



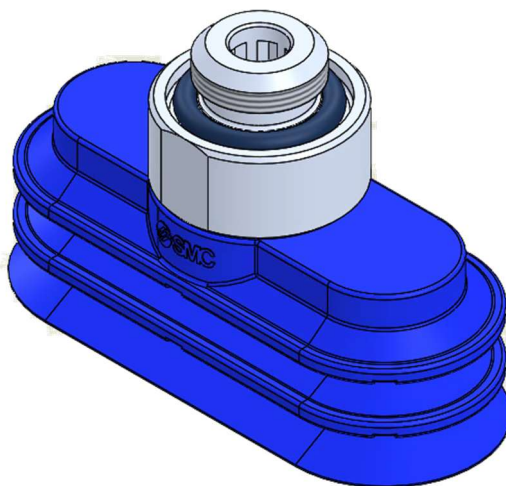
# Operation Manual

PRODUCT NAME

Suction cup / Oval bellows type

MODEL / Series / Product Number

ZP3P-WJT series



**SMC Corporation**

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# 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)<sup>\*)</sup>, and other safety regulations.

\*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.



## **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.



## **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.



# Safety Instructions

## 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) Vacuum pads are excluded from this 1 year warranty.**

A 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 vacuum pad or failure due to the deterioration of rubber material are not covered 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.



# ZP3P-WJT Series

## Specific Product Precautions

Be sure to read this before handling the products.

For safety instructions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

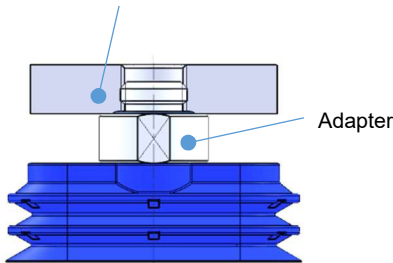
### Handling

#### (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.

#### Direct mounting type (Male thread)

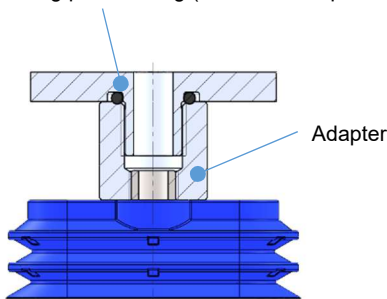
Mounting plate (Customer Preparation)



Product part number	Connection thread size	Proper tightening Torque [N · m]
ZP3P-T□WJT2SF-□-AG01	G1/8	3 to 5
ZP3P-T□WJT2SF-□-AG02	G1/4	8 to 12

#### Direct mounting type (Female thread)

Mounting plate, O-ring (Customer Preparation)

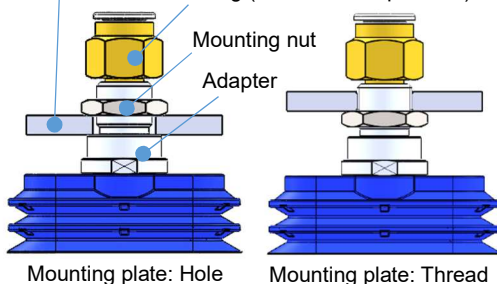


Product part number	Connection thread size	Proper tightening Torque [N · m]
ZP3P-T□WJT2SF-□-BG01	G1/8	3 to 5
ZP3P-T□WJT2SF-□-BG02	G1/4	8 to 12

#### Plate mounting type (Male thread)

Mounting plate (Customer Preparation)

Fitting (Customer Preparation)



Mounting plate: Hole

Mounting plate: Thread

Product part number	Connection thread size	Proper tightening Torque [N · m]
ZP3P-T□WJT2SF-□-A10-B6	M10x1.0	8 to 10
ZP3P-T□WJT2SF-□-A14-B01	M14x1.0	11 to 13



# ZP3P-WJT Series

## Specific Product Precautions

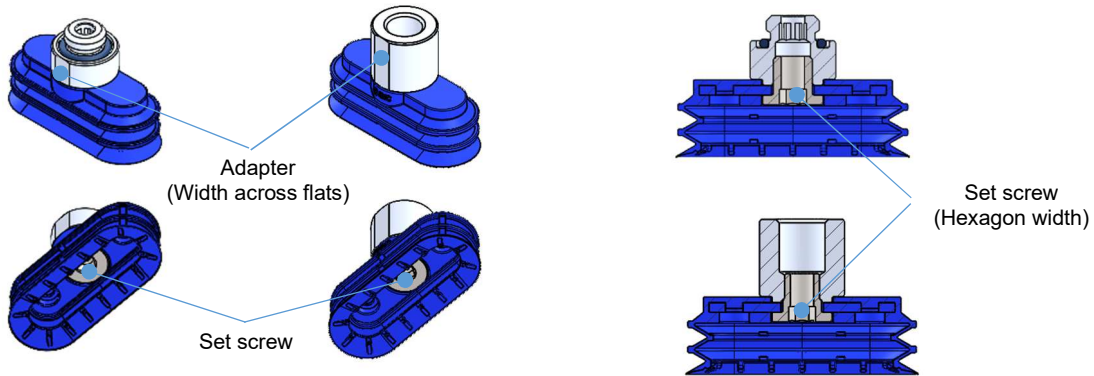
Be sure to read this before handling the products.

