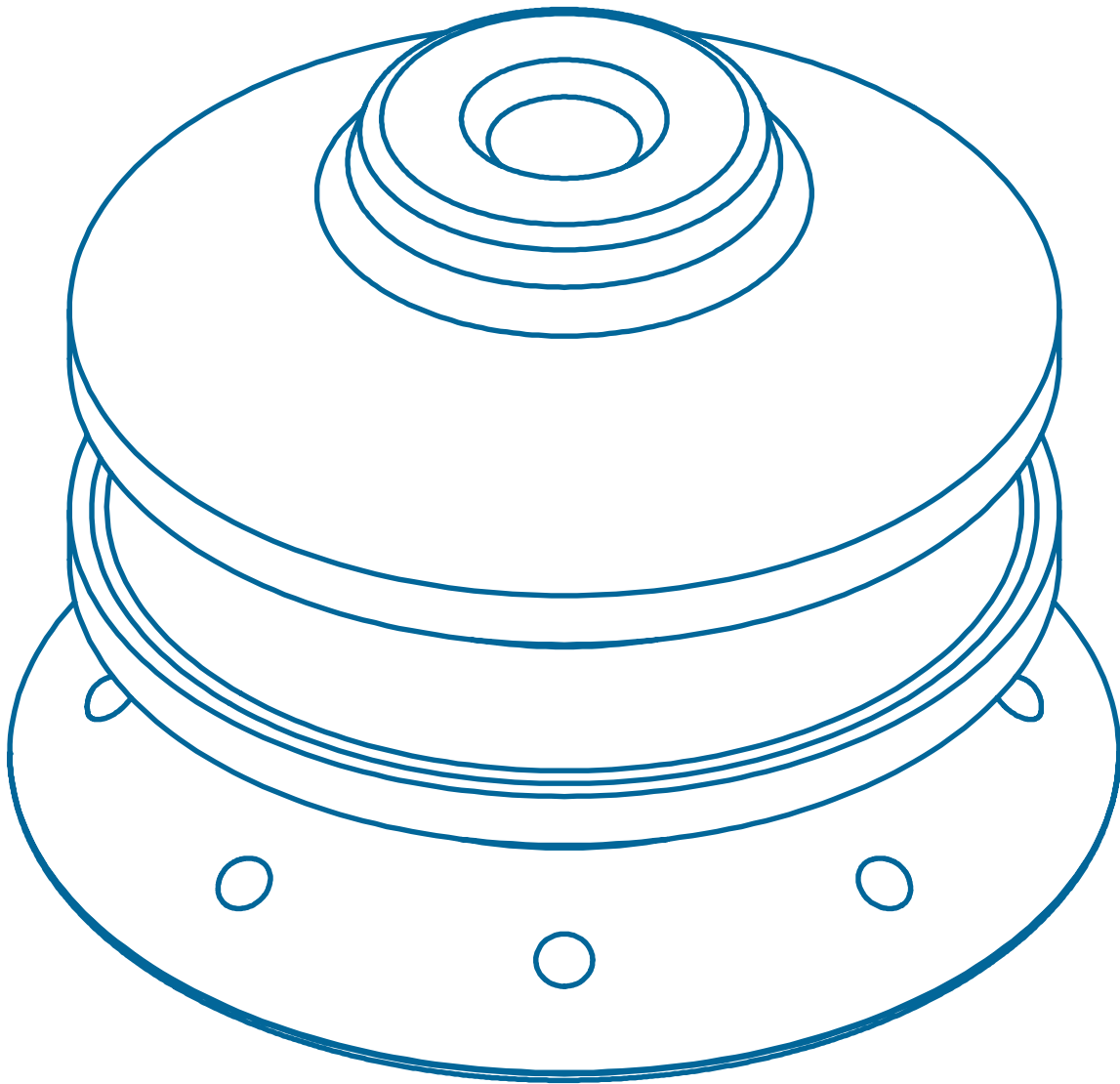
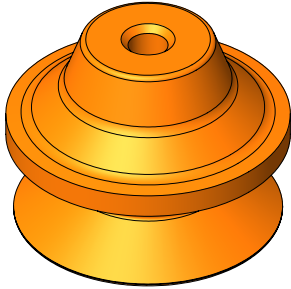
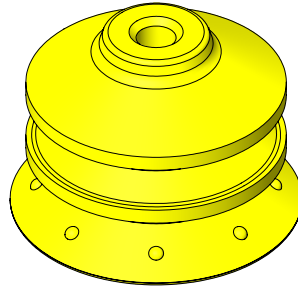
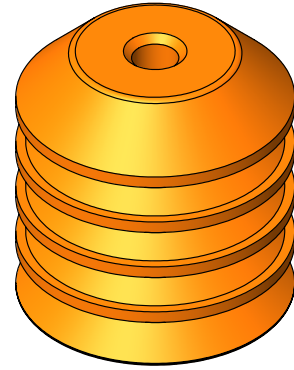
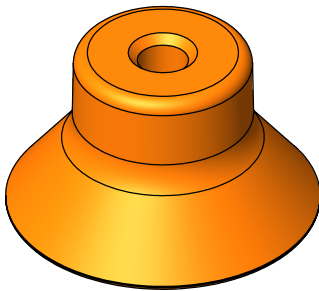
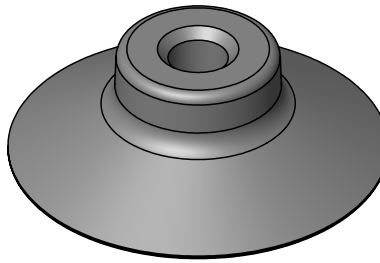
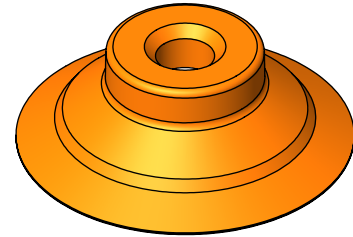
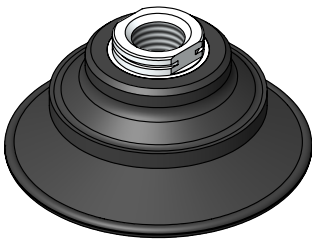
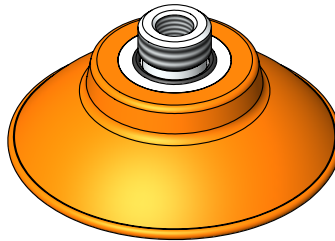
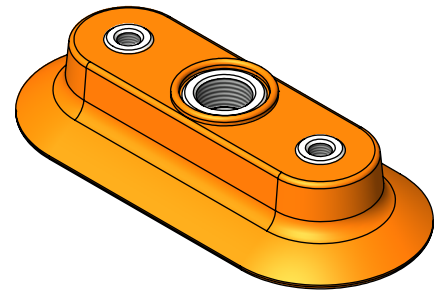


Vacuum Cups

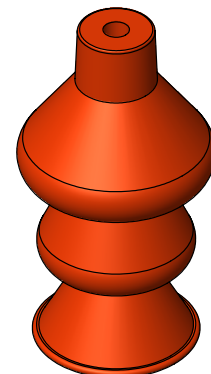
Section 2



EDCO USA®

**Bellows****Double Bellows****Multi-Bellows****Deep****Flat****Universal****Bellows Flat****Flat-Concave****Oval**

Bellows	3
Double Bellows	8
Bellows Flat	10
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Deep	14
Flat	16
Flat-Concave	21
Oval	24
Universal	26
Egg	29
Information	30

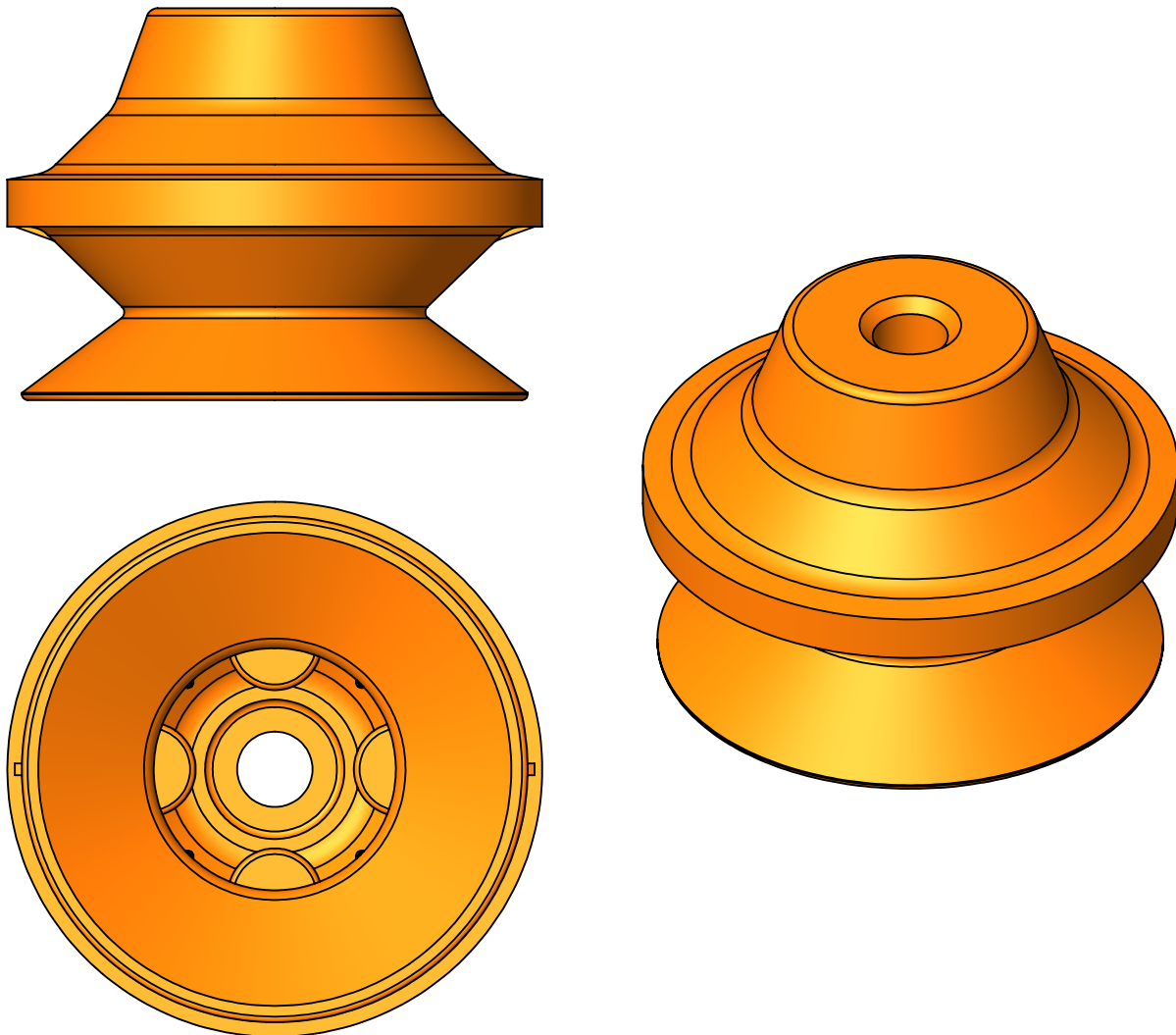
**Egg**

Bellows Vacuum Cups

Bellows vacuum cups are used when it is necessary to compensate for varying workpiece heights, to handle parts with uneven (concave, convex, or textured) surfaces, or easily damaged parts. A lifting effect during evacuation can be used to help separate a top sheet from those stacked below. Bellows vacuum cups can conform to curved or uneven workpieces such as pipes, bottles, containers, cylinders, car body components, flexing cardboard boxes, etc. Bellows vacuum cups provide height compensation and a ball-joint motion through a limited angular range.

