

## Atmospheric Pressure Calculation

Note the Rated Effect of Atmospheric Pressure on Vacuum Level – Capacities Are Reduced As You Go Higher  
The Possible Vacuum Attained is based on your Altitude



**Basic Formula:**

$$\text{Current Atmospheric Pressure} \times \frac{\text{Max. Rated Level of Vacuum Pump}}{29.92 \text{ in. Hg. (Absolute Vacuum)}}$$

It is important to consider the relationship between atmospheric pressure and altitude as it affects vacuum pump performance. Basically, the higher you are, the less vacuum you can attain.

Because free air is less dense at higher altitudes (i.e. lower atmospheric pressure) operation at these higher altitudes has the effect of reducing the capacity and maximum vacuum levels attainable. In general, flow is not affected, only the maximum vacuum level attainable.

<i>Vacuum Gauge Reading When Read at Altitude</i>					
Altitude Above Sea Level		Atmospheric Pressure (psi)	Vacuum Level		
Feet	Meters		Max. Attainable	Loss at Altitude	Max. Possible at Altitude
0 ft.	0 M	14.70 psi	29.921 in. Hg.	-	-
1000 ft.	305 M	14.16 psi	28.9 in. Hg.	3.4%	96.6%
2000 ft.	610 M	13.66 psi	27.8 in. Hg.	7.1%	92.9%
3000 ft.	914 M	13.16 psi	26.8 in. Hg.	10.4%	89.6%
4000 ft.	1219 M	12.68 psi	25.8 in. Hg.	13.8%	86.2%
5000 ft.	1524 M	12.22 psi	24.9 in. Hg.	16.8%	83.2%
6000 ft.	1829 M	11.77 psi	24.0 in. Hg.	19.8%	80.2%
7000 ft.	2134 M	11.33 psi	23.1 in. Hg.	22.8%	77.2%
8000 ft.	2438 M	10.91 psi	22.2 in. Hg.	25.9%	74.1%
9000 ft.	2743 M	10.50 psi	21.4 in. Hg.	28.6%	71.4%
10,000 ft.	3048 M	10.10 psi	20.6 in. Hg.	31.3%	68.7%
11,000 ft.	3353 M	9.71 psi	19.8 in. Hg.	33.9%	66.1%
12,000 ft.	3658 M	9.34 psi	19.0 in. Hg.	36.5%	63.5%
13,000 ft.	3962 M	8.97 psi	18.3 in. Hg.	39.0%	61.0%
14,000 ft.	4267 M	8.62 psi	17.5 in. Hg.	41.4%	58.6%
15,000 ft.	4752 M	8.28 psi	16.9 in. Hg.	43.6%	56.4%

## Atmospheric Pressure Calculation (Continue)

<i>Pressure Below Atmospheric</i>						
<b>Pg - psig</b>	<b>Pa - psia</b>	<b>Inches Hg.</b>	<b>-m bar</b>	<b>Torr</b>	<b>- mm Hg.</b>	<b>% Vacuum</b>
0.00	14.70	0	0.00	760.00	0.00	0.00
0.49	14.24	1	33.86	734.60	25.40	3.30
0.98	13.75	2	67.72	709.20	50.80	6.60
1.47	13.26	3	101.58	683.80	76.20	9.90
1.96	12.76	4	135.44	658.40	101.60	13.20
2.45	12.27	5	169.30	633.00	127.00	16.50
2.95	11.78	6	203.16	607.60	152.40	19.80
3.44	11.29	7	237.02	582.20	177.80	23.10
3.93	10.80	8	270.88	556.80	203.20	26.40
4.42	10.31	9	304.74	531.40	228.60	29.70
4.91	9.82	10	338.60	506.00	254.00	33.00
5.40	9.33	11	372.46	480.60	279.40	36.30
5.89	8.84	12	406.32	455.20	304.80	39.60
6.38	8.35	13	440.18	429.80	330.20	42.90
6.87	7.96	14	474.04	404.40	355.60	46.20
7.36	7.36	15	507.90	379.00	381.00	49.40
7.86	6.87	16	541.76	353.60	406.40	52.80
8.35	6.38	17	575.62	328.20	431.80	56.10
8.84	5.89	18	609.48	302.80	457.20	59.40
9.33	5.40	19	643.34	277.40	482.60	62.70
9.82	4.91	20	677.20	252.00	508.00	66.00
10.31	4.42	21	711.06	226.60	533.40	69.30
10.80	3.93	22	744.92	201.20	558.80	72.60
11.29	3.44	23	778.78	175.80	584.20	75.90
11.78	2.95	24	812.64	150.40	609.60	79.20
12.27	2.45	25	846.50	125.00	635.00	82.50
12.76	1.96	26	880.36	99.60	660.40	85.80
13.26	1.47	27	914.22	74.20	685.80	89.10
13.75	0.98	28	948.08	48.80	711.20	92.40
14.24	0.49	29	981.94	23.40	736.60	95.70
14.70	0.00	29.92	1013.00	0.00	760.00	100.00
<b>Absolute Vacuum</b>						

ANVER vacuum equipment is rated per US ASME and other European regulations at sea level. Please note it is the responsibility of the purchaser of vacuum equipment to account for and compensate for loss of vacuum lifting capacity if equipment is to be used at higher altitudes. This sometimes requires purchasing a larger capacity vacuum lifter and derating it, or purchasing larger diameter pads, or larger pump in vacuum component applications. Vacuum lifters that have control systems to shut off above a preset level must also be adjusted down for altitude. Vacuum gauges with green, yellow and red zones may also not indicate correctly at high altitude. This is all due to the fact that as you go higher in altitude you cannot achieve the same levels of vacuum. Contact factory for additional information as different applications and vacuum lifter models require different solutions.