



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.

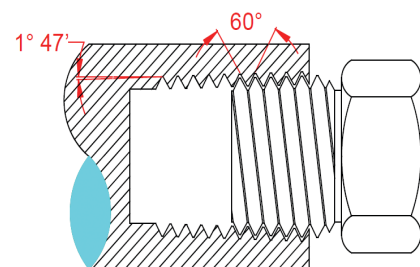
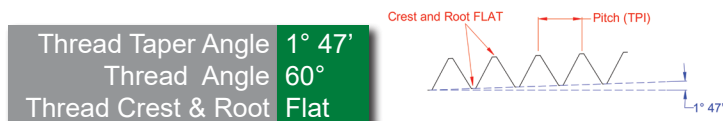
METAL IMPREGNATED SILICONE (Vacuforce code SMI & STMI) has the same basic characteristics as the standard silicone described above, but the metal impregnated compound has been design specifically for the food industry. Iron filings inside the actual silicone compound allow metal detectors to sense that 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)

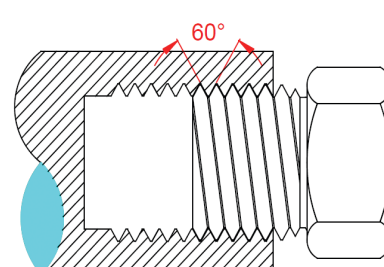
Referred to as NPT, this American pipe thread is by far the most common thread used in American made fluid power components and is the standard thread in the USA and Canada. This tapered thread seals using a thread sealant or tape. The Pneuforce NPT male threaded fittings have a pre-applied thread sealant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



	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

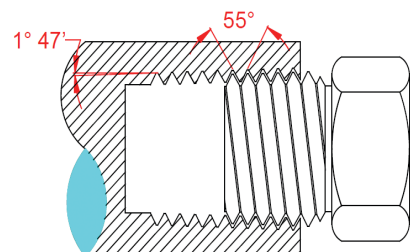
National Pipe Straight (NPS)

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.



British Standard Pipe Taper (BSPT)

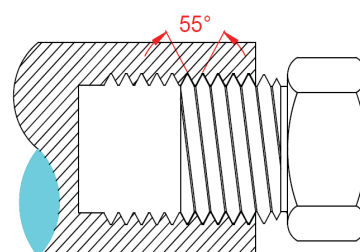
Sometimes referred to as an "R" thread, the BSP Thread (British Standard Pipe) is used throughout the world as a pipe thread except for the USA which uses NPT. BSPT is a tapered thread and is used in male threaded components to connect to female BSPT and also BSPP thread forms. Of course using a BSPT 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.



	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.



- 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



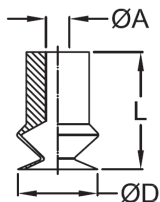
VFB	20	N	
Series	Model	Diameter	Cup Material
	5	5	N Nitrile
	8	8	S Red Silicone
	10-2	11	ST White Translucent Silicone
	15-2	16	SMI Metal Impregnated Red Silicone
	20	22	STMI Metal Impregnated White Translucent Silicone
	30-2	34	
	40	43	
	50-2	53	
	75	75	
	110	110	
	150	150	

Part number example VFB30-2SMI
34mm diameter single bellows vacuum cup in red metal impregnated silicone



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

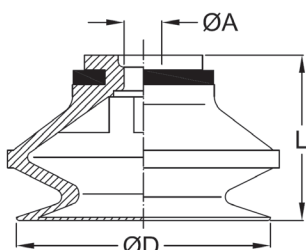


DIMENSIONS (mm)

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

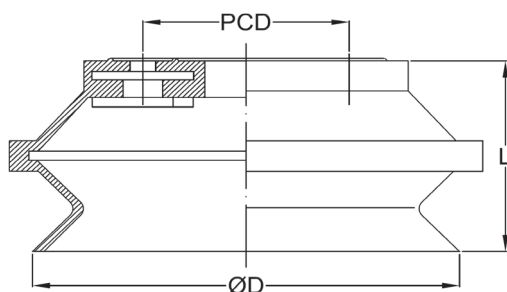
VFB20 | VFB30 | VFB30-2 | VFB40 | VFB50-2



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					3/8NPSF
	80N	80					M10M
	100N	100					M14M
	125N	125					

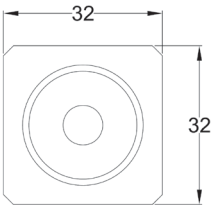
Part number example *STC100N-60-G3/8F*
 100mm diameter bellows vacuum cup in 60 durometer NBR with
 G3/8 female thread connection port.

LEVEL COMPENSATORS

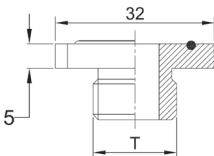
Refer to page 1.32 for suitable
 level compensators for this
 vacuum cup range.



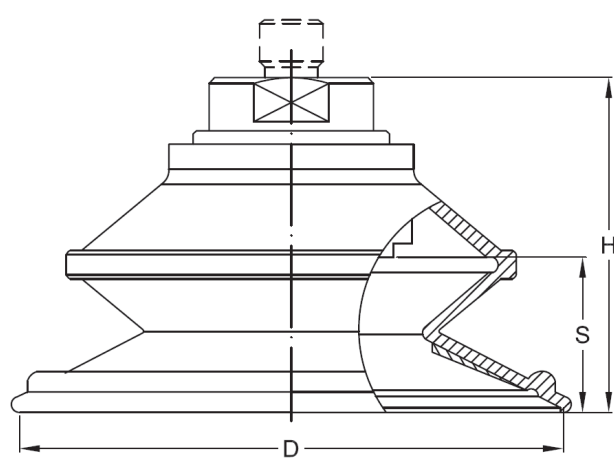
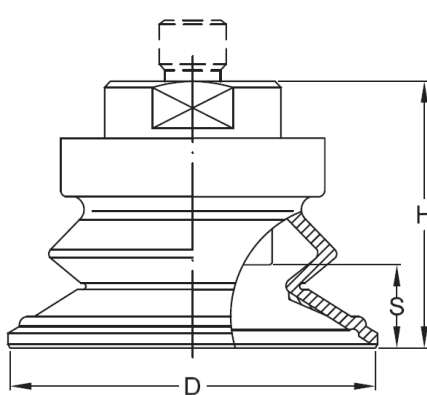
QUICK RELEASE FITTINGS



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		37	
STC50N-*-G3/8F			
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			
STC125N-*-G1/4F	125	82	32
STC125N-*-G1/4M		61	
STC125N-*-G3/8F			
STC125N-*-3/8NPSF			

* add cup Durometer code

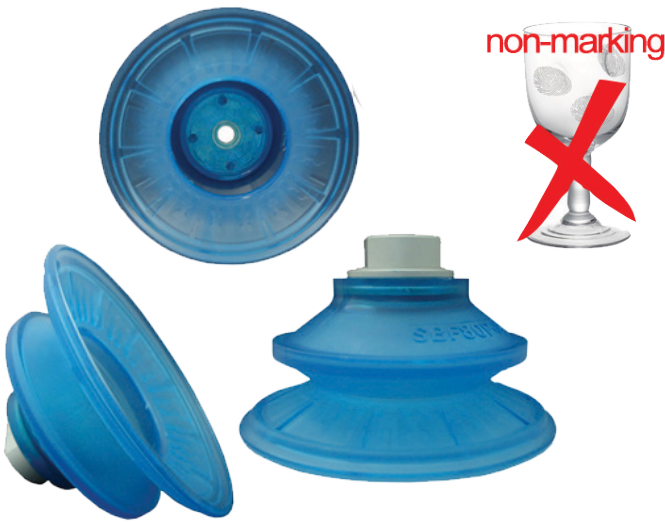
SBF POLYURETHANE BELLOWS TRACTION CUPS



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		Thread	
		30	30	PU	Polyurethane	G1/4F	
		40	40			G1/4M	
		50	50			G3/8F	
		60	60			G3/8M	
		80	80			3/8NPSF	
		100	100				

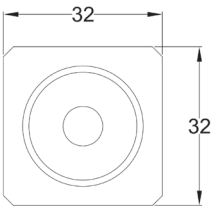
Part number example SBF60-PU-G3/8F 60mm diameter vacuum cup in polyurethane with G3/8 female thread.

