TABLE 29. PRESSURE LOSSES WITH LOW PRESSURE STEAM

Capacities of pipes for various pressure losses in ounces per 100 ft. straight pipe or its equivalent, allowing for condensation in covered piping, steam and condensation flowing in same direction, given in terms of square feet of direct radiation based on ¼ lb. condensation per sq. ft. per hr.

For capacities of pipes other than 100 ft. long, multiply the capacities given below by the factor for required length as given in Table 27, Column No. 4.

To determine the pressure loss in a pipe of given size, length and capacity: Multiply pressure loss in ounces per 100 ft. by length of pipe divided by 100.

Press. Loss in Oz. 100'	Commercial Pipe Size														
	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	4½"	5"	6"	7"	8"	10"
0.25	12	23	51	79	158	262	480	717	1014	1379	1887	3078	4559	6408	11631
0.50	16	32	71	111	224	370	678	1013	1433	1949	2667	4352	6446	9060	16445
1.00	23	46	101	157	316	524	959	1431	2027	2757	3773	6156	9117	12814	23261
1.50	28	56	124	192	387	641	1174	1754	2481	3374	4618	7535	11159	15685	28471
2.00	32	64	142	222	447	741	1356	2026	2866	3898	5334	8704	12891	18119	32891
2.50	36	73	160	248	500	829	1517	2266	3205	4358	5964	9732	14414	20259	36775
3.00	39	79	175	272	548	908	1662	2482	3511	4774	6534	10662	15790	22194	40610
3.50	43	86	189	293	591	980	1794	2680	3790	5155	7055	11511	17048	24286	44115
4.00	46	91	202	314	632	1048	1919	2886	4054	5513	7543	12312	18231	25631	46520
4.50	48	97	214	333	671	1111	2035	3039	4299	5847	8002	13047	19320	27157	49315
5	51	102	226	351	707	1172	2145	3204	4532	6164	8435	13747	20456	28607	51931
6	56	112	247	384	774	1283	2349	3509	4964	6751	9349	15346	22547	31946	58311
7	60	121	267	415	836	1386	2537	3790	5361	7281	9961	16248	24060	33817	61397
8	64	129	286	443	894	1482	2713	4052	5732	7796	10667	17407	25781	36221	65782
9	68	137	303	470	949	1572	2878	4299	6012	8167	11223	18337	27217	38248	69357
10	72	145	319	496	1000	1657	3033	4532	6410	8716	11928	19464	28827	40518	73550
11	76	152	335	520	1049	1738	3181	4721	6707	9101	12211	20317	30039	42351	77012
12	79	159	350	543	1095	1815	3334	4963	7020	9548	13068	21324	31581	44388	81200
13	82	165	364	565	1140	1889	3461	5161	7308	9929	13589	22168	32838	46480	84710
14	85	172	378	587	1183	1960	3588	5360	7580	10310	14110	23012	34096	48572	88221
15	88	178	391	607	1226	2029	3713	5546	7843	10668	14598	23819	35284	49976	90990
16	91	184	404	627	1265	2096	3838	5732	8108	11026	15086	24624	36472	51381	93760
17	94	189	416	647	1304	2159	3954	5904	8353	11410	15544	25350	37560	52847	95685
18	97	195	428	665	1342	2222	4070	6077	8598	11794	16003	26087	38641	54314	98630
19	99	200	440	683	1378	2283	4180	6242	8830	12061	16437	26840	39776	55764	106247
20	102	205	452	701	1414	2344	4290	6407	9063	12328	16870	27594	40912	57214	113862
24	112	225	495	768	1548	2566	4697	7018	9928	13501	18697	30691	45094	63992	116621

TABLE 30. ONE-PIPE STEAM

Capacity in Sq. Ft. of Radiation

A Commercial Pipe Sizes	*B* Supply Main Branch to Risers (dripped). Steam and water flowing same direction.	*C* Supply Main Branch to Risers; Up-Feed Risers. Steam and water flowing opposite direction.	*D* Branches to Radiators		*E* Wet Drip Main	*F* Dry Drip Main				*G* Radiator Valve Sizes	*H* Allowance in feet of pipe for	
			5 ft. in length or less	5 ft. to 10 ft. in length		Not Exceeding 400 ft. in Length Graded not less than 1 in. in 30 ft.					Ells	Globe Valves
¾	.....	.....	.....	.....	.....	180				.....	0.8	1.2
1	40	40	24	.....	800	420				24	1.3	1.9
1¼	75	75	60	24	1,800	900				60	2.1	3.2
1½	150	100	100	60	3,000	1,500				100	2.8	4.2
2	300	170	200	100	6,000	3,000				200	5.	19.
2½	500	220	.....	.....	10,000	4,900				.....	7.	26.
3	900	340	.....	.....	18,000	9,000				.....	10.	33.
3½	1,500	460	.....	.....	26,000	13,000				.....	12.	39.
4	2,000	600	.....	.....	37,000	18,500				.....	14.	45.
4½	2,800	.....	.....	Drips for Risers						.....	15.	54.
5	3,600	For Down Feed Risers See Note	.....	Steam Risers	Drips to Returns Wet	Drips to Returns Dry	Steam Risers	Drips to Returns Wet	Drips to Returns Dry	.....	18.	58.
6	6,000		.....							.....	22.	70.
7	9,000	.....	.....	1	¾	¾	2½	1	1¼	.....	26.	82.
8	13,000	.....	.....	1¼	¾	¾	3	1	1¼	.....	31.	94.
10	23,000	.....	.....	1½	¾	1	3½	1¼	1½	.....	39.	117.
12	37,000	.....	.....	2	1	1	4	1¼	1½	.....	47.	140.

NOTES

Length Factors—For supply mains where steam and water are flowing in the same direction and for wet returns where lengths are other than 100 ft. multiply the factor here given by the sq. ft. of radiation to determine the carrying capacity of the pipe.

Length in Feet	200	300	400	500	1,000
Factors	0.710	0.578	0.500	0.447	0.316

To obtain size of supply mains (not dripped) and down feed risers where steam and water are flowing in the same direction, add amount of radiation the pipe is to supply steam to, and ¼ the radiation the pipe is carrying water from, and size as for steam mains (Column *B*). Where main is dripped at each point of reduction or oftener use Column *B*.

The end of steam mains, if reduced, to be one size larger than table calls for. On circuit mains where reduced and not dripped use eccentric coupling for making reduction.

In installations in buildings 3 stories or more in height each up-feed riser should be separately dripped into wet drip main. In tall buildings where risers are 100 ft. in length, or over, horizontal run-outs, to permit expansion or, where necessary, due to the design of building, should have separate drips carried down to basement into drip return line.