

Selection method for suction pad

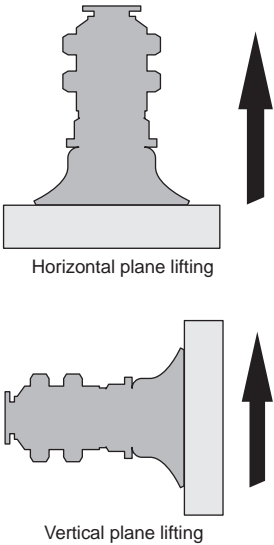
Theoretical suction force

The theoretical suction force is determined by the area of the pad and the vacuum pressure created when the pad is used. Use the calculated value as a reference value, carry out suction testing as necessary and confirm. Theoretical suction force is a value for static conditions, so please allow enough margin considering the mass of the workpiece and the force due to acceleration during movement (lifting, stopping, turning, etc.). Also, please allow sufficient margin when determining the number and placement of pads.

①Using the formula

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

W: Suction force (N)
 C: Pad area (cm²)
 P: Vacuum pressure (-kPa)
 f : Safety factor during horizontal lifting (refer to the figure at right): 1/4
 During vertical lifting (refer to the figure at right): 1/8



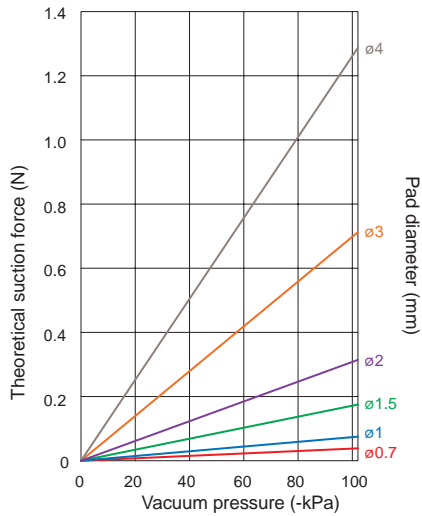
*1: For the sponge pad, refer to the table on the right, as calculation uses the inner diameter of the sponge pad section.
 *2: For the flat type pad, refer to the table on the following page, as calculation uses the grooves on the suction surface.
 *3: For the suction force of bellows (multi-stage bellows)/soft (soft bellows)/thin pads, the theoretical suction force may exceed the strength of the pad itself depending on the pad characteristics and degree of vacuum, so please check with an actual device.

Suction pad
General/Deep/Compact
Sponge
Bellows
Multi-Stage bellows
Oval
Soft
Soft bellows
Anti-slip
Thin object
Flat
Suction mark prevention

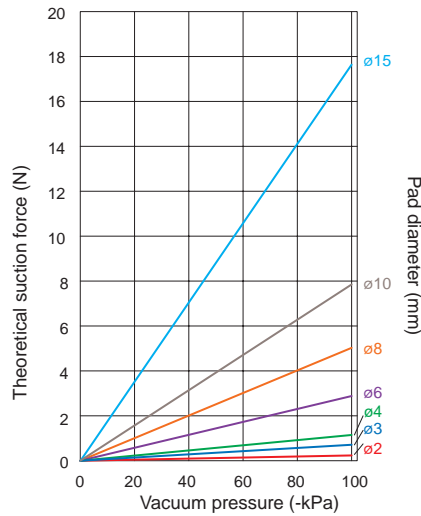
(2) Theoretical suction force graph < Add the safety factor to the numerical value obtained from the graph. >

Standard/bellows/multi-stage bellows/soft/soft bellows/anti-slip/for thin objects/suction mark prevention pad (*)

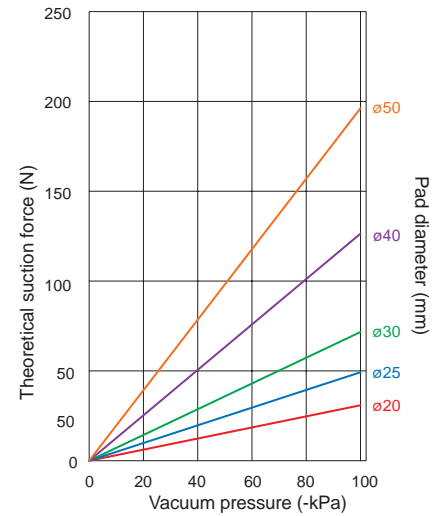
● Pad diameter (compact): $\phi 0.7$ mm to $\phi 4$ mm



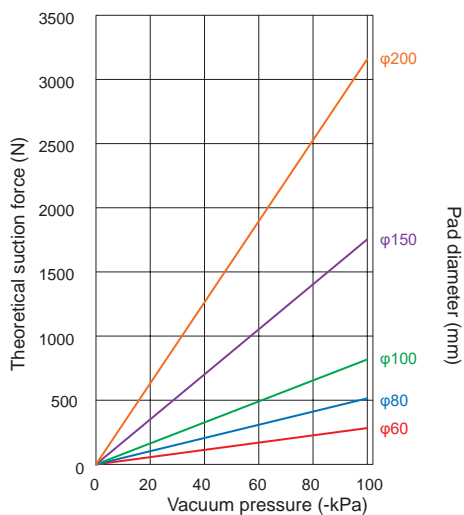
● Pad diameter $\phi 2$ mm to $\phi 15$ mm



