

Vacuum Pad with Ejector

ZHP Series

Pad Diameter: $\varnothing 63, \varnothing 80$

RoHS

Ejector and pad are integrated.
Space saving and reduced piping labor!

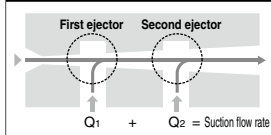
Two-stage ejector

More efficient ejector

Suction flow rate **50% increased^{*1}** Air consumption **30% reduced^{*1}**

^{*1} Compared with SMC single stage ejector

Two-stage ejector



With One-touch fitting

Metric: $\varnothing 4, \varnothing 6$
Inch: $\varnothing 5/32", \varnothing 1/4"$

Strainer

Prevents entry of foreign matter at the pad suction port.

Improved ease of removal^{*2}

With groove

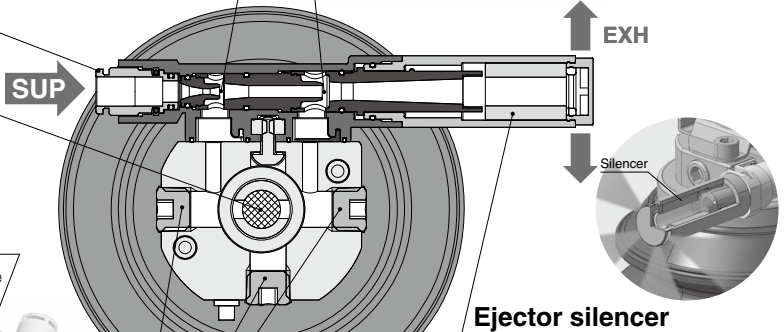
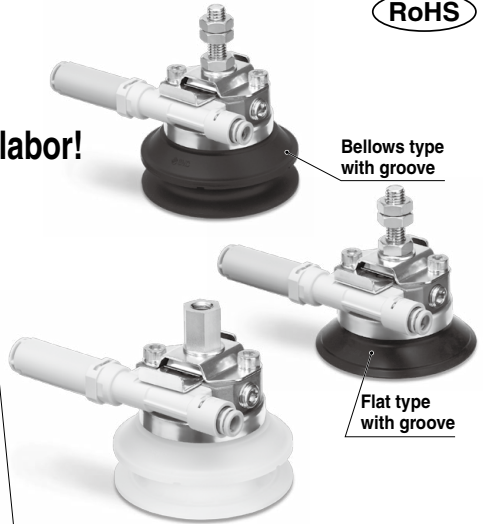
Dents and bumps on the adsorption surface prevent the workpiece from sticking to it. This facilitates easy removal.



Shot-blasted die

A shot-blasted die is used to create micro-dents and bumps on the adsorption surface. Workpieces can be removed easily.

^{*2} Compared with current ZP series

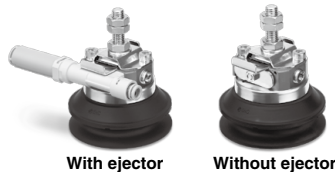


Ejector silencer

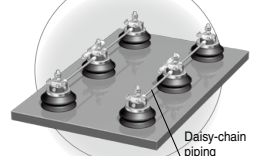
By dispersing the exhaust in all directions, undesired exhaust noise can be silenced while still exhibiting maximum vacuum performance.

