

# Suction Cup

RoHS

Flat Type with Ribs	Bellows Type	ø20, ø25, ø32, ø40, ø50
2.5-Stage Bellows Type		ø20, ø25, ø32, ø40, ø50

**Suitable for the adsorption transfer of corrugated cardboard, etc., requiring abrasion resistance**

**Material: FS61 (Fluoro-based rubber) improves abrasion resistance**

\* More than 4 times the abrasion resistance of SMC's urethane suction cups

**Reduced suction of foreign matter, such as paper particles, due to mesh filter** p. 1

Can be replaced without tools

**2.5-stage bellows type** p. 1

Optional inner ring and retainer

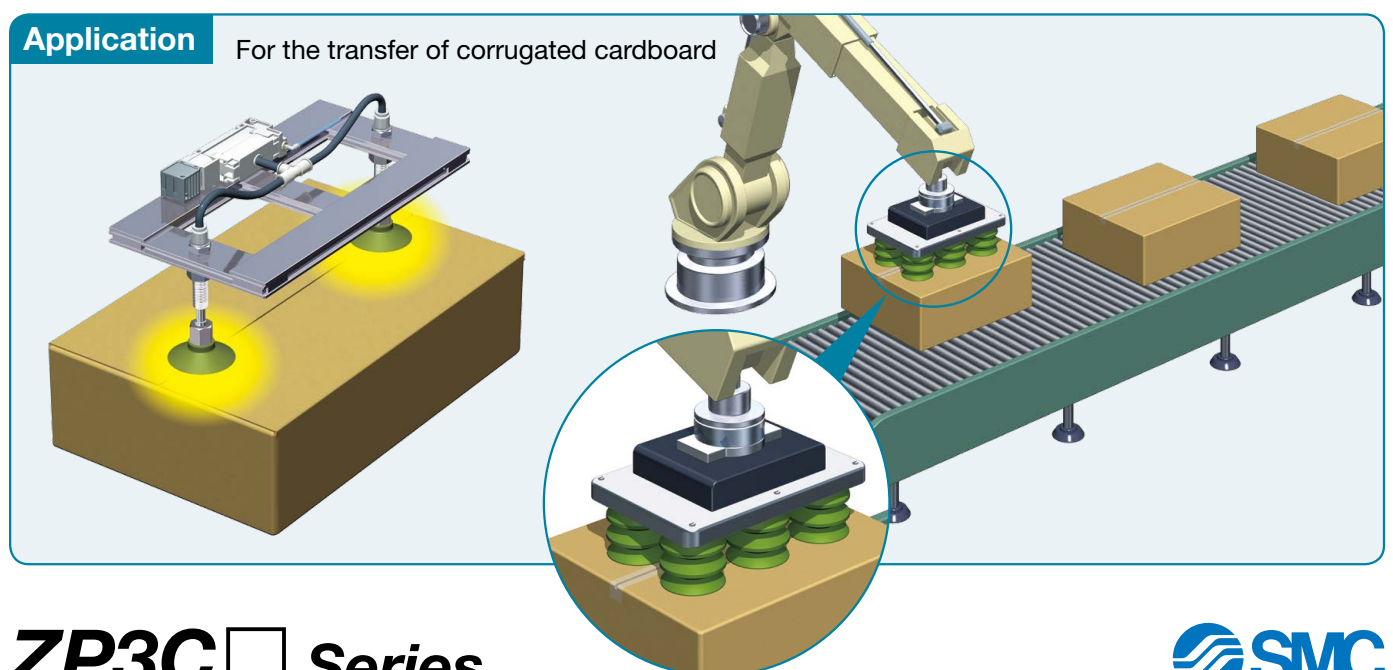
**New**

Sizes ø20 and ø25 have been added for the 2.5-stage bellows type. p. 17



## Application

For the transfer of corrugated cardboard



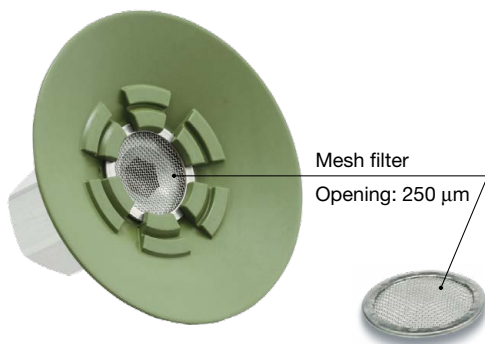
**ZP3C** □ **Series**

**SMC**

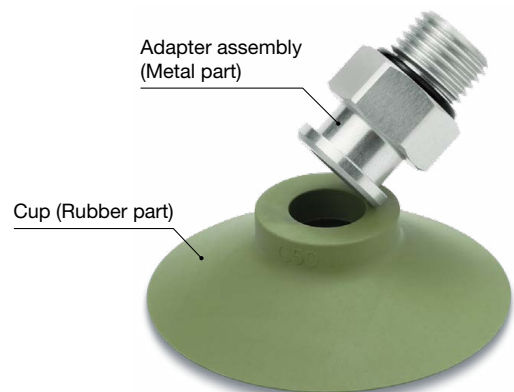
CAT.ES100-177A<sup>A</sup>

### Reduced suction of foreign matter due to mesh filter

- Reduced suction of foreign matter into the vacuum pump and ejector
- The cup and mesh filter can be replaced without tools.

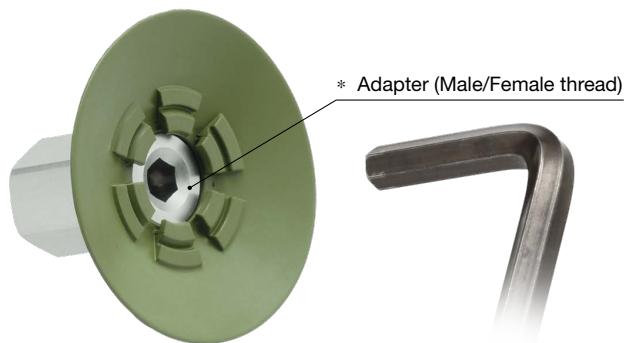


### The separation and disposal of the metal and rubber parts is possible.



### Compatible with 2 types of mounting tools

- Mounting with a hexagon wrench



- Mounting with a standard wrench



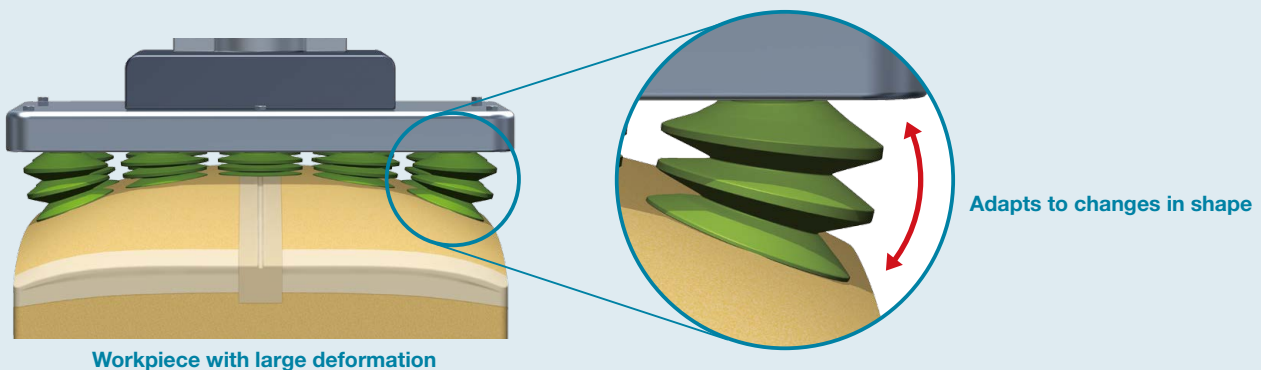
## 2.5-Stage Bellows Type

### The large stroke is suitable for workpieces with:

- Differences in height
- Steps
- Inclined surfaces
- Soft workpieces requiring cushioning

### Adapts to changes in shape after adsorption

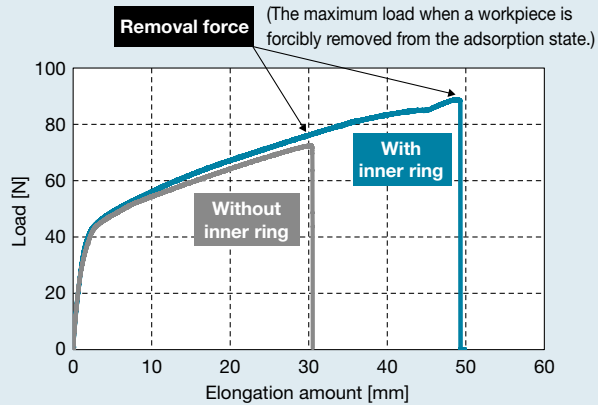
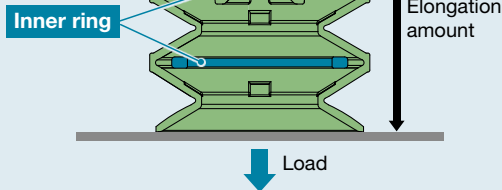
It is effective when adsorbing the corrugated cardboard that has low rigidity and experiences deformation.



## 2.5-Stage Bellows Type

### Optional inner ring

Adding the optional inner rings improves the removal force and adsorption performance on uneven surfaces.