● Pad diameter: $\phi 20$ mm to $\phi 50$ mm



● Pad diameter $\phi 60$ mm to $\phi 200$ mm

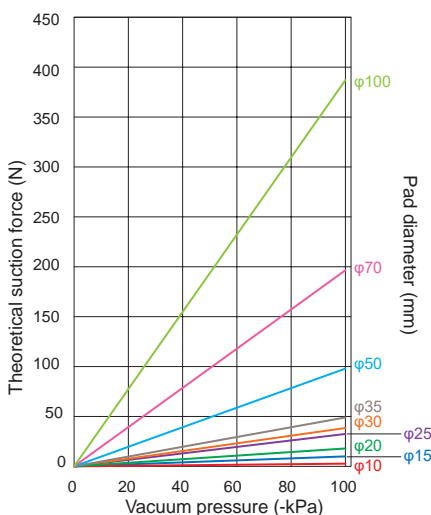


*Depending on the pad shape, there are pads with no setting for the pad diameter indicated in the graph. Check the size with the pad size list in the table below.

Pad shape	Standard	Bellows	Multi-Stage bellows	Soft	Soft bellows	Anti-slip	For thin objects	Suction mark prevention
$\phi 0.7$	●	-	-	-	-	-	-	-
$\phi 1$	●	-	-	-	-	-	-	-
$\phi 1.5$	●	-	-	-	-	-	-	-
$\phi 2$	●	●	-	-	-	-	-	-
$\phi 4$	●	●	-	●	-	-	-	-
$\phi 6$	●	●	●	●	●	-	-	-
$\phi 8$	●	●	●	●	●	-	●	-
$\phi 10$	●	●	●	●	●	●	●	●
$\phi 15$	●	●	-	●	●	-	●	-
$\phi 20$	●	●	●	●	●	●	●	●
$\phi 25$	●	●	-	-	-	-	-	-
$\phi 30$	●	●	●	●	-	●	-	●
$\phi 40$	●	●	-	●	-	●	-	-
$\phi 50$	●	●	●	-	-	●	-	-
$\phi 60$	●	●	-	-	-	-	-	-
$\phi 80$	●	●	-	-	-	-	-	-
$\phi 100$	●	●	-	-	-	-	-	-
$\phi 150$	●	-	-	-	-	-	-	-
$\phi 200$	●	-	-	-	-	-	-	-

