

Pressure in PSI on End of Vacuum Chuck

Inside Diameter of chuck	Area in SQ. Inches	In Hg	0.4887 PSI per inch of mercury				
		5	10	15	20	25	30
		Pounds of air pressure at end of chuck					
1.13	1.00	2.45	4.90	7.35	9.80	12.25	14.70
2	3.14	8	15	23	31	38	46
2.5	4.91	12	24	36	48	60	72
3	7.07	17	35	52	69	86	104
3.5	9.62	24	47	71	94	118	141
4	12.57	31	61	92	123	154	184
4.5	15.90	39	78	117	155	194	233
5	19.63	48	96	144	192	240	288
5.5	23.76	58	116	174	232	290	348
6	28.27	69	138	207	276	345	415
6.5	33.18	81	162	243	324	405	486
7	38.48	94	188	282	376	470	564
7.5	44.18	108	216	324	432	540	648
8	50.27	123	246	368	491	614	737
8.5	56.75	139	277	416	555	693	832
9	63.62	155	311	466	622	777	933
9.5	70.88	173	346	520	693	866	1039
10	78.54	192	384	576	768	960	1151
10.5	86.59	212	423	635	846	1058	1269
11	95.03	232	464	697	929	1161	1393
11.5	103.87	254	508	761	1015	1269	1523
12	113.10	276	553	829	1105	1382	1658
12.5	122.72	300	600	900	1199	1499	1799
13	132.73	324	649	973	1297	1622	1946
13.5	143.14	350	700	1049	1399	1749	2099
14	153.94	376	752	1128	1505	1881	2257
14.5	165.13	403	807	1210	1614	2017	2421
15	176.71	432	864	1295	1727	2159	2591
15.5	188.69	461	922	1383	1844	2305	2766
16	201.06	491	983	1474	1965	2456	2948

Example: A 3 1/2" chuck at 20 inches of mercury (in Hg) at sea level will have a total of 88 pounds of pressure pushing on the end of the chuck.

Determining Pressure on end of vacuum chuck
 $\text{pressure} = (\text{Area} \times .4887) \times \text{inches mercury}$

area of a circle = $\pi \times \text{radius squared}$
 $3.14 \times (R \times R) = \text{Square inches}$

Atmospheric Pressure = 14.7 PSI
 0.4887 PSI per inch of mercury