- Structure designed to minimize clogging

Port/For Vacuum release, Pressure sensor, Daisy-chain piping

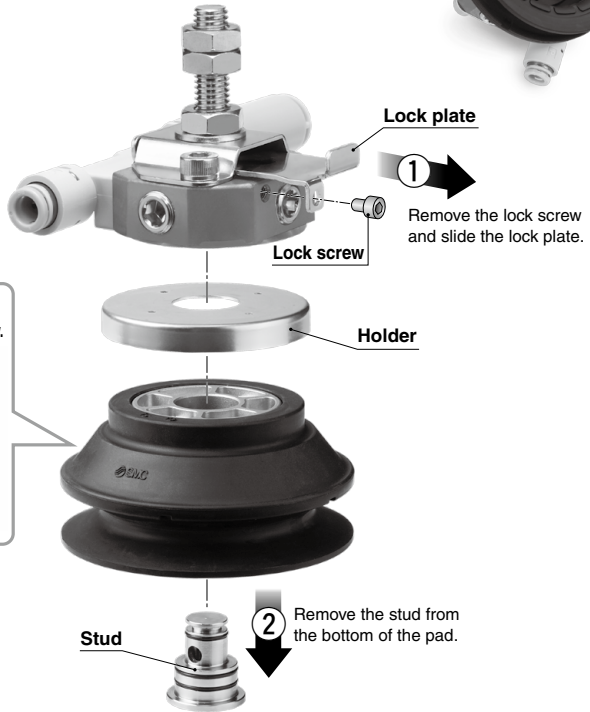


Daisy-chain vacuum piping is possible.
<Daisy-chain piping example>



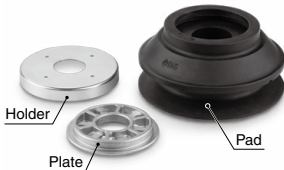
Easier maintenance

Mounting with the lock plate reduces the pad replacement work steps!



Uses an isolated structure.

- A lock plate is used to facilitate separation.
- Rubber and metal parts can be disposed of separately.

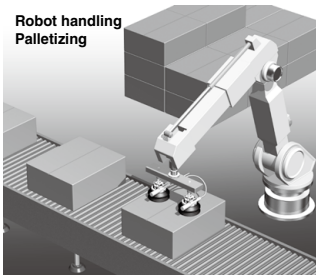


Pad diameter	Pad form	Pad material	Mounting	Nozzle nominal size *2 [mm]
ø63, ø80	Bellows type with groove Flat type with groove	NBR (Black) *1 Silicone rubber (White) Urethane rubber (Navy blue) FKM (Black) *1	Metric size (Male thread/Female thread) M8 M10	ø0.7 ø1.0 ø1.2 ø1.5
			Inch size (Male thread/Female thread) 5/16-18UNC 3/8-16UNC	

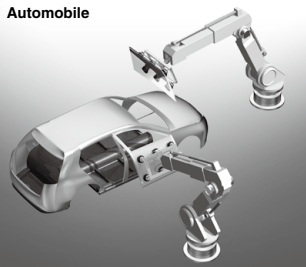
*1 Refer to page 784 for identification method.
*2 With ejector

Application Examples

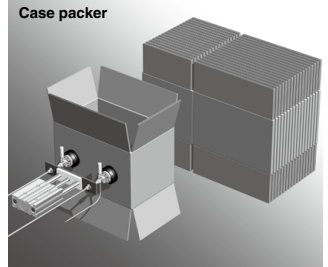
Robot handling
Palletizing



Automobile



Case packer



Vacuum Pad with Ejector

ZHP Series

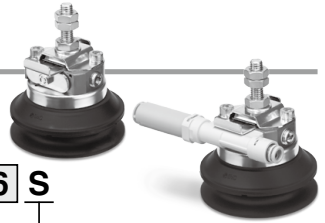
ø63, ø80



How to Order

Without ejector **ZHP 80 BM N B - 00**

With ejector **ZHP 80 BM N B - 10 C6 S**



Pad diameter

63	ø63
80	ø80

Pad form

BM	Bellows type with groove
UM	Flat type with groove

Pad material

N	NBR (Black)*
S	Silicone rubber (White)
U	Urethane rubber (Navy blue)
F	FKM (Black)*

* Refer to page 784 for identification method.