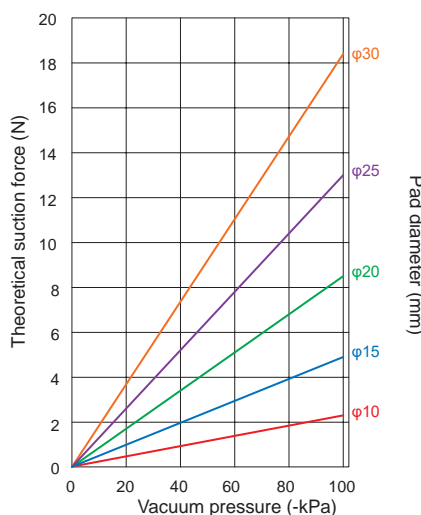
Sponge pad

● Pad diameter: $\phi 10$ mm to $\phi 100$ mm



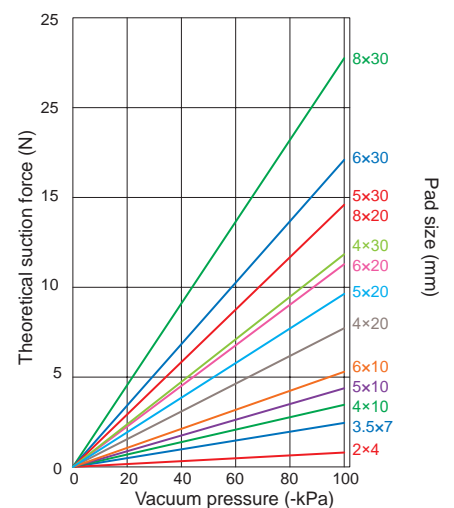
Flat pad

● Pad diameter: $\phi 10$ mm to $\phi 30$ mm



Oval pad

● Pad size: 2x4 mm to 8x30 mm



Suction pad

General/Deep/ Compact

Sponge

Bellows

Multi-Stage bellows

Oval

Soft

Soft bellows

Anti-slip

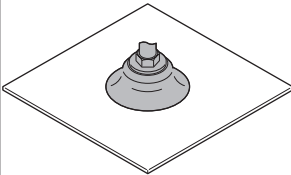
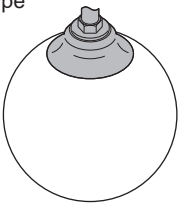
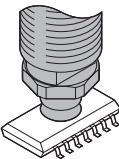
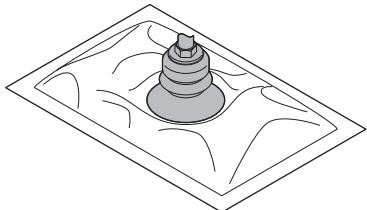
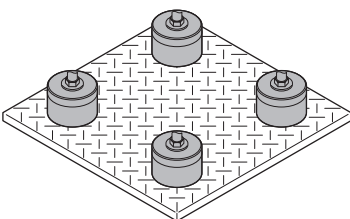
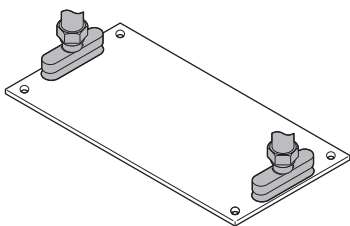
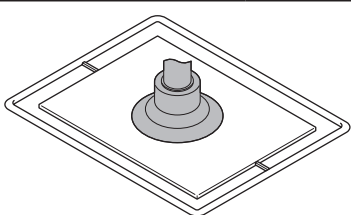
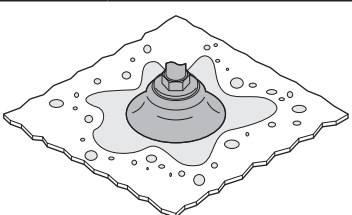
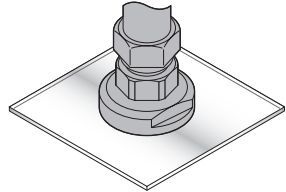
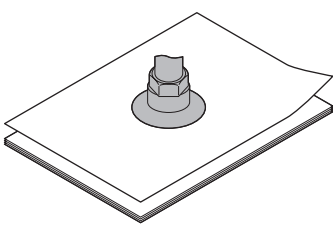
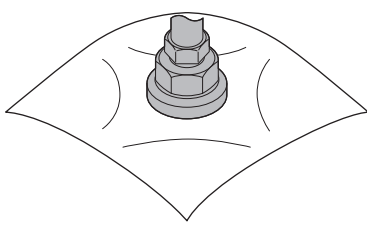
Thin object

Flat

Suction mark prevention

Suction pad

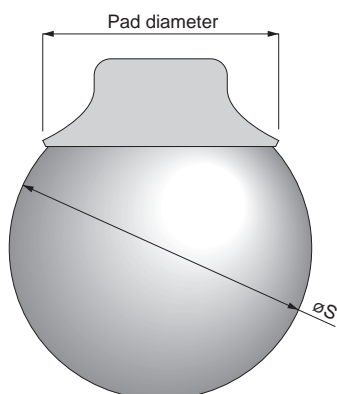
Suction pad shape

Standard			Bellows/multi-stage bellows
Standard 	Deep type 	Compact 	
Thick and flat workpieces.	Round fruits (apples, etc.) and Round ball.	Compact workpieces and semiconductor manufacturing facilities.	Retort-packs and bags containing food, etc.
Sponge		Oval	
			
Workpieces such as building outer wall materials, small stones and shells		Long workpieces like substrates and semiconductors.	
Soft/Soft bellows		Anti-slip	Suction mark prevention
			
Taking out molded products and easily damaged workpieces.		Workpieces with oil adhered such as press parts.	Liquid crystal glass, painting process, semiconductor manufacturing facilities.
Thin object type			Flat type/flat intake flow rate increase type
			
Thin workpieces such as copy paper and vinyl.			Thin workpieces such as sheets and vinyl.

●Suction of spherical surfaces (deep pad)















Minimum adsorbable diameter

Pad diameter (mm)	ø15	ø20	ø25	ø30	ø40	ø50	ø60	ø80	ø100
Sphere diameter (øS mm)	20	30	40	50	80	100	120	160	200



