

Mark-free Pad Series ZP2/ZP3E Series

Minimizes the transfer of rubber constituents to workpieces

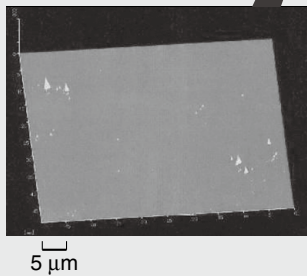
Pad
Si board
Standard silicone rubber
Enlarged view 5 μm
Adsorption mark

Analysis equipment:
Scanning probe microscope

Measurement conditions:
Measurement mode
Atomic force microscope DFM mode

Sample conditions:
Pressing of the vacuum pad to the Si board for 1 hour

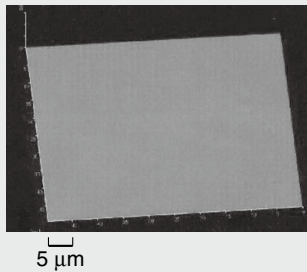
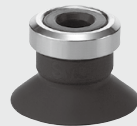
Monitoring location:
Monitored at a randomly selected location where adsorption marks were likely due to contact between the vacuum pad and Si board



1 Mark-free NBR Pad

Minimizes the transfer of rubber constituents which are said to be the cause of adsorption marks

Pad diameter: $\phi 4$ to $\phi 125$

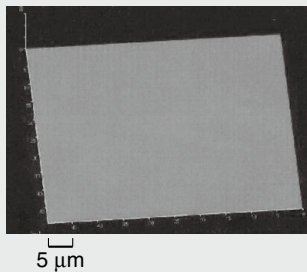


2 Fluororesin-coated Pad

A fluororesin sheet is baked onto the pad adsorption surface. Prevents the transfer of rubber constituents

Pad diameter: $\phi 40$ to $\phi 125$

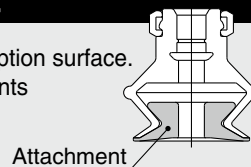
Pad material: NBR, FKM



3 Resin Attachment

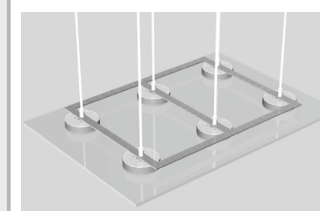
PEEK material is used for the pad adsorption surface. Prevents the transfer of rubber constituents

Applicable pad diameter: $\phi 6$ to $\phi 32$



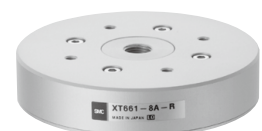
The above images of adsorption marks are sample data. Actual results will depend on the actual conditions.

Related Product












4 Non-contact Gripper

No adsorption marks are left because the vacuum pad does not come into contact with workpieces.



p. 353

	Pad type	Series	Pad form	Material of the adsorption part (Part in contact with workpieces)	Adsorption mark ^{*1}		Operating temperature range (°C)	Static friction ratio ^{*5}
					Condition ^{*2} (Initial value)			
					Visual checking	Vapor method ^{*3}		
Mark-free Pad Series	 Mark-free NBR 	ZP2 ZP3E	Flat type Flat type with groove Bellows type with ribs and groove	Mark-free NBR (Specially treated ^{*4})	●	●	5 to 40	0.15 to 0.2
	 Fluororesin-coated 	ZP2	Flat type with ribs	NBR + Fluororesin coating	●	●	5 to 60	0.1
				FKM + Fluororesin coating	●	●	5 to 100	
	 Resin attachment 	ZP2	Applicable for the bellows type	PEEK	●	●	5 to 40	0.15 to 0.2
			Conductive PEEK (Volume resistivity: 1×10 ⁶ Ωcm)	●	●			
	 Non-contact gripper 			—	●	●	Standard: -5 to 60 (No freezing)	—
Standard	ZP Series (Standard material) 			NBR FKM Conductive NBR/ Silicone rubber	×	×	—	—
				Silicone rubber Urethane rubber	○	×		

Adsorption mark characteristics [●: Little or no influence ○: Can be used depending on the conditions ×: Not suitable]

- *1 **Adsorption mark** ————— Indicates the transfer of rubber constituents from the pad
- *2 **Condition** ————— Visual evaluation of the adsorption mark
- *3 **Vapor method** ————— Method of applying vapor to workpieces to visually check for adsorption marks
- *4 **Specially treated** ————— The NBR is specially treated to modify and reduce the transfer of rubber constituents.
- *5 **Static friction ratio** ————— Static friction ratio when a workpiece (glass) is adsorbed by the pad (NBR = 1 as a benchmark)
When a cyclone pad is used, the pad does not come into contact with workpieces (glass).
The customer needs to install a guide for holding.

* The above table is only for reference when selecting a pad.
Values and evaluation are reference data only. Preparatory testing under actual operating conditions is recommended.

Cleaning method [Mark-free NBR pad/Fluororesin-coated pad/Resin attachment]

- Always clean the product before operation and when carrying out regular maintenance.
- 1) Hold a part other than the adsorption surface.
 - * Non particle-generating vinyl gloves are recommended.
- 2) Soak a non particle-generating cloth in 2-propanol (isopropyl alcohol) (purity > 99.5%).
 - * Please use the solution recommended above.
- 3) Wipe the adsorption surface (pad/resin attachment) and the part that comes into contact with workpieces.
- 4) Dry with clean air blow. (Or, wipe again with a dry, non particle-generating cloth.)

Model Selection

For Special Applications

Mark-free

For Film Adsorption

Multistage

Flat

Nozzle

Sponge

For Disk Adsorption

For Panel Holding

Ball Spine Buffer

Construction

Mounting Bracket Assembly

Precautions



Mark-free Pad

Symbol/Form

Pad diameter $\varnothing 4, \varnothing 6, \varnothing 8, \varnothing 10, \varnothing 16, \varnothing 25, \varnothing 32, \varnothing 40, \varnothing 50$

U: Flat type

- Pad which reduces the number of adsorption marks left on workpieces by the rubber
- The pad is made from mark-free NBR, and the NBR is then specially treated to minimize the transfer of rubber constituents to workpieces.

The mounting bracket assembly (adapter, buffer) is the same as that of the ZP series. Refer to the following pages and order it separately.

Mounting Bracket Part Nos.

Adapter Assembly	p. 121 to 123
Buffer Assembly	p. 124 to 126
Lock Ring Unit	p. 31

How to Order

Pad unit **ZP2-04 UCL-X19**



Pad diameter

Symbol	Pad diameter
04	$\varnothing 4$
06	$\varnothing 6$
08	$\varnothing 8$
10	$\varnothing 10$
16	$\varnothing 16$
25	$\varnothing 25$
32	$\varnothing 32$
40	$\varnothing 40$
50	$\varnothing 50$

With/Without lock ring

Nil	With lock ring
X19	Without lock ring *1

*1 $\varnothing 10$ or larger

Pad material

Symbol	Material
CL	Mark-free NBR

Pad form

Symbol	Form
U	Flat type

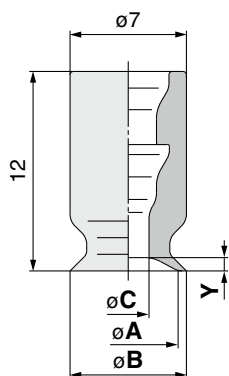
* The lock ring is shipped together but does not come assembled.

Dimensions: Pad Unit

* The dimensions of the model with a mounting bracket are the same as those of the ZP series. Refer to the following pages.

