



VACUUM CUPS

VACUUM CUP MATERIALS



There are various reasons for choosing a particular vacuum cup material. The first choice is normally the hardness. This will determine the ability of a vacuum cup to seal against the surface of the product being handled. The most commonly used hardness measurement scale is Shore Hardness, often referred to as Durometer. In fact, a durometer is the actual instrument used to measure hardness but is often referred to as the measuring unit throughout industry.

There are different hardness scales based on the materials being measured, such as plastics or rubbers or metals. The scale used to identify the hardness of vacuum cup materials is Durometer Scale A, which ranges from 100 (hard) to 5 (soft). Vacuum cups are typically available in compounds with a hardness between 35 to 70 Durometer.

Another, sometimes very important characteristic of a vacuum cup material, is the temperature resistance. Most pick-and-place applications occur at “room temperature”, but in the plastic injection industry for example, part temperature is often considered in vacuum cup choice due to the high temperature of parts being removed from the mold tool. At the other end of the scale is the handling of cold products, such as refrigerated or frozen food packaging. Typical vacuum cup materials have a temperature range from -40°C to 204°C (-40°F to +400°F).

NBR (Vacuforce code suffix N) is the most common material and is the same as **Nitrile rubber and Buna-N**. NBR is used in general industrial applications and is found in steel handling, plastics handling, and any other application where the cup should be resistant to oils and related chemicals. In most applications, this is the “go-to” material choice based on its fair cost and good wear resistance. The hardness of this compound is typically 60 durometer, although this can be as low as 40 or as high as 70. NBR is often overlooked for high temperature applications such as injection molding as the user specifies a very high temperature and therefore opts for silicone. NBR is suitable for most plastic injection parts handling as its temperature rating is often in excess of 90°C/200°F.

SILICONE (Vacuforce code suffix S & ST) is a very popular cup compound but is more expensive than NBR. Silicone does offer the advantage of having extreme temperature resistance both cold and hot, ideal for handling frozen packaged food and hot plastic-injected molded parts with a temperature range from -40°C (-40°F) to 204°C (400°F). Silicone is softer than NBR, having a typical Durometer rating of 40, allowing it to seal against contoured or rough surfaces, such as cardboard sheet, corrugated plastic, and plastic food packaging. Vacuforce silicone is offered as standard with FDA (title 21) compliance to allow direct contact with food and drug products. Vacuforce Code S - Red Silicone, Vacuforce Code ST - White Translucent.

METAL IMPREGNATED SILICONE (Vacuforce code SMI & STMI) has the same basic characteristics as the standard silicone described above, but the metal impregnated compound has been design specifically for the food industry. Iron filings inside the actual silicone compound allow metal detectors to sense that a vacuum cup has fallen into the food packaging that contains food stuffs like bread loaves, rolls, and buns or confectionery foodstuffs. Vacuforce Code SMI - Red Silicone, Code STMI - White Translucent.

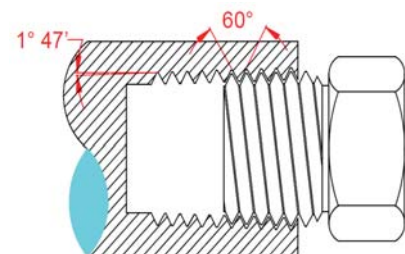
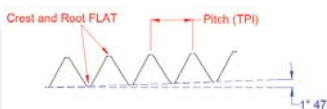
An important note about silicone that must be understood by the vacuum cup user. Silicone should never be used on surfaces which are to be painted, such as automotive body panels, as the paint will not bond properly on the area touched by the silicone compound cup. Also, it should not be used to handle decorative stone such as marble or quartz, or glass products as it will permanently etch the surface.

In the pneumatics and vacuum industry there are 4 types of popular thread forms in use today. This page highlights the technical data of each which should be understood when applying vacuum cup fittings shown in this catalogue to applications found in the field.

National Pipe Taper (NPT)

Referred to as NPT, this American pipe thread is by far the most common thread used in American made fluid power components and is the standard thread in the USA and Canada. This tapered thread seals using a thread sealant or tape. The Pneuforce NPT male threaded fittings have a pre-applied thread sealant to allow speed of connection to female threaded ports.

Thread Taper Angle	1° 47'
Thread Angle	60°
Thread Crest & Root	Flat

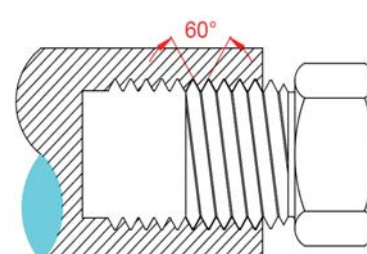
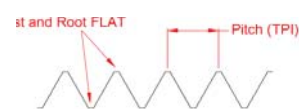


	1/8NPT	1/4NPT	3/8NPT	1/2NPT
TPI	27	18	18	14
Major Ø (mm)	10.3	13.7	17.1	21.3
Pitch (mm)	0.94	1.41	1.41	1.81

National Pipe Straight (NPS)

Often referred to as NPSF, the NPS thread has the same fundamental characteristics as NPT except that it is a straight thread. NPSF stands for National Pipe Straight Fuel and is often used in female threads for fuel line connections or in the pneumatics industry it is often found in plastic body parts where a tapered thread could split the component body as the fitting is tightened.

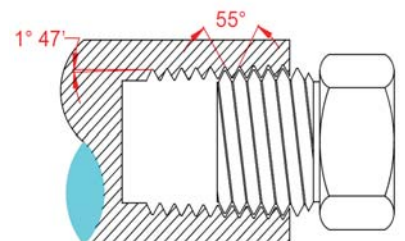
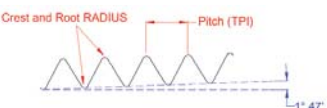
Thread Taper Angle	0°
Thread Angle	60°
Thread Crest & Root	Flat



British Standard Pipe Taper (BSPT)

Sometimes referred to as an "R" thread, the BSP Thread (British Standard Pipe) is used throughout the world as a pipe thread except for the USA which uses NPT. BSPT is a tapered thread and is used in male threaded components to connect to female BSPT and also BSPP thread forms. Of course using a BSPT male to BSPT female is the preferred method which offers a full tapered seal. BSPT threads need a thread sealant to seal. However, Pneuforce BSPT male threads have a pre-applied thread sealant and do not require additional thread tape.

Thread Taper Angle	1° 47'
Thread Angle	55°
Thread Crest & Root	Radius

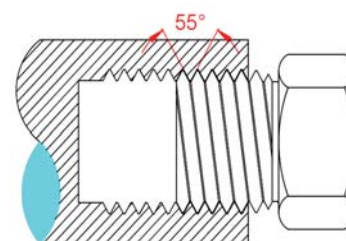
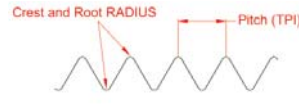


	1/8BSP	1/4BSP	3/8BSP	1/2BSP
TPI	28	19	19	14
Major Ø (mm)	9.7	13.2	16.6	20.9
Pitch (mm)	0.91	1.34	1.34	1.81

British Standard Pipe Parallel (BSPP)

Often referred to as a "G" thread, the BSPP thread form is by far the most popular female thread for pneumatic components throughout the world except for the USA where NPT is the standard. A parallel thread, the male fittings seal with an O ring ensuring a perfect seal each time and also in multiple connections such as a manifold, ensure common fitting height. A further advantage is that the male fitting can be used repeatedly without the need for reapplying thread sealant. Male G threads cannot be connected to female BSPT thread ports.

Thread Taper Angle	0°
Thread Angle	55°
Thread Crest & Root	Radius



VFB SINGLE BELLOWS CUP



- Single bellows design
- Compensates for height variances in part picking
- Can seal on convex and concave surfaces
- Available from 5mm to 150mm diameter
- NBR, FDA Silicone and metal detectable materials



VFB		20	N	
Series	Model	Diameter	Cup Material	
	5	5	N	Nitrile
	8	8	S	Red Silicone
	10-2	11	ST	White Translucent Silicone
	15-2	16	SMI	Metal Impregnated Red Silicone
	20	22	STMI	Metal Impregnated White Translucent Silicone
	30-2	34	<i>Part number example VFB30-2SMI</i> <i>34mm diameter single bellows vacuum cup in red metal impregnated silicone</i>	
	40	43		
	50-2	53		
	75	75		
	110	110		
	150	150		

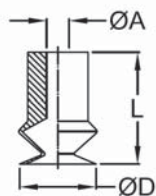


This cup series is available in metal detectable FDA compliant silicone.

For red colored metal detectable silicone use material code SMI.

For white translucent metal detectable silicone use material code STMI.

VFB5 | VFB8 | VFB10-2 | VFB15-2

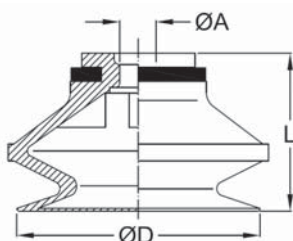


DIMENSIONS (mm)

Model	ØD	ØA	L	Fitting Type
VFB5	5	2	9	A
VFB8	8	2	12	
VFB10-2	11	4	17	B
VFB15-2	16	4	20	

* add cup material code

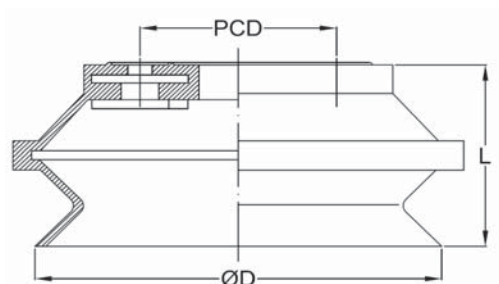
VFB20 | VFB30 | VFB30-2 | VFB40 | VFB50-2



Model	ØD	ØA	L	Fitting Type
VFB20	22	5	19	C
VFB30	34		26	
VFB30-2	34	6.5	28	D
VFB40	43		28	
VFB50-2	53	10	35	E

* add cup material code

VFB75 | VFB110 | VFB150



Model	ØD	PCD x # Positions	L	Fitting Type
VFB75W*	75	35 x 4	37	J
VFB110W*	115	55 x 8	54	K
VFB150W*	150	71 x 8	71	L

* add cup material code



For cup fittings
refer to page 1.34

STC SINGLE BELLOWS TRACTION CUPS



The STC series of vacuum cups are designed to offer the vacuum user a cup that can pick up on angled surfaces and adapt to products such as formed sheet steel that may have a tight radius. The cups include an aluminum male or female threaded fitting for machinery and vacuum source connection.

This cup is available in Nitrile rubber in both 45 and 60 Durometer. Ideal for handling pressed steel sheet and glass products. The single bellows design offers slight vertical movement when vacuum is applied independent of the machinery which aids in sheet separation and also compliance on concave and convex surfaces.



APPLICATIONS

- Automotive steel stamping
- Glass handling
- Plywood transfer
- Handling of oily steel surfaces
- Concave and convex surfaces
- Large box & carton handling

STC		100N	45	G3/8F
Series	Model	Diameter (mm)	Durometer	Thread
	30N	30	45	G1/4F
	40N	40	60	G1/4M
	50N	50		G3/8F
	60N	60		G3/8M
	80N	80		3/8NPSF
	100N	100		

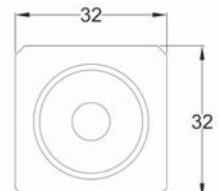
Part number example STC100N-60-G3/8F
100mm diameter bellows vacuum cup in 60 durometer NBR with G3/8 female thread connection port.