Mounting

Symbol	Type	Thread	Size
A		Male thread	M8
B	Metric size	Female thread	M10
C		Female thread	M8
D		Female thread	M10
E	Inch size	Male thread	5/16-18UNC
F		Male thread	3/8-16UNC
G		Female thread	5/16-18UNC
H		Female thread	3/8-16UNC

Exhaust release

S	Silencer exhaust
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Supply (P) port

Symbol	Type	Port size
C4	Metric	ø4 One-touch fitting
C6		ø6 One-touch fitting
N3	Inch	e5/32" One-touch fitting
N7		ø1/4" One-touch fitting

Ejector/ Nozzle nominal size [mm]

07	Nozzle: ø0.7
10	Nozzle: ø1.0
12	Nozzle: ø1.2
15	Nozzle: ø1.5

Ejector Specifications

	ZHP□□□-07□	ZHP□□□-10□	ZHP□□□-12□	ZHP□□□-15□
Nozzle nominal size [mm]	0.7	1.0	1.2	1.5
Max. suction flow rate [L/min (ANR)]	30	52	63	78
Air consumption [L/min (ANR)]	24	40	58	87
Vacuum pressure reached [kPa]	-91			
Standard supply pressure [MPa]	0.35			

* Standard supply pressure

Recommended Work Load

	ZHP63□	ZHP80□
Horizontal lifting	66	106
Vertical lifting	33	53

Use this product with the recommended work load or less. The transfer work over the recommended work load may cause the vacuum pressure to decrease by the air leak. The work load shown above is the value when the vacuum pressure reaches -85 kPa, and that is calculated by multiplying the theoretical value by a safety factor of "1/4" for the horizontal lifting or "1/8" for the vertical lifting. For details, refer to pages 11 to 32 for the Vacuum Equipment Model Selection. The vacuum pressure reached may vary depending on the workpiece (permeability, etc.). Calculate the actual work load in accordance with the vacuum pressure reached.

Response Time

Pad dia.	Nozzle size	ZHP□BM□-07□	ZHP□BM□-10□	ZHP□BM□-12□	ZHP□BM□-15□
ø63		295	143	120	86
ø80		455	221	190	140

Response time means a period of time that the vacuum pressure reaches -57 kPa after the externally installed valve has been turned ON when the bellows type pad is used and the supply pressure is 0.35 MPa.

Weight

Material: NBR, Mounting: A [g]

ZHP63BMNA-□C6S	184
ZHP80BMNA-□C6S	224
ZHP63UMNA-□C6S	167
ZHP80UMNA-□C6S	175

- For the ZHP□□□A-00 (without ejector), weight shown above -12 g.
- When the mounting symbol is other than "A", add the weight ① shown in the table on the right to the weight described in the table above.
- When the material is other than NBR, add the weight ② shown in the table on the right to the weight described in the table above.
- This weight includes the accessory weight.

① Weight Difference by Mounting Style [g]

B	C	D	E	F	G	H
20	-5	14	7	25	1	11

② Weight Difference by Material [g]

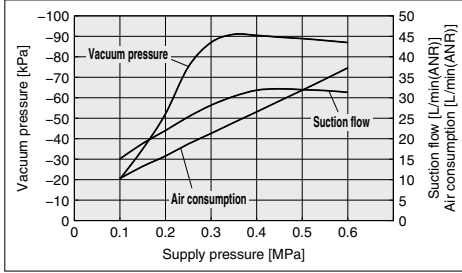
Pad diameter/form	Silicone rubber	Urethane rubber	FKM
ZHP63BM	-2.9	0	20.3
ZHP80BM	-5.0	0	35.1
ZHP63UM	-1.5	0	10.6
ZHP80UM	-2.1	0	15.5

ZHP Series

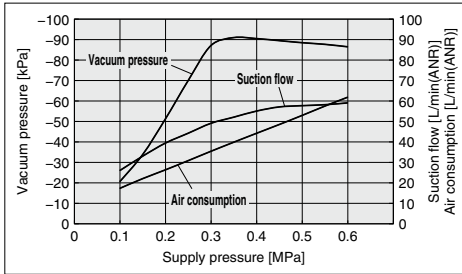
Exhaust Characteristics/Flow Rate Characteristics (Representative Value)