Characteristics of each pad material

■ Rubber material, sponge material

			Pad material		Nitriles Rubber	NBR compatible with the Food Sanitation Act	HNBR	Silicone rubber	Conductive silicone rubber	Super soft silicone rubber	Urethane rubber	Fluorine Rubber	Fluorosilicone rubber	EPDM	Conductive butadiene rubber (low resistance)	Conductive NBR (Low resistance)	Chloroprene rubber (sponge)	Silicone rubber (sponge)
			Item	Order code	N, NH (* 1)	G	HN	S	SE	YS2	YS4	U	F	FS	EP	E	NE	Blank
Applications			Cardboard Plywood Iron plate Food-related Other general workpieces		Cardboard Plywood Iron plate Food-related Other general workpieces Low-concentration ozone Working in an environment	Semiconductor Taking out molded products Thin workpieces Food-related		Food-related		Cardboard Plywood Iron plate	Chemical atmospheres High temperature workpieces	Molded parts Remove	Used in applications requiring light resistance and ozone resistance, wet atmospheres	General semiconductor workpieces	Semiconductor	Workpieces with uneven surface	Workpieces with uneven surface Food-related	
Pad color																		
Characteristics	Surface hardness by pad shape (Shore A)	Standard	50° to 80°	60° to 70°	50° to 70°	50°	60°	—	—	55° to 70°	60° to 70°	-	50° to 70°	70°	60° to 70°	-	—	
		Bellows	50°	—	50°	50°	60°	20°	40°	55°	60°	-	50°	—	60°	—	—	
		Multi-Stage bellows	50°	50°	50°	50°	—	20°	40°	55°	50°	-	50°	—	60°	—	—	
		Oval	40° to 50°	—	50°	40° to 50°	50° to 60°	—	—	55°	50°	—	50°	70°	70°	—	—	
		Soft	40°	—	—	40°	60°	—	—	—	—	40°	—	—	50°	—	—	
		Soft bellows	40°	—	50°	40°	60°	—	—	55°	—	—	50°	—	60°	—	—	
		Anti-Slip	50°	—	—	50°	—	—	—	55°	60°	—	—	—	60°	—	—	
		Flat type	60°	—	—	40°	40°	—	—	50°	50°	—	—	—	60°	—	—	
		Flat intake flow rate increase type	—															
	Volume resistance ratio	Thin object type	40°	—	—	40°	—	—	—	55°	50°	40°	—	—	60°	—	—	
		High-temperature usage limits		110°C		140°C	180°C		180°C		60°C	230°C	180°C	150°C	100°C	110°C	80°C	180°C
		Low-temperature usage limits		-30°C		-30°C	-40°C		-40°C		-20°C	-10°C	-50°C	-40°C	-50°C	-30°C	-45°C	-40°C
		Weather resistance		△		○	◎		◎		○	○	○	◎	○	△	○	◎
		Ozone resistance		x		○	◎		◎		◎	◎	◎	◎	x	x	○	◎
		Acid resistance		△		△	○		○		x	◎	○	◎	△	△	△	○
		Alkali resistance		○		○	◎		◎		x	x	◎	◎	○	○	◎	◎
		Oil resistance	(Gasoline/Light oil)	◎		◎	△		△		◎	◎	△	x	x	◎	x	△
			(Benzene/Toluene)	△		x	△		△		△	◎	△	x	x	△	△	△
		Volume resistance ratio		—		—	—	10 ⁸ Ω·cm or less		—		—	—	—	—	200 Ω·cm or less	200 Ω·cm or less	—

Reading the rating ➡ ◎: Ideal, ○: Suitable, △: Good, x: Unsuitable




*1: Pad material order code: NH is available only for the anti-slip type.

Note 1: Characteristics of general synthetic rubbers used for the pad material are indicated in the table of characteristics.

Note 2: The values for the temperature usage limits are for very short periods of use. Therefore, careful consideration should be employed for usage extending for a constant period of time.

Note 3: When surface-treated (option) fiber raised type is selected, the high temperature usage limit temperature for fluoro rubber is 200°C.

■ Resin material

Item	Pad material		PEEK	POM	Conductive PEEK
	Order code		K	M	KE
Applications			Semiconductor/LCD manufacturing equipment	Various manufacturing lines Food-related products Packaging machine	Semiconductor/LCD manufacturing equipment Electronic device parts
Pad color			 Beige	 White	 Black
Various properties	High-temperature usage limits		250°C	95°C	250°C
	Low-Temperature usage limits		-50°C	-60°C	-50°C
	Weather resistance		◎	x	◎
	Acid resistance		◎	x	◎
	Alkali resistance		◎	△	◎
	Self-Lubrication		○	◎	○
	Abrasion resistance		◎	◎	◎
	Volume resistance ratio		—	—	10 ⁸ to 10 ⁶ Ω·cm

Reading the rating ➡ ◎: Ideal, ○: Suitable, △: Good, x: Unsuitable

*1: Characteristics are those of pad resin material and do not include the suction mark prevention pad holder. Select with consideration to the vacuum pad holder to be used and the specifications of the suction mark prevention pad holder.

*2: Characteristics are general characteristics of each material and not guaranteed values. Confirm performance with an actual device before use.

*3: The values for the high temperature usage limits are for very short periods of use. Therefore, careful consideration should be employed for usage extending for a constant period of time.

*4: The volume resistance ratio is a representative value released by the material manufacturers and not a guaranteed value.