With Adapter	p. 33 to 42
With Buffer	p. 43 to 49

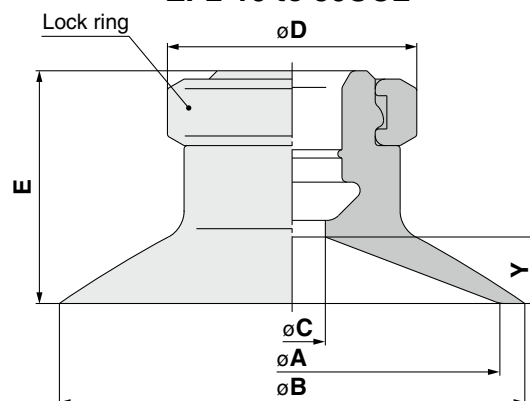
ZP2-04 to 08UCL



Dimensions

Model	A	B	C	Y
ZP2-04UCL	4	4.8	1.6	0.8
ZP2-06UCL	6	7	2.5	
ZP2-08UCL	8	9		1

ZP2-10 to 50UCL



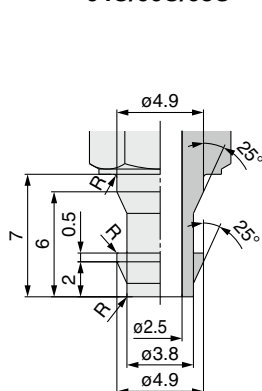
Dimensions

Model	A	B	C	D	E	Y
ZP2-10UCL	10	12	4	13	12	3
ZP2-16UCL	16	18		12.5	3.5	
ZP2-25UCL	25	28	7	15	14	4
ZP2-32UCL	32	35		14.5	4.5	
ZP2-40UCL	40	43	18	18.5	6.5	
ZP2-50UCL	50	53	19.5	7.5		

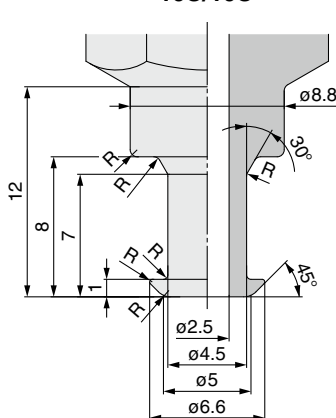
Adapter Mounting Dimensions

If an adapter will be made by the customer, design the adapter with the dimensions shown below.

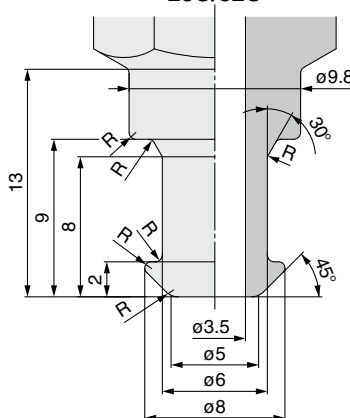
Applicable pad 04U/06U/08U



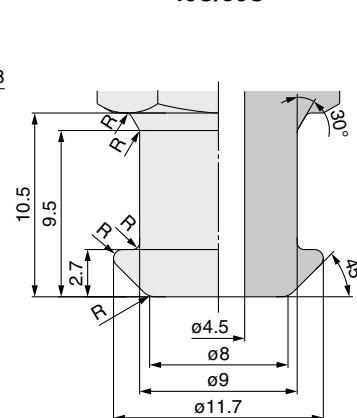
Applicable pad 10U/16U



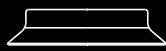
Applicable pad 25U/32U



Applicable pad 40U/50U



* The R part has to be smooth with no corners.



Mark-free Pad/High Rigidity

Symbol/Form

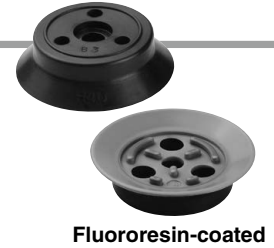
H: Flat type with ribs

Pad diameter $\varnothing 40, \varnothing 50, \varnothing 63, \varnothing 80, \varnothing 100, \varnothing 125$

- Pad which reduces the number of adsorption marks left on workpieces by the rubber
- The pad is made from mark-free NBR, and the NBR is then specially treated to minimize the transfer of rubber constituents to workpieces.
- Prevents the rubber constituents of the pad from transferring to workpieces by baking a fluororesin sheet to the adsorption surface

How to Order

Pad unit **ZP2-40 H CL**



Fluororesin-coated

Pad diameter

Symbol	Pad diameter
40	$\varnothing 40$
50	$\varnothing 50$
63	$\varnothing 63$
80	$\varnothing 80$
100	$\varnothing 100$
125	$\varnothing 125$

Pad form

Symbol	Form
H	High rigidity (Flat type with ribs)

Pad material

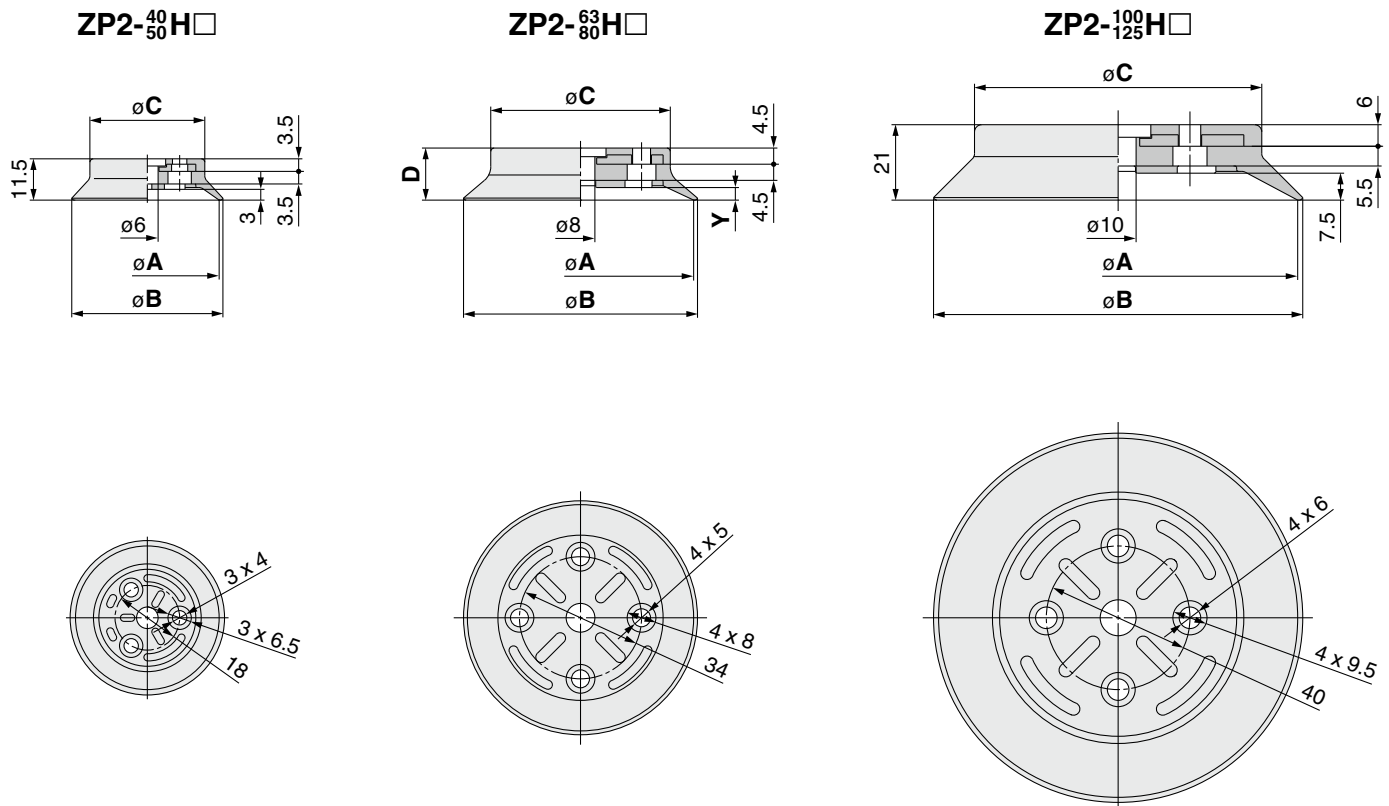
Symbol	Material
CL	Mark-free NBR
NT	NBR + Fluororesin coating
FT	FKM + Fluororesin coating

For the mounting bracket assembly, refer to the following pages and order it separately.

