



Series Soft

Series

ltrathin Series

Flat Series

Mark-free Series

Long Stroke Series

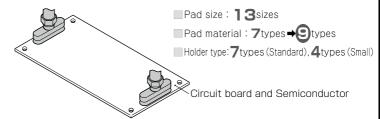
Vacuum Cylinder

Newly available size: 2 x 4, 3.5 x 7mm



Vacuum Pad for Circuit Board and Semiconductor Vacuum Pad Oval Series

■ Suitable for long work-piece like Circuit board and Semiconductor.



- Various selections of pad size, pad material and holder type.
 - Downsized holders (A, B, C and D type) are available for space-saving.

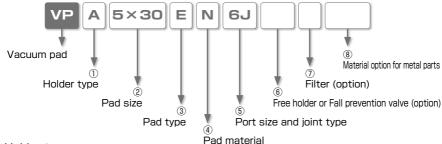
No need to detach a holder when replacing vacuum pad. Optional selection of Fall prevention valve and Vacuum Filter.

Variety of selections in pad holder for "Copper alloy free" and against "low ozone concentration".

No copper based metal parts, HNBR, and FKM are adopted for seal rubber.

Newly added pad sizes and pad materials, suitable for smaller work-pieces and various installation environment.

■ Model Designation (Example)



1. Holder type

_			_			_		
၀	Standard Small	A	Code	Standard	В	ပ္ပ	Standard Small	С
de	Small	MA	ଟି Small		MB	de	Small	MC
Т	уре	Fixed type / Top port	Type		Fixed type / Side port	Type		Spring type / Top port
င္ပ	Standard	D	င္ပ	Standard	F	င္ပ	Standard	AE
de	Standard Small	MD	Standard Small		ul —		Standard Small	-
T	уре	Spring type / Side port	٦	уре	Spring type / Direct mount	٦	Гуре	Screw fixing type / Top port
င္ပ	Standard Small	BE						
de	Small	-						
Т	уре	Screw fixing type / Side port						

②. Pad size

A B	4mm	7mm	10mm	20mm	30mm
2mm	2 × 4	_	_	_	_
3.5mm	_	3.5×7	_	_	_
4mm	_	_	4×10	4 × 20	4 × 30
5mm	_	_	5×10	5 × 20	5 × 30
6mm	_	_	6×10	6 × 20	6 × 30
8mm	_	1	-	8 × 20	8 × 30



③. Pad type

Code	E
Type	Oval

4. Pad material and application

Material	Nitrile rubber	Silicone rubber	Urethane rubber	Fluoro rubber	Conductive Silicone	Conductive Butadiene rubber (Low resistance type)	Conductive NBR (Low resistance type)	HNBR	EPDM
Code	N	S	U	F	SE	Е	NE	HN	EP
Application	Cardboard	Semiconductors	Cardboard	Chemical	Semiconductors	General parts of	Semiconductors	Cardboard	Application
	Plywood	Taking out	Iron plate	environment	Taking out	semiconductors		Plywood	that requires
	Iron plate	molded parts	Plywood	High temp.	molded parts			Iron plate	light-
	Food-related	Thin work-		work-pieces	Thin work-			Food-related	resistance or
	Other general	pieces			pieces			Other general	ozone-proof.
	work-pieces	Food-related			Food-related			work-pieces	For use in
								For use under a low	a moisture-
								ozone concentration	containing
								environment	atmosphere.

^{** 1.}The Conductive Silicone rubber is a silicone rubber capable of releasing static electricity. (Volume resistance: Max. 10°O·cm)

Port size and joint type

■ Standard type holder

Joint type	Push-in fitting	Barb fitting		
Code	6J	6B		
O.D. x I.D.	ø6mm×ø4mm	ø6mm×ø4mm		
Pad size	2×4mm ~ 8×30mm			

■ Small type holder

Joint type	Push-in fitting	Barb fitting			
Code	4J	4B	6B		
O.D. x I.D.	ø4mm×ø2.5mm	ø4mm×ø2.5mm	ø6mm×ø4mm		
Pad size		2×4mm ~ 8×30mm			

6. Free holder or Fall prevention valve (option)

Code	-FH	-FHH	-ECV
Option	Oscillating angle of free holder: 30°	Oscillating angle of free holder: 15°	Fall prevention valve
Applicable holder		VPA, VPB, VPC, VPD, VPF	

^{* .} Free holder cannot be installed on small pad holder.

7. Filter (option)

Code	-F15
Applicable holder	VPA, VPB, VPC, VPD, VPF

(8). Material option for metal parts

Code	No code	-S3
Material	Standard	Copper alloy free material

 $[\]ensuremath{\%}$. Free holder, fall prevention valve and filter are not available when "-S3" is selected.

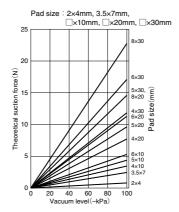
^{※ 2.} The material of Conductive Butadiene rubber (low resistance) is a butadiene rubber. (Volume resistance: Max. 200Ω · cm)

^{* 3.} Pad size 2 x 4 and 3.5 x 7mm are not available with Conductive Butadiene rubber (Low resistance type)

^{* 4.} The material of Conductive NBR (low resistance) is a nitrile rubber. (Volume resistance: Max. 200Ω cm)

^{* 5.} Pad material N and NE are not suitable for use under ozone environment.

■ Theoretical suction force



** . The theoretical suction force is calculated under a static condition. Consider the safety factor (Horizontal lifting: 1/4 and Vertical lifting: 1/8) for an actual operation.

⚠ Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Common Safety Instructions for Products Listed in This Catalog on page 43-49, and "Common Safety Instructions for Vacuum Pad" on page 477-478.

Warning

- Since small vacuum pad holders are designed to be more lightweight than general holders, small type is inferior in load resistance. Secure an enough margin for a load setting and evaluate PISCO products with an actual system.
- 2. When installing a pad frame, confirm the structure of vacuum pad oval series and use a proper tool to tighten the screw with tightening torque 0.27 ~ 0.33N·m. Make sure that there is no looseness of the screw.
- 3. When installing bulkhead type pad holder, check the tightening torque for each holder and use proper tool to tighten the fixing nut. Make sure that there is no looseness of the nut. Excessive tightening of a fixing nut may deform the bulkhead part and result in malfunction of the keyway.

Caution

- Pad fixing holder for oval pad does not have conductivity. When using a conductive vacuum pad, static electricity needs to be dissipated through the vacuum pad.
- 2. When using a conductive vacuum pad with a holder equipped with free holder or vacuum filter (optional parts), static electricity needs to be dissipated through the vacuum pad.

■ How to insert and disconnect ■

1. How to insert and disconnect tubes (Push-in fitting)

Tube insertion Insert a tube into Pushin fitting up to the tube end. Lock-claws bite the tube and fix it automatically, then the elastic sleeve seals

around the tube.



Refer to "7. Instructions for Tube Insertion" under "Common Safety Instructions for Products Listed in This Catalog".

② Tube disconnection
 The tube is disconnected
 by pushing release-ring
 to release Lock-claws.
 Make sure to stop air
 supply before the tube
 disconnection.



2. How to insert and disconnect tubes (Barb fitting)

① Tube insertion
Insert the barb into a
tube up to the barb
end. The outer shape
of barb seals inside the
tube. Use Tube Clamp
Sleeve (※) to avoid the
disconnection of tubes.



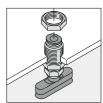
② Tube disconnection
Remove Tube Clamp
Sleeve first, and pull
the tube out.

※ Refer to Minimal fitting on P.266"



3. How to fix holder

In order to fix the vacuum pad holder, tighten the hexagonal nut with a spanner. Refer to the dimensional drawings for detail.



Applicable Tube and Related Products

Polyurethane Tube

(1. Piping products catalog P.596)

■ Polyurethane Tube is for general pneumatic piping and suitable for piping compactly.

Nylon Tube

(1. Piping products catalog P.608)

■ Nylon Tube is for general pneumatic piping and suitable for a high-pressure fluid medium up to 1.5MPa (NB tube: 1.0MPa).

Vacuum Tube

(1. Piping products catalog P.612)

Vacuum Tube is a ultra-soft tube and suitable for piping for vacuum generators or actuators. Vacuum Generators · · · · P.52

Vacuum Filter Series · · · · P.758

Solenoid valve SVA

(3. Drive products catalog P. 126)













Pincette

■ Standard Size List (Combinations with Standard Vacuum Pad Holder) |

Fixed type / Top port / Push-in fitting

Fixed type / Side port / Push-in fitting

Туре	Page	Pad	Port size
Type	rage	size	6mm
VPA		2×4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	636	5×20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

Туре	Page	Pad	Port size
Type	rage	size	6mm
VPB		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4×20mm	•
		4×30mm	•
		5×10mm	•
	636	5×20mm	•
		5×30mm	•
		6×10mm	•
		6×20mm	•
		6×30mm	•
		8×20mm	•
		8×30mm	•

Spring type / Top port / Push-in fitting

Spring type / Side port / Push-in fitting

Page	Pad	Port size
rage	size	6mm
	2×4mm	•
	3.5×7mm	•
	4×10mm	•
	4x20mm	•
	4×30mm	•
	5×10mm	•
637	5×20mm	•
	5×30mm	•
	6×10mm	•
	6×20mm	•
	6x30mm	•
	8x20mm	•
	8x30mm	•
	Page	Page size 2x4mm 3.5x7mm 4x10nm 4x20nm 4x20nm 5x10nm 5x20nm 6x20nm 6x20nm 8x20mm 8x20mm

Type	Dogo	Pad	Port size
Type	Page	size	6mm
VPD		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4×20mm	•
		4×30mm	•
		5×10mm	•
	637	5×20mm	•
		5×30mm	•
		6×10mm	•
		6×20mm	•
		6×30mm	•
		8×20mm	•
		8×30mm	•

Screw fixing type / Top port / Push-in fitting

Screw fixing type / Side port / Push-in fitting



Type	Page	Pad	Port size
туре	raye	size	6mm
VPAE		2×4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4×30mm	•
		5×10mm	•
	638	5x20mm	•
		5×30mm	•
		6×10mm	•
		6×20mm	•
		6×30mm	•
		8x20mm	•
		8×30mm	•

Type	Page	Pad	Port size
Type	rage	size	6mm
VPBE		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4×20mm	•
		4×30mm	•
		5×10mm	•
	638	5×20mm	•
		5×30mm	•
		6×10mm	•
		6×20mm	•
		6×30mm	•
		8×20mm	•
		8×30mm	•

Standard

Sponge Series

Series Multi-Below

Series

Spring type / Direct mount



		1.0 1.0			
Type	Page	パッド	Male thread size		
туре		サイズ	M14×1mm		
VPF		2×4mm	•		
		3.5×7mm	•		
		4×10mm	•		
		4x20mm	•		
		4×30mm	•		
		5×10mm	•		
	638	5x20mm	•		
		5×30mm	•		
		6×10mm	•		
		6x20mm	•		
		6×30mm	•		
		8x20mm	•		
		8×30mm	•		
	and the Art (Deep felice				

Vacuum Pad Rubber Only



Type	Page	Pad	
туре	raye	size	
VP		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	633	5x20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

Fixed type / Top port / Barb fitting



۲	ıxea	type /	Side	port /	Barb	ππιn



Port size

Time	D	Pad	Port size
Type	Page	size	6×4mm
VPA		2x4mm	•
		3.5×7mm	•
		4x10mm	•
		4x20mm	•
	639	4x30mm	•
		5×10mm	•
		5x20mm	•
		5×30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•
O			

T	_	Pad	Port size
Type	Page	size	6×4mm
VPB		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
	640 5 5 6 6 6	4x30mm	•
		5×10mm	•
		5x20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

Spring type / Top port / Barb fitting



Carina tuna	/ Cido port	/ Dorb fitti	

Type	Page	Pad	

Type	Page	Pad	Port size
Type		size	6×4mm
VPC		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	640	5x20mm	•
		5×30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8×20mm	•
		8×30mm	•

туре	rage	size	6×4mm
VPD		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	641	5x20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

