

SUCTION CUPS

VTEC SUCTION CUP TECHNOLOGY

P.11~19



VB series (Bellows) P.20~23



VB-M series (Direct Fitting Bellows) P.24~25



VBF series (Bellows Flat) P.26~29



VBL series (Long Bellows) P.30~33



VU series (Universal) P.34~37



VF series (Flat) P.38~43



VFC series (Flat Curve) P.44~47



VD series (Deep) P.48~49



VS series (Sponge) P.50~51



VOU series (Oval Universal) P.52~53



VOC series (Oval Curved) P.54~55



KPS series (Plastic Bag Opening) P.56~57



NF series (Non-touch Flat) P.58~59



L & BJ series (Level Compensator and Ball Joint and Fitting Connector) P.60~67



Fittings for Suction cups P.68~74



1. Advantages of suction cup

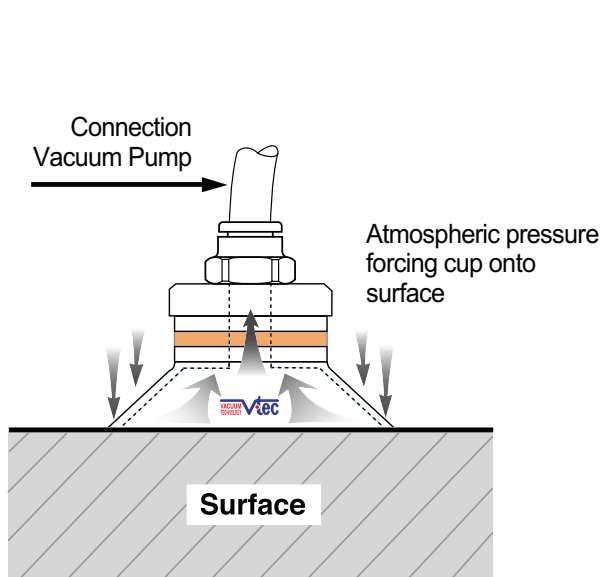
Materials' handling with suction cup is very simple low cost and reliable. It is therefore a solution worth using before considering more complicated handling techniques. Suction cups can lift, and hold objects from a few grams up to several kg.

► Advantages

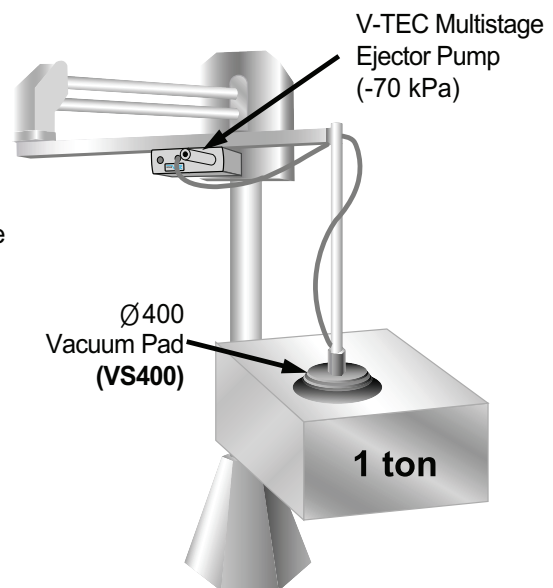
- ✓ Easy installation
- ✓ Low service requirement
- ✓ Low price
- ✓ Does not damage the goods
- ✓ Fast attachment and detachment

2. The principle of suction cup

Why does a suction cup suck onto the surface it's placed on? It's quite simple and is all to do with atmospheric pressure. Atmospheric pressure can generally be defined as the weight of the air above us on earth. When a lower pressure is created (vacuum) than atmospheric pressure (1 bar), forces are produced; these forces are required to enable suction cups to work. As a vacuum is drawn through the cup, the atmospheric pressure outside the cup is greater than that inside the cup, thus creating a holding force between the cup and the surface, the larger the cup and deeper the vacuum then the greater the holding force.



How a suction cup works.



Weights that can be lifted with suction cups.

3. How to select the suction cup

$$D = 113X \sqrt{\frac{m \times n}{U \times s}}$$

D : Suction cup dia. (mm)

m : Mass to lift (kg)

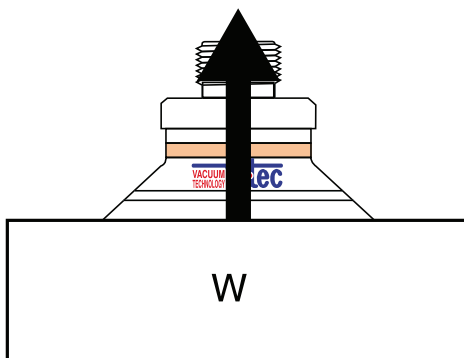
u : Vacuum level (-kPa)

n : Safety factor (2 or 3)

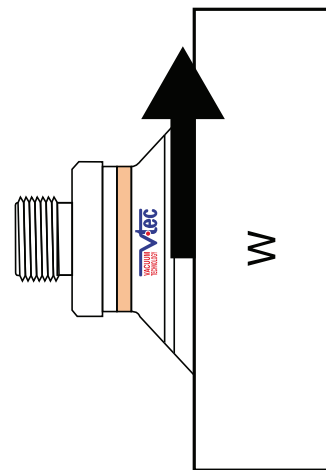
s : Quantity of cup

4. Calculating achievable perpendicular / parallel lifting force (-60kPa=-450 mmHg)

Perpendicular



Parallel



Lift : Formula

W : Lifting force (N)

P : Vacuum level (-kPa)

S : Size of suction cup (cm²)

n : Safety factor { Perpendicular : insert 2 or 3
Parallel : 3 insert or 4

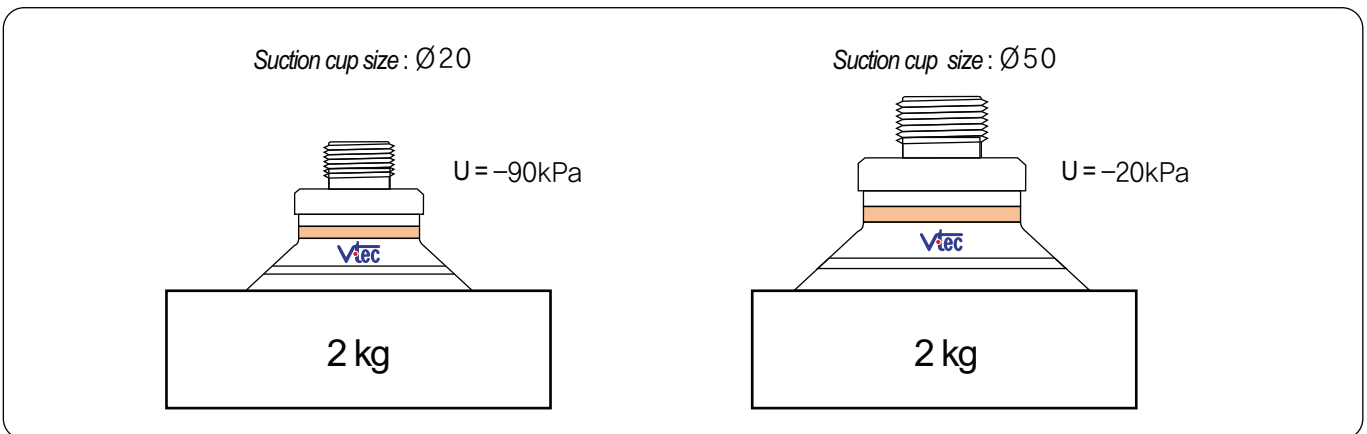
$$W = P \times S \times 0.1 \times \frac{1}{n}$$

5. Recommended vacuum level to use (-60kPa)

There are several reasons why -60 kPa is the optimum vacuum level to use with suction cups. The energy required creating -60 kPa is low in comparison to that required generating -90 kPa. The additional lifting force that can be achieved between these two levels is not that high, considering that it takes approx ten times as much energy to create the -90 kPa level. If a vacuum circuit is designed to run at -90 kPa then clearly there is very little capacity left in the pump performance, thus no margin for error. Lastly suction cups running at -90 kPa adhere to the surface with far more contact force, hence stressing the cup much more, which will result in premature wear of the cup itself.

For example

Object	Vacuum level	Cup size
2kg	-90kPa	Ø20
	-60kPa	Ø30
	-20kPa	Ø50



Lifting force comparison table for cup size



























Cup Size (mm)	-60kPa Lifting force(kg) Perpendicular				-60kPa Lifting force(kg) Parallel			
	Safety factor force (kg)		force (kg)		Safety factor force (kg)		force (kg)	
	min	max	min	max	min	max	min	max
Ø2-8	0~0.005	0~0.145	0~0.01	0~0.295	0~0.002	0~0.098	0~0.008	0~0.295
Ø10-15	0~0.17	0~0.43	0~0.34	0~0.86	0~0.14	0~0.23	0~0.44	0~0.71
Ø20-25	0~0.31	0~1.25	0~0.63	0~2.5	0~0.27	0~0.83	0~0.81	0~2.5
Ø30-35	0~0.81	0~2.55	0~1.63	0~5.1	0~0.33	0~1.08	0~1	0~3.26
Ø40	0~1.12	0~2.9	0~2.24	0~5.81	0~0.74	0~1.66	0~2.24	0~5
Ø50-60	0~2.19	0~7.65	0~4.38	0~15.3	0~1.25	0~2.89	0~3.77	0~8.67
Ø75-80	0~8.16	0~10.2	0~16.32	0~20.4	0~3.74	0~6.8	0~11.22	0~20.4
Ø100-115	0~17.5	0~22.9	0~35	0~45.9	0~7.99	0~8.5	0~23.97	0~25.51
Ø150	0~35.0	0~43.3	0~70	0~86.7		0~20.4		0~61.22
Ø200-300	0~96.9	0~219.3	0~193.8	0~438.7	0~45.88		0~137.64	

6. Applications for suction cups

Vtec suction cups are available in a wide range of shapes, sizes, materials and configurations. The standard cups range from 2mm to 400mm in diameter, with lifting forces of up to 1300kg at - 90kPa. Many types of object and materials can be lifted, flat, curved, smooth, coarse, dense and porous. All the cups are manufactured to very high standards, and cups can be ordered separately or complete with fitting.

How to select a suction cup

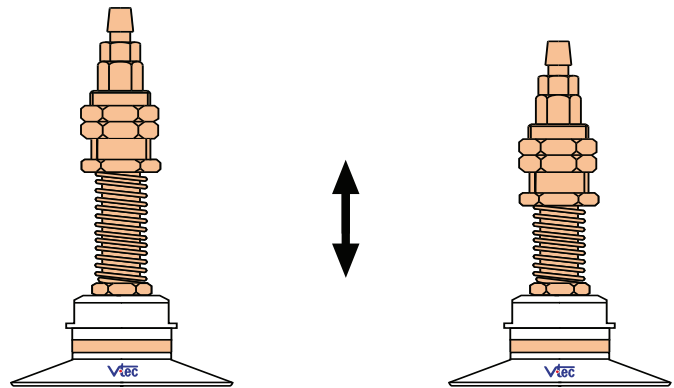
1. Choose the model depending on the shape of object to lift.
2. Choose the size of the cup based on the weight of the object to lift.
3. Choose the material of the cup based on the working environment and surface texture.
4. Select the fitting size to suit the application.
5. Select the accessory depending on the application i.e.. level compensator or ball joint.

Type	Description	Some Applications
VB (Bellows)  20 ~ 23 	The bellows cup is very good at compensating for a degree of difference in level and curvature of the work piece	Sheet Veneer Plastic Sheets Thin Film Sheets Cardboard Boxes and Electronic components
VB-M (Direct Fitting Bellows)  24 	Same general advantages to that of the normal bellows cups but can be fitted directly onto a piece of pipe, thus making installation very simple and reducing pad costs to a minimum, very suitable for integration to packaging machines.	Sheet Veneer · Plastic Sheets Cardboard boxes Cardboard Packaging Materials Thin Film Sheets
VBF (Bellows & Flat)  26 ~ 29 	Good lifting force can be achieved with this cup in the vertical plane. Prevent transformation when lifting metal thin plate.	· Vaneer sheets · Sheet metal · Automotive body panels and door · Plastic sheets · plywood · Glass
VBL (Long Bellows)  30 ~ 33 	Similar advantages to that of the normal bellows cups but can cope with an increased degree of height compensation and is particularly good for handling fragile objects	Fragile Objects · Eggs General Foodstuffs · Bread Glass
VU (Universal)  34 ~ 37 	Good lifting forces can be achieved with this cup, is best suited to flat stable surfaces, but can cope with a small degree of curvature.	Small Components Semiconductor Chips Packaging Materials Sheet Metal
VF (Flat)  38 ~ 43 	Again good lifting forces can be achieved with this pad; optimum-lifting forces can be achieved with this cup in the horizontal plane, but is also good in the vertical plane.	Sheet Metal Veneer Sheets Plastic Sheet Material Electronic Components
VFC (Flat Curve)  44 ~ 47 	This pad is specifically designed to cope with both flat and curved surfaces, which means that multiple objects can be handled with the same vacuum pad	Automotive Windscreens Shaped Sheet Metal Panels Sheet Metal
VD (Deep flat)  48 ~ 49 	Features and strengths This is best suited to curved or irregular surfaces Also, it is deep and grip around corners and edges.	Plastic sheets Sheet veneer Sheet metal Shaped sheet metal panels
VOU (Oval Universal)  52 ~ 53 	Best suitable for handling long objects With flat and curved surfaces	Semiconductor chips Electronic components Small ampul
VOC (Oval Curved)  54 ~ 55 	This pad is best suitable for handling long objects With flat or curved surfaces. Specially, parallel to the surface of the object it has a thick and durable lip.	Long objects with flat Curved surfaces Shaped sheet metal panels
VS (Sponge)  50 ~ 51 	Used for handling rough and uneven surfaces and when used with ball joint option and level spring option can accommodate very unlevel and uneven surfaces.	Handling thin Film with adjustable support Rough Wood Paving Slabs Masonry Bricks
KPS (Plastic Bag Opening)  56 ~ 57 	Developed to be used for opening plastic bags this pad gives good adhesive to thin plastic and film type materials.	Thin film sheet and plastic bags, Plastic Bag Opening, paper Bag Handling Thin Film Materials
NF (Non-touch Flat)  58 ~ 59 	Non-contact handling item. Safe gripping with mark free. No moving parts.	Circuit boards, CDs and DVDs, Metal, Wood, Packaging, Plastic, Thin products, Film, Paper, Mirrors, Paper-board..

7. Accessories

Level Compensator

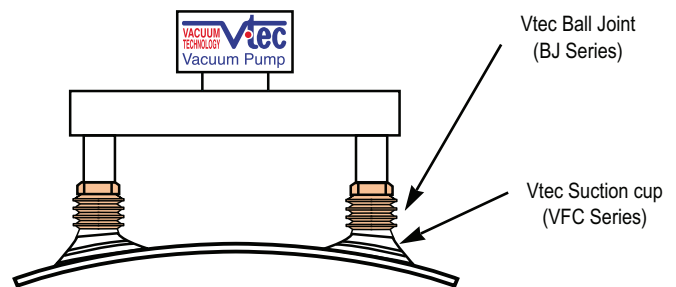
The Vtec level Compensator is used to compensate for differences in height on the surface of the material that is to be lifted. The advantage being a more reliable and less precise pick up position when handling product that may be less consistent in its shape, size and position. The level compensator also provides a degree of shock absorption should this be required. The level compensator come in configurations with varying sizes of spring and stroke.



SUCTION
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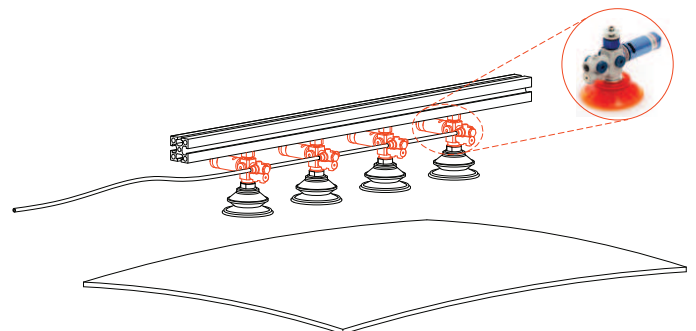
Ball Joints

The Vtec Ball Joint or sometimes referred to as a universal joint is for use when a degree of angular compliance is required, more commonly used with flat type cups which unlike bellows do not allow for much angular compliance as part of their design. The vacuum port is integral through the center of the joint thus providing a neat and compact solution.



Vacuum speeder

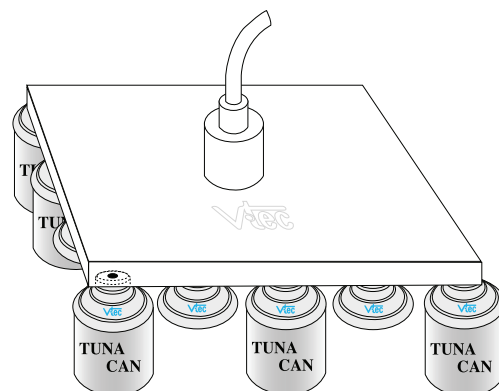
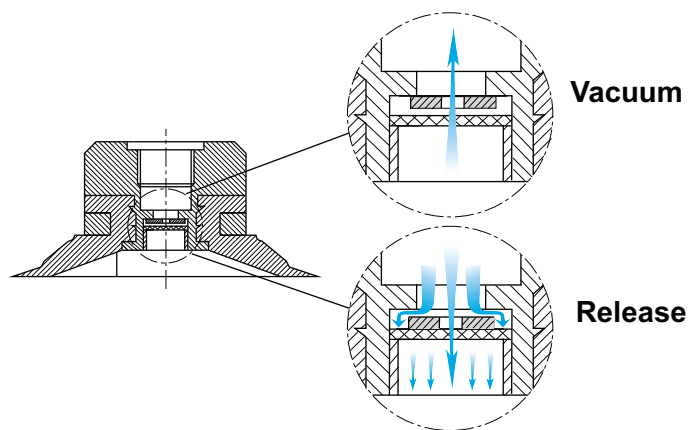
Vacuum speeder is a combination of a vacuum cartridge and suction cup. VSM is available for various mounting options, accessible parts, and interchangeable parts. Due to this it is easily possible to make a compact and simple vacuum system. The vacuum cartridge is located close to the suction point providing you with an extremely quick response time.



7. Accessories

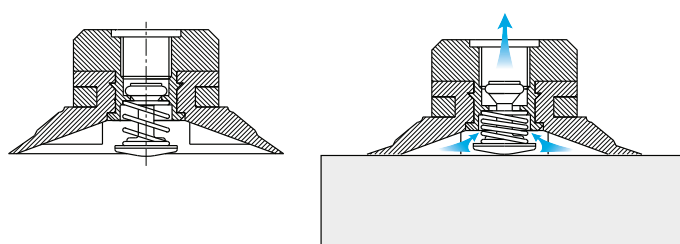
Vacuum Efficiency valve (EV)

Ordered as an integral part of the suction cup, the valve is useful on applications where multiple cups are used and not all cups come into contact with surface to lifted. The valve has a small vacuum port so as not to degradate the vacuum supply if the cup is uncovered whilst still providing enough flow to achieve the required vacuum. When the cup comes in contact with the surface only the volume inside the cup has to be evacuated. When release of the product is required, this can still be done quickly, because as air is forced back through the cup the plate valve opens up and allows full flow through. This valve is only suitable for use with smooth surface non-porous materials.



Button Valve : BV

When the suction cup is not in contact with the object, the valve closes the opening in the fitting. No air can flow through the suction cup and the pump does not need to compensate for leakage. The system is not disturbed and vacuum is maintained up to the fitting. The valve first opens when the suction cup makes contact with the object. The air can then flow through the fitting and vacuum is created in the cup.



8. Material and characteristic of suction cup

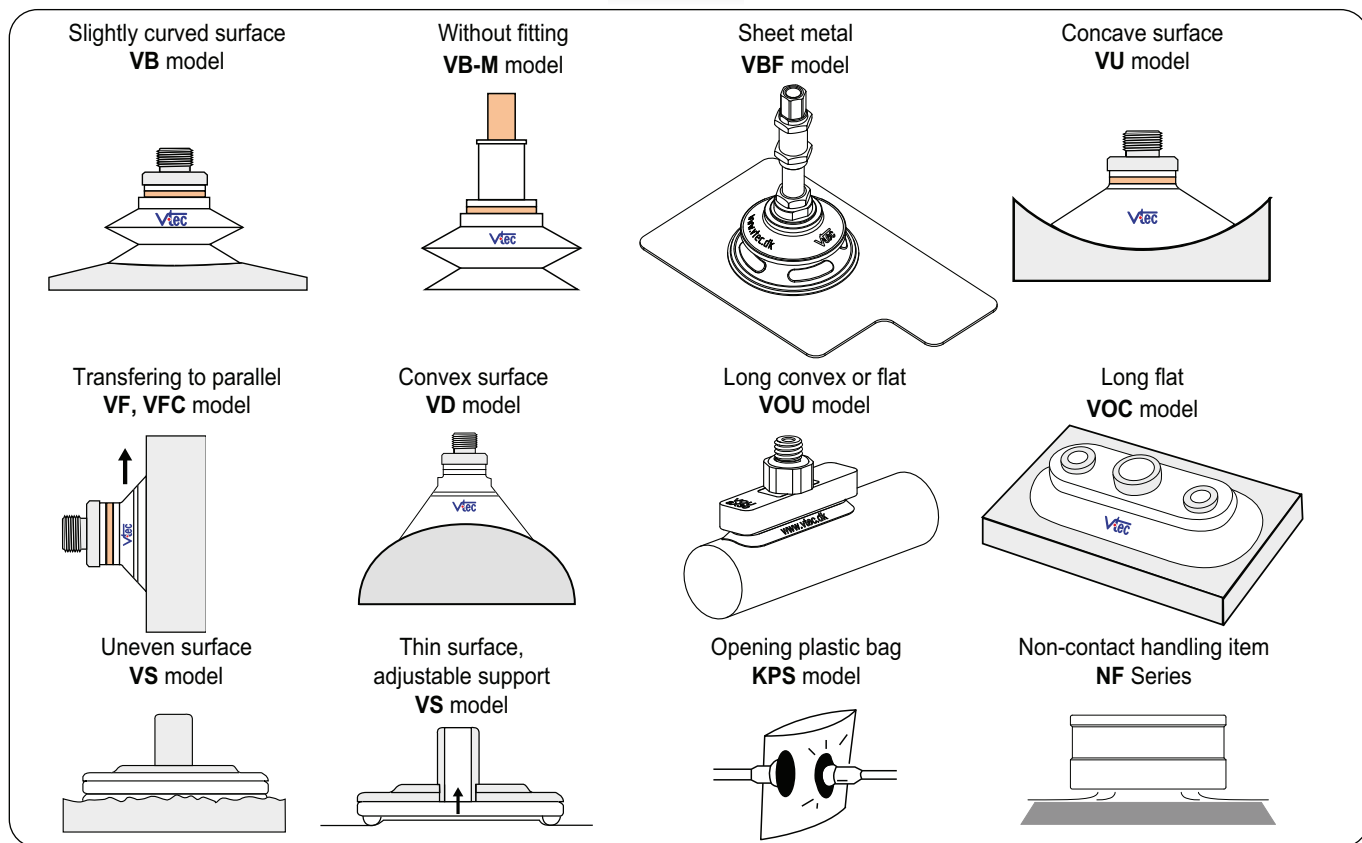
Material	Temperature	Durability	Oil Resistance	Weather & ozone
N - NBR	-20°C to + 110°C	Excellence	Excellence	Very good
S - Silicon, WS-White Silicon	-70°C to + 200°C	Good	unsuitable	Excellence
HS - High Temp. Silicon	-70°C to + 280°C	Good	unsuitable	Excellence
C.S - Conductive (special material)	-45°C to + 90°C	Excellence	Excellence	Very good
U - Urethane	0°C to + 100°C	Excellence	Excellence	Excellence
A - Mark free	-10°C to + 100°C	Excellence	Excellence	Very good
PU- Poly Urethane	-0°C to + 60°C	Excellence	Excellence	Excellence
E - EPDM	0°C to + 150°C	Very good	unsuitable	Excellence

