



VACCON

/// VACUUM PRODUCTS

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ACCELERATING AUTOMATION
WITH VACUUM TECHNOLOGY

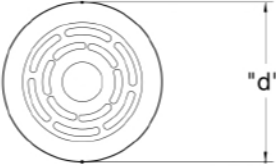
Vacuum Cup Selection Guide

As is true in most vacuum applications, there is more than one correct answer. In order to successfully find the best cup(s) and pumps for a specific task, it is helpful to review the guidelines below.

Vacuum Cup Sizing

Choose the cup size, quantity, material and style based on the size of the object being handled, its weight, orientation, surface temperature, conditions and space available to mount the cups.

I. Determine the cup size by using the "Vacuum Cup Holding Force Calculation:"

FORCE		PRESSURE		AREA
	=		X	
OBJECT WEIGHT SAFETY FACTOR * Lbs (Kg)		CONVERT "Hg TO PSI, DIVIDE BY 2 (2Hg" = 1 PSI) PSI (Kpa)		AREA = $\pi * d^2/4$ $\pi = 3.14$ in ² (cm ²)
Force = Pressure x Area				

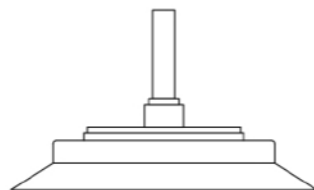
F = the weight of the objects in lbs(kg) multiplied by the safety factor, see below.

P = the expected vacuum level in PSI (Kpa) (2Hg" = 1 PSI)

A = the area of the Vacuum cup measured by in²[cm²]

Safety Factors:

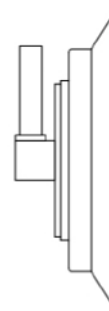
Always include safety factors when calculating lifting capabilities.



Safety Factor=2

Horizontal Lift = 2

Safety factor of 2 is recommended when cup face is in horizontal position.



Safety Factor=4

Vertical Lift = 4

Safety factor of 4 is recommended when cup face is in a vertical position.



Vacuum Cups & Fittings

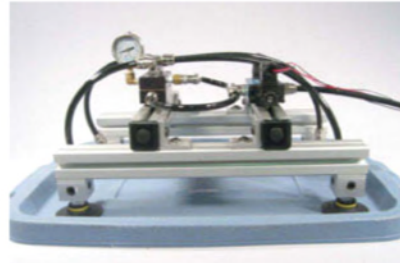
II. Determine Type of Material to be handled: Non-Porous, Porous, Flexible/Non-Porous

Materials being handled in pick & place applications can be grouped into three categories – non-porous, porous and flexible. It is important to determine what type of material you are working with in order to determine the cup type, and the fitting choices. Vaccon offers a variety of cup styles – including bellows, multi-bellows, round, oval, flat (with and without cleats), cups with removable fittings and cups with permanent fittings.

Non-Porous Materials: steel, glass, laminated chipboard, rigid plastic, semiconductors, etc.



VP20 pump with bellows cup picks up diamond tread plates – stacking application.



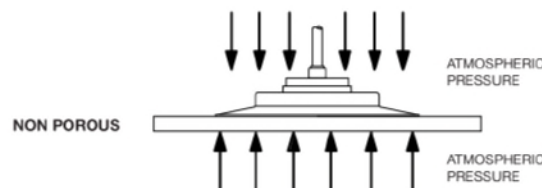
Vaccon EOAT with Multi-port pumps, manifold blocks and flat cleated cups – pick and place plastic lids for packaging application.



VP10 with bellows cups – pick and place deodorant packages for packaging application.

Handling non-porous materials is the easiest application for choosing a Vacuum cup and vacuum pump because there is no vacuum flow (leakage). The cup seals to the surface of the object enabling the pump to reach its maximum vacuum level.

Typically, flat cleated cups are used for non-porous applications because the rigid, low profile design resists peeling away. In horizontal applications, where there is a large array of cups, bellows cups may be an option as they offer the pliability needed to ensure that all cups make contact with the object(s) being handled.



Example: Holding Force Calculation for Non-Porous Materials

Application: lift a 100 lb [45.36 kg] steel plate, 1/8" [3mm] thick, measuring 4' x 4' [121.9cm X 121.9cm] from a horizontal stack and place into a press
Vaccon recommends an "H" series pump when handling non-porous materials. All "H" series pumps generate 14 PSI [28"Hg, .965 bar].

$$F = P * A$$

Force = 200 lbs [90.72 kg] (weight x safety factor/horizontal lift or 100 lbs [45.36 kg] x 2)

Pressure = 14 PSI [.965 bar] (convert 28"Hg to PSI by dividing by 2)

If F (200 lbs [90.72 kg]) = P (14 PSI [.965 bar]) * A (Solve for A)

$A = 200/14$ [90.72/.965] which is 14.3 in² [94.01 cm²] – " A " represents the total area of the cup or all the cups combined to lift this load horizontally

Determine the Number of Cups Needed to Determine the Diameter of each Cup

Whereas the metal is only 1/8" [3mm] thick, it will tend to droop. Vaccon recommends using 2 rows of 3 cups each for a total of 6 cups.

Therefore, 14.3 in² [94.01 cm²] divided by 6 cups = 2.38 in² [15.67 cm²] is the area per cup

Solve for the diameter (d) using the equation: $A = \pi * d^2 / 4$

$$d^2 = 4 * 2.38 / \pi \text{ or } d^2 = 3.03 \text{ in}^2$$

$$d = \text{sq. root of } 3.03 \text{ or } 1.74 \text{ in}$$

$$[A = \pi * d^2 / 4]$$

$$[d^2 = 4 * 15.67 / \pi \text{ or } d^2 = 19.96 \text{ cm}^2]$$

$$[d = \text{sq. root of } 19.96 \text{ or } 44.7 \text{ mm}]$$

Solution: Choose a flat cup with cleats with a diameter of 1.75" [44.45mm] or greater. With plenty of space on the steel plate to position cups, choosing a larger cup will add to the holding force and take into account any acceleration or deceleration loads during transfer.



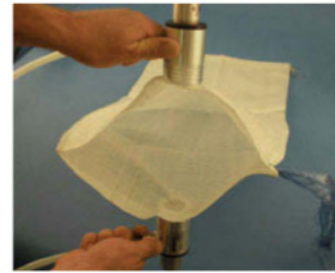
Porous Materials: corrugated, woven materials, or objects with extremely rough or uneven surfaces



VDF pump w/flat cleated cup – picks up plywood with knots– palletizing application.

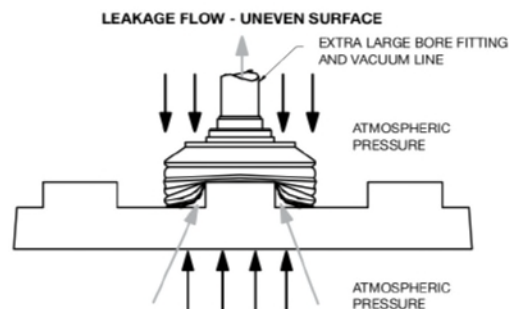
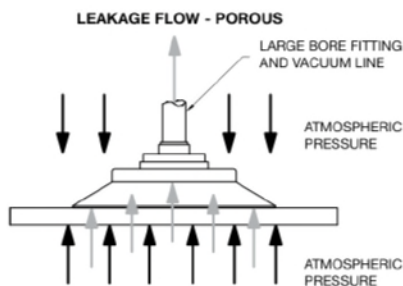


VP80 pump with manifold blocks and bellows cups picks up corrugated board for packaging application.



Two CDF pumps handle cheesecloth fabric bag – bag opening and closing application.

When handling porous materials, it is important that the flow path between the object and the vacuum pump is as large as necessary to allow the pump to draw away the air that leaks through the surface or from gaps between the cup and the surface. Pay close attention to the bore size of the fitting in the cup, as well as the size of the vacuum lines. To confirm vacuum lines are sized properly, see page 3 or the Operating and Installation Instructions section for each pump.



When calculating the holding force for porous materials, the vacuum level that will be achieved is not normally known because the leak rate of the material is unknown. To move forward and determine the diameter of the Vacuum cups, assume that system will reach a vacuum level of 8 PSI [16"Hg, .542 bar].

Vaccon recommends the "M" series vacuum pumps to maximize flow and minimize compressed air usage when handling porous materials. To ensure that the vacuum level of 8 PSI [16"Hg, .542 bar] is achieved, contact Vaccon Tech Support for a pump recommendation.

Example: Holding Force Calculation for Porous Materials or Uneven Surfaces

Application: lift a 100 lb [45.36 kg] corrugated box with vacuum cups in the horizontal plane. Remember the safety factor and the equation $F = P * A$

200 lbs [90.72 kg] = 8 PSI [.542 bar] x A - Solve for A – the total vacuum cup(s) area.

$A = 200 [90.72] / 8 [.542 \text{ bar}] = 25 \text{ in}^2 [164.35 \text{ cm}^2]$ of combined cup area. Assume the number of cups used will be 4.

Determine the Number of Cups Needed to Determine the Diameter of each Cup

Divide the total area by the number of cups $(25/4)[164.35/4]$ – area of each cup is $6.25 \text{ in}^2 [41.09 \text{ cm}^2]$

Solve for the diameter (d) using the equation: $A = \pi * d^2/4$, $6.25 = 3.14 (d^2)/4$

$d = \text{square root of } (6.25 * 4/3.14) = 2.82$

$[A = \pi * d^2/4, 41.09 = 3.14 (d^2)/4]$

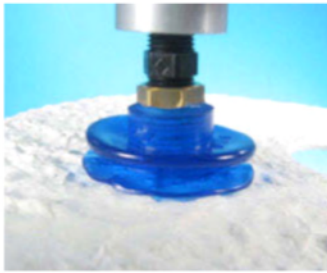
$[d = \text{square root of } (41.09 * 4/3.14) = 72.3 \text{ mm}]$

Solution: Choose a flat cup with cleats or bellows cups with a diameter of 3" [76.2mm] or greater. (Dimensions have been rounded up.)
In this situation, Vaccon recommends a VP80-250M vacuum pump.