Exhaust Characteristics

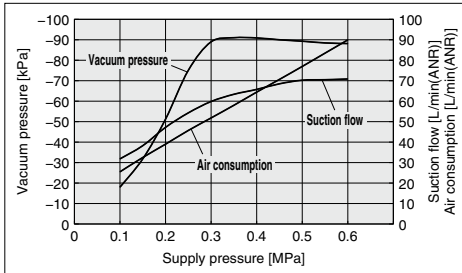
ZHP□-07□



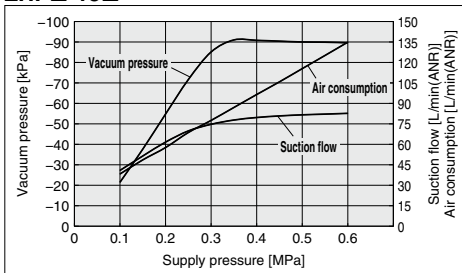
ZHP□-10□



ZHP□-12□



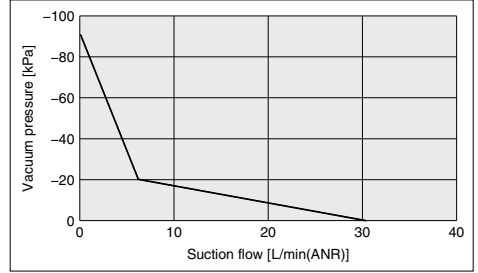
ZHP□-15□



Flow Rate Characteristics

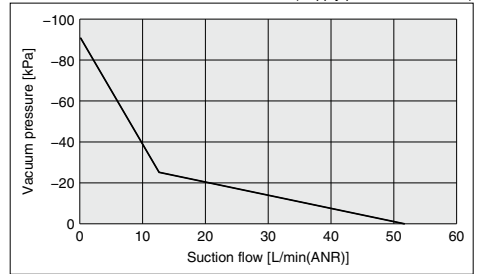
ZHP□-07□

(Supply pressure: 0.35 MPa)



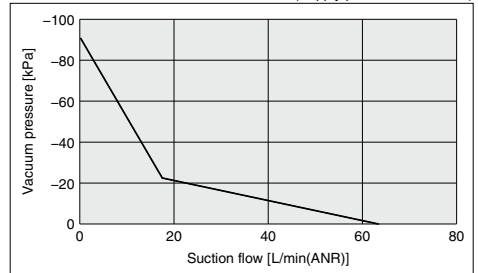
ZHP□-10□

(Supply pressure: 0.35 MPa)



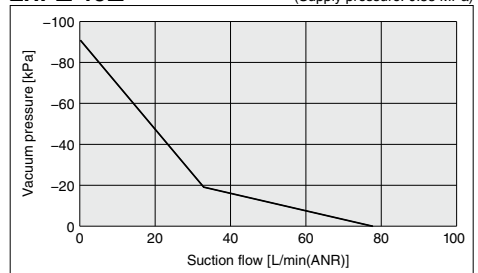
ZHP□-12□

(Supply pressure: 0.35 MPa)

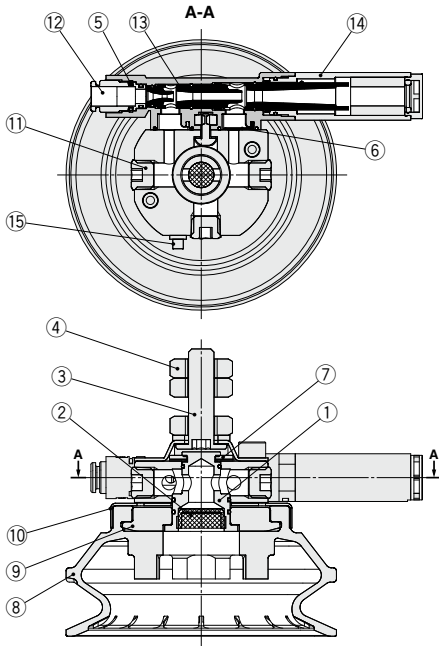


ZHP□-15□

(Supply pressure: 0.35 MPa)



