

Intake Pipe Sizing Chart – Medical Air Systems

Medical Air Systems	Max CFM @110 Psi	System Intake Pipe Length (ft) – See notes											
		25	50	75	100	150	200	250	300	350	400	450	500
Duplex 2hp	6.5	1.25	1.25	1.25	1.25	1.50	1.50	1.50	2.00	2.00	2.00	2.00	2.00
Duplex 3hp	9.6	1.25	1.25	1.50	1.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.50
Duplex 5hp	16	1.50	2.00	2.00	2.00	2.00	2.50	2.50	2.50	2.50	2.50	2.50	3.00
Duplex 7.5hp	24	2.00	2.00	2.00	2.50	2.50	2.50	3.00	3.00	3.00	3.00	3.00	3.00
Duplex 10hp	32	2.00	2.50	2.50	2.50	2.50	3.00	3.00	3.00	3.00	3.50	3.50	3.50
Duplex 15hp	48	2.50	2.50	2.50	3.00	3.00	3.50	3.50	3.50	3.50	4.00	4.00	4.00
Duplex 20hp	64	2.50	3.00	3.50	3.50	3.50	4.00	4.00	4.00	5.00	5.00	5.00	5.00
Triplex 7.5hp	48	3.00	3.00	3.00	3.00	3.00	3.00	3.50	3.50	3.50	3.50	3.50	3.50
Triplex 10hp	64	3.00	3.00	3.00	3.00	3.00	3.00	3.50	3.50	3.50	3.50	4.00	4.00
Triplex 15hp	96	3.00	3.00	3.00	3.00	3.50	3.50	4.00	4.00	4.00	4.00	5.00	5.00
Triplex 20hp	128	3.00	3.50	3.50	4.00	4.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00
Quadruplex 7.5hp	72	3.00	3.00	3.00	3.00	3.00	3.50	3.50	3.50	4.00	4.00	4.00	4.00
Quadruplex 10hp	96	3.00	3.00	3.00	3.00	3.50	3.50	3.50	4.00	4.00	4.00	4.00	5.00
Quadruplex 15hp	144	3.00	3.00	3.50	3.50	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00
Quadruplex 20hp	192	3.50	4.00	4.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
Pentaplex 15hp	192	3.50	4.00	4.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00
Pentaplex 20hp	256	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00
Hexaplex 15hp	240	4.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00
Hexaplex 20hp	320	5.00	5.00	5.00	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00

Notes:

¹ Length is based on adjusted length for bends.

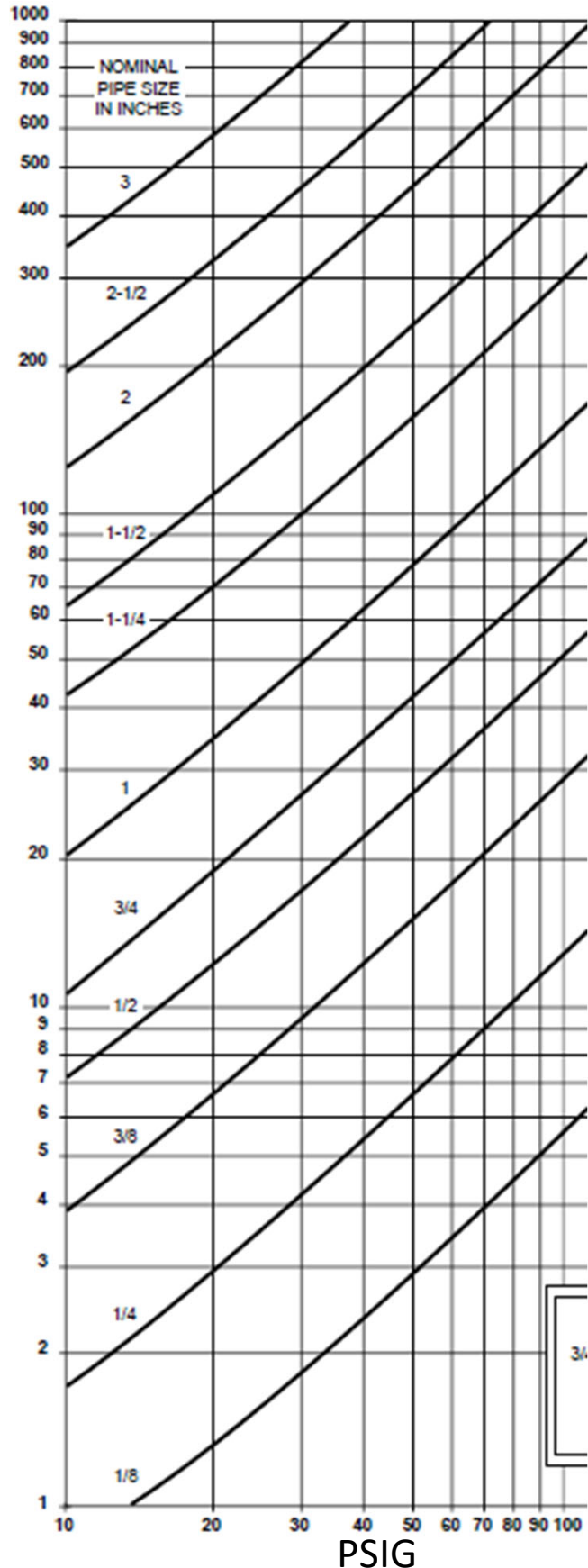
Effective Pipe Length for each 90° elbow (air system)