9. How to select suction cup

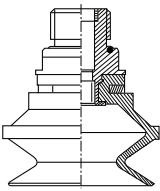

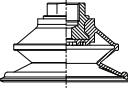
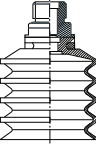
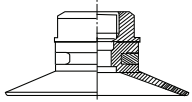
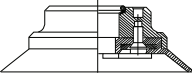
Suction cup	Shape			Requirements									
	Flat	Slightly surface	Concave surface	Smooth surface	Uneven surface	Varying surface levels	Thin flexible materials	Good stability	Mark free	Safety	Parallel lift	Without fitting	Opening plastic bag
VB	★★★	★★★		★★★		★★★	★★★	★	★★★	★★★	★		★★
VB-M	★★★	★★★		★★★		★★★	★★★	★	★★★	★★★	★	★★★	★★
VPF	★★★	★★★	★	★★★		★★★	★★★	★★★	★★★	★★★	★★★		
VBL	★★★	★★★		★★★		★★★	★★★			★★			
VU	★★★	★★★	★★★	★★★				★★		★★★	★★		★★
VF	★★★			★★★				★★★	★★★	★★★	★★★		
VFC	★★★	★★★		★★★	★			★★★	★★★	★★★	★★★		★
VD	★★	★★★		★★★		★		★★	★★★	★★★	★★		
VOU	★★★	★★	★★	★★★				★★		★★	★		
VOC	★★★	★★★		★★★		★		★★★		★★★	★★★		
VS	★★★			★★★	★★★		★★★			★★★	★		
KPS	★★★			★★★								★★★	★★★
NF	★★★	★★★					★★★		★★★				

★★★ Excellent ★★ Very good ★ good

SUCTION CUPS

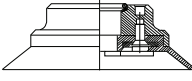
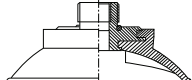
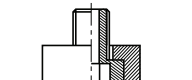
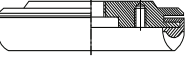
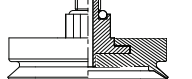

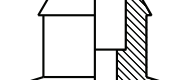


10. Suction cup specifications

Design	Model	Diameter (mm)	Volume (cm ³)	Material						Lifting force (kg) Perpendicular			Lifting force (kg) Parallel		
				N	(WS)	CS	U	(WPU)	E	-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
 20 ~ 23	VB 5	5.6	0.1	•	•	•				0.03	0.08	0.1			
	VB 6X	7	0.1	•	•	•				0.05	0.11	0.14			
	VB 8	8.8	0.2	•	•	•				0.08	0.16	0.25			
	VB 10	11	0.5	•	•	•	•			0.15	0.34	0.5			
	VB 12	12	0.59	•	•	•	•			0.2	0.41	0.62			
	VB 15	15.5	1.1	•	•	•	•	•		0.29	0.6	0.9			
	VB 17	18.5	1.5	•	•	•	•			0.4	0.8	1.0			
	VB 20	22	2.7	•	•	•	•	•		0.6	1.0	1.42			
	VB 30	34	10	•	•	•	•	•		1.22	2.24	2.75			
	VB 40	43	15	•	•	•	•	•		2.24	3.97	5			
	VB 50	53	32	•	•	•	•	•		3.36	6.63	8.36			
	VB 75	78	110	•	•	•	•	•		7.65	17.04	23.06			
VB 110	115	310	•	•	•	•			13.97	35	47.04				
VB 150	155	650	•	•	•	•			30	70	90.1				
 24	VB 20M	22	2.7	•	•	•	•			0.7	1.2	1.6			
	VB 30M	34	10	•	•	•	•			1.5	2.6	3.9			
	VB 50M	53	32	•	•	•	•			3.2	7.9	10.5			
 26 ~ 29	VBF 25	25	2.6					•		1.1	3.2	3.8	0.61	1.37	1.89
	VBF 30	32	6					•		1.77	6.26	9.48	0.86	3.09	7.75
	VBF 40	42	7.2					•		2.5	9.66	12.8	1.18	6.5	11.3
	VBF 50	51.5	11					•		4.18	13.2	16.28	2.09	9.6	14.7
	VBF 60	64	22					•		8.94	16.26	18.54	6.84	12.84	16.92
	VBF 80	84	59.5					•		11.92	21.68	24.72	9.12	17.12	22.56
	VBF 100	103	103.5					•		14.9	27.1	30.9	11.4	21.4	28.2
 30 ~ 33	VBL 15	15.5	1.95	•	•	•	•			0.29	0.6				
	VBL 20	20	4	•	•	•	•			0.03	0.06				
	VBL 30	30	13	•	•	•	•			0.06	0.16				
	VBL 35M	35	21	•	•	•	•			0.08	0.19				
	VBL 40	40	27	•	•	•	•			0.11	0.22				
	VBL 40B	42	26	•	•	•	•			1.03	2.1				
	VBL 50	50	55	•	•	•	•			0.17	0.43				
	VOBL 35X90	30X90	43	•	•	•	•			2.5	3.2				
 34 ~ 37	VU 1.5X	1.9	0.0015	•	•	•				0.0008	0.003	0.004			
	VU 2	2.6	0.0025	•	•	•				0.003	0.01	0.0015			
	VU 2X	2.6	0.003	•	•	•				0.003	0.01	0.0015			
	VU 3	3.8	0.01	•	•	•				0.009	0.04	0.06			
	VU 3k	3.5	0.018	•	•	•				0.014	0.06	0.09			
	VU 4	5	0.03	•	•	•				0.02	0.09	0.13	0.02	0.08	0.10
	VU 4X	4.6	0.03	•	•	•				0.02	0.09	0.13	0.02	0.08	0.10
	VU 6	7	0.05	•	•	•				0.05	0.17	0.25	0.03	0.15	0.20
	VU 8	9	0.1	•	•	•				0.1	0.29	0.39	0.1	0.29	0.34
	VU 10	11	0.2	•	•	•	•			0.15	0.44	0.70	0.15	0.44	0.50
	VU 15	16.5	0.5	•	•	•	•			0.35	0.85	1.12	0.35	0.55	0.60
	VU 20	22	1	•	•	•	•			0.6	1.22	1.63	0.6	0.89	1.00
	VU 25	27	1.5	•	•	•	•			0.91	1.98	2.5	0.7	0.95	1.05
 38 ~ 43	VF 15	16.5	0.37	•	•	•	•			0.35	0.86	1.12	0.35	0.66	0.76
	VF 20	22	1	•	•	•	•			0.61	1.47	1.93	0.51	0.81	0.86
	VF 25	27	1.1	•	•	•	•	•		0.91	1.98	2.55	0.81	0.91	1.02
	VF 30	32	2	•	•	•	•	•		1.22	2.55	3.16	1.12	1.63	2.04
	VF 40	42	4.8	•	•	•	•	•		2.04	4.08	5.10	1.53	2.55	3.06
	VF 50	53	10	•	•	•	•	•		3.67	7.55	9.79	2.44	4.08	5.10
	VF 50X2	53	10	•	•	•	•	•		3.67	7.55	9.79	2.44	4.08	5.1

* Lifting force : Not considered safety factor.

10. Suction cup specifications

Design	Model	Diameter (mm)	Volume (cm ³)	Material						Lifting force (kg) Perpendicular			Lifting force (kg) Parallel		
				N	(W)S	CS	U	(W)PU	E	-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
 38 ~ 43	VF75	77	20	•	•	•	•	•		8.16	20.40	27.55	6.12	11.22	14.26
	VF 90	92	50					•		10.2	27.84	57.14	14.28	25.51	30.61
	VF 110	112	70	•	•	•	•			14.28	42.85	57.14	14.28	25.51	30.61
	VF 150	152	160	•	•	•	•			30.61	86.73	112.54	25.51	61.22	81.63
	VF 200	200	460	•	•	•	•			76.53	193.87	275.51	38.3	96.9	137.5
	VF 300	304	820	•	•	•	•			163	438	653	135	307	476
 44 ~ 47	VFC 50	50	10	•	•	•	•	•		2.85	6.94	10.2	2.61	6.34	8.2
	VFC 60	60	20	•	•	•	•	•		4.55	11.57	15.3	3.05	7.92	10.7
	VFC 60X	60	20	•	•	•	•			4.55	11.57	15.3	3.05	7.92	10.7
	VFC 75	75	30	•	•	•	•	•		7.65	19.38	25.51	6.19	15.46	20.9
	VFC 75X1	75	30	•	•	•	•			7.65	19.38	25.51	6.19	15.46	20.9
	VFC 75X2	75	30	•	•	•	•			7.65	19.38	25.51	6.19	15.46	20.9
	VFC 90	90	60					•		9.8	24.82	32.65	9.52	21.59	27.89
VFC 100	100	80	•	•	•	•	•		12.75	35.71	46.93	12.24	23.97	28.57	
 48 ~ 49	VD 30	30	4.5	•	•	•	•	•		1.22	2.55	3.06	0.73	1.53	1.83
	VD 40	40	75	•	•	•	•	•		2.04	3.97	5.0	1.22	2.38	3.00
	VD 50	50	13.5	•	•	•	•	•		3.57	7.44	9.38	2.14	4.46	5.62
	VD 60	61	22	•	•	•	•	•		5.50	14	18.5	3.3	8.4	11.1
	VD 70	72	38					•		7.15	18.8	24.9	4.2	11.6	16.2
	VD 85	85	60	•	•	•	•			10	28	39	6.0	16.8	23.4
	VD 85X	85	60	•	•	•	•			10	28	39	6.0	16.8	23.4
	VD 90F	89.5	56					•		9.25	24.36	32.17	7.97	14.42	18.15
									•						
 50 ~ 51	VS 30X80	30X80	43						•	2.7	9.1	14			
	VS 35	35	6						•	2.04	5.10	7.14			
	VS 60	60	20						•	6.12	15.3	22.44			
	VS 100	100	55						•	18.36	45.9	67.34			
	VS 150	150	125						•	38	97	138			
	VS 200	200	543						•	76.53	193.87	275.51			
	VS 300	300	1285						•	163.26	438.77	653.06			
	VS 400	400	2285						•	326	876	1300			
 52 ~ 53	VOU4x10	4X10	0.064	•	•	•	•					0.205			
	VOU4x20	4X20	0.094	•	•	•	•					0.347			
	VOU6x10	6X10	0.081	•	•	•	•					0.256			
	VOU6x20	6X20	0.137	•	•	•	•					0.603			
	VOU8x20	8X20	0.17	•	•	•	•					0.818			
	VOU8x30	8X30	0.25	•	•	•	•					1.053			
	VOU10x30	10X30	0.394	•	•	•	•					1.554			
	VOU15x45	15X45	1.584	•	•	•	•					3.271			
	VOU20x60	20X60	3.532	•	•	•	•					6.352			
 54 ~ 55	VOC 11 x 23	11X23	2.0		•					0.61	1.3	1.6	0.6	1.2	1.5
	VOC 35 x 90	35X90	20	•	•	•	•			5	13.4	17.4	4	10.72	13.92
	VOC 35 x 110	35X110	25	•	•	•	•			6.25	16.7	21.7	5	13.36	17.36
	VOC 60 x 140	60X140	52	•	•	•	•			13.4	38	53	10.72	30.4	42.4
	VOC 60 x 180	60X180	67	•	•	•	•			19.1	54.2	75.7	15.28	43.36	60.56
 56 ~ 57	KPS-1	34	14.5	•	•	•	•			1.22	2.24	2.75			
	KPS-2	28	2.0	•	•	•	•			0.7	1.53	1.83			
	KPS-3	13	0.5	•	•	•	•			0.35	0.85	1.12			
	KPS-4	16	1.0	•	•	•	•			0.6	1.22	1.63			
	KPS-5	28	2.0	•	•	•	•			0.7	1.53	1.83			
	KPS-5-15	15	1.1	•	•	•	•			0.4	1.11	1.23			
	KPS-6	30	2.0	•	•	•	•			0.8	1.7	2.05			
	KPS-7	68	20	•	•	•	•			5.5	14	18.5			
	KPS-8	22.5	1.4	•	•	•	•			0.5	1.15	1.25			
	KPS-9	40.5	8	•	•	•	•			1.55	2.8	5.1			
	VU-30-X	30	1.8	•	•	•	•			0.65	1.48	17.8			

* Lifting force : Not considered safety factor.

VB Series (Bellows)

Features and Strengths

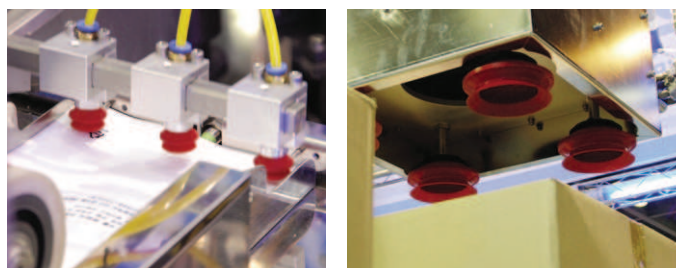
Particularly good for use on curved surfaces and for separating thin sheets of materials in stacks.

The bellows cup is very good at compensating for a degree of difference in level and curvature of the work piece, more angular and level compensation can be achieved by using other **Vtec** cup accessories.



Suitable for Handling

- Sheet Veneer
- Plastic Sheets
- Paper Box handling
- Thin Film Sheets
- Cardboard Boxes and Electronic Components



Order No.

VB30 **PU** **F** - **18F** **EV** - **L1820T** - **BJ 18**

① ② ③ ④ ⑤ ⑥ ⑦

▶ See pages 21, 60-67.

① Diameter

VB5	- Ø5
VB6X	- Ø6
VB8	- Ø8
VB10	- Ø10
VB12	- Ø12
VB15	- Ø15
VB17	- Ø17
VB20	- Ø20
• VB30	- Ø30
VB40	- Ø40
VB50	- Ø50
VB75	- Ø75
VB75B	- Ø75
VB110	- Ø110
VB110B	- Ø110
VB150	- Ø150

② Material

N	- NBR
S	- Silicon
WS	- White Silicon
HS	- High Temp. Silicon
CS	- Conductive (Special mat'l)
U	- Urethane
A	- Mark Free
• PU	- Poly Urethane*
• WPU	- Poly Urethane* (Minimal mark)

*Only for VB15, VB20, VB30, VB40, VB50, VB75

③ Filter

no mark	- Standard
• F	- With filter (PE) VB30, VB40, VB50, VB75, VB110

④ Thread size

M5M	- M5 male (VB5, VB8, VB10, VB12, VB15)
18M	- G1/8" male (VB30, VB40)
14M	- G1/4" male (VB30, VB40, VB50)
38M	- G3/8" male (VB50)
M518MF	- M5 female and G1/8" male (VB17, VB20)
M518MFB*	- M5 female and G1/8" male (VB20)
• 18F(A)	- G1/8" female (VB17, VB20, VB30, VB40, VB50, VB75, VB75B)
18FB*	- G1/8" female (VB30, VB40)
14F(A)	- G1/4" female (VB75, VB75B)
38F(A)	- G3/8" female (VB75, VB75B)
12F(A)	- G1/2" female (VB75, VB75B, VB110, VB110B, VB150)
M5X5F	- M5X5 female (VB17, VB20)
18X5F	- G1/8" X 5 female (VB30, VB40, VB50)

Remark : VB30~150 fittings are including mesh filter.

* Only for silicon material

(A) : AL-Material (Only VB75, VB75B)

⑤ Valves Efficiency valve : EV

no mark	- standard
• EV	- Vacuum efficiency valve (See page : 16) (VB17, VB20, VB30, VB40, VB50)

Accessories order No.

L1820T BJ 18

⑥

⑦

⑥ Level compensator		⑦ Ball joint model
Model	Stroke (mm)	
L506TX, L506TS, L506TM, L506TU	6	● BJ 18
L510LTX, L510LTS, L510LTM, L510LTU	10	
L507T, L507TN	7	
L515T	15	
L510, L510T	10	
L520, L520T, L520TF	20	
L1805F	5	
L525TXN, L525TSN, L525TMN, L525TUN	25	
L1805M, L1805F	5	
L1810T, L1810TS, L1810TSE	10	
L1815T, L1815	15	
● L1820T, L1820TS	20	
L1820TN*	20	
L1830, L1830T, L1830TS	30	
L1850, L1850T	50	
L1230, L1230T	30	BJ 12
L1250, L1250T	50	

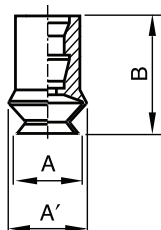
*Not available with Ball Joint (BJ).

SUCTION CUPS

Recommended (max.) lifting forces

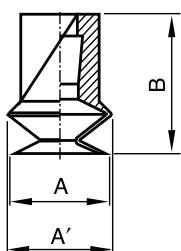
Model	Volume (cm ³)	Lifting Force (kg) – Parallel		
		-20 kPa	-60 kPa	-90 kPa
VB5	0,05	0,03	0,08	0,10
VB6X	0,09	0,05	0,11	0,14
VB8	0,15	0,08	0,16	0,25
VB10	0,48	0,15	0,34	0,5
VB12	0,59	0,2	0,41	0,62
VB15	1,1	0,29	0,6	0,9
VB17	1,5	0,4	0,8	1
VB20	2,7	0,6	1	1,42
VB30	10	1,22	2,24	2,75
VB40	15	2,24	3,97	5
VB50	32	3,36	6,63	8,36
VB75(B)	110	7,65	17,04	23,06
VB110(B)	310	13,97	35	47,04
VB150	650	30	70	90,1

Dimensional information



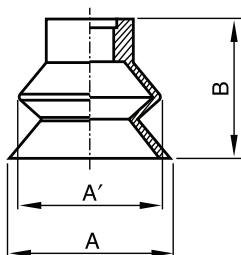
◀ VB6X [mm]

Model	A	A'	B
VB6X	7	9	13.5



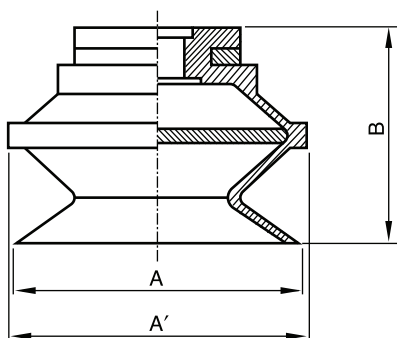
◀ VB5 VB8 VB10 VB12 VB15 [mm]

Model	A	A'	B
VB5	5.8	6.2	9.2
VB8	8.8	9.6	11.9
VB10	11	12	16
VB12	12	14	16.5
VB15	15.5	17.5	19.5



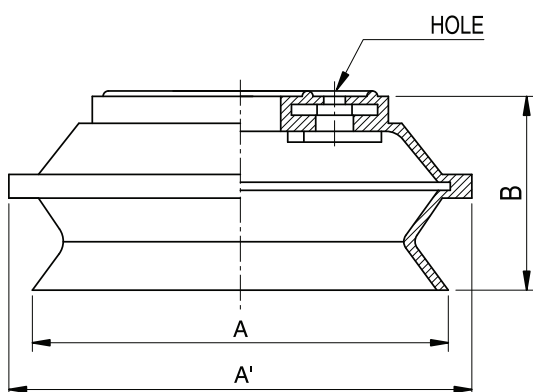
◀ VB17 [mm]

Model	A	A'	B
VB17	18.5	16.6	15.6



◀ VB20 VB30 VB40 VB50 [mm]

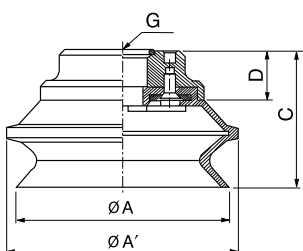
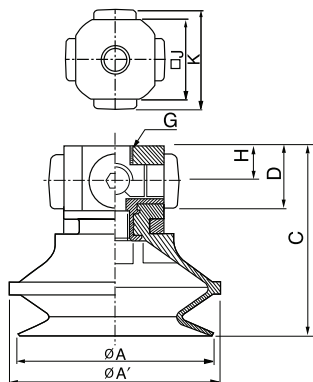
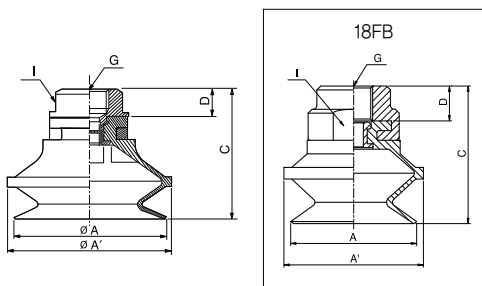
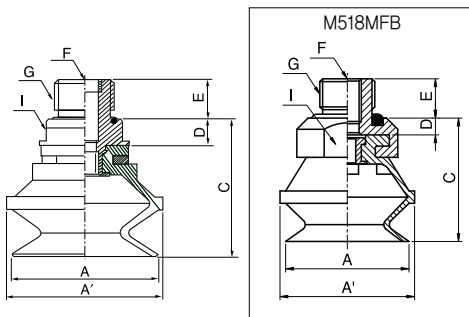
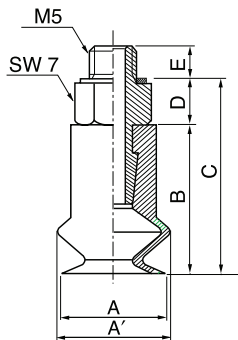
Model	A	A'	B
VB20	22	24	19
VB30	34	36	26
VB40	43	46	28
VB50	53	58	35



◀ VB75 VB110 VB150 [mm]

Model	A	A'	B	HOLE
VB75(B)	78	83	37	4- \varnothing 6.5 P.C.D \varnothing 35
VB110(B)	115	124	54	8- \varnothing 6 P.C.D \varnothing 55
VB150	155	166	71	8- \varnothing 6 P.C.D \varnothing 70.5

Dimensional information



Male thread [mm]

Model	ØA	ØA'	B	C	D	E
VB5-M5M	5.6	6.2	9.2	13.2	4	3.5
VB8-M5M	8.8	9.6	11.9	15.9	4	3.5
VB10-M5M	11	12	16	21	5	4
VB12-M5M	12	14	16.5	21.5	5	4
VB15-M5M	15.5	17.5	19.5	24.5	5	4

Male thread [mm]

Model	ØA	ØA'	C	D	E	F	G	I
VB17-M518MF	18.5	16.6	17.1	1.5	6	M5	G1/8"	SW12
VB20-M518MF	22	24	20.5	1.5	6	M5	G1/8"	SW12
VB20-M518MFB*	22	24	22	3	7	M5	G1/8"	SW16
VB30-18M	34	36	31	5	7	-	G1/8"	SW17
VB30-14M	34	36	32	6	9	-	G1/4"	SW17
VB40-18M	43	46	33	5	7	-	G1/8"	SW17
VB40-14M	43	46	34	6	9	-	G1/4"	SW17
VB50-14M	53	58	41	6	9	-	G1/4"	SW24
VB50-38M	53	58	41	6	10	-	G3/8"	SW24

*Only for silicon material

Female thread [mm]

Model	ØA	ØA'	C	D	G	I
VB17-18F	18.5	16.6	23.6	8	G1/8"	SW15
VB20-18F	22	24	27	8	G1/8"	SW15
VB30-18F	34	36	34	8	G1/8"	SW17
VB30-18FB*	34	36	35	9	G1/8"	SW21
VB40-18F	43	46	36	8	G1/8"	SW17
VB40-18FB*	43	46	37	9	G1/8"	SW21
VB50-18F	53	58	44	9	G1/8"	SW24

*Only for silicon material

Female threadx5 [mm]

Model	ØA	ØA'	C	D	G	H	□J	K
VB17-M5X5F	18.5	16.6	24.6	9	M5X5	5	15	22
VB20-M5X5F	22	24	28	9	M5X5	5	15	22
VB30-18X5F	34	36	44	18	G1/8"X5	10	22	30
VB40-18X5F	43	46	46	18	G1/8"X5	10	22	30
VB50-18X5F	53	58	53	18	G1/8"X5	10	28	36

Female thread [mm]

Model	ØA	ØA'	C	D	G
VB75(B)-18F	78	83	50	18	G1/8"
VB75(B)-14F	78	83	50	18	G1/4"
VB75(B)-38F	78	83	50	18	G3/8"
VB75(B)-12F	78	83	50	18	G1/2"
VB110(B)-12F	115	124	63	15	G1/2"
VB150-12F	155	166	78	14	G1/2"

VB-M Series (Direct Fitting Bellows)

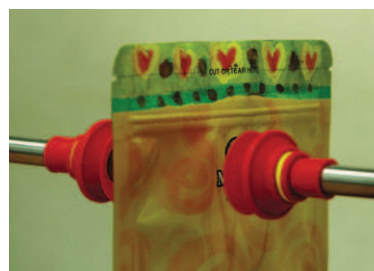
Features and Strengths

Same general advantages to that of the normal bellows cups but can be fitted directly onto a piece of pipe, thus making installation very simple and reducing cup costs to a minimum, very suitable for integration to packaging machines.



