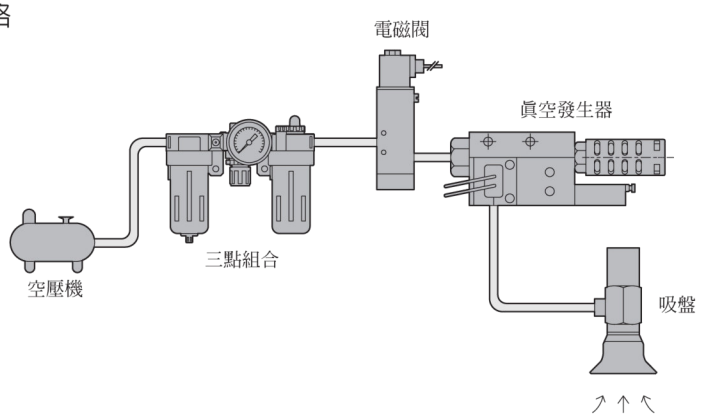
真空吸盤使用概略



理論吸著力

圓形吸盤

吸盤徑 (φmm)	2	3.5	5	6	8	10	15	20	25	30	35	40	50	60	80	95	100	120	150	200
吸盤面積(cm^2)	0.031	0.096	0.196	0.282	0.502	0.785	1.767	3.141	4.908	7.068	9.621	12.56	19.63	28.27	50.26	70.88	78.53	113.0	176.7	314.1
−93.3 kpa	0.293	0.900	1.837	2.645	4.703	7.349	16.53	29.39	45.93	66.14	90.03	117.5	183.7	264.5	470.3	663.2	734.9	1058	1653	2939
−700 (mmHg)	[0.029]	[0.091]	[0.186]	[0.269]	[0.478]	[0.747]	[1.681]	[2.989]	[4.670]	[6.725]	[9.153]	[11.95]	[18.68]	[26.90]	[47.82]	[67.44]	[74.79]	[107.6]	[168.1]	[298.9]
−80.8 kpa	0.254	0.779	1.591	2.291	4.073	6.364	14.32	25.45	39.78	57.28	77.96	101.8	159.1	229.1	407.3	574.4	636.4	916.5	1432	2545
−600 (mmHg)	[0.025]	[0.078]	[0.160]	[0.230]	[0.409]	[0.640]	[1.441]	[2.562]	[4.003]	[5.764]	[7.846]	[10.24]	[16.01]	[23.05]	[40.99]	[57.8]	[63.05]	[92.23]	[144.1]	[256.2]
−66.7 kpa	0.210	0.648	1.313	1.891	3.362	5.254	11.82	21.01	32.83	47.28	64.36	84.06	131.3	189.1	336.2	474.1	525.4	756.5	1182	2101
−500 (mmHg)	[0.021]	[0.065]	[0.133]	[0.192]	[0.341]	[0.533]	[1.200]	[2.135]	[3.336]	[4.083]	[6.538]	[8.540]	[13.34]	[19.21]	[34.16]	[48.17]	[53.37]	[76.86]	[120.0]	[213.5]
−53.4 kpa	0.168	0.515	1.051	1.514	2.692	4.206	9.464	16.82	26.29	37.85	51.52	67.30	105.1	151.4	269.2	379.6	420.6	605.7	947.4	1682
−400 (mmHg)	[0.017]	[0.052]	[0.106]	[0.153]	[0.273]	[0.427]	[0.960]	[1.708]	[2.668]	[3.843]	[5.230]	[6.832]	[10.67]	[15.37]	[27.32]	[38.53]	[42.70]	[61.48]	[96.07]	[170.8]
−40.0 kpa	0.126	0.385	0.787	1.134	2.016	3.150	7.089	12.60	19.69	28.35	38.59	50.41	78.77	113.4	201.6	284.3	315.0	453.7	708.9	1260
−300 (mmHg)	[0.012]	[0.039]	[0.080]	[0.115]	[0.204]	[0.320]	[0.720]	[1.281]	[2.001]	[2.882]	[3.923]	[5.124]	[8.006]	[11.52]	[20.49]	[28.90]	[32.02]	[46.11]	[72.05]	[128.1]