Construction



Component Parts

No.	Description	Note
1	Stud	
2	Strainer	
3	Mounting bracket	
4	Lock nut	2 pcs. included for male thread mounting (Not included for female thread mounting)
5	Lock pin	
6	Check valve	
7	Lock plate	

Replacement Parts

No.	Description	Part no.	Note
8	Pad	ZP3E-□□□	Flat/Bellows type with groove
9	Plate	ZHP1-PL□-A	
10	Holder		
11	Plug*	TB00148	Included for metric size
		TB00055	Included for inch size
12	One-touch fitting	KJH□-C2	
13	Ejector assembly	ZK2-EJ□W-A	
14	Silencer assembly	ZHP1-SA1-A	
15	Lock screw	CA00284	Included

* 3 pieces are included in one product. (The part numbers are for 1 piece.)

Replacement Parts/How to Order

⑧ Pad

ZP3E - **80** **BM** **N**

• Pad material

N	NBR
S	Silicone rubber
U	Urethane rubber
F	FKM

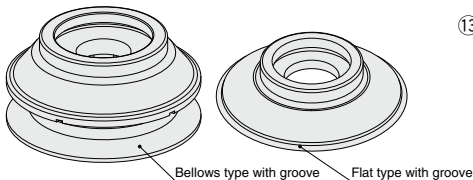
• Pad form

BM	Bellows type with groove
UM	Flat type with groove

• Pad diameter

63	φ63
80	φ80

* When changing the pad diameter, replace also the plate together.



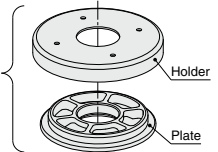
⑨⑩ Plate assembly*

ZHP1 - PL **1** - A

• Size (Applicable pad dia./form)

1	φ63/φ80: Flat type, φ63: Bellows type
2	φ80: Bellows type

* Part number for a set of plate and holder



⑫ One-touch fitting (The order lot is 10 pieces.)

KJH **06** - C2

• Applicable tubing O.D.

04	φ4
06	φ6
03	φ5/32"
07	φ1/4"

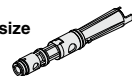


⑬ Ejector assembly

ZK2 - EJ **10** W - A

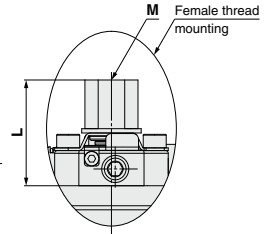
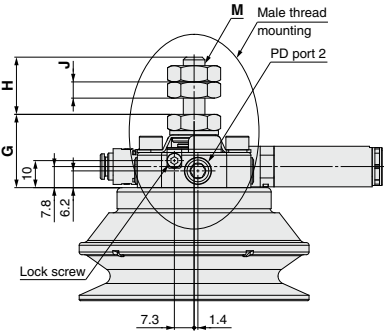
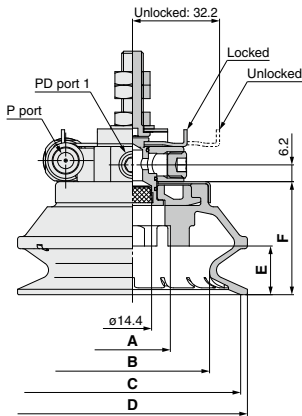
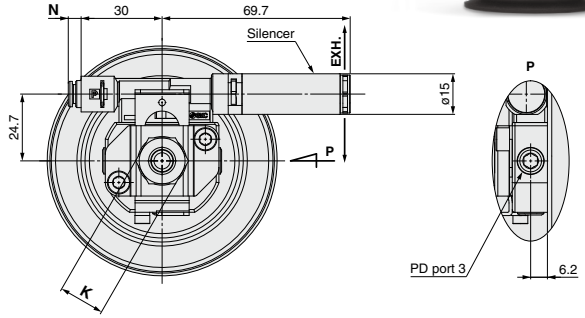
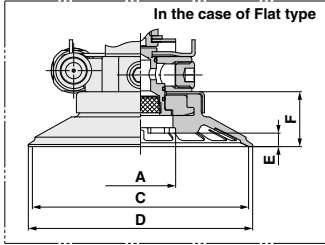
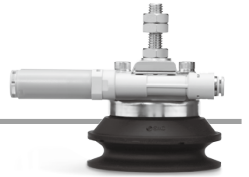
• Nozzle nominal size

