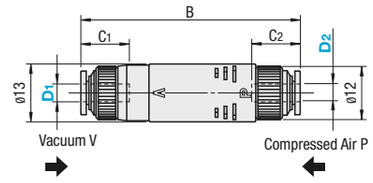
Vacuum Generators / Vacuum Pressure Sensors

■Vacuum Generators - Union Straight



RoHS

VUHK



For nozzle diameter, see the schematic drawing.

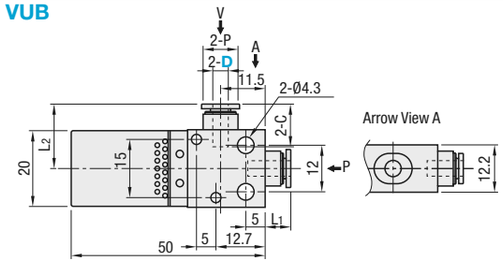
Part Number Type	D1	D2	Nozzle Dia. Nominal	Nozzle Dia. (mm)	B	C1	C2	Ultimate Vacuum (-kPa)	Suction Flow (ℓ / min(ANR))	Flow Consumption (ℓ / min(ANR))	Mass (g)	Unit Price 1 ~ 9 pc (s).	Volume Discount Rate 10~20
VUHK	4	4	5	0.5	49.3	11	11	90	7	11.5	18.5		
			7	0.7	56.1			92	12.5	23	20		
	6	6	5	0.5	51.2	11.7	11.7	90	7	11.5	17.5		
			7	0.7	57.7			92	12.5	23	18.5		

■Vacuum Generators - Square Union



RoHS

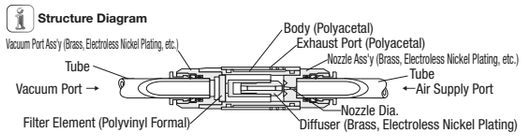
VUB



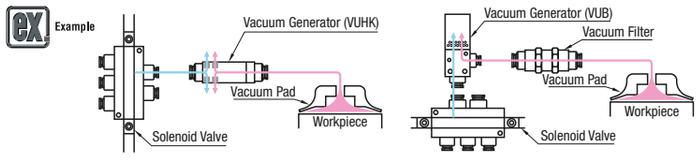
Part Number Type	D	Nozzle Dia. (mm)	P	C	L1	L2	Operating Pressure (MPa)	Ultimate Vacuum (-kPa)	Suction Flow (ℓ / min(ANR))	Flow Consumption (ℓ / min(ANR))	Mass (g)	Unit Price 1 ~ 9 pc (s).	Volume Discount Rate 10~20
VUB	4	0.5	9	11	6.6	16.6	0.5	90	7	11.5	18		
	6	0.7	10.5	11.6	7	17	0.5	93	13	23	18.5		

Larger nozzle diameter provides more suction flow and shortens time required to vacuum inner volume from the generator to workpiece. In this case, however, air consumption is larger.

Structure Diagram



Example



■Specifications

Applicable Fluid	Air
Operating Temperature Range	0~60°C
Operating Pressure Range	0.15MPa~0.7MPa
Rated Supply Pressure	0.5MPa

■Cautions

- Dusts on workpiece material may cause damage to the vacuum generator. Use in combination with the vacuum filter on **P.1439**.

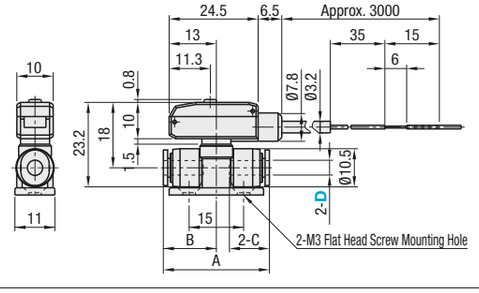
Ordering Example

Part Number	-	D2	-	Nozzle Dia. Nominal
VUHK4 VUB6	-	4	-	7

■Vacuum Pressure Sensors - Union



RoHS

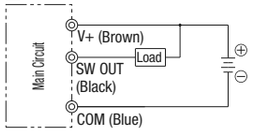


Part Number Type	D	C	A	B	Mass (g)	Unit Price 1 ~ 9 pc (s).	Volume Discount Rate 10~20
	4	11	29.2	14.6	48		
	6	11.6	30	15	48		