LEVEL COMPENSATORS

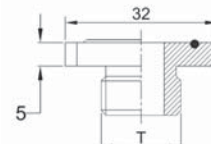
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



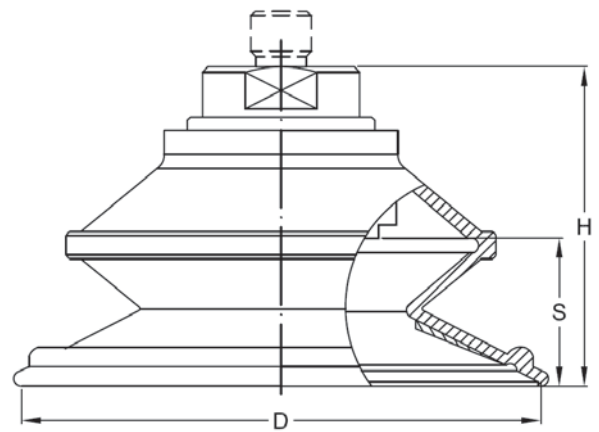
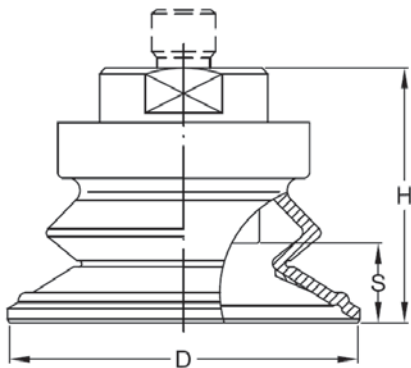
QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF



DIMENSIONS (mm)



Model	ØD	H	S
STC30N-*-G1/4F	30	28	9
STC30N-*-G1/4M			
STC30N-*-G3/8F		42	
STC30N-*-3/8NPSF			
STC40N-*-G1/4F	40	28	10
STC40N-*-G1/4M			
STC40N-*-G3/8F		42	
STC40N-*-3/8NPSF			
STC50N-*-G1/4F	50	51	11.5
STC50N-*-G1/4M			
STC50N-*-G3/8F		37	
STC50N-*-3/8NPSF			

* add cup Durometer code

Model	ØD	H	S
STC60N-*-G1/4F	60	55	14.5
STC60N-*-G1/4M		41	
STC60N-*-G3/8F			
STC60N-*-3/8NPSF			
STC80N-*-G1/4F	80	64	22.5
STC80N-*-G1/4M		50	
STC80N-*-G3/8F			
STC80N-*-3/8NPSF			
STC100N-*-G1/4F	100	70	25
STC100N-*-G1/4M		56	
STC100N-*-G3/8F			
STC100N-*-3/8NPSF			

* add cup Durometer code

SBF POLYURETHANE BELLOWS TRACTION CUPS



The SBF series of vacuum cups are designed to offer the vacuum user a cup that can pick up on angled surfaces and adapt to products such as formed sheet steel that may have a tight radius. The cups include an aluminum male or female threaded fitting for machinery and vacuum source connection.

This cup is available as standard in POLYURETHANE which is a MARK FREE compound. It is as flexible as rubber but much harder wearing. Ideal for handling pressed steel sheet and glass products. Standard Durometer is 60 but other Durometer grades are available upon request.

The single bellows design offers slight vertical movement when vacuum is applied independent of the machinery aiding sheet separation and also compliance on concave and convex surfaces.



APPLICATIONS

- Automotive steel stamping
- Glass handling
- Plywood transfer
- Handling of oily steel surfaces
- Concave and convex surfaces
- Large box & carton handling

SBF	80	PU	G3/8F
Series	Model	Diameter (mm)	Material
	30	30	PU Polyurethane
	40	40	
	50	50	
	60	60	
	80	80	
	100	100	
			Thread
			G1/4F
			G1/4M
			G3/8F
			G3/8M
			3/8NPSF

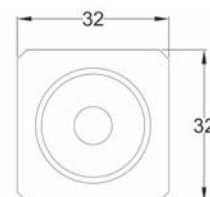
Part number example SBF60-PU-G3/8F 60mm diameter vacuum cup in polyurethane with G3/8 female thread.

LEVEL COMPENSATORS

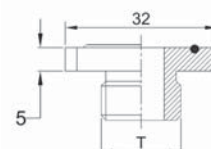
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



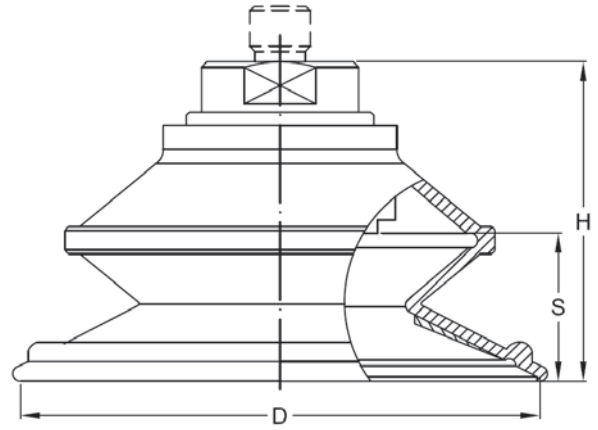
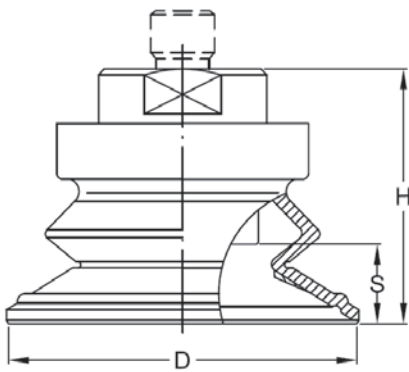
QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF



DIMENSIONS (mm)



Model	ØD	H	S
SBF30-PU-18F	30	28	7
SBF30-PU-14F			
SBF30-PU-38F		35	
SBF30-PU-38NPSF			
SBF40-PU-18F	40	28	9
SBF40-PU-14F			
SBF40-PU-38F		42	
SBF40-PU-38NPSF			
SBF50-PU-18F	50	51	12
SBF50-PU-14F			
SBF50-PU-38F		37	
SBF50-PU-38NPSF			

Model	ØD	H	S
SBF60-PU-18F	60	41.5	15
SBF60-PU-14F			
SBF60-PU-38F			
SBF60-PU-38NPSF			
SBF60-PU-12F	80	50	23
SBF80-PU-18F			
SBF80-PU-14F			
SBF80-PU-38F			
SBF80-PU-38NPSF	100	55	21
SBF80-PU-12F			
SBF100-PU-18F			
SBF100-PU-14F			
SBF100-PU-38F			
SBF100-PU-38NPSF			
SBF100-PU-12F			

B1.5 SINGLE BELLOWS CUP



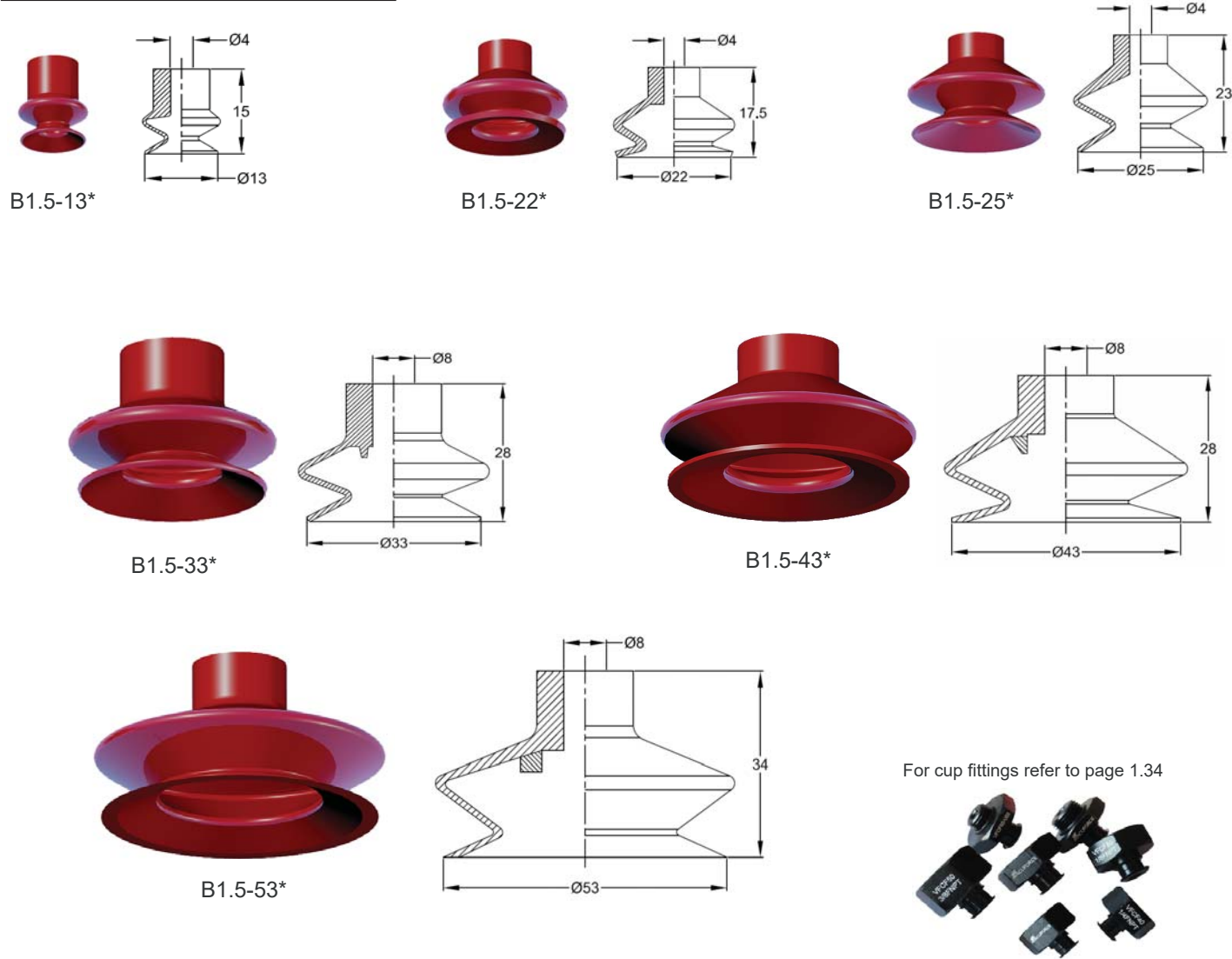
B1.5		33	N	
Series		Model	Diameter (mm)	
		13	13	
		22	22	
		25	25	
		33	33	
		43	43	
		53	53	
		Cup Material		
		N	Nitrile	
		S	Red Silicone	
		ST	Translucent White Silicone	

Part number example B1.5-33N
33mm Diameter single bellows vacuum cup in Nitrile rubber

For Suitable Cup Fittings
Refer to Table Below

Model	Fitting Type
B1.5-13	B
B1.5-22	
B1.5-25	
B1.5-33	F
B1.5-43	
B1.5-53	

DIMENSIONS (mm)



For cup fittings refer to page 1.34



B2.5
25
N
Series
Model Diameter (mm)

5	5
7	7
10	10
14	14
18	18
20	20
25	25
32	32
42	42
60	60

Cup Material

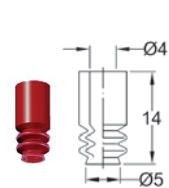
N	Nitrile
S	Red Silicone
ST	Translucent White Silicone

Part number example B2.5-32N
25mm Diameter double bellows
vacuum cup in Nitrile rubber

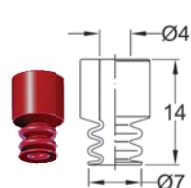
For Suitable Cup Fittings
Refer to Table Below

Model	Fitting Type
B2.5-5	B
B2.5-7	
B2.5-10	
B2.5-14	
B2.5-18	
B2.5-20	
B2.5-25	F
B2.5-32	
B2.5-42	
B2.5-60	

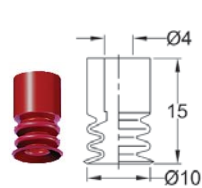
DIMENSIONS (mm)