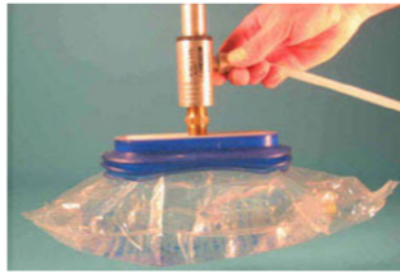


Vacuum Cups & Fittings

Flexible Materials: plastic films, baked goods, IV bags, paper bags – things that wrinkle



Close up of a CDF 200 and VC 32C1-F cup picking up a donut textured surface



CDF 500H-75 and VC 129 oval bellows cup picking up 1000ml of saline solution in plastic bag



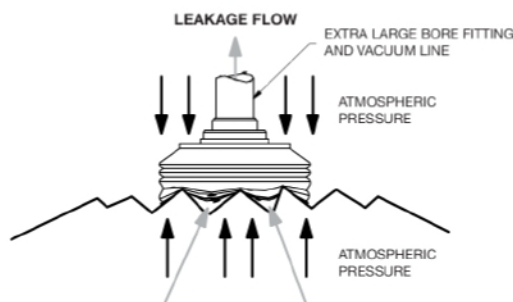
CDF 750 and VCUH cup picking up single layer cake

When handling flexible packaging materials, it is critical that the cup fitting and the vacuum line have a very large bore. Flexible materials wrinkle, causing large leak paths. The cup and the vacuum pump must be sized to accommodate that leak rate. The bore of the fitting must be close to a 1:2 ratio to the diameter of the cup.

Typically, handling flexible materials does not involve heavy weights. Calculating cup holding force is not required.

Choose a cup with a very thin flexible lip to ensure the cup conforms to the wrinkled material. Multi-bellows cups work well in these applications because of their flexibility. Vaccon's VCHF7 High Flex Vacuum cups easily conform to uneven, textured surfaces or wrap around odd shaped items creating a strong seal to securely hold products without distorting or damaging the surface.

The interaction between the Vacuum cup and the flexible material is critical. Because the leakage flow rates are so high, it is necessary to use our CDF Series of high flow (air amplifier) vacuum pumps. With so many variables affecting performance, Vaccon strongly suggests that a sample of the material be sent to our in-house test facility for a pump and cup recommendation.



Vacuum Cup Material Specifications:

Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory. Below is a general description of the various materials available and their characteristics.

Material	Working Temperature	Wear Resistance	Oil resistance	Durometer	Application
*Vinyl	+32°F to +125°F [0°C to +52°C]	Excellent	Fair	A20-A75 Range	general purpose material for most applications
Oil Resistant Vinyl	+32°F to +125°F [0°C to +52°C]	Good	Excellent	A40-A60 Range	excellent for oil resistant applications
Polyurethane	+32°F to +150°F [0°C to +66°C]	Good	Good	A20-A70 Range	good for chemical resistance and glass handling
Chloroprene	-40°F to +230°F [-40°C to +110°C]	Excellent	Good	A50-A60 Range	general purpose material with good oil resistance and low temperature performance
Nitrile	+32°F to +194°F [0°C to +90°C]	Good	Good	A50-A60 Range	general purpose material with good oil and abrasion resistance
Silicone-Grey	-50°F to +392°F [-46°C to +200°C]	Good	Good	A30-A60 Range	good for applications involving high temperatures, food or non-marking situations
Silicone-Translucent	-92°F to +392°F [-69°C to +200°C]	Good	Good	A30-A60 Range	good for applications involving high temperatures, food or non-marking situations

*Standard durometer for vinyl cups is A50 $\pm$ 5 points — may vary with color. Other Materials Available - please consult factory: FDA Vinyl, Anti-Static Vinyl, FDA Silicone.

Vacuum Cup Terms and Definitions:

Bellows:	The fold or collapsible area that allows the cup to compress like an accordion
Convolution:	The folded area of a bellows cup that makes up 1 external "V"
Cleats:	Bottom protrusions used for maintaining a larger vacuum area
Durometer:	Method by which the hardness of a material is gauged
Insert/Fitting:	Metal piece bonded or inserted into the material to allow fastening by threads or bolts
Vacuum cup:	Cup that requires the use of an external vacuum source to adhere to a surface
Vacuum Level:	The magnitude of suction created by a vacuum pump typically measured in inches of mercury "Hg or [mbar]
Vacuum Flow:	The volume of free air induced by the vacuum pump per unit of time, typically measured in SCFM [L/min]
Porosity:	Ability of air to pass through a material

Standard Atmospheric Pressure Measured at Sea Level: 1 ATM = 14.7 PSI = 29.92"Hg = 760 mmHg = 1 bar

Facts to Remember:

50 mmHg = 1 PSI
1mmHg = 1 torr (vacuum)
1"Hg = 25.4 mmHg
2"Hg = 1 PSI
29.92"Hg = 100 Kpa
14.7 PSI = 100 Kpa
14.7 PSI = 29.92"Hg
14.7 PSI = 760 mmHg

Conversion Chart – Vacuum vs. Pressure				
% Vacuum	"Hg	mmHg	bar	PSI
10	3	76.92	-0.1	-1.47
20	6	153.85	-0.2	-2.94
30	9	230.77	-0.3	-4.41
40	12	307.69	-0.4	-5.88
50	15	384.62	-0.5	-7.35
60	18	461.54	-0.6	-8.82
70	21	538.46	-0.7	-10.29
80	24	615.38	-0.8	-11.76
90	27	692.31	-0.9	-13.23
100	30	769.23	-1.0	-14.70



Single Bellows Cups: 1 Convolution

VC Style



VCC Style



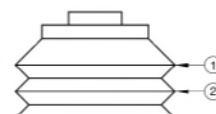
VCR Style



Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

Bellows Styles:
Style D-1 = One Convolution
Style D-2 = Two Convolutions

This bellows has a total of 2 convolutions



Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq. mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VC B5		1	in.	0.18	0.03	0.50	0.45	0.12	0.06	No	V	ORV, GS or P	0	1	4
			mm	4.6	20	12.7	11.4	3.0	1.5				0		
VCC-B-020-*		1	in.	0.20	0.03	0.45	0.35	0.28	0.16	No	N or S	-	0	2	5
			mm	5.1	20	11.4	8.9	7.1	4.1				0		
VC B6		1	in.	0.25	0.05	0.45	0.39	0.14	0.06	No	V	ORV, GS or P	0	1	4
			mm	6.4	31	11.4	9.9	3.6	1.5				0		
VC B10-5		1	in.	0.41	0.13	0.65	0.48	0.31	0.16	No	V	ORV, GS or P	0.02	2	1
			mm	10.4	85	16.5	12.2	7.9	4.1				0.6		
VCC-B-043-*		1	in.	0.43	0.15	0.66	0.48	0.41	0.19	Yes	N or S	-	0.03	7	6
			mm	10.9	94	16.8	12.2	10.4	4.8				0.9		
VCR-B10P-*		1	in.	0.43	0.15	0.67	0.46	0.36	0.15	No	C or S	-	0.03	3	1
			mm	10.9	94	17.0	11.7	9.1	3.8				0.9		
VC B3		1	in.	0.51	0.20	0.56	0.28	0.31	0.15	No	V	ORV, GS or P	0.02	2	4
			mm	13.0	132	14.2	7.1	7.9	3.8				0.6		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number.

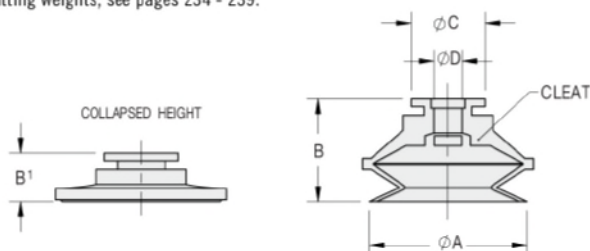
I.E. **VCC-B-020-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 234 - 239.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Single Bellows Cups: 1 Convolution

VC Style



VCC Style



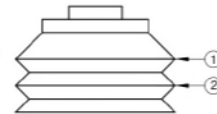
VCR Style



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Bellows Styles:
Style D-1 = One Convolution
Style D-2 = Two Convolutions

This bellows has a total of 2 convolutions



Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq. mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VCC-B-051-*		1	in.	0.51	0.20	0.63	0.45	0.41	0.16	Yes	N or S	-	0.05	7	6
			mm	13.0	132	16.0	11.4	10.4	4.1				1		
VC B15		1	in.	0.61	0.29	0.81	0.57	0.36	0.14	No	V	ORV, GS or P	0.05	3	1
			mm	15.5	189	20.6	14.5	9.1	3.6				1		
VCC-B-063-*		1	in.	0.63	0.31	0.75	0.48	0.41	0.19	Yes	N or S	-	0.05	7	6
			mm	16.00	201	19.1	12.2	10.4	4.8				1		
VCR-B15P-*		1	in.	0.65	0.33	0.77	0.50	0.36	0.15	No	C or S	-	0.05	3	1
			mm	16.5	214	19.6	12.7	9.1	3.8				1		
VCC-B-075-*		1	in.	0.72	0.41	0.61	0.40	0.41	0.16	Yes	N or S	-	0.07	7	6
			mm	18.3	263	15.5	10.2	10.4	4.1				2		
VC B2		1	in.	0.75	0.44	0.71	0.43	0.51	0.26	No	V	ORV, GS or P	0.07	NF	4
			mm	19.1	285	18.0	10.9	13.0	6.6				2		
VC B20		1	in.	0.80	0.50	0.78	0.63	0.38	0.16	No	V	ORV, GS or P	0.07	3	4
			mm	20.3	324	19.8	16.0	9.7	4.1				2		
VCR-B20P-*		1	in.	0.85	0.57	0.79	0.38	0.56	0.22	Yes	C or S	-	0.10	4	2
			mm	21.6	366	20.1	9.7	14.2	5.6				3		
VC B20P		1	in.	0.87	0.59	0.73	0.40	0.57	0.19	Yes	V	ORV, GS or P	0.07	4	2
			mm	22.1	384	18.5	10.2	14.5	4.8				2		
VCC-B-087-*		1	in.	0.87	0.59	0.75	0.45	0.39	0.19	Yes	N or S	-	0.07	7	6
			mm	22.1	384	19.1	11.4	9.9	4.8				2		
VCC-B-094-*		1	in.	0.94	0.69	0.91	0.50	0.39	0.15	Yes	N or S	-	0.11	7	6
			mm	23.9	448	23.1	12.7	9.9	3.8				3		
VC 124		1	in.	1.02	0.82	1.45	0.97	0.64	0.34	No	V	ORV, GS or P	0.18	NF	4
			mm	25.9	527	36.8	24.6	16.3	8.6				5		