Screw fixing type / Top port / Barb fitting



Type	Page	Pad	Port size
туре		size	6×4mm
VPAE		2×4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	641	5x20mm	•
		5×30mm	•
		6×10mm	•
		6x20mm	•
		6×30mm	•
		8x20mm	•
		8×30mm	•

Screw fixing type / Side port / Barb fitting

Туре	Page	Pad	Port size
Type	Page	size	6×4mm
VPBE		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4×20mm	•
	642	4×30mm	•
		5×10mm	•
		5×20mm	•
		5×30mm	•
		6×10mm	•
		6×20mm	•
		6×30mm	•
		8×20mm	•
		8×30mm	•

629

Standard Series

261162

Multi-Bellov

Oval Series

■ Standard Size List (Combinations with Small Vacuum Pad Holder)

Fixed type / Top port / Push-in fitting

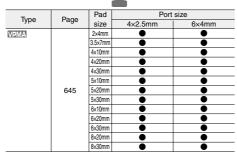
Fixed type / Side port / Push-in fitting

Type	Page	Pad	Port size
Type		size	4mm
VPMA		2×4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4×30mm	•
		5×10mm	•
	642	5x20mm	•
		5×30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8×30mm	•
	•		

Type	Page	Pad	Port size
туре	raye	size	4mm
VPMB		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
		4x30mm	•
		5×10mm	•
	643	5x20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

Fixed type / Top port / Barb fitting

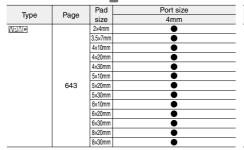
Fixed type / Side port / Barb fitting



T	_	Pad	Port size		
Type	Page	size	4×2.5mm	6×4mm	
VPMB		2×4mm	•	•	
		3.5×7mm	•	•	
		4×10mm	•	•	
		4x20mm	•	•	
		4x30mm	•	•	
		5×10mm	•	•	
	646	5x20mm	•	•	
		5x30mm	•	•	
		6×10mm	•	•	
		6x20mm	•	•	
		6x30mm	•	•	
		8x20mm	•	•	
		8x30mm	•	•	

Spring type / Top port / Push-in fitting

Spring type / Side port / Push-in fitting



T	Page	Pad	Port size
Type		size	4mm
VPMD		2x4mm	•
		3.5×7mm	•
		4×10mm	•
		4x20mm	•
	644	4x30mm	•
		5×10mm	•
		5x20mm	•
		5x30mm	•
		6×10mm	•
		6x20mm	•
		6x30mm	•
		8x20mm	•
		8x30mm	•

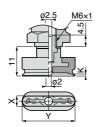
Spring type / Top port / Barb fitting

Spring type / Side port / Barb fitting

Time	Page	Port	Port	size
Type		size	4×2.5mm	6×4mm
VPMC		2×4mm	•	•
		3.5×7mm	•	•
		4×10mm	•	•
		4x20mm	•	•
		4×30mm	•	•
		5×10mm	•	•
	647	5x20mm	•	•
		5×30mm	•	•
		6×10mm	•	•
		6x20mm	•	•
		6×30mm	•	•
		8×20mm	•	•
		8×30mm	•	•

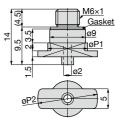
Time	Dogo	Port	Port size			
Туре	Page	size	4×2.5mm	6×4mm		
VPMD		2x4mm	•	•		
		3.5×7mm	•	•		
		4×10mm	•	•		
		4×20mm	•	•		
		4×30mm	•	•		
		5×10mm	•	•		
	648	5×20mm	•	•		
		5×30mm	•	•		
		6×10mm	•	•		
		6×20mm	•	•		
		6×30mm	•	•		
		8×20mm	•	•		
		8x30mm	•			

■ Drawing of Vacuum Pad and Holder Joint ■ Pad frame dimension



Unit: mm

	Pad	size	Inner lip height	
Model code	Х	Υ	K	
VP 2×4E4	2	4	0.15	
VP 3.5×7E4	3.5	7	0.3	
VP 4×10E4		10		
VP 4×20E4	4	20	0.8	
VP 4×30E4		30		
VP 5×10E4		10		
VP 5×20E4	5	20	0.8	
VP 5×30E4		30		
VP 6×10E4		10		
VP 6×20E4	6	20	1.1	
VP 6×30E4		30		
VP 8×20E4	8	20	1.1	
VP 8×30E4	0	30		
VP 2×4E4A	2	4	0.15	
VP 3.5×7E4A	3.5	7	0.3	
VP 4×10E4A		10		
VP 4×20E4A	4	20	0.8	
VP 4×30E4A		30		
VP 5×10E4A		10		
VP 5×20E4A	5	20	0.8	
VP 5×30E4A		30		
VP 6×10E4A		10		
VP 6×20E4A	6	20	1.1	
VP 6×30E4A		30		
VP 8×20E4A	8	20	1.1	
VP 8×30E4A	U	30	1.1	

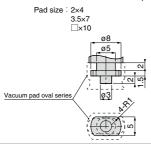


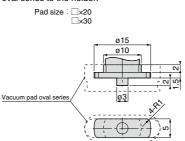
Unit: mm

Pad frame Model code	øP1	øP2
FSPH10	5	8
FSPH20	10	15

■ Holder Dimensions for Vacuum Pad Oval Series |

Refer to the following dimensions, when producing vacuum pad holder and attach PISCO vacuum pad oval series to the holder.

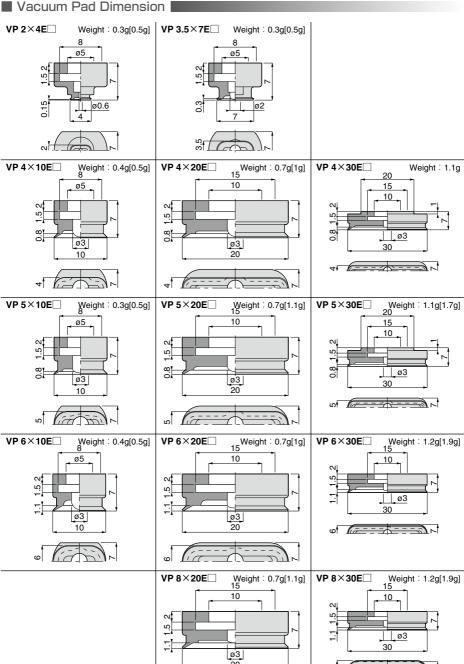




633

Oval

■ Vacuum Pad Dimension



Oval

Weight : 2.8g[3.4g]

ø2.5

ø2

Soft Series

Series Ultrathin

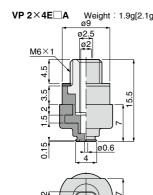
Flat Series

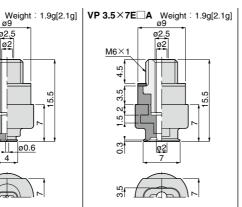
Mark-free Series

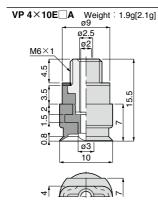
Vacuum Cylinder

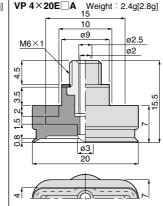
Air Pincette

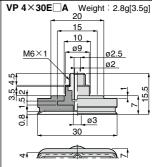
■ Vacuum Pad with frame Dimension











20

15

10

ø9

____ø3 30

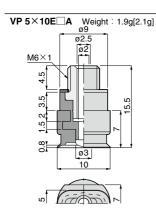
VP 5×30E□A

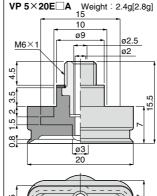
 $M6 \times 1$

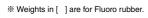
5:5

3.5

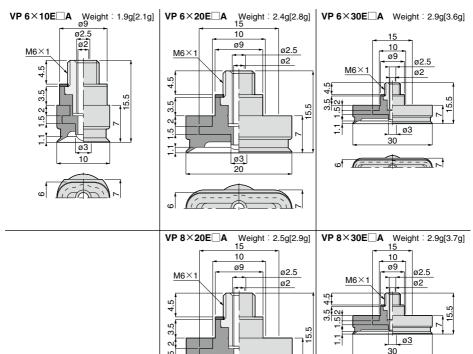
ω







■ Vacuum Pad with frame Dimension



ø3 20

Standard Series

635

Series Bellows Series

Series

 $\ensuremath{\ensuremath{\%}}$ Weights in [$\,$] are for Fluoro rubber.

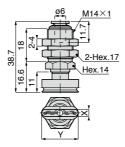


PA Fixed type / Top port / Push-in fitting









Model code	Pad size		Weight	CAD
Wodel code	Χ	Υ	(g)	file name
VPA2×4E46J8	2	4		
VPA3.5×7E46J8	3.5	7		
VPA4×10E46J8		10		
VPA4×20E46J8	4	20	Name	
VPA4×30E46J8		30		
VPA5×10E46J8		10		
VPA5×20E46J8	5	20	Now preparing	Refer to
VPA5×30E46J8		30	proparities	PISCO
VPA6×10E46J8		10		website.
VPA6×20E46J8	6	20		
VPA6×30E46J8	ı	30]	
VPA8×20E46J8	0	20		
VPA8×30E46J8	8	30		

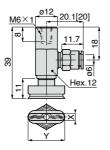
- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for
- $\ensuremath{\%}$. $\ensuremath{\mathbb{8}}$: Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- \divideontimes . Bulkhead nut tightening torque : 18 \sim 21N·m

PE Fixed type / Side port / Push-in fitting









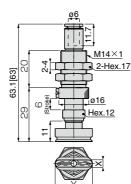
Model code	Pad size		Weight	CAD
Model code	Χ	Υ	(g)	file name
VPB2×4E46J8	2	4		
VPB3.5×7E46J8	3.5	7		
VPB4×10E46J8		10		
VPB4×20E46J8	4	20		
VPB4×30E46J8		30		
VPB5×10E46J8		10	Nam	
VPB5×20E46J8	5	20	Now preparing	Refer to
VPB5×30E46J8		30	proparities	PISCO
VPB6×10E46J8		10		website.
VPB6×20E46J8	6	20		
VPB6×30E46J8		30		
VPB8×20E46J8	8	20		
VPB8×30E46J8	ő	30		

- ※ . Value in [] is the dimension of a "-S3" spec model.
- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for
- ※ . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.