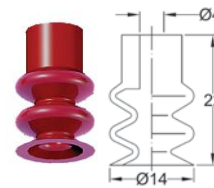
B2.5-5*



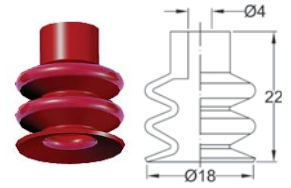
B2.5-7*



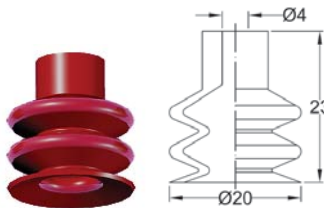
B2.5-10*



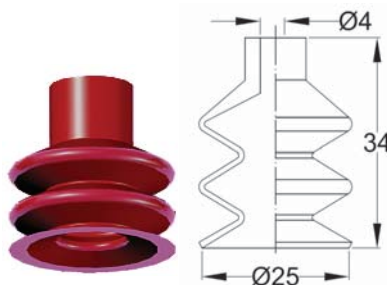
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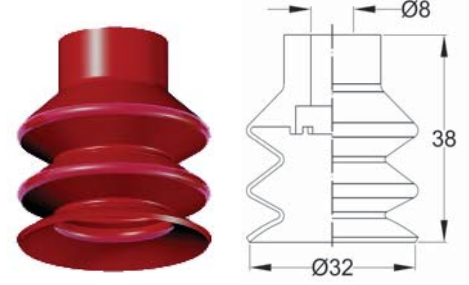
B2.5-18*



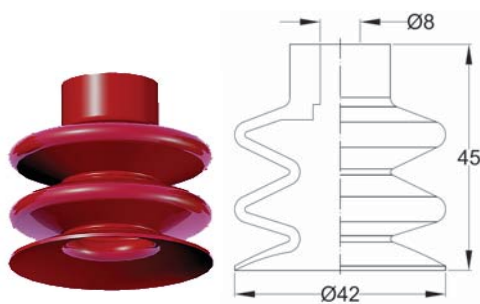
B2.5-20*



B2.5-25*



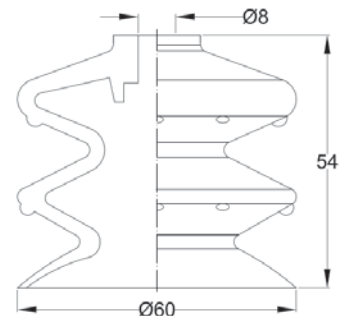
B2.5-32*



B2.5-42*



B2.5-60*



For cup fittings
refer to page 1.34

VFDB DOUBLE BELLOWS CUP



- Double Bellows Design
- Compensates for Height Variances in Part Picking
- Can seal on Convex and Concave Surfaces
- Available from 20mm to 70mm Diameter
- NBR, FDA Silicone and Dual Durometer Polyurethane



VFDB	40		DPU	
Series	Model	Diameter (mm)	Cup Material	
	20	20	N	Nitrile
	30	30	S	Red Silicone
	40	40	PU	PU 60 Durometer
	50	50	DPU	Dual PU 30/60 Durometer
	70	70		

Part number example VFDP40DPU
40mm Diameter double bellows vacuum cup in dual durometer polyurethane compound (30/60 = lip/body)

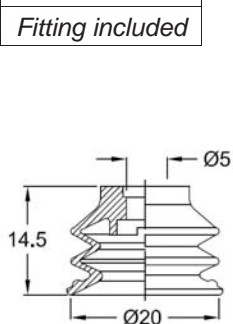
Dual Durometer Vacuum Cups (DPU)

The DPU compound variant of these vacuum cups offer a dual Durometer polyurethane construction. The body of the vacuum cup is a 60 Durometer polyurethane offering rigidity and strength, whereas the lip of the vacuum cup is a 30 Durometer polyurethane offering superior sealing capabilities particularly on rough or curved surfaces.

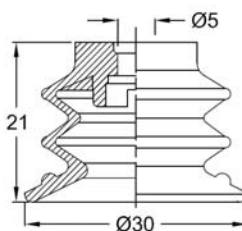
DIMENSIONS (mm)

For Suitable Cup Fittings
Refer to Table Below

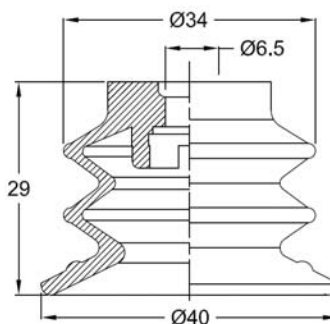
Model	Fitting Type
VFDB20	C
VFDB30	
VFDB40	
VFDB50	D
VFDB70	E
VFDB70	Fitting included



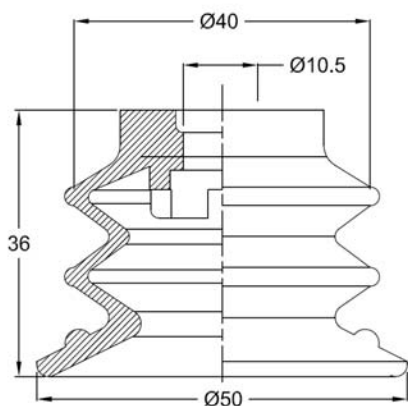
VFDB20



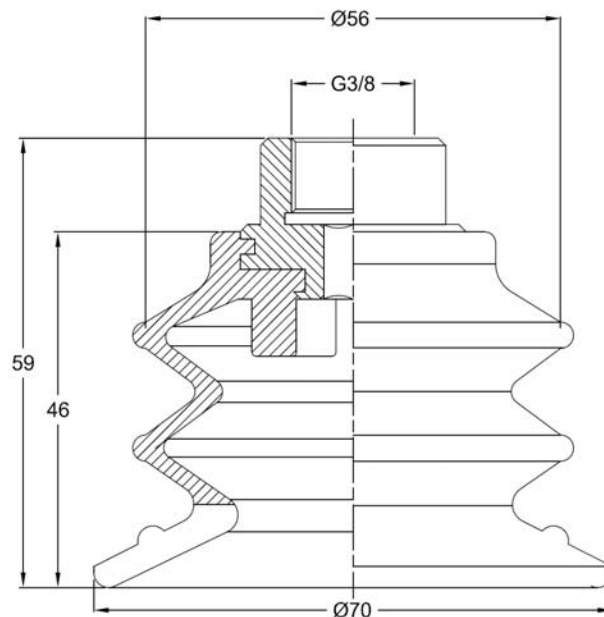
VFDB30



VFDB40



VFDB50



VFDB70



For cup fittings
refer to page 1.34

SOB OVAL BELLOWS CUP



The SOB series of vacuum cups are designed to offer the vacuum user a cup that can pick up on narrow surfaces and adapt to products such as formed sheet steel. The cups include an aluminum male or female threaded fitting for machinery and vacuum source connection.

This cup is available in Nitrile rubber in both 45 and 60 Durometer. Ideal for handling pressed steel sheet and glass products. The single bellows design offers slight vertical movement when vacuum is applied independent of the machinery aiding sheet separation and also compliance on concave and convex surfaces.



SOB		30X60N		-	45	-	G3/8F
Series	Model	L x W (mm)			Durometer		Thread
	30X60N	30 x 60			45		G1/4F
	40X80N	40 x 80			60		G1/4M
	55X110N	55 x 110					G3/8F
	70X140N	70 x 140					3/8NPSF

Part number example SOB30X60N-60-G3/8F
30mm x 60mm Oval Bellows Cup 60 Durometer with a G3/8 female threaded fitting.

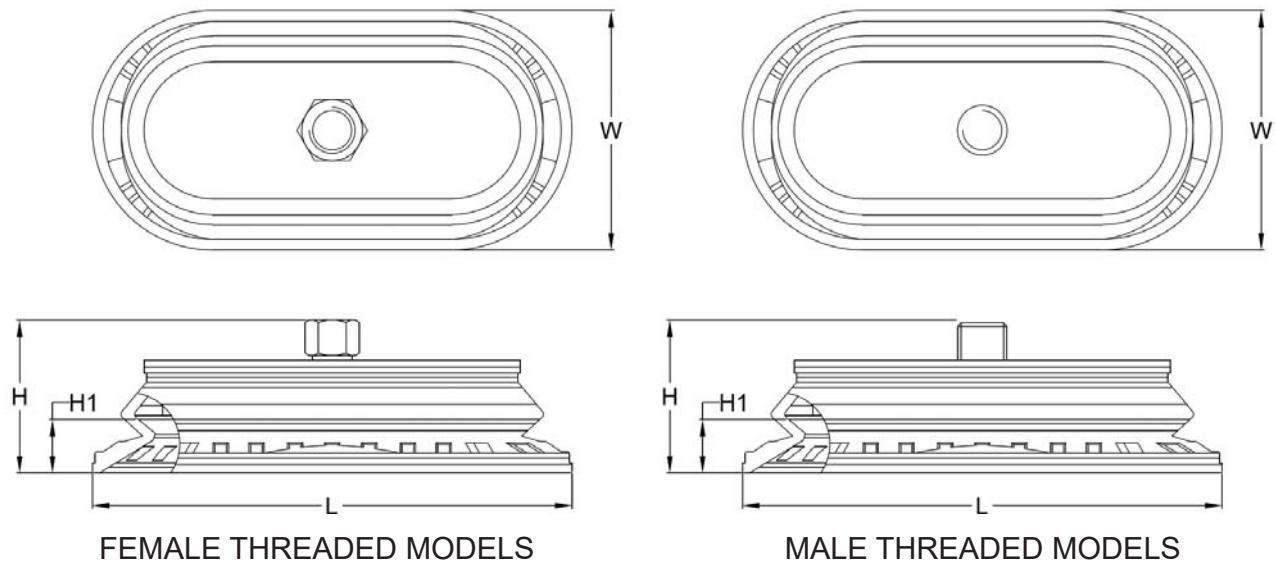
LEVEL COMPENSATORS

Refer to page 1.32 for suitable level compensators for this vacuum cup range.





DIMENSIONS (mm)



Model	SIZE W x L (mm)	H	H1
SOB30X60N-*-G1/4F	30 x 60	34	10
SOB30X60N-*-G1/4M		22	
SOB30X60N-*-G3/8F		34	
SOB30X60N-*-3/8NPSF		34	
SOB40X80N-*-G1/4F	40 x 80	37	10
SOB40X80N-*-G1/4M		25	
SOB40X80N-*-G3/8F		37	
SOB40X80N-*-3/8NPSF		37	

* indicates Durometer choice

Model	SIZE W x L (mm)	H	H1
SOB55X110N-*-G1/4F	55 x 110	43	13
SOB55X110N-*-G1/4M		31	
SOB55X110N-*-G3/8F		43	
SOB55X110N-*-3/8NPSF		43	
SOB70X140N-*-G1/4F	70 x 140	48	17
SOB70X140N-*-G1/4M		35	
SOB70X140N-*-G3/8F		48	
SOB70X140N-*-3/8NPSF		48	

* indicates Durometer choice

VFBL MULTIPLE BELLOWS



- Multiple bellows design
- Compensates for height variances in part picking
- Thin web design allows for sealing on crinkled or uneven surfaces such as plastic wrapping in the food industry
- Available from 20mm to 50mm Diameter
- NBR, FDA Silicone and Metal Detectable Materials



VFBL		40-2	N	
Series	Model	Diameter	Cup Material	
	20-2	20	N	Nitrile
	30-2	30	S	Red Silicone
	40-2	40	ST	White Translucent Silicone
	50-2	50	SMI	Metal Impregnated Red Silicone
			STMI	Metal Impregnated White Translucent Silicone

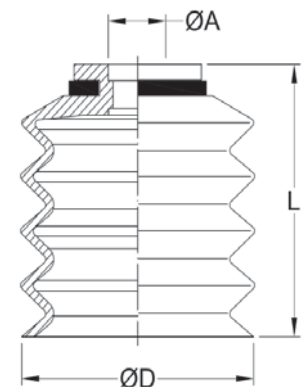
Part number example VFBL30-2SMI
30mm diameter single bellows vacuum cup in red metal impregnated silicone

DIMENSIONS (mm)

VFBL20-2 | VFBL30-2 | VFBL40-2 | VFBL50-2



Model	ØD	ØA	L	Fitting Type
VFBL20-2	20	5.5	23	C
VFBL30-2	30	6.5	32	D
VFBL40-2	40		42	
VFBL50-2	50	10	53	E



This cup series is available in metal detectable FDA compliant silicone.
For red colored metal detectable silicone use material code SMI.
For white translucent metal detectable silicone use material code STMI.