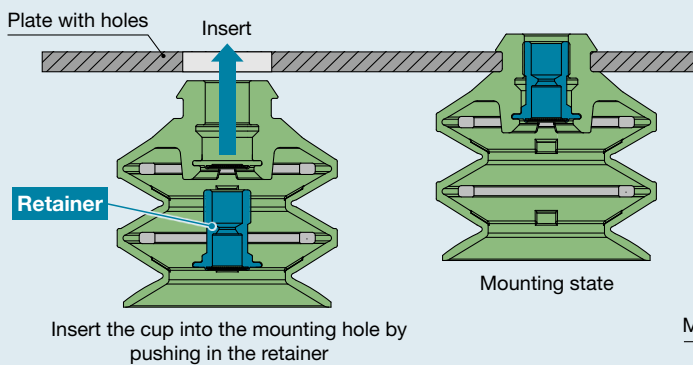


\* For size ø50  
When adsorbing on a dry, flat, and smooth plane surface at -60 kPa of vacuum pressure

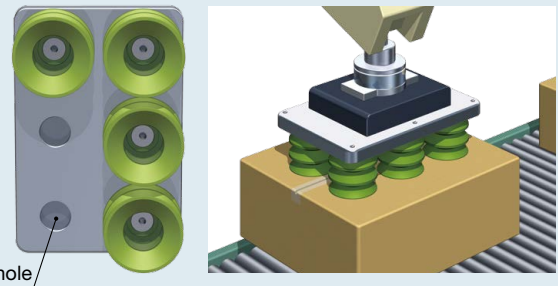


### With retainer

#### Direct installation without tools



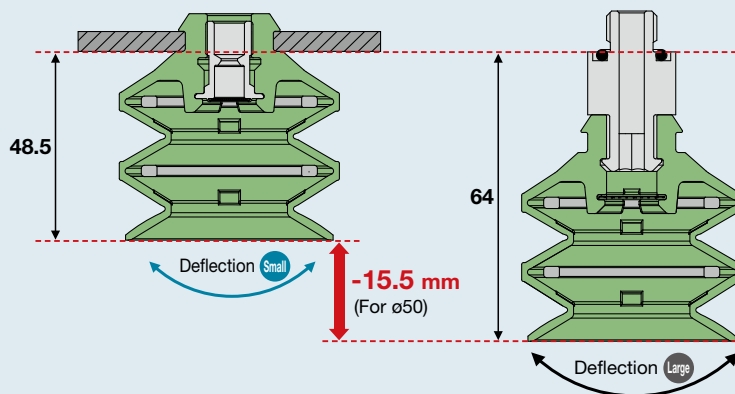
#### Multiple mounting examples



### Reduced height: space saving and reduces deflection of the workpiece during transfer.

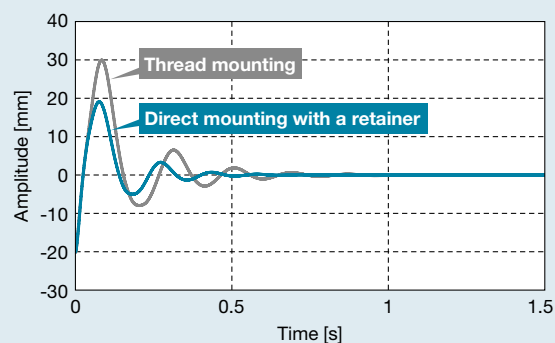
#### Direct mounting with a retainer

#### Thread mounting





### Improved cycle time

Reduced settling time during acceleration/deceleration






## Variations

### Flat Type with Ribs, Bellows Type

Mounting	Type	Vacuum inlet direction	Connection			Vacuum inlet
			Type	Cup diameter		
				ø20, ø25, ø32	ø40, ø50	
<b>With adapter</b> 	Thread mounting	Vertical	Male thread	M8 x 1	M10 x 1	Use the connection thread.
				G1/8	G1/4	
			Female thread	G1/8	G1/4	
<b>With buffer</b> 	Plate mounting	Vertical	Male thread	M14 x 1	M18 x 1.5	Rc1/8
		Lateral				M5 x 0.8

### 2.5-Stage Bellows Type

Mounting	Type	Vacuum inlet direction	Connection			Vacuum inlet
			Type	Cup diameter		
				ø20, ø25, ø32	ø40, ø50	
<b>With adapter</b> 	Thread mounting	Vertical	Male thread	M8 x 1	M10 x 1	Use the connection thread.
				G1/8	G1/4	
			Female thread	G1/8	G1/4	
<b>With buffer</b> 	Plate mounting	Vertical	Male thread	M14 x 1	M18 x 1.5	Rc1/8
		Lateral				M5 x 0.8
<b>With retainer</b> 	Direct mounting	—	Direct mounting onto the plate	Mounting hole dia.: ø13.5 Plate thickness t: 3.0	Mounting hole dia.: ø20.5 Plate thickness t: 3.0	—

# CONTENTS

## Suction Cup

### Flat Type with Ribs

### Bellows Type

#### **ZP3C Series**



#### ● Flat Type with Ribs, Bellows Type

How to Order .....	p. 5
Specifications .....	p. 6
Dimensions .....	p. 7
Construction .....	p. 14
Mounting Bracket Assembly .....	p. 15

### 2.5-Stage Bellows Type

#### **ZP3C2 Series**



#### ● 2.5-Stage Bellows Type

How to Order .....	p. 17
Specifications .....	p. 18
Dimensions .....	p. 19
Construction .....	p. 23
Mounting Bracket Assembly .....	p. 24

Specific Product Precautions .....	p. 26
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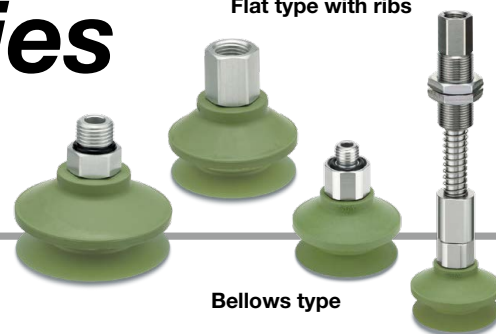
# Suction Cup

Flat Type with Ribs Bellows Type

## ZP3C Series



Flat type with ribs



Bellows type

### How to Order

Cup unit

ZP3C- 20 C FS

With adapter

ZP3C- T 20 C FS

With buffer

ZP3C- T 20 C FS JB 10 - MF

- MF - A8

1

2

3

4

5

6

7

• Cup material: FS61

#### 1 Vacuum inlet direction

Nil	Cup unit
T	Vertical
Y*1	Lateral

\*1 Only selectable for the type with a buffer

#### 2 Cup diameter

20	ø20
25	ø25
32	ø32
40	ø40
50	ø50

#### 3 Cup form

C	Flat type with ribs
B	Bellows type

#### 4 Buffer specifications

JB	Rotating, With bushing
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#### 5 Buffer stroke

Stroke [mm]	Cup diameter [mm]	
	ø20 to ø32	ø40, ø50
10	●	●
20	●	—
30	●	●
50	—	●

#### 6 Mesh filter

Nil	Without mesh filter
MF	With mesh filter

#### 7 Connection thread

Type	Thread	Symbol	Size	Cup diameter [mm]	
				ø20 to ø32	ø40, ø50
Thread mounting	Male thread	A8	M8 x 1	●	—
		A10	M10 x 1	—	●
		AG01	G1/8	●	—
		AG02	G1/4	—	●
	Female thread	BG01	G1/8	●	—
		BG02	G1/4	—	●

\* Use the connection thread for the vacuum inlet.



## Specifications

### Material Specifications

Material	FS61 (Fluoro-based rubber)
Color of rubber	Green
Rubber hardness (Shore A: $\pm 5^\circ$ )	65
Operating temperature range*1	0°C to 200°C
Ambient temperature	0°C to 150°C

\*1 Surface temperature of the workpiece to be adsorbed

### Cup Specifications

Form	Cup diameter	Effective adsorption area [cm <sup>2</sup> ]	Adsorption force*1 [N]	Removal force*2 [N]	Internal capacity [cm <sup>3</sup> ]
Flat type with ribs	ø20	1.7	10.0	18.3	1.0
	ø25	2.0	11.8	25	1.3
	ø32	2.3	13.9	34.6	1.7
	ø40	6.1	36.7	58.2	4.3
	ø50	7.1	42.4	79.4	6.9
Bellows type	ø20	2.3	13.7	17	3.1
	ø25	2.8	16.6	25.9	5.4
	ø32	3.0	17.9	30.4	8.0
	ø40	4.7	27.9	47	17.7
	ø50	6.5	39.3	69.6	26.8

\*1 The adsorption force is a theoretical value calculated by: effective adsorption area x vacuum pressure (-60 [kPa]).

\*2 The removal force is a measured value when adsorbing on a dry, flat, and smooth surface at -60 kPa of vacuum pressure.

### Adapter Specifications

Connection	Male thread		Female thread	
Cup diameter	ø20 to ø32	ø40, ø50	ø20 to ø32	ø40, ø50
Connection thread	M8 x 1 G1/8	M10 x 1 G1/4	G1/8	G1/4
Vacuum inlet	Use the connection thread.			