Suction pad

Pad diameter compatibility table by material

Pad material		N: Nitriles								
Pad shape		Standard			Bellows	Multi-Stage bellows	Soft	Soft bellows	Thin object type	Flat type
		Standard	Deep type	Compact						
Suction pad	Pad diameter (mm)	ø0.7		●						
		ø1	●	●						
		ø1.5		●						
		ø2	●	●	●					
		ø3	●	●						
		ø4	●	●	●		●			
		ø6	●		●	●	●	●		
		ø8	●		●	●	●	●	●	
		ø10	●		●	●	●	●	●	●
		ø15	●	●	●		●	●	●	●
		ø20	●	●	●	●	●	●	●	●
		ø25	●	●	●					●
		ø30	●	●	●	●	●			●
		ø40	●	●	●	●	●			
		ø50	●	●	●	●				
		ø60	●	●	●					
		ø80	●	●	●					
		ø100	●	●	●					
		ø150	●							
		ø200	●							

Pad material		S: Silicone										
Pad shape		Standard			Bellows	Multi-Stage bellows	Soft	Soft bellows	Flat type	Anti-Slip	Thin object type	Sponge
		Standard	Deep type	Compact								
Suction pad	Pad diameter (mm)	ø0.7		●								
		ø1	●	●								
		ø1.5		●								
		ø2	●	●	●							
		ø3	●	●								
		ø4	●	●	●		●					
		ø6	●		●	●	●	●				
		ø8	●		●	●	●	●			●	
		ø10	●		●	●	●	●	●	●	●	●
		ø15	●	●	●		●	●	●		●	●
		ø20	●	●	●	●	●	●	●	●	●	●
		ø25	●	●	●				●			●
		ø30	●	●	●	●	●		●	●		●
		ø35										●
		ø40	●	●	●	●	●			●		
		ø50	●	●	●	●				●		●
		ø60	●	●	●							
		ø70										●
		ø80	●	●	●							
		ø100	●	●	●							●
		ø150	●									
		ø200	●									

Pad material		U: Urethane								
Pad shape		Standard			Bellows	Multi-Stage bellows	Soft bellows	Anti-Slip	Thin object type	Flat type (*1)
		Standard	Deep type	Compact						
Pad diameter (mm)	ø0.7			●						
	ø1	●		●						
	ø1.5			●						
	ø2	●		●						
	ø3	●		●						
	ø4	●		●						
	ø6	●			●		●			
	ø8	●			●		●		●	
	ø10	●			●	●	●	●	●	●
	ø15	●	●		●	●	●	●	●	●
	ø20	●	●		●	●	●	●	●	●
	ø25	●	●		●					●
	ø30	●	●		●	●		●		●
	ø40	●	●		●	●		●		
	ø50	●	●		●	●		●		
	ø60	●	●		●					
	ø80	●	●		●					
	ø100	●	●		●					
	ø150	●								
	ø200	●								

*1: Increased intake flow rate FH is not supported.

Pad material		F: Fluorine								G: NBR compatible with the Food Sanitation Act			
Pad shape		Standard			Bellows	Multi-Stage bellows	Anti-Slip	Thin object type	Flat type	Standard			Multi-Stage bellows
		Standard	Deep type	Compact						Standard	Deep type	Compact	
Pad diameter (mm)	ø0.7			●								●	
	ø1	●		●						●		●	
	ø1.5			●								●	
	ø2	●		●						●		●	
	ø3	●		●						●		●	
	ø4	●		●						●		●	
	ø6	●			●	●				●			●
	ø8	●			●	●		●		●			●
	ø10	●			●	●	●	●	●	●			●
	ø15	●	●		●	●		●	●	●	●		
	ø20	●	●		●	●	●	●	●	●	●		●
	ø25	●	●		●				●	●	●		
	ø30	●	●		●	●	●		●	●	●		●
	ø40	●	●		●	●	●			●	●		●
	ø50	●	●		●	●	●			●	●		●
	ø60	●	●		●								
	ø80	●	●		●								
	ø100	●	●		●								
	ø150	●											
	ø200	●											

Suction pad

Pad material		SE: Conductive silicone							E: Conductive butadiene rubber (low resistance)		Blank: Chloroprene	NH:Oil-resistant NBR
Pad shape		Standard			Bellows	Soft	Soft bellows	Flat type	Standard		Sponge	Anti-Slip
		Standard	Deep type	Compact					Standard	Compact		
Pad diameter (mm)	ø0.7			●						●		
	ø1	●		●					●	●		
	ø1.5			●						●		
	ø2	●		●					●	●		
	ø3	●		●					●	●		
	ø4	●		●	●	●			●	●		
	ø6	●			●	●	●		●			
	ø8	●			●	●	●		●			
	ø10	●			●	●	●	●	●		●	●
	ø15	●	●		●	●	●	●	●		●	
	ø20	●	●		●	●	●	●	●		●	●
	ø25	●	●		●			●	●		●	
	ø30	●	●		●	●		●	●		●	●
	ø35										●	
	ø40	●	●		●	●			●			●
	ø50	●	●		●				●		●	●
	ø60	●			●							
	ø70										●	
	ø80	●			●							
	ø100	●			●						●	
	ø150	●										
	ø200	●										