For cup fittings refer to page 1.34

- Designed for handling thin plastic and paper bags
- Ultra thin seal lip ensures vacuum tight seal
- Ideal for bag opening and transfer
- High flow cup fitting
- Available in FDA silicone as standard



SBLP		30	S		G1/4	
Series	Model	Diameter	Cup Material		Fitting Thread	
	30	30	S	Red Silicone	G1/4	G1/4
	40	40	SMI	Metal Impregnated Red Silicone	N1/4	1/4NPT
	50	50	STMI	Metal Impregnated White Translucent Silicone	G3/8	3/8NPT
					N3/8	3/8NPT
					G1/2	G1/2
					N1/2	1/2NPT

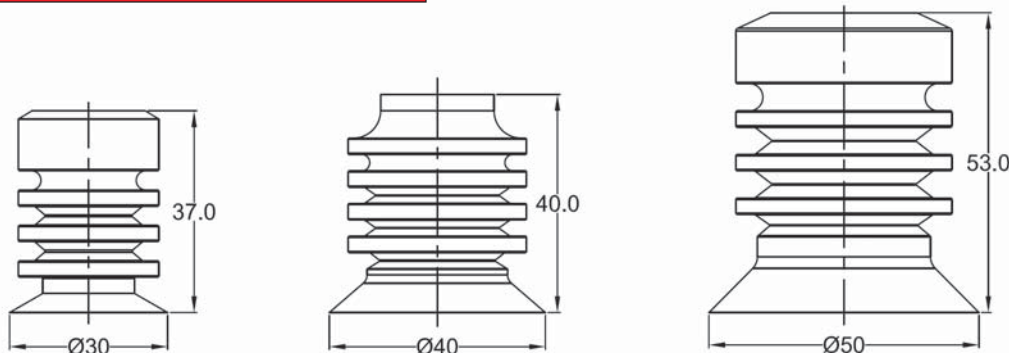
Part number example SBLP40S

40mm vacuum suction cup in silicone

Part number example SBLP40S-G3/8

40mm vacuum suction cup in silicone with male G3/8 Cup Fitting

CUP DIMENSIONS (mm)

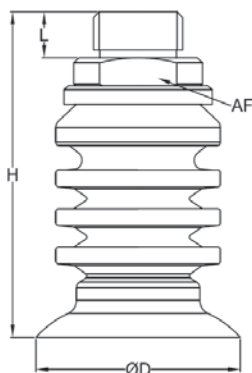


This cup series is available in metal detectable FDA compliant silicone.

For red colored metal detectable silicone use material code SMI.

For white translucent metal detectable silicone use material code STMI.

CUP + FITTING DIMENSIONS (mm)



Fitting Model	Cup ØD	H	L	AF
SBLP-G1/4	30	51.5	9	19
SBLP-N1/4	30	51.5	11.5	
SBLP-G3/8	40	56	10	22
SBLP-N3/8	40	57.5	11.5	
SBLP-G1/2	50	69	10	28
SBLP-N1/2	50	69	16	

SBLP Vacuum cup fittings are designed to ensure maximum flow is applied to the cup sealing lip to ensure maximum grip.



EHC EGG HANDLING CUPS



- Egg handling vacuum cups
- Available in FDA silicone as standard
- Multiple bellows offers vacuum lift independent of machine movement

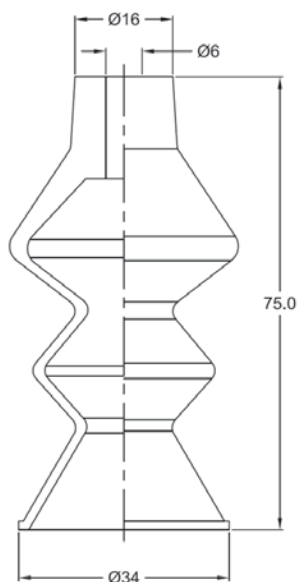


EHC		3475		N	
Series	Model	Diameter	Cup Material		
	3475	34	N	NBR Black 50 Durometer	
	3566	35	S	Silicone White 30 Durometer	
	3776	37	SBLK	Silicone Black 50 Durometer	
			SR	Silicone Red 50 Durometer	
			SBLU	Silicone Blue 50 Durometer	

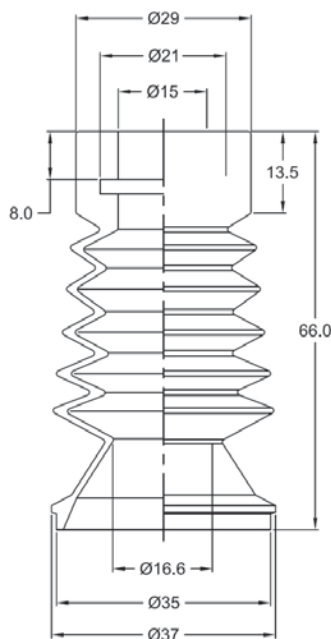
Part number example EHC3475N
34mm Egg Handling Cup in NBR

Note - #3566 only available in Blue Silicone
#3766 only available in Red Silicone

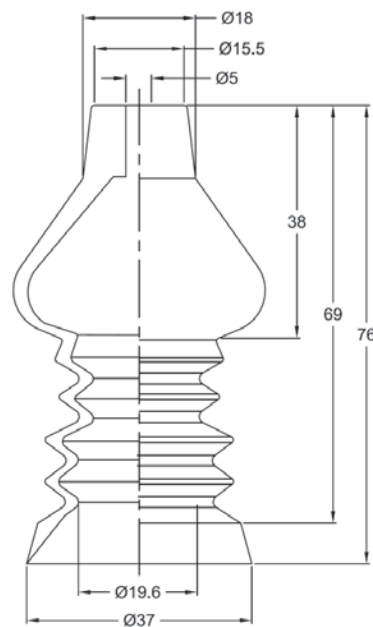
DIMENSIONS (mm)



Model 3475



Model 3566

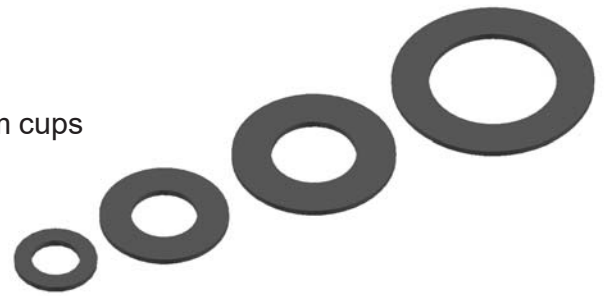


Model 3776



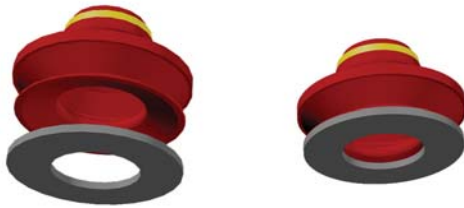
This cup series is available in metal detectable FDA compliant silicone.
For red colored metal detectable silicone use material code SMI.
For white translucent metal detectable silicone use material code STMI.

- Foam seal lips for VFB series vacuum cups
- Used for handling rough or embossed surfaces
- Self adhesive seal bonds to base of VFB series vacuum cups



FCR		30		S	
Series	Model	Suitable for Cup Model	Seal Material		
	20	VFB20	N	NBR	
	30	VFB30-2	S	Silicone	
	40	VFB40			
	50	VFB50-2			

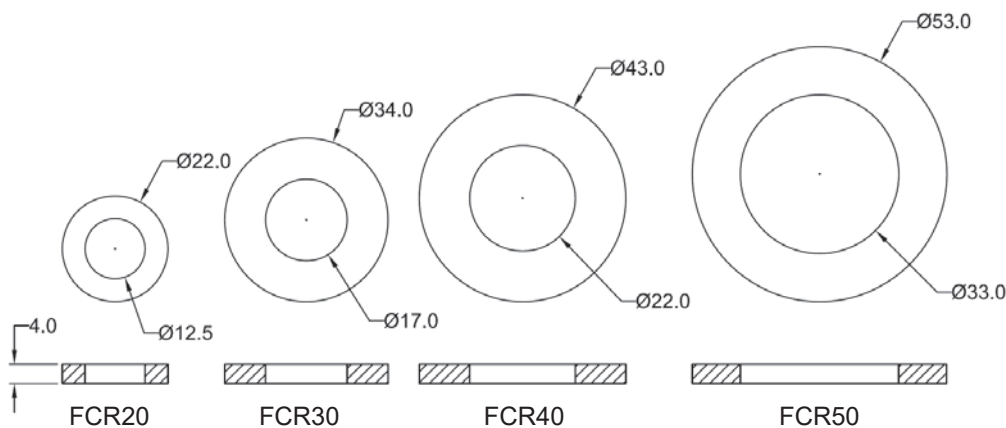
ASSEMBLY



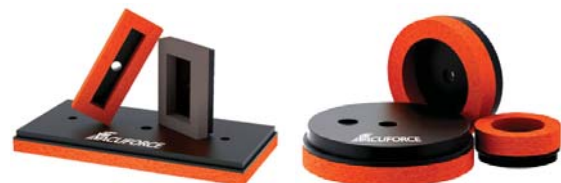
Ensure that the vacuum cup is free from dirt and grease on the sealing lip and is in good overall condition. Remove the self adhesive seal from the foam ring and place on a flat surface with sticky face upwards.

Place cup centrally over foam ring and press against the foam ring squarely and firmly for 1-2 seconds.

DIMENSIONS (mm)



For larger foam cups please refer to pages 1.30 and 1.31



VFF FLAT CUPS



- Flat design vacuum cup
- Internal cleats for increased grip in lateral movement
- Good for shear movement and grip
- Available from 15mm to 150mm diameter
- NBR, FDA Silicone and metal detectable materials



VFF		40-2	N	
Series	Model	Diameter	Cup Material	
	15	15	N	Nitrile
	20	20	S	Red Silicone
	30-2	30	ST	White Translucent Silicone
	40-2	40	SMI	Metal Impregnated Red Silicone
	50-2	50	STMI	Metal Impregnated White Translucent Silicone

Part number example VFF30-2S 30mm diameter flat vacuum cup in red silicone

LEVEL COMPENSATORS

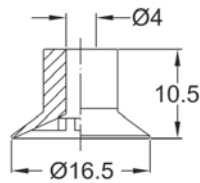


This cup series is available in metal detectable FDA compliant silicone.
For red colored metal detectable silicone use material code SMI.
For white translucent metal detectable silicone use material code STMI.

Refer to page 1.32 for suitable level compensators for this vacuum cup range.