Pipe Size (in)	1.25	1.5	2	2.5	3	3.5	4	5	6	8
Effective Pipe Length (ft)	3.4	4.0	4.9	6.4	7.9	9.7	10.0	11.9	13.2	14.5

Discharge Pipe Sizing Chart – Medical Air Systems

Medical Air Systems	Max CFM @50 Psi	Typ. Pipe Size	Min. ⁶ Dist. Pipe Size
Duplex 2hp	7	3/4	1/2
Duplex 3hp	10.4	3/4	1/2
Duplex 5hp	17.2	3/4	3/4
Duplex 7.5hp	25.2	3/4	3/4
Duplex 10hp	34.8	3/4	3/4
Duplex 15hp	50.4	1	1
Duplex 20hp	69.4	1	1-1/4
Triplex 7.5hp	50.4	1	1
Triplex 10hp	70	1	1
Triplex 15hp	101	1-1/4	1-1/4
Triplex 20hp	139	1-1/4	1-1/4
Quadruplex 7.5hp	76	1	1
Quadruplex 10hp	104	1-1/4	1
Quadruplex 15hp	151	1-1/4	1-1/4
Quadruplex 20hp	208	1-1/2	1-1/2
Pentaplex 15hp	202	1-1/2	1-1/2
Pentaplex 20hp	278	1-1/2	1-1/2
Hexaplex 15hp	252	1-1/2	1-1/2
Hexaplex 20hp	347	2	2

SCFM



Notes:

- ¹ A larger pipe size may be required depending on the length of the distribution piping in the facility.
- ² See Effective Pipe Length table for adjustments
- ³ Table assumes 5% pressure loss for pipes 3/4" and up and 100 feet of pipe at 68°F, 14.7psia atmospheric pressure, and .0018" pipe roughness
- ⁴ Always go up in size if close or questionable
- ⁵ Instrument Air systems will use same pipe sizing (flow is different).
- ⁶ Above pipe size is what is typically at the intake to the vacuum system. distribution piping may need to be larger.

Exhaust Pipe Sizing Chart – Medical Vacuum Systems

Medical Vacuum Systems	Max scfm @19 inHg	System Exhaust Pipe Length (ft) – See notes											
		25	50	75	100	150	200	250	300	350	400	450	500
Duplex ≤ 2hp	16	1.25	1.25	1.25	1.25	1.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Duplex 3hp	21	1.50	1.50	1.50	1.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Duplex 4hp	29	2.00	2.00	2.00	2.00	2.00	2.50	2.50	3.00	3.00	3.00	3.00	3.00
Duplex 5hp	38	2.00	2.00	2.00	2.00	2.50	2.50	3.00	3.00	3.00	3.00	3.00	3.00
Duplex 7.5hp	65	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Duplex 10hp	87	3.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
Duplex 15hp	129	4.00	4.00	4.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00
Duplex 20hp	137	4.00	4.00	4.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00
Duplex 25hp	168	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00
Triplex 5hp	76	3.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
Triplex 7.5hp	130	3.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00
Triplex 10hp	174	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Triplex 15hp	258	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00
Triplex 20hp	274	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00
Triplex 25hp	336	5.00	5.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00
Quadruplex 7.5hp	195	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Quadruplex 10hp	261	4.00	4.00	4.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00	6.00
Quadruplex 15hp	387	5.00	5.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00
Quadruplex 20hp	411	5.00	5.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00
Quadruplex 25hp	504	5.00	5.00	6.00	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00	8.00