VPC Spring type / Top port / Push-in fitting





	Model code	Pad	size	Spring force	Weight	CAD
	iviodei code	Х	Y	(N)	(g)	file name
	VPC2×4E46J8	2	4	7.0~12.6		
	VPC3.5×7E46J8	3.5	7	7.0~12.6		
7	VPC4×10E46J8		10		Now preparing	
	VPC4×20E46J8	4	20	7.0~12.6		Refer to
	VPC4×30E46J8		30			
	VPC5×10E46J8		10			
	VPC5×20E46J8	5	20	7.0~12.6		
	VPC5×30E46J8		30			PISCO
	VPC6×10E46J8		10			website.
	VPC6×20E46J8	6	20	7.0~12.6		
	VPC6×30E46J8		30			
	VPC8×20E46J8	8	20	7.0~12.6		
	VPC8×30E46J8	0	30	7.0~12.0		

- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * . Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4.5 \sim 6N·m

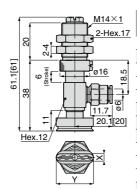
Oval

Spring type / Side port / Push-in fitting









Model code	Pad size		Spring force	Weight	CAD	
Model code	Х	Υ	(N)	(g)	file name	
VPD2×4E46J8	2	4	7.0~12.6	i		
VPD3.5×7E46J8	3.5	7	7.0~12.6			
VPD4×10E46J8		10				
VPD4×20E46J8	4	20	7.0~12.6			
VPD4×30E46J8		30				
VPD5×10E46J8		10		Now		
VPD5×20E46J8	5	20	7.0~12.6	preparing	Refer to	
VPD5×30E46J8		30		propariis	PISCO	
VPD6×10E46J8		10			website.	
VPD6×20E46J8	6	20	7.0~12.6			
VPD6×30E46J8		30				
VPD8×20E46J8	8	20	DO 106			
VPD8×30E46J8	0	30	7.0~12.6			

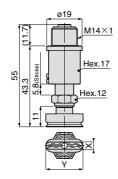
- * . Value in [] is the dimension of a "-S3" spec model.
- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4.5 \sim 6N \cdot m

PF Spring type / Direct mount / Metric thread



Unit: mm



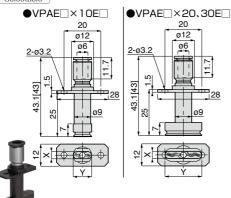


Model code	Pad		Spring force	Weight	CAD	
Model code	X	Υ	(N)	(g)	file name	
VPF2×4E48	2	4	7.9~15.0			
VPF3.5×7E48	3.5	7	7.9~15.0	7.9~15.0 Now		
VPF4×10E48		10				
VPF4×20E48	4	20	7.9~15.0			
VPF4×30E48		30				
VPF5×10E48		10				
VPF5×20E48	5	20	7.9~15.0		Refer to	
VPF5×30E48		30		proparitis	PISCO	
VPF6×10E48		10			website.	
VPF6×20E48	6	20	7.9~15.0			
VPF6×30E48		30				
VPF8×20E48	8	20	7.9~15.0			
VPF8×30E48	0	30	7.9~ 15.0			

- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for
- ※ . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Tightening torque for fixing a pad holder : 4.5 \sim 6N \cdot m

PAE Screw fixing type / Top port / Push-in fitting

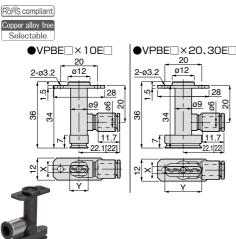




Model code	Pad	Pad size		CAD
Model Code	X	Υ	(g)	file name
VPAE2×4E46J8	2	4		
VPAE3.5×7E46J8	3.5	7		
VPAE4×10E46J8	4	10		
VPAE4×20E46J8		20		Refer to
VPAE4×30E46J8		30	Now preparing	
VPAE5×10E46J8		10		
VPAE5×20E46J8	5	20		
VPAE5×30E46J8		30		PISCO
VPAE6×10E46J8		10		website.
VPAE6×20E46J8	6	20]	
VPAE6×30E46J8		30		
VPAE8×20E46J8	8	20		
VPAE8×30E46J8	ő	30		

- $\ensuremath{\%}$. Value in [$\ensuremath{]}$ is the dimension of a "-S3" spec model.
- *. 4 4: Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

VPBE Screw fixing type / Side port / Push-in fitting

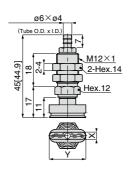


Pad size Weight (g) CAD file name VPBE2×4E46J8 2 4 4 20 4 20 4 20 4 20 4 20 4 20 4					•	, inc
VPBE2x4E46J8 2 4 VPBE3.5x7E46J8 3.5 7 VPBE4x10E46J8 10 10 VPBE4x20E46J8 4 20 VPBE5x10E46J8 30 10 VPBE5x20E46J8 5 20 VPBE5x30E46J8 30 10 VPBE6x10E46J8 10 Now preparing PISCO website. VPBE6x20E46J8 6 20 VPBE6x30E46J8 30 30 VPBE8x20E46J8 30 30 VPBE8x20E46J8 20 30		Madalaada	Pad	size	Weight	CAD
VPBE3.5×7E[6J]8 3.5 7 VPBE4×10E[4]6J]8 10 VPBE4×20E[4]6J]8 4 20 VPBE5×10E[4]6J]8 30 VPBE5×20E[4]6J]8 5 20 VPBE5×30E[4]6J]8 30 VPBE6×10E[4]6J]8 10 VPBE6×20E[4]6J]8 10 VPBE6×20E[4]6J]8 30 VPBE6×30E[4]6J]8 30 VPBE8×20E[4]6J]8 30		woder code	Х	Υ	(g)	file name
VPBE4×10E46J8 4 20 VPBE4×20E46J8 4 20 VPBE5×10E46J8 30 VPBE5×20E46J8 5 20 VPBE5×30E46J8 30 VPBE6×10E46J8 10 VPBE6×20E46J8 10 VPBE6×20E46J8 10 VPBE6×30E46J8 30 VPBE6×30E46J8 30 VPBE8×20E46J8 8	_	VPBE2×4E46J8	2	4		
VPBE4×20E46J8 4 20 VPBE4×30E46J8 30 VPBE5×10E46J8 5 20 VPBE5×30E46J8 5 20 VPBE6×10E46J8 10 Now preparing VPBE6×10E46J8 10 PISCO website. VPBE6×20E46J8 6 20 VPBE6×30E46J8 30 30 VPBE8×20E46J8 30 30		VPBE3.5×7E46J8	3.5	7		
VPBE4×30E46J8 30 VPBE5×10E46J8 10 VPBE5×20E46J8 5 VPBE5×30E46J8 30 VPBE6×10E46J8 10 VPBE6×20E46J8 10 VPBE6×30E46J8 20 VPBE6×30E46J8 30 VPBE8×20E46J8 20		VPBE4×10E46J8	4	10		Refer to
VPBE5×10E46J8 5 20 Now preparing Refer to PISCO website. VPBE5×30E46J8 5 20 PISCO website. VPBE6×10E46J8 10 0 0 VPBE6×20E46J8 6 20 0 0 VPBE6×30E46J8 30 0 0 0 0 VPBE8×20E46J8 8 20 0 <t< td=""><th></th><td>VPBE4×20E46J8</td><td>20</td><td rowspan="2"></td></t<>		VPBE4×20E46J8		20		
VPBE5x20E[46J]8 5 20 Now preparing PISCO VPBE5x30E[46J]8 10 PISCO website. VPBE6x10E[46J]8 6 20 VPBE6x30E[46J]8 30 VPBE6x20E[46J]8 30 VPBE8x20E[46J]8 20		VPBE4×30E46J8		30		
VPBE5x20E46J8 5 20 preparing Refer to PISCO Website. VPBE6x10E46J8 10 10 vbse6x20E46J8 6 20 vbse6x30E46J8 30 vbse6x20E46J8 30 vbse6x20E46J8 30 vbse6x20E46J8 20 vbse6x20E46J8 vbse6x20E46J8 20 vbse6x20E46J8 vbse6x20E4		VPBE5×10E46J8		10	Marin	
VPBE5×30E46J8 30 PISCO Website. VPBE6×10E46J8 10 website. VPBE6×20E46J8 6 20 VPBE6×30E46J8 30 VPBE8×20E46J8		VPBE5×20E46J8	5	20		
VPBE6x20E46J8 6 20 VPBE6x30E46J8 30 VPBE8x20E46J8 20		VPBE5×30E46J8		30	proparitis	PISCO
VPBE6×30E46J8 30 VPBE8×20E46J8 8 20		VPBE6×10E46J8		10		website.
VPBE8×20E46J8 8 20		VPBE6×20E46J8	6	20		
8		VPBE6×30E46J8		30		
VPBE8×30E46J8 30		VPBE8×20E46J8	0	20		
		VPBE8×30E46J8	0	30		

- * . Value in [] is the dimension of a "-S3" spec model.
- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- ※. 8: Replaced with "-S3" for "Copper alloy free".
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

PA Fixed type / Top port / Barb fitting





				OTHE - ITHI
Model code	Pad	size	Weight	CAD
Model code	Х	Υ	(g)	file name
VPA2×4E46B8	2	4		
VPA3.5×7E46B8	3.5	7		
VPA4×10E46B8		10		
VPA4×20E46B8	4	20		
VPA4×30E46B8		30		
VPA5×10E46B8		10		
VPA5×20E46B8	5	20	Now preparing	Refer to
VPA5×30E46B8		30	proparitis	PISCO
VPA6×10E46B8		10		website.
VPA6×20E46B8	6	20		
VPA6×30E46B8		30		
VPA8×20E46B8	8	20		
VPA8×30E46B8	0	30		
· · · · · · · · · · · · · · · · · · ·				

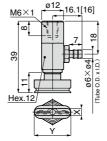
- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4: Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * . Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lpha . Bulkhead nut tightening torque : 12 \sim 14N·m

PB Fixed type / Side port / Barb fitting









Model code	Pad	Pad size Weight		CAD
Model code	Χ	Υ	(g)	file name
VPB2×4E46B8	2	4		
VPB3.5×7E46B8	3.5	7		
VPB4×10E46B8		10		
VPB4×20E46B8	4	20		
VPB4×30E46B8		30	Now preparing	Refer to
VPB5×10E46B8		10		
VPB5×20E46B8	5	20		
VPB5×30E46B8		30		PISCO
VPB6×10E46B8		10		website.
VPB6×20E46B8	6	20		
VPB6×30E46B8		30		
VPB8×20E46B8	8	20		
VPB8×30E46B8	Ö	30		

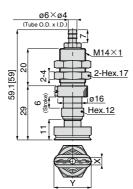
- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

Spring type / Top port / Barb fitting









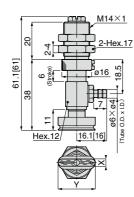
Model code	Pad	size	Spring force	Weight	CAD	
Model code	Х	Υ	(N)	(g)	file name	
VPC2×4E46B8	2	4	7.0~12.6	-		
VPC3.5×7E46B8	3.5	7	7.0~12.6			
VPC4×10E46B8		10				
VPC4×20E46B8	4	20	7.0~12.6			
VPC4×30E46B8		30		Now preparing		
VPC5×10E46B8		10			Now	
VPC5×20E46B8	5	20	7.0~12.6		Refer to	
VPC5×30E46B8		30			PISCO	
VPC6×10E46B8		10			website.	
VPC6×20E46B8	6	20	7.0~12.6			
VPC6×30E46B8		30				
VPC8×20E46B8	8	20	7.0~12.6			
VPC8×30E46B8	0	30	7.0-3 12.0			

- ※ . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for
- ※ . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lpha . Bulkhead nut tightening torque : 4.5 \sim 6N·m

Spring type / Side port / Barb fitting

20 & 3D





Model code	Pad	size	Spring force	Weight	CAD
Model code	Х	Υ	(N)	(g)	file name
VPD2×4E46B8	2	4	7.0~12.6		
VPD3.5×7E46B8	3.5	7	7.0~12.6		
VPD4×10E46B8		10			
VPD4×20E46B8	4	20	7.0~12.6		
VPD4×30E46B8		30			
VPD5×10E46B8		10		Now preparing	
VPD5×20E46B8	5	20	7.0~12.6		Refer to
VPD5×30E46B8		30			PISCO
VPD6×10E46B8		10			website.
VPD6×20E46B8	6	20	7.0~12.6		
VPD6×30E46B8		30			
VPD8×20E46B8	8	20	7.0~12.6		
VPD8×30E46B8	0	30	7.0~12.0		

- * . Value in [] is the dimension of a "-S3" spec model.
- **. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- ※ . 8 : Replaced with "-S3" for "Copper alloy free" .
- ※. Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4.5 \sim 6N·m

VPAE

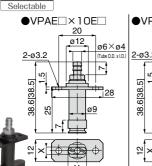
Oval

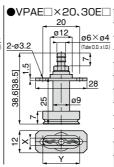
VPAE Screw fixing type / Top port / Barb fitting

CAD 20 & 3D Unit: mm

RoHS compliant

Copper alloy free
Selectable





	Model code	Pad	Pad size		CAD
	Model code	Х	Y	(g)	file name
,	VPAE2×4E46B8	2	4		
	VPAE3.5×7E46B8	3.5	7		
	VPAE4×10E46B8		10		
,	VPAE4×20E46B8	4	20		
	VPAE4×30E46B8		30	Now preparing	
	VPAE5×10E46B8		10		
	VPAE5×20E46B8	5	20		Refer to
	VPAE5×30E46B8		30		PISCO website.
	VPAE6×10E46B8		10		
	VPAE6×20E46B8	6	20		
	VPAE6×30E46B8	1	30		
	VPAE8×20E46B8	8	20		
	VPAE8×30E46B8	0	30		

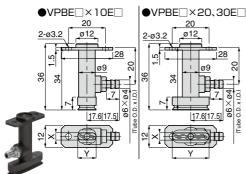
- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- ※. Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.



