into wet return.

Note 5.—Pitch of mains should be not less than 1/4 in. in 10 ft.; on horizontal branches to radiators and risers at least 1/2 in. in 10 ft.

upon a total pressure drop in the entire equivalent length from steam supply to farthest heating unit of 4 oz. Up-feed risers, branches to risers and heating units should not be loaded beyond the maximum capacities given in Columns *H* and *I*.

Table 18 is similar to Table 17 and is for larger systems where the equivalent length of run ranges up to 1200 ft. It is based on a total pressure drop of 8 oz. in the entire equivalent length.

In designing any kind of a heating system it is well to avoid excessive pressure drop in any part of the system. While, under proper design and good workmanship, higher drop may give good results, it is generally not considered good practice to exceed a drop of 1 oz. in 100 ft. equivalent length.

TABLE 11. PIPE SIZES FOR TWO-PIPE, GRAVITY, LOW PRESSURE STEAM, WHERE EQUIVALENT LENGTH OF RUN FROM BOILER OR SOURCE OF SUPPLY TO FARTHEST RADIATOR DOES NOT EXCEED 200 FT.

Capacity in Sq. Ft. of Equivalent Radiation  
Based on Total Pressure Drop of 1 oz. per 100 ft.

| PIPE SIZE INCHES | SUPPLY MAIN DRIPPED AND BRANCHES TO RISERS DRIPPED Steam and Condensate Flowing in same Direction | SUPPLY RISERS Up-Feed | BRANCHES TO SUPPLY RISERS AND RADIATORS NOT DRIPPED | RETURN RISERS  | WET RETURN MAIN | DRY RETURN MAIN | RADIATOR SUPPLY VALVE | RADIATOR RETURN VALVE |
|------------------|---------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------|----------------|-----------------|-----------------|-----------------------|-----------------------|
| A                | B                                                                                                 | C                     | D*                                                  | E              | F               | G               | H                     | I                     |
| 3/4              | 56                                                                                                | 30<br>56              | 26                                                  | 122<br>320     | 700             | 320             | 30<br>56              | 122<br>190            |
| 1 1/4            | 122<br>190                                                                                        | 122<br>190            | 58<br>95                                            | 670<br>1058    | 1200<br>1900    | 670<br>1058     | 122<br>190            | 386                   |
| 2                | 386<br>635                                                                                        | 386<br>635            | 195<br>395                                          | 2300<br>3800   | 4000<br>6700    | 2300<br>3800    | 386                   | -----                 |
| 3                | 1163<br>1737                                                                                      | 1129<br>1548          | 700<br>1150                                         | 7000<br>10,000 | 10,700          | 7000<br>10,000  | -----                 | -----                 |
| 4                | 2457                                                                                              | 2042                  | 1700                                                | -----          | -----           | -----           | -----                 | -----                 |
| 5                | 4546                                                                                              | -----                 | 3150                                                | -----          | -----           | -----           | -----                 | -----                 |
| 6                | 7462                                                                                              | -----                 | -----                                               | -----          | -----           | -----           | -----                 | -----                 |

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\*Radiator branches more than 8 ft. in length should be one size larger than shown in Col. *D*.

Note 1.—These tables apply where pipes are properly reamed. No allowances for defective material or workmanship have been made. (Also see Tables 8 and 9).

Note 2.—Capacities based on 1/4 lb. condensation per square foot per hour equivalent radiation and actual diameter of standard pipe.

Note 3.—Extra length to be added to straight run of pipe for various fittings and valves to determine equivalent length. (See Table 4.)

Note 4.—Where it is necessary to drip a supply main, supply riser or branch to a supply riser, same should be dripped separately into a wet return or through an adequate seal into a dry return. Never drip a supply pipe into a dry return except through an adequate seal.

Note 5.—Pitch of mains should not be less than 1/4 in. in 10 ft.; on horizontal branches to radiators and risers at least 1/2 in. in 10 ft.