### Buffer Specifications

Cup diameter		ø20 to ø32			ø40, ø50		
Non-rotating specification		JB: Rotating, With bushing					
Stroke		10	20	30	10	30	50
Connection thread		M14 x 1			M18 x 1.5		
Spring reaction force [N]	At 0 stroke	3.0			5.0		
	At full stroke	4.5	5.0	5.2	6.5	8.5	10.5

### Mesh Filter Specifications

Mesh filter	60
Opening	250 μm

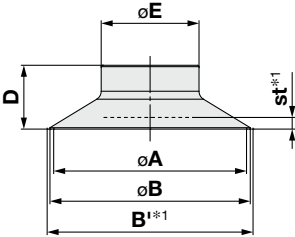
# ZP3C Series

## Dimensions

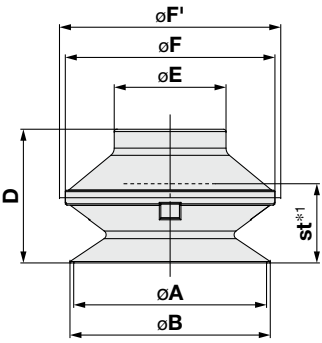
### Single unit

ZP3C - **20** **C** FS  
**1** **2**

Flat type with ribs



Bellows type



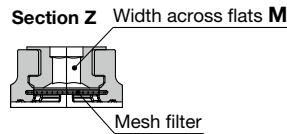
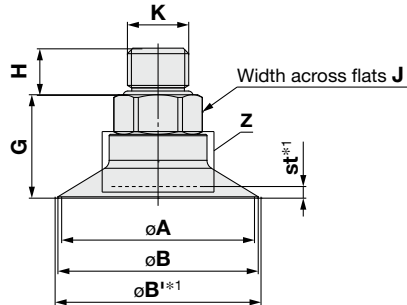
	Model			A	B	B <sup>I</sup> *1	D	E	F	F <sup>I</sup> *1	st*1	Weight [g]
	① Cup diameter	② Cup form	Cup material									
ZP3C	20	C	FS	21.4	23	23.3	10	15	—	—	2	2.2
	25			26.4	28	28.4			—	—		2.7
	32			31.4	33	33.5			11	—	—	2.5
	40			41.4	43	44.2	13.7	—	—	7.9		
	50			51.4	52.7	53.9	14.7	—	—	3.5	11.6	
	20	B		21.4	23	—	17	15	24	26	8	3.6
	25			26.4	28	—	20	17	29	31	11	5.7
	32			31.4	33	—	21.8		35	37	12.8	8.4
	40			41.4	43	—	28.7	24	45	47.5	16	17.7
	50			51.4	53	—	30.7	25	55	57.5	18	26.6

\*1 Achieved vacuum pressure: Reference at -85 [kPa]



## Dimensions

### With adapter Flat type with ribs/Male thread



**ZP3C - T** **20** **C** **FS** - **MF** - **A8**

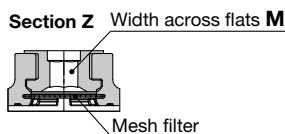
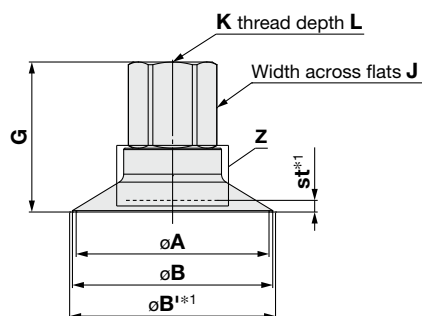
		Cup diameter [mm]	
		ø20 to ø32	ø40, ø50
1	2		
3	Connection thread (Male thread)		
A8	M8 x 1	○	—
A10	M10 x 1	—	○
AG01	G1/8	○	—
AG02	G1/4	—	○

Model							A	B	B*1	G	H	J	K	M	st*1	Min. hole diameter	*2 Weight [g]
Vacuum inlet direction	1 Cup diameter	Cup form	Cup material	2 Mesh filter	3 Connection thread												
ZP3C	T	C	FS	Nil MF	A8	20	21.4	23	23.3	20	6.5	14	M8 x 1	4	2	4	7.7
						25	26.4	28	28.4								8.1
						32	31.4	33	33.5	21							8.9
						40	41.4	43	44.2	22.2							16.2
					A10	50	51.4	52.7	53.9	23.2	7.5	17	M10 x 1	6	2.5	6	19.9
						20	21.4	23	23.3	17							7.0
						25	26.4	28	28.4								7.4
						32	31.4	33	33.5	18							8.2
					AG01	40	41.4	43	44.2	22.2					2.5	7.1	17.7
						50	51.4	52.7	53.9	23.2							21.5
						20	21.4	23	23.3	17							7.0
						25	26.4	28	28.4								7.4

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

### With adapter Flat type with ribs/Female thread



**ZP3C - T** **20** **C** **FS** - **MF** - **BG01**

		Cup diameter [mm]	
		ø20 to ø32	ø40, ø50
1	2		
3	Connection thread (Female thread)		
BG01	G1/8	○	—
BG02	G1/4	—	○

Model							A	B	B*1	G	J	K	L	M	st*1	Min. hole diameter	*2 Weight [g]
Vacuum inlet direction	1 Cup diameter	Cup form	Cup material	2 Mesh filter	3 Connection thread												
ZP3C	T	C	FS	Nil MF	BG01	20	21.4	23	23.3	24.5	14	G1/8	7.4	4	2	4	7.9
						25	26.4	28	28.4								8.4
						32	31.4	33	33.5	25.5							9.2
						40	41.4	43	44.2	32.2							18.4
					BG02	50	51.4	52.7	53.9	33.2	17	G1/4	11	6	3.5	7.1	22.1
						20	21.4	23	23.3	24.5							7.9
						25	26.4	28	28.4								8.4
						32	31.4	33	33.5	25.5							9.2
						40	41.4	43	44.2	32.2							18.4
						50	51.4	52.7	53.9	33.2							22.1

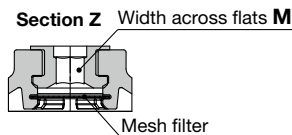
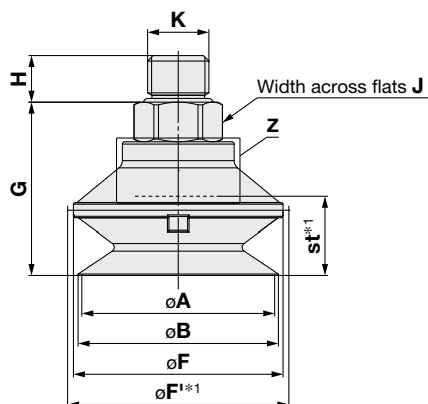
\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

# ZP3C Series

## Dimensions

### With adapter Bellows type/Male thread



ZP3C - T **20** B FS - **MF** - **A8**

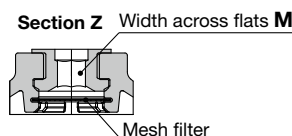
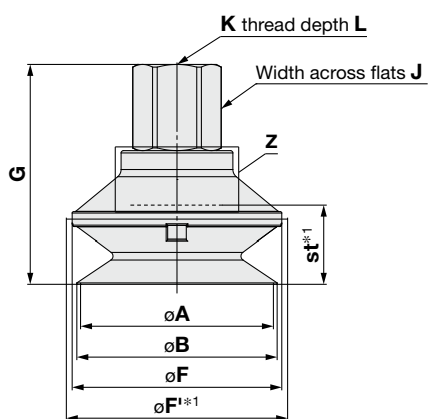
③ Connection thread (Male thread)		Cup diameter [mm]	
		ø20 to ø32	ø40, ø50
<b>A8</b>	M8 x 1	○	—
<b>A10</b>	M10 x 1	—	○
<b>AG01</b>	G1/8	○	—
<b>AG02</b>	G1/4	—	○

Model							A	B	F	F*1	G	H	J	K	M	st*1	Min. hole diameter	*2 Weight [g]
	Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Mesh filter	③ Connection thread												
ZP3C	T	20	B	FS	Nil MF	A8	21.4	23	24	26	27	6.5	14	M8 x 1	4	8	4	9.1
		25					26.4	28	29	31	30					11		11.1
		32					31.4	33	35	37	31.8					12.8		13.8
		A10				40	41.4	43	45	47.5	37.2		17	M10 x 1	6	16	25.9	
						50	51.4	53	55	57.5	39.2					18	34.9	
						20	21.4	23	24	26	24					8	8.4	
		AG01				25	26.4	28	29	31	27	7.5	14	G1/8	4	11	10.4	
						32	31.4	33	35	37	28.8					12.8	13.1	
						AG02	40	41.4	43	45	47.5					37.2	10	17
		50					51.4	53	55	57.5	39.2	18	36.4					

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

### With adapter Bellows type/Female thread



ZP3C - T **20** B FS - **MF** - **BG01**

③ Connection thread (Female thread)		Cup diameter [mm]	
		ø20 to ø32	ø40, ø50
<b>BG01</b>	G1/8	○	—
<b>BG02</b>	G1/4	—	○

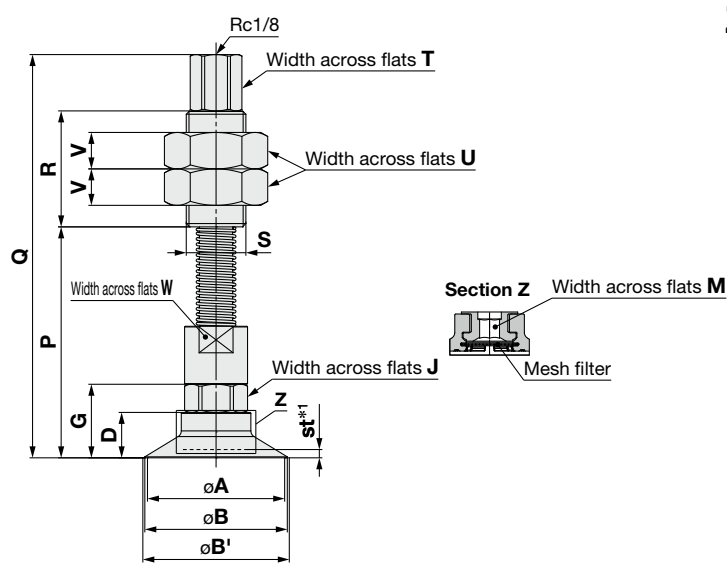
Model							A	B	F	F*1	G	J	K	L	M	st*1	Min. hole diameter	*2 Weight [g]
Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Mesh filter	③ Connection thread													
ZP3C	T	B	FS	Nil MF	BG01	20	21.4	23	24	26	31.5	14	G1/8	7.4	4	8	4	9.3
						25	26.4	28	29	31	34.5					11		11.4
						32	31.4	33	35	37	36.3					12.8		14.1
						40	41.4	43	45	47.5	47.2					16		28.2
						50	51.4	53	55	57.5	49.2					18		37.1
					BG02							17	G1/4	11	6		7.1	