VPBE Screw fixing type / Side port / Barb fitting







Model code	Pad	Pad size		CAD
Model code	Х	Υ	(g)	file name
VPBE2×4E46B8	2	4		
VPBE3.5×7E46B8	3.5	7		
VPBE4×10E46B8		10		
VPBE4×20E46B8	4	20		
VPBE4×30E46B8		30	1	
VPBE5×10E46B8		10		
VPBE5×20E46B8	5	20	Now preparing	Refer to
VPBE5×30E46B8		30	preparitis	PISCO
VPBE6×10E46B8		10		website.
VPBE6×20E46B8	6	20		
VPBE6×30E46B8		30		
VPBE8×20E46B8	8	20		
VPBE8×30E46B8	٥	30		

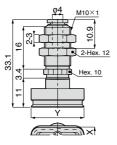
- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- ※ . ⑧ : Replaced with "-S3" for "Copper alloy free" .
- * . Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

VPMA Fixed type / Top port / Push-in fitting









One · min							
Model code	Pad	size	Weight	CAD			
Model code	Х	Υ	(g)	file name			
VPMA2×4E44J8	2	4					
VPMA3.5×7E44J8	3.5	7					
VPMA4×10E44J8		10					
VPMA4×20E44J8	4	20	Now preparing	Refer to			
VPMA4×30E44J8		30					
VPMA5×10E44J8		10					
VPMA5×20E44J8	5	20					
VPMA5×30E44J8		30	propariis	PISCO			
VPMA6×10E44J8		10		website.			
VPMA6×20E44J8	6	20					
VPMA6×30E44J8		30					
VPMA8×20E44J8	8	20					
VPMA8×30E44J8	0	30					
W. M. Bardanad with Bard with a marketical and a Baffer to many 604							

- * . 4 : Replaced with Pad rubber material code. Refer to page 624
- ※. ⑧: Replaced with "-S3" for "Copper alloy free".
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 5 \sim 7N·m

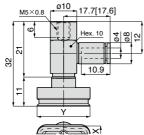
VPME Fixed type / Side port / Push-in fitting

Unit: mm









	Model code	Pad		Weight	CAD
	Model code	Χ	Υ	(g)	file name
Ì	VPMB2×4E44J8	2	4		
	VPMB3.5×7E44J8	3.5	7		
	VPMB4×10E44J8		10		
	VPMB4×20E44J8	4	20		
	VPMB4×30E44J8		30		Refer to PISCO website.
	VPMB5×10E44J8		10	Nau	
	VPMB5×20E44J8	5	20	Now preparing	
	VPMB5×30E44J8		30		
	VPMB6×10E44J8		10		
	VPMB6×20E44J8	6	20		
	VPMB6×30E44J8		30		
	VPMB8×20E44J8	8	20		
	VPMB8×30E44J8	O	30		

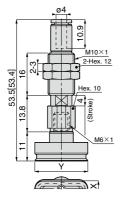
- * . Value in [] is the dimension of a "-S3" spec model.
- *. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * . Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

VPMC Spring type / Top port / Push-in fitting



Oval





Model code	Pad	Pad size		Weight	CAD
Model Code	Х		(N)	(g)	file name
VPMC2×4E44J8	2	4	1 ~ 1.3		
VPMC3.5×7E44J8	3.5	7	1 ~ 1.3		
VPMC4×10E44J8		10			
VPMC4×20E44J8	4	20	1 ~ 1.3		
VPMC4×30E44J8		30			Refer to PISCO
VPMC5×10E44J8		10		Maur	
VPMC5×20E44J8	5	20	1 ~ 1.3	Now preparing	
VPMC5×30E44J8		30			
VPMC6×10E44J8		10			website.
VPMC6×20E44J8	6	20	1 ~ 1.3		
VPMC6×30E44J8		30			
VPMC8×20E44J8	8	20	1 ~ 1.3		
VPMC8×30E44J8	30		1.5		
			_		

- * . Value in [] is the dimension of a "-S3" spec model.
- *. 4: Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * . Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4 \sim 6N·m

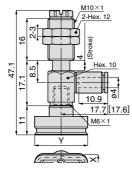


VPMD Spring type / Side port / Push-in fitting









Model code	Pad size		Spring force	Weight	CAD
Woder code	Х	Υ	(N)	(g)	
VPMD2×4E44J8	2	4	1 ~ 1.3		
VPMD3.5×7E44J8	3.5	7	1 ~ 1.3		
VPMD4×10E44J8		10			
VPMD4×20E44J8	4	20	1 ~ 1.3		Refer to PISCO
VPMD4×30E44J8		30			
VPMD5×10E44J8		10	1 ~ 1.3	Now preparing	
VPMD5×20E44J8	5	20			
VPMD5×30E44J8		30			
VPMD6×10E44J8		10			website.
VPMD6×20E44J8	6	20	1 ~ 1.3		
VPMD6×30E44J8		30			
VPMD8×20E44J8	8	20	1 ~ 1.3		
VPMD8×30E44J8	0	30	1.5		

- * . Value in [] is the dimension of a "-S3" spec model.
- $\ensuremath{\,\%\,}$. $\ensuremath{\,4\!\!\!/}$: Replaced with Pad rubber material code. Refer to page 624 for details.
- ※. ⑧: Replaced with "-S3" for "Copper alloy free".
- $\ensuremath{\ensuremath{\%}}$. Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4 \sim 6N·m

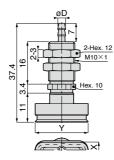
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VPMA Fixed type / Top port / Barb fitting









Madalaada	Pad	size	Tube O.D. x I.D.	Weight	CAD
Model code	Х	Υ	øD	(g)	file name
VPMA2×4E44B8	2	4	4 × 2.5		
VPMA2×4E46B8	۷	4	6 × 4	1	
VPMA3.5×7E44B8	3.5	7	4 × 2.5		
VPMA3.5×7E46B8	5.5	,	6 × 4		
VPMA4×10E44B8		10	4 × 2.5		
VPMA4×10E46B8		10	6 × 4		
VPMA4×20E44B8	4	20	4 × 2.5		
VPMA4×20E46B8	,		6 × 4		
VPMA4×30E44B8		30	4 × 2.5		Refer to
VPMA4×30E46B8		50	6 × 4		
VPMA5×10E44B8		10	4 × 2.5	Now preparing	
VPMA5×10E46B8			6 × 4		
VPMA5×20E44B8	5	20	4 × 2.5		
VPMA5×20E46B8	Ü		6 × 4		
VPMA5×30E44B8		30	4 × 2.5		
VPMA5×30E46B8			6 × 4		website.
VPMA6×10E44B8		10	4 × 2.5		
VPMA6×10E46B8			6 × 4		
VPMA6×20E44B8	6	20	4 × 2.5		
VPMA6×20E46B8			6 × 4		
VPMA6×30E44B8		30	4 × 2.5		
VPMA6×30E46B8			6 × 4		
VPMA8×20E44B8		20	4 × 2.5		
VPMA8×20E46B8	8		6 × 4		
VPMA8×30E44B8		30	4 × 2.5		
VPMA8×30E46B8			6 × 4		

- * . 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- * . 8 : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- $\ensuremath{\text{\%}}$. Bulkhead nut tightening torque : 5 \sim 7N \cdot m



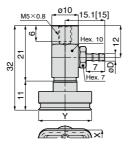


VPMB Fixed type / Side port / Barb fitting









Model code	Pad size		Tube O.D. x I.D.	Weight	CAD
Woder code	Х	Υ	øD	(g)	
VPMB2×4E44B8	2	4	4 × 2.5		
VPMB2×4E46B8	۷.	4	6×4		
VPMB3.5×7E44B8	3.5	7	4 × 2.5		
VPMB3.5×7E46B8	5.5	,	6×4		
VPMB4×10E44B8		10	4 × 2.5		
VPMB4×10E46B8		10	6×4		
VPMB4×20E44B8	4	20	4 × 2.5		
VPMB4×20E46B8		20	6×4		
VPMB4×30E44B8		30	4 × 2.5		
VPMB4×30E46B8			6×4		
VPMB5×10E44B8		10	4 × 2.5		
VPMB5×10E46B8			6×4		
VPMB5×20E44B8	5	20	4 × 2.5	Now	
VPMB5×20E46B8			6×4	preparing	Refer to
VPMB5×30E44B8		30	4 × 2.5		PISCO
VPMB5×30E46B8			6×4		website
VPMB6×10E44B8		10	4 × 2.5		
VPMB6×10E46B8		10	6×4		
VPMB6×20E44B8	6	20	4 × 2.5		
VPMB6×20E46B8		20	6×4		
VPMB6×30E44B8		30	4 × 2.5		
VPMB6×30E46B8		- 50	6×4		
VPMB8×20E44B8		20	4 × 2.5		
VPMB8×20E46B8	8	20	6×4		
VPMB8×30E44B8		30	4 × 2.5		
VPMB8×30E46B8			6×4		

- * . Value in [] is the dimension of a "-S3" spec model.
- $\frak * . \frak 4$: Replaced with Pad rubber material code. Refer to page 624 for details.
- ※ . ⑧ : Replaced with "-S3" for "Copper alloy free" .
- ※. Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.

CAD CAD data is available at PISCO website.

Series
Soft
Series

Soft Bellows Series Skidoroof

Series

Flat Series Mark-free

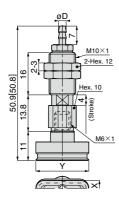
Long Stroke Series

Air Pincette

VPMC Spring type / Top port / Barb fitting







Madalasala	Pad	size	Tube O.D. x I.D.	Spring force	Weight	CAD
Model code	Χ	Υ	øD	(N)	(g)	file name
VPMC2×4E44B8	2	4	4×2.5	1~1.3		
VPMC2×4E46B8		4	6×4	1~1.3		
VPMC3.5×7E44B8	3.5	7	4×2.5	1~1.3		
VPMC3.5×7E46B8	5.5	_ ′	6×4	1.91.5		
VPMC4×10E44B8		10	4×2.5			
VPMC4×10E46B8		10	6×4			
VPMC4×20E44B8	4	20	4×2.5	1~1.3		
VPMC4×20E46B8	4	20	6×4	1 -1.5		
VPMC4×30E44B8		30	4×2.5		Now preparing	
VPMC4×30E46B8		30	6×4			
VPMC5×10E44B8		10	4×2.5	1~1.3		
VPMC5×10E46B8			6×4			
VPMC5×20E44B8	5	20	4×2.5			
VPMC5×20E46B8	3		6×4			Refer to PISCO
VPMC5×30E44B8		30	4×2.5			
VPMC5×30E46B8			6×4			website.
VPMC6×10E44B8		10	4×2.5			
VPMC6×10E46B8			6×4			
VPMC6×20E44B8	6	20	4×2.5	1~1.3		
VPMC6×20E46B8			6×4	1 1.0		
VPMC6×30E44B8		30	4×2.5			
VPMC6×30E46B8			6×4			
VPMC8×20E44B8		20	4×2.5			
VPMC8×20E46B8	8		6×4	1~1.3		
VPMC8×30E44B8	9	30	4×2.5	1.5		
VPMC8×30E46B8		50	6×4			

- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- ※ . ⑧ : Replaced with "-S3" for "Copper alloy free" .
- * Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4 \sim 6N·m