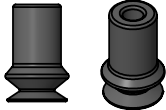
Suitable Workpiece Surface:

- Flat
- Slightly Concave
- Convex
- Compound
- Spherical
- Cylindrical
- Flexible
- Shear Loads

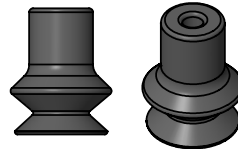


Bellows Vacuum Cups

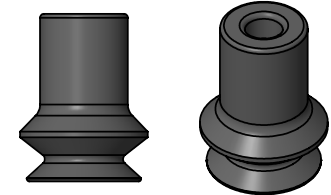
	Cup Size	Cup Material	Cup Fitting
XP-B	15	CS	-10M
	5	Ø 5 mm	A Ameriflex ²
	8	Ø 8 mm	CS Conductive Silicone ¹
	10	Ø 10 mm	D Duramax ²
	15	Ø 15 mm	N Nitrile / TPV
	20	Ø 20 mm	S Silicone
		V Viton	

¹Not available on XP-B15 or XP-B20.²Not available on XP-B5, XP-B8, or XP-B10.

XP-B5



XP-B8

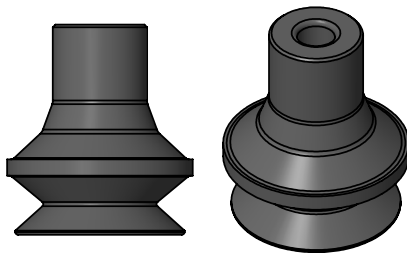


XP-B10

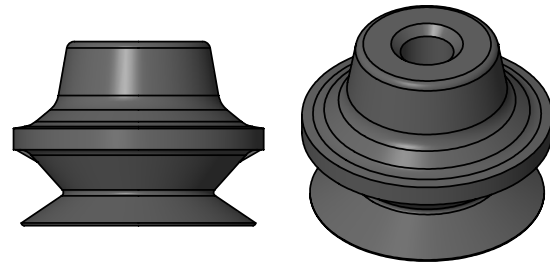
Cup Diameter: in [mm]	5 mm
Outer Diameter: in [mm]	0.24 [6.1]
Cup Height: in [mm]	0.37 [9.3]
Thru Hole: in [mm]	0.08 [2.0]
Stroke: in [mm]	0.06 [1.5]
Cup Weight: oz [g]	0.004 [0.11]
Internal Volume: cu in [cc]	0.01 [0.2]
Force @ 6 inHG: lb [n]	0.07 [0.3]
Force @ 18 inHG: lb [n]	0.10 [0.4]
Minimum Radius: in [mm]	0.06 [1.5]
Shear Load*: lb [n]	0.05 [0.2]

Cup Diameter: in [mm]	8 mm
Outer Diameter: in [mm]	0.38 [9.6]
Cup Height: in [mm]	0.47 [12.0]
Thru Hole: in [mm]	0.08 [2.0]
Stroke: in [mm]	0.13 [3.3]
Cup Weight: oz [g]	0.01 [0.3]
Internal Volume: cu in [cc]	0.01 [0.2]
Force @ 6 inHG: lb [n]	0.18 [0.8]
Force @ 18 inHG: lb [n]	0.36 [1.6]
Minimum Radius: in [mm]	0.07 [1.8]
Shear Load*: lb [n]	0.18 [0.8]

Cup Diameter: in [mm]	10 mm
Outer Diameter: in [mm]	0.48 [12.2]
Cup Height: in [mm]	0.63 [16.0]
Thru Hole: in [mm]	0.14 [3.7]
Stroke: in [mm]	0.18 [4.5]
Cup Weight: oz [g]	0.03 [0.9]
Internal Volume: cu in [cc]	0.03 [0.5]
Force @ 6 inHG: lb [n]	0.3 [1.3]
Force @ 18 inHG: lb [n]	0.8 [3.6]
Minimum Radius: in [mm]	0.16 [4.1]
Shear Load*: lb [n]	0.4 [1.7]



XP-B15



XP-B20

Cup Diameter: in [mm]	15 mm
Outer Diameter: in [mm]	0.70 [17.7]
Cup Height: in [mm]	0.79 [20.0]
Thru Hole: in [mm]	0.14 [3.7]
Stroke: in [mm]	0.26 [6.6]
Cup Weight: oz [g]	0.04 [1.1]
Internal Volume: cu in [cc]	0.07 [1.2]
Force @ 6 inHG: lb [n]	0.70 [3.1]
Force @ 18 inHG: lb [n]	1.30 [5.8]
Minimum Radius: in [mm]	0.20 [5.1]
Shear Load*: lb [n]	0.70 [3.1]

Cup Diameter: in [mm]	20 mm
Outer Diameter: in [mm]	0.94 [23.9]
Cup Height: in [mm]	0.69 [17.6]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.39 [9.9]
Cup Weight: oz [g]	0.08 [2.3]
Internal Volume: cu in [cc]	0.16 [2.6]
Force @ 6 inHG: lb [n]	1.30 [5.8]
Force @ 18 inHG: lb [n]	2.20 [9.8]
Minimum Radius: in [mm]	0.39 [9.9]
Shear Load*: lb [n]	1.10 [4.8]

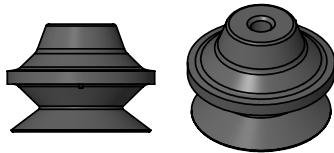
*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Bellows Vacuum Cups

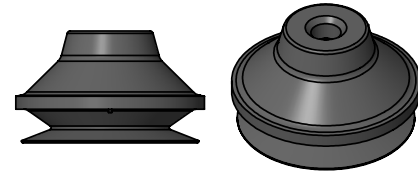
	Cup Size	Cup Material	Cup Fitting
XP-B	50	V	-38F
30	Ø 30 mm	A Ameriflex	(Blank) None
40	Ø 40 mm	D Duramax	See cup fittings for available threads.
50	Ø 50 mm	N Nitrile / TPV	
65	Ø 65 mm	S Silicone	
		V Viton ¹	

¹Not available on XP-B65.



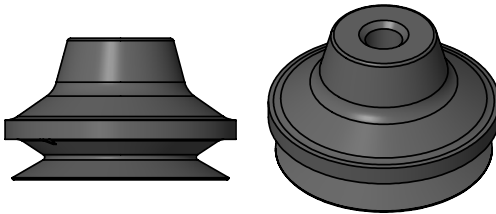
XP-B30

Cup Diameter: in [mm]	30 mm
Outer Diameter: in [mm]	1.42 [36.1]
Cup Height: in [mm]	1.04 [26.4]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.59 [14.9]
Cup Weight: oz [g]	0.25 [7.1]
Internal Volume: cu in [cc]	0.61 [10.0]
Force @ 6 inHG: lb [n]	2.70 [12.0]
Force @ 18 inHG: lb [n]	4.90 [21.8]
Minimum Radius: in [mm]	0.59 [15.0]
Shear Load*: lb [n]	2.50 [11.1]



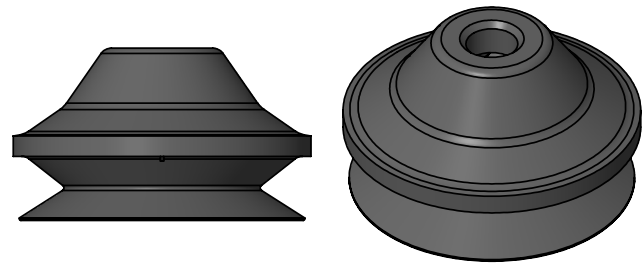
XP-B40

Cup Diameter: in [mm]	40 mm
Outer Diameter: in [mm]	1.82 [46.2]
Cup Height: in [mm]	1.08 [27.4]
Thru Hole: in [mm]	0.29 [7.4]
Stroke: in [mm]	0.59 [14.9]
Cup Weight: oz [g]	0.35 [9.9]
Internal Volume: cu in [cc]	0.90 [14.7]
Force @ 6 inHG: lb [n]	4.90 [21.8]
Force @ 18 inHG: lb [n]	8.80 [39.1]
Minimum Radius: in [mm]	0.79 [20.1]
Shear Load*: lb [n]	4.40 [19.5]



XP-B50

Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	2.23 [56.6]
Cup Height: in [mm]	1.36 [34.7]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	0.79 [20.0]
Cup Weight: oz [g]	0.66 [18.8]
Internal Volume: cu in [cc]	2.00 [32.8]
Force @ 6 inHG: lb [n]	7.40 [32.9]
Force @ 18 inHG: lb [n]	14.60 [64.9]
Minimum Radius: in [mm]	0.98 [24.9]
Shear Load*: lb [n]	7.30 [32.4]



XP-B65

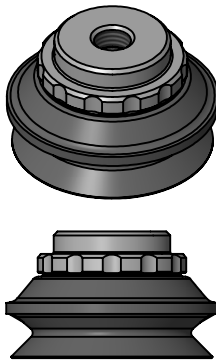
Cup Diameter: in [mm]	65 mm
Outer Diameter: in [mm]	2.87 [72.9]
Cup Height: in [mm]	1.66 [42.2]
Thru Hole: in [mm]	0.50 [12.7]
Stroke: in [mm]	0.90 [22.9]
Cup Weight: oz [g]	1.30 [36.9]
Internal Volume: cu in [cc]	3.90 [63.9]
Force @ 6 inHG: lb [n]	13.30 [59.2]
Force @ 18 inHG: lb [n]	26.30 [117.0]
Minimum Radius: in [mm]	1.22 [31.0]
Shear Load*: lb [n]	13.1 [58.3]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