Mounting Bracket Part Nos./Dimensions

Adapter Assembly	p. 255, 256
Buffer Assembly	p. 257 to 260
Ball Joint Type	p. 261 to 263

Dimensions: Pad Unit



Dimensions

Model	A	B	C
ZP2-40H□	40	42	32
ZP2-50H□	50	53	42

Dimensions

Model	A	B	C	D	Y
ZP2-63H□	63	65	50	14.5	3.5
ZP2-80H□	80	82	61	16.5	4.5

Dimensions

Model	A	B	C
ZP2-100H□	100	103	80
ZP2-125H□	125	128	104

Model Selection

For Special Applications

Mark-free

For Film Adsorption

Multistage

Flat

Nozzle

Sponge

For Disk Adsorption

For Panel Holding

Ball Spine Buffer

Construction

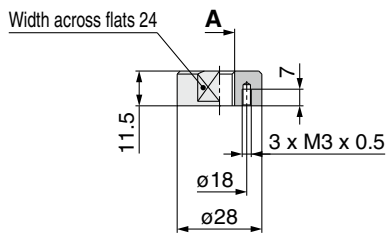
Mounting Bracket Assembly

Precautions

Mark-free Pad/High Rigidity *ZP2 Series* Mounting Bracket Assembly

Adapter Assembly

Adapter assembly part no.	Applicable pad part no.
ZPA-T1-B8	ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW
ZPA-T1-B10	

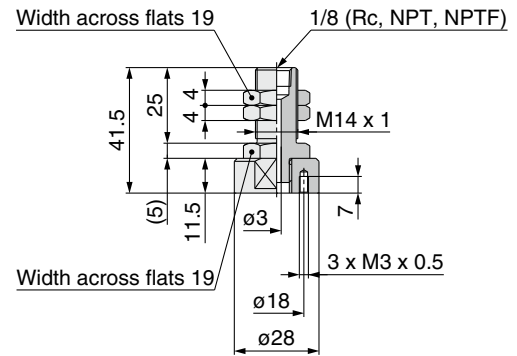


Dimensions

Part no.	A
ZPA-T1-B8	M8 x 1.25
ZPA-T1-B10	M10 x 1.5

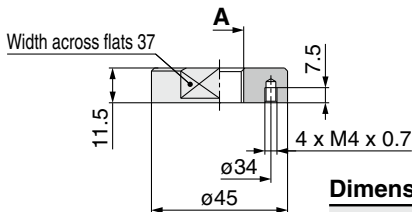
* With three M3 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-T1-B01	ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW
ZPA-T1-N01	
ZPA-T1-T01	



* With three M3 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-T2-B8	ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)
ZPA-T2-B10	
ZPA-T2-B12	
ZPA-T2-B16	

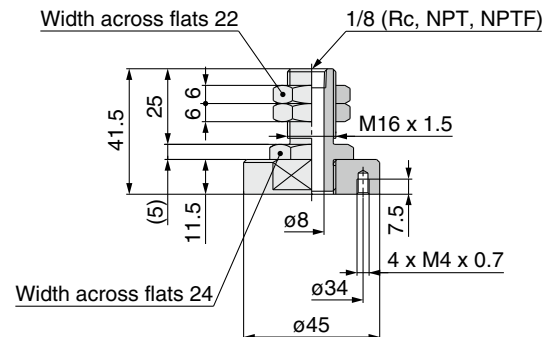


Dimensions

Part no.	A
ZPA-T2-B8	M8 x 1.25
ZPA-T2-B10	M10 x 1.5
ZPA-T2-B12	M12 x 1.75
ZPA-T2-B16	M16 x 1.5

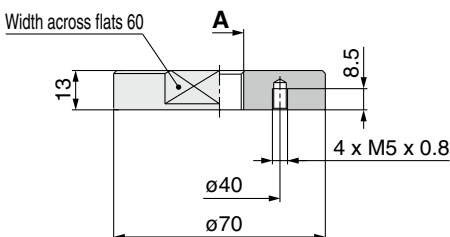
* With four M4 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-T2-B01	ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)
ZPA-T2-N01	
ZPA-T2-T01	



* With four M4 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-T3-B12	ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)
ZPA-T3-B16	

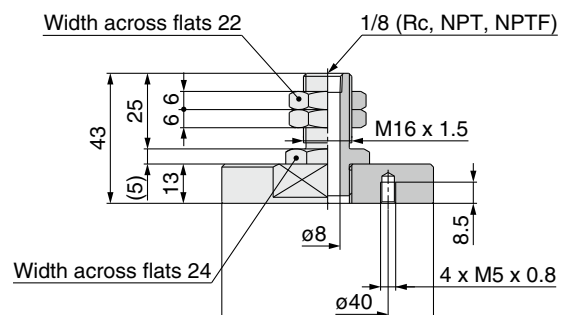


Dimensions

Part no.	A
ZPA-T3-B12	M12 x 1.75
ZPA-T3-B16	M16 x 1.5

* With four M5 bolts

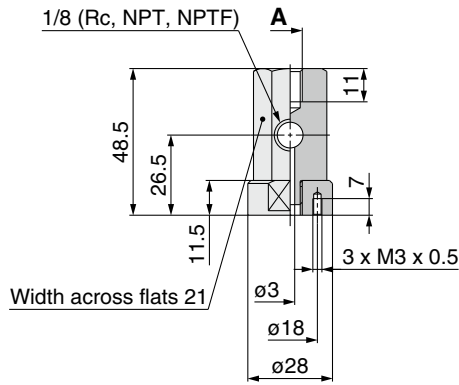
Adapter assembly part no.	Applicable pad part no.
ZPA-T3-B01	ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)
ZPA-T3-N01	
ZPA-T3-T01	



* With four M5 bolts

Adapter Assembly

Adapter assembly part no.	Applicable pad part no.
ZPA-X1-B01-B8	ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW
ZPA-X1-N01-B8	
ZPA-X1-T01-B8	
ZPA-X1-B01-B10	
ZPA-X1-N01-B10	
ZPA-X1-T01-B10	

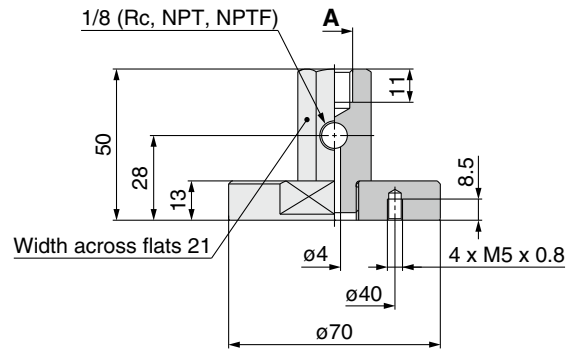


Dimensions

Part no.	A
ZPA-X1-□01-B8	M8 x 1.25
ZPA-X1-□01-B10	M10 x 1.5

* With three M3 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-X3-B01-B10	ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)
ZPA-X3-N01-B10	
ZPA-X3-T01-B10	
ZPA-X3-B01-B12	
ZPA-X3-N01-B12	
ZPA-X3-T01-B12	

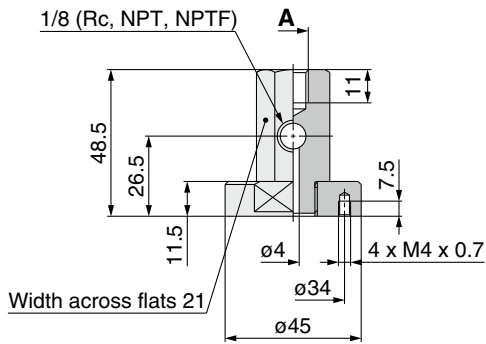


Dimensions

Part no.	A
ZPA-X3-□01-B10	M10 x 1.5
ZPA-X3-□01-B12	M12 x 1.75

* With four M5 bolts

Adapter assembly part no.	Applicable pad part no.
ZPA-X2-B01-B10	ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)
ZPA-X2-N01-B10	
ZPA-X2-T01-B10	
ZPA-X2-B01-B12	
ZPA-X2-N01-B12	
ZPA-X2-T01-B12	



Dimensions

Part no.	A
ZPA-X2-□01-B10	M10 x 1.5
ZPA-X2-□01-B12	M12 x 1.75

* With four M4 bolts

Model Selection

For Special Applications

Mark-free

For Film Adsorption

Multistage

Flat

Nozzle

Sponge

For Disk Adsorption

For Panel Holding

Ball Spine Buffer

Construction

Mounting Bracket Assembly

Precautions

■ Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no. Buffer body (Material: Aluminum alloy)		Applicable pad part no. ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW												
ZPB-T1J25-B01														
ZPB-T1J25-N01														
ZPB-T1J25-T01														
ZPB-T1J50-B01														
ZPB-T1J50-N01														
ZPB-T1J50-T01														
ZPB-T1J75-B01														
ZPB-T1J75-N01														
ZPB-T1J75-T01														
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Part no.</th> <th style="width: 20%;">A</th> <th style="width: 20%;">B</th> </tr> </thead> <tbody> <tr> <td>ZPB-T1J25-□01</td> <td>40</td> <td>107</td> </tr> <tr> <td>ZPB-T1J50-□01</td> <td>75</td> <td>142</td> </tr> <tr> <td>ZPB-T1J75-□01</td> <td>111</td> <td>178</td> </tr> </tbody> </table> <p>* With three M3 bolts</p>	Part no.	A	B	ZPB-T1J25-□01	40	107	ZPB-T1J50-□01	75	142	ZPB-T1J75-□01	111	178
Part no.	A	B												
ZPB-T1J25-□01	40	107												
ZPB-T1J50-□01	75	142												
ZPB-T1J75-□01	111	178												