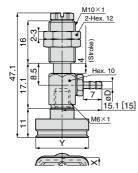
http://en.pisco.co.jp

VPMD Spring type / Side port / Barb fitting









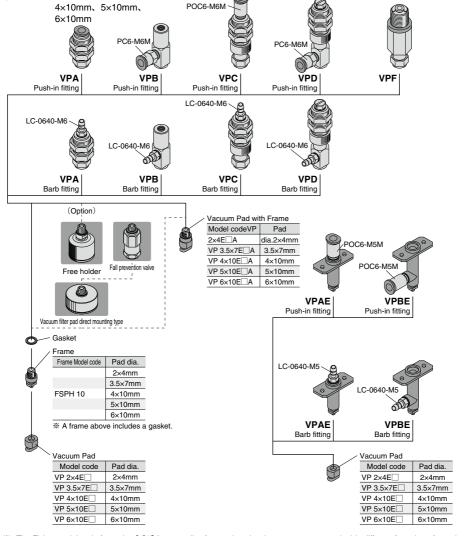
Model code	Pad	size	Tube O.D. x I.D.	Spring force	Weight	CAD
Model code	Χ		øD	(N)	(g)	file name
VPMD2×4E44B8	2	4	4×2.5	1~1.3		
VPMD2×4E46B8		4	6 × 4	1.91.5		
VPMD3.5×7E44B8	3.5	7	4×2.5	1~1.3		
VPMD3.5×7E46B8	0.0		6×4	1 1.0		
VPMD4×10E44B8		10	4×2.5			
VPMD4×10E46B8		10	6×4			
VPMD4×20E44B8	4	20	4×2.5	1~1.3		
VPMD4×20E46B8	,		6×4	1 1.5		
VPMD4×30E44B8		30	4×2.5		Now preparing	
VPMD4×30E46B8		30	6 × 4			
VPMD5×10E44B8		10	4×2.5	1~1.3		
VPMD5×10E46B8			6×4			Refer to
VPMD5×20E44B8	5	20	4×2.5			
VPMD5×20E46B8			6×4			
VPMD5×30E44B8		30	4×2.5			
VPMD5×30E46B8		30	6×4			website
VPMD6×10E44B8		10	4×2.5			
VPMD6×10E46B8		10	6 × 4			
VPMD6×20E44B8	6	20	4×2.5	1~1.3		
VPMD6×20E46B8			6 × 4	1 1.5		
VPMD6×30E44B8		30	4×2.5			
VPMD6×30E46B8		30	6×4			
VPMD8×20E44B8		20	4×2.5			
VPMD8×20E46B8	8	20	6×4	1~1.3		
VPMD8×30E44B8		30	4×2.5	1.5		
VPMD8×30E46B8		30	6×4			

- * . Value in [] is the dimension of a "-S3" spec model.
- ※. 4 : Replaced with Pad rubber material code. Refer to page 624 for details.
- ※. ⑧: Replaced with "-S3" for "Copper alloy free".
- $\ensuremath{\ensuremath{\%}}$. Nitrile rubber (N) and Conductive NBR (Low resistance) (NE) are not suitable for measures against ozone.
- lepha . Bulkhead nut tightening torque : 4 \sim 6N·m

●Pad dia.: 2×4mm、3.5×7mm、

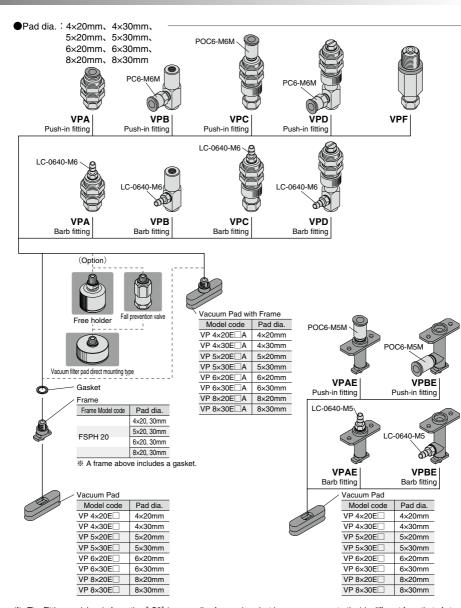


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- **. The Fitting model code for option "-S3" (copper alloy free and against low ozone concentration) is different from that of standard products. Contact us for details.
- ** . Holder alone is purchasable by the following model code. Model code : VP ① 20R()6J/6B
 - 1 Holder type



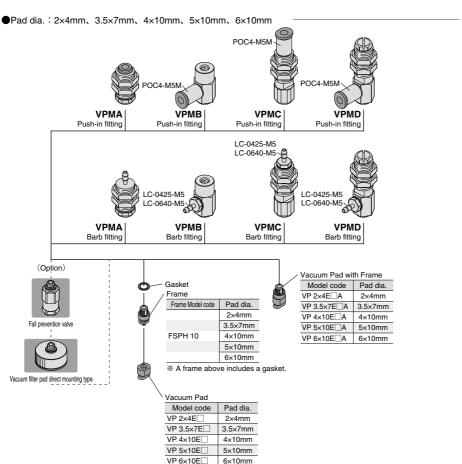


** .The Fitting model code for option "-S3" (copper alloy free and against low ozone concentration) is different from that of standard .** . Holder alone is purchasable by the following model code.

Model code: VP ① 20R()6J/6B

① Holder type

■ Construction (Combinations with Small Vacuum Pad Holder)



- * . Holder alone is purchasable by the following model code. Model code : VPM ① 20R()4J/ ③ B
 - 1) Holder type, 3 Port size

Standa Series

651

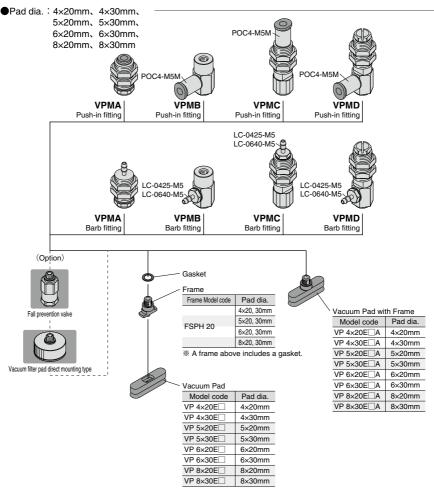
Bellow Series

Series

Oval Series

Series

Pincett



- ** .The Fitting model code for option "-S3" (copper alloy free and against low ozone concentration) is different from that of standard products. Contact us for details.
- $\ensuremath{\,\times\,}$. Holder alone is purchasable by the following model code.
- Model code: VPM ① 20R()4J/ ③ B
- 1) Holder type, 3) Port size

Standard Series

Sponge Series

Bellows Series

Multi-Bellows

Oval Series

Vacuum Pad

Common Safety Instructions for Vacuum Pads

Before selecting or using PISCO products, read following instructions. Read the detailed instruction for individual series as the instructions below.

↑ Warning

- 1. Take safety measures in advance where a dropping work-piece can cause danger.
- 2. Make sure to install a vacuum pad holder securely. Looseness may cause trouble.
- 3. Pay special attention to the work conveyance by screwed vacuum pads, accompanied by rotary movement. There is a possibility of troubles due to the looseness of screws from the rotary movement.
- 4. There is a possibility of troubles due to the leakage of vacuum system, clogging, vacuum pad abrasion, crack, deterioration, the galling of slider part in the holder and the looseness in joints. Carry out maintenance inspection periodically.
- 5. When a work-piece is conveyed by a vacuum pad, consider the acceleration, impacts and wind pressure. Otherwise, the work-piece may drop during conveyance.

↑ Caution

- 1. Thoroughly read and understand the theoretical suction force in this catalog before selecting diameter, Qty and suction place of vacuum pads. Select vacuum pads with enough margin in suction force.
- 2. The product incorporating NBR as seal rubber material has a risk of malfunction caused by ozone crack. Ozone exists in high concentrations in static elimination air, clean-room, and near the high-voltage motors, etc. As a countermeasure, material change from NBR to HNBR or FKM is necessary. Consult with PISCO for more information.
- 3. Select the material of vacuum pad in accordance with use environment and ease of use, referring to "Vacuum Pad Selection Guide" .
- 4. Select the suitable pad shape (type) in accordance with a work-piece and its shape, referring to "Vacuum Pad Selection Guide".
- 5. Select spring-holder type when work-pieces have different heights or are weak against an external force. Select the suitable holder type, referring to spring force and spring length in the catalog.
- 6. Since spring-holder type has a sliding action, minimize the transverse load. Otherwise, the life time of the holder can be reduced or malfunction of the holder can occur.
- 7. In replacing vacuum pads, check the structure of holders and pads in the catalog and tighten the hexagonal-column of the holder with a proper tool, referring to the following tightening torque.
 - Table. Tightening torque

Vacuum pad holder	Standard	Small			
Pad screw size (mm)	Tightening torque (N·m)				
M4×0.7	0.5 ~ 1.0	0.9 ~ 1.1			
M6×1	2 ~ 2.7				
M10×1.5	5 ~ 7	-			
M20×2	9 ~ 10	_			

- 8. In replacing the adapters of Soft / Soft Bellows Series, check the structure of holders, pad and adapters and tighten the hexagonal-column of the holder with a proper tool, referring to the following tightening torque.
 - Table. Tightening torque

Pad screw size (mm)	Tightening torque (N⋅m)
M4×0.7	0.7 ~ 0.8
M6×1	1.5 ~ 2.0

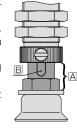
9. In installing vacuum pad holders of general and small type with bulkhead, check the structure and tighten the hexagonal-column of the holder with a proper tool, referring to the following tightening torque.

Vacuum pad holder		Standard				
Holder type	VPA	VPC, VPD, VPF, VPHC, VPHD, VPHDW	VPE	VPMA	VPMC, VPMD	VPME
Bulkhead nut size (mm)			Tightening to	orque (N·m)		
M3×0.5	_	_	0.7	_	_	0.7
M4×0.5	_	_	_	1 ~ 1.2	_	_
M4×0.7	1 ~ 1.2	_	_	_	_	_
M5×0.5	1.5 ~ 2	_	_	1.5 ~ 2	_	_
M5×0.8	_	_	1 ~ 1.5	_	_	1 ~ 1.5
M6×0.75	2 ~ 3	_	_	_ 2 ·		_
M8×0.75	2.5 ~ 3.5	1.8 ~ 2.4	_	2.5 -	_	
M8×1	_	1.8 ~ 2.4	_	_	_	_
M10×1	5 ~ 7	4.5 ~ 6	_	5 ~ 7	4 ~ 6	_
M12×1	12 ~ 14	8 ~ 10	_	_	_	_
M14×1	18 ~ 21	4.5 ~ 6	_	_	_	_
M16×1	_	2 ~ 3	_	_	_	
M20×1	19 ~ 21	_	_	_	_	_
M22×1	_	16 ~ 20	_	_	_	_
M24×2	40 ~ 50	_	_	_	_	_
M30×2	_	42 ~ 54	_	_	_	_

- 10. In replacing vacuum pad rubbers of Standard Series ø80, ø100mm, ø150mm, ø200mm and Bellows Series ø80mm, ø100mm, check the structure of holders and pads and tighten the hexagonal-column of the holder with a proper tool, referring to the following tightening torque.
 - Table. Tightening torque

Screw size (mm)	Tightening torque (N⋅m)
M4×0.7	0.5 ~ 0.7
M5×0.8	0.5 ~ 0.7

- 11. Check the structure of vacuum pad in the catalog before replacing a filter element.
- 12. Refer to "Common Safety Instructions for Fittings" for handing fitting joint parts.
- 13. In installing spring-holder type, do not hold the shaft A with a spanner. In replacing vacuum pad, hold the hexagonal-column of the shaft with a spanner. If the keyway B is deformed, there is a possibility of malfunction.
- 14. Excessive tightening of a fixing nut may deform the bulkhead part and result in malfunction of the keyway.
- 15. As the nature of rubber, powdery component like additives may come out on the surface of a vacuum pad as time elapses.



VACUUM

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ponge Series

ulti-Bellows

Series

Series Soft Bellows

Skidproof Series

Ultrathin Series

Flat Series

Series Long Stroke

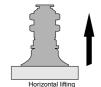
Cylinder

Air Pincette

Vacuum Pad Selection Guide

Selection Guide 1 > Select the diameter of vacuum pad from the formula (1) and chart of the theoretical suction force (2)

The theoretical suction force is determined from pad area and vacuum level. Calculated value is for reference only, so carry out the evaluation under an actual operating condition. The theoretical suction force is calculated under a static condition. Obtain an enough margin, considering the weight of a work-piece and acceleration of lifting, pause and rotary movement. Enough room is needed in deciding a number of pads and arrangement position.