橢圓形吸盤

吸盤徑 (φmm)	2×4	3.5×7	4×10	4×20	4×30	5×10	5×20	5×30	6×10	6×20	6×30	8×20	8×30
吸盤面積(cm^2)	0.071	0.218	0.365	0.765	1.165	0.446	0.946	1.446	0.522	1.122	1.722	1.462	2.262
−93.3 kpa	0.664	2.04	3.416	7.159	10.902	4.173	8.852	13.35	4.884	10.49	16.11	13.68	21.16
−700 (mmHg)	[0.068]	[0.207]	[0.347]	[728]	[1.108]	[0.424]	[0.900]	[1.375]	[0.496]	[1.067]	[1.638]	[1.391]	[2.152]
−80.8 kpa	0.575	1.767	2.958	6.200	9.441	3.614	7.666	11.71	4.230	9.092	13.95	11.84	18.33
−600 (mmHg)	[0.058]	[0.178]	[0.298]	[0.624]	[0.950]	[0.363]	[0.771]	[1.179]	[0.425]	[0.915]	[1.404]	[1.192]	[1.844]
−66.7 kpa	0.475	1.158	2.442	5.118	7.794	2.983	6.328	9.673	3.492	7.750	11.51	9.780	15.13
−500 (mmHg)	[0.048]	[0.148]	[0.248]	[0.529]	[0.792]	[0.303]	[0.642]	[0.982]	[0.354]	[0.762]	[1.170]	[0.993]	[1.537]
−53.4 kpa	0.380	1.168	1.955	4.097	6.240	2.388	5.066	7.744	2.795	6.009	9.222	7.830	12.11
−400 (mmHg)	[0.039]	[0.119]	[0.198]	[0.416]	[0.633]	[0.242]	[0.514]	[0.786]	[0.283]	[0.610]	[0.936]	[0.794]	[1.229]
−40.0 kpa	0.285	0.875	1.464	3.069	4.673	1.789	3.795	5.801	2.094	4.501	6.908	5.865	9.074
−300 (mmHg)	[0.029]	[0.089]	[0.149]	[0.312]	[0.475]	[0.181]	[0.385]	[0.589]	[0.212]	[0.457]	[0.702]	[0.596]	[0.922]

吸盤材質與特性

項目 / 材料	拉伸程度	延伸性	耐油性(汽油)	耐油性(苯)	耐氣候	耐臭氧	耐熱性	耐寒性	耐藥品	耐磨耗性	耐酸性	耐水性	電氣絕緣	硬度 HS
NBR (N)	◎	◎	◎	△	○	○	○	×	◎	○	○	◎	○	A60/S
矽膠(S)	△	○	△	△	○	○	○	◎	◎	×	×	○	◎	
PU膠(U)	◎	◎	◎	○	◎	◎	×	○	◎	◎	×	△	◎	
防靜電橡膠(SE)	△	○	△	△	○	○	○	◎	◎	×	×	○	10^4~10^6 Ω	A50/S
低阻抗防靜電橡膠(E)	△	○	×	×	○	×	○	◎	◎	×	△	○	200 Ω	

Ps. 備註

・◎：適合　○：條件上適合　△：不適合　×：不可使用

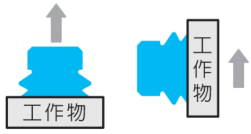
· 吸盤選定要領

- 理論吸附力是根據使用吸盤的面積和使用吸盤時產生的真空度計算求得
- 計算值做爲參考值，請根據需要進行實際的吸附試驗來確認
- 理論吸附力是靜態條件下的數值，需增加考量工作物的重量和移動時(如提升、停止、轉動…等)的加速度引起的力，請預留足夠的裕度
- 另外再確定吸盤的數量和配置時，請預留足夠的裕度

