PISCO® Hot NEWS

No. NP 76-01

Assuring light and small workpieces being released

Vacuum cup with Push-rod

NEW

- Suitable for dealing with releasing parts from suction cup and static electricity
- 6 different dia. of vacuum cups are provided

Vacuum cup dia. (mm)					
ø2.5	ø3	ø4	ø6	ø8	ø10

- Vacuum cup material

Material			
Nitrile	Fluorine	Silicone	ESD Silicone

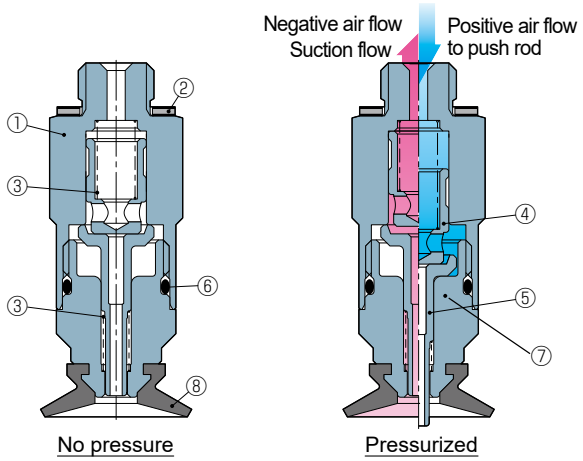
Note: Both vacuum source and compressed air are needed to run the product.

Specification

Fluid Media		Air
Service pressure range	Positive	**30**kPa ~ **0.5**MPa (4.35 ~72.5 psi)
	Negative	**-101**kPa ~ **-30**kPa (-29.8 ~ -8.86 inHg)
Service temperature range		**0** ~ **60**°C (32 ~ 140°F) No freezing
Suction flow		**4**ℓ/min (0.14CFM) (※)
Cracking pressure for push-rod plunger		**30**kPa (4.35 psi)
Cracking pressure for vacuum piston		**-30**kPa (-8.86 inHg)

※) Supplied pressure at -80kPa

Construction



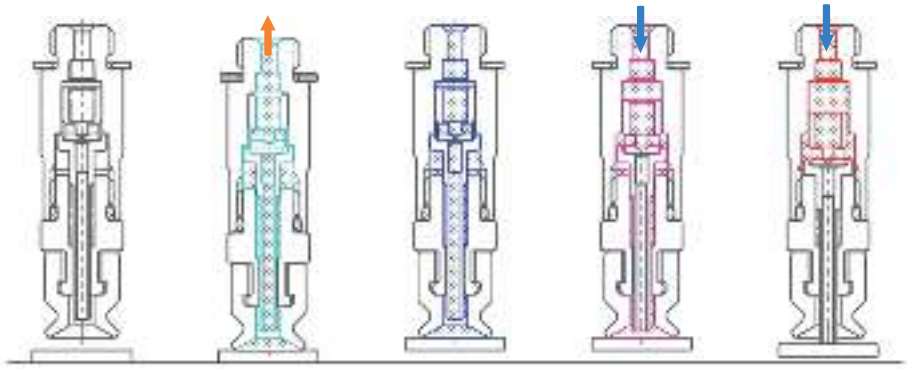
No.	Parts	Material
①	Top body	Stainless steel (※)
②	Gasket	SUS304 + NBR or SPCC + NBR
③	Spring	Stainless steel
④	Vacuum valve piston	Stainless steel (※)
⑤	Push-rod plunger	Stainless steel (※)
⑥	O-ring	NBR
⑦	Bottom Body	Stainless steel (※)
⑧	Vacuum cup	Nitrile
		Silicone
		Fluorine
		ESD Silicone

※) Anti-corrosivity is equivalent to SUS303, based on Austinic or Ferritic stainless steel

Activating the push-rod

When the fitting is pressurized, the suction flow valve (Chart ④) and the release valve (push-rod) are pushed down while vacuum release air goes through gap. Then, the tip of push-rod comes out (Chart ⑤), simultaneously push-rod valve (Chart ⑤) sits on the seat of the bottom body of the fitting (Chart ⑦) and blocks the air flow to prevent the workpiece from blowing away.

Mechanism



Status	No pressure	Suction flow	Lifting workpiece	Blow-off air first	Rod pushing workpiece
Vacuum pressure	-	ON	ON	-	-
Positive pressure	-	-	-	ON	ON
Description	Stand-by with the rod drawn-in.	Vacuum low opens the vacuum valve.	As vacuum level gets to the maximum, vacuum flow stops and the vacuum valve closes.	Release air goes through gap to release vacuum	The push rod plunger comes down and the rod pushes the work-piece. The valve blocks the air flow at the same time.

⚠ Remarks

⚠Caution The product performance may be reduced due to contaminations. Use the product in a clean environment.

⚠Warning 1. The load of pushing rod is 1N or below (at 0.2MPa). In case there are concerns that it could damage the workpiece, lower the supplied pressure and test it physically.

2. When the product is installed, please refer to the tightening torque listed below. It could cause malfunctions, short life cycles if it was not tightened with the proper torque.

Thread size	Tightening torque (N·m)
M3×0.5	0.7
M4×0.7	0.9 ~ 1.1
M5×0.8	1.0 ~ 1.5

Model Designation for Vacuum cup（Example）

VP ① 6 ② Y ③ N ④

① Vacuum Cup

④. Cup material

Code	N	F	S	SE(※)
Material	Nitrile	Fluorine	Silicone	ESD Silicone

※） Code：The volume resistivity of SE (ESD Silicone rubber) is $10^5\Omega$·cm or less

③. Cup type

Code	Y
Type	Push-Rod Fitting

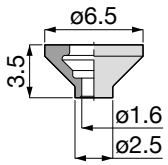
※) All the cups are designed espacially for the push-rod release fitting. They can not fit to the regular vacuum fittings.