Single Bellows Cups: 1 Convolution

Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VC B1		1	in.	1.20	1.13	1.23	0.84	0.54	-	No	V	ORV, GS or P	0.42	1/8 NPTF	9
			mm	30.5	730	31.2	21.3	13.7	-				12		
VCR-B30P-*		1	in.	1.31	1.35	1.02	0.60	0.75	0.22	No	C or S	-	0.28	5	2
			mm	33.3	870	25.9	15.2	19.1	5.6				8		
VC B30P		1	in.	1.32	1.37	1.00	0.58	0.56	0.19	Yes	V	ORV, GS or P	0.21	4	2
			mm	33.5	883	25.4	14.7	14.2	4.8				6		
VCC-B-130-*		1	in.	1.32	1.37	1.08	0.65	0.71	0.31	Yes	N or S	-	0.25	8	6
			mm	33.5	883	27.4	16.5	18.0	7.9				7		
VCR-B40P-*		1	in.	1.69	2.24	1.10	0.64	0.79	0.30	Yes	C or S	-	0.42	5	2
			mm	42.9	1447	27.9	16.3	20.1	7.6				12		
VC B40P		1	in.	1.69	2.24	1.10	0.52	0.79	0.25	Yes	V	-	0.42	5	2
			mm	42.9	1447	27.9	13.2	19.1	7.1				12		
VCC-B-169-*		1	in.	1.69	2.24	1.10	0.70	0.71	0.31	Yes	N or S	-	0.39	8	6
			mm	42.9	1447	27.9	17.8	18.0	7.9				11		
VC 32C		1	in.	2.00	3.14	1.61	0.85	0.73	0.38	Yes	V	ORV, GS or P	0.67	NF	4
			mm	50.8	2027	40.9	21.6	18.5	9.7				19		
VC 32C-1		1	in.	2.00	3.14	1.59	0.85	0.75	0.50	Yes	V	ORV, GS or P	0.53	NF	4
			mm	50.8	2027	40.4	21.6	19.1	12.7				15		
VC 32C1-F		1	in.	2.00	3.14	1.50	0.85	1.00	-	Yes	V	ORV, GS or P	1.13	1/4 NPTF	9
			mm	50.8	2027	38.1	21.6	25.4	-				32		
VCC-B-209-*		1	in.	2.07	3.37	1.34	0.85	0.71	0.31	Yes	N or S	-	0.78	8	6
			mm	52.6	2171	34.0	21.6	18.0	7.9				22		
VC B50P		1	in.	2.10	3.46	1.38	0.75	1.04	0.41	Yes	V	ORV, GS or P	0.78	6	2
			mm	53.3	2235	35.1	19.1	26.4	10.4				22		
VCR-B50P-*		1	in.	2.10	3.46	1.43	0.75	1.04	0.41	Yes	C or S	-	0.88	6	2
			mm	53.3	2235	36.3	19.1	26.4	10.4				25		
VC 32B		1	in.	2.78	6.07	1.82	0.79	1.00	-	Yes	V	ORV, GS or P	1.66	1/4 NPTF	9
			mm	70.6	3916	46.2	20.1	25.4	-				47		
VCC-B-307-*		1	in.	3.07	7.40	1.80	1.25	0.98	0.47	Yes	N or S	-	2.15	9	6
			mm	78.0	4776	45.7	31.8	24.9	11.9				61		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number.

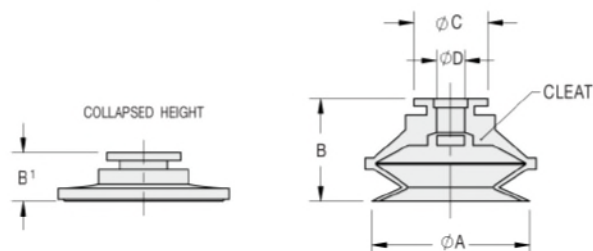
I.E. **VCC-B-020-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please refer the fitting groups for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 234 - 239.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



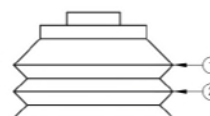
Multi-Bellows Cups: 2, 3, 4 Convolutions



Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

Bellows Styles:
Style D-1 = One Convolution
Style D-2 = Two Convolutions

**This bellows has a total
of 2 convolutions**



Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VCC-B-021-*		2	in.	0.21	0.03	0.53	0.47	0.27	0.16	No	N or S	-	0	3	7
			mm	5.3	22	13.5	11.9	6.9	4.1				0		
VCC-B-028-*		2	in.	0.26	0.05	0.55	0.42	0.37	0.19	No	N or S	-	0	7	7
			mm	6.6	34	14.0	10.7	9.4	4.8				0		
VCC-B-035-*		2	in.	0.35	0.10	0.59	0.46	0.36	0.19	No	N or S	-	0	7	7
			mm	8.9	62	15.0	11.7	9.1	4.8				0		
VC B10-2		2	in.	0.38	0.11	0.75	0.48	0.19	0.06	No	V	ORV, GS or P	0	1	4
			mm	9.7	73	19.1	12.2	4.8	1.5				0		
VCC-B-055-*		2	in.	0.56	0.25	0.91	0.62	0.40	0.19	No	N or S	-	0.07	7	8
			mm	14.2	159	23.1	15.7	10.2	4.8				2		
VCC-B-069-*		2	in.	0.69	0.38	0.91	0.50	0.40	0.19	No	N or S	-	0.07	7	8
			mm	17.5	248	23.1	12.7	10.2	4.8				2		
VC 33A5		3	in.	0.75	0.44	1.00	0.37	0.67	0.44	No	V	ORV, GS or P	0.11	NF	4
			mm	19.1	285	25.4	9.4	17.0	11.2				3		
VCR-BL20P-*		4	in.	0.79	0.49	0.90	0.38	0.57	0.20	No	C or S	-	0.11	4	3
			mm	20.1	316	22.9	9.7	14.5	5.1				3		
VCC-B-079-*		2	in.	0.79	0.49	0.91	0.50	0.40	0.19	No	N or S	-	0.07	7	8
			mm	20.1	316	23.1	12.7	10.2	4.8				2		
VC 33A3		2	in.	0.89	0.62	1.02	0.55	0.67	0.43	No	V	ORV, GS or P	0.14	NF	4
			mm	22.6	401	25.9	14.0	17.0	10.9				4		
VCC-B-098-*		2	in.	0.98	0.72	1.34	0.69	0.40	0.16	No	N or S	-	0.14	7	8
			mm	24.9	467	34.0	17.5	10.2	4.1				4		
VCR-BL30P-*		4	in.	1.18	1.09	1.26	0.55	0.79	0.25	No	C or S	-	0.21	5	3
			mm	30.0	706	32.0	14.0	20.1	6.4				6		

Multi-Bellows Cups: 2, 3, 4 Convolutions

Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VC 33A2		2	in.	1.25	1.23	1.43	0.87	0.68	-	No	V	ORV, GS or P	0.60	1/4 NPTF	9
			mm	31.8	792	36.3	22.1	17.3	-				17		
VCC-B-126-*		2	in.	1.28	1.29	1.48	0.90	0.73	0.31	No	N or S	-	0.35	8	8
			mm	32.5	830	37.6	22.9	18.5	7.9				10		
VC 33A		3	in.	1.42	1.58	2.08	1.14	0.68	-	No	V	ORV, GS or P	0.71	1/4 NPTF	9
			mm	36.1	1022	52.8	29.0	17.3	-				20		
VCR-BL40P-*		4	in.	1.58	1.96	1.60	0.65	0.79	0.25	No	C or S	-	0.42	5	3
			mm	40.1	1265	40.6	16.5	20.1	6.4				12		
VCC-B-165-*		2	in.	1.65	2.14	1.81	0.98	0.70	0.31	No	N or S	-	0.63	8	8
			mm	41.9	1379	46.0	24.9	17.8	7.9				18		
VCR-BL50P-*		4	in.	1.98	3.08	2.04	0.90	1.07	0.41	No	C or S	-	0.85	6	3
			mm	50.3	1986	51.8	22.9	27.2	10.4				24		
VC 32D		2	in.	2.00	3.14	1.65	0.75	0.75	-	No	V	ORV, GS or P	1.02	1/4 NPTF	9
			mm	50.8	2027	41.9	19.1	19.1	-				29		
VCC-B-244-*		2	in.	2.44	4.68	2.17	0.81	0.70	0.31	No	N or S	-	1.34	8	8
			mm	62.0	3017	55.1	20.6	17.8	7.9				38		
VC 130		4	in.	3.31	8.60	2.75	1.14	2.42	-	Yes	V	ORV, GS or P	4.76	3/4 NPTF	10
			mm	84.1	5551	69.9	29.0	61.5	-				135		
VCC-B-346-*		2	in.	3.46	9.40	3.44	1.81	0.97	0.47	Yes	N or S	-	5.86	9	8
			mm	87.9	6066	87.4	46.0	24.6	11.9				166		
VC 104-4.5		2	in.	4.50	15.90	2.50	1.50	3.50	-	Yes	V	ORV, GS or P	7.4	3/8 NPTF	9
			mm	114.3	10261	63.5	38.1	88.9	-				209		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCC-B-021-N** (for Nitrile material).

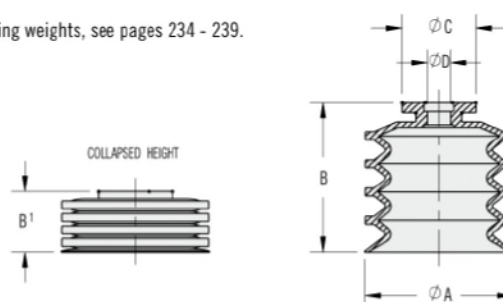
See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 234 - 239.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Flat Cups: with or without Cleats

VC Style



VCC Style



VCR Style



Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads.

Flat cups with cleats are strong with a rigid, low profile that will lift heavy loads. The low profile allows heavy loads to be lifted vertically without the cup "peeling" away from the product surface or deforming the object being lifted. These cups perform well when gripping smooth, flat, heavy objects such as steel, glass (television picture tubes) and coated corrugated.