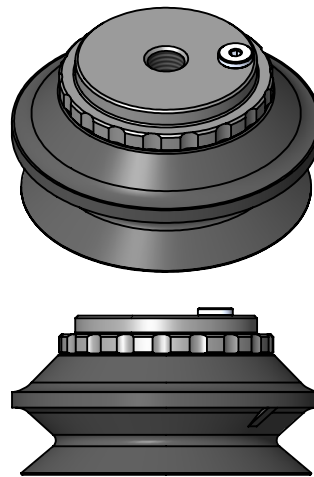
Bellows Vacuum Cups

	Cup Size	Cup Material	Cup Fitting
XP-B	75	S	-12F
75	Ø 75 mm	N Nitrile / TPV	(Blank) None
110	Ø 110 mm	S Silicone	See cup fittings for available threads.
150	Ø 150 mm	V Viton	



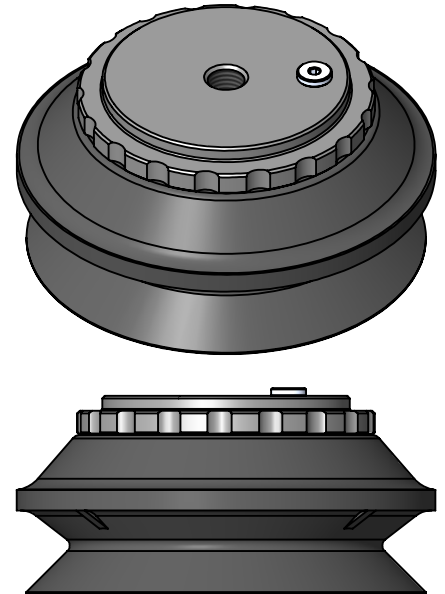
XP-B75

Cup Diameter: in [mm]	75 mm
Outer Diameter: in [mm]	3.30 [83.8]
Cup Height*: in [mm]	1.98 [50.3]
Stroke: in [mm]	0.79 [20.0]
Cup Weight: oz [g]	1.80 [51.0]
Internal Volume: cu in [cc]	6.70 [110.0]
Force @ 6 inHG: lb [n]	16.00 [71.2]
Force @ 18 inHG: lb [n]	37.00 [164.0]
Minimum Radius: in [mm]	1.60 [40.6]
Shear Load*: lb [n]	19.00 [84.5]



XP-B110

Cup Diameter: in [mm]	110 mm
Outer Diameter: in [mm]	4.82 [122.4]
Cup Height*: in [mm]	2.49 [63.1]
Stroke: in [mm]	1.32 [33.2]
Cup Weight: oz [g]	5.10 [145.0]
Internal Volume: cu in [cc]	19.00 [311.0]
Force @ 6 inHG: lb [n]	30.00 [133.0]
Force @ 18 inHG: lb [n]	77.00 [342.0]
Minimum Radius: in [mm]	2.40 [61.0]
Shear Load*: lb [n]	39.00 [173.5]



XP-B150

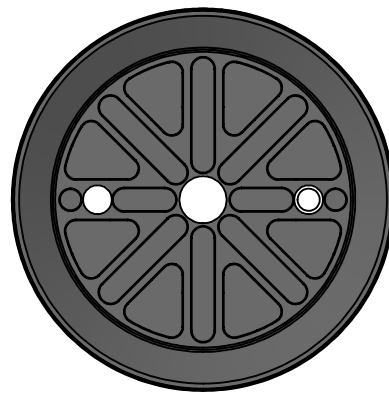
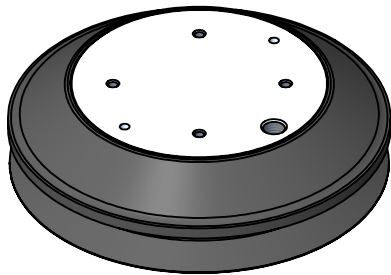
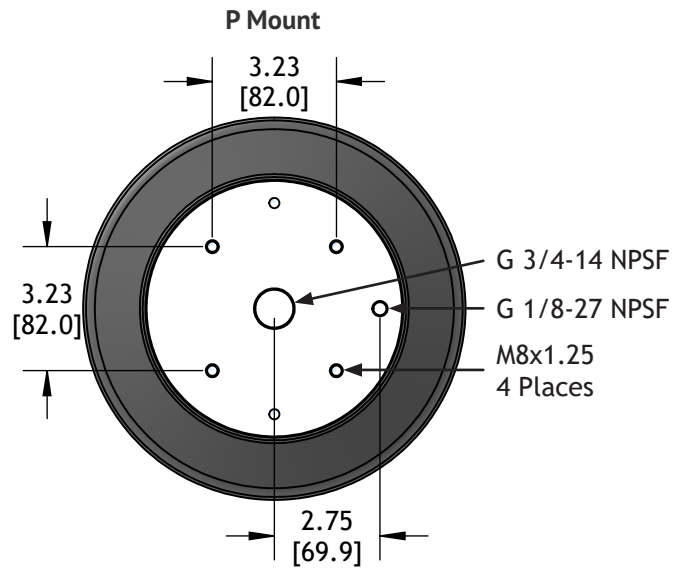
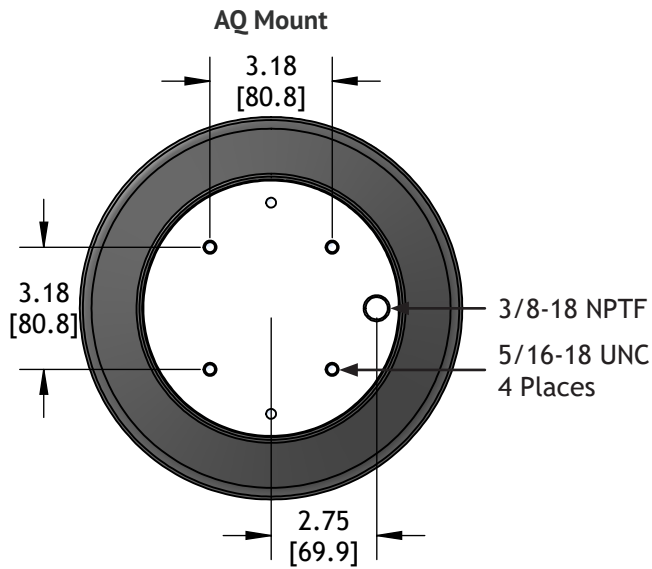
Cup Diameter: in [mm]	150 mm
Outer Diameter: in [mm]	6.54 [166.1]
Cup Height*: in [mm]	3.10 [78.8]
Stroke: in [mm]	1.75 [44.4]
Cup Weight: oz [g]	13.00 [369.0]
Internal Volume: cu in [cc]	40.00 [656.0]
Force @ 6 inHG: lb [n]	66.00 [294.0]
Force @ 18 inHG: lb [n]	154.00 [685.0]
Minimum Radius: in [mm]	3.00 [76.2]
Shear Load*: lb [n]	77.00 [342.0]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Bellows Vacuum Cups

Cup Material		Mount	
XP-B250	S	-	AQ
N	Nitrile / TPV	AQ	Quad Mount, Side Port
S	Silicone	P	Quad Mount, Centered Port



XP-B250

Cup Diameter: in [mm]	250 mm
Outer Diameter: in [mm]	9.96 [253.0]
Cup Height: in [mm]	2.56 [65.0]
Stroke: in [mm]	1.44 [36.6]
Cup Weight: oz [g]	3.57 [1.62]
Internal Volume: cu in [cc]	85.40 [1400.0]
Force @ 18 inHG: lb [n]	450.00 [2002.0]
Minimum Radius: in [mm]	10.00 [254.0]
Shear Load*: lb [n]	225.00 [1001.0]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

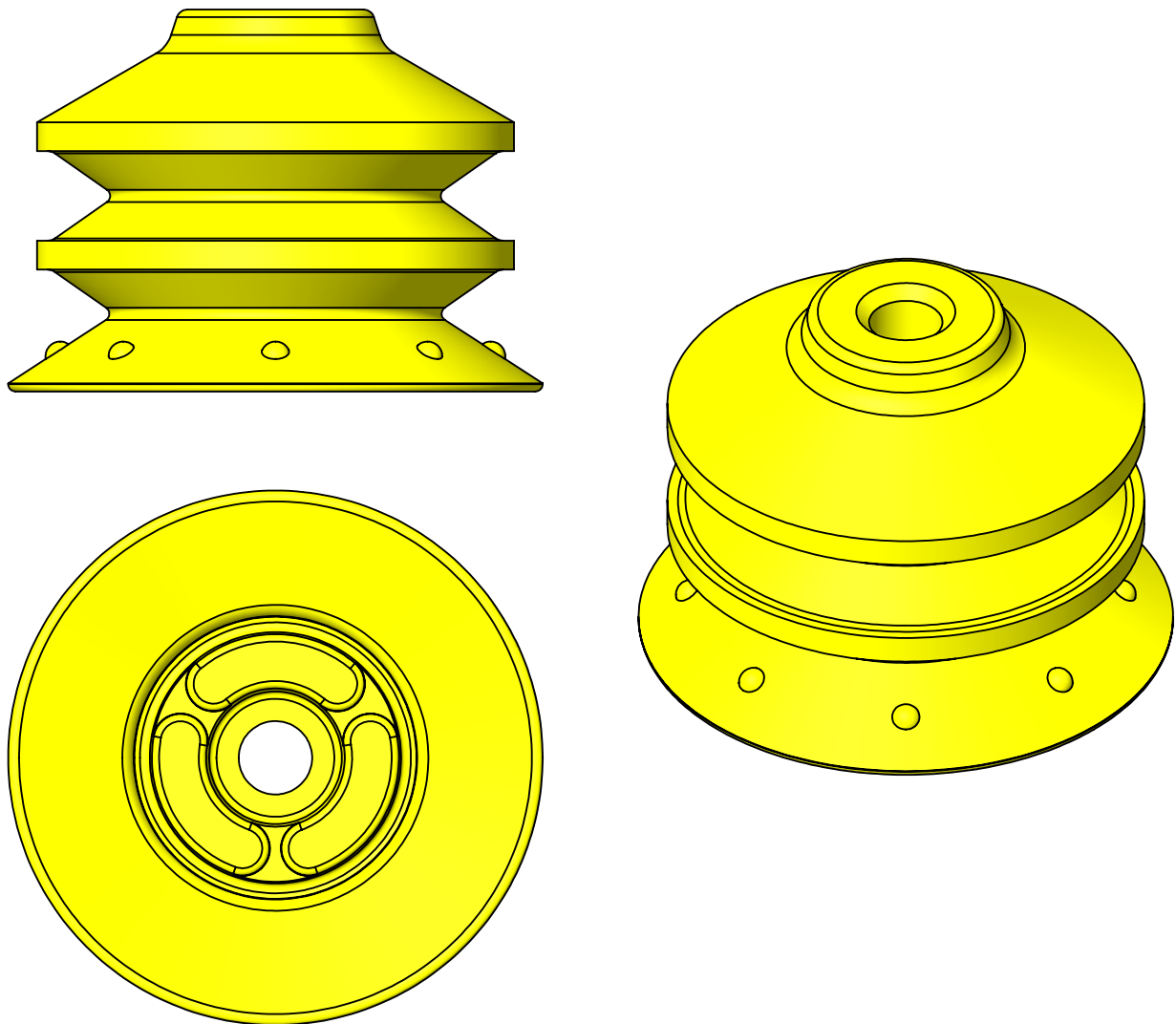
Double-Bellows Vacuum Cups

Double-bellows vacuum cups provide a longer stroke than single-bellows vacuum cups for greater ability to compensate for varying workpiece heights. This increased ability to compensate for varying heights does come at the cost of stability.