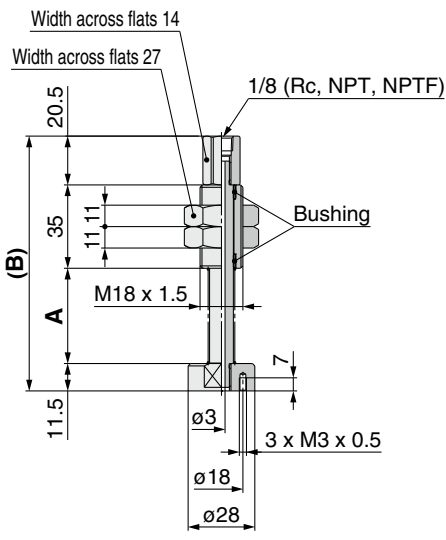
Buffer assembly part no. Buffer body (Material: Aluminum alloy)		Applicable pad part no. ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)												
ZPB-T2J25-B01														
ZPB-T2J25-N01														
ZPB-T2J25-T01														
ZPB-T2J50-B01														
ZPB-T2J50-N01														
ZPB-T2J50-T01														
ZPB-T2J75-B01														
ZPB-T2J75-N01														
ZPB-T2J75-T01														
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Part no.</th> <th style="width: 20%;">A</th> <th style="width: 20%;">B</th> </tr> </thead> <tbody> <tr> <td>ZPB-T2J25-□01</td> <td>40</td> <td>107</td> </tr> <tr> <td>ZPB-T2J50-□01</td> <td>75</td> <td>142</td> </tr> <tr> <td>ZPB-T2J75-□01</td> <td>111</td> <td>178</td> </tr> </tbody> </table> <p>* With four M4 bolts</p>	Part no.	A	B	ZPB-T2J25-□01	40	107	ZPB-T2J50-□01	75	142	ZPB-T2J75-□01	111	178
Part no.	A	B												
ZPB-T2J25-□01	40	107												
ZPB-T2J50-□01	75	142												
ZPB-T2J75-□01	111	178												

Buffer assembly part no. Buffer body (Material: Aluminum alloy)		Applicable pad part no. ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)															
ZPB-T3J25-B01																	
ZPB-T3J25-N01																	
ZPB-T3J25-T01																	
ZPB-T3J50-B01																	
ZPB-T3J50-N01																	
ZPB-T3J50-T01																	
ZPB-T3J75-B01																	
ZPB-T3J75-N01																	
ZPB-T3J75-T01																	
ZPB-T3J100-B01																	
ZPB-T3J100-N01																	
ZPB-T3J100-T01																	
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Part no.</th> <th style="width: 20%;">A</th> <th style="width: 20%;">B</th> </tr> </thead> <tbody> <tr> <td>ZPB-T3J25-□01</td> <td>44</td> <td>131</td> </tr> <tr> <td>ZPB-T3J50-□01</td> <td>80</td> <td>167</td> </tr> <tr> <td>ZPB-T3J75-□01</td> <td>120</td> <td>207</td> </tr> <tr> <td>ZPB-T3J100-□01</td> <td>155</td> <td>242</td> </tr> </tbody> </table> <p>* With four M5 bolts</p>	Part no.	A	B	ZPB-T3J25-□01	44	131	ZPB-T3J50-□01	80	167	ZPB-T3J75-□01	120	207	ZPB-T3J100-□01	155	242
Part no.	A	B															
ZPB-T3J25-□01	44	131															
ZPB-T3J50-□01	80	167															
ZPB-T3J75-□01	120	207															
ZPB-T3J100-□01	155	242															

Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-T1JB25-B01	ZPB-T1JF25-B01
ZPB-T1JB25-N01	ZPB-T1JF25-N01
ZPB-T1JB25-T01	ZPB-T1JF25-T01
ZPB-T1JB50-B01	ZPB-T1JF50-B01
ZPB-T1JB50-N01	ZPB-T1JF50-N01
ZPB-T1JB50-T01	ZPB-T1JF50-T01
ZPB-T1JB75-B01	ZPB-T1JF75-B01
ZPB-T1JB75-N01	ZPB-T1JF75-N01
ZPB-T1JB75-T01	ZPB-T1JF75-T01

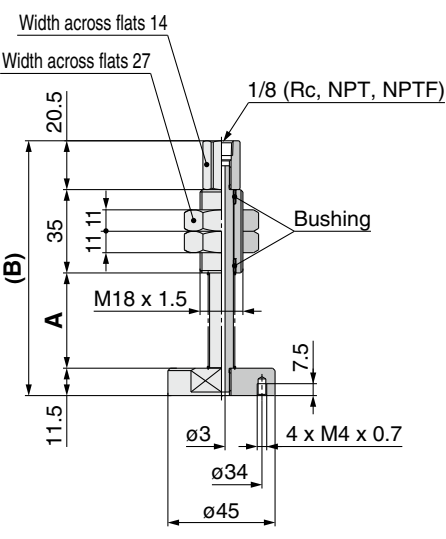


Applicable pad part no.
ZP2-40H(CL/NT/FT)
ZP2-50H(CL/NT/FT)
ZP2-3050HW

Dimensions		
Part no.	A	B
ZPB-T1(JB/JF)25-□01	40	107
ZPB-T1(JB/JF)50-□01	75	142
ZPB-T1(JB/JF)75-□01	111	178

* With three M3 bolts

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-T2JB25-B01	ZPB-T2JF25-B01
ZPB-T2JB25-N01	ZPB-T2JF25-N01
ZPB-T2JB25-T01	ZPB-T2JF25-T01
ZPB-T2JB50-B01	ZPB-T2JF50-B01
ZPB-T2JB50-N01	ZPB-T2JF50-N01
ZPB-T2JB50-T01	ZPB-T2JF50-T01
ZPB-T2JB75-B01	ZPB-T2JF75-B01
ZPB-T2JB75-N01	ZPB-T2JF75-N01
ZPB-T2JB75-T01	ZPB-T2JF75-T01

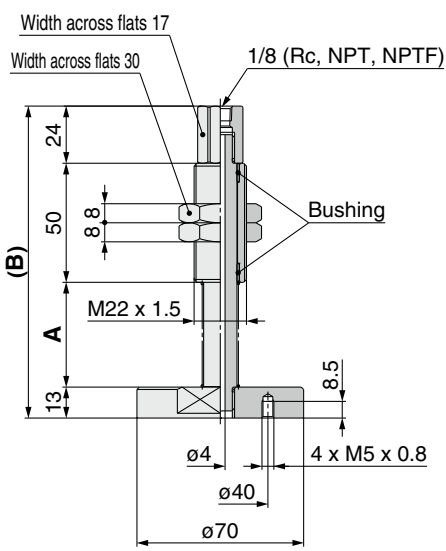


Applicable pad part no.
ZP2-63H(CL/NT/FT)
ZP2-80H(CL/NT/FT)

Dimensions		
Part no.	A	B
ZPB-T2(JB/JF)25-□01	40	107
ZPB-T2(JB/JF)50-□01	75	142
ZPB-T2(JB/JF)75-□01	111	178

* With four M4 bolts

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-T3JB25-B01	ZPB-T3JF25-B01
ZPB-T3JB25-N01	ZPB-T3JF25-N01
ZPB-T3JB25-T01	ZPB-T3JF25-T01
ZPB-T3JB50-B01	ZPB-T3JF50-B01
ZPB-T3JB50-N01	ZPB-T3JF50-N01
ZPB-T3JB50-T01	ZPB-T3JF50-T01
ZPB-T3JB75-B01	ZPB-T3JF75-B01
ZPB-T3JB75-N01	ZPB-T3JF75-N01
ZPB-T3JB75-T01	ZPB-T3JF75-T01
ZPB-T3JB100-B01	ZPB-T3JF100-B01
ZPB-T3JB100-N01	ZPB-T3JF100-N01
ZPB-T3JB100-T01	ZPB-T3JF100-T01