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VCC-F-020-*		in.	0.20	0.03	0.36	0.35	0.32	0.16	No	N or S	-	0	7	9
		mm	5.1	20	9.1	8.9	8.1	4.1				0		
VC 1		in.	0.22	0.04	0.21	0.19	0.22	0.06	No	V	ORV, GS or P	0	NF	3
		mm	5.6	25	5.3	4.8	5.6	1.5				0		
VC 165A		in.	0.37	0.11	0.25	0.22	0.37	0.21	No	V	ORV, GS or P	0	NF	4
		mm	9.4	69	6.4	5.6	9.4	5.3				0		
VCC-F-039-*		in.	0.39	0.12	0.43	0.39	0.37	0.20	No	N or S	-	0	7	9
		mm	9.9	77	10.9	9.9	9.4	5.1				0		
VC 25		in.	0.59	0.27	0.53	0.53	0.46	0.25	No	V	ORV, GS or P	0.04	NF	4
		mm	15.0	176	13.5	13.5	11.7	6.4				1		
VCC-F-059-*		in.	0.59	0.27	0.44	0.36	0.36	0.20	No	N or S	-	0.04	7	10
		mm	15.0	176	11.2	9.1	9.1	5.1				1		
VCR-F15P-*		in.	0.66	0.34	0.47	0.42	0.36	0.15	Yes	C or S	-	0.04	3	1
		mm	16.8	221	11.9	10.7	9.1	3.8				1		
VCC-F-079-*		in.	0.79	0.49	0.45	0.35	0.33	0.20	No	N or S	-	0.04	7	10
		mm	20.1	316	11.4	8.9	8.4	5.1				1		
VCR-F20P-*		in.	0.87	0.59	0.32	0.27	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	22.1	384	8.1	6.9	14.5	5.3				2		
VCC-F-100-*		in.	1.00	0.79	0.50	0.35	0.38	0.20	No	N or S	-	0.07	7	10
		mm	25.4	507	12.7	8.9	9.7	5.1				2		
VC 36 B		in.	1.02	0.82	0.34	0.25	0.56	0.24	Yes	V	ORV, GS or P	0.04	NF	3
		mm	25.9	527	8.6	6.4	14.2	6.1				1		
VC 10		in.	1.04	0.85	0.90	0.70	0.62	-	No	V	ORV, GS or P	0.32	1/8 NPTF	5
		mm	26.4	548	22.9	17.8	15.7	-				9		
VCR-F25P-*		in.	1.10	0.95	0.36	0.33	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	27.9	613	9.1	8.4	14.5	5.3				2		
VC 11		in.	1.19	1.11	0.88	0.75	0.75	-	No	V	ORV, GS or P	0.49	1/4 NPTF	5
		mm	30.2	718	22.4	19.1	19.1	-				14		



Flat Cups: with or without Cleats

VC Style



VCC Style



VCR Style



Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads.

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Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VCC-F-020-*		in.	0.20	0.03	0.36	0.35	0.32	0.16	No	N or S	-	0	7	9
		mm	5.1	20	9.1	8.9	8.1	4.1				0		
VC 1		in.	0.22	0.04	0.21	0.19	0.22	0.06	No	V	ORV, GS or P	0	NF	3
		mm	5.6	25	5.3	4.8	5.6	1.5				0		
VC 165A		in.	0.37	0.11	0.25	0.22	0.37	0.21	No	V	ORV, GS or P	0	NF	4
		mm	9.4	69	6.4	5.6	9.4	5.3				0		
VCC-F-039-*		in.	0.39	0.12	0.43	0.39	0.37	0.20	No	N or S	-	0	7	9
		mm	9.9	77	10.9	9.9	9.4	5.1				0		
VC 25		in.	0.59	0.27	0.53	0.53	0.46	0.25	No	V	ORV, GS or P	0.04	NF	4
		mm	15.0	176	13.5	13.5	11.7	6.4				1		
VCC-F-059-*		in.	0.59	0.27	0.44	0.36	0.36	0.20	No	N or S	-	0.04	7	10
		mm	15.0	176	11.2	9.1	9.1	5.1				1		
VCR-F15P-*		in.	0.66	0.34	0.47	0.42	0.36	0.15	Yes	C or S	-	0.04	3	1
		mm	16.8	221	11.9	10.7	9.1	3.8				1		
VCC-F-079-*		in.	0.79	0.49	0.45	0.35	0.33	0.20	No	N or S	-	0.04	7	10
		mm	20.1	316	11.4	8.9	8.4	5.1				1		
VCR-F20P-*		in.	0.87	0.59	0.32	0.27	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	22.1	384	8.1	6.9	14.5	5.3				2		
VCC-F-100-*		in.	1.00	0.79	0.50	0.35	0.38	0.20	No	N or S	-	0.07	7	10
		mm	25.4	507	12.7	8.9	9.7	5.1				2		
VC 36 B		in.	1.02	0.82	0.34	0.25	0.56	0.24	Yes	V	ORV, GS or P	0.04	NF	3
		mm	25.9	527	8.6	6.4	14.2	6.1				1		
VC 10		in.	1.04	0.85	0.90	0.70	0.62	-	No	V	ORV, GS or P	0.32	1/8 NPTF	5
		mm	26.4	548	22.9	17.8	15.7	-				9		
VCR-F25P-*		in.	1.10	0.95	0.36	0.33	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	27.9	613	9.1	8.4	14.5	5.3				2		
VC 11		in.	1.19	1.11	0.88	0.75	0.75	-	No	V	ORV, GS or P	0.49	1/4 NPTF	5
		mm	30.2	718	22.4	19.1	19.1	-				14		



Flat Cups: with or without Cleats

VC Style



VCC Style



VCR Style



Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads.

Flat cups with cleats are strong with a rigid, low profile that will lift heavy loads. The low profile allows heavy loads to be lifted vertically without the cup "peeling" away from the product surface or deforming the object being lifted. These cups perform well when gripping smooth, flat, heavy objects such as steel, glass (television picture tubes) and coated corrugated.

Part Number			A - O.D.	Approx. Area sq. in. [sq. mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VC 106		in.	2.50	4.91	1.18	0.80	1.09	-	No	V	ORV, GS or P	1.02	1/4 NPTF	5
		mm	63.5	3167	30.0	20.3	27.7	-				29		
VCC-F-295-*		in.	2.95	6.83	1.20	1.08	0.92	0.47	Yes	N or S	-	1.20	9	11
		mm	74.9	4409	30.5	27.4	23.4	11.9				34		
VC 30		in.	3.06	7.35	1.45	1.10	1.15	-	No	V	ORV, GS or P	2.61	1/4 NPTF	5
		mm	77.7	4744	36.8	27.9	29.2	-				74		
VC 27A		in.	3.25	8.30	1.20	0.95	2.23	-	Yes	V	ORV, GS or P	3.28	1/4 NPTF	6
		mm	82.6	5352	30.5	24.1	56.6	-				93		
VCC-F-374-*		in.	3.74	10.99	1.47	1.08	0.97	0.47	Yes	N or S	-	1.83	9	11
		mm	95.0	7087	37.3	27.4	24.6	11.9				52		
VC 27		in.	4.25	14.19	1.30	0.85	2.73	-	Yes	V	ORV, GS or P	4.03	1/4 NPTF	6
		mm	108.0	9152	33.0	21.6	69.3	-				122		
VC 63		in.	4.75	17.72	1.25	0.90	1.67	-	Yes	V	ORV, GS or P	4.09	3/8 NPTF	6
		mm	120.7	11432	31.8	22.9	42.4	-				116		
VC 34		in.	6.25	30.68	1.37	0.85	5.00	-	Yes	V	ORV, GS or P	16.0	3/8 NPTF	6
		mm	158.8	19793	34.8	21.6	127.0	-				454		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number.

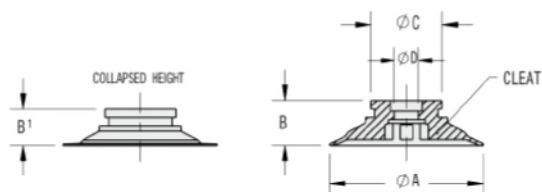
I.E. **VCC-F-374-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

[†] Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see page 239.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Universal Cups

Universal Cups

Universal cups can handle flat or slightly curved surfaces.



Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Weight oz [g]	Fitting Group	Cup Type [†]
VCR-U4P-*		in.	0.20	0.03	0.27	0.26	0.18	0.07	No	C or S	0	1	1
		mm	5.1	20	6.9	6.6	4.6	1.8			0.1		
VCR-U6P-*		in.	0.28	0.06	0.27	0.26	0.20	0.08	No	C or S	0	1	1
		mm	7.1	40	6.9	6.6	5.1	2.0			0.1		
VCR-U8P-*		in.	0.37	0.11	0.27	0.24	0.20	0.08	No	C or S	0	1	1
		mm	9.4	69	6.9	6.1	5.1	2.0			0.1		
VCR-U10P-*		in.	0.44	0.15	0.43	0.40	0.35	0.15	No	C or S	0.02	3	1
		mm	11.2	98	10.9	10.2	8.9	3.8			0.7		
VCR-U15P-*		in.	0.65	0.33	0.45	0.37	0.35	0.15	No	C or S	0.03	3	1
		mm	16.5	214	11.4	9.4	8.9	3.8			0.8		
VCR-U20P-*		in.	0.85	0.57	0.33	0.21	0.57	0.21	No	C or S	0.04	4	2
		mm	21.6	366	8.4	5.3	14.5	5.3			0		
VCR-U30P-*		in.	1.25	1.23	0.38	0.21	0.57	0.21	No	C or S	0.07	4	2
		mm	31.8	792	9.7	5.3	14.5	5.3			2		
VCR-U40P-*		in.	1.65	2.14	0.53	0.33	0.77	0.25	No	C or S	0.21	5	2
		mm	41.9	1379	13.5	8.4	19.6	6.4			6		
VCR-U50P-*		in.	2.05	3.30	0.72	0.45	1.06	0.44	No	C or S	0.39	6	2
		mm	52.1	2129	18.3	11.4	26.9	11.2			11		

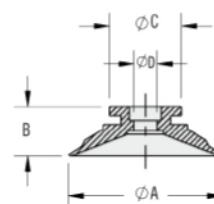
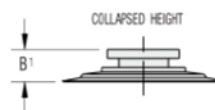
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCR-U4P-S** (for Silicone material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 234 - 239.

Material	Color	Temperature Range
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



VC Style



Like cleated cups, oval cups have heavy load capabilities due to their rigid design and large vacuum work area. Oval cups have the largest lifting force because they provide the most surface area for a given footprint.