VFF15-2

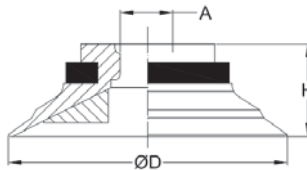


DIMENSIONS (mm)

Model	ØD	ØA	L	Fitting Type
VFF15-2*	16.5	4	16	B

* add cup material code

VFF20 | VFF30-2 | VFF40-2 | VFF50-2



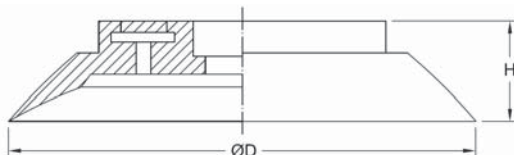
Model	ØD	ØA	L	Fitting Type
VFF20*	22	5.5	8	C
VFF30-2*	32		10	
VFF40-2*	40	6.5	13	D
VFF50-2*	50	10.5	13	E

* add cup material code

VFF75WN | VFF110WN | VFF150WN



The Vacuforce VFF75, 110 and 150 series have an integral metal washer to offer secure attachment to the associated cup fittings. These large diameter flat vacuum cups are used to handle larger objects such as wooden boards, stone counter tops, steel sheets and similar products in both a horizontal and shear orientation. These three models of cups are connected to the fitting with small bolts that attach from the inside of the vacuum cup. The image on the right shows the cup and fitting assembled.



Model	ØD	PCD x # Positions	L	Fitting Type
VFF75W*	75	35 x 4	13	J
VFF110W*	115	55 x 7	20	K
VFF150W*	150	71 x 7	26	L

* add cup material code



For cup fittings
refer to page 1.34

SFF FLAT CUPS



The SFF series of vacuum cups are designed to offer the vacuum user very high speed lateral transfer especially on wet or oily surfaces such as steel stamped parts. The SFF cups are also suitable for shear plane applications where the part is being turned through 90 degrees. The cups include an aluminum male or female threaded fitting for machinery and vacuum source connection.

These vacuum cups are available 45 and 60 Durometer NBR.



APPLICATIONS

- Automotive steel stamping
- Glass handling
- Plywood transfer
- Handling of oily steel surfaces
- Concave and convex surfaces
- Large box & carton handling

SFF	80	N	60	G3/8F
Series	Diameter (mm)	Material		Mounting Thread
	30	N	NBR	G1/4F
	40			G1/4M
	50			G3/8F
	60			3/8NPSF
	80			
	100			

Part number example SFF80N-60-G3/8F

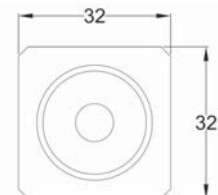
80mm diameter flat cup 60 Durometer NBR with G3/8 female thread

LEVEL COMPENSATORS

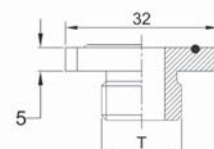
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



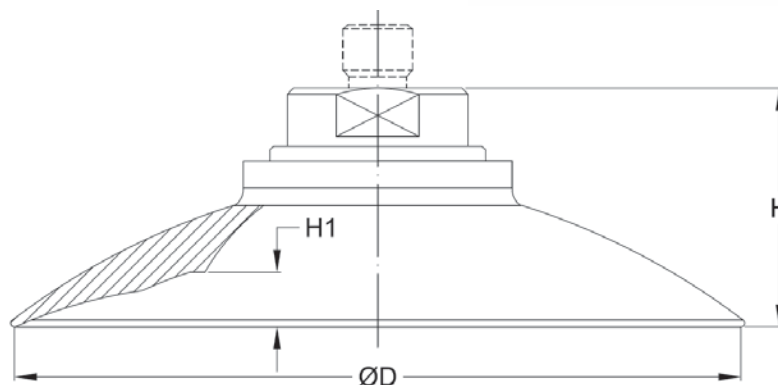
QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF



DIMENSIONS (mm)



Model	ØD	H	H1
SFF30N-*-G1/4F	32	20	2.7
SFF30N-*-G1/4M			
SFF30N-*-G3/8F			
SFF30N-*-3/8NPSF		34	
SFF40N-*-G1/4F	42	22	3.7
SFF40N-*-G1/4M			
SFF40N-*-G3/8F			
SFF40N-*-3/8NPSF		36	
SFF50N-*-G1/4F	52	42	4.7
SFF50N-*-G1/4M			
SFF50N-*-G3/8F			
SFF50N-*-3/8NPSF		28	

* indicates Durometer choice

Model	ØD	H	H1
SFF60N-*-G1/4F	62	45	6
SFF60N-*-G1/4M			
SFF60N-*-G3/8F			
SFF60N-*-3/8NPSF		31	
SFF80N-*-G1/4F	82	45	7.5
SFF80N-*-G1/4M			
SFF80N-*-G3/8F			
SFF80N-*-3/8NPSF		31	
SFF100N-*-G1/4F	102	50	9
SFF100N-*-G1/4M			
SFF100N-*-G3/8F			
SFF100N-*-3/8NPSF		36	

* indicates Durometer choice

SOF OVAL CUP



The SOF series of vacuum cups are designed to offer the vacuum user a cup that can pick up on narrow surfaces. The cups include an aluminum male or female threaded fitting for machinery and vacuum source connection.

This cup is available in Nitrile rubber compound in both 45 and 60 Durometer. Ideal for handling pressed steel sheet and glass products.



SOF	20X80		45	G3/8F
Series	Model	L x W (mm)	Durometer	Thread
	20X80	20 X 80	45	G1/4F
	30X90	30 x 90	60	G1/4M
	40X110	40 x 110		G3/8F
				3/8NPSF

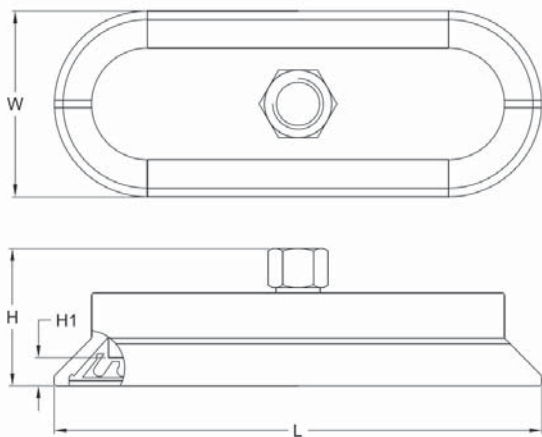
Part number example SOF30X90N-60-G3/8F
30mm x 90mm Oval Cup 60 Durometer NBR with G3/8 female thread

LEVEL COMPENSATORS

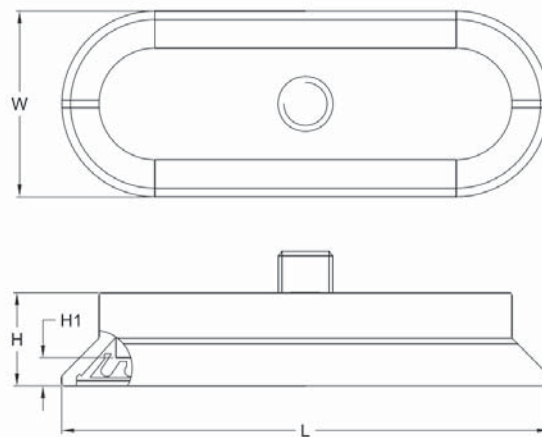
Refer to page 1.32 for suitable NON-ROTATING level compensators for this vacuum cup range.



DIMENSIONS (mm)



FEMALE THREADED MODELS



MALE THREADED MODELS

Model	SIZE W x L (mm)	H	H1
SOF20X80N-*-G1/4F	20 x 80	30	5
SOF20X80N-*-G1/4M		17	
SOF20X80N-*-G3/8F		30	
SOF20X80N-*-3/8NPSF		30	
SOF30X90N-*-G1/4F	30 x 90	30	5
SOF30X90N-*-G1/4M		17	
SOF30X90N-*-G3/8F		30	
SOF30X90N-*-3/8NPSF		30	

* indicates Durometer choice

Model	SIZE W x L (mm)	H	H1
SOF40X110N-*-G1/4F	40 x 110	36	6
SOF40X110N-*-G1/4M		23	
SOF40X110N-*-G3/8F		36	
SOF40X110N-*-3/8NPSF		36	

* indicates Durometer choice

SPC SOLAR PANEL CUPS

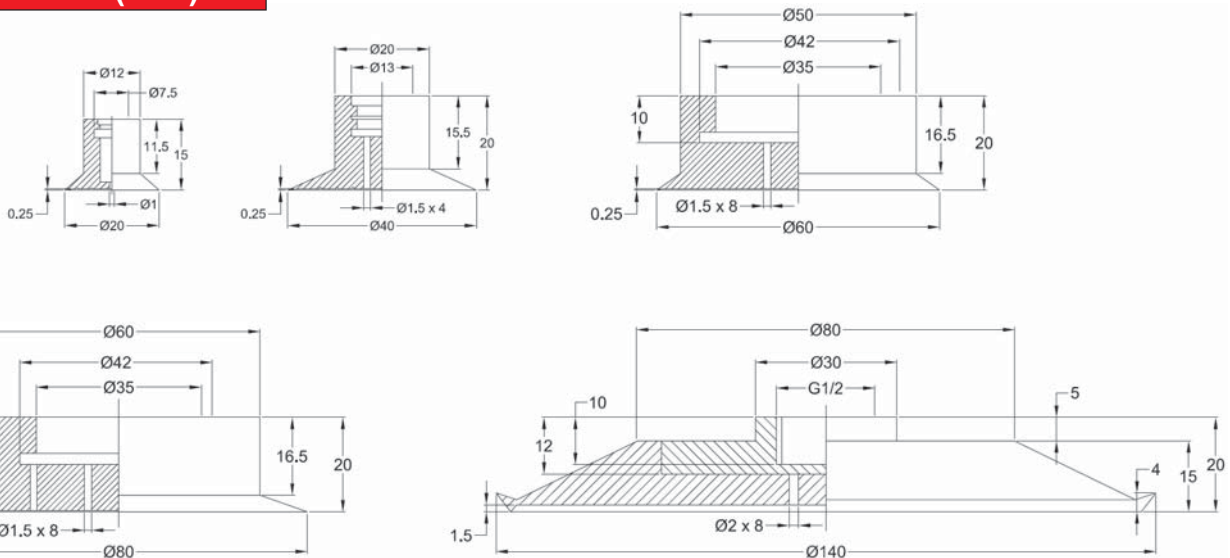


- Designed for the solar panel manufacturing industry
- Ensures minimal distortion during vacuum grip
- Suitable for foil and thin sheet handling and also semi-conductor manufacturing

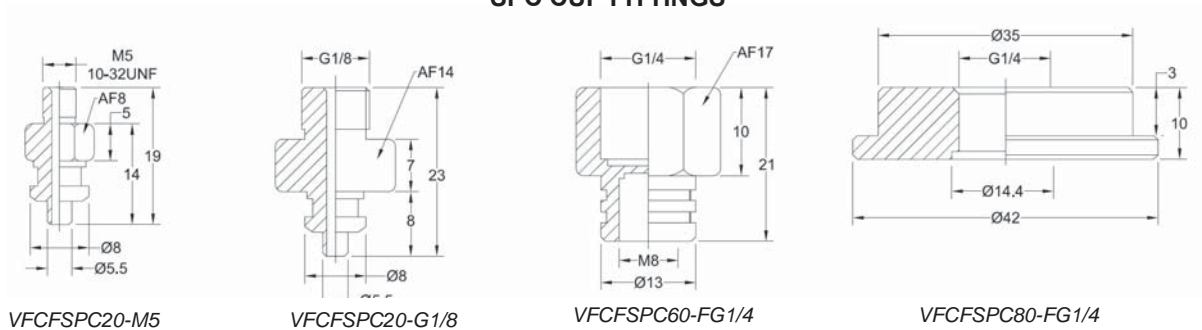


SPC		20	NR	
Series	Model	Diameter	Cup Material	
	20	20	NR	Natural Rubber
	40	40	Part number example SPC40NR 40mm solar panel cup in natural rubber	
	60	60		
	80	80		
	140	140		

DIMENSIONS (mm)