Our double-bellows vacuum cups include bottom cleats to help stabilize the cup when collapsed against a workpiece. The added traction surface increases the ability to withstand lateral shear loads. The cleats also help prevent flexible workpieces from deforming into the center of the cup when subjected to deep vacuum.

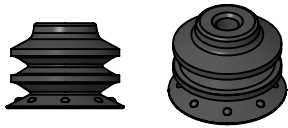
Suitable Workpiece Surface:

- Flat
- Slightly Concave
- Convex
- Compound
- Spherical
- Cylindrical
- Flexible
- Shear Loads



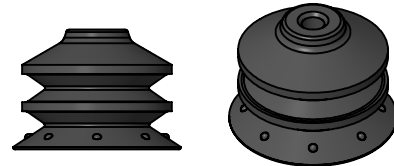
Double-Bellows Vacuum Cups

	Cup Size	Cup Material	Cup Fitting
XP-2B	65	A	-18MS
25	Ø 25 mm	A Ameriflex	(Blank) None
35	Ø 35 mm	D Duramax	See cup fittings for available threads.
50	Ø 50 mm	N Nitrile / TPV	
65	Ø 65 mm		



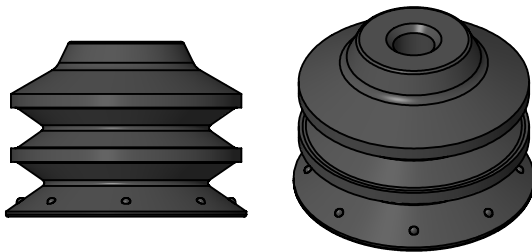
XP-2B25

Cup Diameter: in [mm]	25 mm
Outer Diameter: in [mm]	1.02 [25.9]
Cup Height: in [mm]	0.74 [18.8]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.38 [9.7]
Cup Weight: oz [g]	0.11 [3.1]
Internal Volume: cu in [cc]	0.18 [3.0]
Force @ 6 inHG: lb [n]	2.02 [9.0]
Force @ 18 inHG: lb [n]	3.15 [14.0]
Minimum Radius: in [mm]	0.31 [7.9]



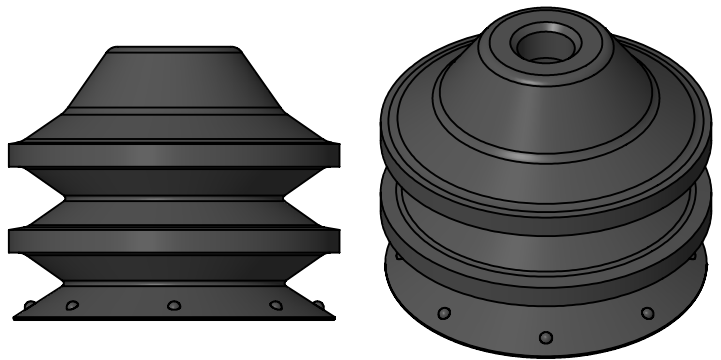
XP-2B35

Cup Diameter: in [mm]	35 mm
Outer Diameter: in [mm]	1.46 [37.0]
Cup Height: in [mm]	1.04 [26.4]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.59 [15.0]
Cup Weight: oz [g]	0.28 [7.9]
Internal Volume: cu in [cc]	0.61 [10.0]
Force @ 6 inHG: lb [n]	3.37 [15.0]
Force @ 18 inHG: lb [n]	5.62 [25.0]
Minimum Radius: in [mm]	0.39 [9.9]



XP-2B50

Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	2.09 [53.0]
Cup Height: in [mm]	1.52 [38.6]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	0.82 [20.8]
Cup Weight: oz [g]	0.85 [24.1]
Internal Volume: cu in [cc]	1.83 [30.0]
Force @ 6 inHG: lb [n]	8.32 [37.0]
Force @ 18 inHG: lb [n]	13.30 [59.2]
Minimum Radius: in [mm]	1.26 [32.0]



XP-2B65

Cup Diameter: in [mm]	65 mm
Outer Diameter: in [mm]	2.87 [72.9]
Cup Height: in [mm]	2.37 [60.3]
Thru Hole: in [mm]	0.50 [12.7]
Stroke: in [mm]	1.30 [33.0]
Cup Weight: oz [g]	2.20 [63.0]
Internal Volume: cu in [cc]	5.85 [95.9]
Force @ 6 inHG: lb [n]	8.40 [37.4]
Force @ 18 inHG: lb [n]	21.00 [93.4]
Minimum Radius: in [mm]	1.22 [31.0]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

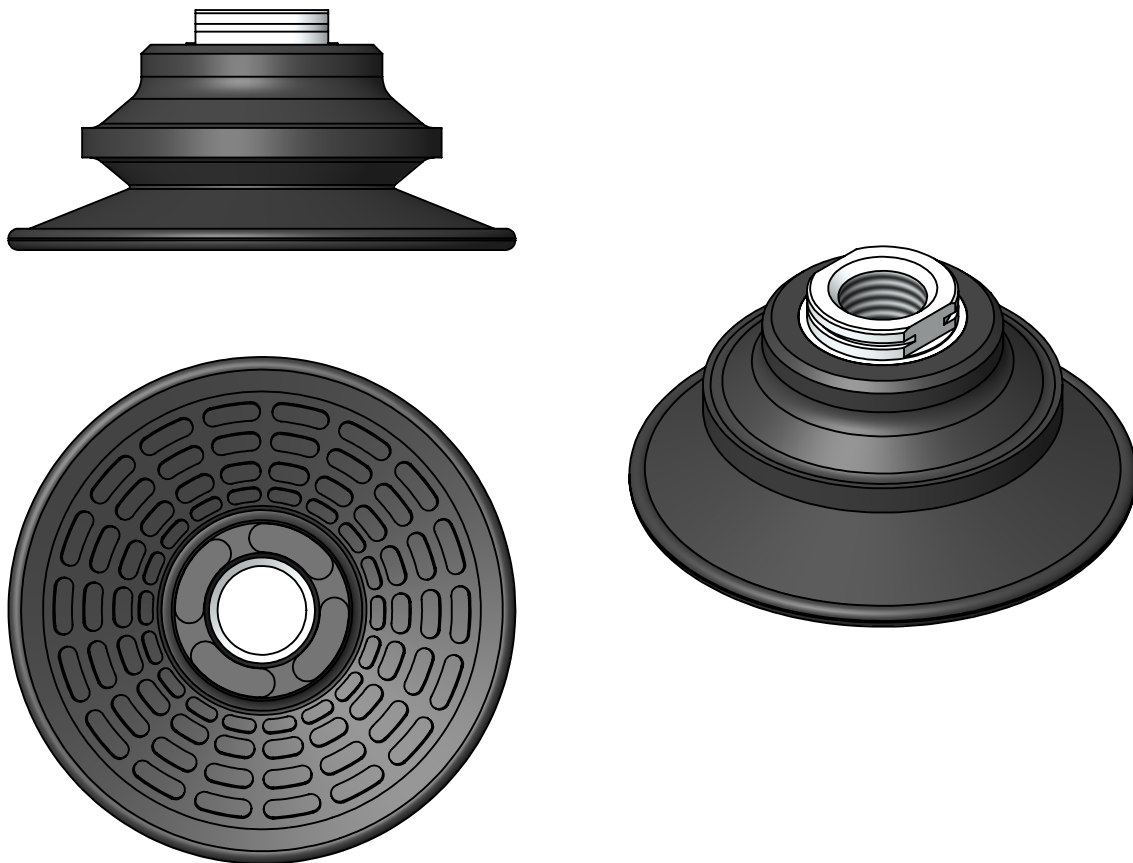
Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Bellows Flat Vacuum Cups

The Bellows flat style vacuum cups combine the versatility of a Bellows cup with a large anti-skid tread pattern to provide maximum holding power and high resistance to shear loads even when lubrication is present. BF Cups are ideal for feeding sheet metal blanks to stamping presses or other robotic applications where it is necessary to resist loads caused by rapid acceleration and deceleration. Mounting bellows flat vacuum cups using the 22 mm wrench flats is quick and easy.

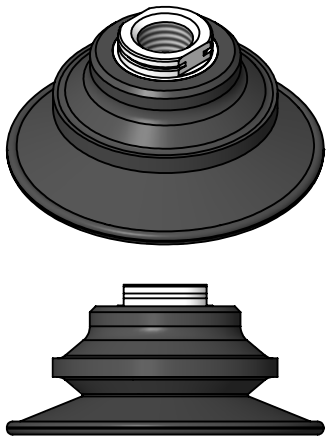
Suitable Workpiece Surface:

- Flat
- Slightly Concave
- Convex
- Compound
- Shear Loads



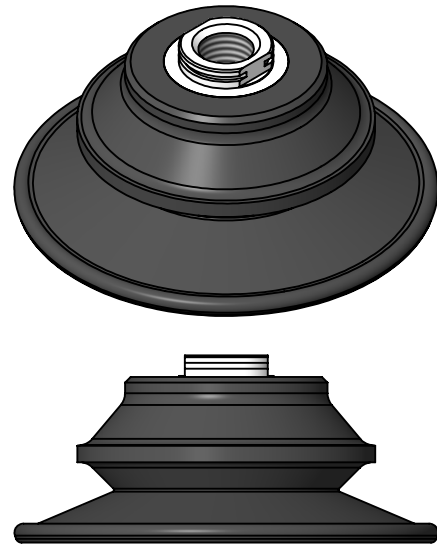
Bellows Flat Vacuum Cups

Cup Size		Cup Material		Fitting	
XP-BF		80		N	
80		Ø 80 mm		N	
100		Ø 100 mm		N	
				-38F	
				3/8 NPSF Female	



XP-BF80

Cup Diameter: in [mm]	80 mm
Outer Diameter: in [mm]	3.30 [83.8]
Cup Height: in [mm]*	1.56 [39.7]
Stroke: in [mm]	0.58 [14.7]
Cup Weight: oz [g]	1.70 [48.2]
Internal Volume: cu in [cc]	1.80 [29.5]
Force @ 6 inHG: lb [n]	17.00 [75.6]
Force @ 18 inHG: lb [n]	42.00 [187.0]
Minimum Radius: in [mm]	2.80 [71.1]
Shear Load ² : lb [n]	45.00 [200.0]