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

## Dimensions

**With buffer** Flat type with ribs/Vacuum inlet direction: Vertical



**ZP3C - T** **20** **C** **FS** **JB** **10** - **MF**

①

②

③

④

JB	Rotating, With bushing
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Model							A	B	B <sup>*1</sup>	D	G	J	M	P	Q	R	S	T	U	V	W	st <sup>*1</sup>	Min. hole dia.	*2 Weight [g]	
Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Buffer spec.	③ Buffer stroke	④ Mesh filter																			
ZP3C	T	20	C	FS	JB	10	Nil MF	21.4	23	23.3	10	20	14	4	66	111	30	M14 x 1	12	19	4	13	2	3	81.2
						20									78	123									85.5
		25				30		91	136	90.3															
						10		66	111	81.6															
		30				78		123	86.0																
						91		136	90.7																
		32				67		112	82.4																
						79		124	86.8																
		30				92		137	91.5																
						40		69.7	121.7	2.5	207.2														
		94.7						146.7	221.7																
		50				114.7		166.7	233.2																
						10		70.7	122.7	3.5	210.9														
		30				95.7		147.7	222.5																
		50				115.7		167.7	236.9																

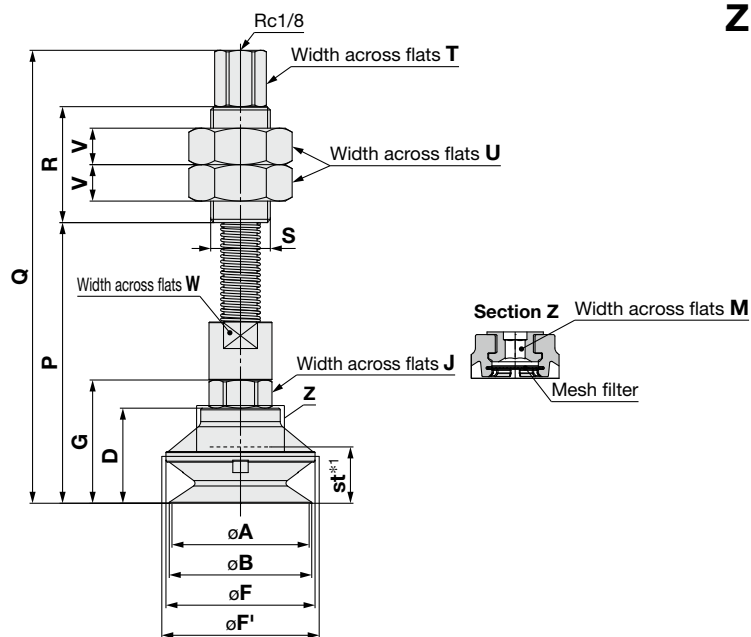
\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

# ZP3C Series

## Dimensions

**With buffer** Bellows type/Vacuum inlet direction: Vertical



Model								A	B	D	F	F <sup>*1</sup>	G	J	M	P	Q	R	S	T	U	V	W	st <sup>*1</sup>	Min. hole dia.	*2 Weight [g]						
Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Buffer spec.	③ Buffer stroke	④ Mesh filter																										
ZP3C	T	20	B	FS	JB	10	Nil MF	21.4	23	17	24	26	27	14	4	73	118	30	M14 x 1	12	19	4	13	8	3	82.5						
						20										85	130									86.9						
						30										98	143									91.7						
		10				76		121	84.6																							
		25				20		26.4	28	20	29	31	30	88	133	30	M14 x 1							12		19	4	13	11	89.0		
						30																								101	146	93.7
						10																								77.8	122.8	87.3
		32				20		31.4	33	21.8	35	37	31.8	89.8	134.8	30	M14 x 1							12		19	4	13		12.8	91.7	
						30								102.8	147.8														96.4			
						10								84.7	136.7			217.0														
		40				30		41.4	43	28.7	45	47.5	37.2	109.7	161.7			35	M18 x 1.5	14	27	11	16						16		231.5	
						50								129.7	181.7	242.9																
						10								86.7	138.7	225.9																
		50				30		51.4	53	30.7	55	57.5	39.2	111.7	163.7	35	M18 x 1.5							14		27	11	16		18	240.4	
						50								131.7	183.7			251.8														

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

## Dimensions

**With buffer** Flat type with ribs/Vacuum inlet direction: Lateral

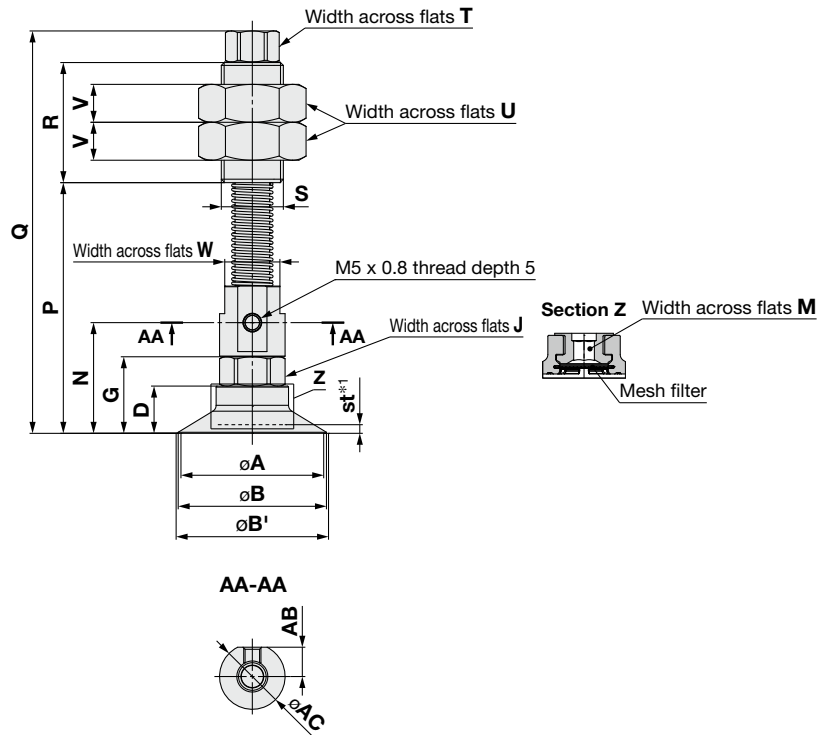
**ZP3C - Y** **20** **C** **FS** **JB** **10** - **MF**

①

②

③

④



Model							A	B	B'※1	D	G	J	M	N	P	Q	R	S	T	U	V	W	A	B	A	C	st※1	Min. hole dia.	※2 Weight [g]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Buffer spec.	③ Buffer stroke	④ Mesh filter																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
ZP3C	Y	20	C	FS	JB	10	Nil MF	21.4	23	23.3	10	20	14	4	29	66	104	30	M14 x 1	12	19	4	14	6.5	15	2	4	81.7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

# ZP3C Series

## Dimensions

**With buffer** Bellows type/Vacuum inlet direction: Lateral

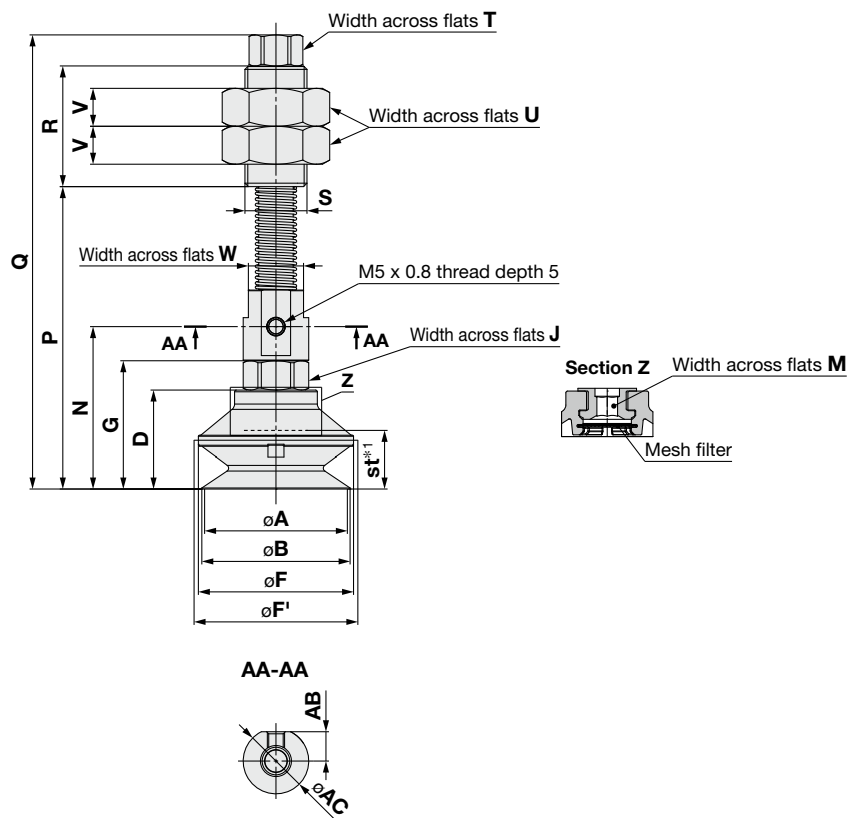
ZP3C - Y **20** B FS **JB** **10** - **MF**

①

②

③

④



JB	Rotating, With bushing
----	---------------------------

Model							A	B	D	F	F <sup>1</sup> *1	G	J	M	N	P	Q	R	S	T	U	V	W	A	B	C	st <sup>*1</sup>	Min. hole dia.	*2 Weight [g]																				
	Vacuum inlet direction	① Cup diameter	Cup form	Cup material	② Buffer spec.	③ Buffer stroke																								④ Mesh filter																			
ZP3C	Y	20	B	FS	JB	10	Nil MF	21.4	23	17	24	26	27	14	4	36	73	111	30	M14 x 1	12	19	4	14	6.5	15	11	8	4	83.0																			
						20											85	123												88.1																			
						30											98	136												93.5																			
		25				10		26.4	28	20	29	31	30	14	4	39	76	114	30	M14 x 1	12	19	4	14	6.5	15	11	12.8	4	85.1																			
						20											88	126												90.1																			
						30											101	139												95.6																			
		32				10		31.4	33	21.8	35	37	31.8	17	6	40.8	77.8	115.8	35	M18 x 1.5	14	27	11	16	8.5	19	18	6	87.8																				
						20											89.8	127.8											92.8																				
						30											102.8	140.8											98.3																				
						40											10	41.4											43	28.7	45	47.5	37.2	17	6	47.1	87.7	131.7	35	M18 x 1.5	14	27	11	16	8.5	19	18	6	215.4
																	30																				112.7	156.7											231.2
																	50																				132.7	176.7											243.8
						50											10	51.4											53	30.7	55	57.5	39.2	17	6	49.1	89.7	133.7	35	M18 x 1.5	14	27	11	16	8.5	19	18	6	224.3
																	30																				114.7	158.7											240.2
																	50																				134.7	178.7											252.7

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

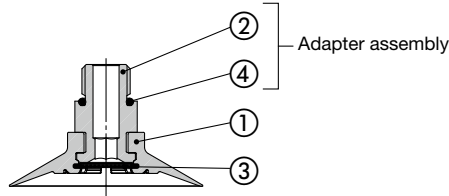
\*2 This does not include the weight of the mesh filter. For the type with a mesh filter, add the weight of the parts separately. (Refer to page 14.)