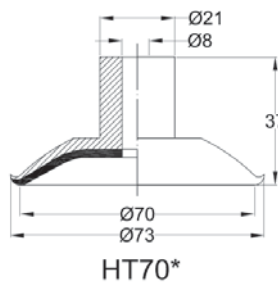
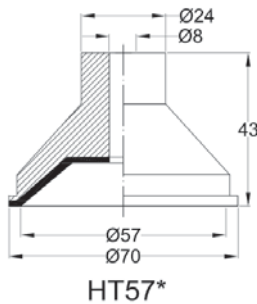
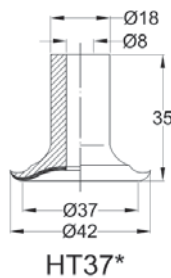
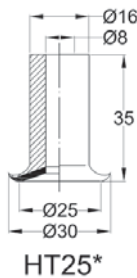
SPC CUP FITTINGS



- High temperature cups with a vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramic, steel and plastics handling
- Cups include rubber body and high temperature foam seal

HT	20	NR
Series	Model	Diameter
	25	25
	37	37
	57	57
	70	70
Cup Rubber Material		
NR	NBR Rubber	
FKM	Fluorocarbon	
SS	Silicone	

Part number example
HT20FKM 25mm Diameter
Cup in Fluorocarbon Rubber



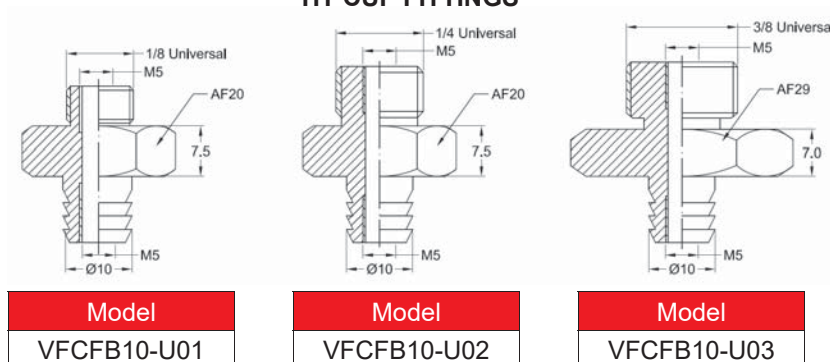
* indicates cup material choice



Maximum Temperature Rating	
NBR Rubber	100°C (212°F)
Silicone	350°C (660°F)
Fluorocarbon	550°C (1022°F)

Maximum temperature ratings are based upon duration of hold time, the time between cycles and vacuum level being used. Trials should be administered for longer contact periods.

HT CUP FITTINGS



HT HIGH TEMPERATURE CUPS

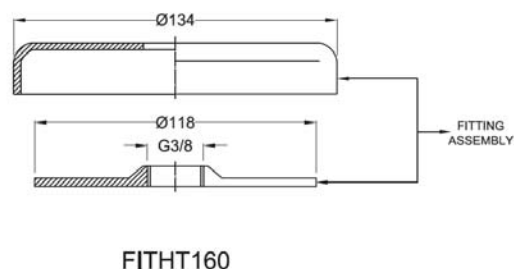
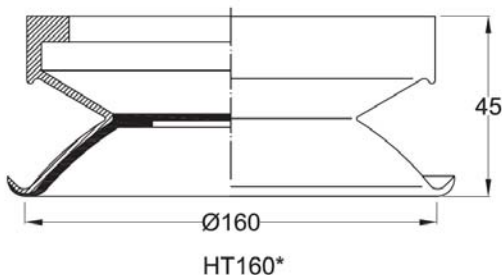
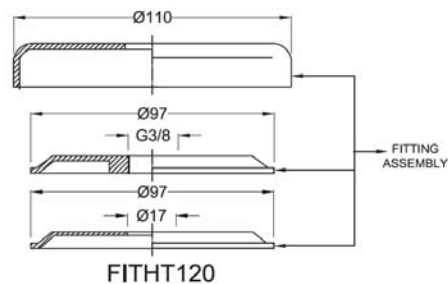
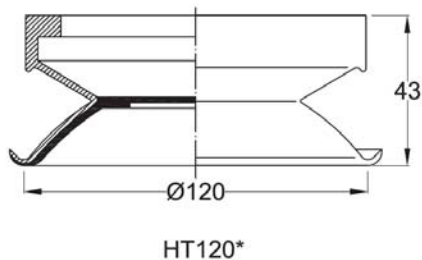
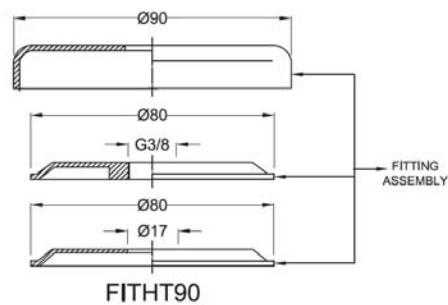
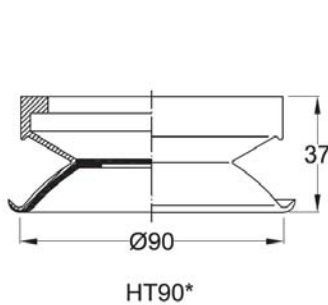


- High temperature cups with vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramics, steel and plastics handling
- Cups include rubber body and high temperature foam seal

HT	90	NR
Series	Model	Diameter
	90	90
	120	120
	160	160
Cup Rubber Material		
	NR	NBR Rubber
	FKM	Fluorocarbon
	SS	Silicone



The illustrations below show the dimensions of the cup on the left with the corresponding fitting assembly on the right. The cups and the fittings should be ordered separately. The cup fitting is a three piece fixture that clamps the cup to ensure a rigid assembly.

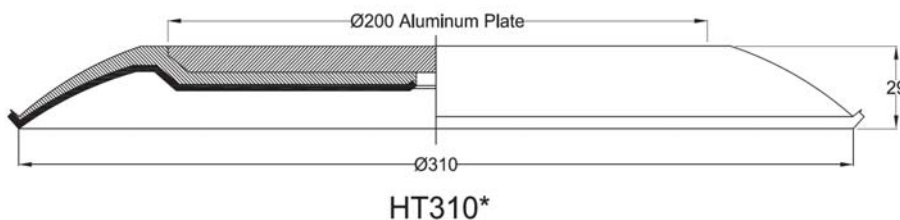
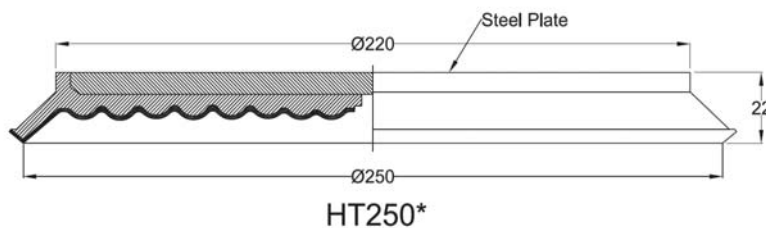
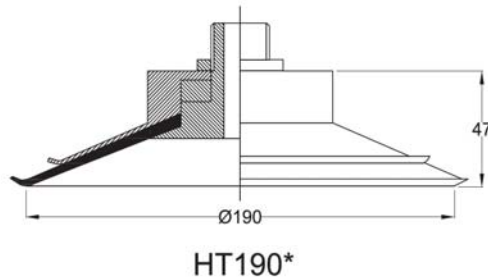


* indicates cup material choice

- High temperature cups with vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramics, steel and plastics handling
- Cups include rubber body and high temperature foam seal

HT	190	NR
Series	Model	Diameter
	190	190
	250	250
	310	310
Cup Rubber Material		
NR	NBR Rubber	
FKM	Fluorocarbon	
SS	Silicone	

The HT190 Series is assembled onto the applicable fitting as shown in the HT190 table below. The HT250 and HT310 cup assemblies do not have a vacuum port or mounting hole(s). These features are installed by the user. Cups and fittings should be ordered separately.



* indicates cup material choice



HT190 Cup Fittings	
FITHT1901/2	G1/2
FITHT1903/4	G3/4

The HT190 cup is shown assembled on the corresponding cup fitting. There are two types of fitting as shown in the table above.

HT250 Cup Fitting
FITHT250

The HT250 cup fitting is supplied without mounting or vacuum ports.

HT310 Cup Fitting
FITHT310

The HT310 cup fitting is supplied without mounting or vacuum ports.

SNP FOAM SEAL CUPS



- Designed for handling rough or embossed materials
- Excellent vacuum seal for wood, brick, stone and more
- Two types of foam density depending on application
- Self adhesive foam seal

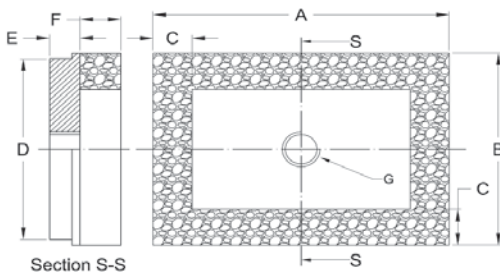


SNP	107	X	75	NAT
Series	Length (mm)		Width (mm)	Foam Type
	107		75	NAT Natural Rubber
	135		50	NBR Nitrile Rubber
	135		60	
	290		68	
	290		140	

Part number example SNP107X75NAT
107mm x 75mm Natural Foam Rubber
Suction Cup Including Fitting

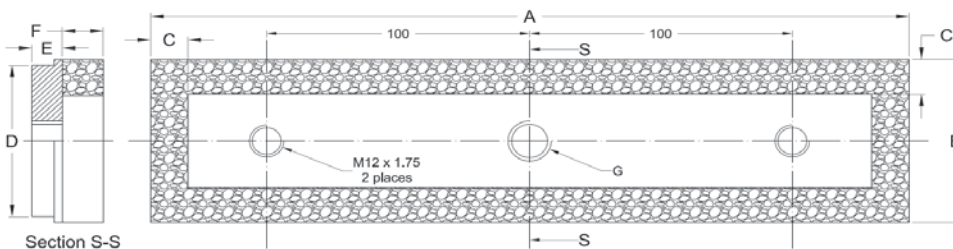
DIMENSIONS (mm)

SNP107X75, SNP135X50 & SNP135X60



Model	A	B	C	D	E	F	G
SNP107X75	107	75		70			
SNP135X50		50		45			G1/8
SNP135X60	135	60	15	55	11	15	
SNP290X68		68		62			G1/2
SNP290X140	290	140		134			

SNP290X68, SNP290X140



Spare Seals

Assembly	Spare Seal
SNP107X75	FR107X75
SNP135X50	FR135X50
SNP135X60	FR135X60
SNP290X68	FR290X68
SNP290X140	FR290X140



LEVEL COMPENSATORS

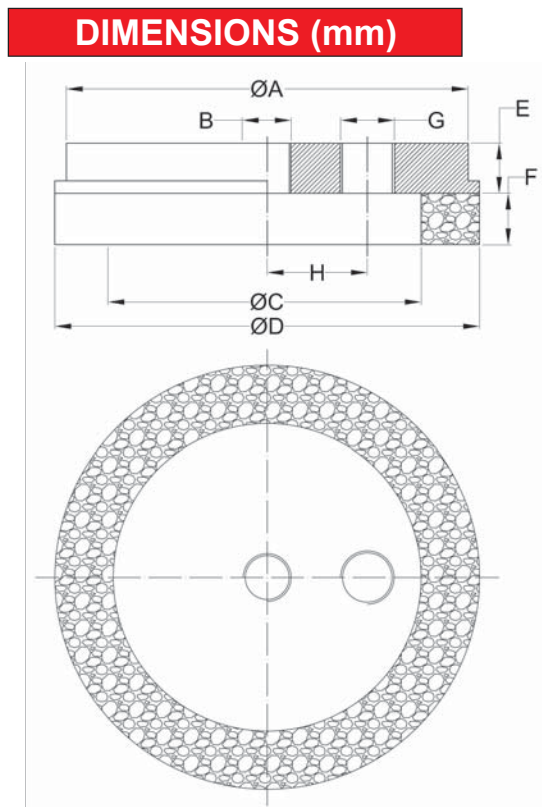
Refer to page 1.32 for suitable NON-ROTATING level compensators for this vacuum cup range.



