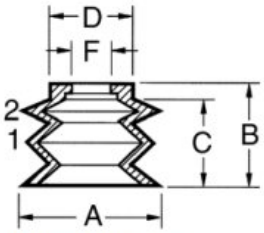
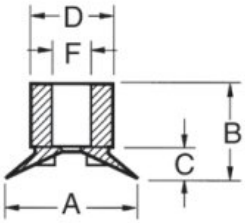
GAST Vacuum Cups to 5 7/8” Diameter

PRODUCT FEATURES

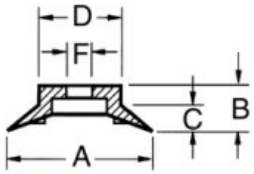
- Flat and bellows options for a variety of lifting surfaces
- Durable, tear-resistant vinyl material
- Threaded or ‘slip-fit’ mounting options available



Bellows style cups can be used for irregularly shaped surfaces or for situations where a vertical offset motion is desired.



Flat cups with a slip style mounting should be used for light duty applications when threaded connections are not present or practical.



Flat cups with a threaded mounting should be used for heavy lifting applications.

Part Number	Style	Mounting	A	B	C	D	F	Cleats
VG2095	Bellows	.36” Slip	1.0	1.42	.62	.62	.38	Yes
VG2097	Bellows	.25” FNPT	2.0	1.86	1.12	.75	.25	No
VG2099	Flat	.375” FNPT	3.25	1.06	.44	2.25	.375	Yes
VG2100	Bellows	.375” FNPT	3.31	2.38	2.18	2.38	.375	No
VG2101	Flat	.375” FNPT	4.75	1.18	1.0	1.62	.375	Yes
VG2102	Flat	.5” FNPT	5.87	.78	.78	5.06	.5	Yes

Miscellaneous Information on Vacuum Cups

Lifting Force in Pounds (Safety Factor F = 1)

Cup	10 inHg	15 inHg	20 inHg	27 inHg
VG2095	3.8	5.8	7.8	10
VG2097	15	23	30	41
VG2099	40	61	81	110
VG2100	42	63	84	114
VG2101	87	130	174	235
VG2102	132	199	265	358

Selecting and Sizing Vacuum Cups

One of the keys to getting the most performance out of vacuum pumps and generators is selecting the right size, number, and type of vacuum cups.

Selecting the right size is at first glance a fairly straightforward process. Cup diameters are generally selected based on the weight of the object to be lifted. Most manufacturers will supply charts (see next page) that you can use, to quickly find the lifting force of any size vacuum cup. Or, you can use the following formula to calculate the theoretical lifting force of any size vacuum cup:

W = Force in lbs
C = Area of cup (in 2)
P = Vacuum level - inHg
F = Safety Factor
W = (C x P x 14.7) / (F x 29.92)

The key word here, of course, is theoretical. While the chart and formula will get you in the ball park, selecting the right size cup means taking several variables into consideration.

For example, keep in mind that it's best not to start with the smallest diameter vacuum cup that you can buy. It will take a lot of vacuum to make it work. Try to use the largest cup possible to ease the requirements on your vacuum pump. It's far easier and more economical to get an adequately-sized vacuum cup than to overwork your vacuum pump. This helps ensure long pump life.

It is also much more economical. High levels of vacuum increase energy requirements dramatically. Going from 60% to 90% of vacuum (18 inHg versus. 27 inHg) may increase vacuum force by a factor of 1.5, but the energy needed to produce that force increases by a factor of 10.

Choosing a slightly larger cup also adds safety to your system. A safety factor should always be used in actual cup sizing too, even though cup diameter increases about 10% during use. If the object is lifted vertically, a safety factor of four (4x) should be used. For horizontal movement, a safety factor of two (2x) is recommended.

Acceleration during the lift is another important factor to consider when sizing vacuum cups. Formulas exist to calculate the affect of acceleration, but they are very difficult to work with. It is easiest and perhaps best to use a higher safety factor and carefully test cups in these applications.