Part Number			A-1	A-2	Approx. Area sq. in. [sq. mm]	B - Height	B ¹ - Collapsed Height	C	D	E	F	H	Cleats	Standard Material	Optional Material	Weight oz [g]	Cup Type [†]
VC 89		in.	1.14	2.78	5.85	1.13	0.95	0.57	1.39	1/4 NPTF	-	-	No	V	ORV, GS or P	1	1
		mm	29.0	70.6	3774	28.7	2.41	14.5	35.3							27	
VC 83		in.	1.56	4.09	3.16	1.30	1.20	0.78	2.05	1/4 NPTF	-	-	No	V	ORV, GS or P	3.2	1
		mm	39.6	103.9	2039	33.0	30.5	19.8	51.9							91	
VC 183 2X4		in.	2.00	4.00	7.14	1.00	0.70	1.00	2.00	1/4 NPTF	-	-	Yes	V	ORV, GS or P	2.7	1
		mm	50.8	101.6	4606	25.4	17.8	25.4	50.8							76	
VC 183 2X6		in.	2.00	6.00	11.14	0.98	0.75	1.00	4.00	1.00	1/4 NPTF	-	Yes	V	ORV, GS or P	4.7	1
		mm	50.8	152.4	7187	24.9	19.1	25.4	101.6	25.4						134	
VC 90 2X10		in.	2.00	10.00	19.14	0.82	0.55	1.00	6.50	1.75	1/4 NPTF	-	No	V	ORV, GS or P	4.9	1
		mm	50.8	254.0	12348	20.8	14.0	25.4	165.1	44.5						139	
VC90 3X8		in.	3.00	8.00	22.06	1.10	0.75	1.50	5.00	1.50	3/8 NPTF	-	Yes	V	ORV, GS or P	11	1
		mm	76.2	203.2	14232	27.8	19.1	38.1	127.0	38.1						312	
VC 90 3X10		in.	3.00	10.00	28.06	1.10	0.73	1.50	7.00	1.50	3/8 NPTF	-	Yes	V	ORV, GS or P	14	1
		mm	76.2	254.0	18103	27.8	18.5	38.1	177.8	38.1						397	
VC 32 3.5X5.0		in.	3.50	5.00	11.87	1.82	1.02	1.75	2.50	3/8 NPTF	-	-	Yes	V	ORV, GS or P	6.7	1
		mm	88.9	127.0	7658	46.2	25.9	44.5	63.5							190	
VC 129		in.	3.25	7.87	23.30	1.83	0.80	1.63	3.94	1/2 NPTF	-	-	Yes	V	ORV, GS or P	13.2	1
		mm	82.6	199.9	150.32	46.5	20.3	41.3	100.0							373	
VC 90 6X10		in.	6.00	10.00	58.06	1.19	0.73	2.00	6.00	2.00	6	Consult Factory	Yes	V	ORV, GS or P	24	1
		mm	152.4	254.0	37458	30.2	18.5	50.8	152.4	50.8	152.4					680	

* **How to Order:** All part numbers ending with a dash require customer to specify material type to complete part number. I.E. **VC-89-GS** (for Grey Silicone material).
See Chart below for material specifications.

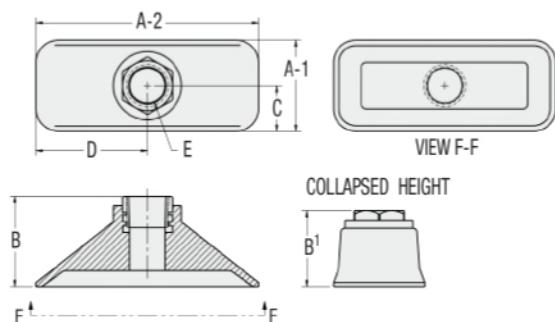
† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF.

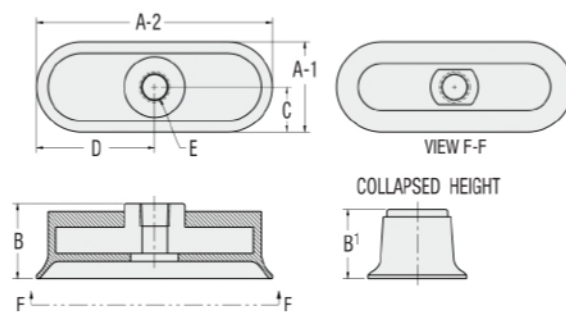
Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
GS - Grey Silicone	Grey	-50°F to +392°F (-46°C to +200°C)



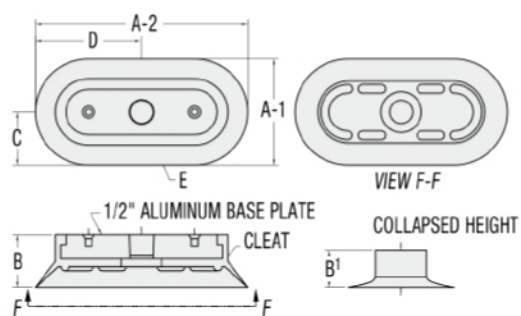
Oval Cups



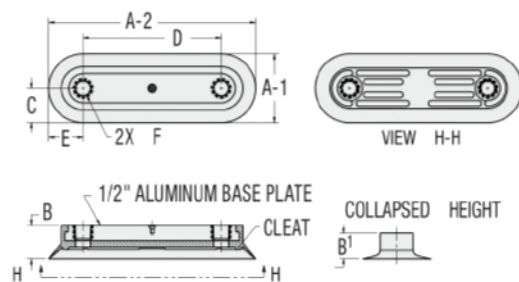
VC 89



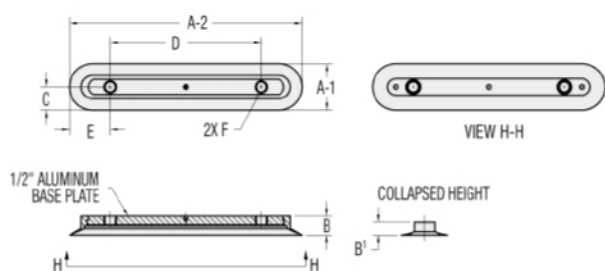
VC 83



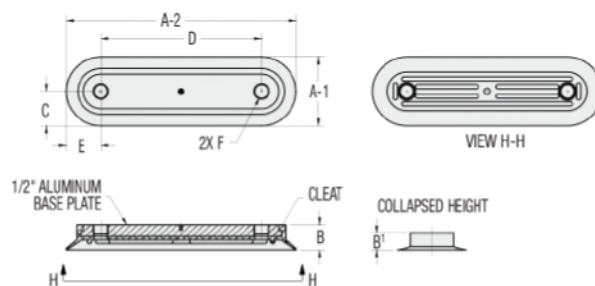
VC 183 2 x 4



VC 183 2 x 6

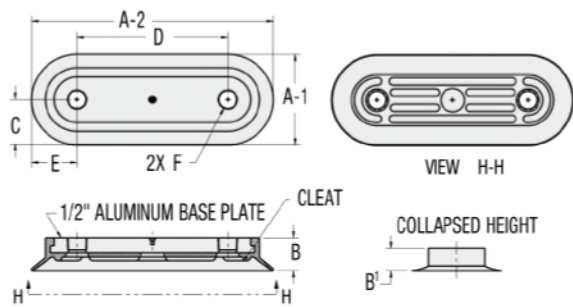


VC 90 2 x 10

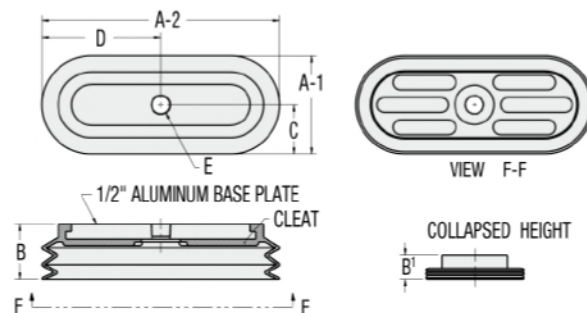


VC 90 3 x 10

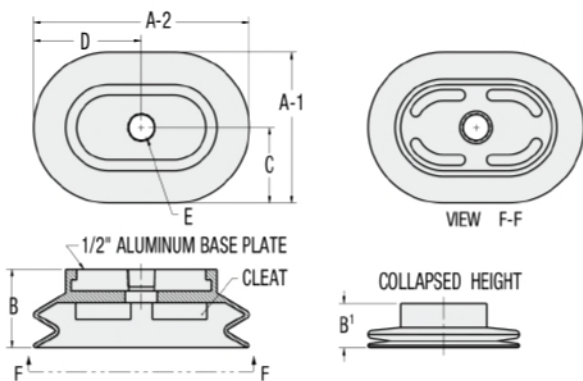




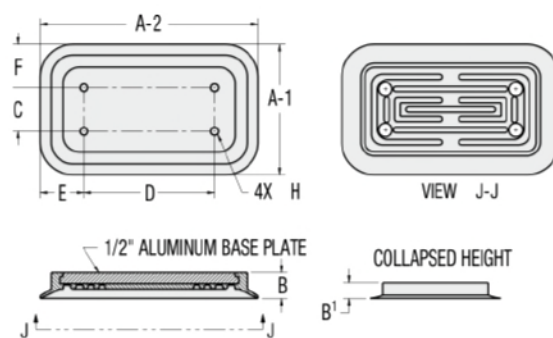
VC 90 3 x 8



VC 129



VC 32 3.5 x 5.0



VC 90 6 x 10

Deep Cups

VCR Style



Deep cups are used for curved and irregular surfaces, not for flat surfaces. They can lift products over corners and edges. Excellent for handling golf balls etc.

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Weight oz [g]	Fitting Group	Cup Type [†]
VCR-D15P-*		in.	0.64	0.32	0.65	0.45	0.35	0.15	No	C or S	0	3	1
		mm	16.3	208	16.5	11.4	8.9	3.8			1		
VCR-D20P-*		in.	0.86	0.58	0.51	0.45	0.57	0.20	No	C or S	0	4	2
		mm	21.8	375	13.0	11.4	14.5	5.1			2		
VCR-D30P-*		in.	1.25	1.23	0.77	0.45	0.57	0.20	No	C or S	0.14	4	2
		mm	31.8	792	19.6	11.4	14.5	5.1			4		
VCR-D50P-*		in.	2.09	3.43	1.25	0.90	1.06	0.43	No	C or S	0.53	6	2
		mm	53.1	2213	31.8	22.9	26.9	10.9			15		

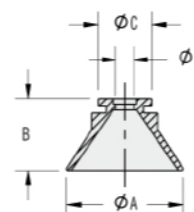
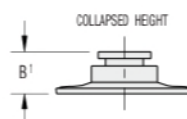
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCR-D15P-S** (for Silicone material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 234 - 239.

Material	Color	Temperature Range
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Ultra Miniature Cups

Ultra-Miniature cups are ideal for use in picking up extremely small parts such as computer chips, wafers and electronics components. In high temperature materials, Ultra-miniature cups may be used in laboratory and food processing environments.