Suitable for Handling

- Cardboard
- Packaging Materials
- Thin Film Sheets
- Sheet Veneer
- Plastic Sheets



Order No.

VB30M N F



① Diameter

- VB20M – Ø20
- **VB30M** – Ø30
- VB50M – Ø50

② Material

- **N** – NBR (VB20M, VB30M, VB50M)
- S – Silicon (VB20M, VB30M, VB50M)
- HS – High Temp. Silicon (VB20M, VB30M, VB50M)
- WS – White Silicon (VB20M, VB30M, VB50M)
- CS – Conductive (Special mat'l) (VB20M, VB30M, VB50M)
- U – Urethane (VB20M, VB30M, VB50M)
- A – Mark Free (VB20M, VB30M, VB50M)
- PU – Poly Urethane (VB20M, VB30M, VB50M)
- WPU – Poly Urethane (Minimal mark)(VB20M, VB30M, VB50M)

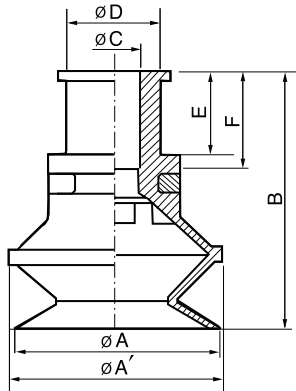
③ Filter

- no mark – Standard
- **F** – With filter(PE) (VB30M, VB50M)

Recommended (max.) lifting forces

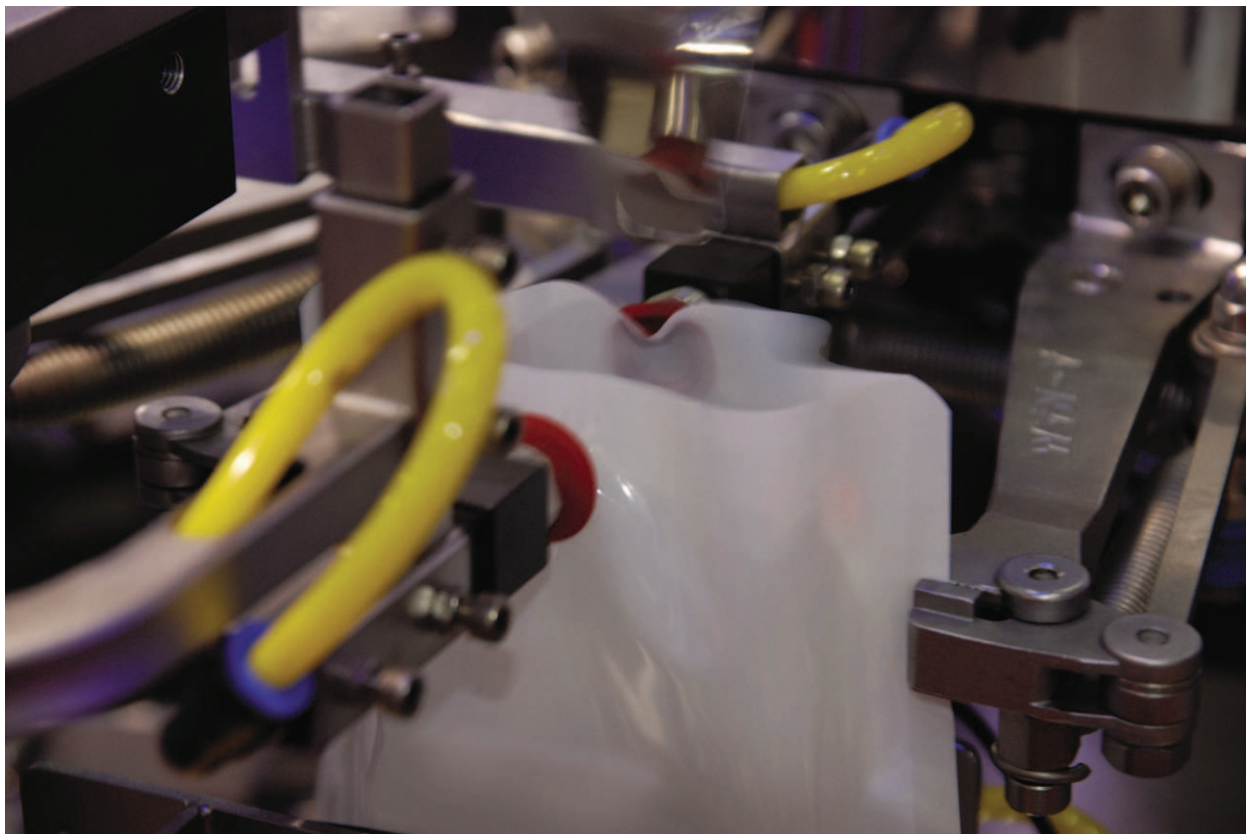
Model	Volume (cm ³)	Lifting Force (kg) –Perpendicular		
		–20 kPa	–60 kPa	–90 kPa
VB20M	2.7	0.7	1.2	1.6
VB30M	10	1.5	2.6	3.9
VB50M	32	3.2	7.9	10.5

Dimensional Information



[mm]

Model	$\varnothing A$	$\varnothing A'$	$\varnothing C$	$\varnothing D$	E	F	B
VB20M	22	24	6	10	9	10,5	28
VB30M	34	36	8,5	14	14	16	40
VB50M	53	57	12,5	20	17	20	52



▲ Plastic pack opening / VTEC Bellows Cup - VB20M

VBF Series (Bellows & Flat)

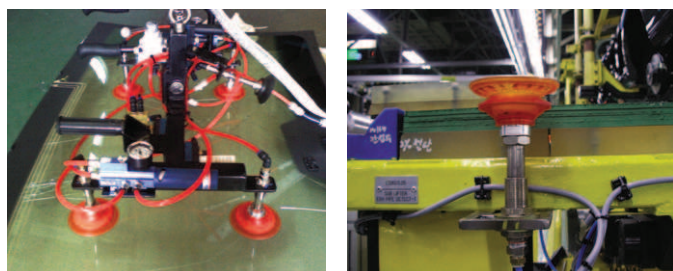
Features and Strengths

- Enhancing the adhesion to the surface
- Good lifting force can be achieved with this cup in the vertical plane
- Prevent transformation when lifting metal thin plate



Suitable for Handling

- Veneer sheets
- Sheet metal
- Automotive panels and door
- Plywood
- Glass



Order No.

VBF100 PU F - 12F - [] - L 1230 - BJ12

①
②
③
④
⑤
⑥
⑦

► See pages 27, 60-67.

① Diameter

VBF25	- Ø25
VBF30	- Ø32
VBF40	- Ø42
VBF50	- Ø51
VBF60	- Ø64
VBF80	- Ø84
• VBF100	- Ø103

② Material

- **PU** – Poly Urethane
- WPU – White Poly urethane

③ Filter

- No Mark – Standard
- **F** – With Filter(PE)

* Available only VBF 60, 80, 100

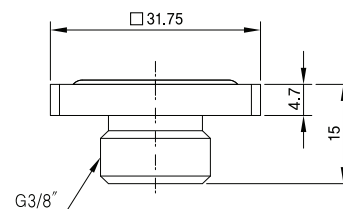
④ Thread Size

18F	- G1/8" female (VBF 25,30,40,50,60,80,100)
14F	- G1/4" female (VBF 25,30,40,50,60,80,100)
38F	- G3/8" female (VBF 25,30,40,50,60,80,100)
• 12F	- G1/2" female (VBF 60,80,100)
14M	- G1/4" male (VBF 25,30,40,50,60,80,100)
M10M	- M10xP1.5 male (VBF 25,30,40,50,60,80)

⑤ Quick Mount Adaptor

- No Mark – Standard
- **QA** – Quick Mount Adaptor**

**Only for G3/8" female and level compensator is not available



Accessories

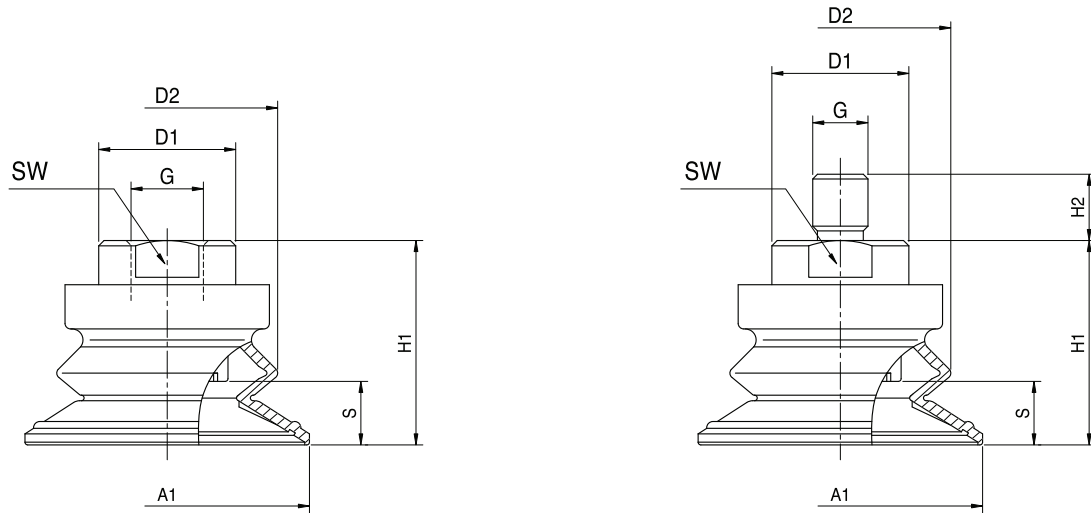
⑥ Level Compensator		⑦ Ball Joint
Level Compensator	Stroke (mm)	Ball Joint
L1805F, L1805M	5	BJ 18
L1810T, L1810TS, L1810TSE, L1810TS-M10F	10	
L1815T, L1815	15	
L1820T, L1820TS	20	
L1830, L1830T, L1830TS	30	
L1850, L1850T	50	
L1820TN (Non-rotate)*	20	
L1230, L1230T	30	BJ 12
L1250, L1250T	50	

*Not available with Ball Joint(BJ)..

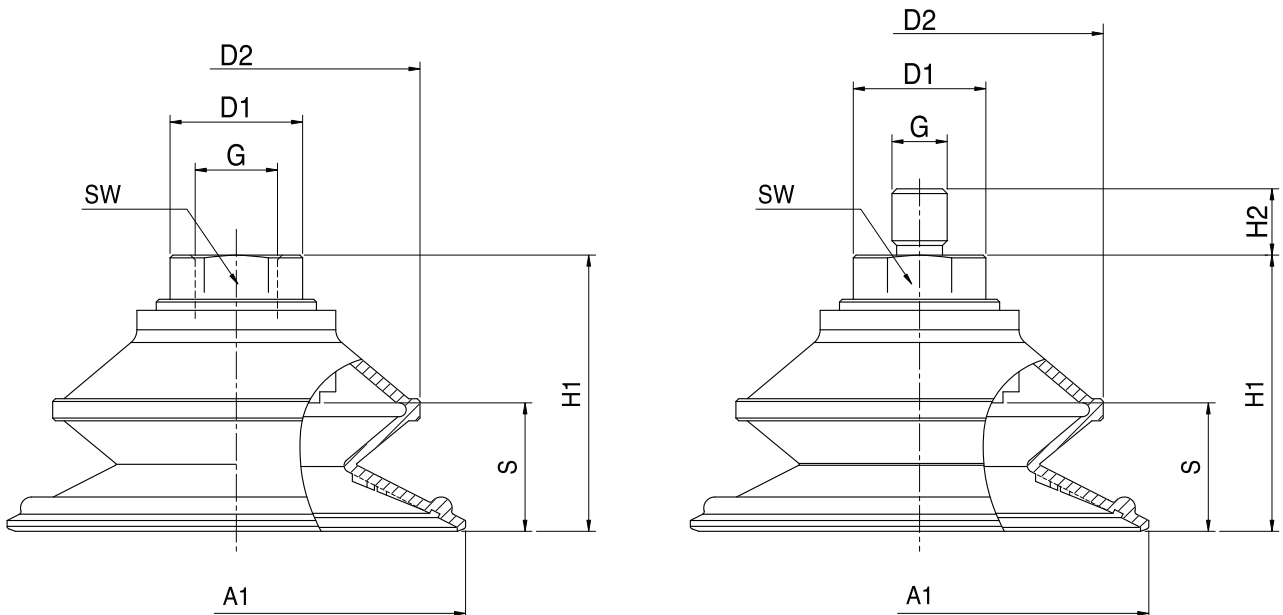
Recommended (max.) lifting force.

Model	Volume (cm ³)	Perpendicular Lifting Force (kg) at Vacuum level			Parallel Lifting Force (kg) at Vacuum level		
		-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
VBF 25PU	2,6	1,1	3,2	3,8	0,61	1,37	1,89
VBF 30PU	6	1,77	6,26	9,48	0,86	3,09	7,75
VBF 40PU	7,2	2,5	9,66	12,8	1,18	6,5	11,3
VBF 50PU	11	4,18	13,2	16,28	2,09	9,6	14,7
VBF 60PU	22	8,94	16,26	18,54	6,84	12,84	16,92
VBF 80PU	59,5	11,92	21,68	24,72	9,12	17,12	22,56
VBF 100PU	103,5	14,9	27,1	30,9	11,4	21,4	28,2

Dimensional information



▲ VBF 25PU, VBF 30PU, VBF 40PU, VBF 50PU



▲ VBF 60 PU, VBF 80PU, VBF 100PU

Dimensional information

[Measure unit : mm]

Model	A1	G	H1	H2	SW	S	D1	D2
VBF25PU – 18F	25,5	G1/8" female	25	–	17	6,1	19,5	26,5
VBF25PU – 14F		G1/4" female	25	–	17		19,5	
VBF25PU – 38F		G3/8" female	41	–	17		19,5	
VBF25PU – 14M		G1/4" male	25	10	17		19,5	
VBF25PU – M10M		M10xP1.5 male	25	12	17		19,5	
VBF30PU – 18F	32	G1/8" female	28	–	17	7	19,8	32
VBF30PU – 14F		G1/4" female	28	–	17		19,8	
VBF30PU – 38F		G3/8" female	44	–	17		–	
VBF30PU – 14M		G1/4" male	28	10	17		19,8	
VBF30PU – M10M		M10xP1.5 male	28	12	17		19,8	
VBF40PU – 18F	42	G1/8" female	29	–	17	9	19,8	32
VBF40PU – 14F		G1/4" female	29	–	17		19,8	
VBF40PU – 38F		G3/8" female	45	–	17		–	
VBF40PU – 14M		G1/4" male	29	10	17		19,8	
VBF40PU – M10M		M10xP1.5 male	29	12	17		19,8	
VBF50PU – 18F	51,5	G1/8" female	37	–	22	11,5	24,8	40
VBF50PU – 14F		G1/4" female	37	–	22		24,8	
VBF50PU – 38F		G3/8" female	37	–	22		24,8	
VBF50PU – 14M		G1/4" male	37	10	22		24,8	
VBF50PU – M10M		M10xP1.5 male	37	12	22		24,8	
VBF60PU – 18F	64	G1/8" female	41,5	–	21	15	24	50
VBF60PU – 14F		G1/4" female	41,5	–	21		24	
VBF60PU – 38F		G3/8" female	41,5	–	21		24	
VBF60PU – 12F		G1/2" female	41,5	–	26		29	
VBF60PU – 14M		G1/4" male	41,5	10	21		24	
VBF60PU – M10M		M10xP1.5 male	41,5	12	21		24	
VBF80PU – 18F	84	G1/8" female	49,5	–	21	22,5	24	68
VBF80PU – 14F		G1/4" female	49,5	–	21		24	
VBF80PU – 38F		G3/8" female	49,5	–	21		24	
VBF80PU – 12F		G1/2" female	49,5	–	26		29	
VBF80PU – 14M		G1/4" male	49,5	10	21		24	
VBF80PU – M10M		M10xP1.5 male	49,5	12	21		24	
VBF100PU – 18F	103	G1/8" female	55	–	22	20,5	24	83
VBF100PU – 14F		G1/4" female	55	–	22		24	
VBF100PU – 38F		G3/8" female	55	–	22		24	
VBF100PU – 12F		G1/2" female	55	–	24		27	
VBF100PU – 14M		G1/4" male	55	10	22		24	

VBL Series (Long Bellows)

Features and Strengths

Similar advantages to that of the normal bellows cups but can cope with an increased degree of height compensation and is particularly good for handling fragile objects.

A note of caution, these cups are not suitable for high level vacuum applications.



Suitable for Handling

- Fragile Objects
- General Food Products
- Glass
- Eggs
- Bread



Order No.

VBL20 N F - M518MF EV - L510T



① Diameter

- VBL15 - Ø15
- **VBL20** - Ø20
- VBL30 - Ø30
- VBL35M - Ø35
- VBL40 - Ø40
- VBL40B - Ø40
- VBL50 - Ø50

② Material

- **N** - NBR
- S - Silicon
- WS - White Silicon
- HS - High Temp. Silicon
- CS - Conductive (Special mat'l)
- U - Urethane
- A - Mark free

④ Thread size

- M5M - M5 male (VBL15)
- 18M - G1/8" male (VBL30, VBL40)
- 14M - G1/4" male (VBL30, VBL40, VBL50)
- 38M - G3/8" male (VBL50)
- **M518MF** - M5 female and G1/8" male (VBL20)
- M518MFB* - M5 female and G1/8" male (VBL20)
- 18F - G1/8" female (VBL20, VBL30, VBL40, VBL50)
- 18FB* - G1/8" female (VBL30, VBL40)
- M5X5F - M5X5 female (VBL20)
- 18X5F - 5XG1/8" female (VBL30, VBL40, VBL50)

▶ See pages 31, 60-67.

③ Filter

- No Mark - Standard
- **F** - With Filter(PE)
VBL30, VBL40
VBL50

⑤ Valves

- no mark - Standard
- **EV** - Vacuum efficiency valve (See page :16)
(VBL20, VBL30, VBL40, VBL50)

Remark : VBL30, 40, 50 fittings are including mesh filter
* Only for silicon material

VOBL 35X90 WS F - 12F



① Material

- N - NBR
- S - Silicon
- **WS** - White Silicon
- HS - High Temp. Silicon
- CS - Conductive
- U - Urethane
- A - Mark free

② Filter

- No Mark - Standard
- **F** - With Filter(PE)

③ Thread size

- **12F** - G1/2" female




Accessories order No.