07	φ0.7
10	φ1.0
12	φ1.2
15	φ1.5



ZHP Series

Dimensions



PD port size
Metric size: Rc1/8
Inch size: NPT1/8

Dimensions

	A	B	C	D	E	F
ZHP63BM	ø26	ø45.8	ø63	ø68	12.5	33.8
ZHP80BM	ø28	ø57	ø80	ø85	18	41.8
ZHP63UM	ø26	—	ø63	ø66	5	20.3
ZHP80UM	ø26	—	ø80	ø83	5	20.3

Supply Port Dimensions

	N
C4	4.7
C6	4.7
N3	4.7
N7	7.3

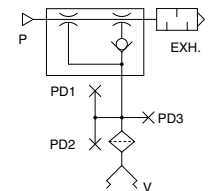
Adapter Dimensions (by Mounting Style)

	G	H	J	K	L	M
ZHP□□□A-□□S	25.7	22.6	5	13	—	M8
ZHP□□□B-□□S	27.1	21.2	6	17	—	M10
ZHP□□□C-□□S	—	—	—	13	36.7	M8 depth 10
ZHP□□□D-□□S	—	—	—	17	39.1	M10 depth 10
ZHP□□□E-□□S	27.45	21.8	6.75	12.7	—	5/16-18UNC
ZHP□□□F-□□S	29.43	26.82	8.33	14.28	—	3/8-16UNC
ZHP□□□G-□□S	—	—	—	12.7	41.7	5/16-18UNC depth 11
ZHP□□□H-□□S	—	—	—	14.28	44.1	3/8-16UNC depth 11

For symbols G and H (inch-type female thread), the dimension K becomes the width across flats.

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Circuit





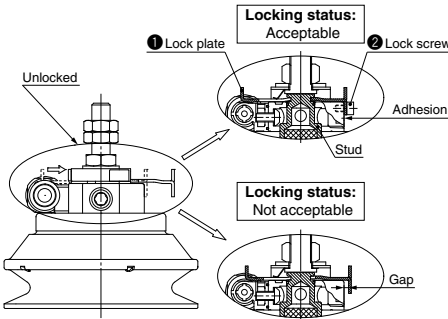
ZHP Series

Specific Product Precautions 1

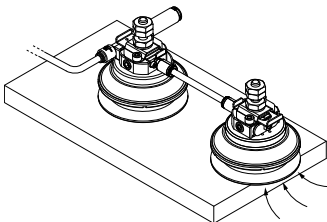
Be sure to read this before handling the products.

Refer to page 33 for safety instructions and pages 34 to 36 for vacuum equipment precautions.

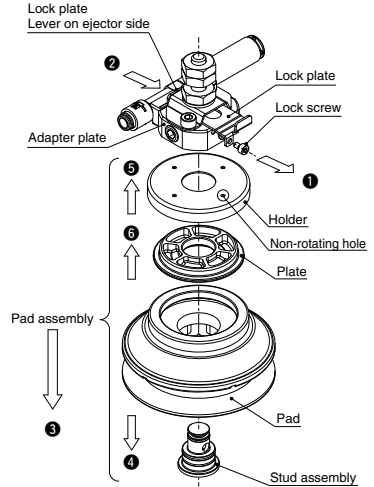
1. Use the product while strictly observing the precautions on vacuum equipment and taking the safety into consideration. Additionally, select a pad size and material suitable for the workpiece to be adsorbed and the atmosphere. Take safety measures so that any accident, such as workpiece drop does not occur during adsorption transfer. For details, refer to pages 11 to 32.
2. After the pad has been replaced, lock the lock plate completely before use. (Refer to ① shown in the figure below.) If the lock plate is not locked completely, the pad may drop due to the vibration or load during operation.
3. To ensure the safety, be sure to mount the lock screw on the lock plate before use. (Refer to ② shown in the figure below.) If the lock plate comes off during operation, this may cause a serious accident, such as pad drop or workpiece drop.