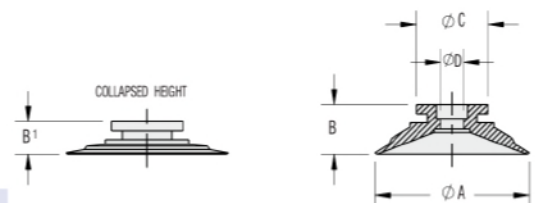


Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	C	D	E	Cleats	Standard Material	Optional Material	Weight oz [g]	Probe
VC-VI 093-*		in.	0.09	0.01	0.16	0.08	0.03	0.02	No	B	S	0	S050-5 S050-10 A050-5 A050-10
		mm	2.4	4	4.1	2.0	0.76	0.5				0	
VC-VI 125-*		in.	0.13	0.01	0.18	0.10	0.03	0.04	No	B	ESD or S	0	
		mm	3.2	8	4.6	2.5	0.76	0.9				0	
VC-VI 250-*		in.	0.25	0.05	0.20	0.10	0.06	0.04	No	B	ESD or S	0	
		mm	6.4	32	5.1	2.5	1.5	0.9				0	
VC-VI 375-*		in.	0.38	0.11	0.25	0.13	0.06	0.04	No	B	ESD or S	0	S075-5 S075-10 A075-5 A075-10
		mm	9.5	71	6.4	3.3	1.5	0.9				0.1	
VC-VI 500-*		in.	0.50	0.20	0.30	0.16	0.06	0.04	No	B	ESD or S	0	
		mm	12.7	127	7.6	4.1	1.5	0.9				0.1	
VC-VI 625-*		in.	0.63	0.31	0.31	0.16	0.06	0.04	No	B	ESD or S	0.01	
		mm	15.9	198	7.9	4.1	1.5	0.9				0.3	
VC-VI 750-*		in.	0.75	0.44	0.32	0.16	0.06	0.04	No	B	ESD or S	0.02	
		mm	19.1	285	8.1	4.1	1.5	0.9				0.5	

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VC-VI 093-B** (for Buna-N material). See Chart below for material specifications.

How to Order Probes: Specify part number from probe chart. See page 241.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF.



Material	Color	Temperature Range
B - Buna-N static dissipative (ESD-safe) non-marking	Black	-5°F to +250°F (-15°C to +121°C)
ESD - Hi-Temp conductive (ESD-safe) silicone	Black	-65°F to +445°F (-55°C to +230°C)
S - Hi-Temp (non-ESD-safe) silicone	Clear	-65°F to +480°F (-55°C to +250°C)



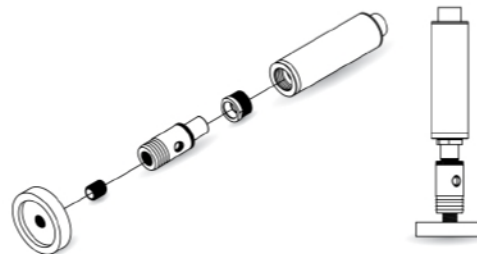
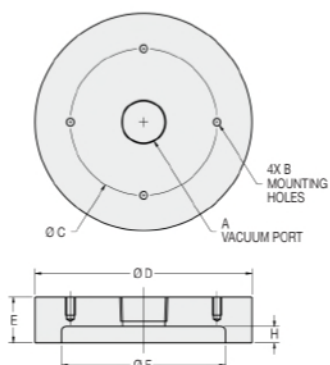
UH Rigid & Specialty Cups

UH Rigid Cups

Ideal for porous material handling applications.



Material: UHMW



CDF Assembly with UH Cup and attachment

UH Series Cup	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	Weight
VC-UH6-16	1" NPT	1/4-20 x .50 deep	4.00	5.91	1.25	4.47	0.44	14.8 oz
VC-UH6-16-TL	1" NPT	1/4-20 x .50 deep	4.00	5.91	1.25	5.60	0.44	12.2 oz
	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	Weight
I-VC-UH6-16	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	113.5	11.2	420 grams
I-VC-UH6-16-TL	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	142.2	11.2	346 grams

Specialty Cups

Consult factory for available styles, materials, and sizes.



High Flex Cup - VCHF Series

High Flex cups for the CDF750HFM Series - see page 195.



Vaccon Cups by Part Number

Part Number	Page #	Part Number	Page #	Part Number	Page #
VC 1	223	VC B2	219	VCHF7-3517	195
VC 10	223	VC B20	219	VCR-B10P	218
VC 104-4.5	222	VC B20P	219	VCR-B15P	219
VC 106	225	VC B3	218	VCR-B20P	219
VC 11	223	VC B30P	220	VCR-B30P	220
VC 12	224	VC B40P	220	VCR-B40P	220
VC 124	219	VC B5	218	VCR-B50P	220
VC 129	227	VC B50P	220	VCR-BL20P	221
VC 130	222	VC B6	218	VCR-BL30P	221
VC 165A	223	VC UH	232	VCR-BL40P	222
VC 168	224	VCC-B-020	218	VCR-BL50P	222
VC 183 2X4	227	VCC-B-021	221	VCR-D15P	230
VC 183 2X6	227	VCC-B-028	221	VCR-D20P	230
VC 25	223	VCC-B-035	221	VCR-D30P	230
VC 27	225	VCC-B-043	218	VCR-D50P	230
VC 27A	225	VCC-B-051	219	VCR-F15P	223
VC 2EA	224	VCC-B-055	221	VCR-F20P	223
VC 30	225	VCC-B-063	219	VCR-F25P	223
VC 32 3.5 x 5.0	227	VCC-B-069	221	VCR-F30P	224
VC 32B	220	VCC-B-075	211	VCR-F40P	224
VC 32C	220	VCC-B-087	219	VCR-F50P	224
VC 32C1	220	VCC-B-094	219	VCR-U10P	226
VC 32C1F	220	VCC-B-098	221	VCR-U15P	226
VC 32D	222	VCC-B-126	222	VCR-U20P	226
VC 33A	222	VCC-B-130	220	VCR-U30P	221
VC 33A2	222	VCC-B-165	222	VCR-U40P	226
VC 33A3	221	VCC-B-169	220	VCR-U4P	226
VC 33A5	221	VCC-B-209	220	VCR-U50P	226
VC 34	225	VCC-B-244	222	VCR-U6P	226
VC 36 B	223	VCC-B-307	220	VCR-U8P	226
VC 37A	224	VCC-B-346	222	VC-VI 093	231
VC 49	224	VCC-F-020	223	VC-VI 125	231
VC 59	224	VCC-F-039	223	VC-VI 250	231
VC 63	225	VCC-F-059	223	VC-VI 375	231
VC 8	224	VCC-F-079	223	VC-VI 500	231
VC 83	227	VCC-F-100	223	VC-VI 625	231
VC 89	227	VCC-F-120	224	VC-VI 750	231
VC 90 2X10	227	VCC-F-142	224		
VC 90 3X10	227	VCC-F-160	224		
VC 90 3X8	227	VCC-F-205	224		
VC 90 6X10	227	VCC-F-236	224		
VC B1	220	VCC-F-295	225		
VC B10-2	221	VCC-F-374	225		
VC B10.5	218	VCHF7-3513	195		
VC B15	219				



Vacuum Cup Fittings



Ideal Applications:

- Automation assembly fixtures
- Robotic end effectors
- End-of-Arm Tooling devices

Designed with large thru bores, Vaccon fittings connect to vacuum cups, vacuum pumps and spring levelers ensuring unrestricted vacuum flow for safe material handling operations.

For plumbing flexibility, Vaccon offers 9 different fitting groups with various thread sizes.

Standard Fittings:

- Clear chromate coated aluminum or brass
- NPT, G, M5 and 10-32 threads
- Male and female threads

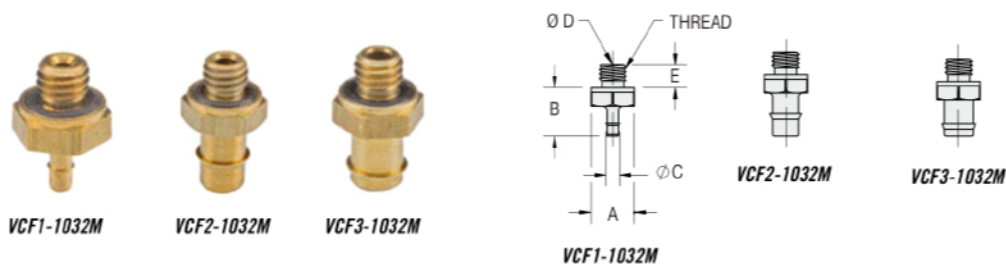
How to Specify:

Size the cup first based on application requirements. Then choose the fitting size. Please note Vaccon's Cup Section includes recommended fitting groups for each cup.

For fitting only: order by model # i.e. VCF4-18F

For cup and fitting: order cup part number first and then the numbered extension of the fitting i.e. **VCR-B20P-C-4-14M** (note: remove the VCF from fitting number)

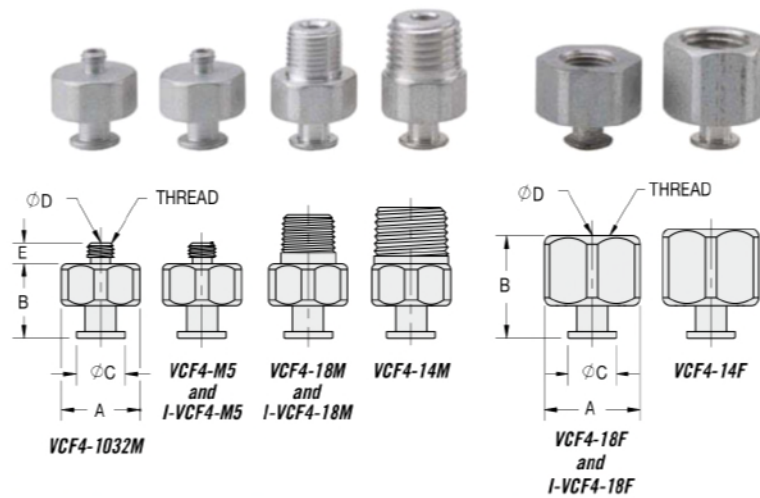
Fitting Groups 1, 2, 3



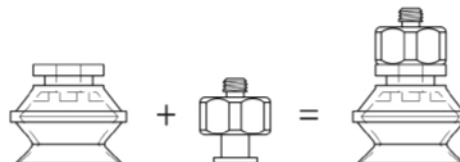
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF1-1032M	10-32 MALE	in.	0.31	0.35	0.10	0.05	0.16	0.07 oz	Brass
		mm	7.9	8.9	2.5	1.4	4.1	2 g	
VCF2-1032M	10-32 MALE	in.	0.31	0.44	0.24	0.09	0.16	0.1 oz	Brass
		mm	7.9	11.2	6.1	2.2	4.1	2.8 g	
VCF3-1032M	10-32 MALE	in.	0.31	0.39	0.24	0.09	0.16	0.1 oz	Brass
		mm	7.9	9.9	6.1	2.4	4.1	2.8 g	