L510T



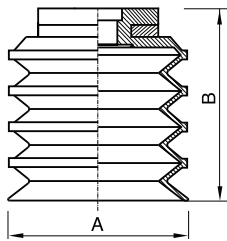
⑥Level compensator	
Model	Stroke
L510	10
• L510T	10
L520	20
L520T, L520TF	20
L1805F	5
L1805M	5
L1810T	10
L1810TS, L1810TSE	10
L1815T, L1815	15
L1820T, L1820TS	20
L1820TN	20
L1830	30
L1830T, L1830TS	30
L1850	50
L1850T	50

Recommended (max.) lifting forces

Model	Volume (cm ³)	Lifting Force (kg) – Perpendicular 	
		-20 kPa	-60 kPa
VBL15	1,95	0,29	0,6
VBL20	4	0,03	0,06
VBL30	13	0,06	0,16
VBL35M	21	0,08	0,19
VBL40	27	0,11	0,22
VBL40B	26	1,03	2,1
VBL50	55	0,17	0,43
VOBL35X90	43	2,5*	3,2*

* Lifting force with PE filter

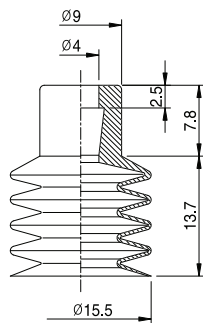
Dimensional Information



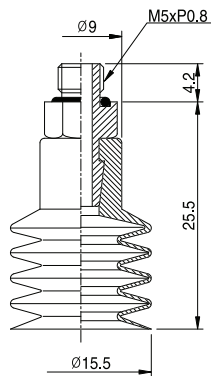
◀ VBL20, VBL30, VBL40, VBL50 [mm]

Model	A	B
VBL20	20	23
VBL30	30	32
VBL40	40	42
VBL50	50	52

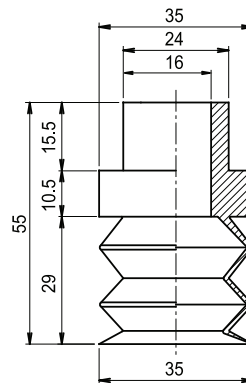
VBL15



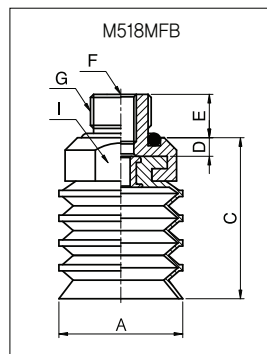
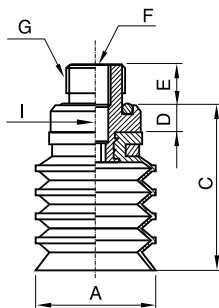
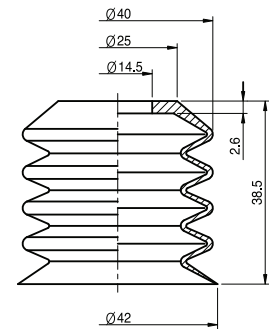
VBL15M5M



VBL35M



VBL40B

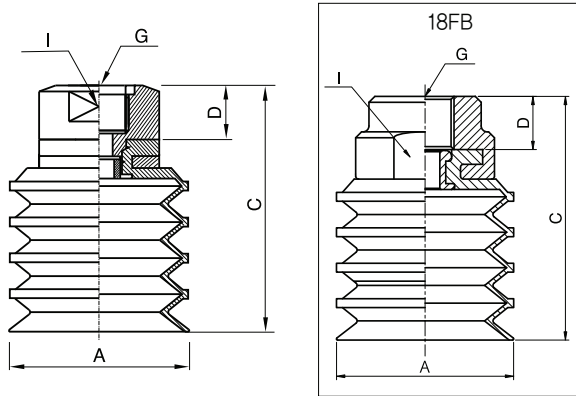


▲ Male thread

Model	A	C	D	E	F	G	I
VBL20-M518MF	20	24.5	1.5	6	M5	G1/8"	SW12.2
VBL20-M518MFB*	20	26	3	7	M5	G1/8"	SW16
VBL30-18M	30	37	5	7	-	G1/8"	SW17
VBL30-14M	30	38	6	9	-	G1/4"	SW17
VBL40-18M	40	47	5	7	-	G1/8"	SW17
VBL40-14M	40	48	6	9	-	G1/4"	SW17
VBL50-14M	50	58	6	9	-	G1/4"	SW24
VBL50-38M	50	58	6	10	-	G3/8"	SW24

* Only for silicon material

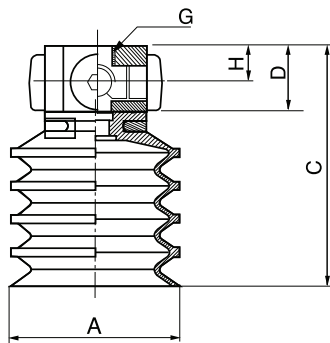
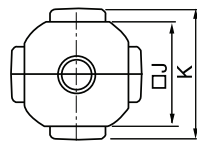
Dimensional Information



Female thread

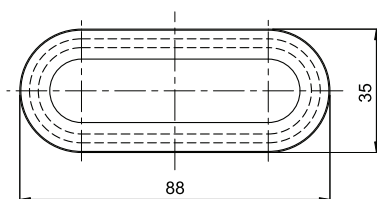
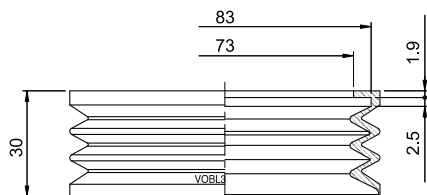
Model	A	C	D	G	I
VBL20-18F	20	31	8	G1/8"	SW15
VBL30-18F	30	40	8	G1/8"	SW17
VBL30-18FB*	30	41	9	G1/8"	SW21
VBL40-18F	40	50	8	G1/8"	SW17
VBL40-18FB*	40	51	9	G1/8"	SW21
VBL50-18F	50	60	9	G1/8"	SW24

* Only for silicon material

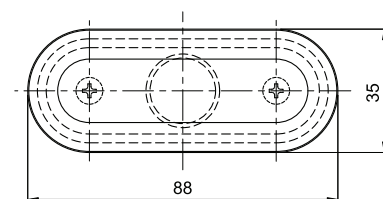
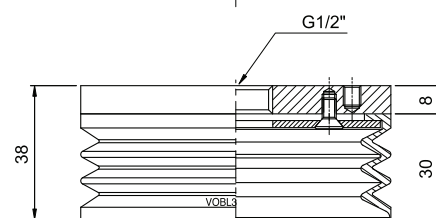
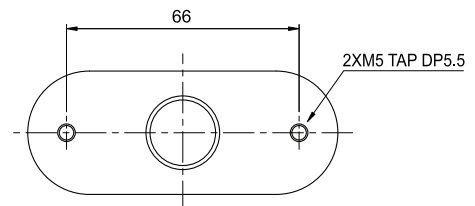


Female thread x 5

Model	A	C	D	G	H	□ J	K
VBL20-M5x5F	20	32	9	M5x5	5	15	22
VBL30-18x5F	30	50	18	G1/8" x 5	10	22	30
VBL40-18x5F	40	60	18	G1/8" x 5	10	22	30
VBL50-18x5F	50	70	18	G1/8" x 5	10	28	36



VOBL 35X90



VOBL 35X90-12F

VU Series (Universal)

Features and Strengths

Good lifting forces can be achieved with this cup, is best suited to flat stable surfaces, but can cope with a small degree of curvature.

Very small cup are available down to just 1.5mm diameter.



Suitable for Handling

- Small components
- Semiconductor Chips
- Packaging Materials
- Sheet Metal
- Printing Industry
- Paper Box



Order No.

VU40 **N** **18F** - **EV** - **L1820T** **BJ 18**

① ② ③ ④ ⑤ ⑥

► See pages 35, 60-67.

① Diameter

VU1,5X – Ø1,5
VU2 – Ø2
VU2X – Ø2
VU3 – Ø3
VU3K – Ø3,5
VU4 – Ø4
VU4X – Ø4
VU6 – Ø6
VU8 – Ø8
VU10 – Ø10
VU15 – Ø15
VU20 – Ø20
VU25 – Ø25
VU30 – Ø30
• VU40 – Ø40
VU50 – Ø50
VU80 – Ø80

② Material

• N – NBR
S – Silicon
WS – White Silicon
HS – High Temp. Silicon
CS – Conductive (Special mat'l)
U – Urethane
A – Mark free

③ Thread size

M2,5M – M2,5 male (VU2,VU3)
M5M – M5 male (VU2, VU3, VU4, VU6, VU8, VU10, VU15)
18M – G1/8" male (VU40)
14M – G1/4" male (VU40, VU50)
38M – G3/8" male (VU50)
M5 18MF – M5 female and G1/8" male (VU20, VU25, VU30)
M5 18MFX* – M5 female and G1/8" male (VU20, VU25, VU30)
• 18F – G1/8" female (VU30, VU40, VU50, VU80)
18FX* – G1/8" female (VU40)
M5X5F – M5X5 female (VU20, VU25, VU30)
18X5F – G1/8"X5 female (VU40, VU50)
8 – Ø8 HOLE (VU80)

Remark : VU40, 50 fittings are including mesh filter.

* Only for silicon material

④ Valves

no mark – standard
• EV – Vacuum efficiency valve (See page :16) (VU20, VU25, VU30, VU40, VU50)

Accessories order No.

L 1820T

BJ 18



⑤

⑥

⑤ Level compensator		⑥ Ball joint model	
Model	Stroke (mm)		
L506TX, L506TS	6	-	
L510LTX, L510LTS	10		
L507T, L507TN	7		
L515T	15		
L510, L510T	10		
L520, L520T	20		
L1805F	5		
L525TXN, L525TSN	25		
L1805M	5		• BJ 18
L1810T, L1810TS, L1810TSE	10		
L1815, L1815T	15		
• L1820T, L1820TS	20		
L1820TN*	20		
L1830, L1830T, L1830TS	30		
L1850, L1850T	50		

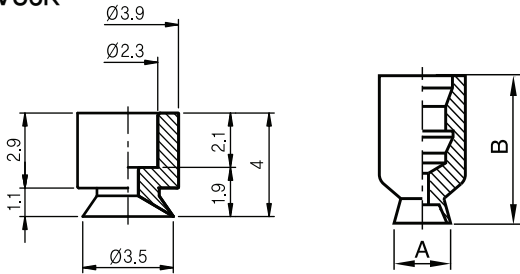
* Not available with Ball Joint(BJ).

Recommended (max.) lifting forces

Model	Volume (cm ³)	Lifting Force (kg) - Perpendicular 			Lifting Force (kg) - Parallel 		
		-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
VU1.5X	0,0015	0,0008	0,003	0,004			
VU2	0,0025	0,003	0,01	0,015			
VU2X	0,0025	0,003	0,01	0,015			
VU3	0,005	0,009	0,04	0,06			
VU3K	0,018	0,014	0,06	0,09			
VU4	0,03	0,02	0,09	0,13	0,02	0,08	0,10
VU4X	0,03	0,02	0,09	0,13	0,02	0,08	0,10
VU6	0,05	0,05	0,17	0,25	0,03	0,15	0,20
VU8	0,1	0,1	0,29	0,39	0,1	0,29	0,34
VU10	0,18	0,15	0,44	0,7	0,15	0,44	0,50
VU15	0,5	0,35	0,85	1,12	0,35	0,55	0,60
VU20	1,0	0,6	1,22	1,63	0,6	0,89	1,00
VU25	1,5	0,91	1,98	2,5	0,7	0,95	1,05
VU30	2,0	1,22	2,55	3,06	0,79	1,00	1,12
VU40	5,5	2,04	3,97	5	1,42	2,24	2,8
VU50	12,0	3,57	7,44	9,38	2,04	3,77	4,48
VU80	32	7,77	19,8	25,21	4,53	12,7	16,94

Dimensional Information

VU3K

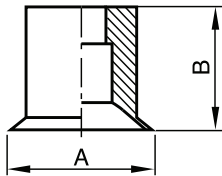


◀ VU1.5X, VU2X, VU4X [mm]

Model	A	B
VU1.5X	1.9	12
VU2X	2.6	12
VU4X	4.6	12

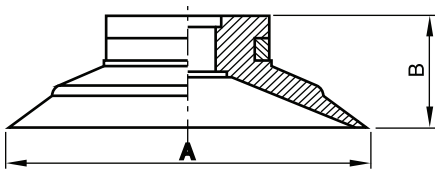
◀ VU2, 3, 4, 6, 8, 10, 15 [mm]

Model	A	B
VU2	2.6	3.5
VU3	3.8	4.5
VU4	5	6.1
VU6	7	6.5
VU8	9	7
VU10	11	10.5
VU15	16.5	11

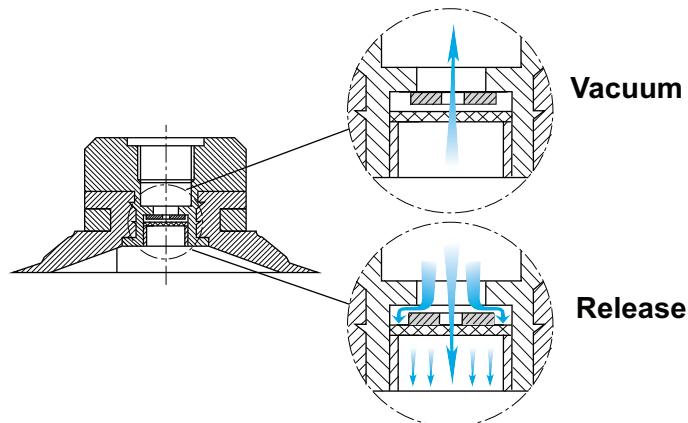


◀ VU20, 30, 40, 50 [mm]

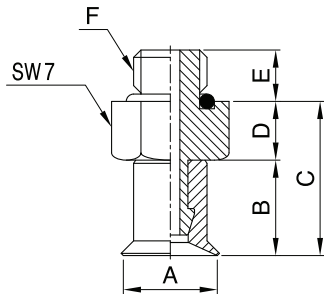
Model	A	B
VU20	22	8
VU25	27	9
VU30	32	9.5
VU40	42	13
VU50	53	17.5



Vacuum Efficiency Valve



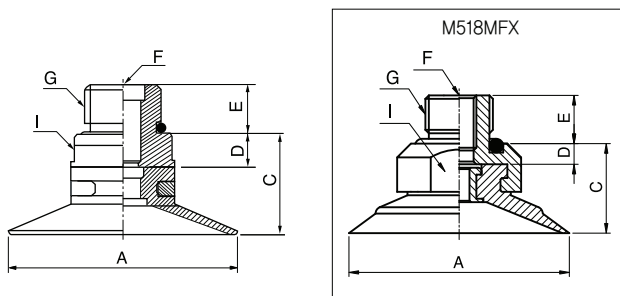
Dimensional Information



◀ Male thread

[mm]

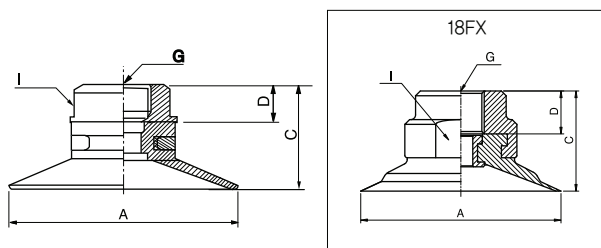
Model	A	B	C	D	E	F
VU2-M2.5M or M5M	2,6	3,5	6/8,1	2,5/4,6	3/4,2	M2,5 or M5
VU3-M2.5M or M5M	3,8	4,5	7/9,1	2,5/4,6	3/4,2	M2,5 or M5
VU4-M5M	5	6,1	10,1	4	3,5	M5
VU6-M5M	7	6,5	10,5	4	3,5	M5
VU8-M5M	9	7	11	4	3,5	M5
VU10-M5M	11	10,5	15,5	5	3,5	M5
VU15-M5M	16,5	11,5	16	5	3,5	M5



◀ Male thread

[mm]

Model	A	C	D	E	F	G	I
VU20-M518MF	22	9,5	1,5	6	M5	G1/8"	SW12
VU20-M518MFX*	22	11	3	7	M5	G1/8"	SW16
VU25-M518MF	27	10,5	1,5	6	M5	G1/8"	SW12
VU25-M518MFX*	27	12	3	7	M5	G1/8"	SW16
VU30-M518MF	32	11	1,5	6	M5	G1/8"	SW12
VU30-M518MFX*	32	12,5	3	7	M5	G1/8"	SW16
VU40-18M	42	18	5	7	-	G1/8"	SW17
VU40-14M	42	19	6	9	-	G1/4"	SW17
VU50-14M	53	23,5	6	9	-	G1/4"	SW24
VU50-38M	53	23,5	6	10	-	G3/8"	SW24



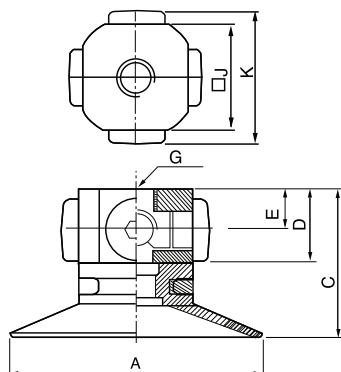
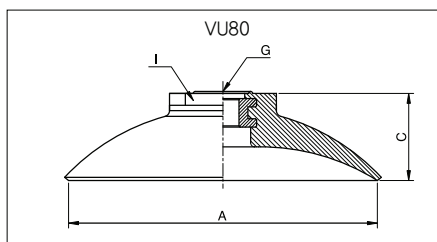
* For silicone material

◀ Female thread

[mm]

Model	A	C	D	G	I
VU20-18F	22	16	8	G1/8"	SW15
VU25-18F	27	17	8	G1/8"	SW15
VU30-18F	32	17,5	8	G1/8"	SW15
VU40-18F	42	21	8	G1/8"	SW17
VU40-18FX*	42	22	9	G1/8"	SW21
VU50-18F	53	26,5	9	G1/8"	SW24
VU80-18F	78	21,5	-	G1/8"	SW19
VU80-8	78	21,5	-	Ø8	SW19

* For silicone material



◀ Female thread X5

[mm]

Model	A	C	D	E	G	□J	K
VU20-M5X5F	22	17	9	5	M5X5	15	22
VU25-M5X5F	27	18	9	5	M5X5	15	22
VU30-M5X5F	32	18,5	9	5	M5X5	15	22
VU40-18X5F	42	31	18	10	G1/8" X5	22	30
VU50-18X5F	53	35,5	18	10	G1/8" X5	28	36

VF Series (Flat)

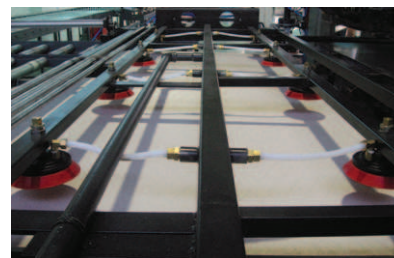
Features and Strengths

Good lifting forces can be achieved with this cup in the horizontal plane, but is also good in the vertical plane. The feet inside the cup provide a good register as well as enhancing the adhesion to the surface.



Suitable for Handling

- Sheet metal
- Plastic
- Veneer Sheets
- Electronic components



Order No.

VF40
PU - 18F
BV - L 1820T
BJ 18

①
②
③
④
⑤
⑥

▶ See pages 39, 60-67.

① Diameter

VF15	- Ø15
VF20	- Ø20
VF25	- Ø25
VF30	- Ø30
• VF40	- Ø40
VF50	- Ø50
VF50X2	- Ø50
VF75	- Ø75
VF90	- Ø90*
VF110	- Ø110
VF150	- Ø150
VF200	- Ø200
VF300	- Ø300

*Only PU Material

② Material

N	- NBR
S	- Silicon
WS	- White Silicon
HS	- High Temp. Silicon
CS	- Conductive (Special mat'l)
U	- Urethane
A	- Mark free
• PU	- Poly Urethane*
WPU	- Poly Urethane* (Minimal mark)

*Only for VF30, VF40, VF50, VF75, VF90

③ Thread size

M5M	- M5 male (VF15)
18M	- G1/8" male (VF40)
14M	- G1/4" male (VF40, VF50)
38M	- G3/8" male (VF50)
M16M	- M16XP1,0 male (VF50X2)
M518MF	- M5 female and G1/8" male (VF20, VF25, VF30)
M518MFX*	- M5 female and G1/8" male (VF20, VF25, VF30)
• 18F(A)	- G1/8" female (VF20, VF25, VF30, VF40, VF50, VF75, VF90)
18FX*	- G1/8" female (VF40)
14F(A)	- G1/4" female (VF75, VF90)
38F(A)	- G3/8" female (VF75, VF90)
12F(A)	- G1/2" female (VF75, VF90, VF110, VF150, VF200)
M5X5F	- M5X5 female (VF20, VF25, VF30)
18X5F	- G1/8X5 female (VF40, VF50)
34F	- G3/4" female (VF300)

Remark : VF40~200 fittings are including mesh filter.

* Only for silicon material (A) : AL-Material (Only VF75, VF90)

④ Valves

no mark	- Standard
EV	- Vacuum Efficiency Valve (See page : 16) (VF20, VF25, VF30, VF40, VF50)
• BV	- Button Valve (See page : 16) (VF20, VF25, VF30, VF40, VF50, VF75, VF90, VF110, VF150)

Accessories order No.

L 1820T



BJ 18



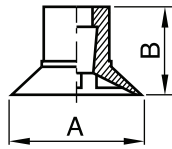
⑤ Level compensator		⑥ Ball joint model	
Model	Stroke (mm)		
L506TX, L506TS	6	-	
L510LTX, L510LTS	10		
L507T, L507TN	7		
L515T	15		
L510, L510T	10		
L520, L520T, L520TF	20		
L1805F	5		
L525TSN	25		
L1805M	5		• BJ 18
L1810T, L1810TS, L1810TSE	10		
L1815, L1815T	15		
• L1820T, L1820TS	20		
L1820TN*	20		
L1830, L1830T, L1830TS	30		
L1850, L1850T	50	BJ 12	
L1230, L1230T	30		
L1250, L1250T	50		

Remark : When apply level compensator into VF300, Use 1/2" level compensator 2pcs or 4pcs
 *Not available with ball joint(BJ)..

Recommended (max.) lifting forces

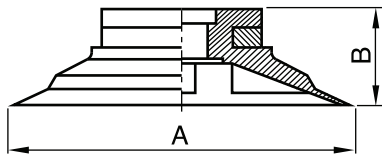
Model	Volume (cm ³)	Lifting Force (kg) - Perpendicular			Lifting Force (kg) - Parallel		
		-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
VF15	0,037	0,35	0,86	1,12	0,35	0,66	0,76
VF20	1,0	0,61	1,47	1,93	0,51	0,81	0,86
VF25	1,1	0,91	1,98	2,55	0,81	0,91	1,02
VF30	2,0	1,22	2,55	3,16	1,12	1,63	2,04
VF40	4,8	2,04	4,08	5,10	1,53	2,55	3,06
VF50	10	3,67	7,55	9,79	2,44	4,08	5,10
VF50x2	10	3,67	7,55	9,79	2,44	4,08	5,10
VF75	20	8,16	20,40	27,55	6,12	11,22	14,28
VF90	50	10,2	27,83	37,41	8,84	15,98	19,72
VF110	70	14,28	42,58	57,14	14,28	25,51	30,61
VF150	160	30,61	86,73	112,24	25,51	61,22	81,63
VF200	460	76,53	193,87	275,51	38,3	96,9	137,5
VF300	820	163	438	653	135	307	476

Dimensional Information including



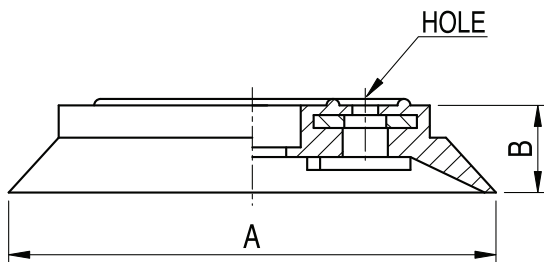
◀ VF15 [mm]

Model	A	B
VF15	16,5	11



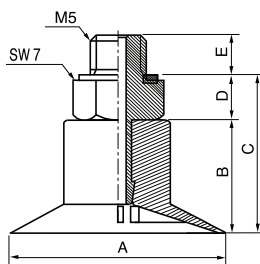
◀ VF20, 25, 30, 40, 50 [mm]

Model	A	B
VF20	22	8
VF25	27	9
VF30	32	10
VF40	42	13
VF50	53	17,5



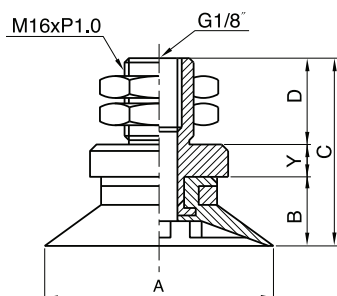
◀ VF75, 90, 110, 150, 200 [mm]

Model	A	B	HOLE
VF75	77	13	4- \varnothing 6.5 P.C.D \varnothing 35
VF90	92	12,5	4- \varnothing 6.5 P.C.D \varnothing 35
VF110	112	20	8- \varnothing 6 P.C.D \varnothing 55
VF150	152	26	8- \varnothing 6 P.C.D \varnothing 70.5
VF200	200	41	-



◀ Male thread [mm]

Model	A	B	C	D	E
VF15-M5-M	16,5	11	16	5	3,5



◀ Male / Female thread [mm]

Model	A	Y	B	C	D
VF50x2	53	7,5	17,5	43,5	20

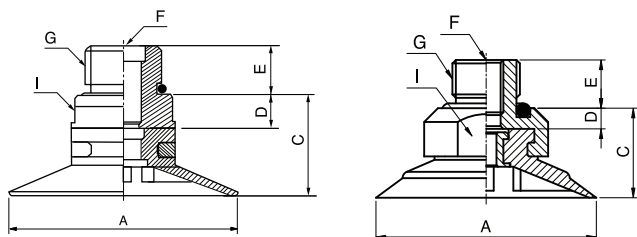
Dimensional Information

◀ Male/Female thread

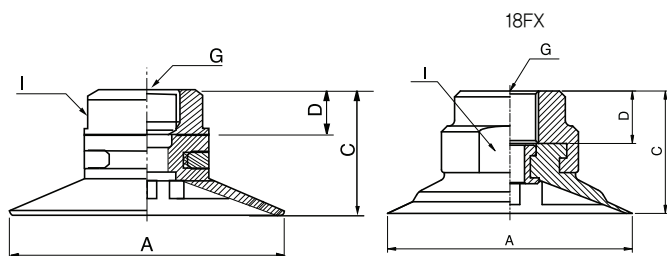
[mm]

