



TECH TIP #46

STEAM PIPE SIZING GUIDE

Did you realize that steam travels at speeds around 82 mph in the average industrial plant piping system?

Did you realize that if you size your steam piping in an office area like the industrial plants, you would have some very upset secretaries complaining about noise? To keep the velocity noise to an acceptable level in a institutional or school setting steam supply piping is generally sized at about 80 ft/sec or 55 mph.

Did you realize that changing the operating pressure of a steam boiler from a engineering design of 125 psi to say 20 psi changes the steam exit velocity from 2850 feet per minute (47.5 ft per sec) to over 11,000 feet per minute (183 ft per sec).....talk about wet steam, the "carryover" of water with the steam at the lower operating pressure will cause major problems all throughout the system. We can help you with your steam system questions.

Did you realize the pipe size and layout is extremely important at the boiler steam supply outlet nozzle. Boiler manufacturers use very specific criteria to size the supply nozzle based on the capacity and operating pressure. The steam velocity at the nozzle must be kept between the 50-80 ft/sec to maintain dry steam.

Remember, if the question is about steam....Call the steam experts in Oklahoma for over 90 years, Federal Corporation.

ADVANCED TECHTIPS.....Look over the following information from the leaders in steam system components, Spirax Sarco. Contact our office and request Spirax Sarco's fantastic engineering handbook, "Hook-ups". It's free to our customers..... \$50.00 a copy to our competitors.

Table 1: Steam Pipe Sizing for Steam Velocity

Capacity of Sch. 80 Pipe in lb/hr steam

Pressure psi	Velocity ft/sec	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
5	50	12	26	45	70	100	190	280	410	760	1250	1770	3100	5000	7100
	80	19	45	75	115	170	300	490	710	1250	1800	2700	5200	7600	11000
	120	29	60	110	175	245	460	700	1000	1800	2900	4000	7500	12000	16500
10	50	15	35	55	88	130	240	365	550	950	1500	2200	3770	6160	8500
	80	24	52	95	150	210	380	600	900	1500	2400	3300	5900	9700	13000
	120	35	72	135	210	330	590	850	1250	2200	3400	4800	9000	14400	20500
20	50	21	47	82	123	185	320	520	740	1340	1980	2900	5300	8000	11500
	80	32	70	120	190	260	520	810	1100	1900	3100	4500	8400	13200	18300
	120	50	105	190	300	440	840	1250	1720	3100	4850	6750	13000	19800	28000
30	50	26	56	100	160	230	420	650	950	1650	2600	3650	6500	10500	14500
	80	42	94	155	250	360	655	950	1460	2700	3900	5600	10700	16500	23500
	120	62	130	240	370	570	990	1550	2100	3950	6100	8700	16000	25000	35000
40	50	32	75	120	190	260	505	790	1100	1900	3100	4200	8200	12800	18000
	80	51	110	195	300	445	840	1250	1800	3120	4900	6800	13400	20300	28300
	120	75	160	290	460	660	1100	1900	2700	4700	7500	111000	19400	30500	42500
60	50	43	95	160	250	360	650	1000	1470	2700	3900	5700	10700	16500	24000
	80	65	140	250	400	600	1000	1650	2400	4400	6500	9400	17500	27200	38500
	120	102	240	410	610	950	1660	2600	3800	6500	10300	14700	26400	41000	58000
80	50	53	120	215	315	460	870	1300	1900	3200	5200	7000	13700	21200	29500
	80	85	190	320	500	730	1300	2100	3000	5000	8400	12200	21000	33800	47500
	120	130	290	500	750	1100	1900	3000	4200	7800	12000	17500	30600	51600	71700
100	50	63	130	240	360	570	980	1550	2100	4000	6100	8800	16300	26500	35500
	80	102	240	400	610	950	1660	2550	3700	6400	10200	14600	26000	41000	57300
	120	150	350	600	900	1370	2400	3700	5000	9100	15000	21600	38000	61500	86300
120	50	74	160	290	440	660	1100	1850	2600	4600	7000	10500	18600	29200	41000
	80	120	270	450	710	1030	1800	2800	4150	7200	11600	16500	29200	48000	73800
	120	175	400	680	1060	1520	2850	4300	6500	10700	17500	26000	44300	70200	97700
150	50	90	208	340	550	820	1380	2230	3220	5500	8800	12900	22000	35600	50000
	80	145	320	570	900	1250	2200	3400	4900	8500	14000	20000	35500	57500	79800
	120	215	450	850	1280	1890	3400	5300	7500	13400	20600	30000	55500	85500	120000
200	50	110	265	450	680	1020	1780	2800	4120	7100	11500	16300	28500	45300	64000
	80	180	410	700	1100	1560	2910	4400	6600	11000	18000	26600	46000	72300	100000
	120	250	600	1100	1630	2400	4350	6800	9400	16900	25900	37000	70600	109000	152000