②. Cup size

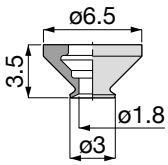
Code	2	3	4	6	8	10
Dia.（mm）	ø2.5	ø3	ø4	ø6	ø8	ø10

Dimensions of vacuum cup

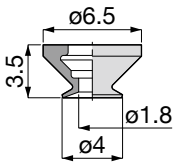
VP2Y4



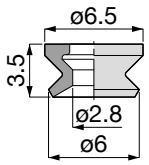
VP3Y4



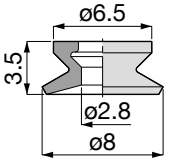
VP4Y4



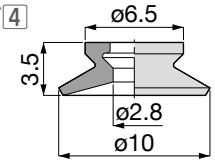
VP6Y4



VP8Y4



VP10Y4



Unit：mm

Model	Price（$）							
	4：N		4：F		4：S		4：SE	
		Weight (g)		Weight (g)		Weight (g)		Weight (g)
VP2Y4	5.45	0.1	13.18	0.1	6.82	0.1	6.82	0.1
VP3Y4	5.45	0.1	13.18	0.1	6.82	0.1	6.82	0.1
VP4Y4	5.45	0.1	13.18	0.1	6.82	0.1	6.82	0.1
VP6Y4	5.45	0.1	13.18	0.1	6.82	0.1	6.82	0.1
VP8Y4	5.45	0.1	13.18	0.2	6.82	0.1	6.82	0.1
VP10Y4	5.45	0.2	13.18	0.2	6.82	0.2	6.82	0.2

Model Designation for Push-Rod Fitting（Exapmle）

VP ① KE ② Y4 ③ -M4 ④

① Vacuum Cup

④. Thread size

Code	-M3	-M4	-M5
Size	M3×0.5	M4×0.7	M5×0.8

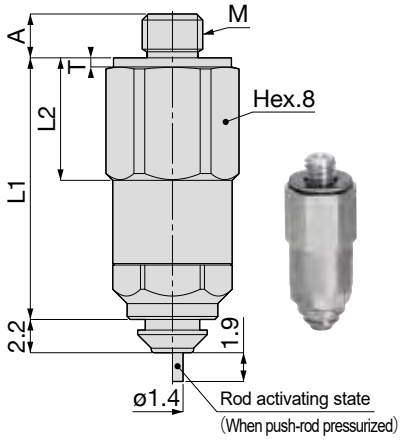
③. Cup mounting

Code	Y4
Method	Snap-on type（Direct-mounting）

②. Fitting type

Code	KE
Type	Push-rod release type

Dimensions for Push-Rod Fitting



Unit：mm

Model	Mounting thread M	A	L1	L2	T	Weight (g)	Price ($)	Cup Connecting code
VPKE-Y4-M3	M3×0.5	2.5	17.2	8	0.5	5.2	22.73	-Y4
VPKE-Y4-M4	M4×0.7	2.9	17.3	8.1	0.6	5.6	22.73	
VPKE-Y4-M5	M5×0.8	3	16.9	7.7	0.5	5.7	22.73	

Model Designation for Vacuum cup with Push-rod（Example）

VP ① KE ② 6 ③ Y ④ N ⑤ -M4 ⑥

① Vacuum Cup

⑥. Thread size

Code	-M3	-M4	-M5
Size	M3×0.5	M4×0.7	M5×0.8

⑤. Cup material

Code	N	F	S	SE
Material	Nitrile	Fluorine	Silicone	ESD Silicone
Vol. resistivity(Ω·cm)	—	—	—	10^5 or below

④. Cup type

Code	Y
Type	Push-rod release type

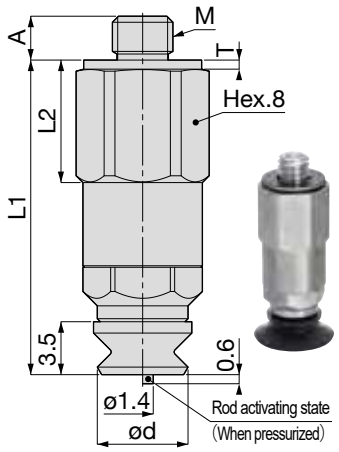
③. Cup size

Code	2	3	4	6	8	10
Dia.（mm）	ø2.5	ø3	ø4	ø6	ø8	ø10

②. Fitting type

Code	KE
Type	Push-rod release type

Dimensions for Vacuum cup with Push-rod fitting



Unit：mm

Model	Cup dia. ød	Thread M	A	L1	L2	T	Price（$） 5：N	5：F	5：S	5：SE	Weight (g)	Cup Connect code
VPKE2Y5-M3	2.5	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.3	-Y4
VPKE2Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.7	
VPKE2Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.8	
VPKE3Y5-M3	3	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.3	
VPKE3Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.7	
VPKE3Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.8	
VPKE4Y5-M3	4	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.3	
VPKE4Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.7	
VPKE4Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.8	
VPKE6Y5-M3	6	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.3	
VPKE6Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.7	
VPKE6Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.8	
VPKE8Y5-M3	8	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.3(5.4)	
VPKE8Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.7(5.8)	
VPKE8Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.8(5.9)	
VPKE10Y5-M3	10	M3×0.5	2.5	20.7	8	0.5	28.18	35.91	29.55	29.55	5.4	
VPKE10Y5-M4		M4×0.7	2.9	20.8	8.1	0.6					5.8	
VPKE10Y5-M5		M5×0.8	3	20.4	7.7	0.5					5.9	

※）The weight in the bracket（ ）is of FKM material.