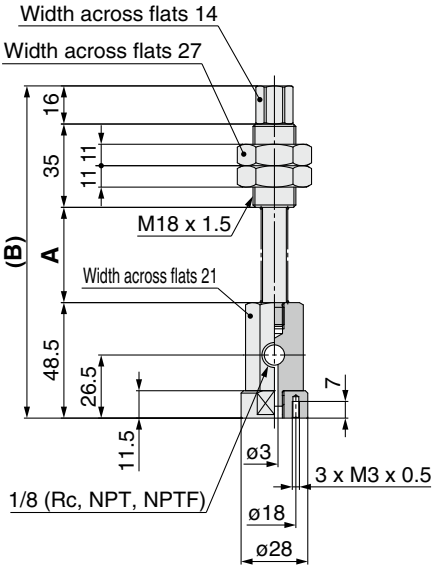
Applicable pad part no.
ZP2-100H(CL/NT/FT)
ZP2-125H(CL/NT/FT)

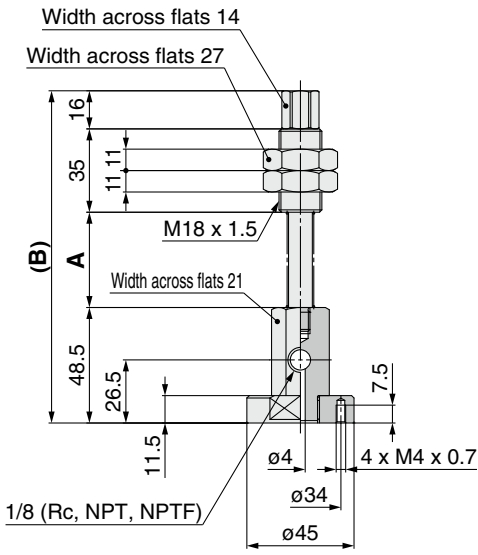
Dimensions		
Part no.	A	B
ZPB-T3(JB/JF)25-□01	44	131
ZPB-T3(JB/JF)50-□01	80	167
ZPB-T3(JB/JF)75-□01	120	207
ZPB-T3(JB/JF)100-□01	155	242

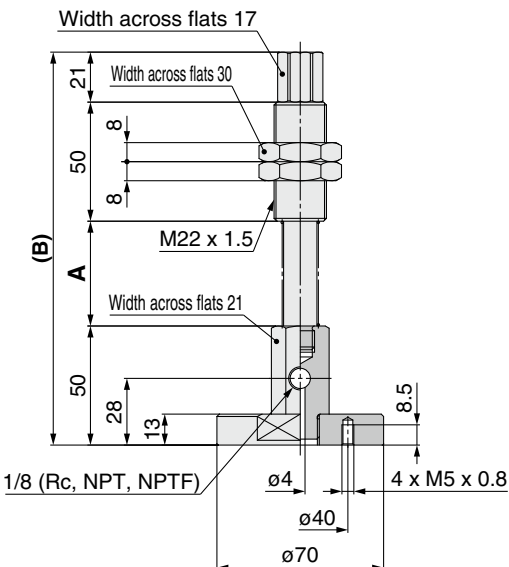
* With four M5 bolts

■ Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no. Buffer body (Material: Aluminum alloy)	 <p>Width across flats 14 Width across flats 27 M18 x 1.5 Width across flats 21 3 x M3 x 0.5 1/8 (Rc, NPT, NPTF)</p>	Applicable pad part no. ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW												
ZPB-X1J25-B01 ZPB-X1J25-N01 ZPB-X1J25-T01 ZPB-X1J50-B01 ZPB-X1J50-N01 ZPB-X1J50-T01 ZPB-X1J75-B01 ZPB-X1J75-N01 ZPB-X1J75-T01														
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Part no.</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>ZPB-X1J25-□01</td> <td>40</td> <td>139.5</td> </tr> <tr> <td>ZPB-X1J50-□01</td> <td>75</td> <td>174.5</td> </tr> <tr> <td>ZPB-X1J75-□01</td> <td>111</td> <td>210.5</td> </tr> </tbody> </table> <p>* With three M3 bolts</p>	Part no.	A	B	ZPB-X1J25-□01	40	139.5	ZPB-X1J50-□01	75	174.5	ZPB-X1J75-□01	111	210.5
Part no.	A	B												
ZPB-X1J25-□01	40	139.5												
ZPB-X1J50-□01	75	174.5												
ZPB-X1J75-□01	111	210.5												

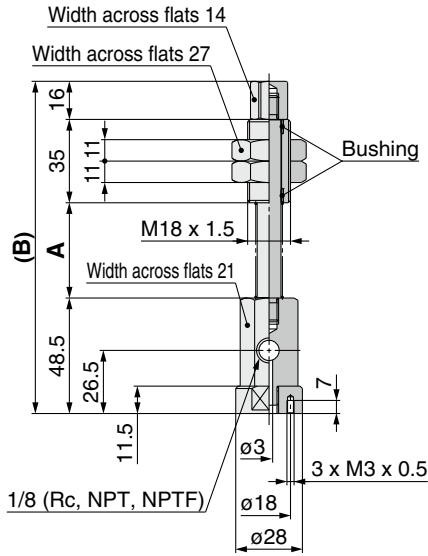
Buffer assembly part no. Buffer body (Material: Aluminum alloy)	 <p>Width across flats 14 Width across flats 27 M18 x 1.5 Width across flats 21 4 x M4 x 0.7 1/8 (Rc, NPT, NPTF)</p>	Applicable pad part no. ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)												
ZPB-X2J25-B01 ZPB-X2J25-N01 ZPB-X2J25-T01 ZPB-X2J50-B01 ZPB-X2J50-N01 ZPB-X2J50-T01 ZPB-X2J75-B01 ZPB-X2J75-N01 ZPB-X2J75-T01														
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Part no.</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>ZPB-X2J25-□01</td> <td>40</td> <td>139.5</td> </tr> <tr> <td>ZPB-X2J50-□01</td> <td>75</td> <td>174.5</td> </tr> <tr> <td>ZPB-X2J75-□01</td> <td>111</td> <td>210.5</td> </tr> </tbody> </table> <p>* With four M4 bolts</p>	Part no.	A	B	ZPB-X2J25-□01	40	139.5	ZPB-X2J50-□01	75	174.5	ZPB-X2J75-□01	111	210.5
Part no.	A	B												
ZPB-X2J25-□01	40	139.5												
ZPB-X2J50-□01	75	174.5												
ZPB-X2J75-□01	111	210.5												

Buffer assembly part no. Buffer body (Material: Aluminum alloy)	 <p>Width across flats 17 Width across flats 30 M22 x 1.5 Width across flats 21 4 x M5 x 0.8 1/8 (Rc, NPT, NPTF)</p>	Applicable pad part no. ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)															
ZPB-X3J25-B01 ZPB-X3J25-N01 ZPB-X3J25-T01 ZPB-X3J50-B01 ZPB-X3J50-N01 ZPB-X3J50-T01 ZPB-X3J75-B01 ZPB-X3J75-N01 ZPB-X3J75-T01 ZPB-X3J100-B01 ZPB-X3J100-N01 ZPB-X3J100-T01																	
		Dimensions <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Part no.</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>ZPB-X3J25-□01</td> <td>44</td> <td>165</td> </tr> <tr> <td>ZPB-X3J50-□01</td> <td>80</td> <td>201</td> </tr> <tr> <td>ZPB-X3J75-□01</td> <td>120</td> <td>241</td> </tr> <tr> <td>ZPB-X3J100-□01</td> <td>155</td> <td>276</td> </tr> </tbody> </table> <p>* With four M5 bolts</p>	Part no.	A	B	ZPB-X3J25-□01	44	165	ZPB-X3J50-□01	80	201	ZPB-X3J75-□01	120	241	ZPB-X3J100-□01	155	276
Part no.	A	B															
ZPB-X3J25-□01	44	165															
ZPB-X3J50-□01	80	201															
ZPB-X3J75-□01	120	241															
ZPB-X3J100-□01	155	276															

Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-X1JB25-B01	ZPB-X1JF25-B01
ZPB-X1JB25-N01	ZPB-X1JF25-N01
ZPB-X1JB25-T01	ZPB-X1JF25-T01
ZPB-X1JB50-B01	ZPB-X1JF50-B01
ZPB-X1JB50-N01	ZPB-X1JF50-N01
ZPB-X1JB50-T01	ZPB-X1JF50-T01
ZPB-X1JB75-B01	ZPB-X1JF75-B01
ZPB-X1JB75-N01	ZPB-X1JF75-N01
ZPB-X1JB75-T01	ZPB-X1JF75-T01