Model	A	C	D	E	F	G	I
VF20-M518MF	22	9,5	1,5	6	M5	G1/8"	SW12
VF20-M518MF*	22	11	3	7	M5	G1/8"	SW16
VF25-M518MF	27	10,5	1,5	6	M5	G1/8"	SW12
VF25-M518MF*	27	12	3	7	M5	G1/8"	SW16
VF30-M518MF	32	11,5	1,5	6	M5	G1/8"	SW12
VF30-M518MF*	32	13	3	7	M5	G1/8"	SW16
VF40-18M	42	18	5	7	-	G1/8"	SW17
VF40-14M	42	19	6	9	-	G1/4"	SW17
VF50-14M	53	22,5	6	10	-	G1/4"	SW24
VF50-38M	53	23,5	6	10	-	G3/8"	SW24

*For silicone material



SUCTION CUPS

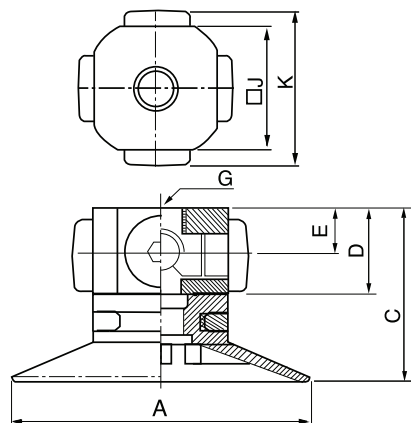


◀ Female thread

[mm]

Model	A	C	D	G	I
VF20-18F	22	16	8	G1/8"	SW15
VF25-18F	27	17	8	G1/8"	SW15
VF30-18F	32	18	8	G1/8"	SW15
VF40-18F	42	21	8	G1/8"	SW17
VF40-18FX*	42	22	9	G1/8"	SW21
VF50-18F	53	26,5	9	G1/8"	SW21

* For silicone material

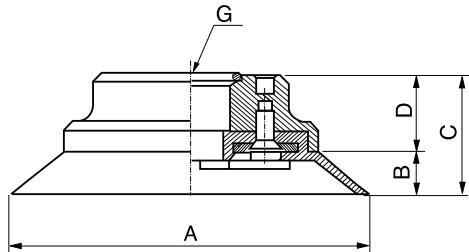


◀ Female thread

[mm]

Model	A	C	D	E	G	□J	K
VF20-M5X5F	22	17	9	5	M5x5	15	22
VF25-M5X5F	27	18	9	5	M5x5	15	22
VF30-M5X5F	32	19	9	5	M5x5	15	22
VF40-18X5F	42	31	18	10	G1/8"X5	22	30
VF50-18X5F	53	35,5	18	10	G1/8"X5	28	36

Dimensional Information

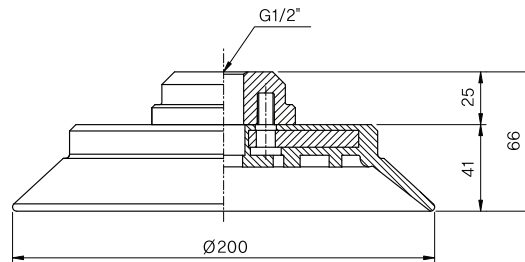


◀ Female thread

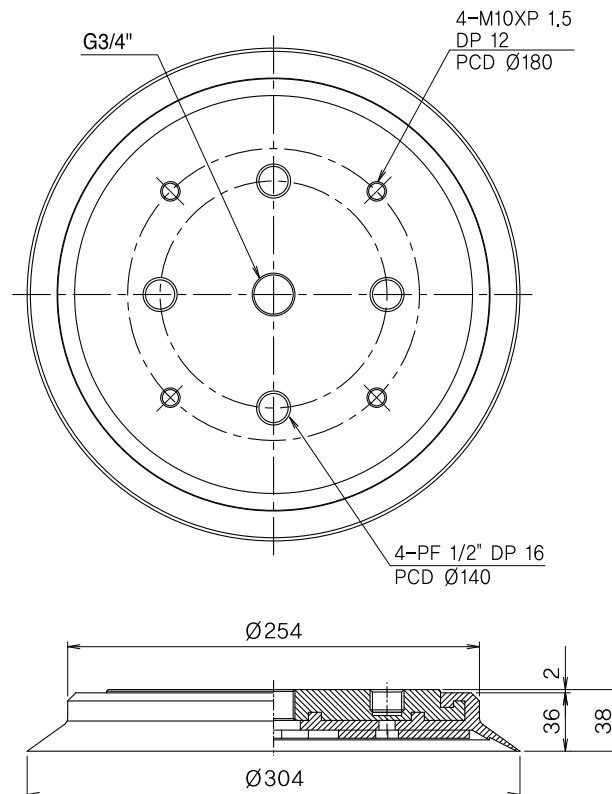
[mm]

Model	A	B	C	D	G
VF75-18F	77	8	26	18	G1/8"
VF75-14F	77	8	26	18	G1/4"
VF75-38F	77	8	26	18	G3/8"
VF75-12F	77	8	26	18	G1/2"
VF90-18F	92	7,5	25,5	18	G1/8"
VF90-14F	92	7,5	25,5	18	G1/4"
VF90-38F	92	7,5	25,5	18	G3/8"
VF90-12F	92	7,5	25,5	18	G1/2"
VF110-12F	112	14	29	15	G1/2"
VF150-12F	152	19	33	14	G1/2"

VF200-12F

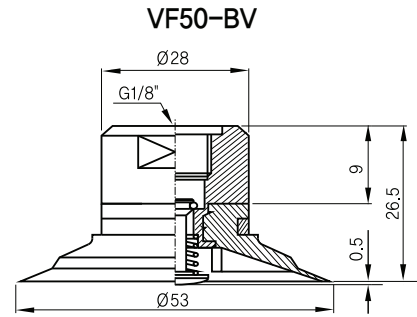
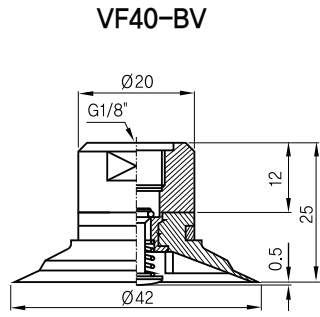
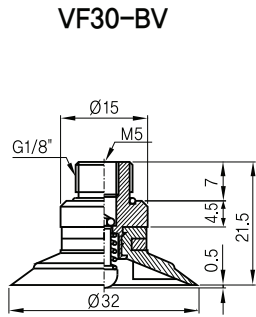


VF300-34F

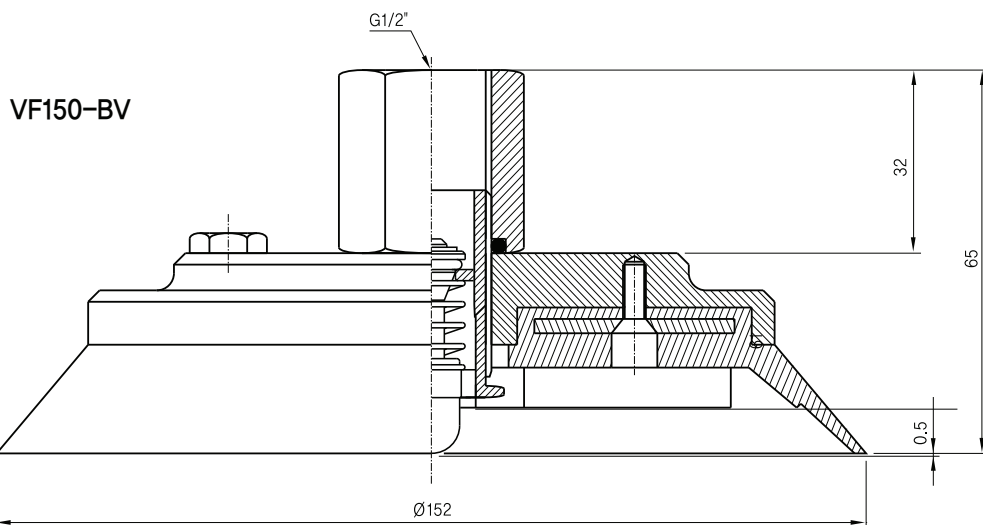
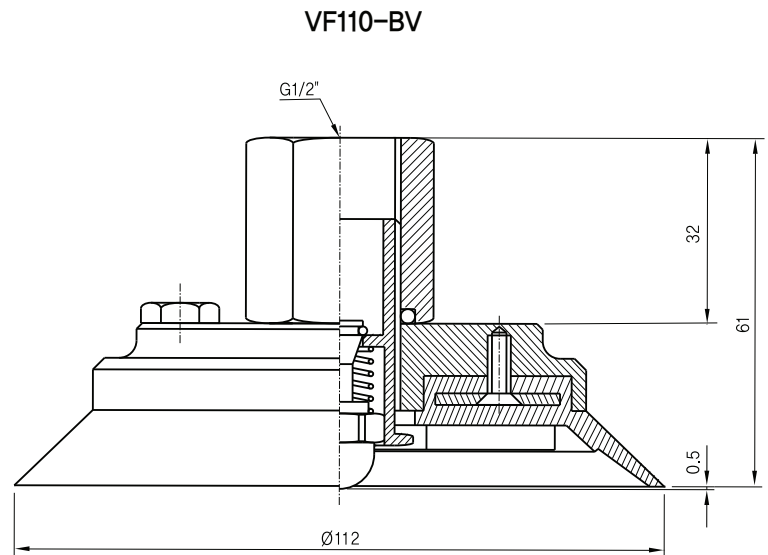
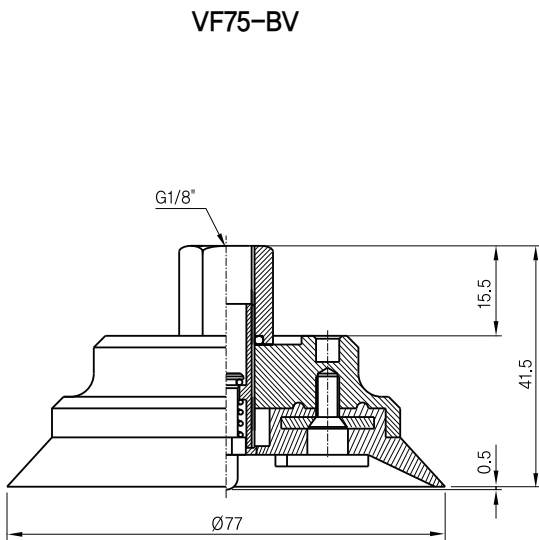


[Measure unit : mm]

Dimensional Information including button valve



[Measure unit : mm]



[Measure unit : mm]

VFC Series (Flat Curve)

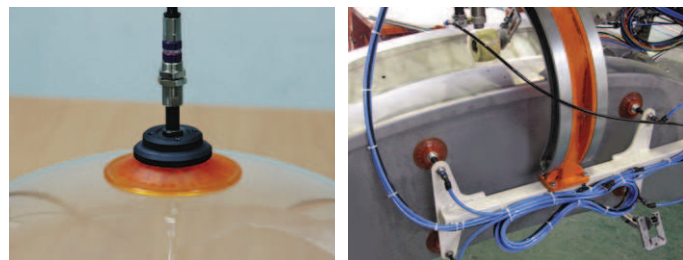
Features and Strengths

This cup is specifically designed to cope with both flat and curved surfaces, which means that multiple objects can be handled with the same suction cup.



Suitable for Handling

- Automotive Windscreens, Roof and Door.
- Sheet Metal
- Shaped Sheet Metal Panels
- TV Cathode ray Tube



Order No.

VFC50 PU - 1838MF - L1820T BJ 18

① ② ③ ④ ⑤

▶ See pages 45, 60-67.

① Diameter

- **VFC50** – Ø50
- VFC60 – Ø60
- VFC60X1 – Ø60
- VFC75 – Ø75
- VFC75X1 – Ø75
- VFC75X2 – Ø75
- VFC90 – Ø90*
- VFC100 – Ø100

*Only for PU Material

② Material

- N – NBR
- S – Silicon
- WS – White Silicon
- HS – High Temp. Silicon
- CS – Conductive (Special mat'l)
- U – Urethane
- A – Mark free
- **PU** – Poly Urethane*
- WPU – Poly Urethane* (Minimal mark)

*Only for VFC50, VFC60
VFC75, VFC90, VFC100

③ Thread size

- M10M – M10XP1,5 male (VFC60X1, VFC75X1)
- M16M – M16XP1,0 male (VFC75X2)
- **1838MF** – G1/8" female and G3/8" male (VFC50, VFC60, VFC75)
- 18F(A) – G1/8" female (VFC90, VFC100)
- 14F(A) – G1/4" (VFC90, VFC100)
- 38F(A) – G3/8" female (VFC90, VFC100)
- 12F(A) – G1/2" female (VFC90, VFC100)

Remark : VFC90, 100 fittings are including mesh filter.
(A) : AL-Material

Accessories order No.

L 1820T

④



BJ 18

⑤

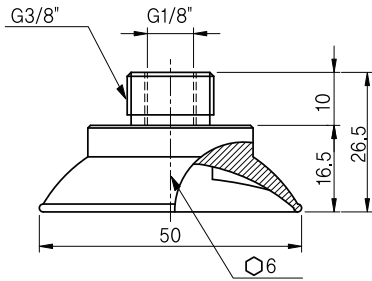
④ Level compensator		⑤ Ball joint model
Model	Stroke	
L1805M	5	<ul style="list-style-type: none"> • BJ 18
L1810T	10	
L1810TS, L1810TSE	10	
L1815T, L1815	15	
• L1820T, L1820TS	20	
L1820TN*	20	
L1830	30	
L1830T, L1830TS	30	
L1850	50	
L1850T	50	
L1230	30	BJ 12
L1230T	30	
L1250	50	
L1250T	50	

* Not available with ball joint(BJ)

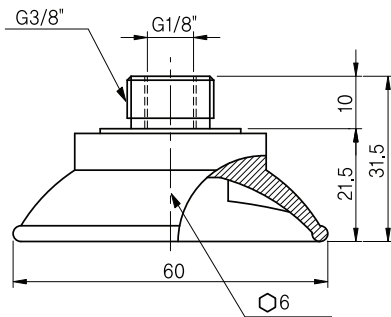
Recommended (max.) lifting forces

Model	Volume (cm ³)	Lifting Force (kg) - Perpendicular 			Lifting Force (kg) - Parallel 		
		-20 kPa	-60kPa	-90kPa	-20 kPa	-60kPa	-90kPa
VFC50	10	2.85	6.94	10.2	2.61	6.34	8.2
VFC60	20	4.55	11.57	15.3	3.05	7.92	10.7
VFC60X1	20	4.55	11.57	15.3	3.05	7.92	10.7
VFC75	30	7.65	19.38	25.51	6.19	15.46	20.9
VFC75X1	30	7.65	19.38	25.51	6.19	15.46	20.9
VFC75X2	30	7.65	19.38	25.51	6.19	15.46	20.9
VFC90	60	9.8	24.82	32.65	9.52	21.59	27.89
VFC100	80	12.75	35.71	46.93	12.24	23.97	28.57

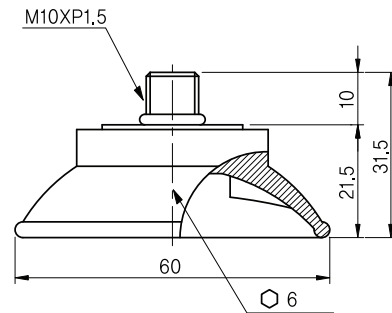
Dimensional Information



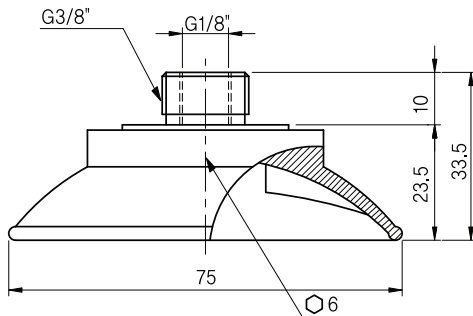
VFC50-1838MF



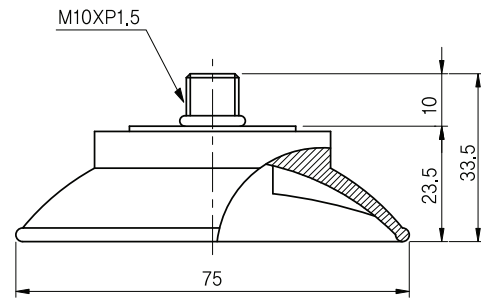
VFC60-1838MF



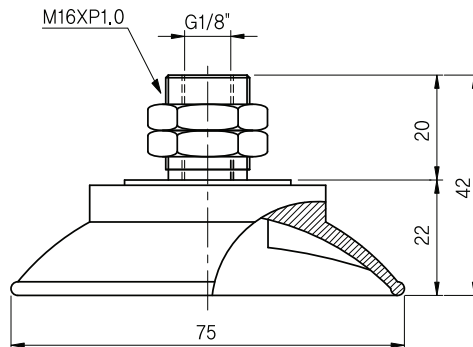
VFC60 X 1



VFC75-1838MF



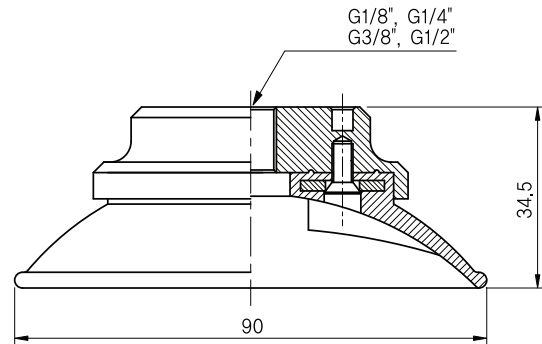
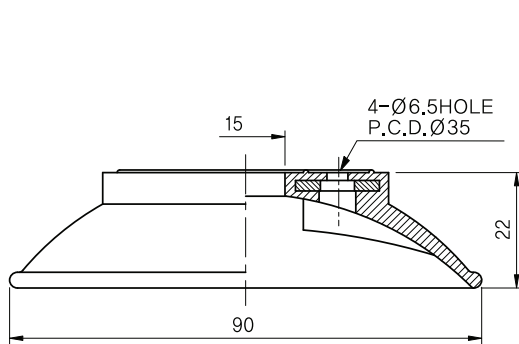
VFC75 X 1



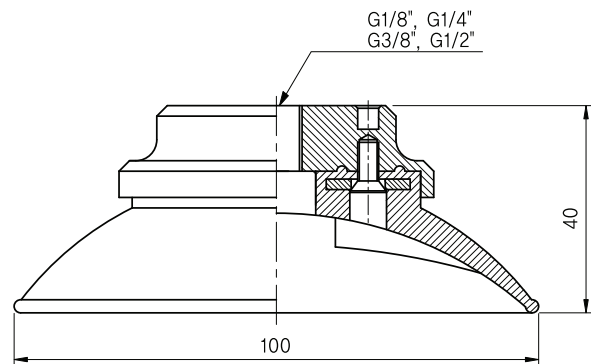
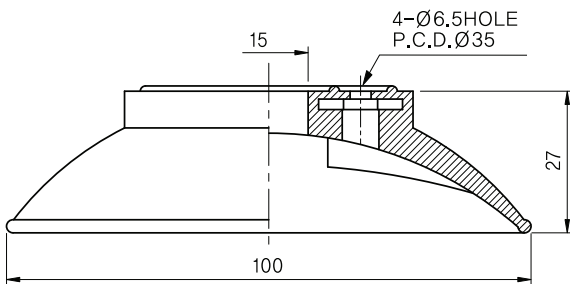
VFC75 X 2

[Measure unit : mm]

Dimensional Information



VFC90



VFC100

[Measure unit : mm]

VD Series (Deep)

Features and Strengths

This cup is best suited to curved or irregular surfaces. Also, it is deep and grip around corners and edges.



Suitable for Handling

- Automotive Roof and Door.
- Sheet metal
- Plastic sheets
- Sheet veneer
- Shaped sheet metal panels



Order No.

VD50 PU - 18F - L 1820T BJ 18



① Diameter

VD30	- Ø30
VD40	- Ø40
• VD50	- Ø50
VD60	- Ø60
VD70	- Ø70*
VD85	- Ø85
VD85X	- Ø85
VD90F	- Ø90*

*Only for PU material

② Material

N	- NBR
S	- Silicon
WS	- White Silicon
HS	- High Temp. Silicon
CS	- Conductive (Special mat'l)
U	- Urethane
A	- Mark free
• PU	- Poly Urethane*
WPU	- Poly Urethane* (Minimal mark)

*Only for VD30,VD40,VD50, VD60, VD70, VD90F

③ Thread size

M8M	- M8 X P1,25 male (VD30, VD40, VD50, VD60, VD70, VD85)
M10M	- M10 X P1,5 male (VD30, VD40, VD50, VD60, VD70, VD85)
• 18F	- G1/8" female (VD30, VD40, VD50, VD60, VD70, VD85, VD90F)
14F	- G1/4" female (VD90F)
38F	- G3/8" female (VD90F)
12F	- G1/2" female (VD85, VD90F)
H19	- Ø19 Hole (VD90F)

► See pages 60-67.

Accessories order No.



L 1820T BJ 18



④ Level compensator		⑤ Ball joint model
Model	Stroke (mm)	
L1805M	5	• BJ 18
L1810T, L1810TS, L1810TSE	10	
L1815T, L1815	15	
• L1820T, L1820TS	20	
L1820TN*	20	
L1830, L1830T, L1830TS	30	
L1850, L1850T	50	
L1230, L1230T	30	
L1250, L1250T	50	

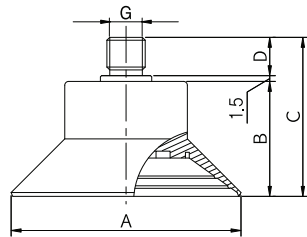
* Not available with ball joint(BJ)

Recommended (max.) lifting forces

Model	Volume (cm ³)	Lifting Force (kg) - Perpendicular 			Lifting Force (kg) - Parallel 		
		-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
VD30	4,5	1,22	2,55	3,06	0,73	1,53	1,83
VD40	7	2,04	3,97	5,0	1,22	2,38	3,00
VD50	13,5	3,57	7,44	9,38	2,14	4,46	5,62
VD60	22	5,50	14	18,5	3,3	8,4	11,1
VD70	38	7,15	18,8	24,9	4,2	11,6	16,2
VD85	60	10	28	39	6,0	16,8	23,4
VD85X	68	10	28	39	6,0	16,8	23,4
VD90F	56	9,25	24,36	32,17	7,97	14,42	18,15

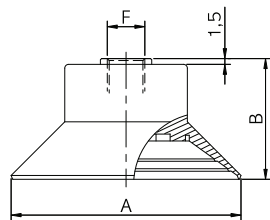
SUCTION CUPS

Dimensional information



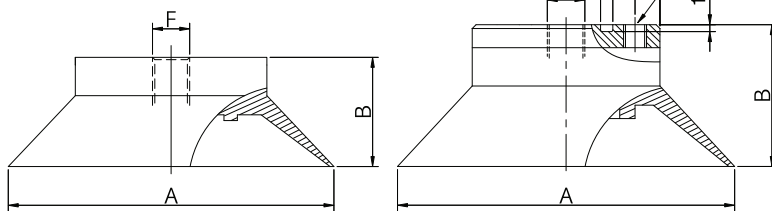
Male thread

Model	A	B	C	D	G
VD30	30	25	35	10	M8xP1.25 or M10xP1.5
VD40	40	25	35	10	M8xP1.25 or M10xP1.5
VD50	50	25	35	10	M8xP1.25 or M10xP1.5
VD60	61	30	41.5	10	M8xP1.25 or M10xP1.5
VD70	72	30	41.5	10	M8xP1.25 or M10xP1.5
VD85	85	28.5	38.5	10	M8xP1.25 or M10xP1.5



Female thread

Model	A	B	F
VD30	30	25	G1/8"
VD40	40	25	G1/8"
VD50	50	25	G1/8"
VD60	61	30	G1/8"
VD70	72	30	G1/8"

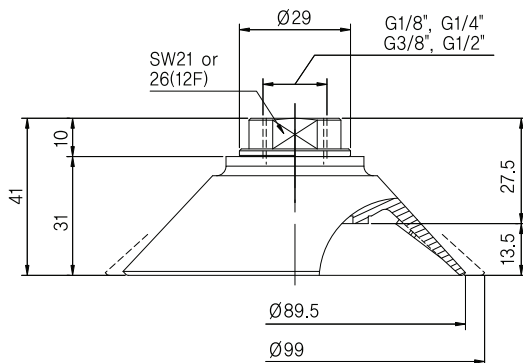


▲ VD 85

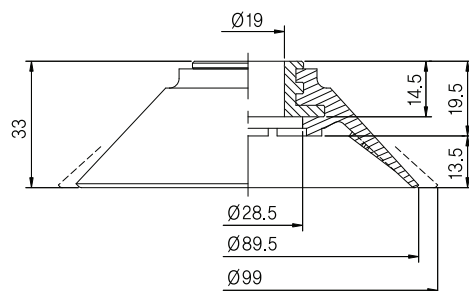
▲ VD 85X

Female thread

Model	A	B	F
VD85	85	28.5	G1/8", G1/2"
VD85X	88	37	G1/8"



▲ VD90F - 18F, 14F, 38F, 12F



▲ VD90F - H19

VS Series (Sponge)

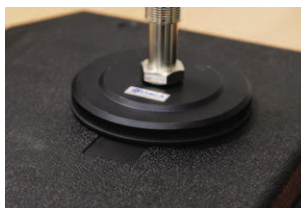
Features and Strengths

Used for handling rough and uneven surfaces and when used with ball joint option and level compensator option can accommodate very unlevel and uneven surfaces.