XP-BF100

Cup Diameter: in [mm]	100 mm
Outer Diameter: in [mm]	4.41 [112.1]
Cup Height: in [mm]*	1.95 [49.6]
Stroke: in [mm]	0.95 [24.1]
Cup Weight: oz [g]	2.40 [68.0]
Internal Volume: cu in [cc]	4.90 [80.3]
Force @ 6 inHG: lb [n]	28.00 [125.0]
Force @ 18 inHG: lb [n]	78.00 [347.0]
Minimum Radius: in [mm]	3.60 [91.5]
Shear Load ² : lb [n]	53.00 [236.0]

²All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

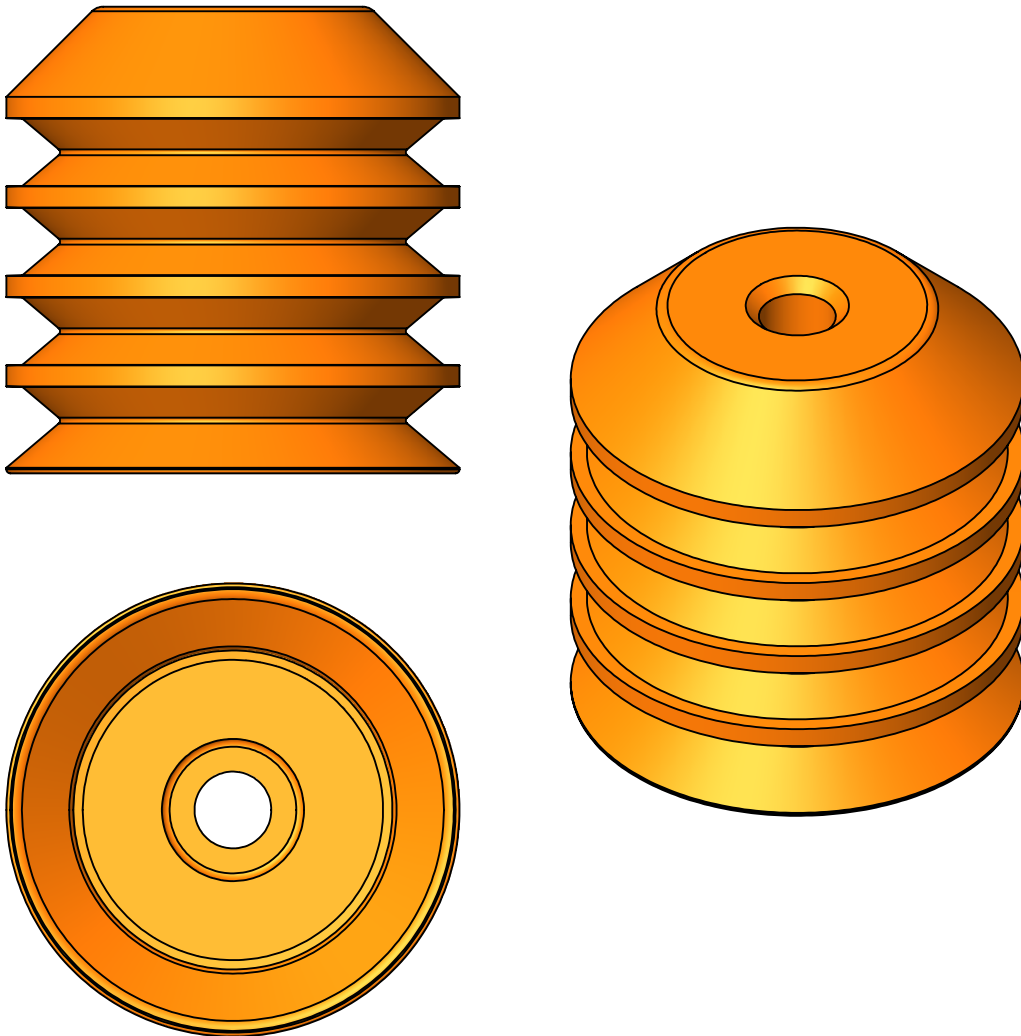
Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Multi-Bellows Vacuum Cups

Multi-bellows vacuum cups are made with shallow-fold bellows plus a thin, shallow sealing lip that allows it to conform to flexible packaging and other thin workpieces. The shallow-fold bellows cannot withstand deep vacuum unless it is fully collapsed. Do not try to use the bellows movement to lift a workpiece or the cup can collapse radially inward. Our multi-bellows vacuum cups include both internal and external stiffening ring features to reduce the possibility of radial collapse where other brands do not. The stiffening ring also provides stability when the cup is fully collapsed.

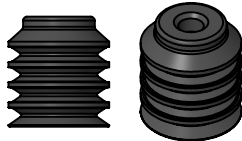
Suitable Workpiece Surface:

- Flat
- Convex
- Compound
- Cylindrical
- Flexible
- Plastic Film



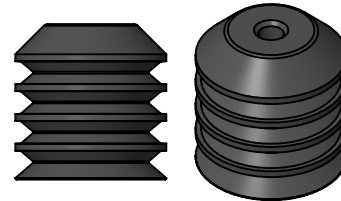
Multi-Bellows Vacuum Cups

	Cup Size	Cup Material	Cup Fitting
XP-BL	30	A	-G14F
20	Ø 20 mm	A Ameriflex	(Blank) None
30	Ø 30 mm	D Duramax	See cup fittings for available threads.
40	Ø 40 mm	N Nitrile / TPV	
50	Ø 50 mm	S Silicone	



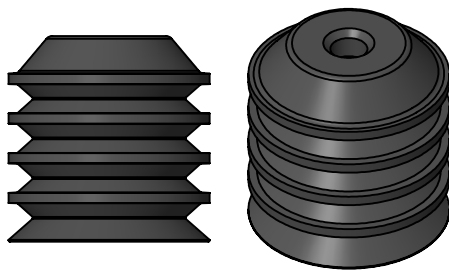
XP-BL20

Cup Diameter: in [mm]	20 mm
Outer Diameter: in [mm]	0.79 [20.0]
Cup Height: in [mm]	0.86 [21.8]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.51 [13.0]
Cup Weight: oz [g]	0.07 [2.0]
Internal Volume: cu in [cc]	0.24 [3.9]
Force @ 6 inHG: lb [n]	0.70 [3.1]
Force @ 18 inHG: lb [n]	1.40 [6.2]
Minimum Radius: in [mm]	0.16 [4.1]



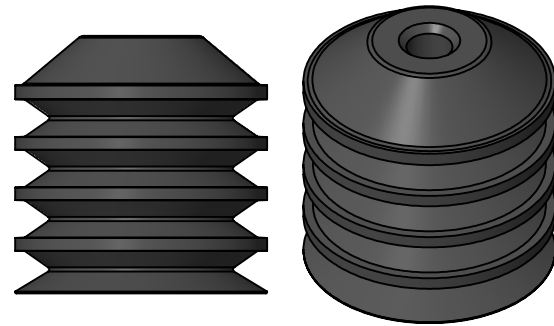
XP-BL30

Cup Diameter: in [mm]	30 mm
Outer Diameter: in [mm]	1.18 [30.0]
Cup Height: in [mm]	1.22 [30.9]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.79 [20.1]
Cup Weight: oz [g]	0.21 [6.0]
Internal Volume: cu in [cc]	0.80 [13.1]
Force @ 6 inHG: lb [n]	1.40 [6.2]
Force @ 18 inHG: lb [n]	3.60 [16.0]
Minimum Radius: in [mm]	0.31 [7.9]



XP-BL40

Cup Diameter: in [mm]	40 mm
Outer Diameter: in [mm]	1.57 [39.9]
Cup Height: in [mm]	1.61 [40.8]
Thru Hole: in [mm]	0.29 [7.4]
Stroke: in [mm]	0.98 [24.9]
Cup Weight: oz [g]	0.43 [12.2]
Internal Volume: cu in [cc]	1.6 [26.2]
Force @ 6 inHG: lb [n]	2.50 [11.1]
Force @ 18 inHG: lb [n]	4.90 [21.8]
Minimum Radius: in [mm]	0.60 [15.2]



XP-BL50

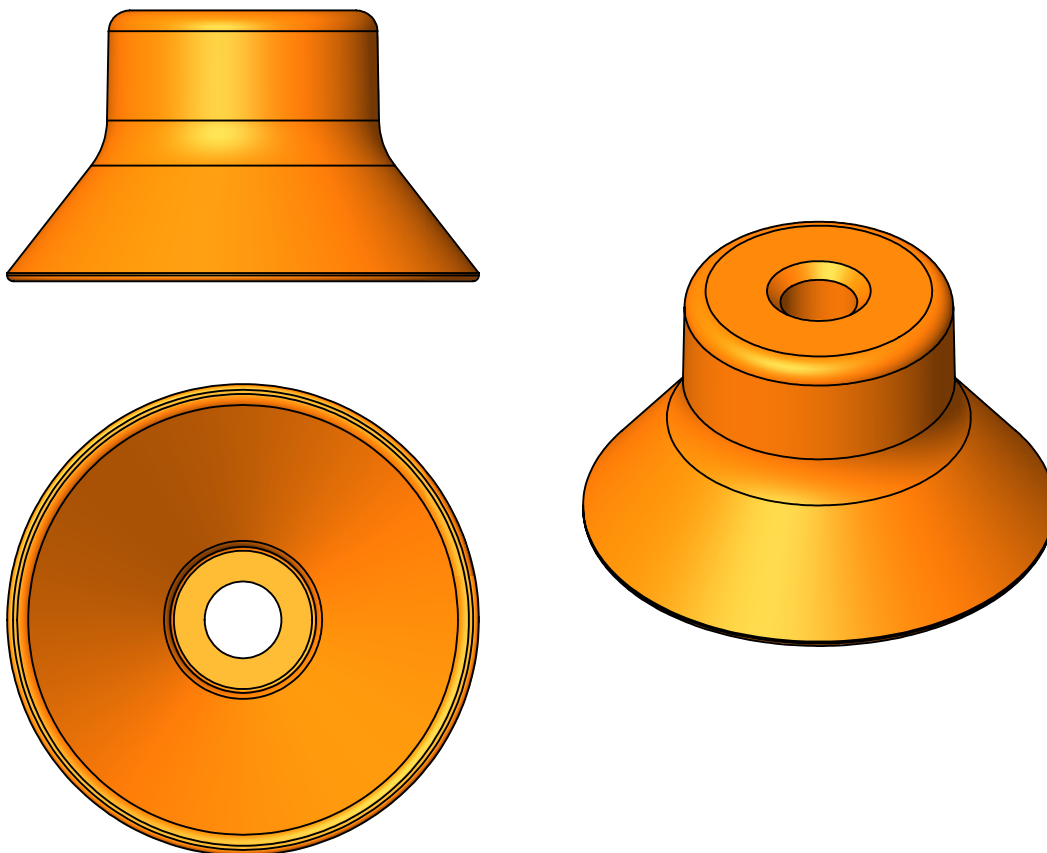
Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	1.97 [50.0]
Cup Height: in [mm]	2.01 [51.1]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	1.10 [27.9]
Cup Weight: oz [g]	0.82 [23.2]
Internal Volume: cu in [cc]	3.40 [55.7]
Force @ 6 inHG: lb [n]	3.80 [16.9]
Force @ 18 inHG: lb [n]	9.60 [42.7]
Minimum Radius: in [mm]	0.60 [15.2]

Deep Vacuum Cups

Deep vacuum cups are used for highly curved or irregular surfaces and can even seal against corners, edges, and spherical workpiece. Deep vacuum cups are unsuitable for use on flat surfaces because the lip will be overstretched and the resultant scrubbing could leave marks on the workpiece.