- Designed for handling rough or embossed materials
- Excellent vacuum seal for wood, brick, stone and more
- Two types of foam density depending on application
- Self adhesive foam seal



SOP	92	NAT
Series	Diameter (mm)	Foam Type
	40	NAT Natural Rubber
	64	NBR Nitrile Rubber
	92	Part number example SOP92NAT 92mm Diameter Natural Foam Rubber Suction Cup Including Fitting
	127	
	180	



Model	A	B	C	D	E	F	G
SOP40	40	G1/4	20	40	10	15	n/a
SOP64	60		40	64			
SOP92	88	G3/8	64	92	15	15	G3/8
SOP127	120		92	127			
SOP180	160	G1/2	140	180			

Spare Seals		
Assembly	Natural Rubber Seal	Nitrile Rubber Seal
SOP40	FR40NAT	FR40NBR
SOP64	FR64NAT	FR64NBR
SOP92	FR92NAT	FR92NBR
SOP127	FR127NAT	FR127NBR
SOP180	FR180NAT	FR180NBR



LEVEL COMPENSATORS

Refer to page 1.32 for suitable non-rotating level compensators for this vacuum cup range.



VACUUM CUP HOLDERS



The Vacuforce cup holders, often referred to as level compensators, are normally used on multiple vacuum cup systems such as sheet or plate handling where the height of the load varies during production cycles. These cup holders have been developed with the best materials to offer maximum life in the toughest applications.

Materials

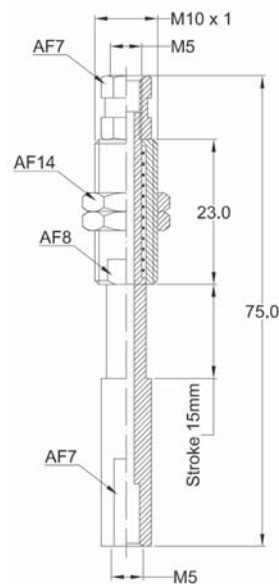
- Hard anodized aluminum thread fittings
- Nickel Plated bushings and lock nuts
- Hard anodized aluminum or chrome plated steel rods



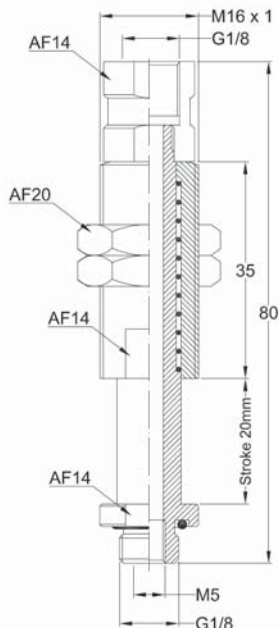
VFLC	EX		NR		14		25		M20	
Series	Spring Type		Non- Rotating		Cup Connection		Buffer Stroke (mm)		Bulkhead Thread	
	EX	External		Rotates	M5	M5				
	IN	Internal	NR	Non- Rotating	18	G1/8				
					14	G1/4				
					38	G3/8				
					12	G1/2				

AF14

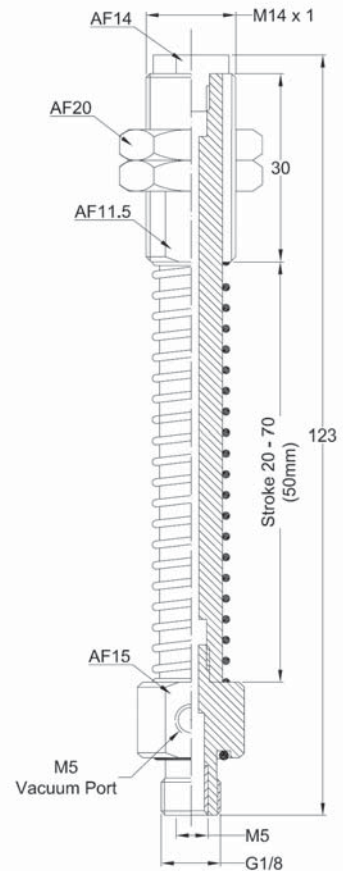
M14 x



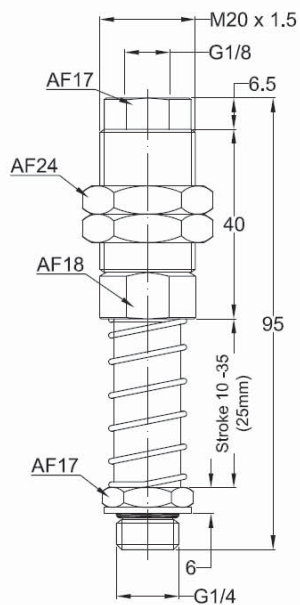
VFLCINM515M10



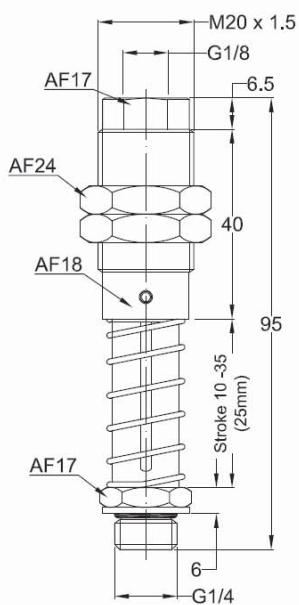
VFLCIN1820M16



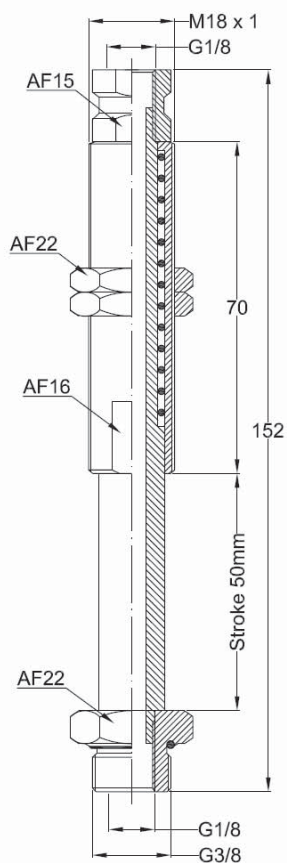
VFLCEX1850M14



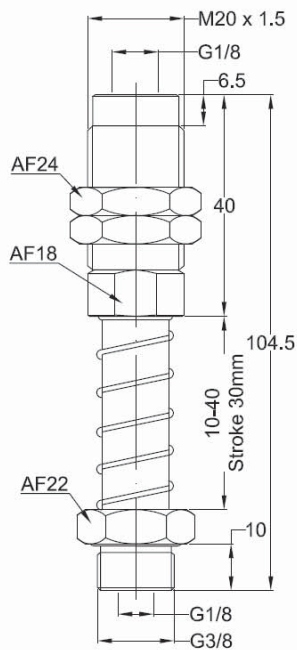
VFLCEX1425M20



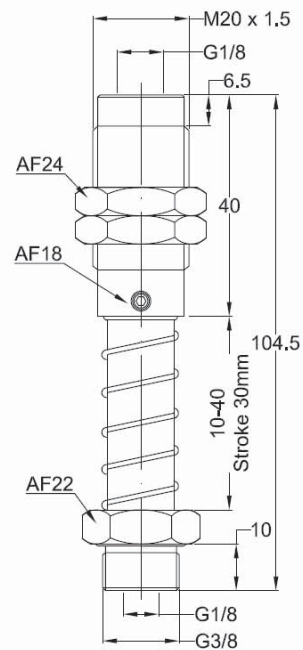
VFLCEXNR1425M20
(non rotating)



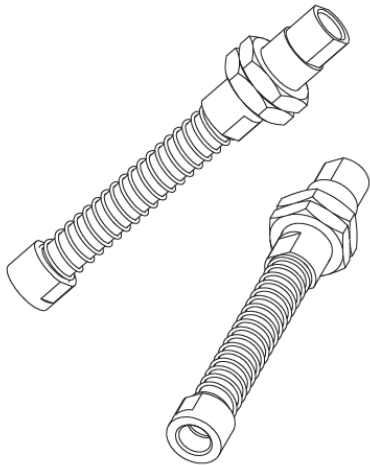
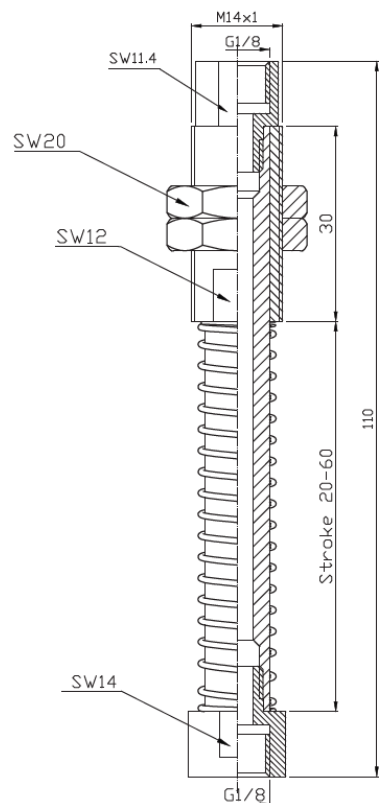
VFLCIN3850M18



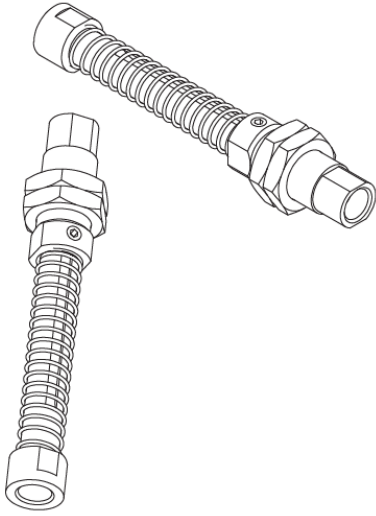
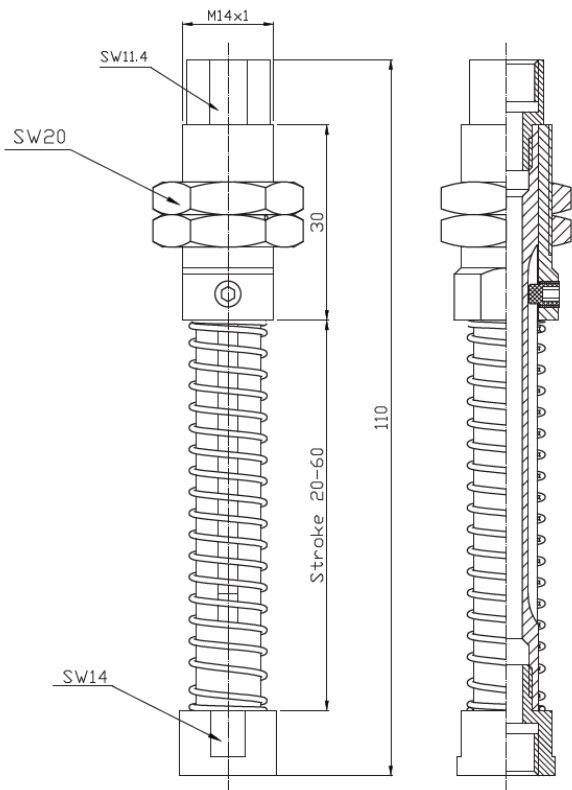
VFLCEX3830M20



VFLCEXNR3830M20
(non-rotating)

