

TABLE 13. PIPE SIZES FOR TWO-PIPE VAPOR HEATING SYSTEMS, WHERE EQUIVALENT LENGTH OF RUN FROM BOILER OR SOURCE OF SUPPLY TO FARTHEST RADIATOR EXCEEDS 200 FT.

Capacity in Sq. Ft. Equivalent Radiation

Based on 2 oz. Total Pressure Drop

PIPE SIZE INCHES	EQUIVALENT LENGTH OF PIPE FROM BOILER TO FARTHEST RADIATOR, INCLUDING MAIN AND RISER. (See Note 6.)				MAXIMUM CAPACITIES		
	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
	100 Ft.	200 Ft.	300 Ft.	400 Ft.			
A	B	C	D	E	F	Ga	H
¾	---	---	---	---	30	---	190
1	79	56	46	39	56	26	450
1¼	173	122	100	87	122	58	990
1½	269	190	155	134	190	95	1500
2	546	386	315	273	386	195	3000
2½	898	635	518	449	635	395	---
3	1645	1163	948	822	1129	700	---
3½	2457	1737	1419	1228	1548	1150	---
4	3475	2457	2011	1738	2042	1700	---
5	6929	4546	3712	3214	---	3150	---
6	10,553	7462	6094	5276	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.		
8	21,967	15,533	12,682	10,983			
10	40,085	23,345	23,144	20,043			
12	64,336	45,492	37,145	32,168			

PIPE SIZE INCHES	DRY RETURN MAIN				WET RETURN MAIN			
	EQUIVALENT LENGTH OF RUN FROM BOILER TO FARTHEST RADIATOR IN FEET				EQUIVALENT LENGTH OF RUN FROM BOILER TO FARTHEST RADIATOR IN FEET			
	100	200	300	400	100	200	300	400
I	J	K	L	M	N	O	P	Q
1	355	320	285	248	1000	700	580	500
1¼	745	670	595	520	1700	1200	990	850
1½	1173	1058	943	822	2700	1900	1570	1350
2	2680	2300	2140	1880	5600	4000	3240	2800
2½	4300	3800	3470	3040	9400	6700	5300	4700
3	7800	7000	6250	5480	15,000	10,700	8500	7500
3½	11,100	10,000	8800	7880	22,000	16,000	13,200	11,000
4	16,700	15,000	13,400	11,700	31,000	22,000	18,300	15,500

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INSTRUCTIONS FOR USING TABLE 13

a1. Radiator branches more than 8 ft. in length should be one size larger than shown in Column G.

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

3. These tables apply where pipes are properly reamed. No allowances for defective material of workmanship have been made. (Also see Tables 7 and 8).

4. Capacities based on ¼ lb. condensation per square foot per hour equivalent radiation and actual diameter of standard pipe.

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

6. Mains are to be proportioned according to the equivalent length of run from the boiler or source of supply to the farthest radiators supplied by the main.

Determine equivalent length of run then use figures in corresponding Columns (B to E) for supply mains; (J to M) for dry-return mains; (N to Q) for wet-return mains for sizing the entire run.

For example: If the distance from boiler or source of supply to the farthest radiator on the longest main should be 300 ft., all mains are to be sized from Column D; if 400 ft., Column E.

Supply and return risers are to be proportioned according to the equivalent length of run from the boiler or source of supply to the farthest radiator on each riser.

For supply risers determine the distance from the boiler to the farthest radiator served by that riser then use the figures in the corresponding Columns (B to E) for sizing each supply riser; providing the amount of radiation for that riser does not exceed amounts shown in Column F. Where supply riser capacities are found to be in excess of amounts shown in Column F, step up to necessary size indicated in that column.

For example: If the distance from the boiler or source of supply to the farthest radiator on a supply riser is 300 ft., that riser is to be sized from Column D, providing the amount of radiation does not exceed the amount shown in Column F. If the amount exceeds that in Column F, use amounts shown in Column F for sizing that entire riser.

If another riser taken from the same main as the one indicated is only 200 ft., this riser should be sized from Column C providing the amount of radiation does not exceed that as shown in Column F.

For return risers determine the equivalent length of run in feet from the top of each riser to the boiler, then use the figures in the corresponding Columns (J to M) for sizing each riser.

7. For practical purposes the pipe sizes on the usual heating system may be determined by using the pressure drop indicated by the longest main riser on that system, neglecting the separate computations for each separate shorter run.

8. Where it is necessary to drip a supply main or a supply riser or a branch to a supply riser, same should drip separately into a wet return. The drip for a vapor or vacuum system may be taken into a dry return through a steam trap.

9. 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.

10. In general it is desirable not to have a supply main smaller than 2 in. in diameter. When the supply main is larger than 2½ in. at the beginning, it is desirable that it shall not be smaller than 2½ in. at the end.