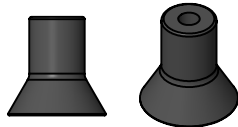
Suitable Workpiece Surface:

- Convex
- Spherical
- Cylindrical



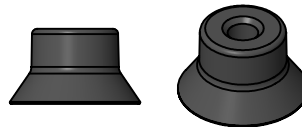
Deep Vacuum Cups

Cup Size		Cup Material		Cup Fitting	
XP-D	15	S		-5F	
15	Ø 15 mm	N	Nitrile / TPV	(Blank)	None
20	Ø 20 mm	S	Silicone	See cup fittings for available threads.	
30	Ø 30 mm				
40	Ø 40 mm				
50	Ø 50 mm				



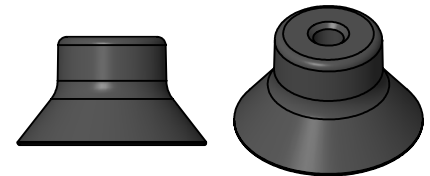
XP-D15

Cup Diameter: in [mm]	15 mm
Outer Diameter: in [mm]	0.64 [16.2]
Cup Height: in [mm]	0.64 [16.3]
Thru Hole: in [mm]	0.14 [3.6]
Stroke: in [mm]	0.12 [3.0]
Cup Weight: oz [g]	0.03 [0.9]
Internal Volume: cu in [cc]	0.06 [1.0]
Force @ 6 inHG: lb [n]	0.65 [2.8]
Force @ 18 inHG: lb [n]	1.70 [7.5]
Minimum Radius: in [mm]	0.24 [6.1]



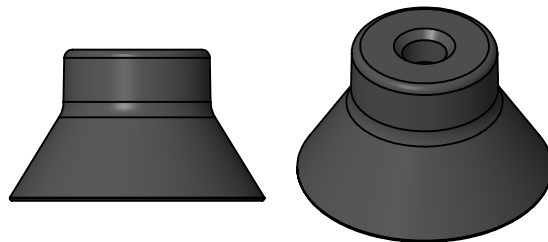
XP-D20

Cup Diameter: in [mm]	20 mm
Outer Diameter: in [mm]	0.85 [21.5]
Cup Height: in [mm]	0.49 [12.4]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.18 [4.6]
Cup Weight: oz [g]	0.05 [1.4]
Internal Volume: cu in [cc]	0.12 [2.0]
Force @ 6 inHG: lb [n]	1.30 [5.7]
Force @ 18 inHG: lb [n]	3.30 [14.6]
Minimum Radius: in [mm]	0.32 [8.1]



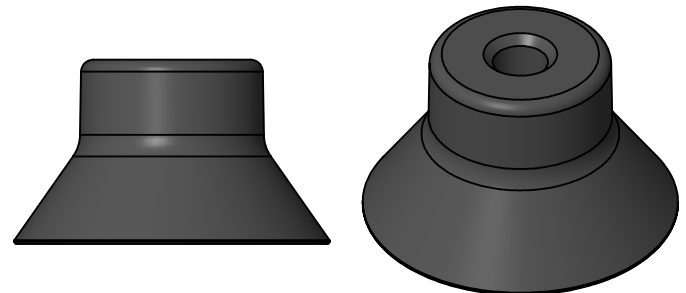
XP-D30

Cup Diameter: in [mm]	30 mm
Outer Diameter: in [mm]	1.23 [31.2]
Cup Height: in [mm]	0.71 [17.9]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.20 [5.1]
Cup Weight: oz [g]	0.11 [3.1]
Internal Volume: cu in [cc]	0.30 [5.0]
Force @ 6 inHG: lb [n]	3.10 [13.8]
Force @ 18 inHG: lb [n]	5.80 [25.8]
Minimum Radius: in [mm]	0.51 [13.0]



XP-D40

Cup Diameter: in [mm]	40 mm
Outer Diameter: in [mm]	1.66 [42.1]
Cup Height: in [mm]	0.98 [25.0]
Thru Hole: in [mm]	0.29 [7.4]
Stroke: in [mm]	0.31 [7.9]
Cup Weight: oz [g]	0.30 [8.5]
Internal Volume: cu in [cc]	0.80 [13.0]
Force @ 6 inHG: lb [n]	5.40 [24.0]
Force @ 18 inHG: lb [n]	11.30 [50.3]
Minimum Radius: in [mm]	0.65 [16.5]



XP-D50

Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	2.05 [52.1]
Cup Height: in [mm]	1.20 [30.5]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	0.39 [9.9]
Cup Weight: oz [g]	0.54 [15.3]
Internal Volume: cu in [cc]	1.40 [23.0]
Force @ 6 inHG: lb [n]	8.10 [36.0]
Force @ 18 inHG: lb [n]	17.00 [75.6]
Minimum Radius: in [mm]	0.98 [24.9]

Flat Vacuum Cups

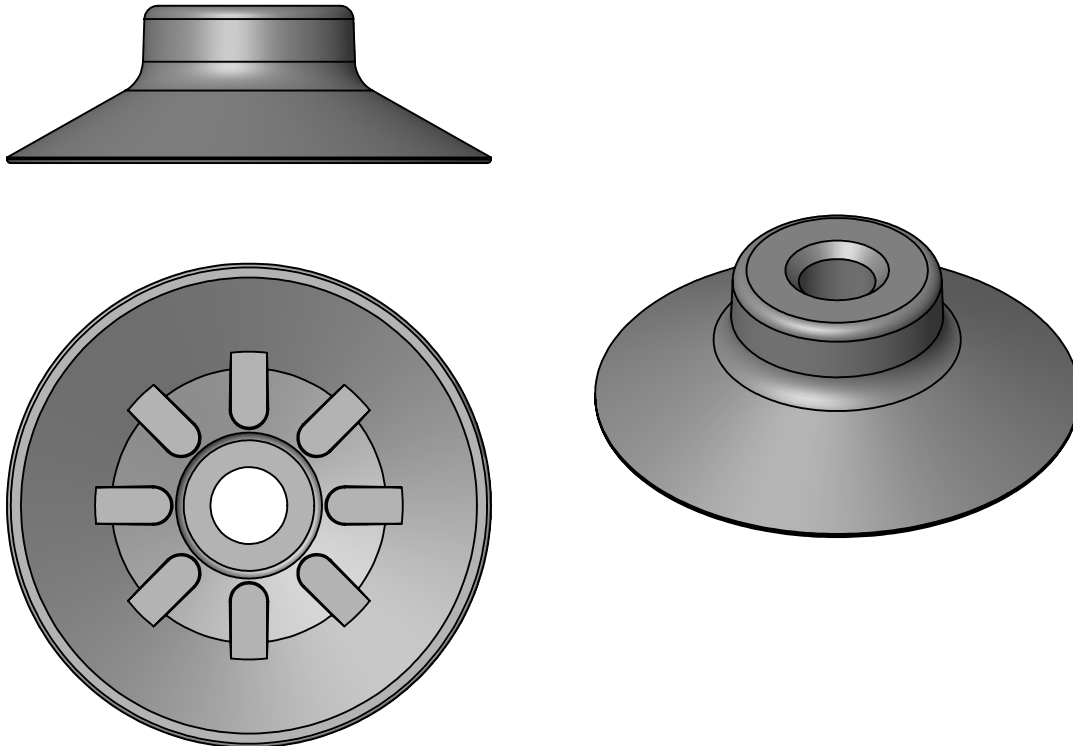
Flat vacuum cups are like universal cups except they have cleats on the bottom which serve as traction surfaces and support the workpiece being lifted to prevent or limit deformation. The cleats limit deflection and maintain a larger exposed area to vacuum for a firm grip on the workpiece.

Flat vacuum cups have high stability and traction but a very short stroke. They should be used primarily for flat workpieces or sheet goods such as cardboard, corrugated board, and dry sheet metal. Flat vacuum cups will not work well with thin workpieces such as plastic sheet goods or flexible packaging.

Flat vacuum cups have very little angular compensation ability so they should always pick up perpendicular to a flat workpiece surface.

Suitable Workpiece Surface:

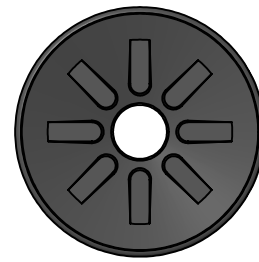
- Flat
- Shear Loads



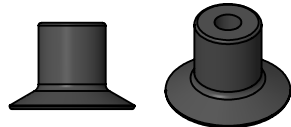
Flat Vacuum Cups

	Cup Size	Cup Material	Cup Fitting
XP-F	20	A	-14M
15	Ø 15 mm	A Ameriflex ¹	(Blank) None
20	Ø 20 mm	D Duramax ¹	See cup fittings for available threads.
25	Ø 25 mm	N Nitrile / TPV	
30	Ø 30 mm	S Silicone	
		V Viton	

¹Not available on XP-F15.

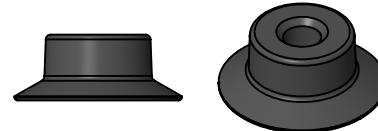


All Flat Cups have cleats.