# Suction Cup **ZP3C Series**

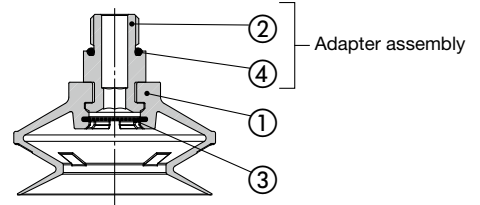
## Construction

### With adapter

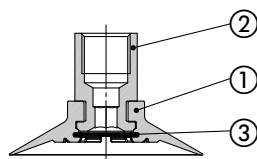
ZP3C-T□CFS-MF-A□



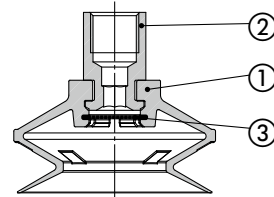
ZP3C-T□BFS-MF-A□



ZP3C-T□CFS-MF-BG□



ZP3C-T□BFS-MF-BG□

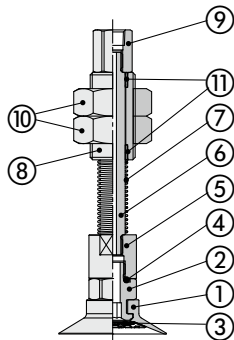


### Component Parts

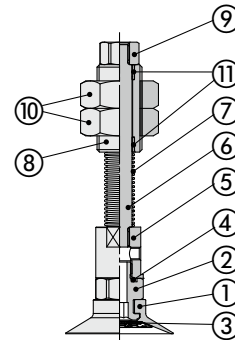
No.	Description	Material	Note
1	Cup	FS61 (Fluoro-based rubber)	Color: Green
2	Adapter	Aluminum alloy (Clear anodized)	
3	Mesh filter	Stainless steel	With mesh filter
4	O-ring	NBR	

### With buffer

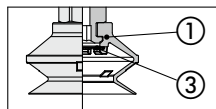
ZP3C-T□CFSJB□-□



ZP3C-Y□CFSJB□-□



ZP3C-T□BFSJB□-□



### Component Parts

No.	Description	Material	Note
1	Cup	FS61 (Fluoro-based rubber)	Color: Green
2	Adapter	Aluminum alloy (Clear anodized)	
3	Mesh filter	Stainless steel	With mesh filter
4	O-ring	NBR	
5	Adapter	Aluminum alloy (Clear anodized)	
6	Piston rod	Structural steel (Hard chrome plating)	
7	Return spring	Stainless steel	
8	Buffer body	Brass (Electroless nickel plating)	
9	Buffer adapter	Brass (Electroless nickel plating)	
10	Nut	Steel (Zinc chromated)	
11	Bushing	—	

### Replacement Parts

#### Mesh Filter Unit

Part number	Applicable cup dia.	Weight [g]
ZPMF-60-D11	ø20 to ø32	0.2
ZPMF-60-D18	ø40, ø50	0.5



# Suction Cup **ZP3C Series**

## Mounting Bracket Assembly

### ■ Adapter Assembly: Vacuum Inlet Direction **Vertical** T Type/ZP3C-T

Product part no.	<p><b>ZP3C - T</b> ① <b>(C/B)</b> <b>FS</b> □ - ②</p> <p>             Cup diameter •              Cup form (C: Flat type with ribs/B: Bellows type) •              Mesh filter •              Cup material •              Connection thread (Male/Female thread) •           </p>	
Component parts	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>ZP3C-T□ (C/B) FS-□-A□</b></p> <p>① Adapter (With O-ring)</p> <p>Cup</p> <p>② Mesh filter</p> </div> <div style="text-align: center;"> <p><b>ZP3C-T□ (C/B) FS-□-BG□</b></p> <p>① Adapter</p> <p>Cup</p> <p>② Mesh filter</p> </div> </div>	

				Symbol	① Cup diameter symbol				
					20	25	32	40	50
① Adapter (Single unit)	② Connection thread	Male thread	M8 x 1	A8	ZP3CA-T3-A8			—	
			M10 x 1	A10	—			ZP3CA-T4-A10	
			G1/8	AG01	ZP3CA-T3-AG01			—	
			G1/4	AG02	—			ZP3CA-T4-AG02	
	Female thread	G1/8	BG01	ZP3CA-T3-BG01			—		
		G1/4	BG02	—			ZP3CA-T4-BG02		
② Mesh filter (Single unit)				ZPMF-60-D11			ZPMF-60-D18		

■ Buffer Assembly: Vacuum Inlet Direction **Vertical** T Type/ZP3C-T, **Lateral** Y Type/ZP3C-Y

Product part no.	<p><b>ZP3C - (T/Y) ① (C/B) FS JB ② - (Nil/MF)</b></p> <p>Cup diameter ●      ● Mesh filter</p> <p>Cup form (C: Flat type with ribs/B: Bellows type) ●      ● Buffer stroke</p> <p>● Cup material</p>	
Component parts	<p><b>ZP3C-T□ (C/B) FSJB□-□      ZP3C-Y□ (C/B) FSJB□-□</b></p> <p>① Buffer assembly (Vacuum inlet: Vertical) (With mounting nut)      ① Buffer assembly (Vacuum inlet: Lateral) (With mounting nut)</p> <p>② Adapter (With O-ring)</p> <p>Cup</p> <p>③ Mesh filter</p>	

		Symbol	① Cup diameter symbol				
			20	25	32	40	50
④ Buffer assembly (With mounting nut)	② Buffer stroke	10	ZP3EB- (T/Y) JB10			ZP3EB- (T/Y) 1JB10	
		20	ZP3EB- (T/Y) JB20			—	
		30	ZP3EB- (T/Y) JB30			ZP3EB- (T/Y) 1JB30	
		50	—			ZP3EB- (T/Y) 1JB50	
③ Adapter (Single unit)			ZP3CA-T3-A8			ZP3CA-T4-A10	
③ Mesh filter (Single unit)			ZPMF-60-D11			ZPMF-60-D18	
④ Mounting nut (Single unit)	M14 x 1		ZPNA-M14			—	
	M18 x 1.5		—			NT-05	



# Suction Cup

## 2.5-Stage Bellows Type

# ZP3C2 Series



### How to Order

Cup unit	ZP3C2-	32	J2	FS						-R
With retainer	ZP3C2-D	32	J2	FS						-R
With adapter	ZP3C2-	T	32	J2	FS			-MF	-A8	-R
With buffer	ZP3C2-	Y	32	J2	FS	JB	10	-MF		-R
		1	2	3	4	5	6	7	8	9

• Cup material: FS61

#### 1 Mounting

D	Direct mounting
---	-----------------

#### 2 Vacuum inlet direction

Nil	Cup unit
T	Vertical
Y*1	Lateral

\*1 Only selectable for the type with a buffer

#### 3 Cup diameter

20	ø20
25	ø25
32	ø32
40	ø40
50	ø50

#### 4 Cup form

J2	2.5-stage bellows type
----	------------------------

#### 5 Buffer specifications

JB	Rotating, With bushing
----	------------------------

#### 6 Buffer stroke

Stroke [mm]	Cup diameter [mm]	
	ø20, ø25, ø32	ø40, ø50
10	●	●
20	●	—
30	●	●
50	—	●

#### 7 Mesh filter

Nil	Without mesh filter
MF	With mesh filter

\* For the type with a retainer, the filter will come with the product as standard.

#### 8 Connection thread

Type	Thread	Symbol	Size	Cup diameter [mm]	
				ø20, ø25, ø32	ø40, ø50
Thread mounting	Male thread	A8	M8 x 1	●	—
		A10	M10 x 1	—	●
		AG01	G1/8	●	—
		AG02	G1/4	—	●
	Female thread	BG01	G1/8	●	—
		BG02	G1/4	—	●

\* Use the connection thread for the vacuum inlet.

#### 9 Inner ring

Nil	Without inner ring
R	With inner ring

## Specifications

### Material Specifications

Cup	Material	FS61 (Fluoro-based rubber)
	Color of rubber	Green
	Rubber hardness (Shore A: $\pm 5^\circ$ )	65
	Operating temperature range*1	0°C to 200°C
	Ambient temperature	0°C to 150°C
Inner ring	Material	POM
	Ambient temperature	0°C to 90°C

\*1 Surface temperature of the workpiece to be adsorbed

### Cup Specifications

Cup diameter	Effective adsorption area [cm <sup>2</sup> ]	Adsorption force*1 [N]	Removal force*2 [N]		Internal capacity [cm <sup>3</sup> ]
			Without inner ring	With inner ring	
ø20	1.7	10.2	13.5	18.8	4.3
ø25	1.9	11.4	19.6	26.9	7.4
ø32	2.6	15.8	31.6	34.8	13.0
ø40	4.8	28.7	52.6	62.1	27.9
ø50	8.1	48.9	74.2	89.7	50.6

\*1 The adsorption force is a theoretical value calculated by: effective adsorption area x vacuum pressure (-60 [kPa]).