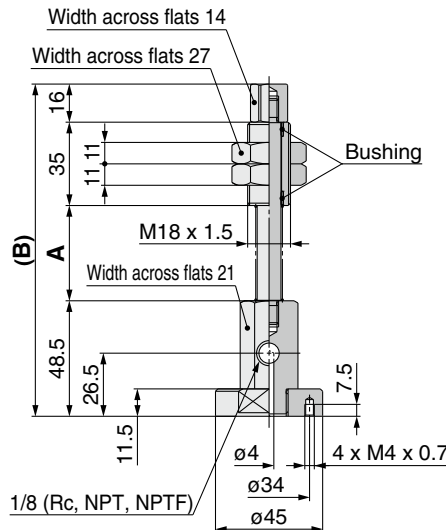
Applicable pad part no.
ZP2-40H(CL/NT/FT)
ZP2-50H(CL/NT/FT)
ZP2-3050HW

Dimensions

Part no.	A	B
ZPB-X1(JB/JF)25-□01	40	139.5
ZPB-X1(JB/JF)50-□01	75	174.5
ZPB-X1(JB/JF)75-□01	111	210.5

* With three M3 bolts

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-X2JB25-B01	ZPB-X2JF25-B01
ZPB-X2JB25-N01	ZPB-X2JF25-N01
ZPB-X2JB25-T01	ZPB-X2JF25-T01
ZPB-X2JB50-B01	ZPB-X2JF50-B01
ZPB-X2JB50-N01	ZPB-X2JF50-N01
ZPB-X2JB50-T01	ZPB-X2JF50-T01
ZPB-X2JB75-B01	ZPB-X2JF75-B01
ZPB-X2JB75-N01	ZPB-X2JF75-N01
ZPB-X2JB75-T01	ZPB-X2JF75-T01



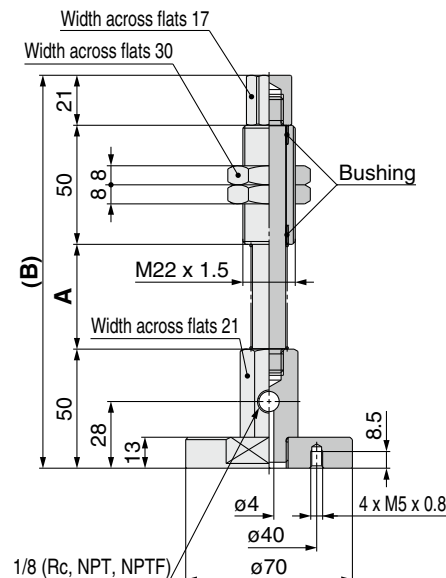
Applicable pad part no.
ZP2-63H(CL/NT/FT)
ZP2-80H(CL/NT/FT)

Dimensions

Part no.	A	B
ZPB-X2(JB/JF)25-□01	40	139.5
ZPB-X2(JB/JF)50-□01	75	174.5
ZPB-X2(JB/JF)75-□01	111	210.5

* With four M4 bolts

Buffer assembly part no.	
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)
ZPB-X3JB25-B01	ZPB-X3JF25-B01
ZPB-X3JB25-N01	ZPB-X3JF25-N01
ZPB-X3JB25-T01	ZPB-X3JF25-T01
ZPB-X3JB50-B01	ZPB-X3JF50-B01
ZPB-X3JB50-N01	ZPB-X3JF50-N01
ZPB-X3JB50-T01	ZPB-X3JF50-T01
ZPB-X3JB75-B01	ZPB-X3JF75-B01
ZPB-X3JB75-N01	ZPB-X3JF75-N01
ZPB-X3JB75-T01	ZPB-X3JF75-T01
ZPB-X3JB100-B01	ZPB-X3JF100-B01
ZPB-X3JB100-N01	ZPB-X3JF100-N01
ZPB-X3JB100-T01	ZPB-X3JF100-T01



Applicable pad part no.
ZP2-100H(CL/NT/FT)
ZP2-125H(CL/NT/FT)

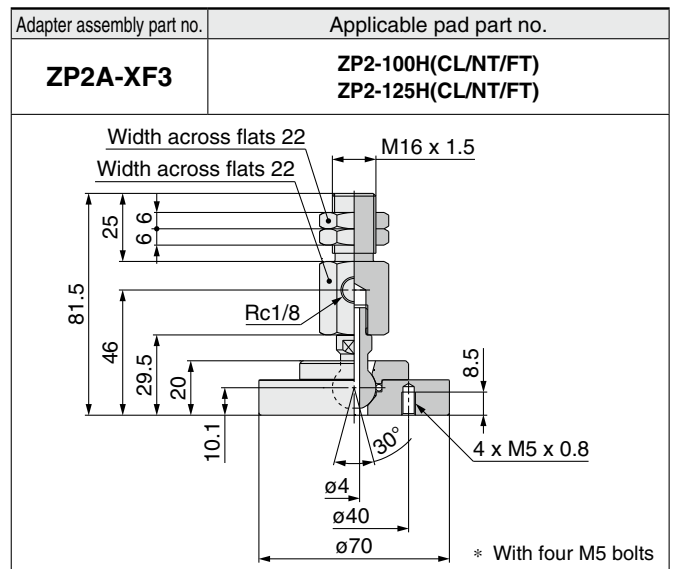
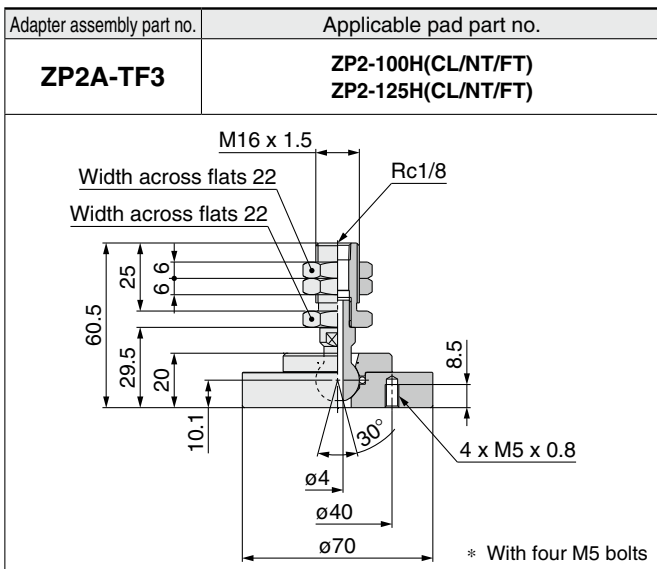
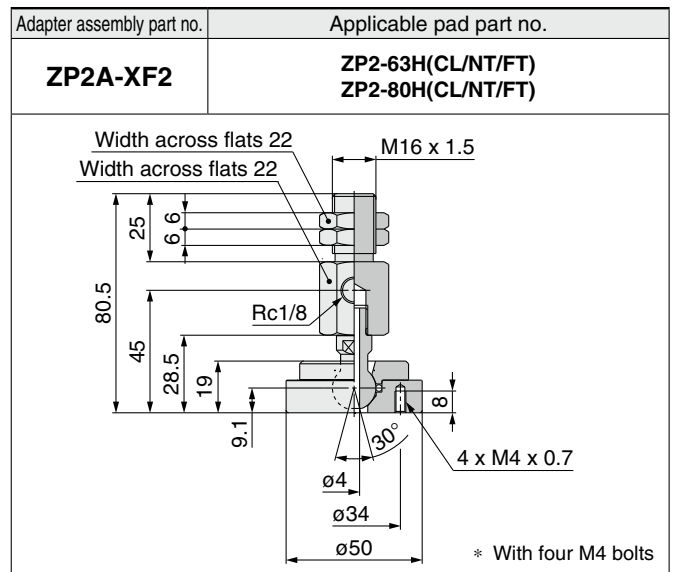
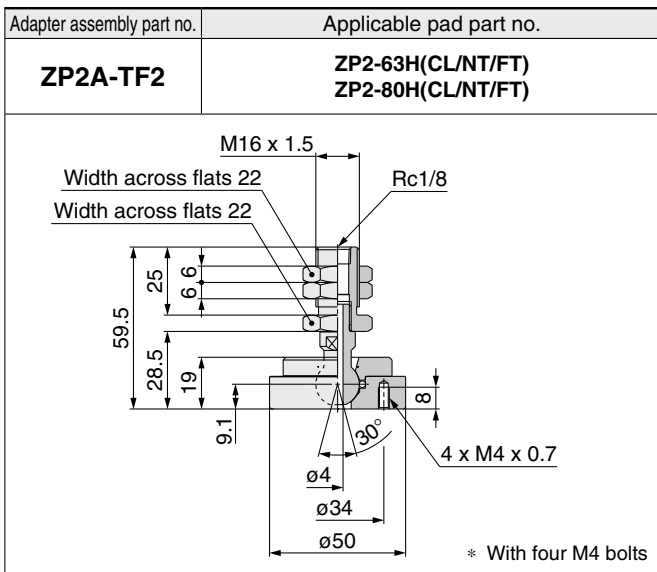
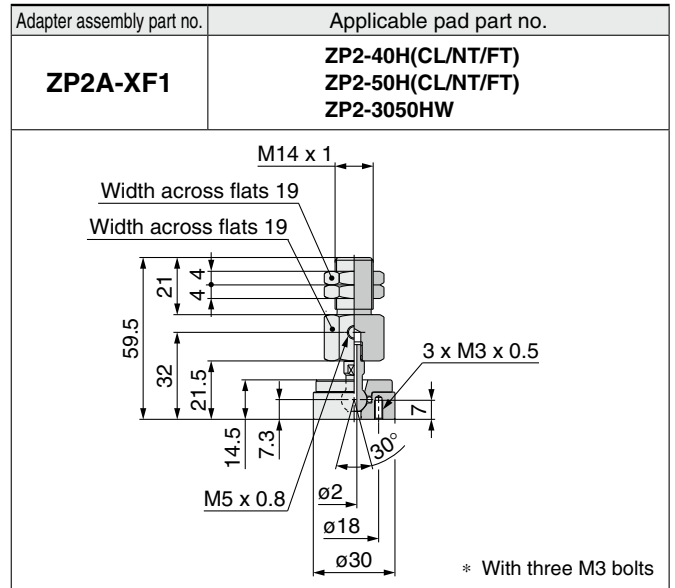
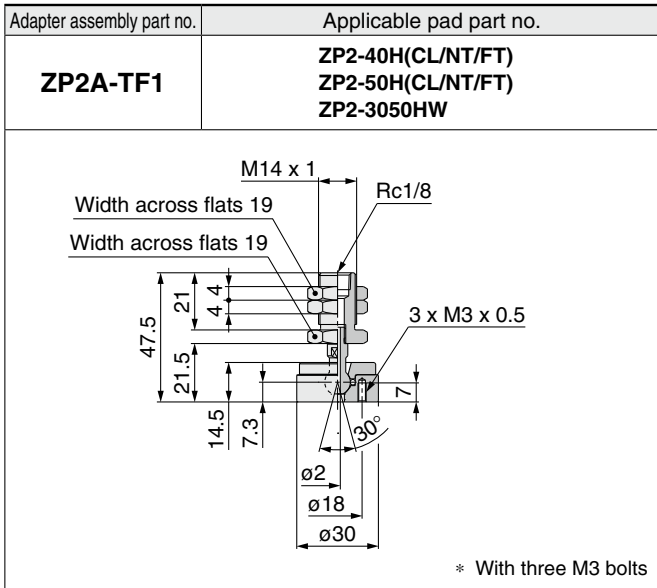
Dimensions