■Specification of Sensor Head

Applicable Fluid		Compressed Air
Pressure Detection Method		Diffusion Semiconductor Pressure Switch
Power Supply		DC10.8 ~ 30V (Ripple included)
Power Consumption		20mA or Less (at DC24V, no load)
Operating Pressure Range		-100~0kPa
Pressure Resistance		200kPa
Storage Temp. Range		-20 ~ 70°C (Atmospheric Pressure, Humidity 60% or Less)
Operating Temperature Range		0 ~ 60°C (No Freezing)
Operating Humidity Range		35 ~ 85% (No Freezing)
Protection Structure		IEC Standards (IP40 Equiv.)
Switch Output	Number of Pressured Positions	1
	Switch Output	NPN Open Connector Output: 30V 80mA or Less Residual Voltage: 0.8V or Less
	Operation Indicator	N.O. (Red LED On at or above set pressure)
	Operating Difference	Fixed (2% F.S. or Less)
	Operation Accuracy	±3% F.S.max. (at Ta=25°C)
	Response	Approx.1m/sec
	Set Pressure Range	-100~0kPa

■Electrical Circuit



Ordering Example

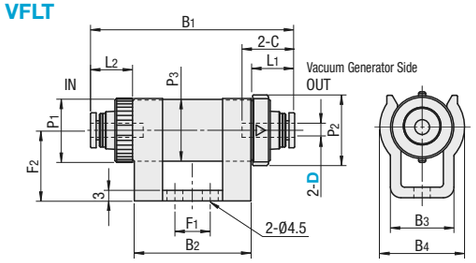
Part Number

■Vacuum Filters / Elements for Replacement

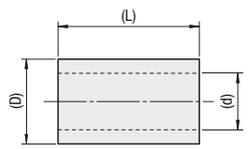


RoHS

VFLT



VFLTE (Element for Replacement)



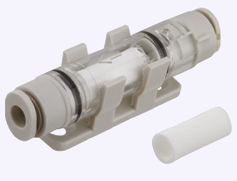
Ⓜ Material Main Body : Polycarbonate
Element : Polyvinyl Formal

Part Number Type	D	B1	B2	B3	B4	L1	L2	P1	P2	P3	C	F1	F2	Filtration Area (cm²)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
VFLT	4	58	33	18	24	11.9	11.9	18.2	20	17.5	14.9	10	20	7.5	18			
	6	60				13	13				16				19			

Part Number	(D)	(d)	(L)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
VFLTE	12	8	20			

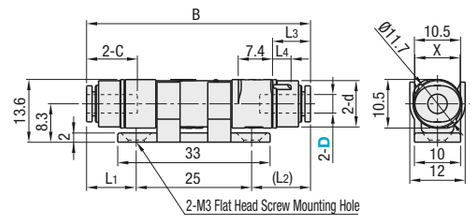
Applicable to both VFLT4 and VFLT6.

■Vacuum Filters / Elements for Replacement - Small

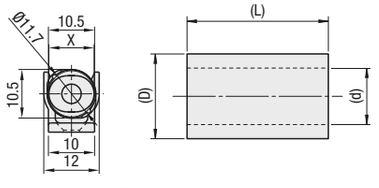


RoHS

VFS



VFSE (Element for Replacement)



Ⓜ Material Main Body : Polycarbonate
Element : Polyvinyl Formal

Part Number Type	D	B	C	L1	(L2)	L3	L4	d	X	Element Length	Filtration Area (cm²)	Mass (g)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
VFS	4	48.5	11	10.8	12.7	8.2	4	10	9.8	15	2.8	5.1			
	6	53.4	11.6	13.2	15.2	10.6	4.5	10.5	11.8			6			

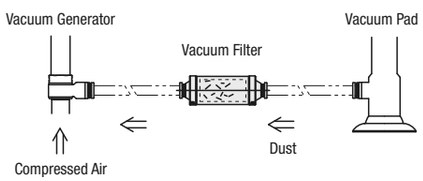
Part Number	(D)	(d)	(L)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
VFSE	6	4	15			

Ordering Example — Part Number: VFS4

Example

Plumbing Example

Plumbing between Vacuum Generator and Vacuum Pad removes dusts entering from pad and protects Generator from failures.