LEVEL COMPENSATORS

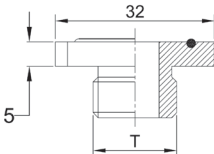
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



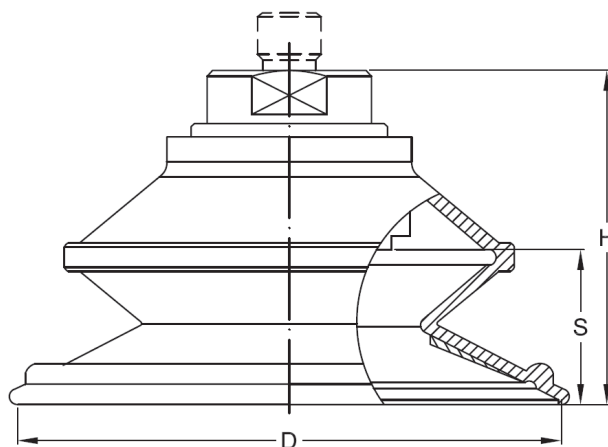
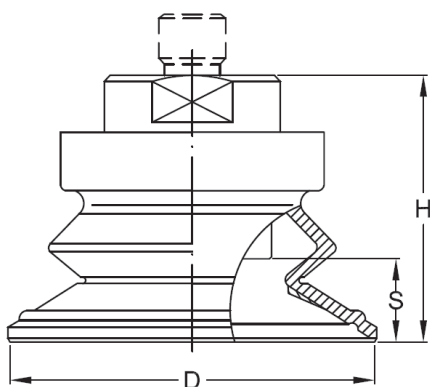
QUICK RELEASE FITTINGS



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



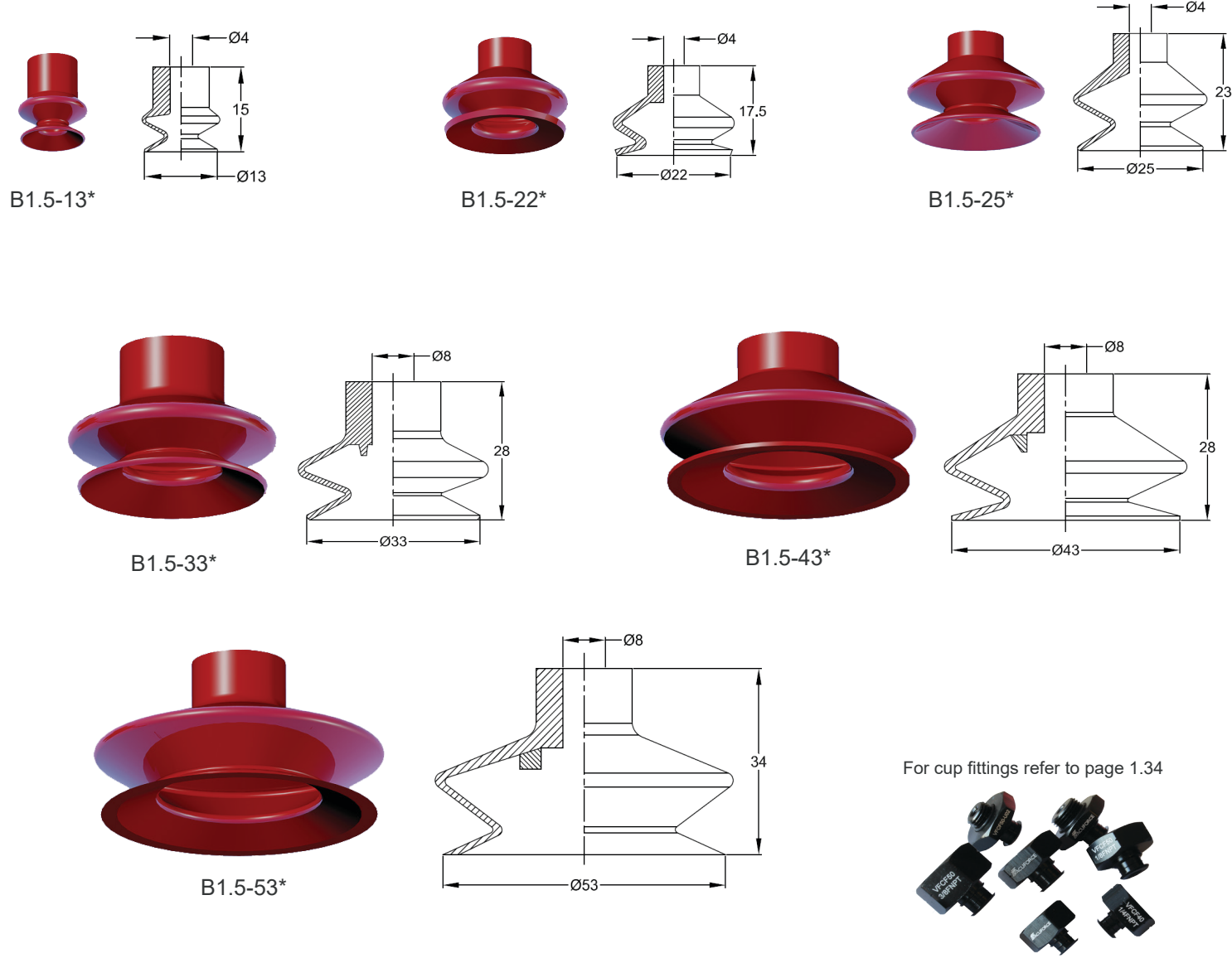
B1.5 - 33		N	
Series	Model	Cup Material	
	13	N	Nitrile
	22	S	Red Silicone
	25	ST	Translucent White Silicone
	33		
	43		
	53		

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

Series	Model	Diameter (mm)
	5	5
	7	7
	10	10
	14	14
	18	18
	20	20
	25	25
	32	32
	42	42
	60	60

N

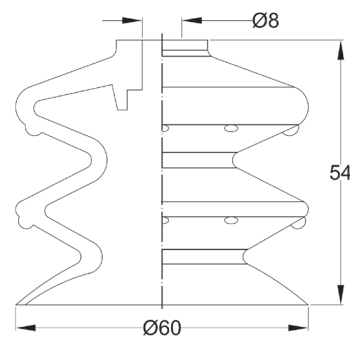
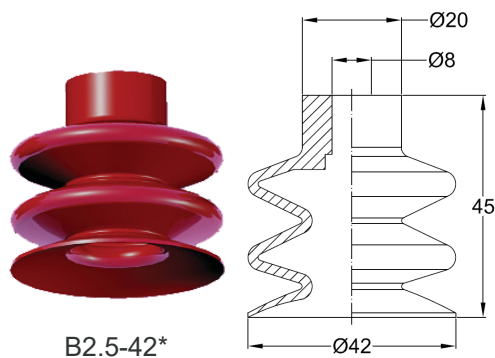
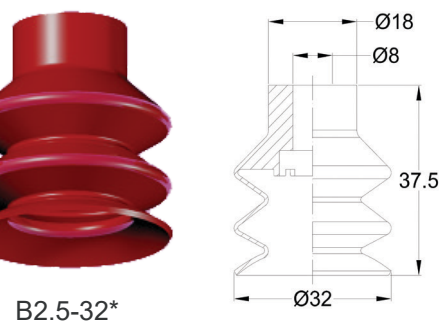
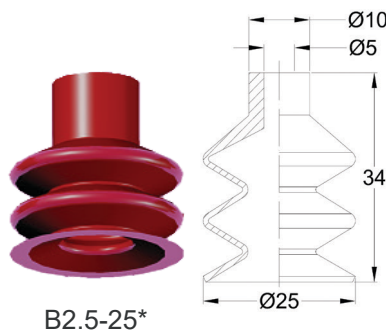
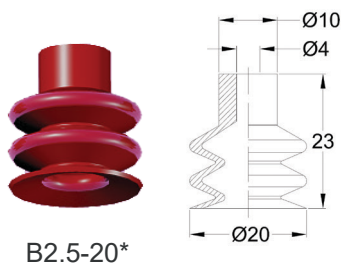
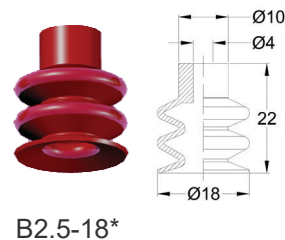
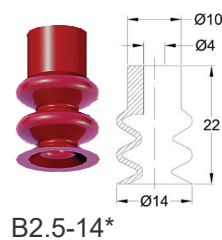
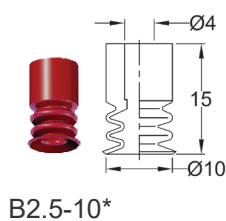
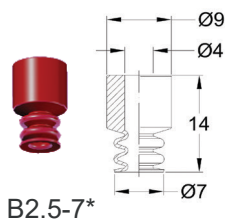
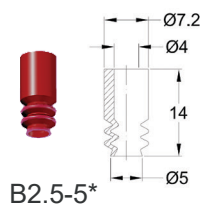
Cup Material	
N	Nitrile
S	Red Silicone
ST	Translucent White Silicone

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)



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)