(1) Calculation by formula

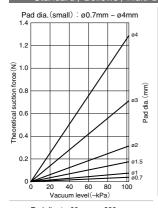
$$W = \frac{C \times P}{101} \times 10.13 \times f$$

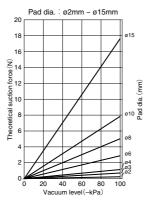
- W: Suction force (N)
- C: Pad area (cm²)
 - Vacuum level (-kPa)
- f : Safety factor Horizontal lifting (refer to the right fig.) ▶ 1/4 Vertical lifting (refer to the right fig.) ▶ 1/8
- *1. Refer to the following chart for Sponge Series.(Internal diameter is used for calculation)
- *2. Refer to the following chart for Flat Series.(Pad grooves are used for calculation) *3. As for Bellows, Multi-Bellows, Soft, Soft Bellows and Ultrathin Series, their theoretical suction force may
- exceed the strength of pad itself, depending on the vacuum level. Carry out the evaluation under an actual operating condition.

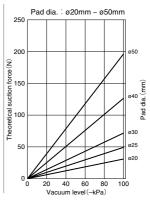
Vertical lifting

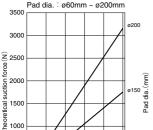
② Chart of the theoretical suction force 〈Add safety factor to values from the chart〉

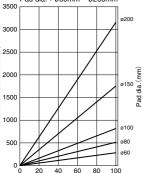
Standard / Bellows / Multi-bellows / Soft / Soft bellows / Skidproof / Ultrathin / Mark-free (*)







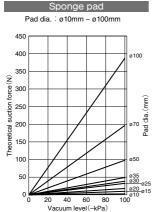


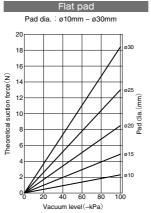


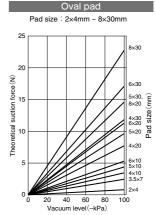
Vacuum level (-kPa)

*. Some sizes are not available for some pad series. Refer to the following size list.

	Pad type	Standard	Bellows	Multi-bellows	Soft	Soft bellows	Skidproof	Ultrathin	Mark-free
	ø0.7~ø3	•	_	_	_	_	_	_	_
	ø4	•	_	_	•	_	_	_	_
	ø6	•	•	_	•	•	_	_	_
	ø8	•	•	_	•	•	_	•	_
	ø10	•	•	•	•	•	•	•	•
	ø15	•	•	_	•	•	_	•	_
200	ø20	•	•	•	•	•	•	•	•
9	ø25	•	•	_	_	_	_	_	_
		•	•	•	•	_	•	_	•
	ø40	•	•	•	•	_	•	_	_
	ø50	•	•	•	_	_	•	_	_
	ø60	•	•	_	_	_	_	_	_
	ø80	•	•	_	_	_	_	_	_
	ø100	•	•	_	_	_	_	_	_
	ø150	•	_	_	_	_	_	_	_
	ø200	•	_	_	_	_	_	_	_



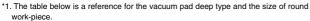




Selection Guide 2 ▶ Select a vacuum pad type according to a work-piece

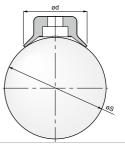
Please select suitable pads for your application from the following.

	Standard Serie	s	Bellows / Multi-bellows Series
	Deep	Small type	
Thick & flat work-piece	Round fruit or ball (*1) Small work-piece or semiconductor product	Food package
	Sponge Series	3	Oval Series
Exterio	or wall panel, pebble	, seashell	Long work-piece (e.g. circuit board and semiconductor product)
Soft / Soft bellows	Series	Skidproof Series	Mark-free Series
Molded parts / Fragile w	vork-piece Greasy parts	work-piece such as pressed	LCD glass / in Painting process / semiconductor
	Ultrathin Serie	S	Flat Series
Thin work-p	piece such as paper	or plastic bag	Thin work-piece such as sheet or plastic bag



Spherical dia : S(mm)	ø20	ø30	ø40	ø50	ø80	ø100	ø120	ø160	ø200
Pad dia. ∶ d(mm)	ø15	ø20	ø25	ø30	ø40	ø50	ø60	ø80	ø100

*2. Refer to the previous page for pad dia. selection except deep type. Refer to the next page for the characteristics of pad materials.



Selection Guide 3 ▶ Select a vacuum pad material from an application

Please select the suitable material from the table.

Ite	m	Pad material	Nitrile rubber	NBR Suited for the food sanitation act. (Japan)	HNBR	Silicone rubber	Conductive Silicone rubber	Urethane rubber	Fluoro rubber	Fluorosilicone rubber	EPDM	Conductive Butadiene rubber (Low resistance type)	Conductive NBR (low resistance)	Chloroprene rubber (For Sponge type)	Silicone rubber (For Sponge Type)
		Material code	N, NH(*1)	G	HN	S	SE	U	F	FS	EP	E	NE	-	S
			Card	board	Cardboard	Semico	nductors	Cardboard	Chemical	Taking out	Application	General	Semiconductors	Uneven	Uneven
			Plyv	vood	Plywood	Takin	g out	Plywood	environment	molded	that requires	parts of		work-	work-
			Metal	plate	Metal plate	molde	d parts	Metal	High temp.	parts	light-resistant	semiconductors		piece	piece
			Food-	related	Food-related	Thin wo	rk-piece	plate	work-pieces		or ozone-				Food-
۸.,	plication		Other	general	Other	Food-	related				proof In use				related
Aμ	plication		wo	ork	general work						under in the				
					In use under						moisture-				
					a low ozone						containing				
					concentration						atmosphere				
					environment										
Pa	d color		Black	Gray	Black	Translucent	Black	Blue	Gray	Salmon	Black	Black	Black	Black	Salmon
		Standard	50°~80°	60°~70°	50°~70°	50°	60°	55°~70°	60°~70°	_	50°~70°	70°	60°~70°	_	_
		Bellows	50°	_	50°	50°	60°	55°	60°	_	50°	_	60°	_	_
		Multi-bellows	50°	50°	50°	50°	_	55°	50°	_	50°	_	60°	_	_
	Surface	Oval	40°~50°	-	50°	40°~50°	50°~60°	55°(*2)	50°(*2)	-	50°	70°	70°	-	-
	hardness	Soft	40°	_	-	40°	60°	-	_	40°	_	_	50°	_	_
	(Shore A)	Soft bellows	40°	_	50°	40°	_	55°	_	_	50°	_	60°	_	_
. P		Skidproof	50°	-	_	50°	-	55°	60°	-	-	-	60°	-	-
/sic		Ultrathin	40°	-	_	40°	_	55°	50°	40°	_	_	60°	_	_
Physical Properties		Flat	60°	_	_	40°	40°	50°	50°	-	-	-	60°	-	_
op.		perating temp.		D,C	140°C		D°C	60°C	230°C	180°C	150°C	100°C	110°C	80°C	180°C
enti-		erating temp.	-)°C	-30°C)°C	-20°C	-10°C	-50°C	-40°C	-50°C	-30°C	-45°C	-40°C
Se	Weathera				0			0	0	0	0	0	\triangle	0	0
	Ozone-pro			<	0	(0	0	0	0	×	×	0	0
	Acid-resis				\triangle	(×	0	0	0	\triangle	\triangle	\triangle	0
	Alkaline-re				0	(×	×	0	0	0	0	0	0
	Oil	(Gasoline oil)			0			0	0	Δ	×	×	0	×	Δ
		(Benzene/toluene)	-		×			\triangle	0	\triangle	×	×	Δ	\triangle	\triangle
	Volume re	sistance	-	_	_	_	Max.10 ⁵ Ω·cm	_	_	_	_	Max.200Ω-cm	Max.200Ω-cm	_	_

○ : Suitable \triangle : Good ×:NG

*1. Material code "NH" is only applicable to Skidproof Series.

*2. It does not apply to pad size: 4×30 mm.

Note 1) The above "Physical Properties" shows the data of general synthetic rubbers.

Note 2) The highest / lowest operating temp. are for momentary usage. Carry out durability evaluation in case of continuous usage under the highest / lowest operating temp.

Please select the suitable vacuum pad resin material from the table

10000 00	loot	the suitable vasaam	pad resilt material ii	on the table.	
		Pad material	PEEK	POM	Conductive PEEK
Item	Material	Mark free series	К	M	KE
	code	Resin attachment for Bellows series	-QK	-QM	-QKE
			Semiconductor/	General production line	Semiconductors/
			Manufacturing machine for	Food-related machine	Manufacturing machine for
Application			liquid crystal	Packaging machine	liquid crystal
					Electronic components
Pad color			Natural (ivory)	White	Black
Highest op	eratin	g temp.	250°C	95°C	250°C
및 Lowest op	erating	temp.	-50°C	-60°C	-50°C
Weatherab	ility		0	×	0
	ance		0	×	0
Alkaline-re	sistan	ce	0	Δ	0
Alkaline-re	ty		0	0	0
Abrasion-r	esista	nce	0	0	0
Volume res	sistano	De .	_	-	10 ⁵ ~10 ⁶ Ω·cm

○ : Suitable

 \triangle : Good ×:NG

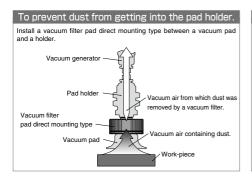
Note 1) The above "Physical Properties" shows the data of pad resin material only. The holder of Mark-free Series is not included.

Note 2) The above "Physical Properties" shows the data of resin attachment only. The pad rubber is not included.

Note 3) The above "Physical Properties" shows general properties of resin materials and not a guaranteed value. Carry out the necessary evaluation under an actual operating condition.

Note 4) The highest / lowest operating temp. is for momentary usage. Carry out durability evaluation in case of continuous usage under the highest / lowest operating temp.

Note 5) Volume resistance is a representative value from the material manufacture, and not a guaranteed value.



To operate several vacuum pads by single vacuum source. Installing a fall prevention valve between a vacuum pad and a holder prevents the troubles like system break down, minimizing the vacuum drop of the whole system automatically by reducing suction flow of the part where the work-piece falls from the vacuum pad (within the range not causing any problem), or no work-piece is to be sucked. Pad holder

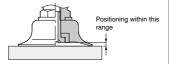
Vacuum pad Work piece

Air Pincett

Reference Guide for Vacuum Pad

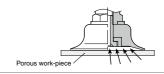
Impact on pad

Avoid an impact or a large force on a vacuum pad, when it is pressed against a work-piece. It may cause deformation, crack or abrasion at an early stage of use. Adjust the pad position so that the lip of pad touches lightly on a work-piece. Especially a small type of vacuum pad should be positioned precisely.



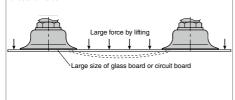
Porous or perforated work-piece

Since the suction of a porous work-piece causes a drop of suction force, select the proper specifications of vacuum system and secure a larger effective cross-section area of the piping. Selecting a small type of vacuum pad is one of solutions to reduce the air leakage.



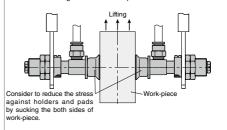
Large and wide flat plate work-piece

When lifting large size of glass board or circuit board, work-piece may bend by the lifting acceleration or the self-weight. Select a proper size of pad and positioning, considering an enough margin of suction force.



Lifting work-piece, sucking the both side of it

Since all vacuum pad holders are designed for horizontal lifting, consider the strength of holders and pads.



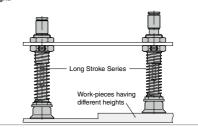
Soft work-piece

When soft work-pieces such as plastic bags, papers or thin boards are sucked, work-pieces can be deformed or shrunk by vacuum suction (Figure-1). Select smaller vacuum pads and reduce the vacuum pressure. Smaller vacuum pads are suitable for plastic bags and papers. When plastic / paper bags are opened by using vacuum pads, shift the center of two vacuum pads slightly in order to open them easily as Figure-2 shows.