\*2 The removal force is a measured value when adsorbing on a dry, flat, and smooth surface at -60 kPa of vacuum pressure.

### Adapter Specifications

Connection	Male thread		Female thread	
Cup diameter	ø20, ø25, ø32	ø40, ø50	ø20, ø25, ø32	ø40, ø50
Connection thread	M8 x 1 G1/8	M10 x 1 G1/4	G1/8	G1/4
Vacuum inlet	Use the connection thread.			

### Buffer Specifications

Cup diameter		ø20, ø25, ø32			ø40, ø50		
Non-rotating specification		JB: Rotating, With bushing					
Stroke [mm]		10	20	30	10	30	50
Connection thread		M14 x 1			M18 x 1.5		
Spring reaction force [N]	At 0 stroke	3.0			5.0		
	At full stroke	4.5	5.0	5.2	6.5	8.5	10.5

### Filter Specifications

Mounting	With adapter	With retainer*1
Mesh	60	—
Opening	250 µm	Hole diameter: 200 µm

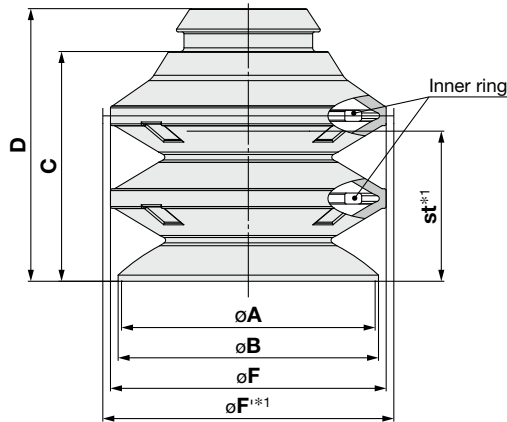
\*1 For the type with a retainer, etched filters are used.

# ZP3C2 Series

## Dimensions

### Single unit

ZP3C2 - **32** J2 FS - **R**  
**1** **2**



Model					A	B	C	D	F	F*1	st*1	*2 Weight [g]
	1 Cup diameter	Form	Cup material	2 Inner ring								
ZP3C2	20	J2	FS	Nil R	23	23.5	19	25	23	25	13	5.2
	25				27.2	28	24	30	27.5	29.5	17.1	7.3
	32				31.4	33	30	36	35	36.9	20.3	14.5
	40				41.4	42.5	37.5	44.5	45	47.5	25.5	28.9
	50				51.4	53	48.5	55.5	55	57.4	33.5	49.5

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the inner ring. For the type with inner rings, add the weight of the parts separately. (Refer to page 23.)

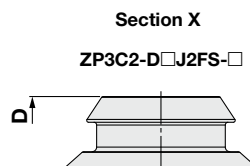
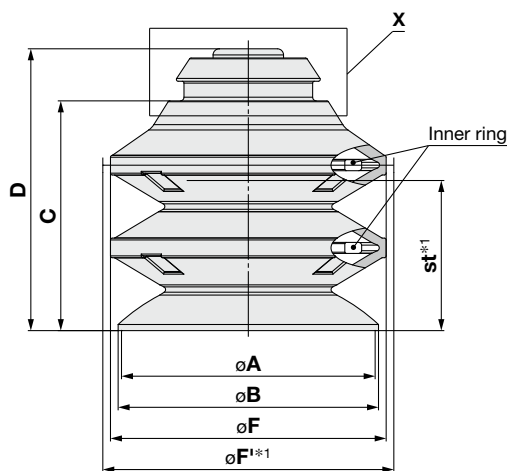
### With retainer Direct mounting

Cup diameter  $\phi 40$

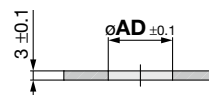
ZP3C2-D40J2FS-□

Cup diameter  $\phi 20, 25, 32, 50$

ZP3C2 - D **32** J2 FS - **R**  
**1** **2**



Recommended mounting plate dimensions



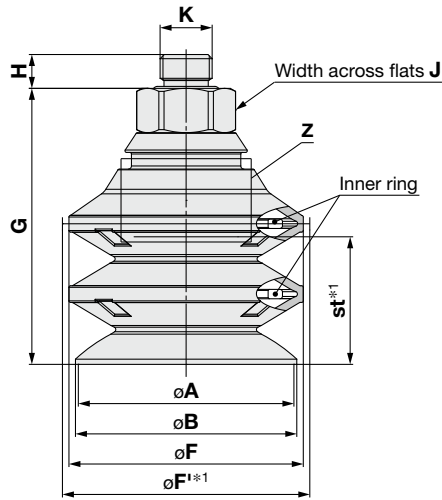
Model						A	B	C	D	F	F*1	AD	st*1	Min. hole diameter	*2 Weight [g]
	Mounting	1 Cup diameter	Form	Cup material	2 Inner ring										
ZP3C2	D	20	J2	FS	Nil R	23	23.5	19	25	23	25	13.5	13	$\phi 2.6$	6.0
		25				27.2	28	24	30	27.5	29.5		17.1		8.2
		32				31.4	33	30	36	35	36.9		20.3		15.4
		40				41.4	42.5	37.5	46	45	47.5	20.5	25.5		32.8
		50				51.4	53	48.5	55.5	55	57.4		33.5		53.4

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weight of the inner ring. For the type with inner rings, add the weight of the parts separately. (Refer to page 23.)

## Dimensions

### With adapter Thread mounting: Male thread



**ZP3C2 - T** **32** **J2** **FS** - **MF** - **A8** - **R**

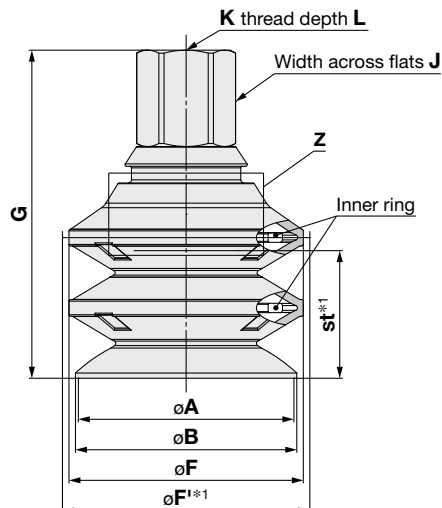
③ Connection thread (Male thread)	Cup diameter [mm]	
	ø20, ø25, ø32	ø40, ø50
<b>A8</b>	M8 x 1	—
<b>A10</b>	M10 x 1	—
<b>AG01</b>	G1/8	—
<b>AG02</b>	G1/4	—

Model								A	B	F	F*1	G	H	J	K	M	st*1	Min. hole diameter	*2 Weight [g]
Vacuum inlet direction	① Cup diameter	Form	Cup material	② Mesh filter	③ Connection thread	④ Inner ring													
ZP3C2	T	J2	FS	Nil MF	A8 AG01 A8 AG01 A8 AG01 A10 AG02 A10 AG02	Nil R													
							23	23.5	23	25	35	6.5			M8 x 1		13	ø4.1	10.9
											32	7.5			G1/8				10.3
							27.2	28	27.5	29.5	40	6.5			M8 x 1		17.1		13.1
											37	7.5			G1/8				12.4
							31.4	33	35	36.9	46	6.5			M8 x 1		20.3	ø6.1	20.3
											43	7.5			G1/8				19.6
							41.4	42.5	45	47.5	53	6.5			M10 x 1		25.5		38.2
											10	6.5			G1/4				40.4
							51.4	53	55	57.4	64	6.5			M10 x 1		33.5		58.8
												10			G1/4				61.0

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weights of the mesh filter and inner ring. For the type with a mesh filter and inner rings, add the weights of the parts separately. (Refer to page 23.)

### With adapter Thread mounting: Female thread



**ZP3C2 - T** **32** **J2** **FS** - **MF** - **BG01** - **R**

③ Connection thread (Female thread)	Cup diameter [mm]	
	ø20, ø25, ø32	ø40, ø50
<b>BG01</b>	G1/8	—
<b>BG02</b>	G1/4	—

Model								A	B	F	F*1	G	J	K	L	M	st*1	Min. hole diameter	*2 Weight [g]
Vacuum inlet direction	① Cup diameter	Form	Cup material	② Mesh filter	③ Connection thread	④ Inner ring													
ZP3C2	T	J2	FS	Nil MF	BG01 BG02	Nil R													
							23	23.5	23	25	39.5						13	ø4.1	11.2
							27.2	28	27.5	29.5	44.5						17.1		13.4
							31.4	33	35	36.9	50.5						20.3		20.5
							41.4	42.5	45	47.5	63						25.5	ø6.1	40.6
							51.4	53	55	57.4	74						33.5		61.2

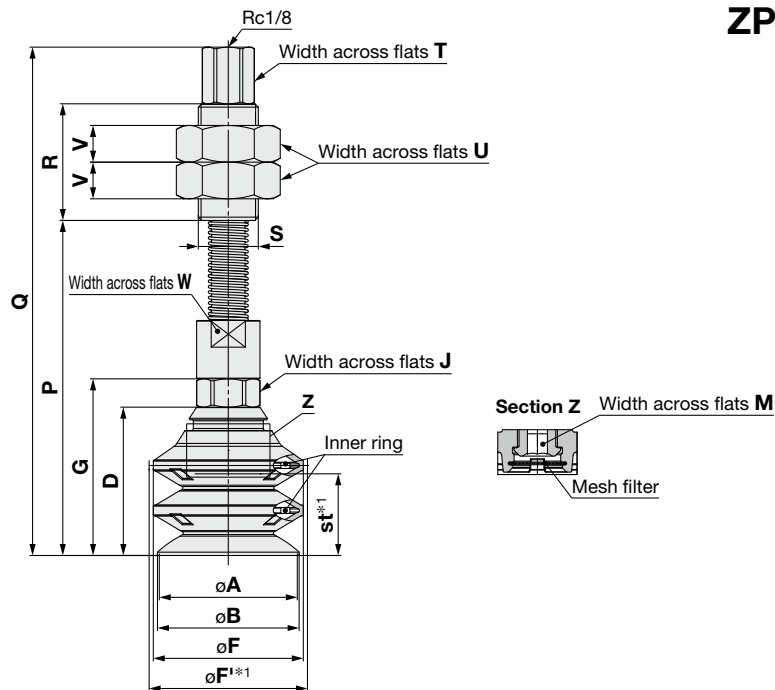
\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weights of the mesh filter and inner ring. For the type with a mesh filter and inner rings, add the weights of the parts separately. (Refer to page 23.)