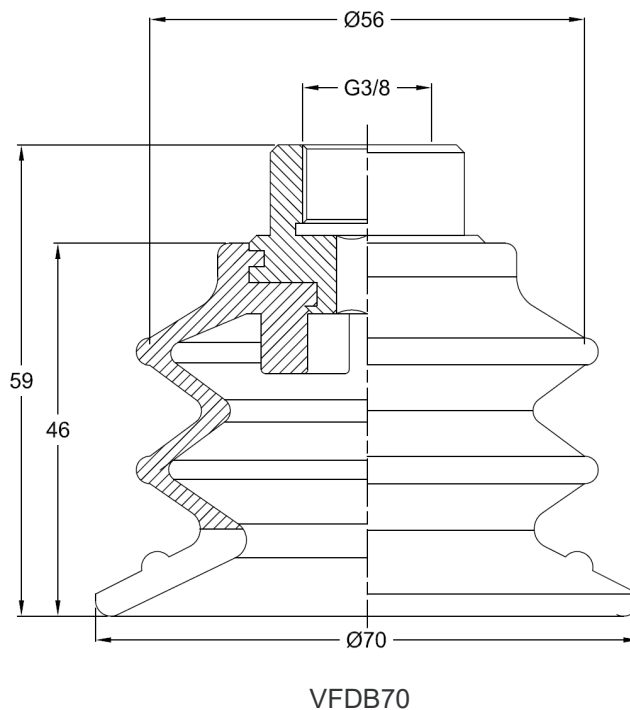
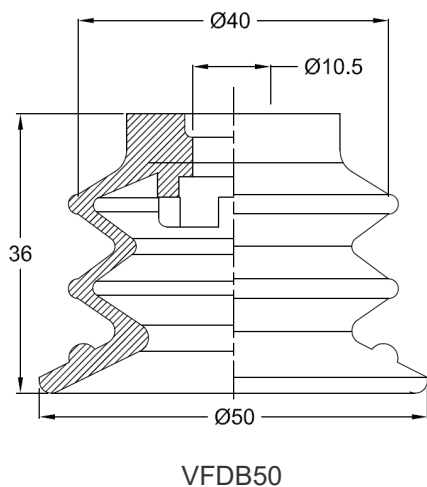
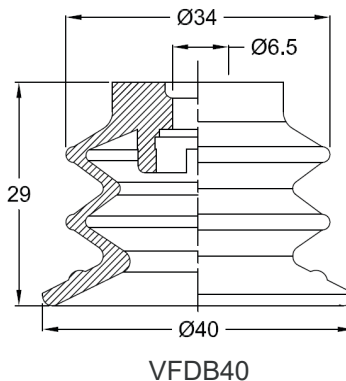
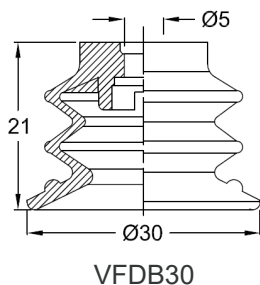
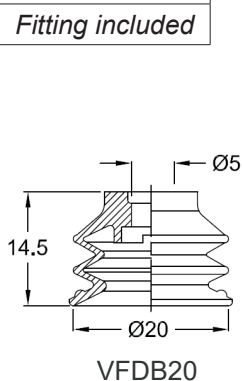
Dual Durometer Vacuum Cups (DPU)

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	D
VFDB50	E
VFDB70	<i>Fitting included</i>



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	
								M10M	
								M14M	

Part number example SOB30X60N-60-G3/8F

30mm x 60mm Oval Bellows Cup 60 Durometer with a

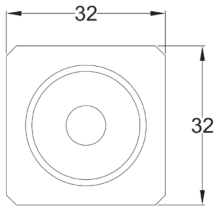
Part number example SOB30X60N-60-G3/8F
30mm x 60mm Oval Bellows Cup 60 Durometer with a G3/8 female threaded fitting.

LEVEL COMPENSATORS

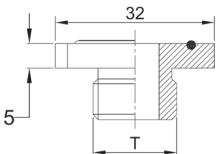
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



QUICK RELEASE FITTINGS

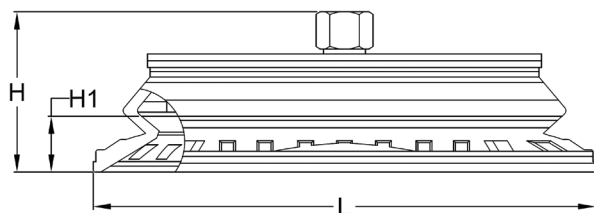
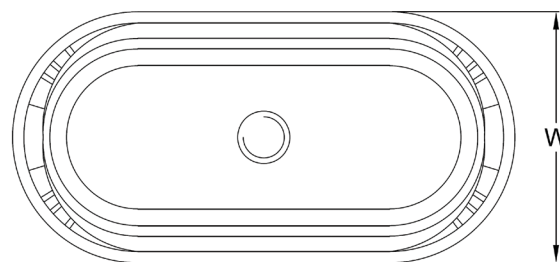
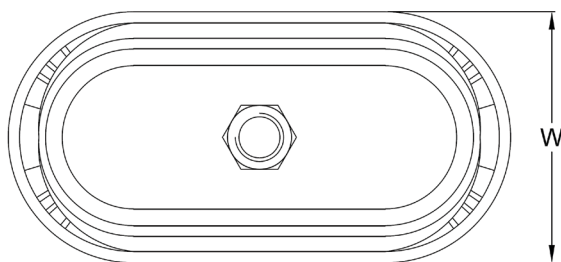


Model	T
QRG38	G3/8
QRN38	3/8NPSF

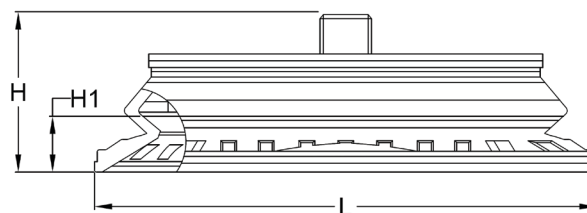




DIMENSIONS (mm)



FEMALE THREADED MODELS



MALE THREADED MODELS

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			
SOB40X80N-*-G1/4F	40 x 80	37	10
SOB40X80N-*-G1/4M		25	
SOB40X80N-*-G3/8F		37	
SOB40X80N-*-3/8NPSF			

* 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			
SOB70X140N-*-G1/4F	70 x 140	48	17
SOB70X140N-*-G1/4M		35	
SOB70X140N-*-G3/8F		48	
SOB70X140N-*-3/8NPSF			

* 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

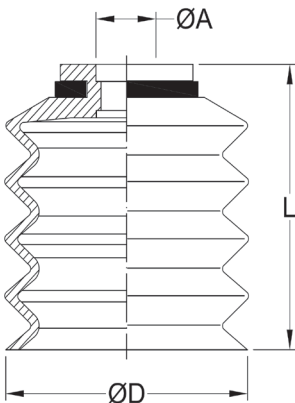
Part number example VFBL30-2SMI
30mm diameter single bellows vacuum cup in red metal impregnated silicone

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	G3/8	
					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

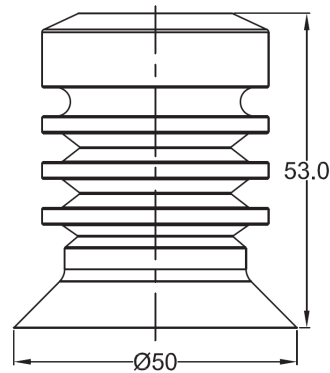
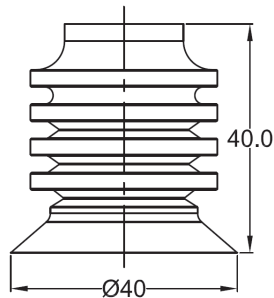
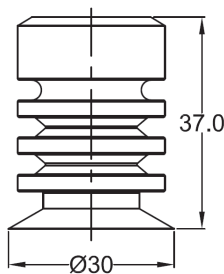
Part number example SBLP40S

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)

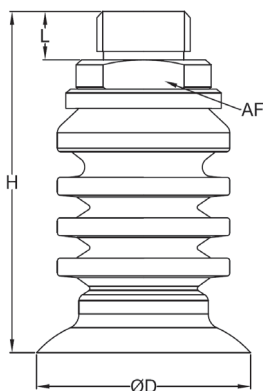


This cup series is available in metal detectable FDA compliant silicone.

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

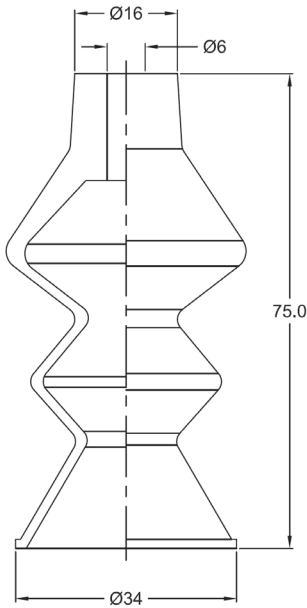


EHC		3475	N	
Series		Model	Diameter	Cup Material
		3475	34	N NBR Black 50 Durometer
		3566	35	S Silicone White 30 Durometer
		3776	37	SBLK Silicone Black 50 Durometer
				SR Silicone Red 50 Durometer
				SBLU Silicone Blue 50 Durometer

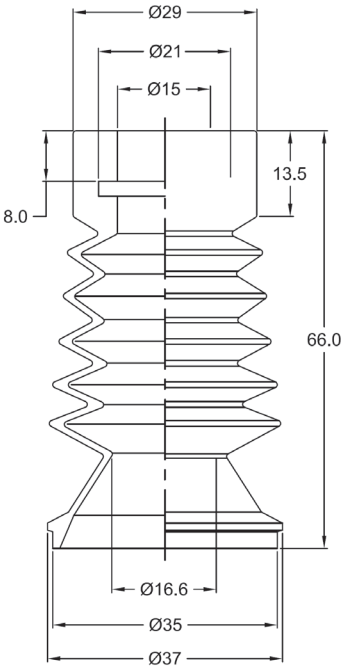
Part number example EHC3475N
34mm Egg Handling Cup in NBR

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

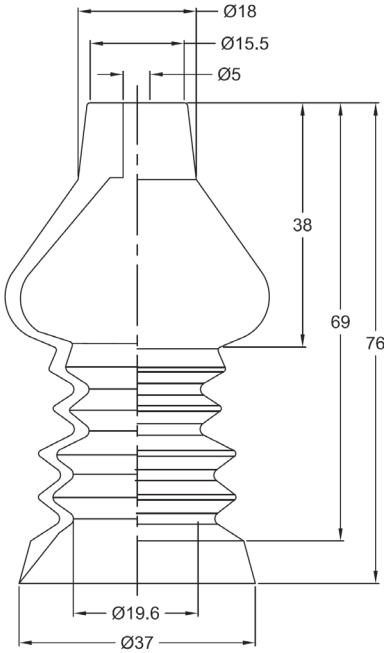
DIMENSIONS (mm)