■Specifications

Applicable Fluid	Air
Operating Temperature Range	0~60°C
Operating Pressure Range	-100~0kPa
Filtration Accuracy	10μm

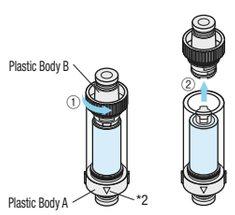
Element Replacement

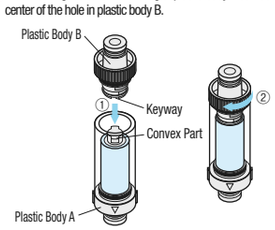
■How to Remove

① Turn plastic body B 45° counterclockwise*.
② Pull out plastic body B.
* Do not turn the plastic body B beyond 45°. It may damage the plastic body.

■How to Lock

① Press-fit plastic body B completely to plastic body A. Be sure that the lug of plastic body A aligns with the key slot in plastic body B.
② Turn plastic body B 45° clockwise *1 to lock.
*1. Do not turn the plastic body B beyond 45°. It may damage the plastic body.
When locking, be sure that the lug of plastic body A comes to the center of the hole in plastic body B.





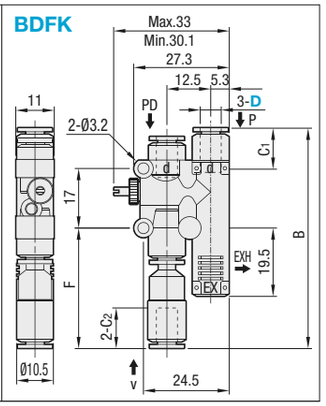
*2. Be sure that the vacuum generator is installed in the same direction as pointed by the △ mark.
If installed reversely, the element inside will become dirty, making it impossible to know the proper time for maintenance.

■Vacuum Generators with Vacuum Release Function



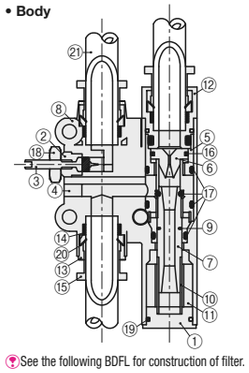
RoHS

BDFK



■Name of Parts / Material List

• Body



See the following BDFL for construction of filter.

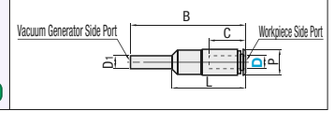
No.	Name of Parts	Material
①	End Plug	Brass, Electroless Nickel Plating
②	Upper Stopper	Brass, Electroless Nickel Plating
③	Release Needle	EN 1.4305 Equiv.
④	Stopper 2	Brass, Electroless Nickel Plating
⑤	Sleeve	Brass, Electroless Nickel Plating
⑥	Nozzle Piston	Brass, Electroless Nickel Plating
⑦	Diffuser Spool	Brass, Electroless Nickel Plating
⑧	Resin Body	PBT Glass 15%
⑨	Spool Gasket	Nitrile Rubber (H-NBR)
⑩	Diffuser Spring	Stainless Steel
⑪	Silencer Element	Polyvinyl Formal (PVF)
⑫	Cartridge	-
⑬	Guide Ring	Brass, Electroless Nickel Plating
⑭	Elastic Sleeve	Nitrile Rubber (NBR)
⑮	Release Ring	Polyacetal (POM)
⑯	Y Gasket	Nitrile Rubber (NBR)
⑰	O-Rings	Nitrile Rubber (NBR)
⑱	Lock Nut	Aluminum Alloy
⑲	Spring Pin	Stainless Steel
⑳	Lock Pawl	Stainless Steel
㉑	Tubes	Urethane or Nylon

■Special Vacuum Filters

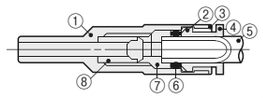


RoHS

BDFL



• Vacuum Filter



No.	Name of Parts	Material
①	Resin Body	Polypropylene (PP)
②	Lock Pawl	Stainless Steel
③	Guide Ring	Brass, Electroless Nickel Plating
④	Release Ring	Polyacetal (POM)
⑤	Tubes	Urethane or Nylon
⑥	Elastic Sleeve	Nitrile Rubber (NBR)
⑦	Element Presser	Polyacetal (POM)
⑧	Filter Element	Polyvinyl Formal (PVF)

