

Suggested Pipe Size for Compressed Air Flow at 100 PSI Length of Run, Feet

SCFM Air Flow	25	50	75	100	150	200	300	500	1000	Compressor HP
4	½	½	½	½	½	½	½	¾	¾	1
12	½	½	½	¾	¾	½	¾	1	1	3
20	¾	¾	¾	¾	1	¾	1	1¼	1¼	5
30	¾	¾	1	1	1	1	1¼	1¼	1¼	7½
40	¾	1	1	1	1¼	1	1¼	1½	1½	10
60	1	1	1¼	1¼	1¼	1¼	1½	1½	2	15
80	1	1¼	1¼	1¼	1½	1¼	1½	2	2	20
100	1¼	1¼	1½	1½	1½	1½	2	2	2½	25
120	1¼	1½	1½	1½	2	1½	2	2½	2½	30
160	1¼	1½	1½	2	2	1½	2½	2½	3	40
200	1½	2	2	2	2	2	2½	3	3	50
240	1½	2	2	2	2½	2	2½	3	3	60
300	2	2	2	2½	2½	2	3	3	3½	75
400	2	2½	2½	2½	3	2½	3	3½	4	100
500	2	2½	2½	3	3	2½	3½	3½	4	125

On a compressed air distribution system, pressure losses greater than 3% are considered excessive, and a well-designed system having a steady rate of air flow is usually designed for not more than a 1% loss or 1 PSI for a 100 PSI system. The pipe size depends not only on the volume of air flow but how far it must be carried. To hold the distribution loss to 1 PSI, pipes of larger diameter must be used on longer runs to carry the same flow that can be handled by smaller pipes on shorter runs.

Figures in the body of the chart above are pipe sizes recommended on a 100 PSI system to carry air with less than 1 PSI loss. When measuring lengths of runs, add 5 feet of length for each pipe fitting. If carrying 120 PSI pressure these sizes will carry slightly *more* air than shown, or pressure loss will be slightly less than 1 PSI. If carrying 80 PSI pressure these pipes will carry slightly *less* air at 1 PSI pressure loss than shown in the chart.

The left column of the chart shows the volume of air to be carried. It is difficult to estimate the air flow volume to be carried in each leg of the distribution system. This varies with the application. On some applications, like in a large plant with many legs in the distribution system serving dozens of air-operated machines, the air usage may be at a fairly steady rate. Other applications, usually on small systems, may have to carry a high surge of air if several machines happen to be operated at the same time. Then there may be a period with almost no flow.

To make a realistic estimate of air flow volume, the far right column of the chart showing compressor HP may be used. On steady pumping, a compressor will produce a minimum of 4 SCFM air flow for each 1 HP of capacity. This is a conservative figure, as most compressors will produce 5 or 6 SCFM.

For example, a 25 HP compressor will produce at least 100 SCFM of air. This is shown in the far left column on the same line as 25 HP.

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