Pad material		NE: Conductive NBR (low resistance)									YS2, YS4: Super soft silicone		
Pad shape		Standard			Bellows	Multi-Stage bellows	Soft	Soft bellows	Anti-Slip	Thin object type	Flat type	Bellows	Multi-Stage bellows
		Standard	Deep type	Compact									
Pad diameter (mm)	ø0.7			●									
	ø1	●		●									
	ø1.5			●									
	ø2	●		●									
	ø3	●		●									
	ø4	●		●			●						
	ø6	●			●	●	●	●					
	ø8	●			●	●	●	●		●			
	ø10	●			●	●	●	●	●	●	●	●	●
	ø15	●	●		●		●	●		●	●	●	
	ø20	●	●		●	●	●	●	●	●	●	●	●
	ø25	●	●		●						●	●	
	ø30	●	●		●	●	●		●		●	●	●
	ø40	●	●		●	●	●		●			●	●
	ø50	●	●		●	●			●			●	●
	ø60	●	●		●								
	ø80	●			●								
	ø100	●	●		●								
	ø150	●											
	ø200	●											

Pad material		HN: HNBR						EP: EPDM						FS: Fluorosilicone	
Pad shape		Standard			Bellows	Multi-Stage bellows	Soft bellows	Standard			Bellows	Multi-Stage bellows	Soft bellows	Soft	Thin object type
		Standard	Deep type	Compact				Standard	Deep type	Compact					
Pad diameter (mm)	ø0.7			●						●					
	ø1	●		●				●		●					
	ø1.5			●						●					
	ø2	●		●				●		●					
	ø3	●		●				●		●					
	ø4	●		●				●		●				●	
	ø6	●			●	●	●	●			●	●	●	●	
	ø8	●			●	●	●	●			●	●	●	●	●
	ø10	●			●	●	●	●			●	●	●	●	●
	ø15	●	●		●		●	●	●		●		●	●	●
	ø20	●	●		●	●	●	●	●		●	●	●	●	●
	ø25	●	●		●			●	●		●				
	ø30	●	●		●	●		●	●		●	●		●	
	ø40	●	●		●	●		●	●		●	●		●	
	ø50	●	●		●	●		●	●		●	●			
	ø60	●	●		●			●	●		●				
	ø80	●	●		●			●	●		●				
	ø100	●	●		●			●	●		●				
	ø150	●						●							
	ø200	●						●							

Pad material		N: Nitriles	S: Silicone	U: Urethane	F: Fluorine	SE: Conductive silicone	E: Conductive butadiene rubber (low resistance)	NE: Conductive NBR (low resistance)	HN: HNBR	EP: EPDM
Pad shape		Oval								
Pad size (mm)	2 x 4	●	●	●	●	●		●	●	●
	3.5 x 7	●	●	●	●	●		●	●	●
	4 x 10	●	●	●	●	●	●	●	●	●
	4 x 20	●	●	●	●	●	●	●	●	●
	4 x 30	●	●			●	●	●	●	●
	5 x 10	●	●	●	●	●	●	●	●	●
	5 x 20	●	●	●	●	●	●	●	●	●
	5 x 30	●	●	●	●	●	●	●	●	●
	6 x 10	●	●	●	●	●	●	●	●	●
	6 x 20	●	●	●	●	●	●	●	●	●
	6 x 30	●	●	●	●	●	●	●	●	●
	8 x 20	●	●	●	●	●	●	●	●	●
	8 x 30	●	●	●	●	●	●	●	●	●

Pad material		K: PEEK	M: POM	KE: Conductive PEEK
Pad shape		Suction mark prevention		
Pad diameter (mm)	ø10	●	●	●
	ø20	●	●	●
	ø30	●	●	●

Pad material		K: PEEK	M: POM	KE: Conductive PEEK
Pad shape		Resin attachment for suction mark prevention bellows		
Pad diameter (mm)	ø10	●	●	●
	ø15	●	●	●
	ø20	●	●	●
	ø25	●	●	●
	ø30	●	●	●

Suction pad

General/Deep/Compact

Sponge

Bellows

Multi-Stage bellows

Oval

Soft

Soft bellows

Anti-slip

Thin object

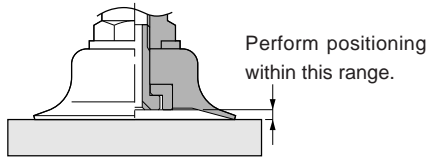
Flat

Suction mark prevention

Reference materials for using vacuum pads

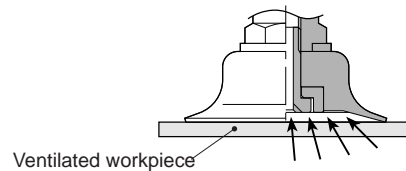
Shock to the pad

When pressing the pad against the workpiece, do not apply impact or great force. The pad may deform, crack and wear out faster. Therefore, use it within the deformation range of the pad skirt or until it touches the rib part lightly. In particular, position accurately for small diameter pads.



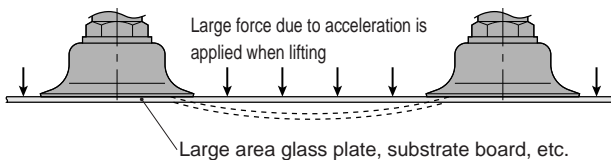
For ventilated workpieces or those with holes

For suction of ventilated workpieces, the suction force decreases due to the amount of air leakage. Measures such as increasing the capacity of the ejector and vacuum pump and increasing the effective cross-sectional area of the piping path are required. Selecting a pad with a small diameter is one way to reduce the amount of air leakage.