# ZP3C2 Series

## Dimensions

**With buffer** Vacuum inlet direction: Vertical



ZP3C2 - T **32** J2 FS **JB** **10** - **MF** - **R**

①

② Buffer specifications

JB	Rotating, With bushing
----	---------------------------

Model								A	B	D	F	F*1	G	J	M	P	Q	R	S	T	U	V	W	st*1	Min. hole dia.	*2 Weight [g]
Vacuum inlet direction	① Cup diameter	Form	Cup material	② Buffer spec.	③ Buffer stroke	④ Mesh filter	⑤ Inner ring																			
ZP3C2	T	J2	FS	JB	10	Nil MF	Nil R	23	23.5	25	23	25	35	14	4	81	126	30	M14 x 1	12	19	4	13	17.1	ø3	84.4
					20											93	138									88.8
					30											106	151									93.6
					10											86	131									86.6
					20			27.2	28	30	27.5	29.5	40	14	4	98	143	30	M14 x 1	12	19	4	13	17.1	ø3	91.0
					30											111	156									95.7
					10											92	137									93.7
					20			31.4	33	36	35	36.9	46	14	4	104	149	30	M14 x 1	12	19	4	13	17.1	ø3	98.1
					30											107	151									102.9
					10											100.5	152.5	35	M18 x 1.5	14	27	11	16	25.5	ø3	229.3
					20											125.5	177.5									243.8
					30											145.5	197.5									255.3
					10			51.4	53	55.5	55	57.4	64	17	6	111.5	163.5									249.9
					20											136.5	188.5	35	M18 x 1.5	14	27	11	16	33.5	ø3	264.4
					30											156.5	208.5									264.4
					50											156.5	208.5									275.8

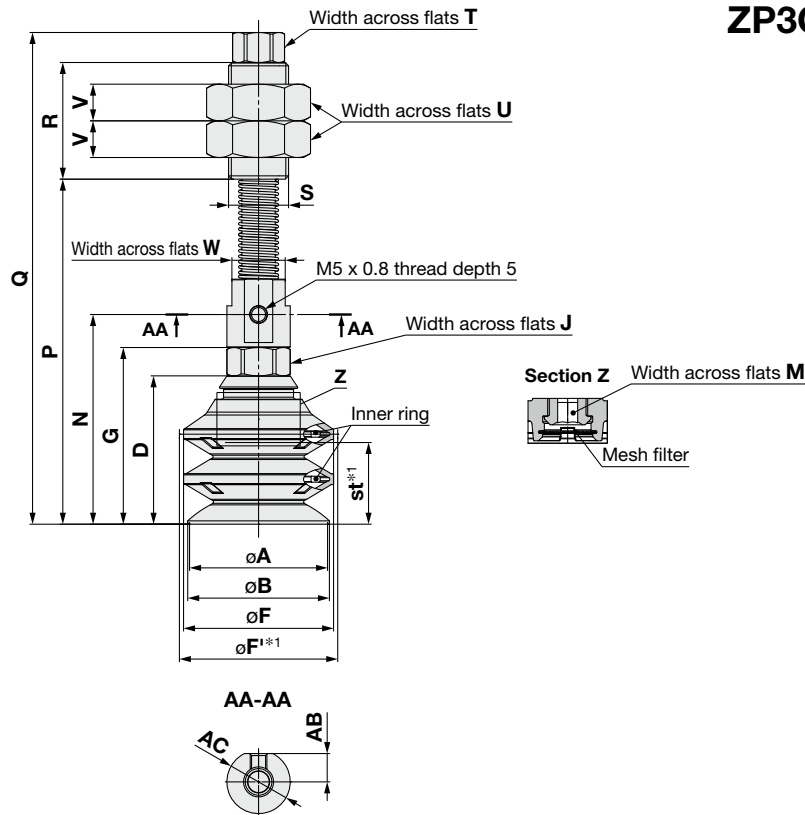
\*1 Achieved vacuum pressure: Reference at -85 [kPa]

\*2 This does not include the weights of the mesh filter and inner ring. For the type with a mesh filter and inner rings, add the weights of the parts separately. (Refer to page 23.)



## Dimensions

**With buffer** Vacuum inlet direction: Lateral



**ZP3C2 - Y** **32** **J2 FS** **JB** **10** - **MF** - **R**

①

② Buffer specifications

JB	Rotating, With bushing
----	---------------------------

Model									A	B	D	F	F*1	G	J	M	N	P	Q	R	S	T	U	V	W	AB	AC	st*1	Min. hole dia.	*2 Weight [g]											
Vacuum inlet direction	① Cup diameter	Form	Cup material	② Buffer spec.	③ Buffer stroke	④ Mesh filter	⑤ Inner ring																																		
ZP3C2	Y	20	J2	FS	JB	10	Nil MF	Nil R	23	23.5	25	23	25	35			44	81	119	30	M14 x 1	12	19	4	14	6.5	15	13	ø4.1	84.9											
						20												93	131											90.0											
						30												106	144											95.4											
						10												86	124											87.1											
						20												98	136											92.2											
						30												111	149											97.6											
						10												92	130											94.2											
						20												104	142											99.3											
						30												117	155											104.8											
						10												103.5	147.5											227.7											
						30												128.5	172.5											243.6											
						50												148.5	192.5											256.1											
						10												114.5	158.5											248.3											
						30												139.5	183.5											264.1											
						50												159.5	203.5											276.7											
		25				27.2			28	30	27.5	29.5	40	14	4	49	55	104	142	15	17.1	20.3																			
																																							86	124	87.1
																																							98	136	92.2
																																							111	149	97.6
																																							92	130	94.2
																																							104	142	99.3
																																							117	155	104.8
																																							103.5	147.5	227.7
																																							128.5	172.5	243.6
																																							148.5	192.5	256.1
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																																							139.5	183.5	264.1
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128.5	172.5	243.6																																							
148.5	192.5	256.1																																							
114.5	158.5	248.3																																							
139.5	183.5	264.1																																							
159.5	203.5	276.7																																							

\*1 Achieved vacuum pressure: Reference at -85 [kPa]

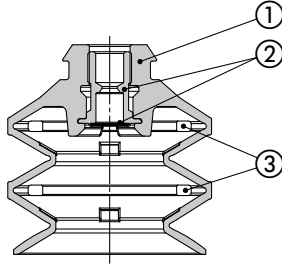
\*2 This does not include the weights of the mesh filter and inner ring. For the type with a mesh filter and inner rings, add the weights of the parts separately. (Refer to page 23.)

# Suction Cup **ZP3C2 Series**

## Construction

### With retainer

**ZP3C2-D□J2FS-□**



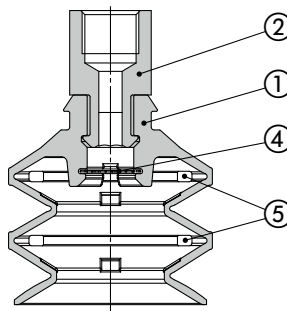
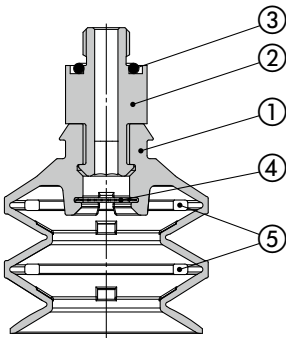
#### Component Parts

No.	Description	Material	
1	Cup	FS61 (Fluoro-based rubber)	
2	Retainer assembly	Aluminum alloy (Anodized)	Etched filter: Stainless steel
3	Inner ring	POM	

### With adapter

**ZP3C2-T□J2FS-□-A□-□**

**ZP3C2-T□J2FS-□-B□-□**



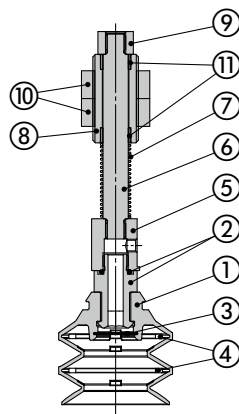
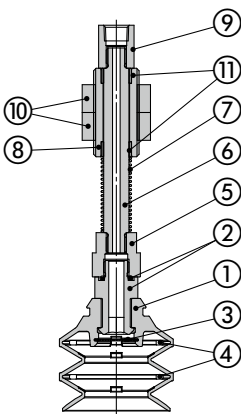
#### Component Parts

No.	Description	Material	
1	Cup	FS61 (Fluoro-based rubber)	
2	Adapter	Aluminum alloy (Anodized)	
3	O-ring	NBR	
4	Mesh filter	Stainless steel	
5	Inner ring	POM	