Part no.	A	B
ZPB-X3(JB/JF)25-□01	44	165
ZPB-X3(JB/JF)50-□01	80	201
ZPB-X3(JB/JF)75-□01	120	241
ZPB-X3(JB/JF)100-□01	155	276

* With four M5 bolts

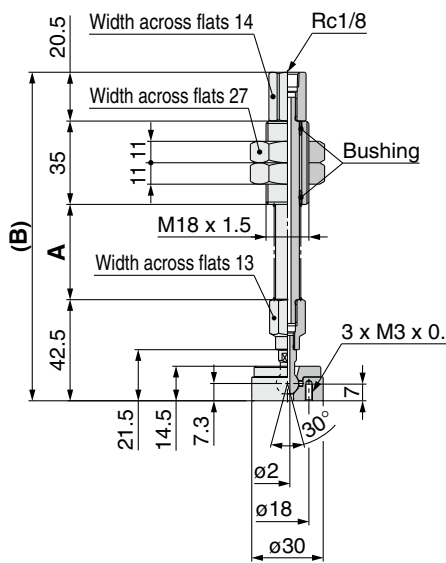
Mark-free Pad/High Rigidity *ZP2 Series* ^{Ball Joint Type} Mounting Bracket Assembly

Adapter Assembly



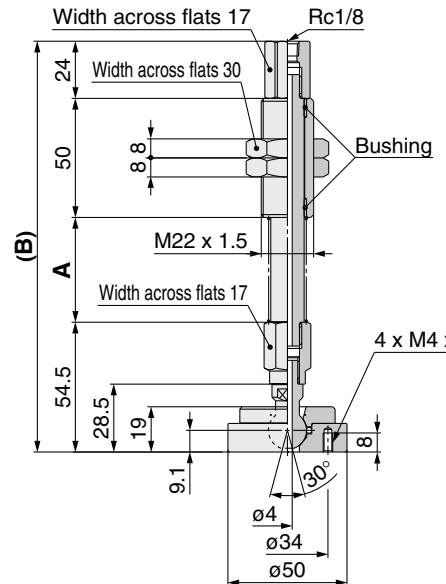
Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no.			Applicable pad part no.		
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)		ZP2-40H(CL/NT/FT)		
ZP2B-TF1JB25	ZP2B-TF1JF25		ZP2-50H(CL/NT/FT)		
ZP2B-TF1JB50	ZP2B-TF1JF50		ZP2-3050HW		
ZP2B-TF1JB75	ZP2B-TF1JF75				

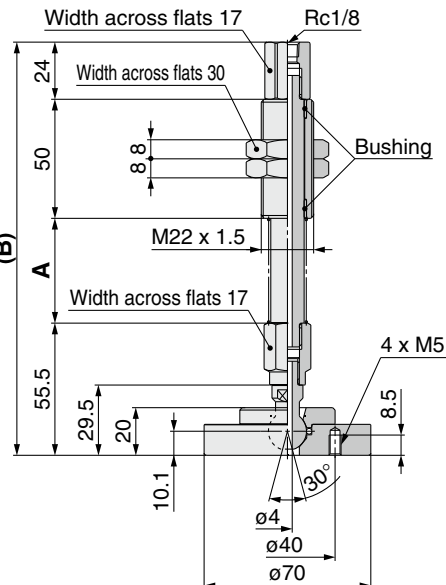
Dimensions		
Part no.	A	B
ZP2B-TF1(JB/JF)25	40	138
ZP2B-TF1(JB/JF)50	75	173
ZP2B-TF1(JB/JF)75	111	209

* With three M3 bolts

Buffer assembly part no.			Applicable pad part no.		
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)		ZP2-63H(CL/NT/FT)		
ZP2B-TF2JB25	ZP2B-TF2JF25		ZP2-80H(CL/NT/FT)		
ZP2B-TF2JB50	ZP2B-TF2JF50				
ZP2B-TF2JB75	ZP2B-TF2JF75				
ZP2B-TF2JB100	ZP2B-TF2JF100				

Dimensions		
Part no.	A	B
ZP2B-TF2(JB/JF)25	44	172.5
ZP2B-TF2(JB/JF)50	80	208.5
ZP2B-TF2(JB/JF)75	120	248.5
ZP2B-TF2(JB/JF)100	155	283.5

* With four M4 bolts

Buffer assembly part no.			Applicable pad part no.		
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)		ZP2-100H(CL/NT/FT)		
ZP2B-TF3JB25	ZP2B-TF3JF25		ZP2-125H(CL/NT/FT)		
ZP2B-TF3JB50	ZP2B-TF3JF50				
ZP2B-TF3JB75	ZP2B-TF3JF75				
ZP2B-TF3JB100	ZP2B-TF3JF100				

Dimensions		
Part no.	A	B
ZP2B-TF3(JB/JF)25	44	173.5
ZP2B-TF3(JB/JF)50	80	209.5
ZP2B-TF3(JB/JF)75	120	249.5
ZP2B-TF3(JB/JF)100	155	284.5

* With four M5 bolts

Model Selection
 For Special Applications
 Mark-free
 For Film Adsorption
 Multistage
 Flat
 Nozzle
 Sponge
 For Disk Adsorption
 For Panel Holding
 Ball Spine Buffer
 Construction
 Mounting Bracket Assembly
 Precautions

Buffer Assembly

* Refer to page 343 for nut tightening torque.