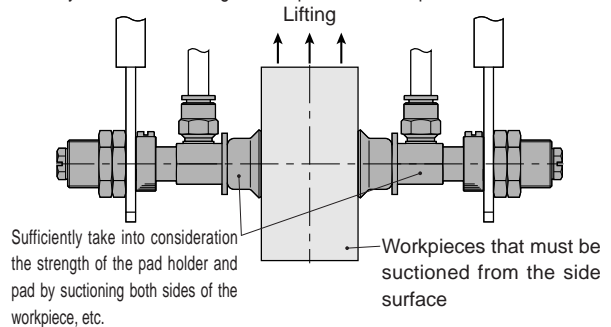
For flat workpieces with large area

When lifting a glass plate or circuit board with a large area, it may be subject to large force due to acceleration or undulation due to its own weight, so it is necessary to allow sufficient margin in consideration of the pad layout and size.



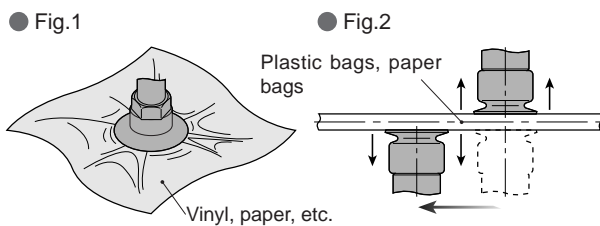
When lifting workpiece sides with suction

All pad holders are designed to be lifted from the horizontal plane. Therefore, when the side of the workpiece is sucked and lifted (vertical plane lifting), carefully consider the strength of the pad holder and pads.



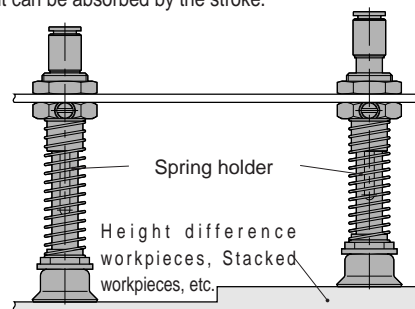
When suctioning soft workpieces

If a soft workpiece such as vinyl, paper or thin plate is sucked, the vacuum pressure will deform the workpiece or cause wrinkles. Therefore, it is necessary to use a small pad and lower the vacuum pressure (see Figure 1). The small diameter pad is appropriate when opening plastic bags, paper bags, etc. When mounting the opposing pad center at a position slightly off-center, opening is easier (see Fig.2).



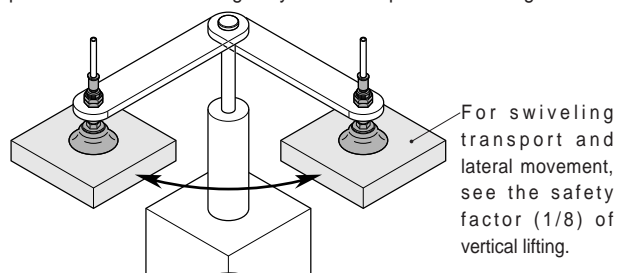
When the distance between the pad and the workpiece is irregular

Use the spring type when the pad and workpiece cannot be positioned, such as suctioning workpieces with height difference or stacked workpieces. Even if the distance between the pad and the workpiece changes, it can be absorbed by the stroke.



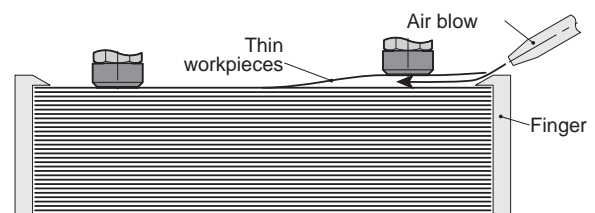
For swiveling transport

If swiveling transport is carried out with a pad fixed with screws, the screws may loosen and the pad may come off, so design with sufficient margin. Also, special attention is required when the suction position and the center of gravity of the workpiece are misaligned.



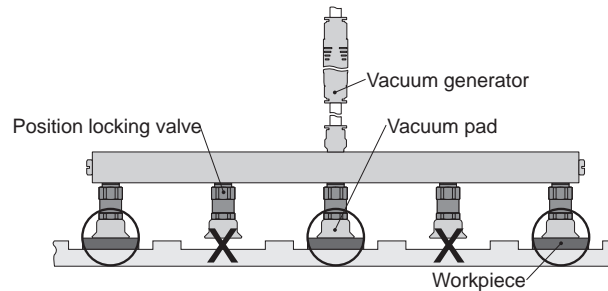
When suctioning multiple thin stacked workpieces

Since multiple workpieces may be suctioned at once, it is necessary to use a small-diameter pad and further lower the vacuum pressure. Moreover, one way to prevent suction of multiple workpieces is to use air blow and claw as shown in the figure below.