Fitting Group 4



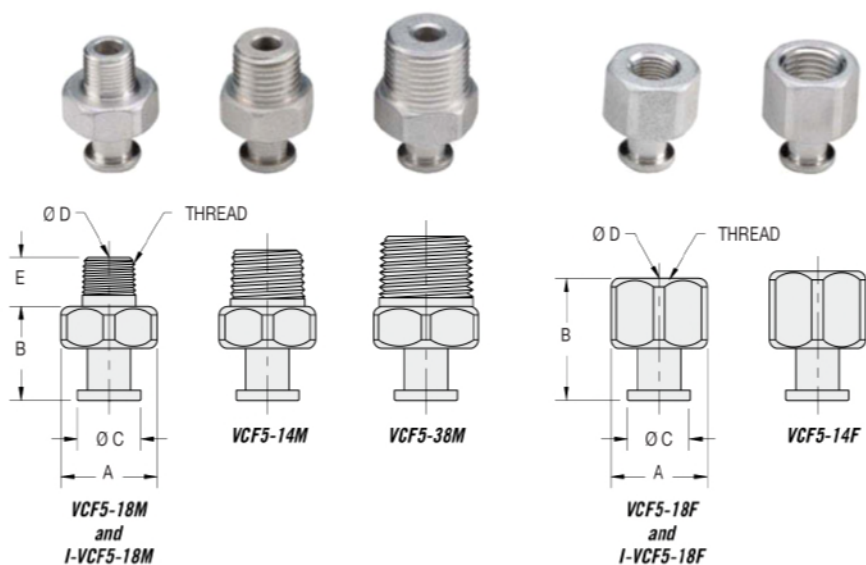
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF4-1032M	10-32 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
VCF4-M5	M5 X 0.8 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
VCF4-18M	1/8 NPT Male	in	0.56	0.53	0.35	0.17	0.35	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	8.9	5.7 g	
VCF4-14M	1/4 NPT Male	in	0.56	0.53	0.35	0.17	0.40	0.3 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	10.2	8.5 g	
VCF4-18F	1/8 NPT Female	in	0.69	0.73	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	17.4	18.5	8.8	4.4	N/A	8.5 g	
VCF4-14F	1/4 NPT Female	in	0.69	0.78	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	17.4	19.8	8.8	4.4	N/A	8.5 g	
I-VCF4-M5	M5 X 0.8 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
I-VCF4-18M	G1/8 Male	in	0.56	0.53	0.35	0.17	0.35	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	8.9	5.7 g	
I-VCF4-18F	G1/8 Female	in	17.4	0.73	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	0.56	18.5	8.8	4.4	N/A	8.5 g	



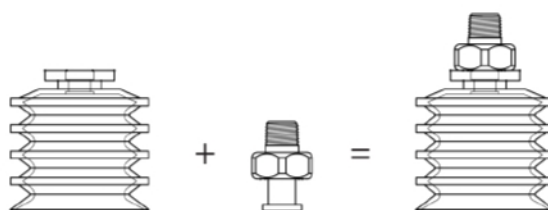
Example: Cup with Fitting

Vacuum Cups & Fittings

Fitting Group 5



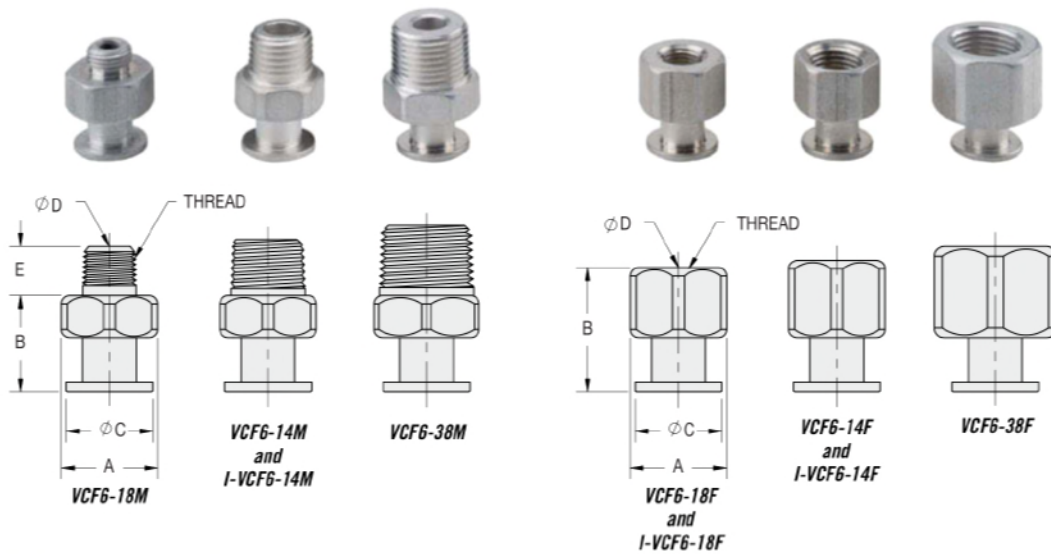
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF5-18M	1/8 NPT Male	in	0.69	0.67	0.45	0.22	0.35	0.3 oz	Aluminum
		mm	17.4	17.0	11.4	5.6	8.9	8.5 g	
VCF5-14M	1/4 NPT Male	in	0.69	0.67	0.45	0.22	0.40	0.3 oz	Aluminum
		mm	17.4	17.0	11.4	5.6	10.2	8.5 g	
VCF5-38M	3/8 NPT Male	in	0.75	0.67	0.45	0.22	0.50	0.4 oz	Aluminum
		mm	19.1	17.0	11.4	5.6	12.7	11 g	
VCF5-18F	1/8 NPT Female	in	0.69	0.87	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	N/A	8.5 g	
VCF5-14F	1/4 NPT Female	in	0.69	0.92	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	23.4	11.4	5.6	N/A	8.5 g	
I-VCF5-18M	G1/8 Male	in	0.69	0.87	0.45	0.22	0.35	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	8.9	8.5 g	
I-VCF5-18F	G1/8 Female	in	0.69	0.87	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	N/A	8.5 g	



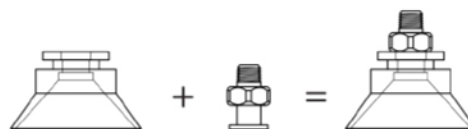
Example: Cup with Fitting



Fitting Group 6



Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF6-18M	1/8 NPT Male	in	0.69	0.69	0.62	0.28	0.35	0.4 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	8.9	11 g	
VCF6-14M	1/4 NPT Male	in	0.69	0.69	0.62	0.28	0.40	0.3 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	10.2	8.5 g	
VCF6-38M	3/8 NPT Male	in	0.75	0.69	0.62	0.28	0.50	0.5 oz	Aluminum
		mm	19.1	17.4	15.7	7.1	12.7	14 g	
VCF6-18F	1/8 NPT Female	in	0.69	0.89	0.62	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	22.5	15.7	7.1	N/A	8.5 g	
VCF6-14F	1/4 NPT Female	in	0.69	0.94	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	17.4	23.7	15.7	7.1	N/A	11 g	
VCF6-38F	3/8 NPT Female	in	0.88	1.04	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	22.2	26.3	15.7	7.1	N/A	11 g	
I-VCF6-14M	G 1/4 Male	in	0.69	0.69	0.62	0.28	0.40	0.3 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	10.2	8.5 g	
I-VCF6-14F	G 1/4 Female	in	0.69	0.94	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	17.4	23.7	15.7	7.1	N/A	11 g	
I-VCF6-18F	G 1/8 Female	in	0.69	0.89	0.62	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	22.5	15.7	7.1	N/A	8.5 g	

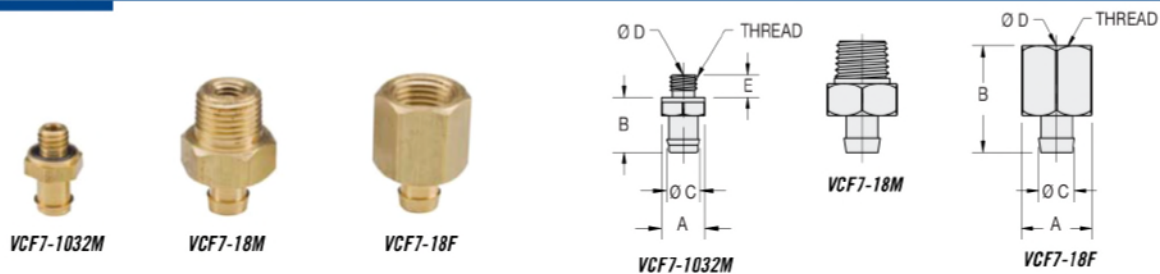


Example: Cup with Fitting



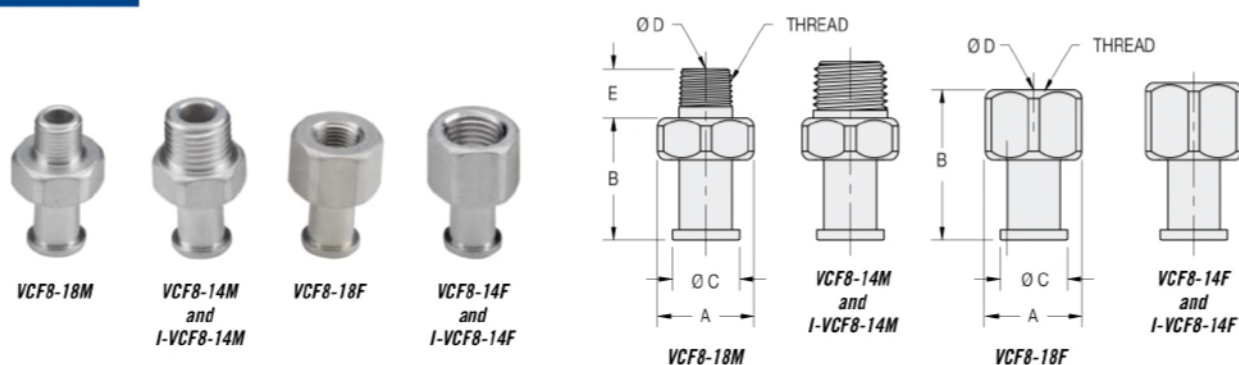
Vacuum Cups & Fittings

Fitting Group 7



Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF7-1032M	10-32 Male	in	0.31	0.39	0.24	0.09	0.16	0.1 oz	Brass
		mm	7.9	9.9	6.1	2.4	4.1	2.8 g	
VCF7-18M	1/8 NPT Male	in	0.50	0.49	0.26	0.16	0.30	0.4 oz	Brass
		mm	12.7	12.4	6.5	4.1	7.6	11 g	
VCF7-18F	1/8 NPT Female	in	0.50	0.76	0.26	0.16	N/A	0.4 oz	Brass
		mm	12.7	19.3	6.5	4.1	N/A	11 g	