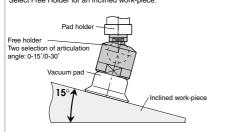
Work-piece with different heights

Select Long Stroke Series for work-pieces having different heights, or piled-up work-pieces. Its stroke can absorb the difference in height.



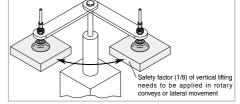
Inclined work-piece

Select Free Holder for an inclined work-piece.



Conveyance with rotary movement

When vacuum pad is fixed with a screw and has a rotary movement, the pad may drop due to the loosened screw. Pay special attention when the vacuum location of work-piece is off the center of work-piece gravity.



Pad dia. list by pad type and material

Pad material Standard				N	I : Nitrile rubb	er				
	and to man		Standard		Dallaura	Multi-	C=#	Soft	I Ilkundhin	Float
1	Pad type	General type	Deep type	Small type	Bellows	Bellows	Soft	bellows	Ultrathin	Flat
	ø0.7			•						
	ø1	•		•						
	ø1.5			•						
	ø2	•		•						
	ø3	•		•						
	ø4	•		•			•			
	ø6	•			•		•	•		
	ø8	•			•		•	•	•	
Pad dia. (mm)	ø10	•			•	•	•	•	•	•
di.	ø15	•	•		•		•	•	•	•
э. (г	ø20	•	•		•	•	•	•	•	•
m	ø25	•	•		•					•
	ø30	•	•		•	•	•			•
	ø40	•	•		•	•	•			
	ø50	•	•		•	•				
	ø60	•	•		•					
	ø80	•	•		•					
	ø100	•	•		•					
	ø150	•								
	ø200	•								

※ . ● : available

Pa	d material					S	Silicone ru	ibber				
	ad type	General type	Standard Deep type	Small type	Bellows	Multi- Bellows	Soft	Soft bellows	Flat	Skidproof	Ultrathin	Sponge
	ø0.7	,,	, ,,	•								
Ī	ø1	•		•								
	ø1.5			•								
	ø2	•		•								
	ø3	•		•								
	ø4	•		•			•					
	ø6	•			•		•	•				
	ø8	•			•		•	•			•	
_[ø10	•			•	•	•	•	•	•	•	•
Pad dia. (mm)	ø15	•	•		•		•	•	•		•	•
<u>e</u> .	ø20	•	•		•	•		•		•	•	•
<u>ب</u> (ø25	•	•		•				•			•
M	ø30	•	•		•	•	•		•	•		•
	ø35											•
	ø40	•	•		•	•	•			•		
	ø50	•	•		•	•				•		•
	ø60	•	•		•							
	ø70											•
	ø80	•	•		•							
	ø100	•	•		•							•
	ø150	•										
	ø200	•										

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Vacuum Cylinder

Pincett

Pa	ad material				U:	Urethane rub	ber			
	Pad type		Standard		Bellows	Multi-	Soft	Skidproof	Ultrathin	Flat
	du typo	General type	Deep type	Small type	Dollows	Bellows	bellows	Citiaproor	Omamin	1 101
	ø0.7			•						
	ø1	•		•						
	ø1.5			•						
	ø2	•		•						
	ø3	•		•						
	ø4	•		•						
	ø6	•			•		•			
_	ø8	•			•		•		•	
Pad dia. (mm)	ø10	•			•	•	•	•	•	•
읎	ø15	•	•		•		•		•	•
а. (r	ø20	•	•		•	•	•	•	•	•
Ħ	ø25	•	•		•					•
$\overline{}$	ø30	•	•		•	•		•		•
	ø40	•	•		•	•		•		
	ø50	•	•		•	•		•		
	ø60	•	•		•					
	ø80	•	•		•					
	ø100	•	•		•					
	ø150	•								
	ø200	•								

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Pa	d material				F: Fluo	ro rubber		G: NBR S	uited for the fo	od sanitation	act. (Japan)		
_	and type				Bellows	Multi-	Skidproof	Ultrathin	Flat		Standard		Multi-
	au type	General type	Deep type	Small type	Dellows	Bellows	Skiupiooi	Ollialilli	riai	General type	Deep type	Small type	Bellows
	ø0.7			•								•	
	ø1	•		•						•		•	
	ø1.5			•								•	
	ø2	•		•						•		•	
	ø3	•		•						•		•	
	ø4	•		•						•		•	
	ø6	•			•					•			
_ [ø8	•			•			•		•			
Pad dia. (mm)	ø10	•			•	•	•	•	•	•			•
<u>e</u> .	ø15	•	•		•			•	•	•	•		
<u></u>	ø20	•	•		•	•	•	•	•	•	•		•
M	ø25	•	•		•				•	•	•		
	ø30	•	•		•	•	•		•	•	•		•
	ø40	•	•		•	•	•			•	•		•
	ø50	•	•		•	•	•			•	•		•
	ø60	•	•		•								
	ø80	•	•		•								
	ø100	•	•		•								
	ø150	•											
	ø200	•											

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E : Conductive Butadiene | S : Chloroprene NH: Pad material SE: Conductive Silicone rubber rubber (Low resistance type) rubber Oilproof NBR Standard Standard Pad type Bellows Soft Flat Sponge Skidproof General type Small type General type Small type ø0.7 ø1 ø 1.5 ø2 • • ø3 lacktrianglelacktriangleø4 ø6 • • • ø8 ø10 ø15 ø20 • • • • lacktriangleø25 • • ø30 • • • • ø35 ø40 • • ø70 ø80 ø100 ø150 •

ø200 ※ . ● : available

Pa	d material				NE : C	onductive N	BR (low re	sistance)			
F	ad type		Standard		Bellows	Multi-	Soft	Soft	Skidproof	Ultrathin	Flat
		General type	Deep type	Small type	200110	Bellows		bellows	Citiapi Co.	O.a.a	
Į	ø0.7			•							
	ø1	•		•							
	ø1.5			•							
	ø2	•		•							
	ø3	•		•							
	ø4	•		•			•				
Ī	ø6	•			•		•	•			
Ì	ø8	•			•		•	•		•	
Pac	ø10	•			•	•	•	•	•	•	•
d.	ø15	•	•		•		•	•		•	•
Pad dia. (mm)	ø20	•	•		•	•	•	•	•	•	•
3	ø25	•	•		•						•
	ø30	•	•		•	•	•		•		•
	ø40	•	•		•	•	•		•		
	ø50	•	•		•	•			•		
	ø60	•	•		•						
	ø80	•			•						
	ø100	•	•		•						
	ø150	•									
	ø200	•									

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Pa	d material			HN:	HNBR					EP:	EPDM			FS : Fluoros	silicone rubber
	ad type	;	Standard	t	Bellows	Multi-	Soft		Standard	i	Bellows	Multi-	Soft	Soft	Ultrathin
	au type	General type	Deep type	Small type	Dellows	Bellows	bellows	General type	Deep type	Small type	Dellows	Bellows	bellows	Suit	Ullialilli
	ø0.7			•						•					
l	ø1	•		•				•		•					
	ø1.5			•						•					
	ø2	•		•				•		•					
	ø3	•		•				•		•					
	ø4	•		•				•		•				•	
	ø6	•			•		•	•			•		•	•	
_[ø8	•			•		•	•			•		•	•	•
ad	ø10	•			•	•	•	•			•	•	•	•	•
읈[ø15	•	•		•		•	•	•		•		•	•	•
=	ø20	•	•		•	•	•	•	•		•	•	•	•	•
Pad dia. (mm)	ø25	•	•		•			•	•		•				
	ø30	•	•		•	•		•	•		•	•		•	
	ø40	•	•		•	•		•	•		•	•		•	
	ø50	•	•		•	•		•	•		•	•			
	ø60	•	•		•			•	•		•				
	ø80	•	•		•			•	•		•				
	ø100	•	•		•			•	•		•				
	ø150	•						•							
	ø200	•						•							

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							E			
Pa	d material	Nitrile rubber	Silicone rubber	Urethane rubber	F Fluoro rubber	Conductive Silicone rubber	Conductive	NE Chloroprene rubber	HN HNBR	EP EPDM
F	ad type					Oval				
	2×4	•	•	•	•	•		•	•	•
	3.5×7	•	•	•	•	•		•	•	•
	4×10	•	•	•	•	•	•	•	•	•
	4×20	•	•	•	•	•	•	•	•	•
P	4×30	•	•			•	•	•	•	•
ă	5×10	•	•	•	•	•	•	•	•	•
Pad size (mm)	5×20	•	•	•	•	•	•	•	•	•
(E)	5×30	•	•	•	•	•	•	•	•	•
3	6×10	•	•	•	•	•	•	•	•	•
	6×20	•	•	•	•	•	•	•	•	•
	6×30	•	•	•	•	•	•	•	•	•
	8×20	•	•	•	•	•	•	•	•	•
	8×30	•	•	•	•	•	•	•	•	•

※ . ● : available

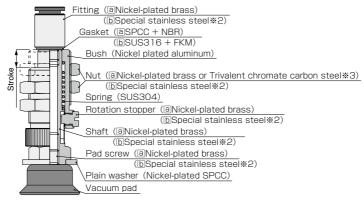
Pa	d material	K : PEEK	M : POM	KE : Conductive PEEK	Q2K : PEEK	Q2M: POM	Q2KE : Conductive PEEK
F	ad type		Mark free		Resin at	tachment for Bellov	vs series
Pg	ø10	•	•	•	•	•	•
g	ø15				•	•	•
ize	ø20	•	•	•	•	•	•
<u>a</u> [ø25				•	•	•
3	ø30	•	•	•	•	•	•

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■ Construction (VPA holder : Fixed type / Top port) |



■ Construction (VPC holder : Spring type / Top port) |



- ※ 1. a : Standard spec. b : "-S3" spec.
- ※ 2. Equivalent Corrosion Resistance to SUS303
- * 3. Nut material differs depending on the bulkhead thread size.

Bulkhead thread size	Nut material		
(mm)	Nickel-plated brass	Trivalent chromate carbon steel	
M5×0.5	0	_	
M6×0.75	0	_	
M8×0.75	0	_	
M10×1	0	_	
M12×1	_	0	
M14×1	_	0	
M16×1	_	0	
M20×1	_	0	
M22×1	_	0	
M24×2	0	_	
M30×2	0	_	

This Safety Instructions aim to prevent personal injury and damage to properties by requiring proper use of PISCO products.

Be certain to follow ISO 4414 and JIS B 8370.

ISO 4414: Pneumatic fluid power···General rules and safety requirements for system and their components.

JIS B 8370: General rules and safety requirements for systems and their components.

This Safety instructions are classified into "Danger", "Warning" and "Caution", depending on the degree of danger or damages caused by improper use of PISCO products.

! Danger

Hazardous conditions. It can cause death or serious personal injury.



Hazardous conditions depending on usages. Improper Use of PISCO products can case death or serious personal injury.



Hazardous conditions depending on usages. Improper use of PISCO products can cause personal injury or damages to properties.

⚠ Danger ■

- 1. Do not use PISCO products for the following applications.
 - ①. Equipment used for maintaining / handling human life and body.
 - ②. Equipment used for moving / transporting human.
 - ③. Equipment specifically used for safety purposes.

Marning ■

- 1. Selection of pneumatic products.
 - ① A user who is a pneumatic system designer or has sufficient experience and technical expertise should select PISCO products.
 - ② Due to wide variety of operating conditions and applications for PISCO products, carry out the analysis and evaluation on PISCO products. The pneumatic system designer is solely responsible for assuring that the user's requirements are met and that the application presents no health or safety hazards. All designers are required to fully understand the specifications of PISCO products and constitute all systems based on the latest catalog or information, considering any malfunction.
- 2. Usage environment

Do not use PISCO products under the following conditions.

- ①. Beyond the specifications or conditions stated in the catalog, or the instructions.
- ②. Use at outdoors.
- Excessive vibrations and impacts.
- Exposure / adhere to corrosive gas, flammable gas, chemicals, seawater, water and vapor.

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^{※ .} Safety Instructions are subject to change without notice.