When using multiple pads with one vacuum source

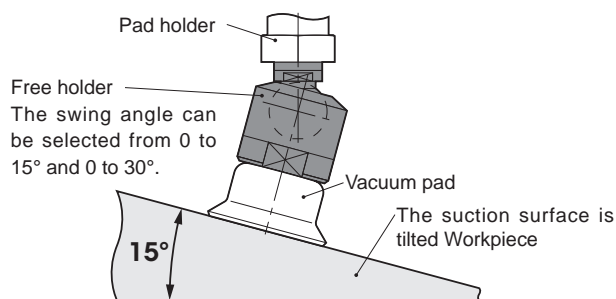
If a position locking valve is installed between the pad and the pad holder, suction when the workpiece comes off the pad or contacts the pad is not contacted is automatically reduced, so problems such as stopping handling can be prevented from stopping, since the vacuum loss of the entire system is reduced.



When the work surface to be suctioned is not flat

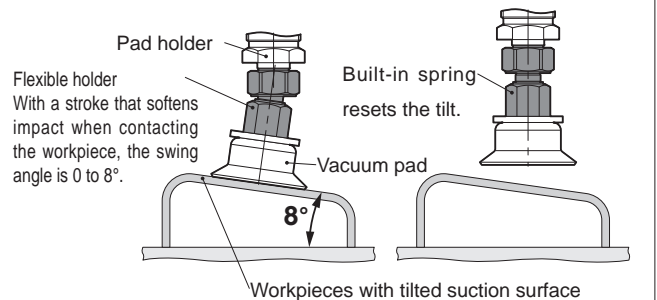
If the surface of the workpiece to be suctioned is not flat (tilted or curved), use a pad swinging device.

● For free holder

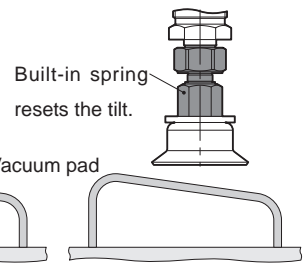


● For flexible holder

■ During workpiece suction



■ After removing the workpiece



If there are problems with the suction marks of the vacuum pad

Although it does not completely prevent suction marks, it can be reduced by using a suction mark prevention series with a special treatment on the pad surface or with a resin material suction mark prevention type as a countermeasure. (The degree of suction mark reduction differs depending on the environment and workpiece, so select a model by performing suction test with an actual device.)

Suction mark countermeasure surface treatment series

Fiber raised type (-NF, -SF)

The fibers (nylon or silk) on the pad surface prevent rubber material transfer by not directly touching the workpiece.



- Pad material (2 types)
Silicone rubber, fluoro rubber
- Pad diameter (mm) (9 types)
ø10 to ø80
- Pad shape (5 types)
Standard (standard/deep), soft, soft bellows, bellows

Anti-sticking (-DL)

Special coating with good slip. Effective for preventing adhesion of lightweight and thin workpieces.



- Pad material (3 types)
Silicone rubber, fluoro rubber, conductive silicone
- Pad diameter (mm) (23 types)
ø4 to ø50 (circular), 2x4 to 8x30 (oval)
- Pad shape (10 types)
Standard (standard/deep), soft, soft bellows, bellows, multi-stage bellows, thin object, flat, flat intake flow rate increase, oval

Suction mark reduction (-ER)

Reduces suction marks by modifying the surface of nitrile rubber with chemical liquids.



- Pad material (2 types)
Nitrile rubber, conductive NBR (low resistance)
- Pad diameter (mm) (29 types)
ø0.7 to ø60 (circular), 2x4 to 8x30 (oval)
- Pad shape (11 types)
Standard (standard/deep/compact), soft, soft bellows, bellows, multi-stage bellows, thin object, flat, flat intake flow rate increase, oval

Fluorine coating (-FG)

The fluorine coating prevents adhesion to the workpiece or the bellows part. Improved pad durability and wear resistance.



- Pad material (4 types)
Silicone rubber, conductive silicone, Super soft silicone rubber (hardness 20°, 40°)
- Pad diameter (mm) (33 types)
ø0.7 to ø200 (round), 2x4 to 8x30 (oval)
- Pad shape (11 types)
Standard (standard/deep/compact), soft, soft bellows, bellows, multi-stage bellows, thin object, flat, flat suction flow rate increase, oval

Suction mark prevention

Suction mark prevention

The resin pad, which prevents workpiece marks, is integrated with the flexible holder. Tilted workpieces can also be suctioned.



- Resin material (3 types)
PEEK, POM, conductive PEEK
- Pad diameter (mm) (3 types)
ø10 to ø30

Suction mark prevention resin attachment (for bellows)

Simply attach the dedicated resin attachment to the bellows. Compatible with workpieces that must not have suction marks. Tilted workpieces can also be suctioned.



- Resin material (3 types)
PEEK, POM, conductive PEEK
- Applicable pad diameter (mm) (5 types)
ø10 to ø30