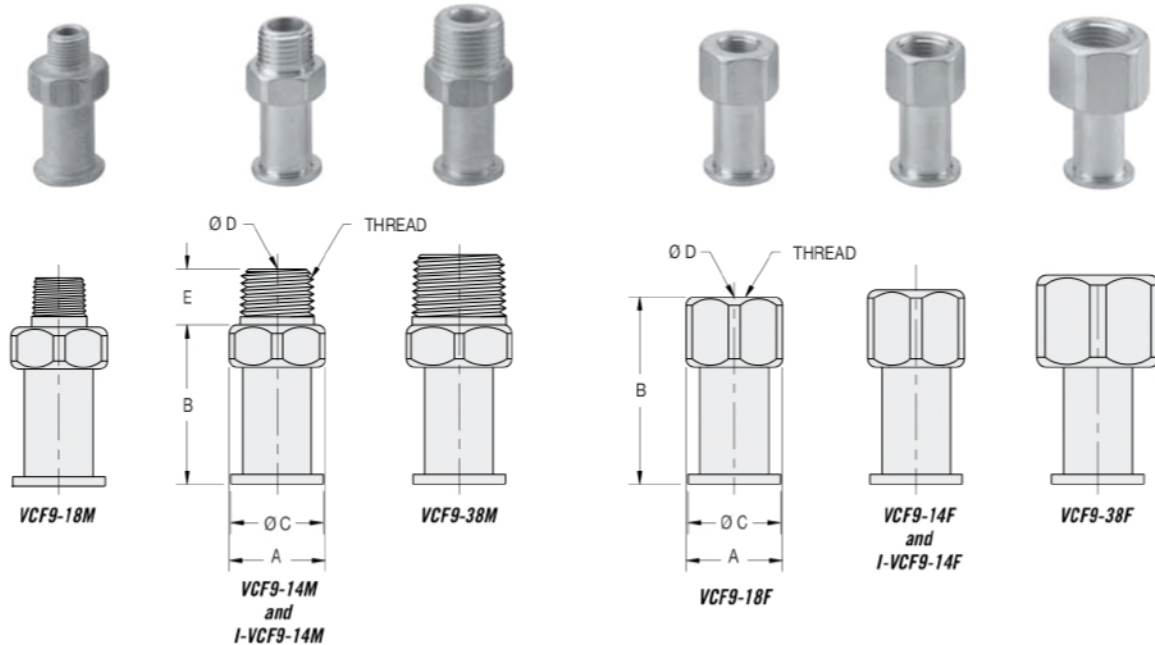
Fitting Group 8



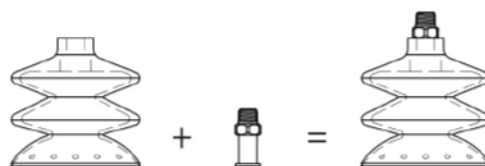
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF8-18M	1/8 NPT Male	in	0.69	0.87	0.48	0.28	0.35	0.3 oz	Aluminum
		mm	17.4	22.1	12.2	7.1	8.9	8.5 g	
VCF8-14M	1/4 NPT Male	in	0.69	0.87	0.48	0.28	0.40	0.3 oz	Aluminum
		mm	17.4	22.1	12.2	7.1	10.2	8.5 g	
VCF8-18F	1/8 NPT Female	in	0.69	1.07	0.48	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	27.2	12.2	7.1	N/A	8.5 g	
VCF8-14F	1/4 NPT Female	in	0.69	1.12	0.48	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	28.4	12.2	7.1	N/A	8.5	
I-VCF8-14M	G 1/4 Male	in	0.69	0.74	0.48	0.28	0.45	0.3 oz	Aluminum
		mm	17.4	18.8	12.2	7.1	11.4	8.5 g	
I-VCF8-14F	G 1/4 Female	in	0.69	1.12	0.48	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	28.4	12.2	7.1	N/A	8.5	



Fitting Group 9



Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF9-18M	1/8 NPT Male	in	0.69	1.14	0.66	0.22	0.35	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	5.6	8.9	11 g	
VCF9-14M	1/4 NPT Male	in	0.69	1.14	0.66	0.34	0.40	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	8.6	10.2	11 g	
VCF9-38M	3/8 NPT Male	in	0.75	1.14	0.66	0.34	0.50	0.6 oz	Aluminum
		mm	19.1	28.8	16.8	8.6	12.7	17 g	
VCF9-18F	1/8 NPT Female	in	0.69	1.34	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	33.9	16.8	8.6	N/A	11 g	
VCF9-14F	1/4 NPT Female	in	0.69	1.39	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	35.2	16.8	8.6	N/A	11 g	
VCF9-38F	3/8 NPT Female	in	0.88	1.49	0.66	0.34	N/A	0.5 oz	Aluminum
		mm	22.4	37.8	16.8	8.6	N/A	14 g	
I-VCF9-14M	G 1/4 Male	in	0.69	1.14	0.66	0.34	0.40	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	8.6	10.2	11 g	
I-VCF9-14F	G 1/4 Female	in	0.69	1.39	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	35.2	16.8	8.6	N/A	11 g	



Example: Cup with Fitting

Manual Pick and Place of Small Components

Vacuum Pencil Kit: VH-8-KIT



Compressed air required to power ultra-mini vacuum pump/probe/cup assembly.

Utilizing a miniature Vaccon venturi vacuum pump as its vacuum source, the vacuum pencil kit includes a vacuum pump, vacuum pencil and a variety of interchangeable ultra-mini cups and probes.

Vaccon's Vacuum Pencil easily adapts to handling different objects by simply changing the Vacuum cup and probe. Lightweight and compact, the vacuum pencil kit is ideal for bench top work.

Ideal Applications:

- Electronics
- Glass handling
- High temperature
- Medical
- Miniature assembly operations

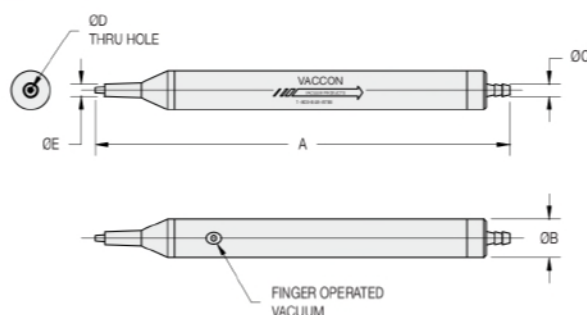
Benefits/Features:

- Lightweight – comfortable to handle
- Quiet – positive work environment
- Easy to assemble – no tools required
- Flexible – quick change of cups and probes for different applications

VH-8-KIT: Kit includes:

- 4 straight probes, 4 angled probes
- 7 Ultra-mini cups – variety of materials and sizes (anti-static for handling electronics, silicone for high temperatures – see page 231)
- 1 VH3020-8 vacuum pencil
- 1 JS-40UM vacuum pump w/inlet, exhaust and vacuum fittings – generates up to 27"Hg [914.3mbar]
- Coiled polyurethane vacuum tubing

Vacuum Pencil



Model #	Dimensions						Weight
		A	B	C	D	E	
VH3020-8	in.	5.87	0.50	0.17	0.02	0.16	0.6 oz
	mm	149.1	12.7	4.2	0.6	4.2	17 g

How to Specify:

Vacuum Pencil only: VH3020-8

Vacuum Pencil Kit: VH-8-KIT

Ultra-Mini cups only: See page 231

Probes only: See page 241



Probes

For Ultra Miniature Vacuum Cups and Vacuum Pencil Kits

Ideal Applications:

- Electronics
- Pick & place small components
- High temperature
- Medical



Straight or angled probes

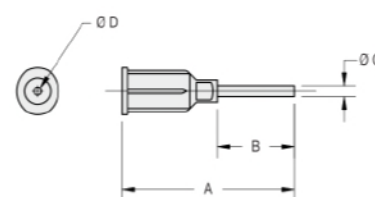
Vaccon probes attach directly to Vaccon's vacuum pencil and ultra-miniature cups for simple, manual placement of small parts.

See ultra-miniature cups on page 231.

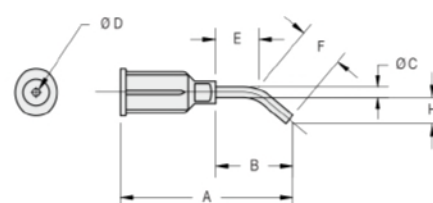
Standard Probe:

- Material: anodized aluminum
- Straight or angled
- Push on/slip fit connection to ultra-mini cups and pencils

Probes sold individually or as part of a Vaccon Vacuum Pencil Kit: **VH-8-KIT** See page 240.



Straight Probes – "S"



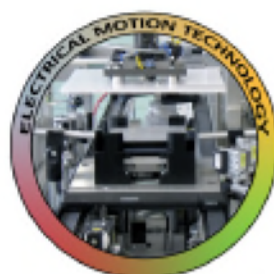
Angled Probe – "A"

Model #		Description	Dimensions							Weight
			A	B	C	D	E	F	H	
S050-5	in.	Straight Probe 1/2" Length	1.12 [28.4]	0.50 [12.7]	0.05	0.03	N/A	N/A	N/A	0.02 oz 0.7 g
	mm				1.3	0.8				
S075-5	in.				0.072	0.05				
	mm				1.8	1.3				
S050-10	in.	Straight Probe 1" Length	1.62 [41.1]	1.00 [25.4]	0.050	0.03	N/A	N/A	N/A	0.03 oz 0.8 g
	mm				1.3	0.8				
S075-10	in.				0.072	0.05				
	mm				1.8	1.3				
A050-5	in.	Angled Probe 1/2" Length	1.12 [28.4]	0.50 [12.7]	0.05	0.03	0.26	0.31	0.19	0.02 oz 0.7 g
	mm				1.3	0.8	6.6	8.0	4.8	
A075-5	in.				0.072	0.05	0.28	0.29	0.17	
	mm				1.8	1.3	7.1	7.3	4.3	
A050-10	in.	Angled Probe 1" Length	1.62 [41.1]	1.00 [25.4]	0.050	0.03	0.76	0.31	0.19	0.03 oz 0.8 g
	mm				1.3	0.8	19.3	8.0	4.8	
A075-10	in.				0.072	0.05	0.78	0.29	0.17	
	mm				1.8	1.3	19.8	7.3	4.3	

How to Specify:

Probe only: Order by model # i.e. **A050-5**





***Vous avez l'idée, nous la concrétisons.
Wij verheugen ons op uw aanvraag.
We look forward to your application.***



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