Model 3475



Model 3566

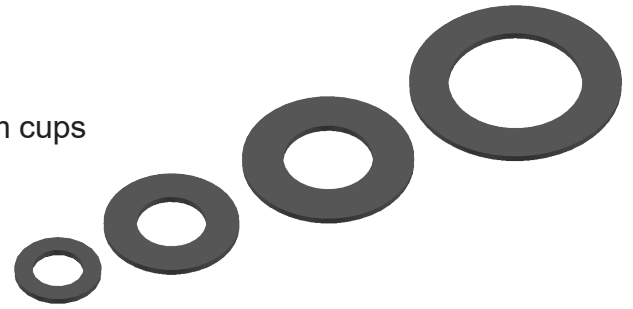


Model 3776



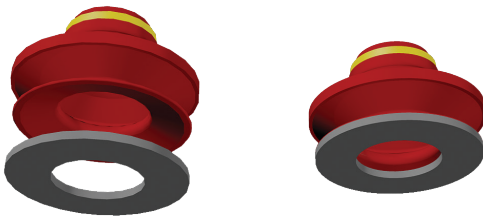
This cup series is available in metal detectable FDA compliant silicone.
For red colored metal detectable silicone use material code SMI.
For white translucent metal detectable silicone use material code STMI.

- 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
	20	VFB20
	30	VFB30-2
	40	VFB40
	50	VFB50-2
Seal Material		
N		NBR
S		Silicone

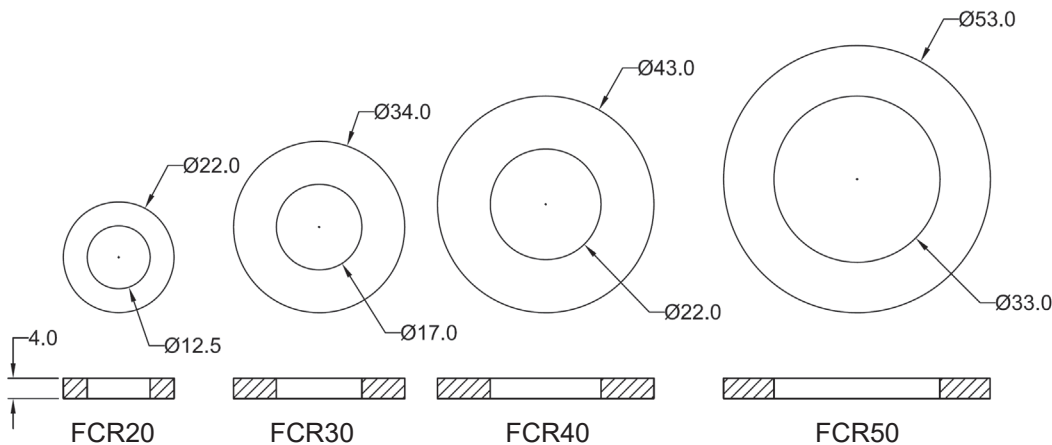
ASSEMBLY



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

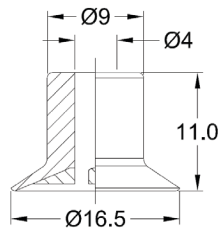
LEVEL COMPENSATORS

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



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.

VFF15-2

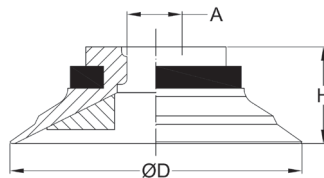


DIMENSIONS (mm)

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

* add cup material code

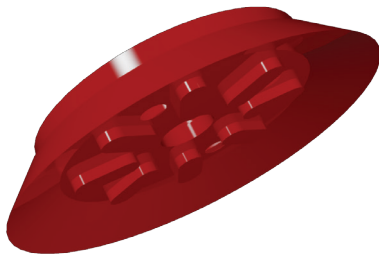
VFF20 | VFF30-2 | VFF40-2 | VFF50-2



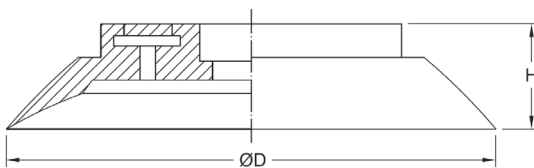
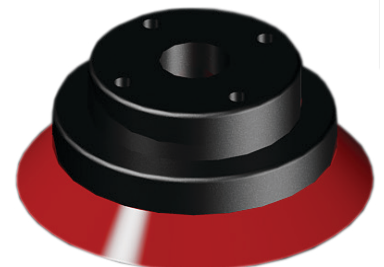
Model	ØD	ØA	L	Fitting Type
VFF20*	22	5.5	8	C
VFF30-2*	32		10	
VFF40-2*	40	6.5	13	D
VFF50-2*	50	10.5	13	E

* 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		Thread
	30	N	NBR	G1/4F
	40			G1/4M
	50			G3/8F
	60			3/8NPSF
	80			M10M
	100			M14M
	125			

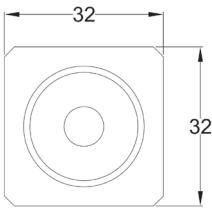
Part number example SFF80N-60-G3/8F
80mm diameter flat cup 60 Durometer NBR with G3/8 female thread

LEVEL COMPENSATORS

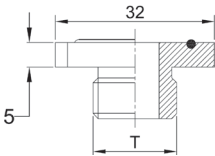
Refer to page 1.32 for suitable level compensators for this vacuum cup range.



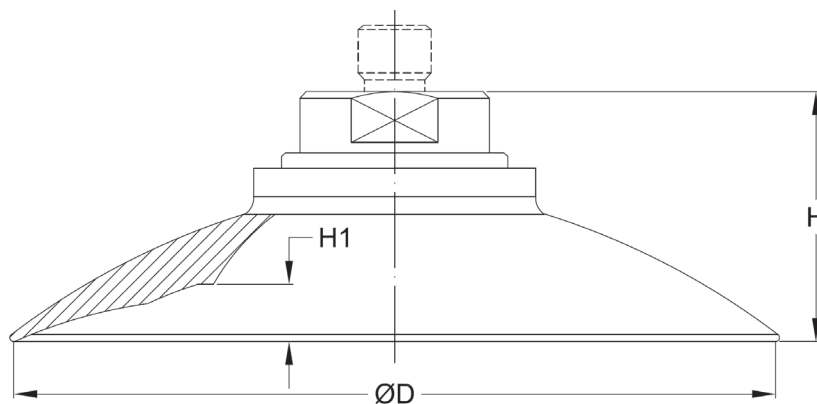
QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF



DIMENSIONS (mm)



Model	ØD	H	H1
SFF30N-*-G1/4F	30	20	2.7
SFF30N-*-G1/4M			
SFF30N-*-G3/8F		34	
SFF30N-*-3/8NPSF			
SFF40N-*-G1/4F	40	22	3.7
SFF40N-*-G1/4M			
SFF40N-*-G3/8F		36	
SFF40N-*-3/8NPSF			
SFF50N-*-G1/4F	50	42	4.7
SFF50N-*-G1/4M			
SFF50N-*-G3/8F		28	
SFF50N-*-3/8NPSF			

* indicates Durometer choice

Model	ØD	H	H1
SFF60N-*-G1/4F	60	45	6
SFF60N-*-G1/4M			
SFF60N-*-G3/8F		31	
SFF60N-*-3/8NPSF			
SFF80N-*-G1/4F	80	45	7.5
SFF80N-*-G1/4M			
SFF80N-*-G3/8F		31	
SFF80N-*-3/8NPSF			
SFF100N-*-G1/4F	100	50	9
SFF100N-*-G1/4M			
SFF100N-*-G3/8F		36	
SFF100N-*-3/8NPSF			
SFF125N-*-G1/4F	125	57	13
SFF125N-*-G1/4M			
SFF125N-*-G3/8F		43	
SFF125N-*-3/8NPSF			

* 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	
	16X50	16 x 50		45		G1/4F	
	20X80	20 x 80		60		G1/4M	
	23X60	23 x 60				G3/8F	
	30X90	30 x 90				3/8NPSF	
	40X110	40 x 110				M10M	
	50X100	50 x 100				M14M	
	60X120	60 x 120					
	70X140	70X140					

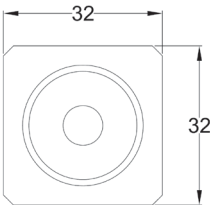
Part number example SOF30X90N-60-G3/8F
30mm x 90mm Oval Cup 60 Durometer NBR with G3/8 female thread

LEVEL COMPENSATORS

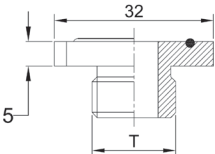
Refer to page 1.32 for suitable NON-ROTATING level compensators for this vacuum cup range.