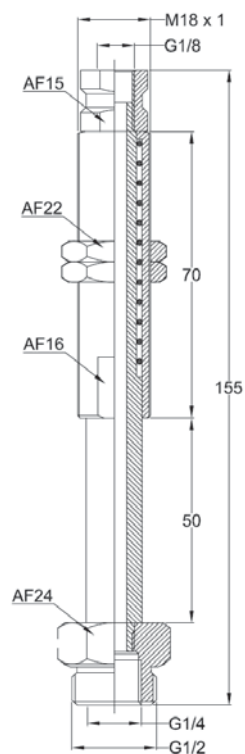


VFLCEX1840M14

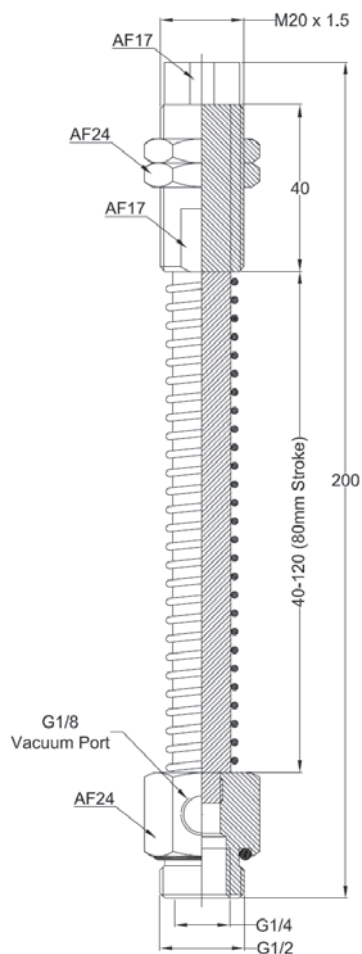


VFLCEXNR1840M14

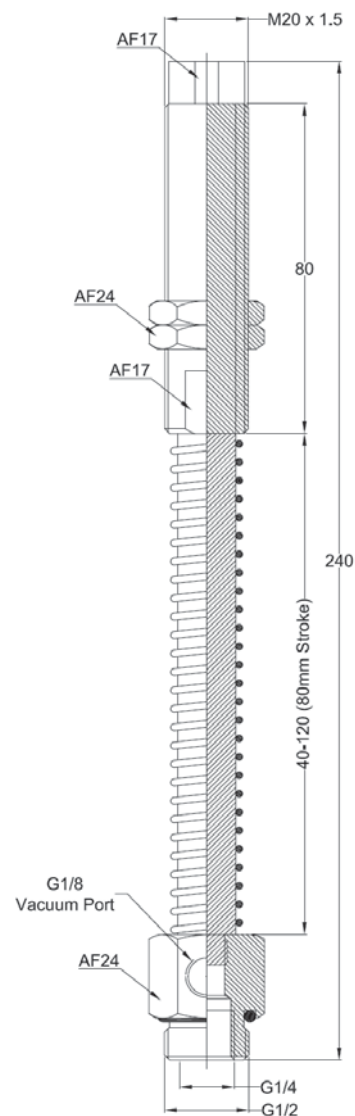
VACUUM CUP HOLDERS



VFLCIN1250M18



VFLCEX1280M20



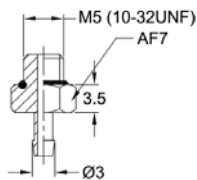
VFLCEX1280M20-80

These cup fittings enable the vacuum cups shown in this catalogue to be mounted to machinery and other apparatus. All male threads utilize the Vacuforce Tri Thread which is a universal thread form suitable for connection to female NPT, NPSF, BSPT and BSPP threads.

All fittings are hard anodized and can be used with all VFB, VFBL, VFDB and VFF vacuum cups.

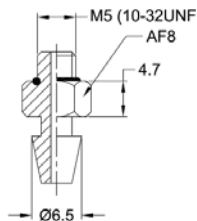


FITTING TYPE A



Model
VFCFB3-M5

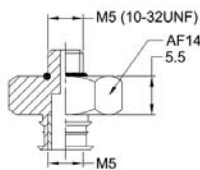
FITTING TYPE B



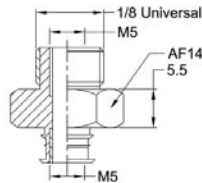
Model
VFCFB6.5-M5



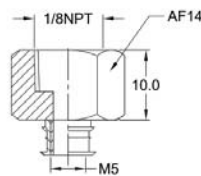
FITTING TYPE C



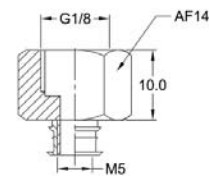
Model
VFCF20-M5



Model
VFCF20-U01

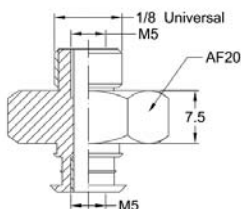


Model
VFCF20-1/8FNPT

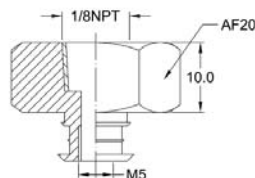


Model
VFCF20-FG1/8

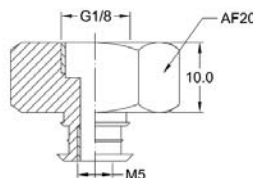
FITTING TYPE D



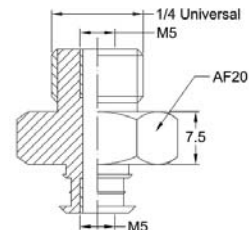
Model
VFCF40-U01



Model
VFCF40-1/8FNPT



Model
VFCF40-FG1/8

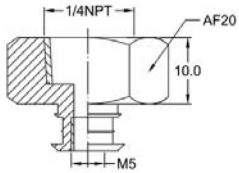


Model
VFCF40-U02

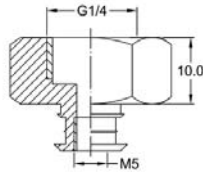
VACUUM CUP FITTINGS



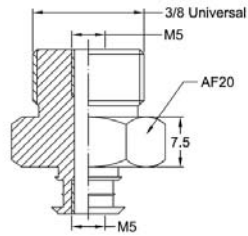
FITTING TYPE D



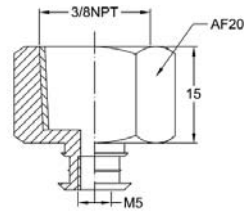
Model
VFCF40-1/4FNPT



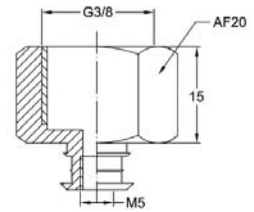
Model
VFCF40-FG1/4



Model
VFCF40-U03

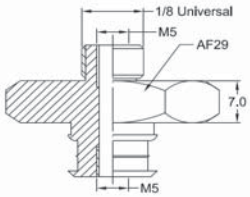


Model
VFCF40-3/8FNPT

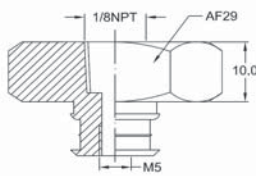


Model
VFCF40-FG3/8

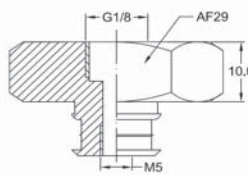
FITTING TYPE E



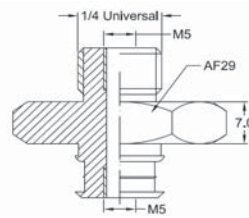
Model
VFCF50-U01



Model
VFCF50-1/8FNPT

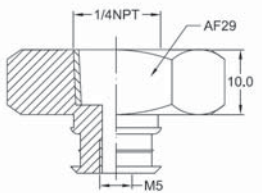


Model
VFCF50-FG1/8

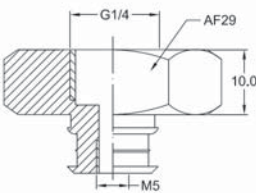


Model
VFCF50-U02

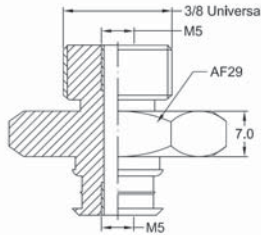
FITTING TYPE E



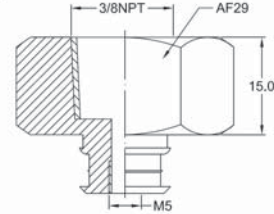
Model
VFCF50-1/4FNPT



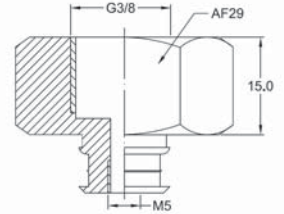
Model
VFCF50-FG1/4



Model
VFCF50-U03

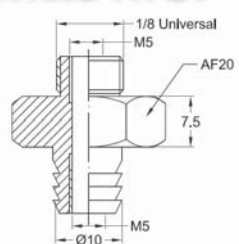


Model
VFCF50-3/8FNPT

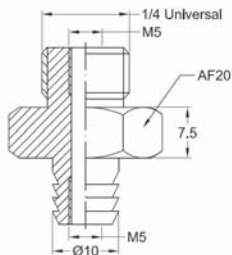


Model
VFCF50-FG3/8

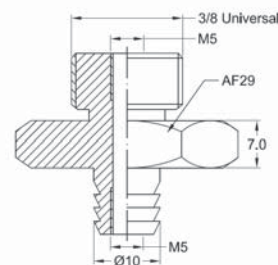
FITTING TYPE F



Model
VFCFB10-U01



Model
VFCFB10-U02



Model
VFCFB10-U03

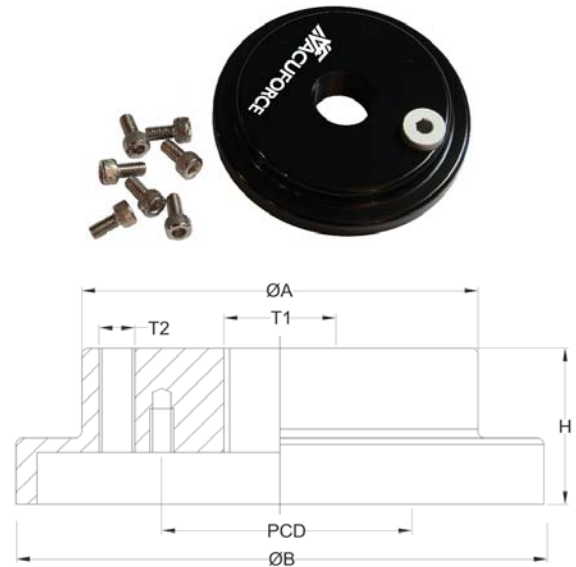
FITTING TYPE J, K & L

The cup fitting series J, K and L utilize M4 bolts to attach the corresponding cup to the fitting body. The fitting model number shown in the table below includes the necessary bolts.

The K & L series fitting has an optional 1/8 vacuum port as shown by T2 in the drawing below.

VFCF	75	-	1/8	N
Series	Model		Mounting Thread	Thread Type
	75			BSPP
	110			NPT
	150			

Fitting Type	Model	ØA	PCD	T1	T2	H	ØB
J	VFCF75-1/8	45	35	1/8	n/a	18	55
	VFCF75-1/4			1/4			
	VFCF75-3/8			3/8			
K	VFCF110-1/4	70	55	1/4	1/8	15	79
	VFCF110-3/8			3/8			
	VFCF110-1/2			1/2			
L	VFCF150-3/8	90	71	3/8		16	112
	VFCF150-1/2			1/2			



Blanking Plugs



These blanking plugs are used to block female threads in a vacuum, compressed air system or a component port. These fittings utilize universal threads and are suitable for NPT, BSPT and BSPP(G) pipe thread connection.

Model	Thread Size
VFBP1/8	1/8 Universal
VFBP1/4	1/4 Universal
VFBP3/8	3/8 Universal



NOTES