### With buffer

**ZP3C2-T□J2FSJB□-□-□**

**ZP3C2-Y□J2FSJB□-□-□**



#### Component Parts

No.	Description	Material	
1	Cup	FS61 (Fluoro-based rubber)	
2	Adapter assembly	Aluminum alloy (Anodized)	O-ring: NBR
3	Mesh filter	Stainless steel	
4	Inner ring	POM	
5	Adapter	Aluminum alloy (Anodized)	
6	Piston rod	Structural steel (Hard chrome plating)	
7	Return spring	Stainless steel	
8	Buffer body	Brass (Electroless nickel plating)	
9	Buffer adapter	Brass (Electroless nickel plating)	
10	Nut	Steel (Zinc chromated)	
11	Bushing	—	

#### Replacement Parts

##### Mesh Filter Unit

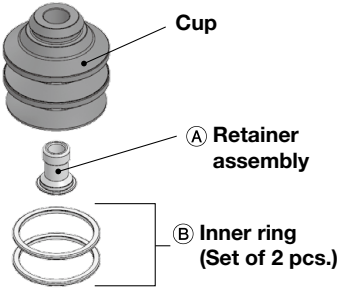
Part no.	Applicable cup diameter [mm]			Weight [g]
	ø20, ø25	ø32	ø40, ø50	
ZPMF-60-D9	●	—	—	0.2
ZPMF-60-D11	—	●	—	0.2
ZPMF-60-D18	—	—	●	0.5

#### Inner Ring (Set of 2 pcs.)

Part no.	Applicable cup diameter [mm]	Weight [g]
ZP3C2-20-R	ø20	0.4
ZP3C2-25-R	ø25	0.6
ZP3C2-32-R	ø32	1
ZP3C2-40-R	ø40	1.4
ZP3C2-50-R	ø50	2.6

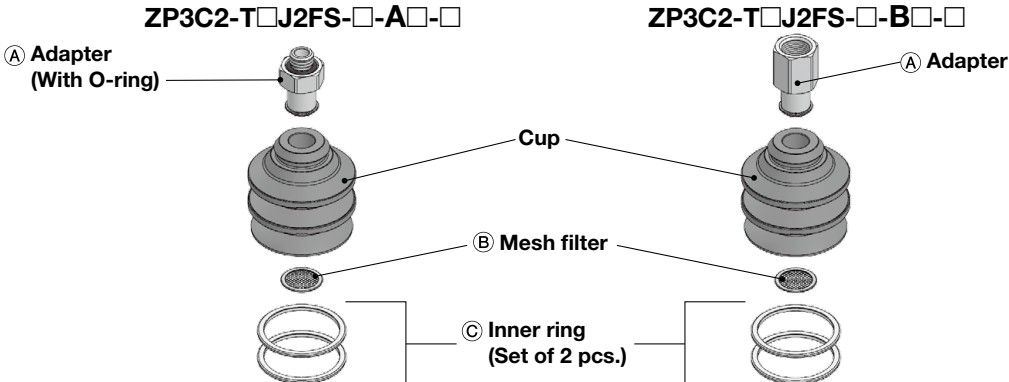
# Suction Cup **ZP3C2 Series** Mounting Bracket Assembly

## Retainer Assembly

Product part no.	<b>ZP3C2 - D ① J2 FS - (Nil/R)</b> Cup diameter •      Cup form •      Cup material •      Inner ring
Component parts	

	① Cup diameter				
	20	25	32	40	50
(A) Retainer assembly	ZP3C2A-D2		ZP3C2A-D3	ZP3C2A-D4	
(B) Inner ring (Set of 2 pcs.)	ZP3C2-20-R	ZP3C2-25-R	ZP3C2-32-R	ZP3C2-40-R	ZP3C2-50-R

## Adapter Assembly: Vacuum Inlet Direction **Vertical** T Type/ZP3C2-T

Product part no.	<b>ZP3C2 - T ① J2 FS - (Nil/MF) - ② - (Nil/R)</b> Cup diameter •      Cup form •      Cup material •      Mesh filter •      Inner ring •      Connection thread
Component parts	

				Symbol	① Cup diameter								
					20	25	32	40	50				
Ⓐ Adapter (Single unit)	Ⓑ Connection thread	Male thread	M8 x 1.0	A8	ZP3C2A-T3-A8			—					
			M10 x 1.0	A10	—			ZP3C2A-T4-A10					
			G1/8	AG01	ZP3C2A-T3-AG01			—					
			G1/4	AG02	—			ZP3C2A-T4-AG02					
	Female thread	G1/8	BG01	ZP3C2A-T3-BG01			—						
		G1/4	BG02	—			ZP3C2A-T4-BG02						
Ⓑ Mesh filter (Single unit)				ZPMF-60-D9			ZPMF-60-D11		ZPMF-60-D18				
Ⓒ Inner ring (Set of 2 pcs.)				ZP3C2-20-R		ZP3C2-25-R		ZP3C2-32-R		ZP3C2-40-R		ZP3C2-50-R	

# Suction Cup Mounting Bracket Assembly **ZP3C2 Series**

■ Buffer Assembly: Vacuum Inlet Direction **Vertical** T Type/ZP3C2-T, **Lateral** Y Type/ZP3C2-Y

Product part no.	<p><b>ZP3C2 - (T/Y) ① J2 FS JB ② - (Nil/MF) - (Nil/R)</b></p> <p> Cup diameter •  Cup form •  Cup material •  • Buffer stroke  • Buffer specifications </p>
Component parts	<p><b>ZP3C2-T □ J2FSJB □-□-□      ZP3C2-Y □ J2FSJB □-□-□</b></p> <p> <b>① Buffer assembly (Vacuum inlet: Vertical) (With mounting nut)</b>  <b>② Buffer assembly (Vacuum inlet: Lateral) (With mounting nut)</b>  <b>③ Adapter (With O-ring)</b>  <b>Cup</b>  <b>④ Mesh filter</b>  <b>⑤ Inner ring (Set of 2 pcs.)</b> </p>

		Symbol	① Cup diameter				
			20	25	32	40	50
Ⓐ Buffer assembly (With mounting nut)	② Buffer stroke	10	ZP3EB- (T/Y) JB10			ZP3EB- (T/Y) 1JB10	
		20	ZP3EB- (T/Y) JB20			—	
		30	ZP3EB- (T/Y) JB30			ZP3EB- (T/Y) 1JB30	
		50	—			ZP3EB- (T/Y) 1JB50	
Ⓑ Adapter (Single unit)			ZP3C2A-T3-A8			ZP3C2A-T4-A10	
Ⓒ Mesh filter (Single unit)			ZPMF-60-D9		ZPMF-60-D11	ZPMF-60-D18	
Ⓓ Inner ring (Set of 2 pcs.)			ZP3C2-20-R	ZP3C2-25-R	ZP3C2-32-R	ZP3C2-40-R	ZP3C2-50-R
Ⓔ Mounting nut (Single unit)		M14 x 1	ZPNA-M14			—	
		M18 x 1.5	—			NT-05	



## ZP3C □ Series

# Suction Cup/Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

### Design

1. When handling workpieces that are permeable or prone to vacuum leakage, there will be a drop in vacuum pressure.

**Make sure to take the drop in vacuum pressure into account when selecting the appropriate products.**

Check whether the target vacuum pressure can be reached with the actual equipment before use.

### Mounting

1. When mounting the product, tighten with the tightening torque shown in the table below.

If excessive or insufficient tightening torque is applied, sealing failure or loose screws may result.

When using a product equipped with a buffer, if the buffer is tightened to a torque beyond the appropriate tightening torque range, the buffer may malfunction.

#### With Adapter (Male thread type)

Model	Connection thread size	Proper tightening torque [N·m]
ZP3C□-T□(C/B/J2)FS-□-A8-□	M8 x 1.0	4.5 to 5.5
ZP3C□-T□(C/B/J2)FS-□-A10-□	M10 x 1.0	8 to 10
ZP3C□-T□(C/B/J2)FS-□-AG01-□	G1/8	3 to 5
ZP3C□-T□(C/B/J2)FS-□-AG02-□	G1/4	8 to 12

#### With Adapter (Female thread type)

Model	Connection thread size	Proper tightening torque [N·m]
ZP3C□-T□(C/B/J2)FS-□-BG01-□	G1/8	3 to 5
ZP3C□-T□(C/B/J2)FS-□-BG02-□	G1/4	8 to 12

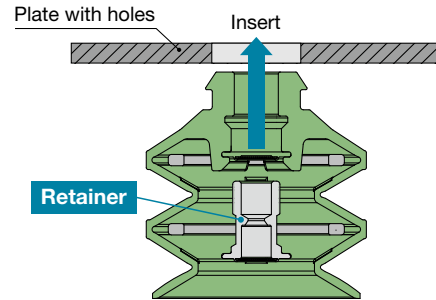
#### With Buffer

Model	Connection thread size	Proper tightening torque [N·m]
ZP3C□-(T/Y)(20 to 32)(C/B/J2)FSJB□-□-□	M14 x 1	6.5 to 7.5
ZP3C□-(T/Y)(40/50)(C/B/J2)FSJB□-□-□	M18 x 1.5	28 to 32

### How to Mount/Remove the Retainer

#### 1. Mounting

After mounting the cup onto the plate, insert the retainer.

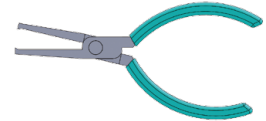


#### 2. Removing



<Tool examples>

- Relay pliers
- End nippers



### Handling

#### 1. Periodically inspect the mesh filter.

An adsorbing malfunction may be caused by the clogging of the mesh filter.


#### 2. When the suction cup is pressed, make sure it stays within the stroke range.


If this product is used with a stroke exceeding the maximum stroke, the cup may be broken or may reach the end of its service life earlier.


#### 3. Suction cups are consumable. Please replace them when cracks or deformation is confirmed during periodic maintenance.

## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

 **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements  
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots etc.

### Warning

#### 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

#### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

#### 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

#### 4. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

### Caution

**SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.**

**Use in non-manufacturing industries is not allowed.**

Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country. The new Measurement Act prohibits use of any unit other than SI units in Japan.

## Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.


\*2) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**

A suction cup (vacuum pad) is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed by the limited warranty.

### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

 **Safety Instructions** Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.