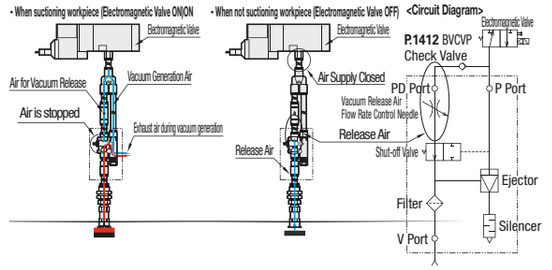
Part Number Type	D	No.	Suction Flow Rate (ℓ/min (ANR)) Selection	B	F	C1	C2	Nozzle Dia. (mm)	Pressure Rating (MPa)	Ultimate Vacuum (-kPa)	Flow Consumption (ℓ / min(ANR))	Mass (g)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
BDFK	4	7	12.5	59.7	34.1	10.9	11	0.5	0.5	90	11.5	20.5			
	6			62.9	34.4	11.7	11.6	0.7		92	23	21.5			

Applicable Fluid	Air
Operating Pressure Range	0.3~0.7MPa
Operating Temperature Range	5 ~ 50°C
Lubrication	Not Required

Part Number Type	Tube Outer Dia. D	Applicable Fitting Dia. D1	B	L	C	P	Mass (g)	Filtration Area (cm²)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
BDFL	4	4	34.7	21.5	11.0	8.0	1.5	0.8			
	6	6	35.2	21.8	11.6	10.5	2.5	1.1			

Applicable Fluid	Air
Operating Pressure Range	-100~0kPa
Filtration Accuracy	10μm
Operating Temperature Range	0~60°C
Filtration Area	Joint Size 44: 0.8cm²
	Joint Size 66: 1.1cm²

Example



• Features

Vacuum release air is introduced to the suction line to reduce the vacuum release time to a value shorter than ever. As a result, the time for suctioning and moving workpiece is shortened and the activity efficiency is improved.
Flow rate of release air can be controlled by Release Air Flow Rate Control Needle.

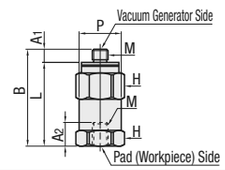
Ordering Example — Part Number: BDFK4 - 7 / BDFL4

■Fall Prevention Valves



RoHS

BAFP



Name of Parts	Material M4	Material M6
Metal Body A	Stainless Steel	Brass, Electroless Nickel Plating
Metal Body B	Brass, Electroless Nickel Plating	Aluminum, Electroless Nickel Plating
Valve Body	Aluminum Alloy	
Stopper	Brass, Electroless Nickel Plating	
Spring	EN 1.4301 Equiv.	
Filter	Polyvinyl Formal (PVF)	
O-Rings	Nitrile Rubber (NBR)	
Gasket	EN 1.4301 Equiv. + Nitrile Rubber (NBR)	

Part Number Type	No.	Thread Size M	A1	A2	B	L	P	Width Across H	Valve Operation Suction Flow Rate (ℓ / min(ANR))	Non-attached Vacuum Decline Level (kPa)	Effective Sectional Area (mm²) Free Flow	Effective Sectional Area (mm²) Control Flow	Mass (g)	Unit Price 1 ~ 9 pc(s).	Unit Price 10~20	Volume Discount Rate
BAFP	4	M4x0.7	3	4.5	19.9	16.9	10	10	5	2	1.63	0.09	7.9			
	6	M6x1.0	4	4.9	28.1	24.1	12	12	13	2	4.06	0.09	12.4			

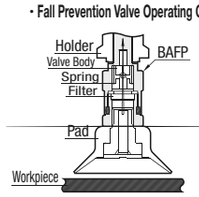
Specifications

Applicable Fluid	Air
Operating Pressure Range	Positive Pressure: 0 ~ 0.7MPa
	Negative Pressure: 0 ~ -100kPa
Min. Operating Pressure	-7kPa
Operating Temperature Range	0~60°C

Ordering Example — Part Number: BAFP4

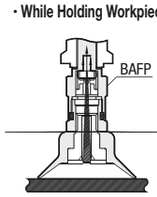
■Description of Fall Prevention Valve

• Fall Prevention Valve Operating Condition



When a workpiece is detached from the vacuum pad, airflow pushes up the valve and shuts the air passage.
During operation, the valve sucks small amount of air through a small hole in the middle.

• While Holding Workpiece



When a workpiece is tightly stuck to vacuum pad, the suction flow is reduced and the spring inside pushes down the valve. As the result, the air passage between the valve and body opens.