· 吸著能力計算方式

$$W=\frac{P\times A}{-10}$$

W：吸著能力 N
P：真空壓 kPa
A：吸盤面積 cm²

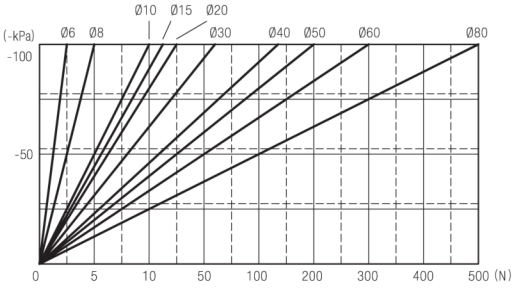


水平吸著

垂直吸著

· 理論吸著力(理論值)

吸盤直徑 ϕ6～ϕ80



· 吸盤材質

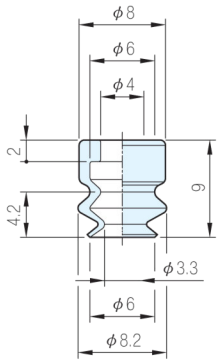
記號	材　質	硬度 HS	使用溫度範圍	顏色	表面電阻*	備註
N	NBR(橡膠)	A60/S	−26～120 ℃	黑	−	−
S	矽膠(Silicon)、矽橡膠		−60～250 ℃	白	−	−
SE	防靜電橡膠	A50/S		黑	10^4～10^6 Ω・cm	訂製品
E	低阻抗防靜電橡膠				200 Ω・cm	訂製品

Ps. 備註

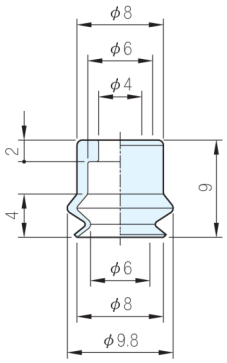
★1爲橡膠的導電性質，表示每cm³的電阻值
2我司指定測試片之測試值

吸盤尺寸圖

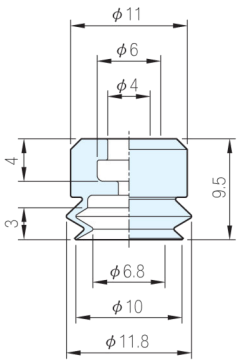
PB-06



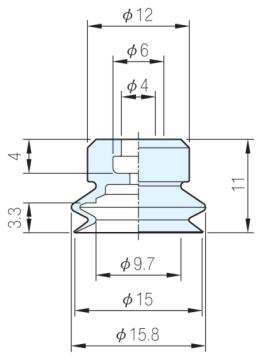
PB-08



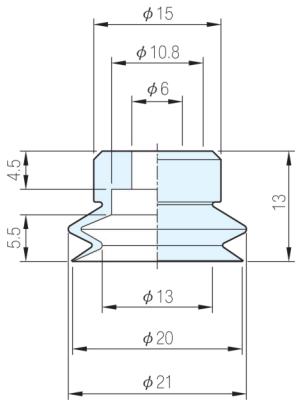
PB-10



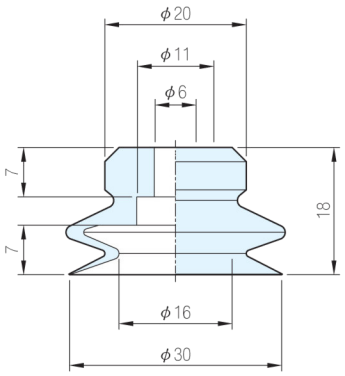
PB-15



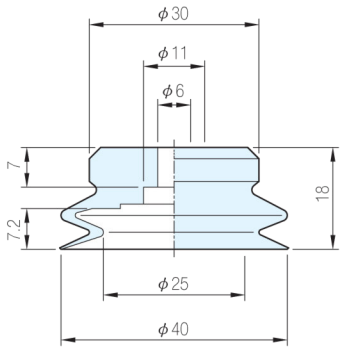
PB-20



PB-30



PB-40



PB-50