4. If the adsorption time delay or incorrect adsorption occurs, the vacuum leak due to worn out pad or strainer clogging may be the cause. Perform the periodic maintenance so that any trouble such as workpiece drop does not occur.
5. When connecting multiple pads to one ejector through the vacuum communication, other pads also cannot adsorb if incorrect adsorption occurs in one pad. Take safety measures so that the workpiece does not drop during transfer.



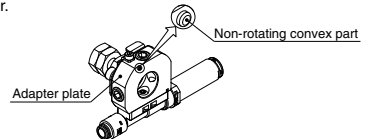
6. Replace the pad while referring to the figure below.



- ① Remove the lock screw.
- ② Push the lever (on the ejector side) of the lock plate to slide it to a position where it stops completely.
- ③ Pull out the pad assembly.
- ④ Pull out the stud assembly from the pad assembly.
- ⑤ Remove the holder.
- ⑥ Remove the plate from the pad.
- ⑦ Mount the pad in the reverse order of steps above.

Cautions on pad mounting

- When mounting the pad assembly on the adapter plate, adjust the position so that the non-rotating convex part on the bottom of the adapter plate enters the non-rotating hole in the holder.



- When locking the lock plate, push in the stud assembly from the lower portion. If the stud assembly is not pushed into the adapter plate completely, the lock plate slides insufficiently, causing pad drop or vacuum leak.



7. Recommended One-touch fitting to be mounted at the PD port is the KQ2S06-01□S or KQ2S07-34□S.

One-touch fitting may interfere with the top surface of the pad depending on the fitting dimensions. This may cause the One-touch fitting not to be mounted.



ZHP Series

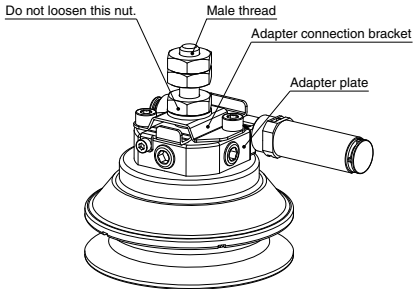
Specific Product Precautions 2

Be sure to read this before handling the products.

Refer to page 33 for safety instructions and pages 34 to 36 for vacuum equipment precautions.

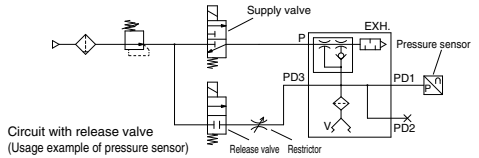
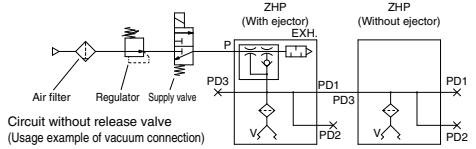
8. When supplying the vacuum release air to the PD port, select an appropriate product suitable for the specifications so that the R port of the 2 port or 3 port valve to be used is blocked not to leak the vacuum in the closed state.

9. When using the male thread mounting type product, do not loosen the bottom nut shown in the figure below. (The bottom nut is intended to secure the connection between the bracket for the adapter connection and the male thread.)



10. Ejector exhaust may be directly released from the ejector silencer in the direction of workpieces. Please contact SMC if this affects adsorption.

11. Circuit examples



12. Pad material and appearance color

The appearance color of the pad may vary depending on the material.

Material	Appearance color
NBR	Black
Silicone rubber	White
Urethane rubber	Navy blue
FKM	Black*

* FKM and NBR have the same color. But, "F" mark is indicated on the inside of the pad when the plate is removed.