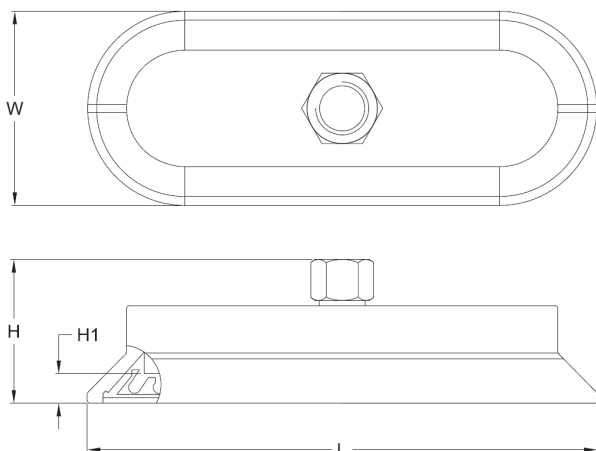
QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF



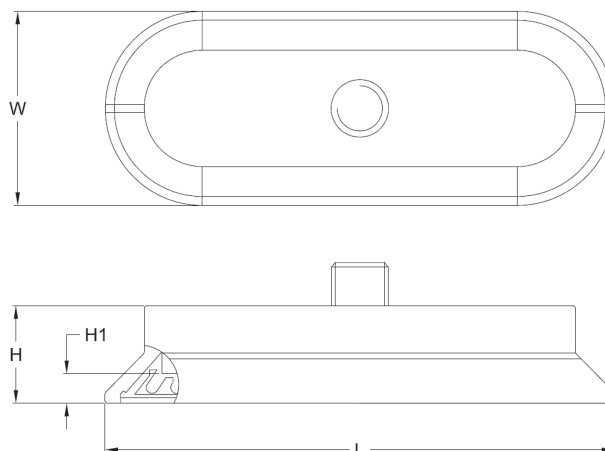
DIMENSIONS (mm)



FEMALE THREADED MODELS

Model	SIZE W x L (mm)	H	H1
SOF16X50N-*-G1/4F	16 x 50	34	3
SOF16X50N-*-G1/4M		21	
SOF16X50N-*-G3/8F		34	
SOF16X50N-*-3/8NPSF			
SOF20X80N-*-G1/4F	20 x 80	30	5
SOF20X80N-*-G1/4M		17	
SOF20X80N-*-G3/8F		30	
SOF20X80N-*-3/8NPSF			
SOF23X60N-*-G1/4F	23 x 60	26	3
SOF23X60N-*-G1/4M		14	
SOF23X60N-*-G3/8F		26	
SOF23X60N-*-3/8NPSF			
SOF30X90N-*-G1/4F	30 x 90	30	5
SOF30X90N-*-G1/4M		17	
SOF30X90N-*-G3/8F		30	
SOF30X90N-*-3/8NPSF			
SOF40X80N-*-G1/4F	40 x 80	28	4
SOF40X80N-*-G1/4M		16	
SOF40X80N-*-G3/8F		28	
SOF40X80N-*-3/8NPSF			

* indicates Durometer choice



MALE THREADED MODELS

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			
SOF50X100N-*-G1/4F	50 x 100	30	5
SOF50X100N-*-G1/4M		18	
SOF50X100N-*-G3/8F		30	
SOF50X100N-*-3/8NPSF			
SOF60X120N-*-G1/4F	60 x 120	32	6
SOF60X120N-*-G1/4M		20	
SOF60X120N-*-G3/8F		32	
SOF60X120N-*-3/8NPSF			
SOF70X140N-*-G1/4F	70 x 140	33	7
SOF70X140N-*-G1/4M		21	
SOF70X140N-*-G3/8F		33	
SOF70X140N-*-3/8NPSF			

* indicates Durometer choice

SPC SOLAR PANEL CUPS

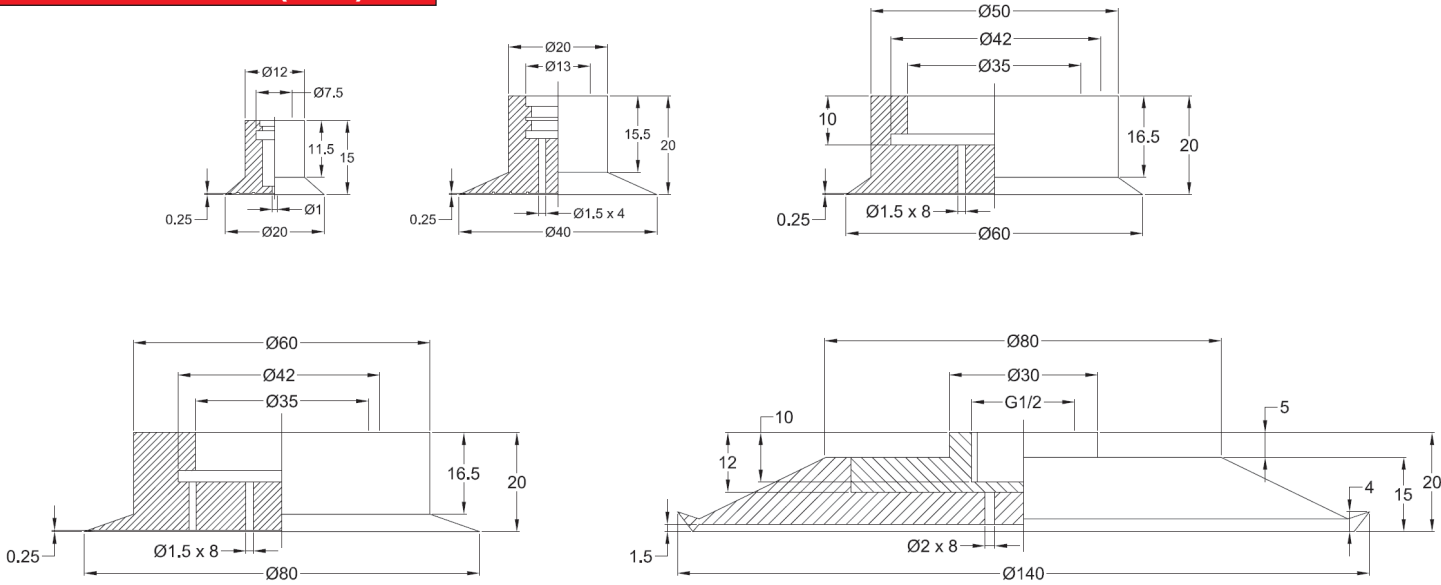


- Designed for the solar panel manufacturing industry
- Ensures minimal distortion during vacuum grip
- Suitable for foil and thin sheet handling and also semi-conductor manufacturing

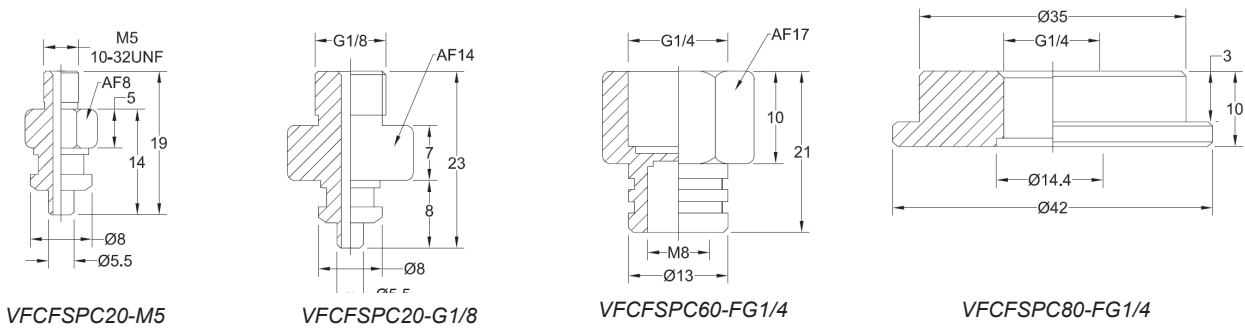


SPC		20		NR	
Series		Model	Diameter	Cup Material	
		20	20	NR	Natural Rubber
		40	40	<i>Part number example SPC40NR</i> <i>40mm solar panel cup in natural rubber</i>	
		60	60		
		80	80		
		140	140		

DIMENSIONS (mm)



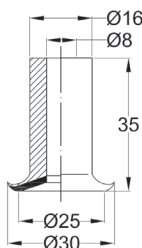
SPC CUP FITTINGS



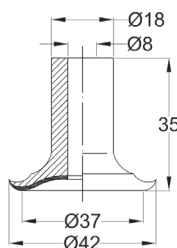
- High temperature cups with a vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramic, steel and plastics handling
- Cups include rubber body and high temperature foam seal

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

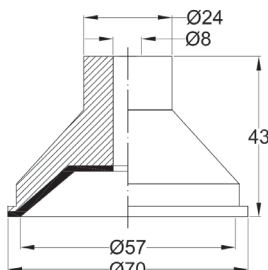
Part number example
HT20FKM 25mm Diameter
Cup in Fluorocarbon Rubber