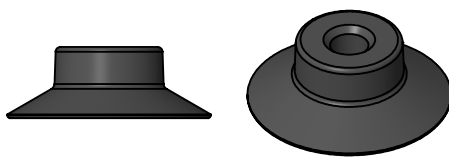
XP-F15

Cup Diameter: in [mm]	15 mm
Outer Diameter: in [mm]	0.65 [16.5]
Cup Height: in [mm]	0.45 [11.4]
Thru Hole: in [mm]	0.14 [3.6]
Stroke: in [mm]	0.03 [0.8]
Cup Weight: oz [g]	0.03 [0.85]
Internal Volume: cu in [cc]	0.20 [0.3]
Force @ 6 inHG: lb [n]	0.80 [3.6]
Force @ 18 inHG: lb [n]	1.90 [8.5]
Minimum Radius: in [mm]	0.51 [13.0]
Shear Load*: lb [n]	0.90 [4.0]



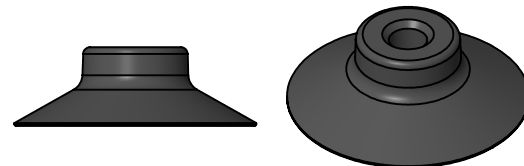
XP-F20

Cup Diameter: in [mm]	20 mm
Outer Diameter: in [mm]	0.87 [22.1]
Cup Height: in [mm]	0.34 [8.7]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.06 [1.5]
Cup Weight: oz [g]	0.05 [1.4]
Internal Volume: cu in [cc]	0.06 [1.0]
Force @ 6 inHG: lb [n]	1.30 [5.8]
Force @ 18 inHG: lb [n]	3.30 [14.7]
Minimum Radius: in [mm]	0.71 [7.6]
Shear Load*: lb [n]	1.70 [7.6]



XP-F25

Cup Diameter: in [mm]	25 mm
Outer Diameter: in [mm]	1.06 [26.9]
Cup Height: in [mm]	0.37 [9.4]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.06 [1.5]
Cup Weight: oz [g]	0.06 [1.7]
Internal Volume: cu in [cc]	0.07 [1.2]
Force @ 6 inHG: lb [n]	2.00 [8.9]
Force @ 18 inHG: lb [n]	4.30 [19.1]
Minimum Radius: in [mm]	0.98 [24.9]
Shear Load*: lb [n]	2.10 [9.3]



XP-F30

Cup Diameter: in [mm]	30 mm
Outer Diameter: in [mm]	1.26 [32.0]
Cup Height: in [mm]	0.41 [10.4]
Thru Hole: in [mm]	0.20 [5.1]
Stroke: in [mm]	0.09 [2.3]
Cup Weight: oz [g]	0.08 [2.3]
Internal Volume: cu in [cc]	0.12 [2.0]
Force @ 6 inHG: lb [n]	2.70 [12.0]
Force @ 18 inHG: lb [n]	5.60 [24.9]
Minimum Radius: in [mm]	0.98 [24.9]
Shear Load*: lb [n]	2.80 [12.5]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

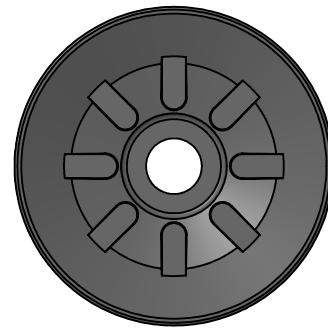
Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Flat Vacuum Cups

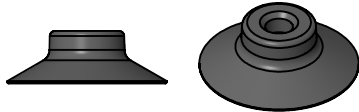
	Cup Size	Cup Material ¹	Cup Fitting
XP-F	50	D	-38M
40	Ø 40 mm	A Ameriflex	(Blank) None
50	Ø 50 mm	D Duramax	See cup fittings for available threads.
65	Ø 65 mm	N Nitrile / TPV	
90	Ø 90 mm ²	S Silicone ¹	
		V Viton ¹	

¹Not available on XP-F65 or XP-F90.

²Uses 65 mm Cup Fittings.

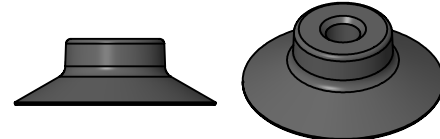


All Flat Cups have cleats.



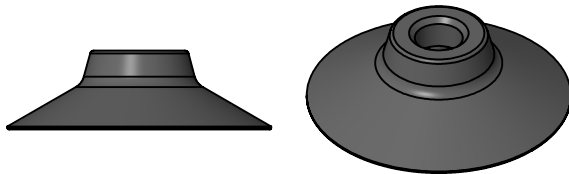
XP-F40

Cup Diameter: in [mm]	40 mm
Outer Diameter: in [mm]	1.66 [42.2]
Cup Height: in [mm]	0.55 [13.9]
Thru Hole: in [mm]	0.30 [7.6]
Stroke: in [mm]	0.10 [2.5]
Cup Weight: oz [g]	0.18 [5.1]
Internal Volume: cu in [cc]	0.29 [4.8]
Force @ 6 inHG: lb [n]	4.50 [20.0]
Force @ 18 inHG: lb [n]	9.00 [40.0]
Minimum Radius: in [mm]	2.05 [52.1]
Shear Load*: lb [n]	4.50 [20.0]



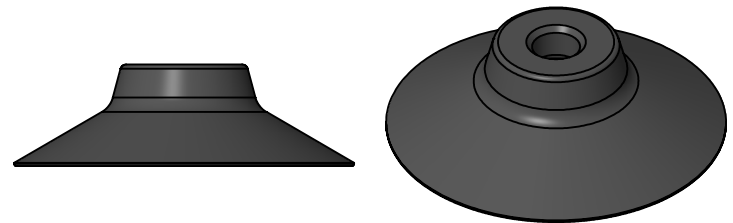
XP-F50

Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	2.09 [53.1]
Cup Height: in [mm]	0.69 [17.5]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	0.12 [3.0]
Cup Weight: oz [g]	0.40 [11.3]
Internal Volume: cu in [cc]	0.61 [10.0]
Force @ 6 inHG: lb [n]	8.10 [36.0]
Force @ 18 inHG: lb [n]	16.6 [73.8]
Minimum Radius: in [mm]	2.17 [55.1]
Shear Load*: lb [n]	8.30 [36.9]



XP-F65

Cup Diameter: in [mm]	65 mm
Outer Diameter: in [mm]	2.75 [69.9]
Cup Height: in [mm]	0.82 [20.9]
Thru Hole: in [mm]	0.50 [12.7]
Stroke: in [mm]	0.15 [2.5]
Cup Weight: oz [g]	0.51 [14.5]
Internal Volume: cu in [cc]	1.46 [24.0]
Force @ 6 inHG: lb [n]	9.00 [40.0]
Force @ 18 inHG: lb [n]	22.00 [98.0]
Minimum Radius: in [mm]	5.50 [140.0]
Shear Load*: lb [n]	11.00 [49.0]



XP-F90

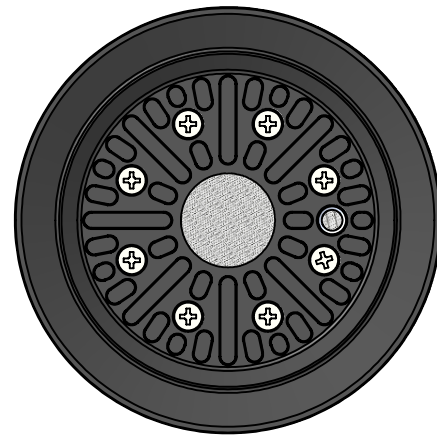
Cup Diameter: in [mm]	90 mm
Outer Diameter: in [mm]	3.54 [89.9]
Cup Height: in [mm]	1.06 [26.9]
Thru Hole: in [mm]	0.50 [12.7]
Stroke: in [mm]	0.20 [5.2]
Cup Weight: oz [g]	1.10 [31.0]
Internal Volume: cu in [cc]	2.93 [48.0]
Force @ 6 inHG: lb [n]	24.00 [106.8]
Force @ 18 inHG: lb [n]	60.00 [266.9]
Minimum Radius: in [mm]	7.20 [183.0]
Shear Load*: lb [n]	30.00 [133.4]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

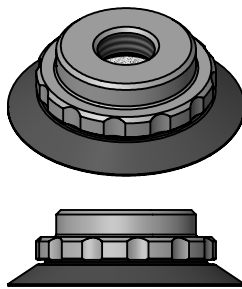
Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

Flat Vacuum Cups

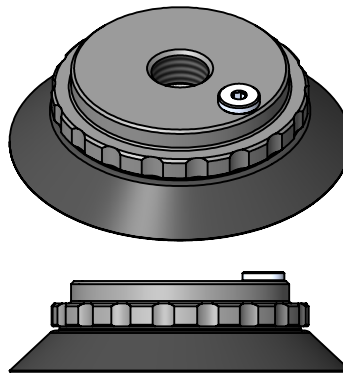
	Cup Size	Cup Material	Cup Fitting
XP-F	110	S	-38F
75	Ø 75 mm	A Ameriflex	(Blank) None
110	Ø 110 mm	N Nitrile / TPV	See cup fittings for available threads.
150	Ø 150 mm	S Silicone	
		V Viton	



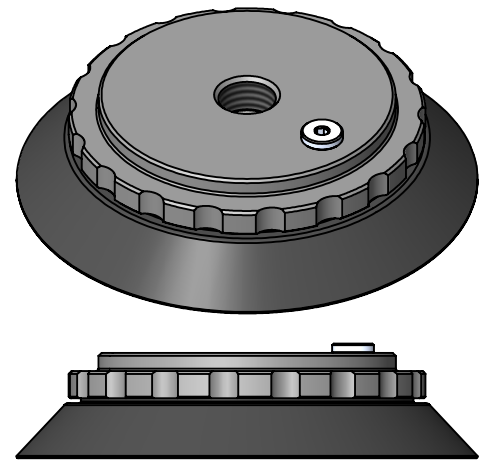
All Flat Cups have cleats.



XP-F75



XP-F110



XP-F150

Cup Diameter: in [mm]	75 mm
Outer Diameter: in [mm]	3.08 [78.2]
Cup Height*: in [mm]	0.99 [25.1]
Stroke: in [mm]	0.09 [2.3]
Cup Weight: oz [g]	1.00 [28.3]
Internal Volume: cu in [cc]	1.20 [19.7]
Force @ 6 inHG: lb [n]	18.00 [80.1]
Force @ 18 inHG: lb [n]	45.00 [20.0]
Minimum Radius: in [mm]	5.90 [150.0]
Shear Load*: lb [n]	23.00 [102.0]

Cup Diameter: in [mm]	110 mm
Outer Diameter: in [mm]	4.44 [112.8]
Cup Height*: in [mm]	1.30 [33.0]
Stroke: in [mm]	0.21 [5.3]
Cup Weight: oz [g]	3.10 [87.9]
Internal Volume: cu in [cc]	4.30 [70.5]
Force @ 6 inHG: lb [n]	32.00 [142.0]
Force @ 18 inHG: lb [n]	94.00 [418.0]
Minimum Radius: in [mm]	9.80 [249.0]
Shear Load*: lb [n]	47.00 [209.0]

Cup Diameter: in [mm]	150 mm
Outer Diameter: in [mm]	6.00 [152.4]
Cup Height*: in [mm]	1.49 [37.9]
Stroke: in [mm]	0.33 [8.4]
Cup Weight: oz [g]	7.30 [207.0]
Internal Volume: cu in [cc]	9.80 [161.0]
Force @ 6 inHG: lb [n]	67.00 [298.0]
Force @ 18 inHG: lb [n]	191.00 [850.0]
Minimum Radius: in [mm]	19.70 [500.0]
Shear Load*: lb [n]	95.00 [422.0]