3. Handling of product

- ①. The pneumatic equipments shall be handled by a person having enough knowledge and experiences. Improper use of compressed air is dangerous. Assembly, operation and maintenance of machines using pneumatic equipment should be conducted by a person with enough knowledge and experience.
- Do not operate machine / equipment or remove pneumatic equipment until safety is confirmed.
 - (1). Make sure that preventive measures against falling work-pieces or sudden movements of machine are completed before inspection or maintenance of these machine.
 - (2). Make sure the above preventive measures are completed. A compressed air supply and the power supply to the machine must be off, and also the compressed air in the systems must be exhausted.
 - (3). Restart the machines with care after ensuring to take all preventive measures against sudden movements.
- ③. Do not disassemble or modify PISCO products, which affect the performance, function, and basic structure of the product.
- ④. Take safety measures such as providing a protection cover if there is a risk of causing damages or fire on machine / facilities by a fluid leakage.
- Do not touch the release-ring of push-in fitting when there is a working pressure.
- Frequent switchover of compressed air may generate heat, and there is a risk of causing burn injury.
- ②. Avoid any load on PISCO products, such as, a tensile strength, twisting and bending. Otherwise, there is a risk of causing damage to the products.
- ®. Do not use PISCO products for applications where threads or tubes swing / rotate. The product can be damaged in these applications.
- ① Do not force the product to rotate or swing even its resin body is rotatable. It may cause damage to the product and a fluid leakage.
- ① Do not supply excessively dry air to products. It may cause malfunction due to a deterioration of rubber parts.
- ①. Do not wash or paint products with water or solvent. Solvent may damage a resin body, or painting may cause malfunction.
- ②. The product incorporating NBR as seal rubber material has a risk of malfunction caused by ozone crack. Ozone exists in high concentrations in static elimination air, clean-room, and near the highvoltage motors, etc. As a countermeasure, material change from NBR to HNBR or FKM is necessary. Consult with PISCO for more information.
- ③. Do not stand on a product, or put anything on it. It may cause falls, personal injury or damage to the product.

Safety Instructions

Warranty

When the product produces a trouble, which is caused by our responsibility, we will carry out either one of the following measures immediately.

- (1). Free-of-charge replacement of same product
- ②. Free-of-charge repair of the product at our factory

Disclaimer

- 1. PISCO does not take any responsibility for any incidental or indirect loss, such as production line stop, interruption of business, loss of benefits, personal injury, etc., caused by any failure on use or application of PISCO products.
- 2. When a cause of the trouble/malfunction applies to any of the following items, it is excluded from the coverage of the above warranty.
 - ①. A case by a natural disaster, a fire except our responsibility, the act by the third person/party, the intention or fault of the customer.
 - ②. A case when a product is used out of the specific range or the method listed in the product catalog or the instruction manual.
 - A case by the remodeling of the product or by a change of structure, performance, or specifications which PISCO does not involved in.
 - ④. A case by the event that is unpredictable by the evaluations and the measures at the time on or before the initial delivery.
 - ⑤. A case caused by the phenomenon that is able to be evaded if your machine or equipment has functions or structures that are comprised in a common sense when this product is incorporated in your machine or equipment.
- 3. The damages caused by the defect of PISCO products shall be covered but limited to the full amount of the PISCO products paid by the customer. Additionally, the above warranty is limited simply to the product itself. The damage induced by the trouble of the product will not be compensated.





Common Safety Instructions for Products Listed in This Catalog

- 1. An odd noise may be heard when supply pressures are immediately before the peak of vacuum levels. The sounding of this odd noise means the characteristics are unstable and the sound may become even noisier. This situation can also adversely affect the sensor, resulting in a malfunction or trouble. So reset the supply pressure.
 - ※. Pressure range in which odd noise occurs is affected by atmospheric pressure.
- 2. Piping design and equipment selection should be made with an effective sectional area on supply pressure side of a vacuum generator being 3 times as large as the nozzle diameter as a standard. Insufficient air flow may impair the performance of the product.
- 3. Do not use a lubricator on products.
- 4. Clean or replace silencer element periodically. There is a possibility of dropping the performance or causing troubles by clogging on the element.
- 5. Keep products away from water, oil drops or dusts because they are neither drip-proof nor dust-proof. Otherwise there is a possibility of causing malfunction, damage to the products, or dropping the performance.
- 6. Piping
 - ①. Compressed air contains a volume of drain (water, oxidized oil and foreign material, etc.) Because the drain reduce product performance remarkably, dehumidify air with an aftercooler and a dryer, and improve the air quality.
 - Do not use a lubricator on products.
 - Rust in pipe and inflow of foreign substances cause the trouble. malfunction, and degradation of the product. Please install a filter (5 μ m) or better filtration) in the compressed air supply line right in front of the product. The flushing inside the pipe before use and in certain intervals is recommended.
 - Remove dusts or drain before piping. They may get into the peripheral machine / facilities and cause malfunction.
 - (5). When inserting an ultra-soft tube into push-in fitting, make sure to place an Insert Ring into the tube edge. There is a risk of causing the escape of tube and a fluid leakage without using an Insert Ring.
 - Arrange piping avoiding any load on fittings and tubes such as twist, tensile, moment load, shaking and physical impact. These may cause damages to fittings, tube deformations, bursting and the escape of
 - (7). Install protective cover when using at a place getting the direct sunlight.
 - Be sure to confirm each port of a vacuum generator with its appearance drawing or the marking on it before piping. Incorrect piping has a risk of damaging the product.
 - at the end of vacuum system as much as possible. A long distance between a pressure sensor and a vacuum system end may increase plumbing resistance which may lead to a high vacuum level at the sensor even when no suctioning and a malfunction of pressure sensor. Make sure to evaluate the products in an actual system.

- ①. A Shorter distance of plumbing with a wider bore is preferable at vacuum system side. A long plumbing with a small bore may result in slow response time at the time of releasing work-piece as well as in failure to secure adequate suction flow rate.
- ①. In case of using non-PISCO brand tubes, make sure the tolerance of the outer tube diameter is within the limits of Table 1.

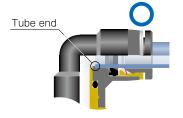
		Tolerance

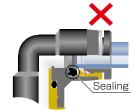
mm size	Nylon tube	Polyurethane tube
ø1.8mm	_	±0.05mm
ø2mm	_	±0.05mm
ø3mm	_	±0.15mm
ø4mm	±0.1mm	±0.15mm
ø6mm	±0.1mm	±0.15mm
ø8mm	±0.1mm	±0.15mm
ø10mm	±0.1mm	±0.15mm
ø12mm	±0.1mm	±0.15mm
ø16mm	±0.1mm	±0.15mm

inch size	Nylon tube	Polyurethane tube
ø1/8	±0.1mm	±0.15mm
ø5/32	±0.1mm	±0.15mm
ø3/16	±0.1mm	±0.15mm
ø1/4	±0.1mm	±0.15mm
ø5/16	±0.1mm	±0.15mm
ø3/8	±0.1mm	±0.15mm
ø1/2	±0.1mm	±0.15mm
ø5/8	±0.1mm	±0.15mm

7-1. Tube insertion (Push-in fitting)

- ①. Make sure that the cut end surface of the tube is at a right angle without a scratch on the tube surface or deformations.
- ②. When inserting a tube, the tube needs to be inserted fully into the push-in fitting until the tubing edge touches the tube end of the fitting as shown in the figure below. Otherwise, there is a risk of leakage.





Tube is not fully inserted up to tube end.

- 3. After inserting the tube, make sure it is inserted properly and not to be disconnected by pulling it moderately.
 - **. When inserting tubes, Lock-claws may be hardly visible in the hole, observed from the front face of the release-ring. But it does not mean the tube will surely escape. Major causes of the tube escape are the followings; ① Shear drop of the lock-claws edge ② The problem of tube diameter (usually small). Therefore, follow the above instructions from ① to ③, even lock-claws is hardly visible.

7-2. Tube insertion (Compression fitting)

①. Make sure that the cut end surface of the tube is at a right angle without deformations or a scratch on its inner and outer surface.



- Pass the tube through the nut and insert the barb into the tube up to the barb end. Then tighten the hexagonal-column of the nut with a proper tool.
- ③. Refer to Table 2 which shows the tightening torque.
 - *. Hold the tube when tightening the nut, since the tube may rotate along with the nut.
- ④. Make sure that the nut touches the metallic body. If not, loosen the nut, disconnect the tube and start over again from the process ①.
- ⑤. Make sure that there is no leakage after tightening the nut.
- ⑥. After inserting the tube, make sure it is inserted properly and not to be disconnected by pulling it moderately.

■ Table 2. Nut tightening torque

Tube O.D.	Tightening torque		
ø10	Max.4N·m		
ø12	Max.5N·m		
ø16	Max.14N·m		

8-1. Tube disconnection (Push-in fitting)

- ①. Make sure there is no air pressure inside of the tube, before disconnecting it.
- ②. Push the release-ring of the push-in fitting evenly and deeply enough to pull out the tube toward oneself. By insufficient pushing of the release-ring, the tube may not be pulled out or damaged by scratch, and tube shavings may remain inside of the fitting, which may cause the leakage later.
- 8-2. Tube disconnection (Compression fitting)
 - ①. Make sure there is no air pressure inside of the tube, before disconnecting it.
 - ②. Use a proper tool to loosen the nut. Then disconnect the tube.
- 9. Installation of a fitting
 - ①. When installing a fitting, use proper tools to tighten a hexagonal-column or an inner hexagonal socket. When inserting a hex key into the inner hexagonal socket of the fitting, be careful so that the tool does not touch lock-claws. The deformation of lock-claws may result in a poor performance of systems or an escape of the tube.
 - ②. Refer to Table 3 which shows the tightening torque. Do not exceed these limits to tighten a thread. Excessive tightening may break the thread part or deform the gasket to cause a fluid leakage. Tightening thread with tightening torque lower than these limits may cause a loosened thread or a fluid leakage. Since the sealability is affected by the processing condition of the installing part, adjust the tightening torque or correct the installing part, according to the condition.
 - Adjust the tube direction while tightening thread within these limits, since some PISCO products are not rotatable after the installation.

■ Table 3. Tightening torque / Sealock color / Gasket materials

Table 6: Hightening torque / Couloux Color / Cabket materials				
Thread type	Thread size	Tightening torque	Sealock color	Gasket material
	$M3 \times 0.5$	0.7N·m		SUS304+NBR SPCC+NBR
	$M5 \times 0.8$	1 ~ 1.5N·m		
	$M6 \times 1$	2 ~ 2.7N·m		
Metric thread	$M3 \times 0.5$	0.7N⋅m	n/a	РОМ
	$M5 \times 0.8$	1 ~ 1.5N·m		
	M6 × 0.75	0.8 ~ 1N·m		
	M8 × 0.75	1 ~ 2N·m	1	
Taper pipe thread	R1/8	4.5 ~ 6.5N⋅m		_
	R1/4	7 ~ 9N⋅m	White	
	R3/8	12.5 ~ 14.5N·m		
	R1/2	20 ~ 22N·m		
Unified thread	No.10-32UNF	1 ~ 1.5N·m	n/a	SUS304+NBR, SPCC+NBR
National Pipe Thread Taper (American standard)	1/16-27NPT	4.5 ~ 6.5N⋅m		
	1/8-27NPT	4.5 ~ 6.5N⋅m		_
	1/4-18NPT	7 ~ 9N⋅m	White	
	3/8-18NPT	12.5 ~ 14.5N·m		
	1/2-14NPT	20 ~ 22N·m		
G thread	G1/4	12 ~ 14N·m		
	G3/8	22 ~ 24N·m	n/a	Aluminum + PBT
	G1/2	28 ~ 30N·m		

- *. These values may differ for some products. Refer to each specification as well.
- ④. When removing a fitting, use proper tools to loosen a hexagonal-column or an inner hexagonal socket. When inserting a hex key into the inner hexagonal socket of the fitting, be careful so that the tool does not touch lock-claws. The deformation of lock-claws may result in a poor performance of systems or an escape of the tube.
- ⑤. Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunctions.
- 10. Handling of fitting
 - ①. Impact caused by dropping or the like may lead to damage to the product and a fluid leakage.