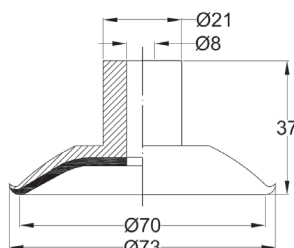
HT25*



HT37*

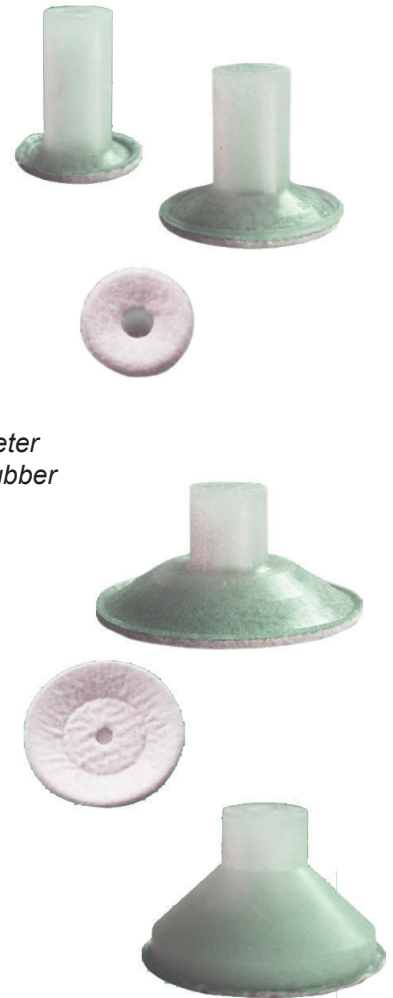


HT57*



HT70*

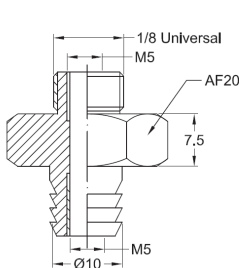
* indicates cup material choice



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

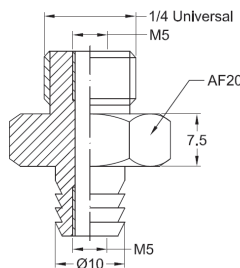
Maximum temperature ratings are based upon duration of hold time, the time between cycles and vacuum level being used. Trials should be administered for longer contact periods.

HT CUP FITTINGS



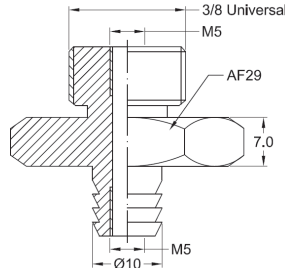
Model

VFCFB10-U01



Model

VFCFB10-U02



Model

VFCFB10-U03

HT HIGH TEMPERATURE CUPS

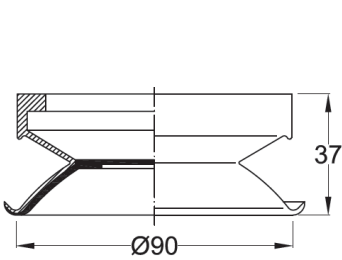


- High temperature cups with vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramics, steel and plastics handling
- Cups include rubber body and high temperature foam seal

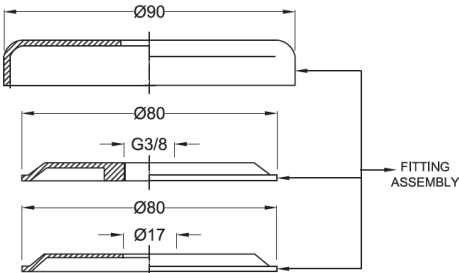
HT	90	NR
Series	Model	Diameter
	90	90
	120	120
	160	160
Cup Rubber Material		
	NR	NBR Rubber
	FKM	Fluorocarbon
	SS	Silicone



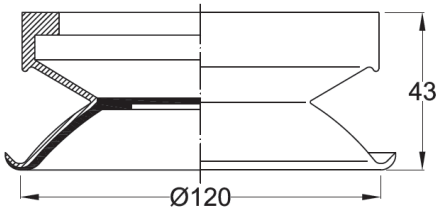
The illustrations below show the dimensions of the cup on the left with the corresponding fitting assembly on the right. The cups and the fittings should be ordered separately. The cup fitting is a three piece fixture that clamps the cup to ensure a rigid assembly.



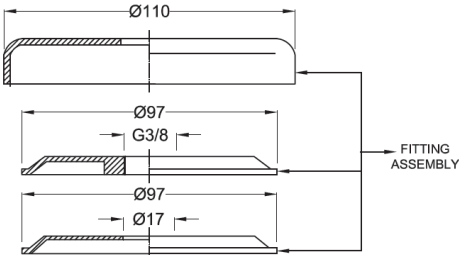
HT90*



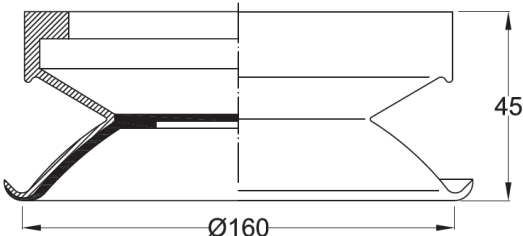
FITHT90



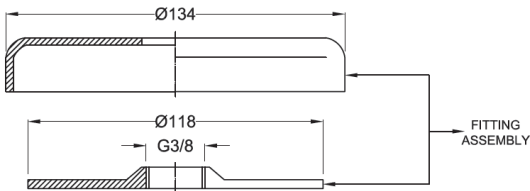
HT120*



FITHT120



HT160*



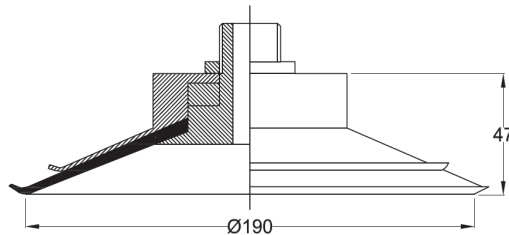
FITHT160

* indicates cup material choice

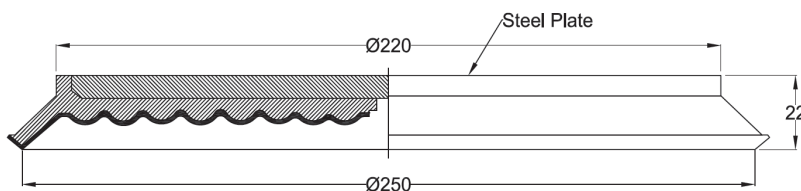
- High temperature cups with vulcanized felt
- Non marking technology
- Temperature rating up to 550°C (1022°F)
- Used for glass, ceramics, steel and plastics handling
- Cups include rubber body and high temperature foam seal

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

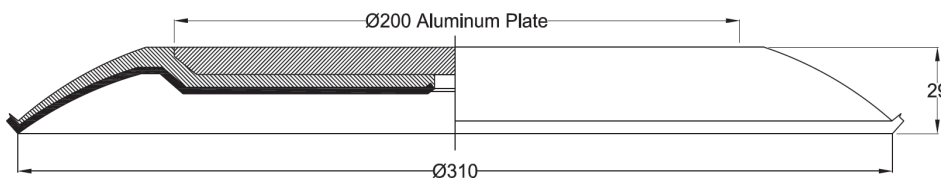
The HT190 Series is assembled onto the applicable fitting as shown in the HT190 table below. The HT250 and HT310 cup assemblies do not have a vacuum port or mounting hole(s). These features are installed by the user. Cups and fittings should be ordered separately.



HT190*



HT250*



HT310*

* 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

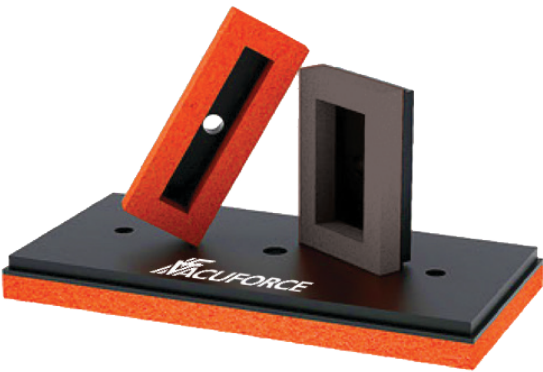
FITHT310

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

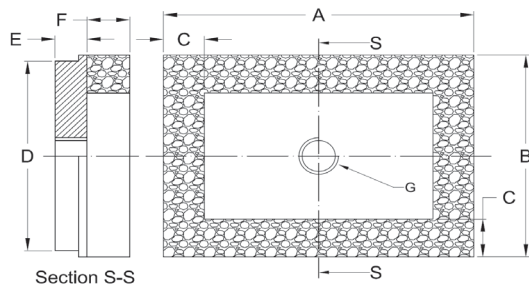


SNP	107x 75	NAT
Series	Length x Width (mm)	Foam Type
	107x75	NAT Natural Rubber
	135x50	NBR Nitrile Rubber
	135x60	
	290x68	
	290x140	

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

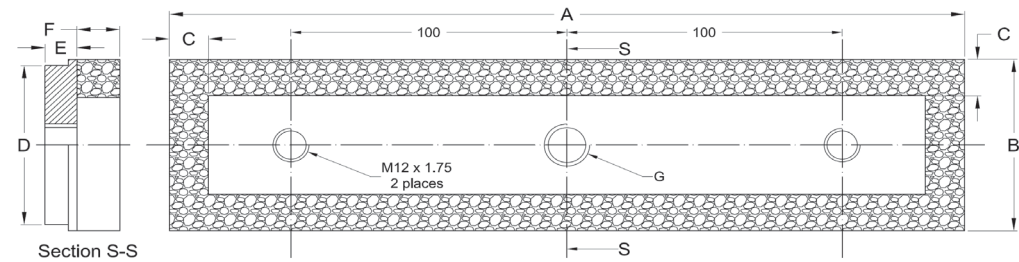
DIMENSIONS (mm)

SNP107X75, SNP135X50 & SNP135X60



Model	A	B	C	D	E	F	G
SNP107X75	107	75		70			
SNP135X50		50		45			G1/8
SNP135X60		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.