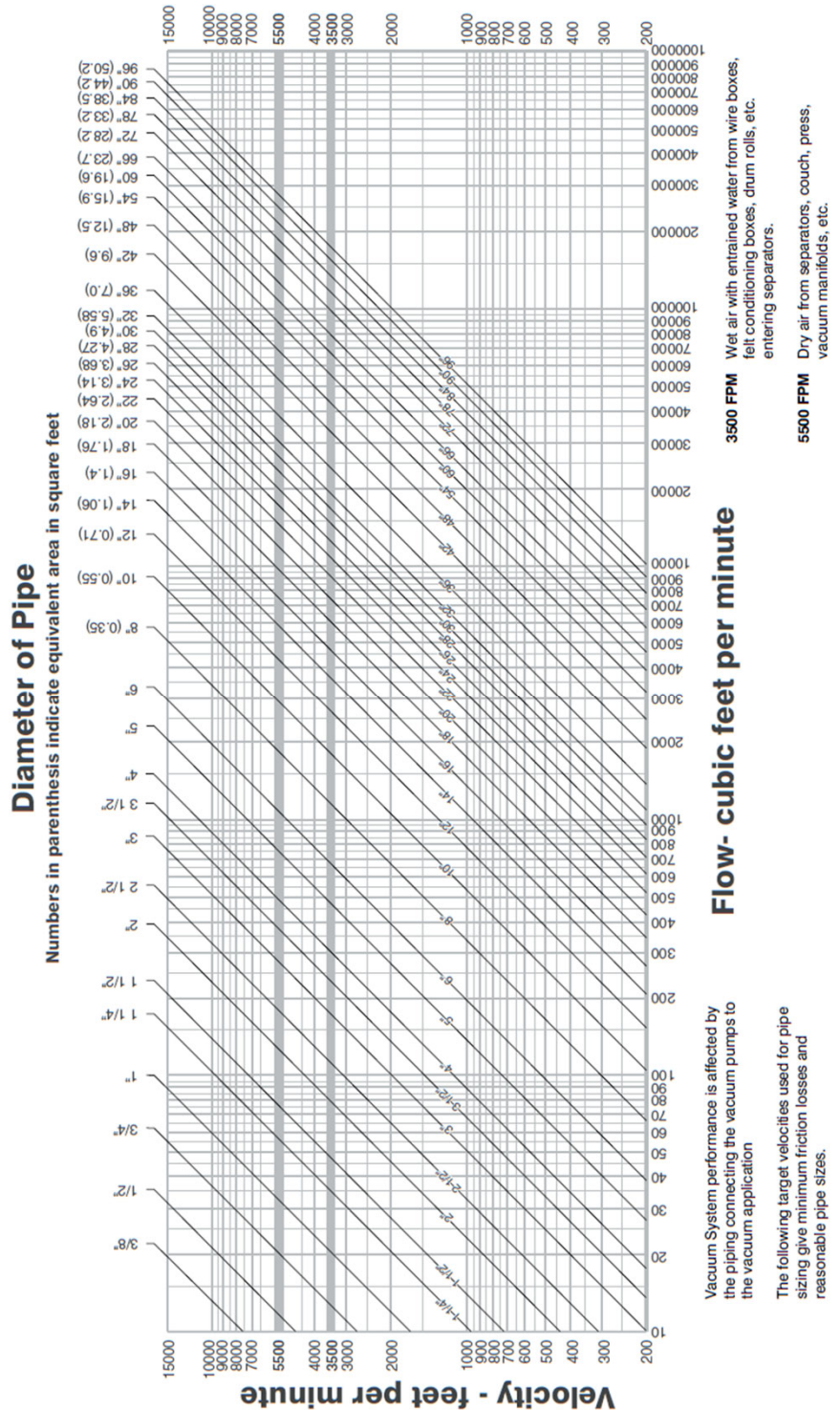
Notes:

- ¹ Length is based on adjusted length for bends.
- ² All pipe sizes are based on copper pipe (Type L), 14.7 psia
- ³ The minimum pipe size must be maintained for the total length of the exhaust pipe. Use next larger size if minimum size is not available.
- ⁴ When determining the length of pipe, add all straight length of pipe together in addition to the number of elbows times the effective pipe length for that size pipe (see the table below).

Effective Pipe Length for each 90° elbow (vacuum system)										
Pipe Size (in)	1.5	2	2.5	3	3.5	4	5	6	8	
Effective Pipe Length (ft)	3.6	4.9	6.4	7.9	9.4	10.0	11.9	13.2	14.5	

Vacuum Pipe Sizing Chart – Medical Vacuum Systems

Medical Vacuum Systems	Max scfm @19 inHg	Typical ³ System Pipe Size
Duplex ≤ 2hp	16	1.5
Duplex 3hp	21	1.5
Duplex 4hp	29	1.5
Duplex 5hp	38	1.5
Duplex 6hp	52	2
Duplex 7.5hp	65	2
Duplex 8hp	77	2
Duplex 10hp	87	2
Duplex 15hp	129	3
Duplex 20hp	137	3
Duplex 25hp	168	3
Triplex 5hp	76	3
Triplex 6hp	104	3
Triplex 7.5hp	130	3
Triplex 8hp	154	3
Triplex 10hp	174	3
Triplex 15hp	258	4
Triplex 20hp	274	4
Triplex 25hp	336	4
Quadruplex 7.5hp	195	3
Quadruplex 8hp	231	3
Quadruplex 10hp	261	3
Quadruplex 15hp	387	4
Quadruplex 20hp	411	4
Quadruplex 25hp	504	4



Notes:

¹ A larger pipe size may be required depending on the length of the distribution piping in the facility.

² See Effective Pipe Length table for adjustments

³ Above pipe size is what is typically at the intake to the vacuum system. Distribution piping may need to be larger.