If it is desired to determine the capacity of a pipe for any other length than 100 ft. or for any initial pressure other than 1 lb. Tables 2 and 3 are used.

To determine the capacity of any pipe under initial pressure other than 1 lb., multiply the capacity given in Table 2 by the pressure factor in Column 2 opposite the required pressure indicated in Column 1.

To determine the capacity for any length other than 100 ft., multiply the capacity given in Table 2 by the length factor in Column *B* opposite the required length in Column *A*.

Example.—What is the capacity of a 140 ft. 4 in. pipe with an initial pressure of 1 lb. and pressure drop of 2 oz. in the 140 ft.?

Solution.—From Table 2 it is found that the capacity of a 100 ft. 4 in. pipe with 1 lb. initial pressure and 2 oz. pressure drop, is 3475 sq. ft. Multiplying this value by 0.841 the constant for a 140 ft. length as given in Table 3 gives 2922 the capacity for the given conditions.

Example.—What is the capacity of a 100 ft. 4 in. pipe with 2 lb. initial pressure and pressure drop of 1 oz.?

Solution.—From Table 2, find 2457, the capacity of the 4 in. pipe with 1 lb. initial pressure and 1 oz. pressure drop. Multiplying 2457 by 1.03 the constant found in Column 2 of Table 3 for 2 lb. initial pressure gives 2531 as the capacity of the 4 in. pipe with 2 lb. initial pressure and a pressure drop of 1 oz. per 100 ft. length.

Example.—What is the capacity of a 140 ft. 4 in. pipe with 2 lb. initial pressure and a pressure drop of 2 oz.?

Solution.—From Table 2 find 3475, the capacity of the 4 in. pipe with 1 lb. initial pressure and 2 oz. pressure drop. Multiplying 3475 by 1.03 the constant found in Column 2 for 2 lb. initial pressure and this by 0.841 the constant found under Column *B* the constant for 140 ft. length all as given in Table 3 gives 3010 as the capacity of the 4 in. pipe with 2 lb. initial pressure and a pressure drop of 2 oz. in the 140 ft. length.

Should lengths other than those given in Column *A* Table 3 and under length of pipes in feet in Table 1 be desired the constant may be obtained from the formula in Column 4 Table 1.

Example.—What would be the constant for 2500 ft. of pipe to be used either in Table 1 or 3?

Solution.—The $\sqrt{\frac{100}{2500}} = 0.2$ or the constant to be used.

In determining the length of pipe used in any system, the actual length must be increased for the various fittings, and valves, in determining the equivalent length before applying any of the tables given.

Gate valves are recommended in all cases where the service calls for the valve to be either entirely closed or open. They should never be used for throttling. Angle and globe valves should be used for throttling such as the by-pass valve in a pressure reducing outfit.

These tables are all based on the latest available scientific data with the idea of conserving pipe sizes as far as possible but without in any way jeopardizing proper operation. In this connection it has been assumed that all pipes will be reamed, that the piping will be properly pitched and in every respect will be of good construction and workmanship. It is recommended that pipes be not loaded beyond the capacities given.

In using these tables special care should be taken to read the headings describing the system, the pressure drop, etc., and particular attention should be given to the footnotes. Observation of these rules will make the effective application of these tables easy and save much time for the user.

TABLE 12. PIPE SIZES FOR TWO-PIPE, GRAVITY, VAPOR† SYSTEMS, 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
A	*B*	*C*	*D**	*E*	*F*	*G*
¾	----	30	----	190	-----	-----
1	56	56	26	450	700	320
1¼	122	122	58	990	1200	670
1½	190	190	95	1500	1900	1058
2	386	386	195	3000	4000	2300
2½	635	635	395	-----	6700	3800
3	1163	1129	700	-----	10,700	7000
3½	1737	1548	1150	-----	-----	10,000
4	2457	2042	1700	-----	-----	-----
5	4546	-----	3150	-----	-----	-----
6	7462	**Different makes of supply and return valves, steam traps and other specialties vary as to capacity, therefore use size as recommended for any particular make. Vertical connections to be of same size as valve and trap used. Return horizontal runout to be not less than ¾ in.**				

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

†This table is for systems which are open to atmosphere or operate under slight pressure or partial vacuum without use of vacuum pumps.

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 ¼ 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. The drip for a vapor or vacuum system may be taken into a dry return through a steam trap.

Note 5.—Pitch of mains should be not less than ¼ in in 10 ft.; on horizontal branches to radiators and risers at least ½ in. in 10 ft.