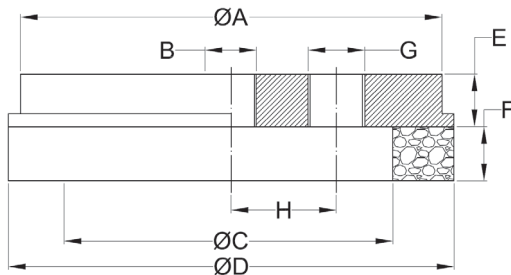


- Designed for handling rough or embossed materials
- Excellent vacuum seal for wood, brick, stone and more
- Two types of foam density depending on application
- Self adhesive foam seal



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

DIMENSIONS (mm)



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.

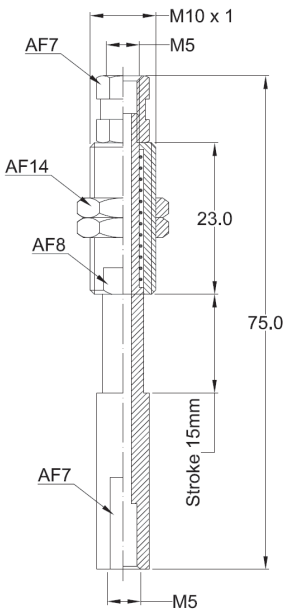
Materials

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

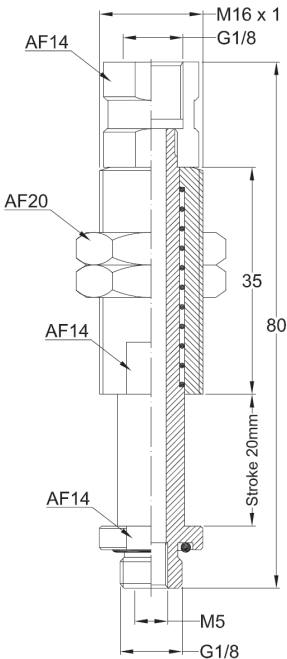


VFLC	EX		NR		14		25		M20	
Series	Spring Type		Non- Rotating		Cup Connection		Buffer Stroke (mm)		Bulkhead Thread	
	EX	External		Rotates	M5	M5				
	IN	Internal	NR	Non- Rotating	18	G1/8				
					14	G1/4				
					38	G3/8				
					12	G1/2				

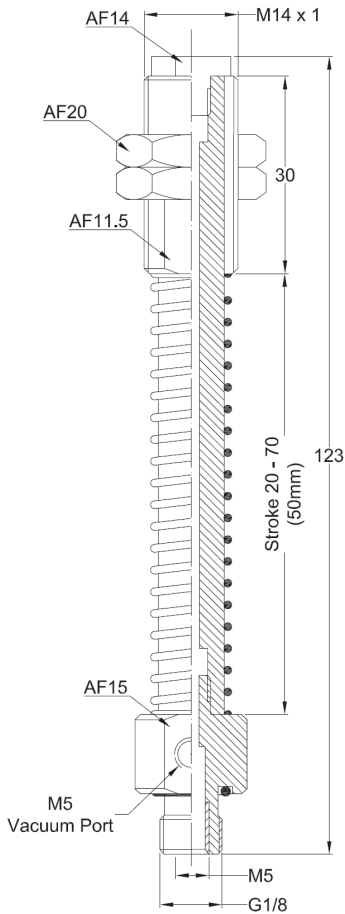
Technical drawing of a bulkhead fitting. It shows a cross-section of a cylindrical body with a threaded end. The dimension AF14 indicates the outer diameter of the body. The dimension M14 x 1 indicates the thread specification of the end fitting.



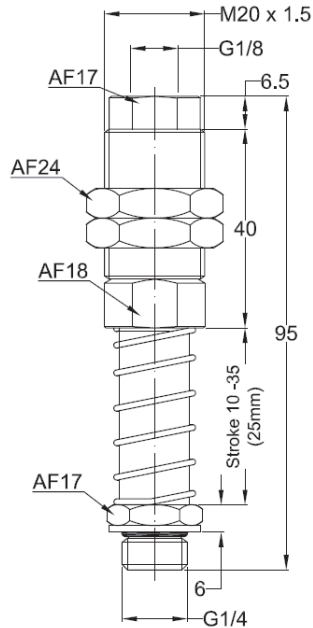
VFLCINM515M10



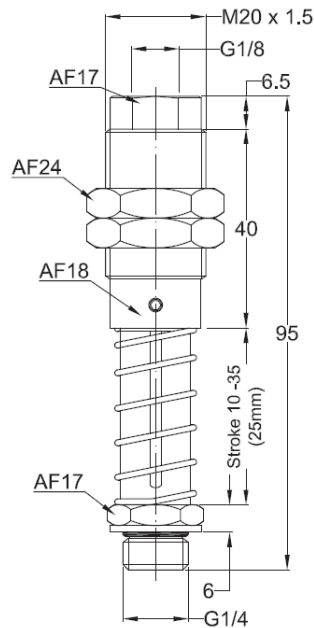
VFLCIN1820M16



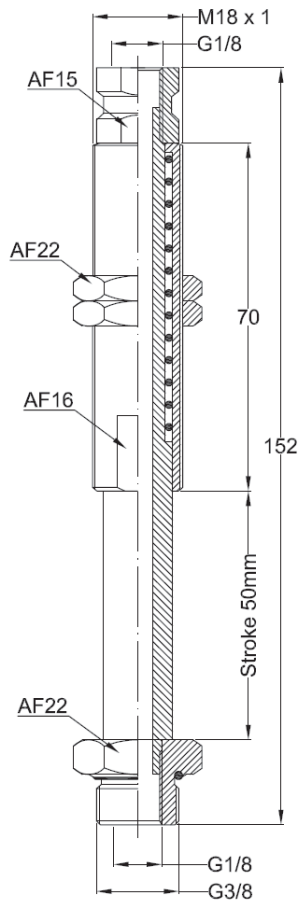
VFLCEX1850M14



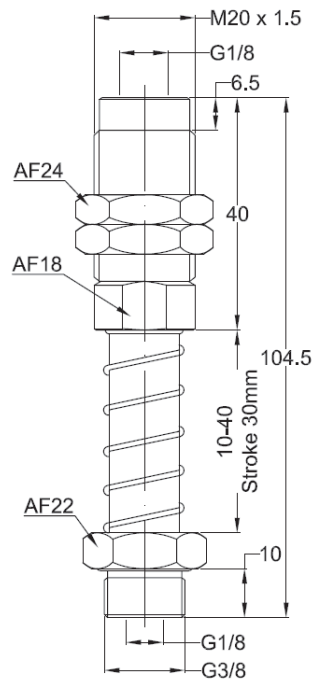
VFLCEX1425M20



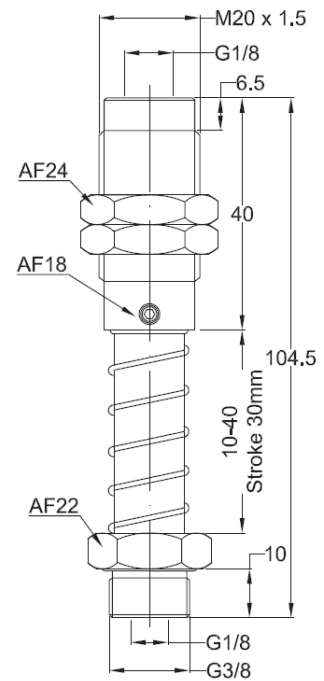
VFLCEXNR1425M20
(non rotating)



VFLCIN3850M18

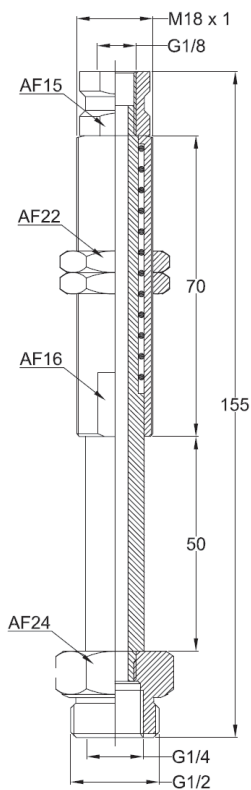


VFLCEX3830M20

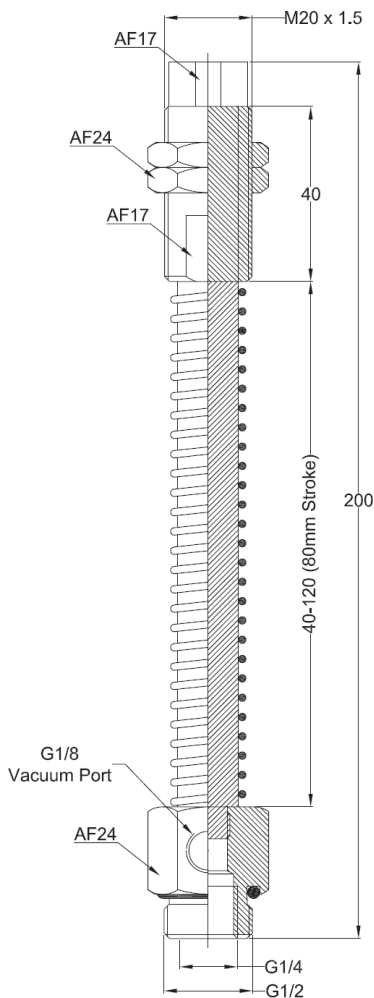


VFLCEXNR3830M20
(non-rotating)