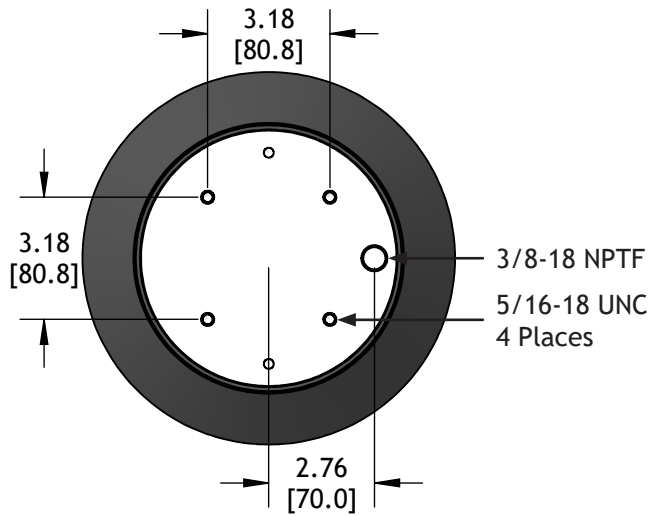
*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

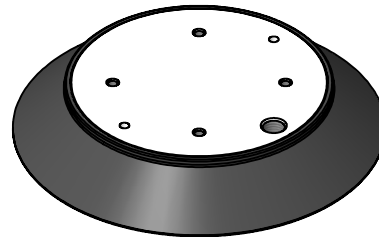
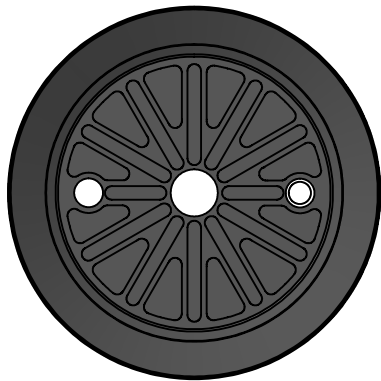
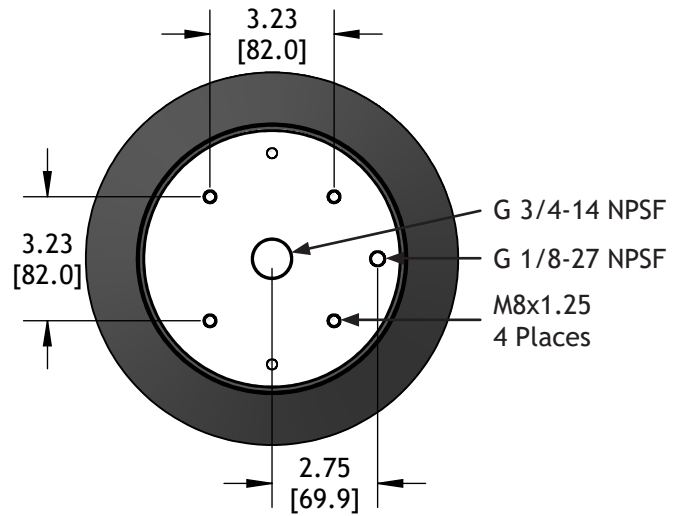
Flat Vacuum Cups

Cup Material		Mount	
XP-F240	S	-	P
NP	Neoprene	AQ	Quad Mount, Side Port
S	Silicone	P	Quad Mount, Center Port

AQ Mount



P Mount



XP-F240

Cup Diameter: in [mm]	240 mm
Outer Diameter: in [mm]	9.70 [246.4]
Cup Height: in [mm]	1.50 [38.2]
Stroke: in [mm]	0.62 [15.7]
Cup Weight: oz [g]	2.80 [1.3]
Internal Volume: cu in [cc]	33.00 [541.0]
Force @ 18 inHG: lb [N]	450.00 [2002.0]
Minimum Radius: in [mm]	20.00 [508.0]
Shear Load*: lb [N]	225.00 [1001.0]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.

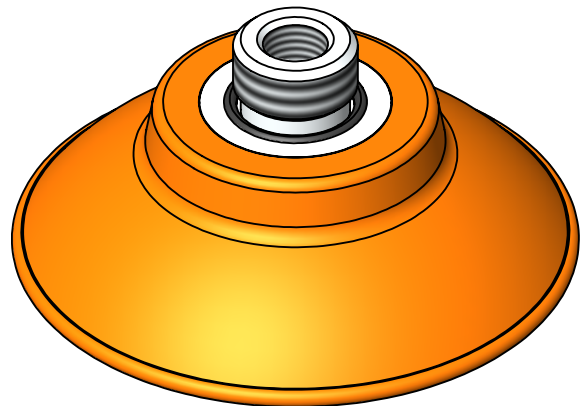
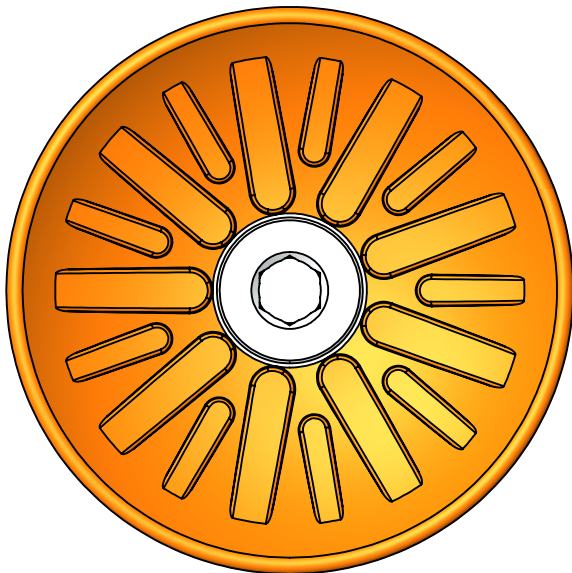
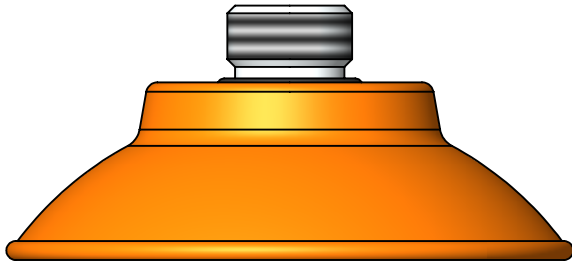
Flat-Concave Vacuum Cups

Flat-concave vacuum cups have a dished bottom plus conforming cleats for use with flat or slightly domed or convex workpieces. The outer lip is reinforced for extra strength and extended life while the cleats provide superior traction to resist later shear loads.

Flat-concave vacuum cups have slight angular compensation ability so they should always be picked up perpendicular to a flat workpiece surface.

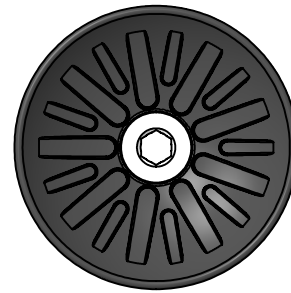
Suitable Workpiece Surface:

- Convex
- Spherical
- Shear Loads

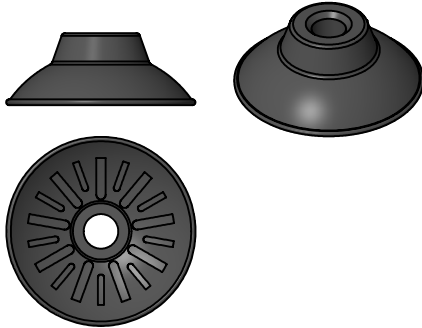


Flat-Concave Vacuum Cups

Cup Material		Cup Fitting	
XP-FC50		-14F	
A	Ameriflex	(Blank)	None
N	Nitrile / TPV	See cup fittings for available threads.	



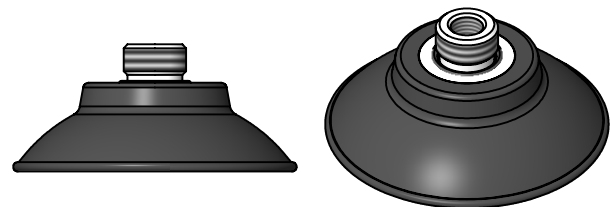
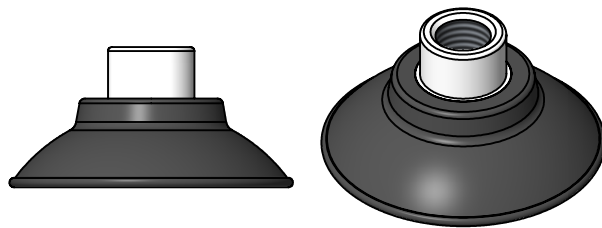
All Flat-Concave Cups have cleats.



XP-FC50

Cup Diameter: in [mm]	50 mm
Outer Diameter: in [mm]	1.97 [50.0]
Cup Height: in [mm]	0.75 [19.1]
Thru Hole: in [mm]	0.36 [9.1]
Stroke: in [mm]	0.25 [6.4]
Cup Weight: oz [g]	0.30 [7.9]
Internal Volume: cu in [cc]	0.70 [11.5]
Force @ 6 inHG: lb [n]	7.80 [34.7]
Force @ 18 inHG: lb [n]	19.00 [84.5]
Minimum Radius: in [mm]	2.09 [53.1]
Shear Load*: lb [n]	10.00 [44.5]

Cup Material		Fitting	
XP-FC75		38F	
N	Nitrile / TPV	38F	3/8 NPSF Female
S	Silicone	G38M	G 3/8 Male



XP-FC75F

Cup Diameter: in [mm]	75 mm
Outer Diameter: in [mm]	2.95 [75.0]
Cup Height: in [mm]*	1.46 [37.1]
Stroke: in [mm]	0.36 [9.1]
Cup Weight: oz [g]	1.70 [48.2]
Internal Volume: cu in [cc]	1.80 [29.5]
Force @ 6 inHG: lb [n]	17.00 [75.6]
Force @ 18 inHG: lb [n]	35.00 [154.0]
Minimum Radius: in [mm]	2.80 [71.1]
Shear Load*: lb [n]	45.00 [200.0]

XP-FC75-G38M

Cup Diameter: in [mm]	75 mm
Outer Diameter: in [mm]	2.95 [75.0]
Cup Height: in [mm]	1.33 [33.7]
Stroke: in [mm]	0.36 [9.1]
Cup Weight: oz [g]	1.70 [48.2]
Internal Volume: cu in [cc]	1.80 [29.5]
Force @ 6 inHG: lb [n]	17.00 [75.6]
Force @ 18 inHG: lb [n]	35.00 [154.0]
Minimum Radius: in [mm]	2.80 [71.1]
Shear Load*: lb [n]	45.00 [200.0]

*All figures for shear load are 18 inHg using a 0.5 coefficient of friction.

Adjust coefficient of friction to suit your conditions, then apply a generous factor of safety (3:1 or greater) to shear loads.