Suitable for Handling

- Marble
- Paving Slabs
- Bricks
- Rough Wood
- Masonry



Order No.

VS60 **E** **F** **- 18F** **BV** **- L1820T** **BJ 18**

① ② ③ ④ ⑤ ⑥ ⑦

▶ See pages 60-67.

① Diameter

VS30X80	- Ø30X80
VS35	- Ø35
• VS60	- Ø60
VS100	- Ø100
VS150	- Ø150
VS200	- Ø200
VS300	- Ø300
VS400	- Ø400

② Material

- **E** - EPDM

③ Adjustable support (Handling for thin Film)

- | | |
|------------|---|
| no mark | - standard |
| • F | - with adjustable* support (See page : 17) (VS35, VS60, VS100, VS150) |

* Not available with BV (Button valve)option

④ Thread size

- **18F** - G1/8" female (VS35, VS60)
- 12F - G1/2" female (VS30X80, VS100, VS150, VS200)
- 34F - G3/4" female (VS200, VS300, VS400)

⑤ Valves

- | | |
|-------------|---|
| no mark | - standard |
| • BV | - Button valve (See page : 16page) (VS35, VS60, VS100, VS150) |

Accessories order No.

L 1820T **BJ 18**

⑥ ⑦

⑥ Level Compensator		⑦ Ball joint model
Model	Stroke (mm)	
L1805M	5	• BJ 18
L1810T, L1810TS, L1810TSE	10	
L1815T, L1815	15	
• L1820T, L1820TS	20	
L1820TN*	20	
L1830, L1830T, L1830TS	30	
L1850, L1850T	50	
L1230, L1230T	30	BJ 12
L1250, L1250T	50	

*Not available with ball joint(BJ)

Recommended (max.) lifting forces

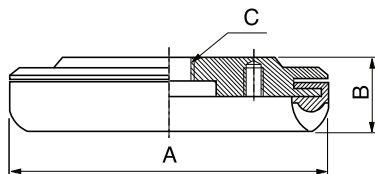
Model	Volume (cm ³)	Lifting Force (kg) – Perpendicular		
		-20 kPa	-60 kPa	-90 kPa
VS 30X80	43	2.7	9.1	14
VS35	6	2.04	5.1	7.14
VS60	20	6.12	15.3	22.44
VS100	55	18.36	45.9	67.34
VS150	125	38	97	138
VS200	543	76.53	193.87	275.51
VS300	1285	163.26	438.77	653.06
VS400	2285	326	876	1300

SUCTION CUPS

Dimensional Information

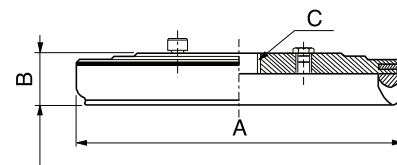
Female thread

VS35, 60, 100, 150



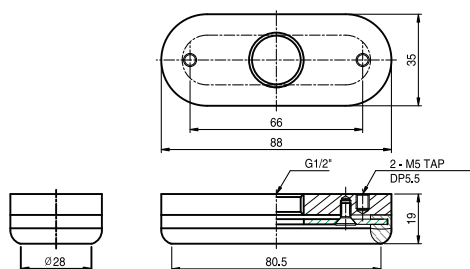
Model	A	B	C
VS35	42.5	15.5	G1/8"
VS60	67.5	15.5	G1/8"
VS100	107.5	19.5	G1/2"
VS150	157.5	19.5	G1/2"

VS200, 300, 400



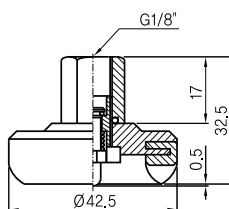
Model	A	B	C
VS200	215	34	G1/2", G3/4"
VS300	315	34	G3/4"
VS400	415	34	G3/4"

VS 30X80

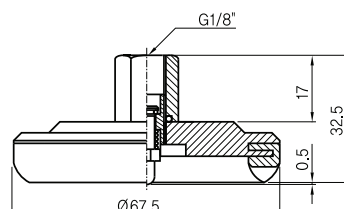


Button valve dimensional Information

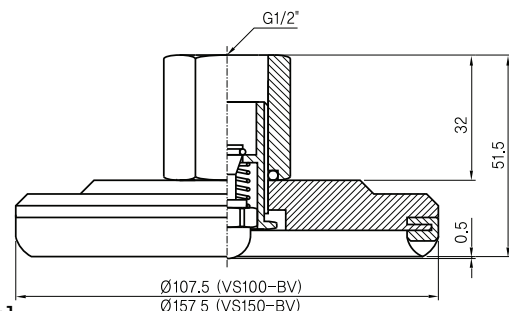
VS35-BV



VS60-BV



VS100-BV, VS150-BV



[Measure unit : mm]

VOU-Series

Features and Strengths

- Best suitable for handling long objects with flat and curved surfaces
- Good lifting forces can be achieved with small size
- Conductive silicon is excellent for handling PCB board or Electronic componets
- Easily mountable without detaching a fitting from the machine (save the maintenance time)



Suitable for Handling

- Semiconductor Chips (PCB board)
- Electronic components
- Small glass cases (e.g. ampule)
- Pipe



Order No.

VOU 15X45 - N F 18F - L 1820TN

① ② ③ ④ ⑤ ▶ See pages 60-67.

① Suction cup Ø(mm)

- VOU 4 X 10
- VOU 4 X 20
- VOU 6 X 10
- VOU 6 X 20
- VOU 8 X 20
- VOU 8 X 30
- VOU 10 X 30
- **VOU 15 X 45**
- VOU 20 X 60

② Material

- **N** - NBR
- S - Silicon
- WS** - White Silicon
- HS - High Temp. Silicon

③ Filter

- No Mark - Standard
 - **F*** - With mesh filter
- *Only for VOU 15x45
VOU 20x60

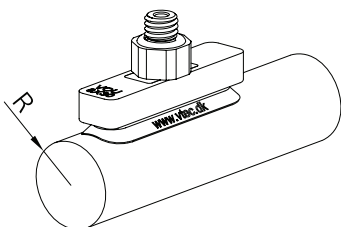
④ Fitting thread

- | | |
|-----------------------------|----------------------------|
| M5M - M5 X 0.8 Male | VOU 4X10, 4X20, 6X10, 6X20 |
| M5F - M5 X 0.8 Female | 8X20, 8X30, 10X30 |
| 18M - G1/8" Male | VOU 15X45, 20X60 |
| • 18F - G1/8" Female | |

⑤ Level Compensator (Accessory)

- | | |
|------------------|---|
| L507TN | - VOU 4X10, 4X20, 6X10, 6X20, 8X20, 8X30, 10X30 |
| • L1820TN | - VOU 15x45, 20x60 |

Recommended (max.) lifting forces

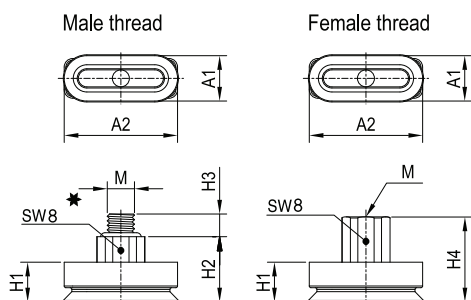


Model	Lifting Force (kg) -Perpendicular	Internal volume (cm ³)	Min.curvature radius R (mm)	Weight ≐ (kg)
VOU 4X10 -...	0.205	0.064	3.5	0.00031
VOU 4X20 -...	0.347	0.094	3.5	0.00036
VOU 6X10 -...	0.256	0.081	4.5	0.00031
VOU 6X20 -...	0.603	0.137	4.5	0.00037
VOU 8X20 -...	0.818	0.17	6.5	0.00037
VOU 8X30 -...	1.053	0.25	6.5	0.00043
VOU 10X30-...	1.554	0.394	8	0.00047
VOU 15X45 -...	3.271	1.584	11	0.022
VOU 20X60 -...	6.352	3.532	17	0.031

SUCTION CUPS

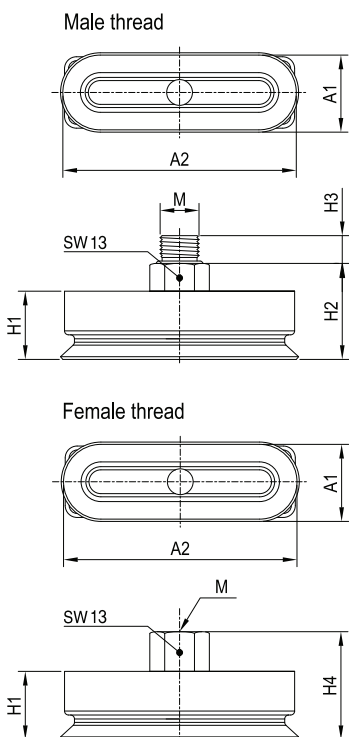
Dimensional information

▼ VOU 4X10 ~ 8X30



Model	A1	A2	H1	H2	H3	H4	M
VOU 4 x 10..M5M	4	10	7	11.5	4	-	M5 x 0.8
VOU 4 x 10..M5F				-	-	15	M5 x 0.8
VOU 4 x 20..M5M	4	20	7	11.5	4	-	M5 x 0.8
VOU 4 x 20..M5F				-	-	15	M5 x 0.8
VOU 6 x 10..M5M	6	10	7	11.5	4	-	M5 x 0.8
VOU 6 x 10..M5F				-	-	15	M5 x 0.8
VOU 6 x 20..M5M	6	20	7	11.5	4	-	M5 x 0.8
VOU 6 x 20..M5F				-	-	15	M5 x 0.8
VOU 8 x 20..M5M	8	20	7	11.5	4	-	M5 x 0.8
VOU 8 x 20..M5F				-	-	15	M5 x 0.8
VOU 8 x 30..M5M	8	30	7	11.5	4	-	M5 x 0.8
VOU 8 x 30..M5F				-	-	15	M5 x 0.8
VOU 10 x 30..M5M	10	30	8.2	12.7	4	-	M5 x 0.8
VOU 10 x 30..M5F				-	-	16.2	M5 x 0.8
VOU 15 x 45..18M	15	45	15.5	23	7	-	G1/8"
VOU 15 x 45..18F				-	-	25.5	G1/8"
VOU 20 x 60..18M	20	60	17.5	25	7	-	G1/8"
VOU 20 x 60..18F				-	-	27.5	G1/8"

▼ VOU 15X45, 20X60



VOC Series (Oval Curved)

Features and Strengths

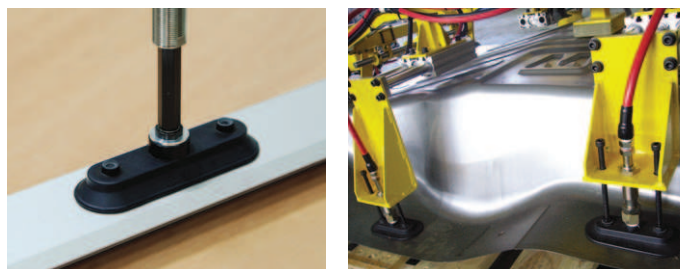
This cup is best suitable for handling long objects with flat or curved surfaces.

Specially, parallel to the surface of the object It has a thick and durable lip.



Suitable for Handling

- Long Objects with Flat
- Curved Surfaces
- Shaped Sheet Metal Panels
- Automotive Bumper



Order No.

VOC 35x90 N - 38F

①

②

③

① Suction cup Ø(mm)

VOC11x23	- Ø11x23
• VOC35x90	- Ø35x90
VOC35x110	- Ø35x110
VOC60x140	- Ø60x140
VOC60x180	- Ø60x180

② Material

• N	- NBR
S	- Silicon
WS	- White Silicon
HS	- High Temp. Silicon
CS	- Conductive (Specil mat'l)
U	- Urethane
A	- Mark free

③ Thread size

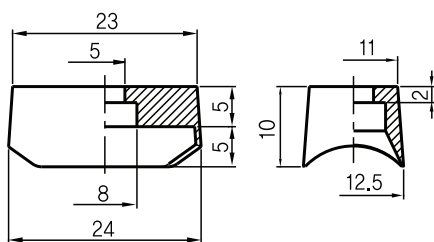
• 38F	- G3/8" female
	(VOC35X90,35X110
	VOC60X140, 60X180

Recommended (max.) lifting forces

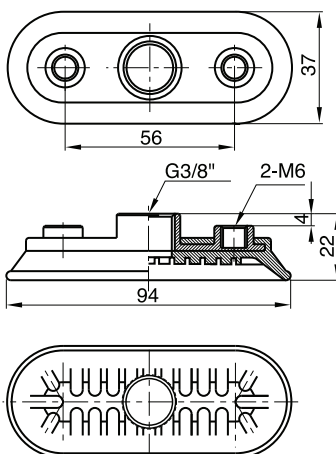
Model	Volume (cm³)	Lifting Force (kg) - Perpendicular			Lifting Force (kg) - Parallel		
		-20 kPa	-60 kPa	-90 kPa	-20 kPa	-60 kPa	-90 kPa
VOC 11 X 23	2,0	0,61	1,3	1,6	0,6	1,2	1,5
VOC 35 X 90	20	5	13,4	17,4	4	10,72	13,92
VOC 35 X 110	25	6,25	16,7	21,7	5	13,36	17,36
VOC 60 X 140	52	13,4	38,0	53,0	10,72	30,4	42,4
VOC 60 X 180	67	19,1	54,2	75,7	15,28	43,36	60,56

Dimensional Information

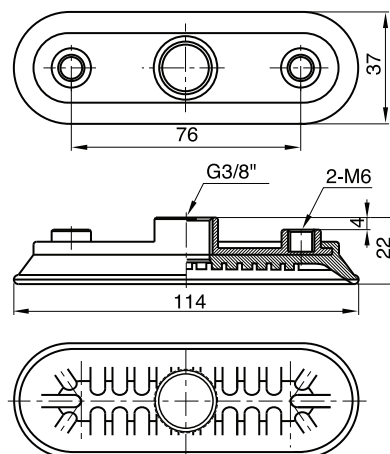
VOC 11x23



VOC 35x90 - 38F

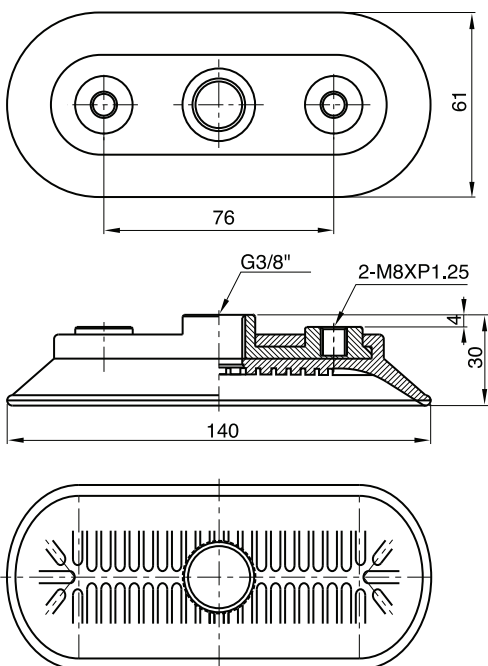


VOC 35x110 - 38F

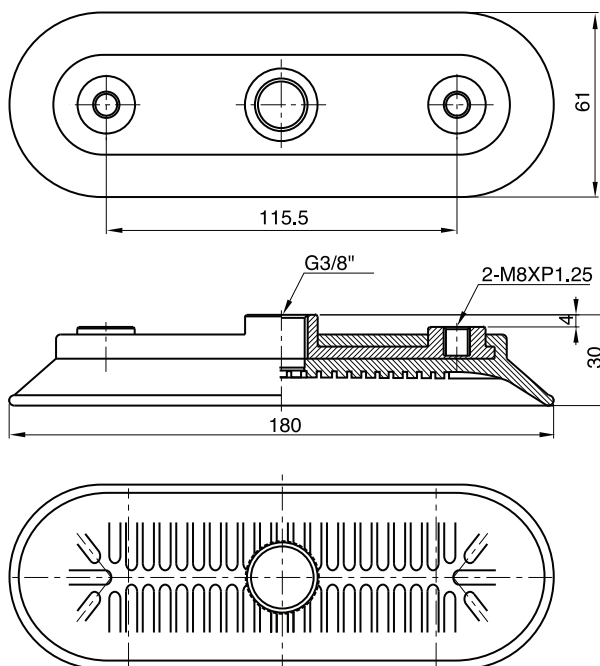


[Measure unit : mm]

VOC 60x140 - 38F



VOC 60x180 - 38F



[Measure unit : mm]

KPS Series (Plastic Bag Opening)

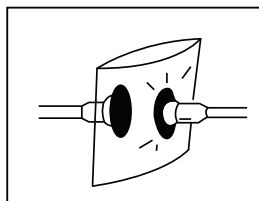
Features and Strengths

Developed to be used for opening plastic bags this cup gives good adhesion to thin plastic and film type materials.



Suitable for Handling

- Plastic Bag Opening
- Thin Film Materials
- Paper Bag Handling



Order No.

KPS-1

U

①

②

① Suction cup Ø

- **KPS-1*** – Ø34
- KPS-2 – Ø28
- KPS-3 – Ø13
- KPS-4 – Ø16
- KPS-5* – Ø28
- KPS-5-15* – Ø15
- KPS-6 – Ø30
- KPS-7 – Ø68
- KPS-8 – Ø25
- KPS-9* – Ø40
- VU-30-X – Ø30

* G1/8" Female fitting available

② Material

- N – NBR
- S – Silicon
- WS – White Silicon
- HS – High Temp. Silicon
- CS – Conductive (Special mat'l)
- **U** – Urethane

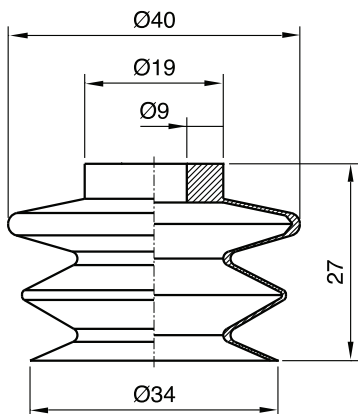
Remark : KPS-8 available only 'S', 'WS', 'HS'

Recommended (max.) lifting forces

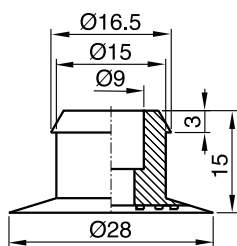
Model	Volume (cm ³)	Lifting Force (kg) – Perpendicular		
		-20 kPa	-60 kPa	-90 kPa
KPS-1	14,5	1,22	2,24	2,75
KPS-2	2,0	0,7	1,53	1,83
KPS-3	0,5	0,35	0,85	1,12
KPS-4	1,0	0,6	1,22	1,63
KPS-5	2,0	0,7	1,53	1,83
KPS-5-15	1,1	0,4	1,11	1,23
KPS-6	2,0	0,8	1,7	2,05
KPS-7	20	5,5	14	18,5
KPS-8	1,4	0,5	1,15	1,25
KPS-9	8	1,55	2,8	5,1
VU-30-X	1,8	0,65	1,48	1,78

Dimensional Information

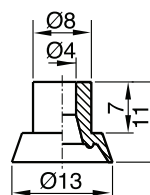
KPS-1



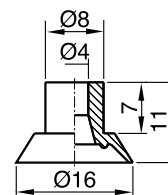
KPS-2



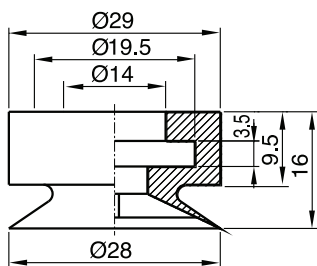
KPS-3



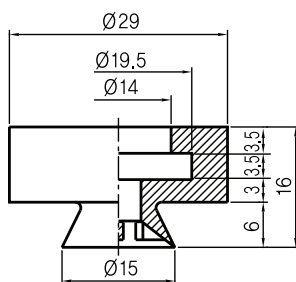
KPS-4



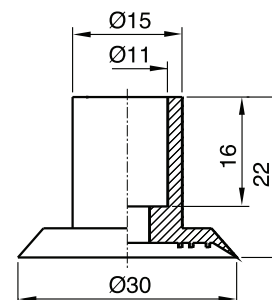
KPS-5



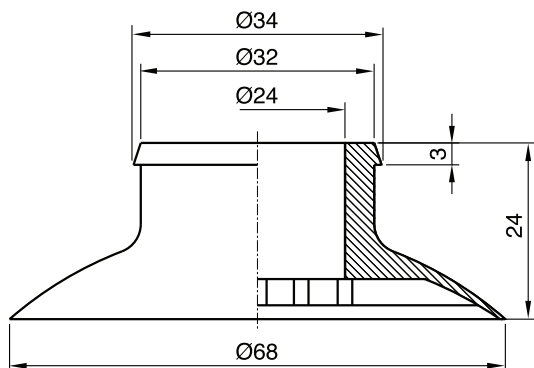
KPS-5-15



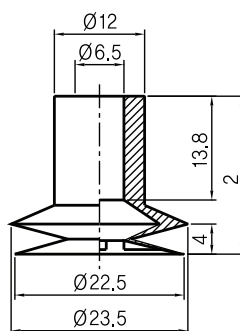
KPS-6



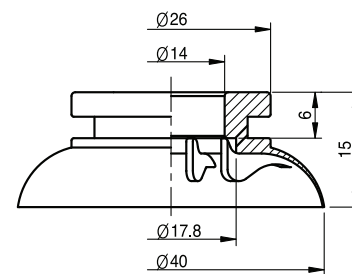
KPS-7



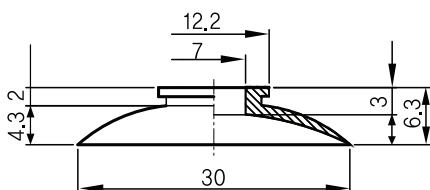
KPS-8



KPS-9



VU-30-X



[Measure unit : mm]

NF Series (Non-touch Flat)

PATENT & PATENT PENDING

Main advantages

- Non-contact handling item
- Integrated Multi-suction system
- Low air consumption
- Large vacuum flow and powerful suction force
- Safe gripping with mark free
- No moving parts
- Excellent gripping with metal sheets with holes.