Buffer assembly part no.		Applicable pad part no.
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)	
ZP2B-XF1JB25	ZP2B-XF1JF25	ZP2-40H(CL/NT/FT) ZP2-50H(CL/NT/FT) ZP2-3050HW
ZP2B-XF1JB50	ZP2B-XF1JF50	
ZP2B-XF1JB75	ZP2B-XF1JF75	

Dimensions

Part no.	A	B
ZP2B-XF1(JB/JF)25	40	141.5
ZP2B-XF1(JB/JF)50	75	176.5
ZP2B-XF1(JB/JF)75	111	212.5

* With three M3 bolts

Buffer assembly part no.		Applicable pad part no.
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)	
ZP2B-XF2JB25	ZP2B-XF2JF25	ZP2-63H(CL/NT/FT) ZP2-80H(CL/NT/FT)
ZP2B-XF2JB50	ZP2B-XF2JF50	
ZP2B-XF2JB75	ZP2B-XF2JF75	
ZP2B-XF2JB100	ZP2B-XF2JF100	

Dimensions

Part no.	A	B
ZP2B-XF2(JB/JF)25	44	182.5
ZP2B-XF2(JB/JF)50	80	218.5
ZP2B-XF2(JB/JF)75	120	258.5
ZP2B-XF2(JB/JF)100	155	293.5

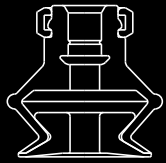
* With four M4 bolts

Buffer assembly part no.		Applicable pad part no.
Buffer body (Material: Brass)	Buffer body (Material: Structural steel)	
ZP2B-XF3JB25	ZP2B-XF3JF25	ZP2-100H(CL/NT/FT) ZP2-125H(CL/NT/FT)
ZP2B-XF3JB50	ZP2B-XF3JF50	
ZP2B-XF3JB75	ZP2B-XF3JF75	
ZP2B-XF3JB100	ZP2B-XF3JF100	

Dimensions

Part no.	A	B
ZP2B-XF3(JB/JF)25	44	183.5
ZP2B-XF3(JB/JF)50	80	219.5
ZP2B-XF3(JB/JF)75	120	259.5
ZP2B-XF3(JB/JF)100	155	294.5

* With four M5 bolts



Resin Attachment

Pad diameter $\varnothing 6, \varnothing 8, \varnothing 10, \varnothing 13, \varnothing 16, \varnothing 20, \varnothing 25, \varnothing 32$

No adsorption marks (rubber constituents) are left on workpieces.

Direct contact between workpieces and the rubber can be avoided by mounting a PEEK attachment inside the bellows pad to prevent the transfer of rubber constituents.

Prevents the pad (rubber) from sticking to workpieces

Ideal for the bellows pad ZP series ($\varnothing 6$ to $\varnothing 32$)

The mounting bracket assembly (adapter) is the same as that of the ZP series. Refer to the following pages and order it separately.

Mounting Bracket Part Nos.

Adapter Assembly p. 121 to 123



How to Order

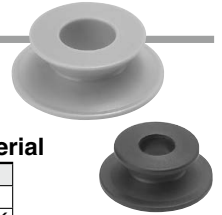
ZP2-06K P

Pad diameter

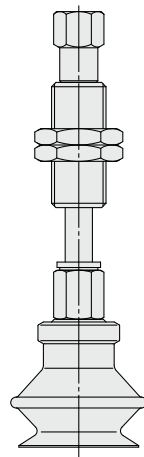
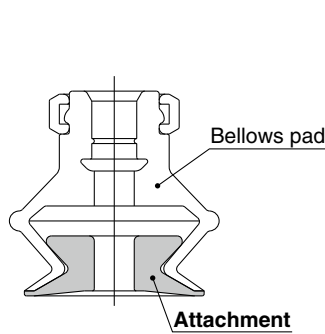
Symbol	Applicable pad
06	ZP06B□
08	ZP08B□
10	ZP10B□
13	ZP13B□
16	ZP16B□
20	ZP20B□
25	ZP25B□
32	ZP32B□

Attachment material

Symbol	Material
P	PEEK
GP	Conductive PEEK



How to Order (When ordering with a pad)



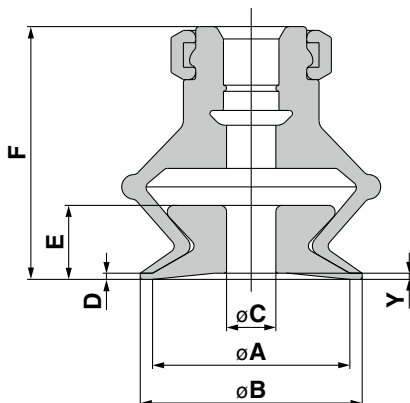
- When ordering with a pad, put "*" below the part number of the pad as shown below. Note that the pad is not delivered with the attachment assembled.
- This attachment can only be mounted inside SMC's standard bellows pads.
- When the attachment is made of conductive PEEK, use conductive material for the pad.

Ordering example **ZPT10BNJ10-B5-A10** ← Bellows pad part no.
 * **ZP2-10KP** ← Resin attachment part no.

Dimensions/Single Unit

* The dimensions of the mounting bracket are the same as the ZP series. Refer to the mounting bracket dimensions on the following pages.

With Adapter p. 69 to 78



Dimensions

Model	Applicable pad	A	B	C	D	E	F	Y
ZP2-06K■	ZP06B□	6	7	1.6	0.5	3	13.5	0.5
ZP2-08K■	ZP08B□	8	9	3		3.5	16.5	
ZP2-10K■	ZP10B□	10	12	3.5		5.5	19	
ZP2-13K■	ZP13B□	13	15	4	1	6	20.5	1
ZP2-16K■	ZP16B□	16	18			8.5	24.5	
ZP2-20K■	ZP20B□	20	22	8		25	30	
ZP2-25K■	ZP25B□	25	27	10	1	11.5	30	
ZP2-32K■	ZP32B□	32	34					

* ■ in the table indicates the attachment material
 * □ in the table indicates the pad material

«Precautions»

- 1) Clean the product before using the attachment.
 This product is not cleaned before shipment. If the product is used in the condition in which it was shipped, residual material may be left on workpieces. Clean before use. If you have any questions, please contact SMC.
- 2) The workpiece contact part of this product is made of resin and, therefore, there may be more vacuum pressure leakage during adsorption compared to general rubber pads. Therefore, maintain as large a flow rate as possible to minimize the pressure drop due to leakage.
- 3) Cannot be used for vacuum retention
- 4) Customers are required to conduct an evaluation to judge whether or not the product should be used.

• If contact with hard material is a problem, do not use this product.



Pads for Special Applications/Mark-free Pad

Specific Product Precautions

Be sure to read this before handling the products.

Refer to page 375 for safety instructions. For vacuum equipment and vacuum pad precautions, refer to pages 376 to 379.

Design

1. Although the adsorption marks (transfer of rubber components to workpieces) left by this product have been minimized compared with the existing rubber pads, be sure to confirm whether they affect the actual workpieces in any way before use.
2. Due to the manufacturing method, a large amount of leakage from the seat portion is more likely to occur in the mark-free pad series compared with common rubber pads.
3. Note that this product cannot be used to hold vacuum.
4. Secure as high a flow rate as possible to suppress the pressure drop caused by leakage to a minimum.
5. The fluororesin-coated pad is a molded product which features an integrated fluororesin sheet and rubber (NBR, FKM) composition. Because of this, the height of the product may decrease due to the deterioration of the rubber and the elongation of the fluororesin sheet after repeated usage. This is assuming that the pads are used for the vertical adsorption of workpieces, with even force being applied to the pad skirts. However, when uneven force is applied to the pads or when an operation which causes the pads to change their shape during adsorption is conducted, such as in the following examples, the pad skirts may become deformed (wrinkled).
 - 1) When the pad contacts a workpiece from a diagonal direction
 - 2) When the pad adsorb an irregularly-shaped workpiece or a workpiece with an uneven surface
 - 3) When the pad is used in a stretched condition due to insufficient lifting force

If any of the problems above occur, please reconsider the application.

6. The resin attachment may cause damage to the vacuum pads if vacuum release air exceeding the max. release flow rate listed in the table below is supplied.

Table) Vacuum Release Air Supply Setting

Pad diameter [mm]	Max. release flow rate [L/min (ANR)]
ø6	20
ø8 to ø32	150