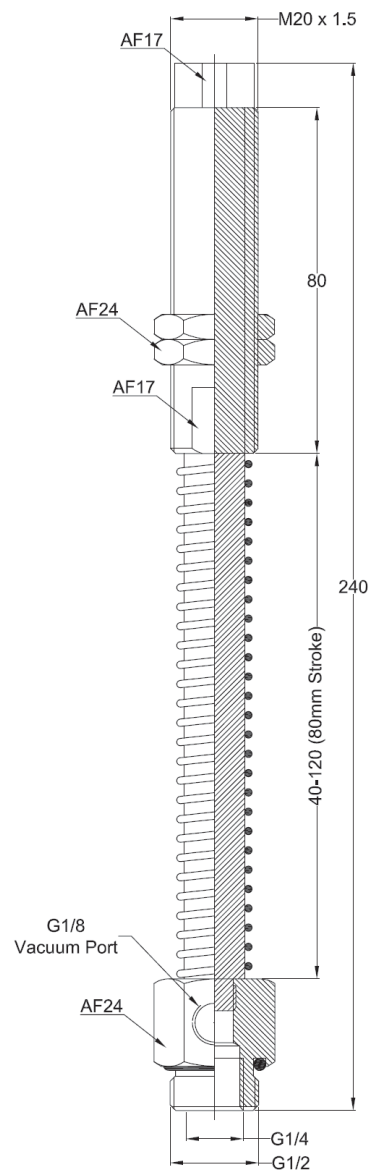
VACUUM CUP HOLDERS



VFLCIN1250M18



VFLCEX1280M20



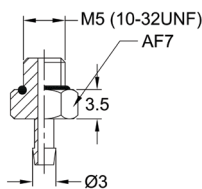
VFLCEX1280M20-80

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.



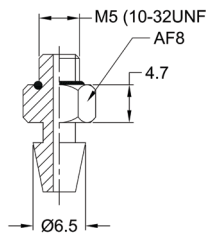
FITTING TYPE A



Model

VFCFB3-M5

FITTING TYPE B

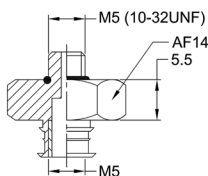


Model

VFCFB6.5-M5

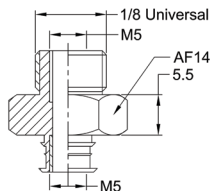


FITTING TYPE C



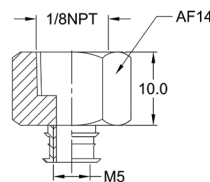
Model

VFCF20-M5



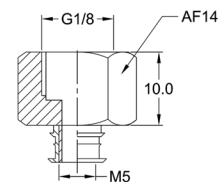
Model

VFCF20-U01



Model

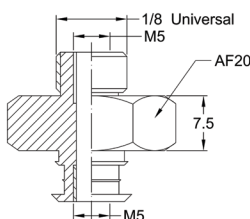
VFCF20-1/8FNPT



Model

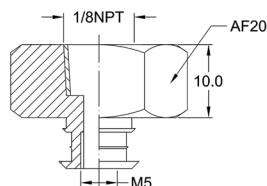
VFCF20-FG1/8

FITTING TYPE D



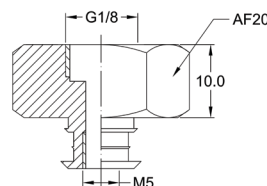
Model

VFCF40-U01



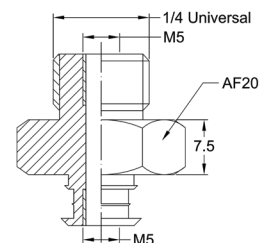
Model

VFCF40-1/8FNPT



Model

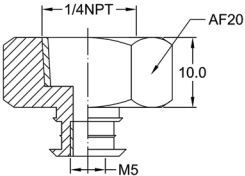
VFCF40-FG1/8



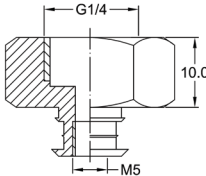
Model

VFCF40-U02

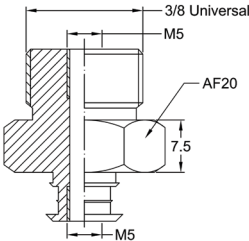
FITTING TYPE D



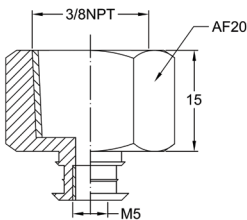
Model
VFCF40-1/4FNPT



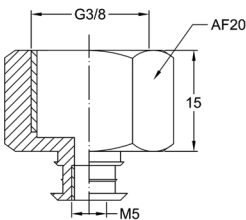
Model
VFCF40-FG1/4



Model
VFCF40-U03

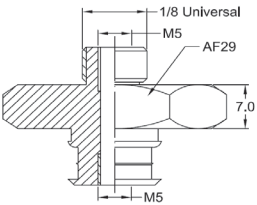


Model
VFCF40-3/8FNPT

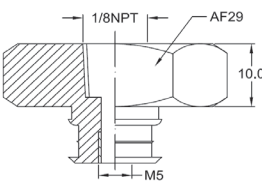


Model
VFCF40-FG3/8

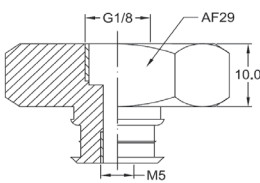
FITTING TYPE E



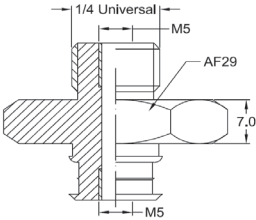
Model
VFCF50-U01



Model
VFCF50-1/8FNPT

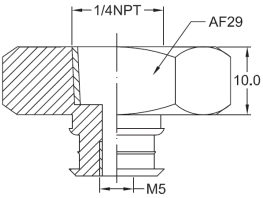


Model
VFCF50-FG1/8

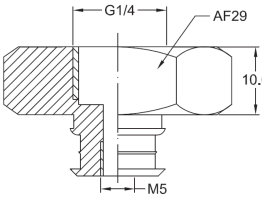


Model
VFCF50-U02

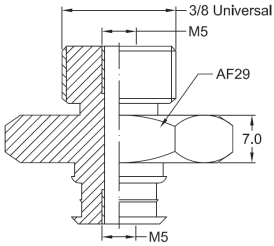
FITTING TYPE E



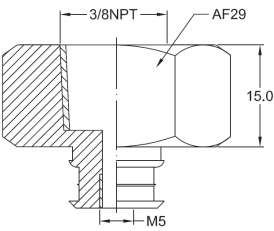
Model
VFCF50-1/4FNPT



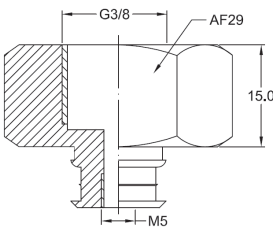
Model
VFCF50-FG1/4



Model
VFCF50-U03

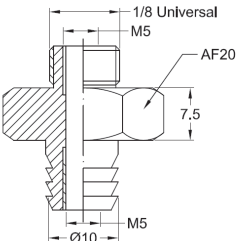


Model
VFCF50-3/8FNPT

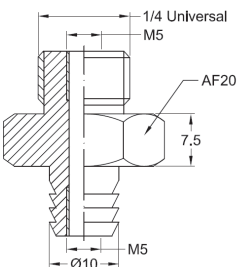


Model
VFCF50-FG3/8

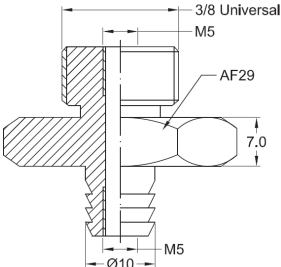
FITTING TYPE F



Model
VFCFB10-U01



Model
VFCFB10-U02



Model
VFCFB10-U03

FITTING TYPE J, K & L

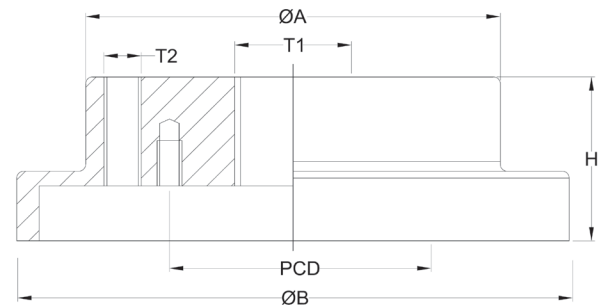
The cup fitting series J, K and L utilize M4 bolts to attach the corresponding cup to the fitting body. The fitting model number shown in the table below includes the necessary bolts.

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		N
	150		NPT



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			



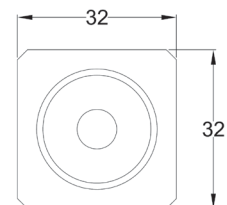
Blanking Plugs



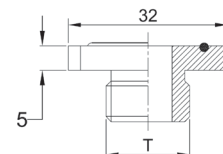
These blanking plugs are used to block female threads in a vacuum, compressed air system or a component port. These fittings utilize universal threads and are suitable for NPT, BSPT and BSPP(G) pipe thread connection.

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

QUICK RELEASE FITTINGS



Model	T
QRG38	G3/8
QRN38	3/8NPSF





NOTES