Application

Circuit boards, Solar cell, CDs and DVDs, Uneven sheet
Wood, Packaging, Plastic, Thin products, Film, Paper,
Mirrors, Paper-board..

Order No.

NF 40 06 A - 18F

① ② ③ ④

① Vacuum pad Ø

- NF 20 – Ø20
- **NF 40** – Ø40
- NF 60 – Ø60

② Vacuum flows

- **06** – standard
- 12 – an extra vacuum flow

③ Material

- **A** – Aluminum
- P – PEEK**

**PEEK
• Excellent electrical insulating properties
• High abrasion Resistance
• Good Lubricity
• Consecutively Operating Temp. : 250°C
• Food Quality

④ Thread size

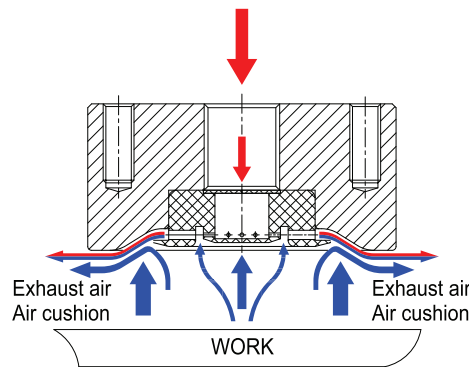
- M5F – M5XPO,8 female (NF20,..)
- **18F** – G1/8" female (NF40,.., NF60,..)

Technical Data

Model	Operating pressure (bar)	Air consumption (NI/m)			Holding force, (kg) at different pressure			Weight (g)
		4 bar	5 bar	6 bar	4 bar	5 bar	6 bar	
NF 20 06	4 ~ 6	75	82	90	0.2	0.22	0.22	Al : 21
NF 20 12		138	166	198	0.2	0.22	0.22	Peek : 11.5
NF 40 06	4 ~ 6	53	68	82	0.29	0.39	0.49	Al : 55
NF 40 12		120	128	135	0.49	0.59	0.68	Peek : 30
NF 60 06	4 ~ 6	105	123	126	0.59	0.79	0.89	Al : 130
NF 60 12		160	190	223	0.99	1.25	1.49	Peek : 70

The principle of VMECA NF PAD

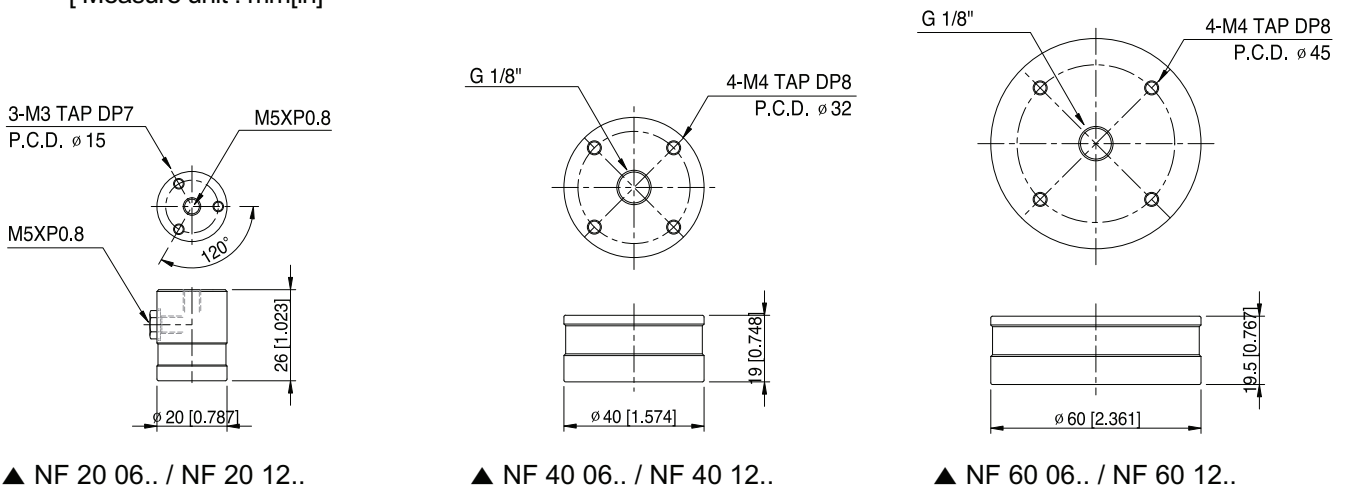
█ COMPRESSED AIR
█ VACUUM



PATENT & PATENT PENDING

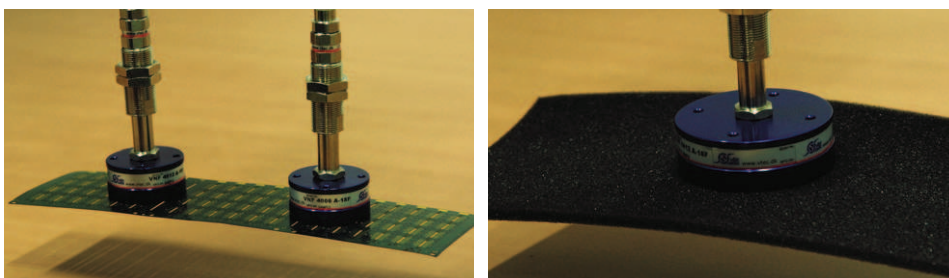
Dimensional information

[Measure unit : mm[in]]



SUCTION CUPS

Applications



Level Compensator

Features and Strengths

The Vtec level compensator is used to compensate for differences in height on the surface of the material that is to be lifted. The advantages being a more reliable and less precise pick up position when handling product that may be less consistent in its shape, size and position. The level compensator also provides a degree of shock absorption should this be required. The level compensator comes in configurations with varying sizes of spring and stroke.

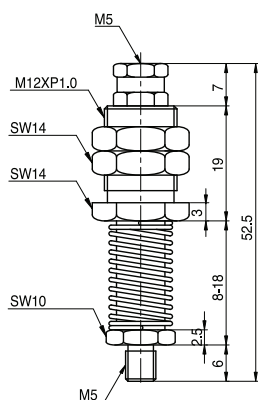


■ 5-Series

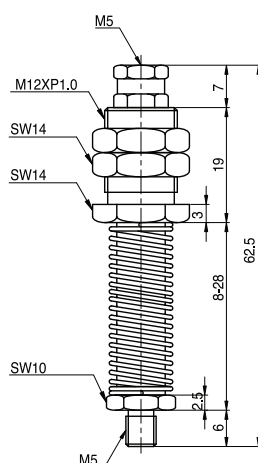
Dimensional Information

Model	Thread Size	Stroke (mm)	Weight (g)
L510T	M5-male	10	30
L520T	M5-male	20	33
L510	M5-male	10	33
L520	M5-male	20	36
L506TX	VB6X, VU1.5X, VU2X, VU4X	6	12
L506TS	VU10, VU15, VF15, VB10, VB12, VB15	6	12
L506TU	VU4, VU6, VU8, VB5, VB8	6	11
L506TM	VU2, VU3	6	11
L510LTX	VB6X, VU1.5X, VU2X, VU4X	10	19.5
L510LTS	VU10, VU15, VF15, VB10, VB12, VB15	10	19.8
L510LTU	VU4, VU6, VU8, VB5, VB8	10	19.2
L510LTM	VU2, VU3	10	19
L507T	M5-female	7	17
L515T	M5-female	15	20
L520TF	M5-female	20	20

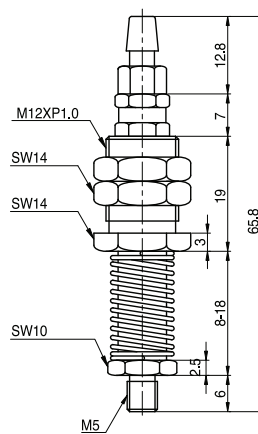
L510T



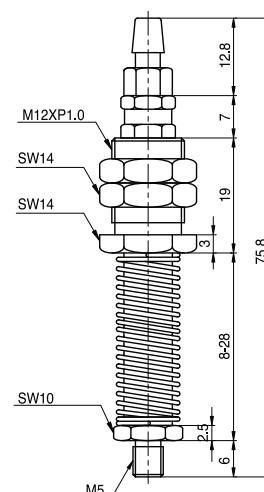
L520T



L510



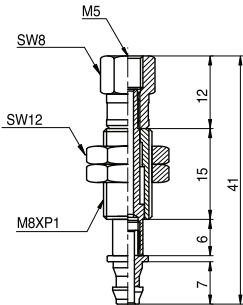
L520



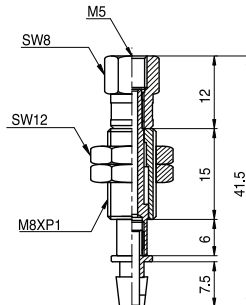
[Measure unit : mm]

Dimensional Information

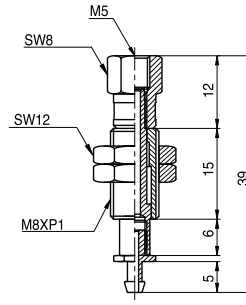
L506TX



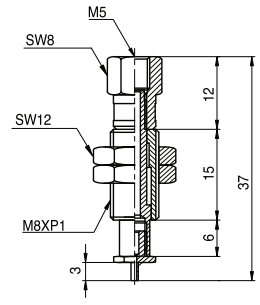
L506TS



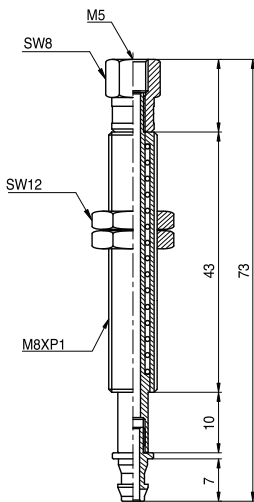
L506TU



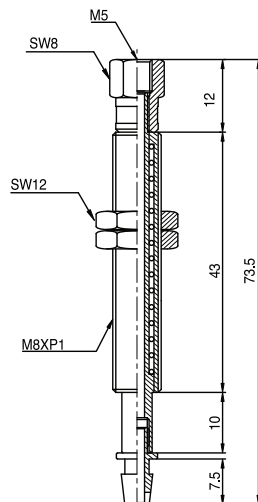
L506TM



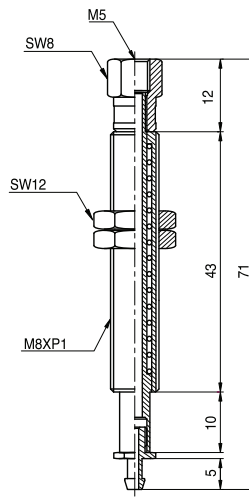
L510LTX



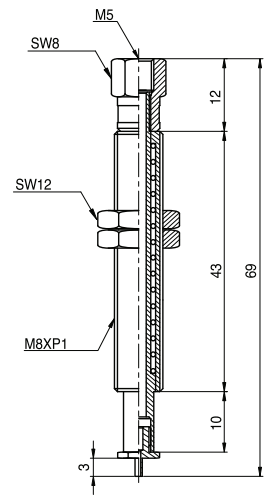
L510LTS



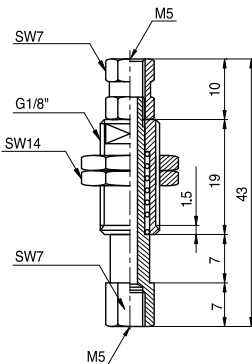
L510LTU



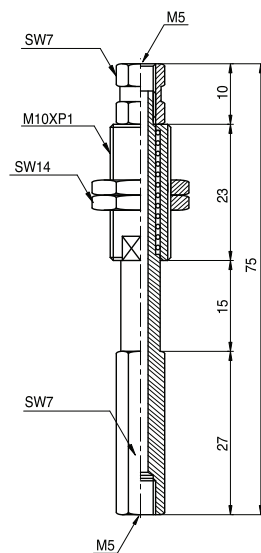
L510LTM



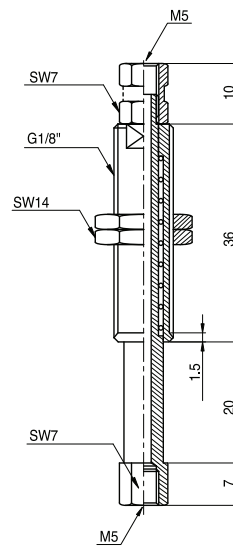
L507T



L515T



L520TF



[Measure unit : mm]

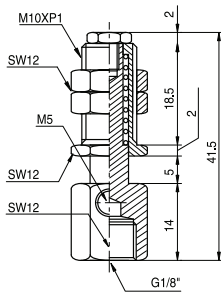
SUCTION CUPS

18-Series

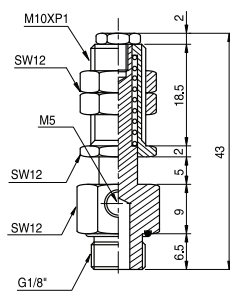
Dimensional Information

Model	Thread Size	Stroke (mm)	Weight (g)
L1805F	G1/8" - female	5	24
L1805M	G1/8" - male	5	28
L1810T	G1/8" - male	10	44
L1810TS-M10F	M10 - female	10	67
L1810TS	G1/8" - male	10	73
L1810TSE	G1/8" - male	10	93
L1815	G1/8" - male	15	86
L1815T	G1/8" - male	15	36
L1820T	G1/8" - male	20	56
L1820TS	G1/8" - male	20	83
L1830	G1/8" - male	30	54
L1830T	G1/8" - male	30	60
L1830TS	G1/8" - male	30	130
L1850	G1/8" - male	50	105
L1850T	G1/8" - male	50	66

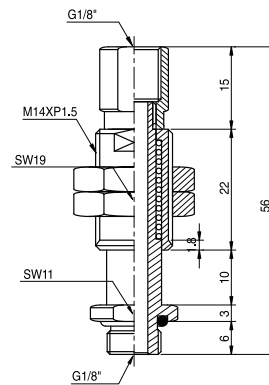
L 1805F



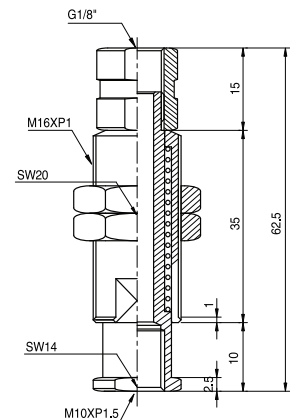
L 1805M



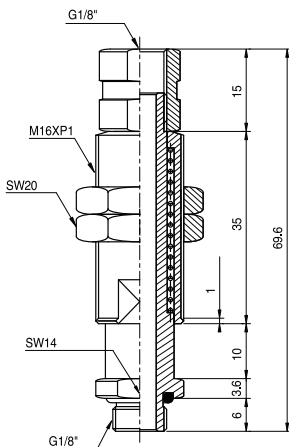
L 1810T



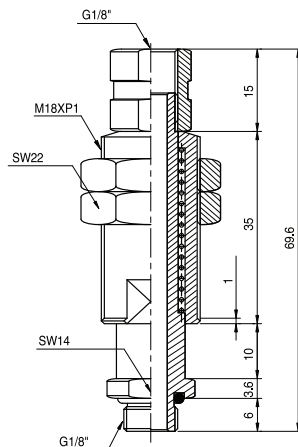
L 1810TS - M10F



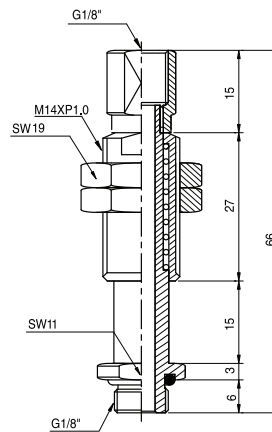
L 1810TS



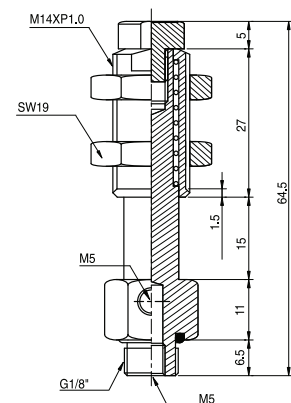
L 1810TSE



L 1815T



L 1815

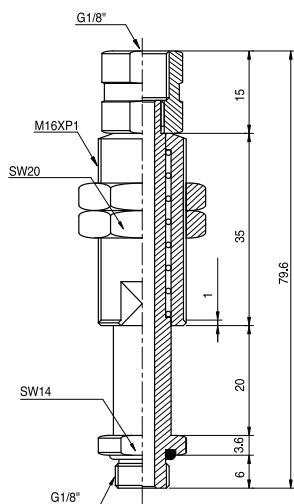


[Measure unit : mm]

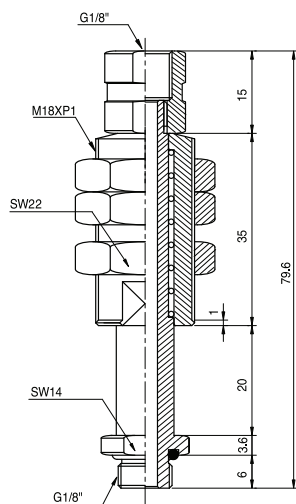
Dimensional Information

SUCTION CUPS

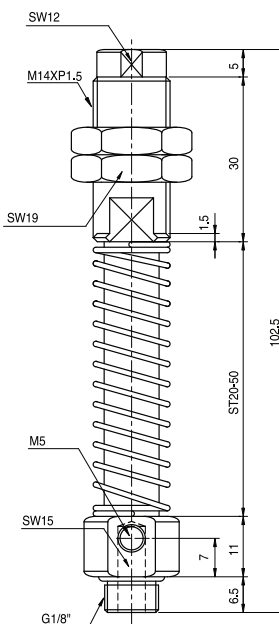
L 1820T



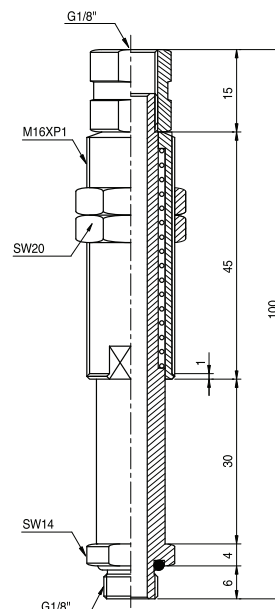
L 1820TS



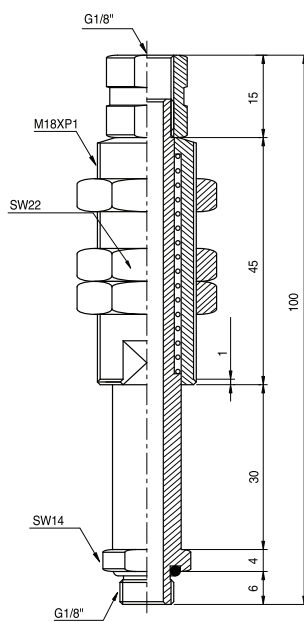
L 1830



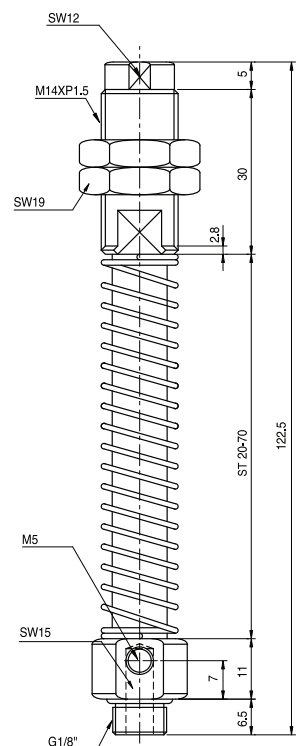
L 1830T



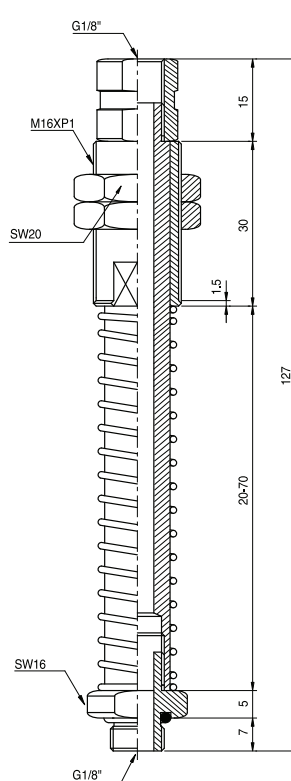
L 1830TS



L 1850



L 1850T



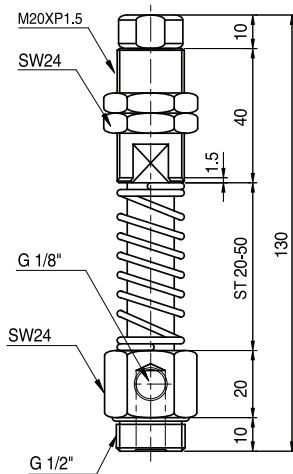
[Measure unit : mm]

12-Series

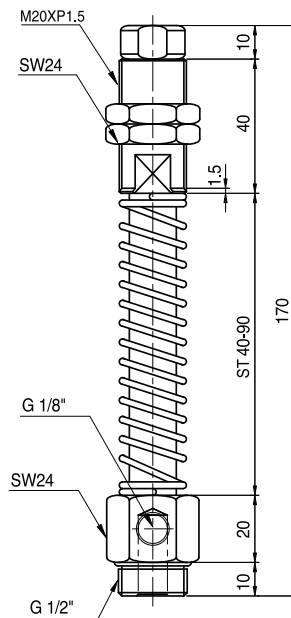
Dimensional Information

Model	Thread Size	Stroke (mm)	Weight (g)
L1230	G 1/2"	30	289
L1250	G 1/2"	50	350
L1230T	G 1/2"	30	241
L1250T	G 1/2"	50	156

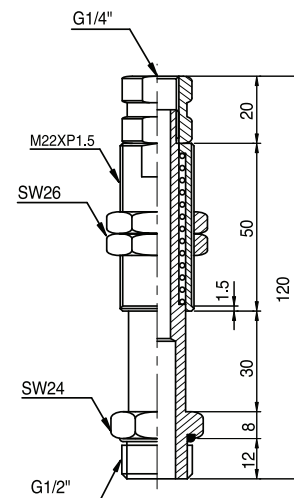
L 1230



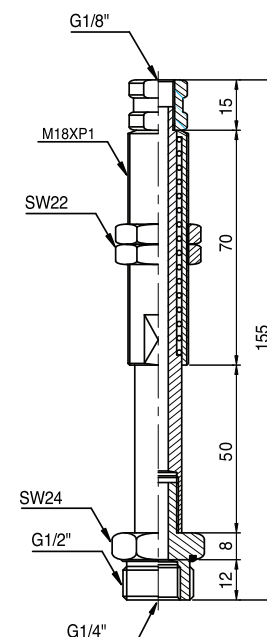
L 1250



L 1230T



L 1250T

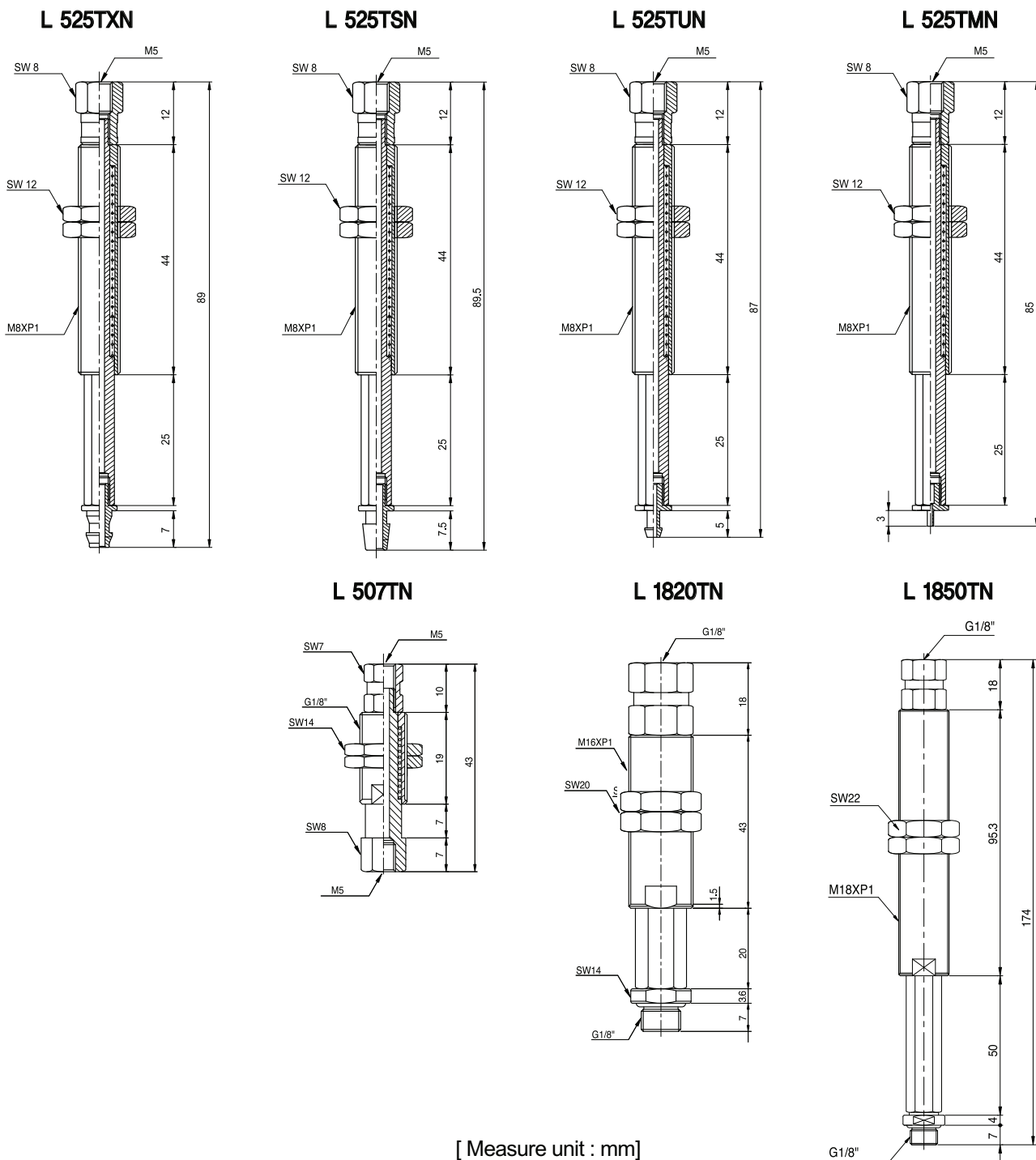


[Measure unit : mm]

■ Non Rotating Level Compensator

Dimensional Information

Model	Thread Size	Stroke (mm)	Weight (g)
L525TXN	VB6X, VU1.5X, VU2X, VU4X	25	20.7
L525TSN	VU10, VU15, VF15, VB10, VB12, VB15	25	20.6
L525TUN	VU4, VU6, VU8, VB5, VB8	25	20.3
L525TMN	VU2, VU3	25	20.1
L507TN	M5-female	7	18
L1820TN	G1/8"-male	20	54
L1850TN	G1/8"-male	50	140



[Measure unit : mm]

SUCTION CUPS

Ball Joints

Features and Strengths

The Vtec Ball Joint or sometimes referred to as a universal joint is for use when a degree of angular compliance is required, more commonly used with flat type cups which unlike bellows do not allow for much angular compliance as part of their design.

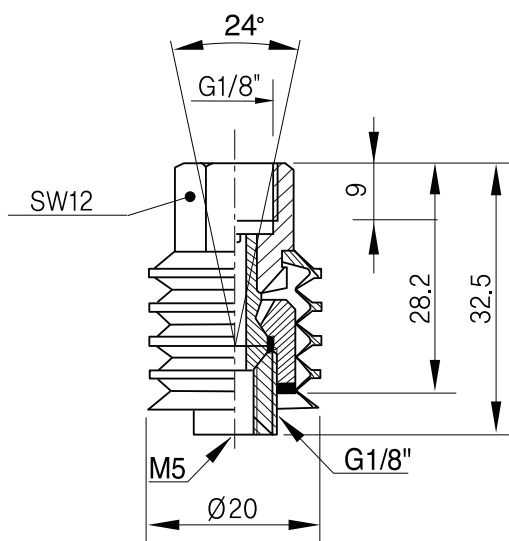
The vacuum port is integral through the centre of the joint thus providing a neat and compact solution.



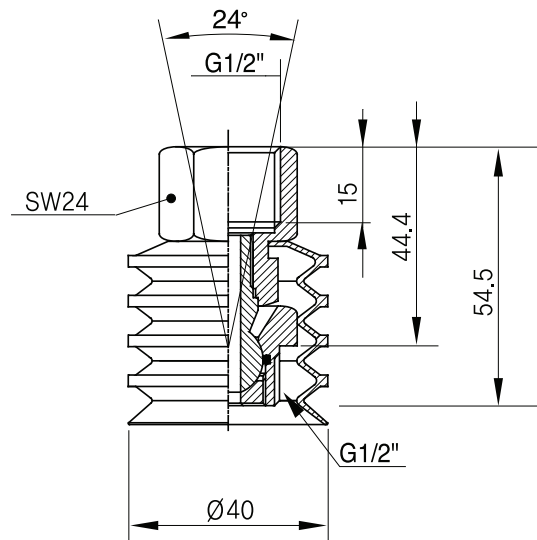
Dimensional Information

Model	Thread Size	Angle	Max. Load (kg)	Weight (g)
BJ 18	G1/8"	±12°	25	19
BJ 12	G1/2"	±12°	50	112

BJ 18



BJ 12



[Measure unit : mm]

Fitting Connector

Features and Strengths

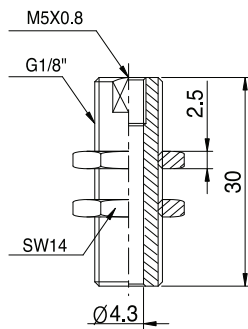
VTEC Fitting Connector is specifically designed to allow an assembled suction cup with fitting to mount easily on a plate. Fitting Connector has various sizes of thread options of vertical or horizontal types for vacuum connection ports. The lightweight aluminum body of the Fitting Connector is essential in making a complete vacuum line for a compact system.



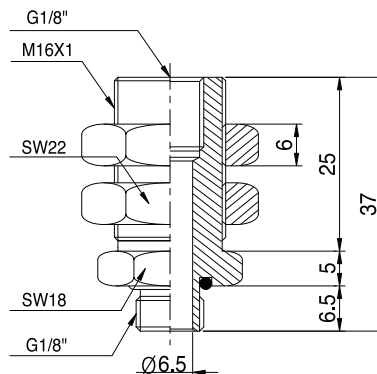
■ 18-Series

Dimensional Information

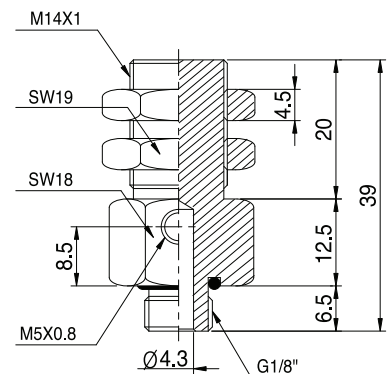
C1800T



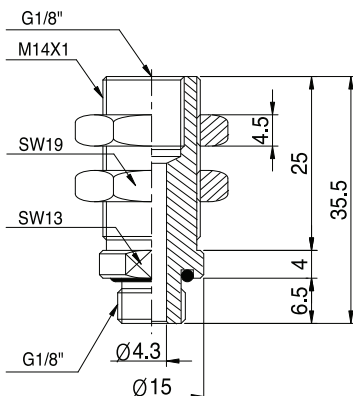
C1816T



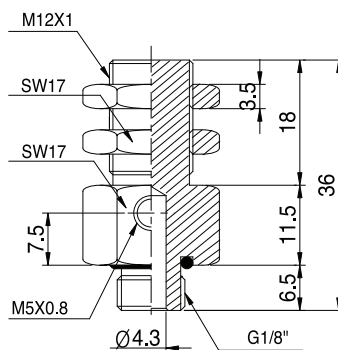
C1814



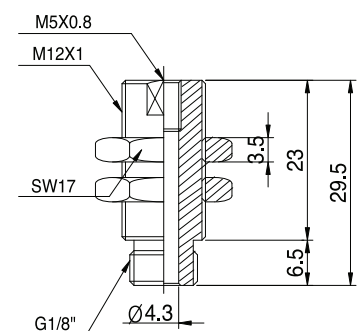
C1814T



C1812



C1812T



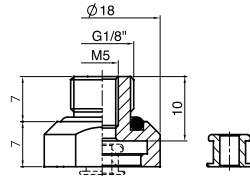
[Measure unit : mm]

Fittings (Option)

M2.5-M		VU2 , VU3	Code No. : 350 000 3000
M2.5-M		VU3K	Code No. : 350 000 3006
M5-M		VU2 , VU3	Code No. : 350 000 3100
M5-M		VU3K	Code No. : 350 000 3106
M5-M		VU4, VU6, VU8 VB5, VB8	Code No. : 350 000 3101
M5-M		VU10, VU15, VF15 VB10, VB12, VB15	Code No. : 350 000 3102
M518-MF		VU20, VU25, VU30 VF20, VF25, VF30 VB17, VB20 VBL20	Code No. Standard - 350 000 3209 Built in mesh-filter - 350 000 5209 Built in efficiency valve - 350 010 4209
M5/18-MFO		VU20, VU25, VU30 VF20, VF25, VF30 VB17, VB20 VBL20	Code No. Standard - 350 000 1209 Built in mesh-filter - 350 000 1109 Built in efficiency valve - 350 010 1209

Fittings (Option)

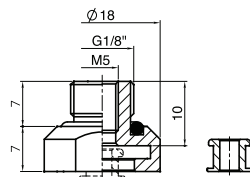
M5/18MFX
(For silicone Mat'l)



VU20, VU25, VU30
VF20, VF25, VF30

Code No. : 350 000 3229

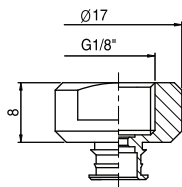
M5/18MFB
(For silicone Mat'l)



VB17
VB20, VBL20

Code No. : 350 000 3239

18-F

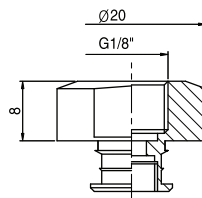


VU20, VU25, VU30
VF20, VF25, VF30
VB17, VB20
VBL20

Code No.

- Standard - 350 000 3310
- Built in mesh-filter - 350 000 4310
- Built in efficiency valve - 350 010 3310

18-F

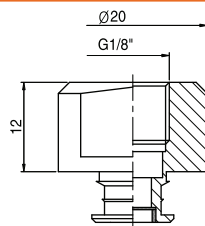


VU40
VF40
VB30, VB40
VBL30, VBL40

Code No.

- Standard (Built in mesh-filter) - 350 000 3311
- Built in efficiency valve - 350 010 3311

18-F

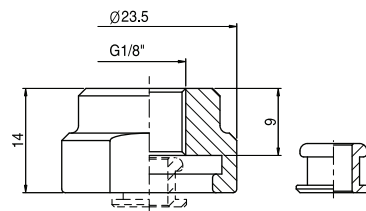


VU40
VF40
VB30, VB40
VBL30, VBL40

Code No.

- Standard (Built in mesh-filter) - 350 000 2311

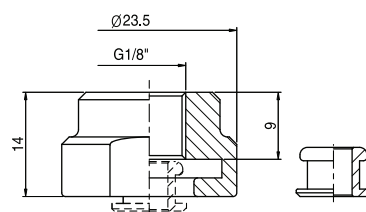
18-FX
(For silicone Mat'l)



VU40, VF40

Code No. : 350 000 3321

18-FB
(For silicone Mat'l)



VB30, VB40
VBL30, VBL40

Code No. : 350 000 3331

Fittings (Option)

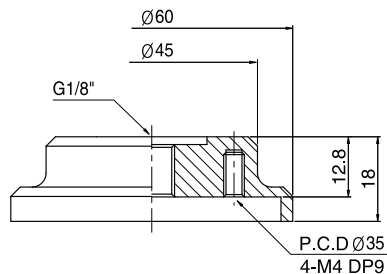
18-F KPS 1		KPS 1	Code No. Standard (Built in mesh-filter) - 350 000 3350
18-F KPS 5		KPS 5, KPS 5-15	Code No. Standard (Built in mesh-filter) - 350 000 3351
18-F KPS 9		KPS 9	Code No. Standard (Built in mesh-filter) - 350 000 3352
18-M		VU40 VF40 VB30, VB40 VBL30, VBL40	Code No. Standard (Built in mesh-filter) - 350 000 2304 Built in efficiency valve - 350 010 2304
18-F		VU50 VF50 VB50 VBL50	Code No. Standard (Built in mesh-filter) - 350 000 1312 Built in efficiency valve - 350 010 1312
18-F		VU50 VF50 VB50 VBL50	Code No. Standard (Built in mesh-filter) - 350 000 3312 Built in efficiency valve - 350 010 3312

Fittings (Option)

14-M		<p>VU40 VF40 VB30, VB40 VBL30, VBL40</p>	<p>Code No. Standard (Built in mesh-filter) - 350 000 3404 Built in efficiency valve - 350 010 3404</p>
14-M		<p>VU50 VF50 VB50 VBL50</p>	<p>Code No. Standard (Built in mesh-filter) - 350 000 3405 Built in efficiency valve - 350 010 3405</p>
38-M		<p>VU50 VF50 VB50 VBL50</p>	<p>Code No. Standard (Built in mesh-filter) - 350 000 3505 Built in efficiency valve - 350 010 3505</p>
5XM5-F		<p>VU20, VU25, VU30 VF20, VF25, VF30 VB17, VB20 VBL20</p>	<p>Code No. Standard - 351 000 3110 Built in mesh-filter - 351 000 4110 Built in efficiency valve - 351 010 3110</p>
5-18-F		<p>VU40 VF40 VB30, VB40 VBL30, VBL40</p>	<p>Code No. Standard (Built in mesh-filter) - 351 000 3311 Built in efficiency valve - 351 010 3311</p>
5-18-F		<p>VU50 VF50 VB50 VBL50</p>	<p>Code No. Standard (Built in mesh-filter) - 351 000 3312 Built in efficiency valve - 351 010 3312</p>

Fittings (Option)

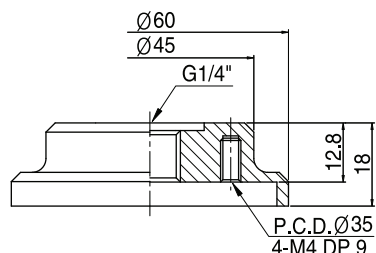
18-F



VB75
VF75
VF90
VFC90
VFC100

Code No.
(PPS) : 350 000 3313
(AL) : 350 000 3323

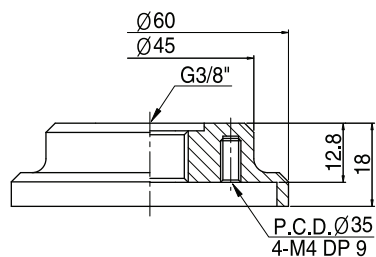
14-F



VB75
VF75
VF90
VFC90
VFC100

Code No.
(PPS) : 350 000 3413
(AL) : 350 000 3423

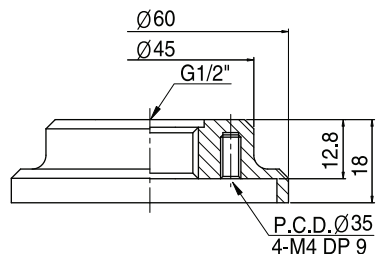
38-F



VB75
VF75
VF90
VFC90
VFC100

Code No.
(PPS) : 350 000 3513
(AL) : 350 000 3523

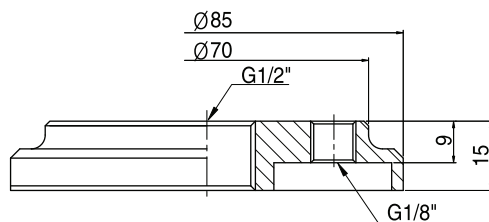
12-F



VB75
VF75
VF90
VFC90
VFC100

Code No.
(PPS) : 350 000 3613
(AL) : 350 000 3623

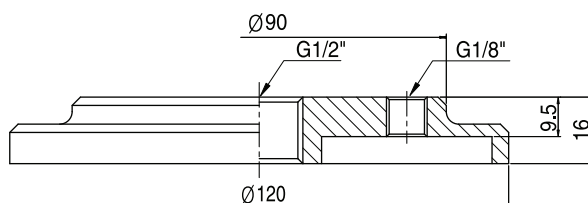
12-F



VB110
VF110

Code No. 350 000 3614

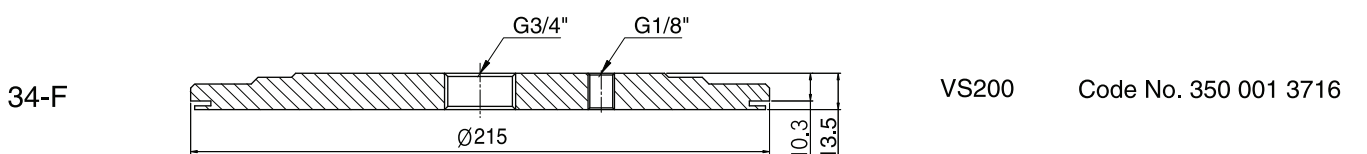
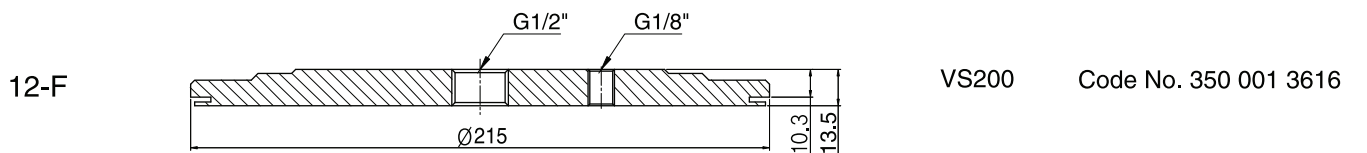
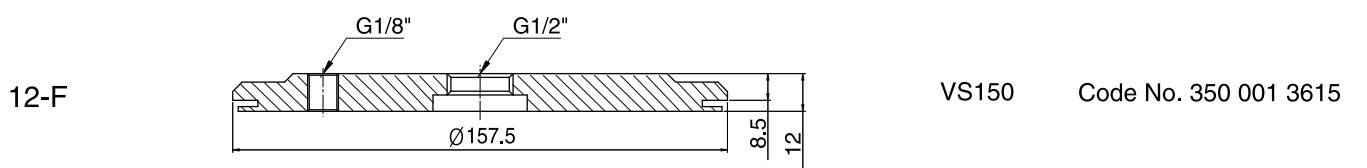
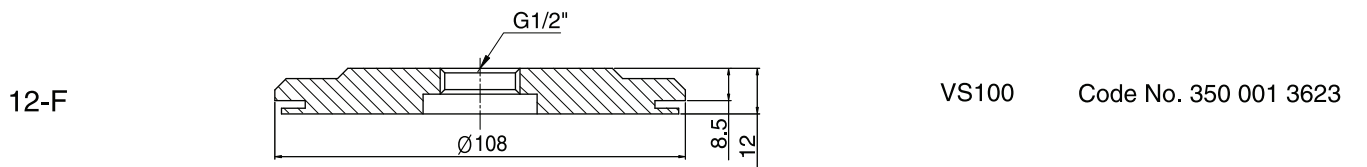
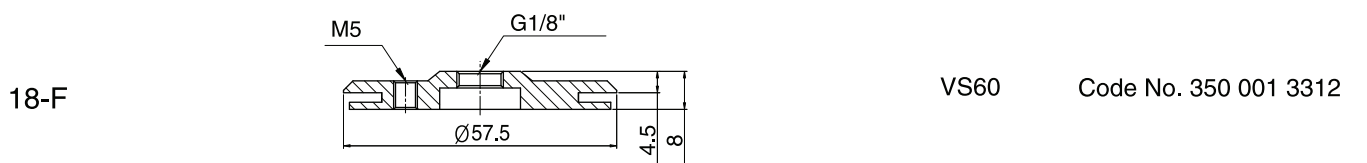
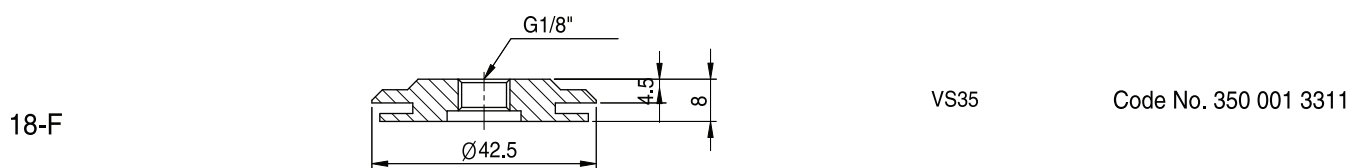
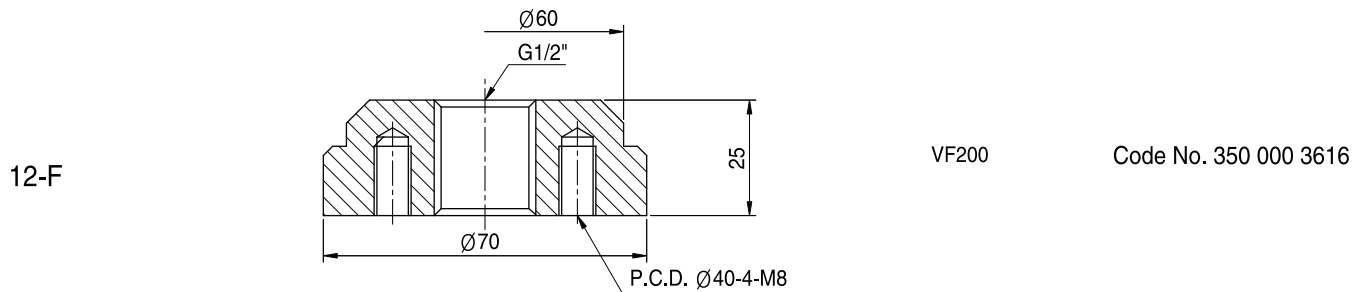
12-F



VB150
VF150

Code No. 350 000 3615

Fittings (Option)



SUCTION CUPS

Fittings (Option)