For safety instructions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

### Handling

**(2) For a direct-mount adapter, secure the adapter's width when adjusting the suction cup orientation. Loosen the set screw inside the suction cup and retighten it to the proper tightening torque in the table below.**

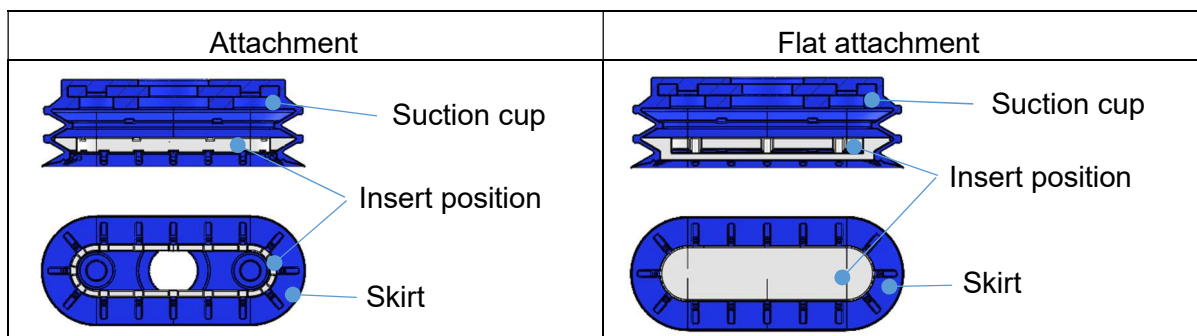
Tightening outside the proper torque range may cause sealing failure or screw loosening. Please note that inserting a flat attachment into the suction cup prevents adjustment of the suction cup orientation through the set screw.



Cup size	Adapter (Width across flats)	Set screw (Hexagon width)	Proper tightening torque [N · m]
15x35	14	4	4.2 to 6.2
25x60, 35x80	21	6	11.5 to 13.5

**(3) When the attachment or the flat attachment is inserted into the suction cup in the position shown below, it may damage or break the skirt if it is pulled with excessive force as the skirt is thin.**

If the attachment is not inserted correctly, it may fail prematurely. Also, the suction cup damage or breakage may lead to adsorption failure.





# ZP3P-WJT Series

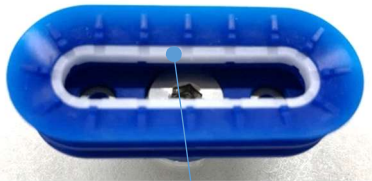
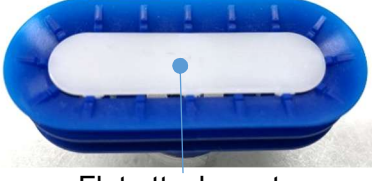
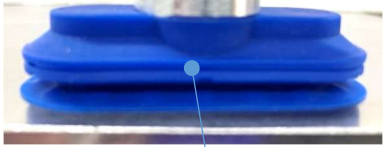

## Specific Product Precautions

Be sure to read this before handling the products.

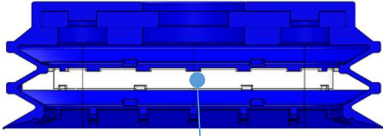
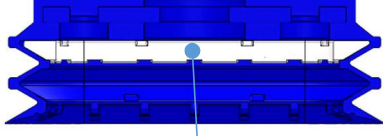
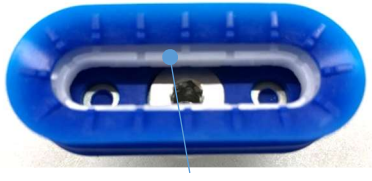
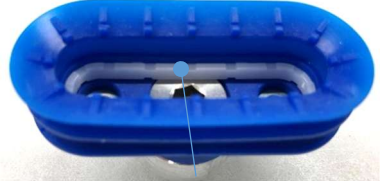
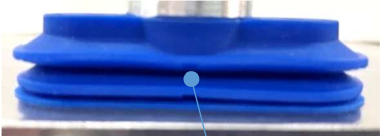

For safety instructions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

### Handling

When the attachment is inserted correctly (In case of OK):

	Attachment	Flat attachment
Appearance after inserting	 Attachment	 Flat attachment
Bellows condition when suction	 No gaps in the bellows	 No gaps in the bellows

When the attachment is inserted in the wrong position or orientation (In case of NG):

	Example 1	Example 2
Incorrect inserting position and orientation	 Attachment	 Attachment
Appearance after inserting	 Attachment	 Attachment
Bellows condition when suction	 There is a gap in the bellows.	 There is a gap in the bellows.



# ZP3P-WJT Series

## Specific Product Precautions

Be sure to read this before handling the products.

For safety instructions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

### Handling

**(4) Depending on the achieved vacuum pressure, the theoretical lifting force may exceed the strength of the suction cup, deforming or breaking the cup.**

The safety factor should be 16 times or more of the theoretical lifting force for horizontal lifting, and it should be 25 times or more for vertical lifting.

【Calculation of theoretical Lifting force】

$$W = P \times S \times 0.1 \times \frac{1}{t}$$

**W:** Lifting force [N]

**P:** Vacuum pressure [kPa]

**S:** Cup area [cm<sup>2</sup>]

**t:** Safety factor    Horizontal lifting: 16 or more

                                 Vertical lifting: 25 or more

Cup Specifications

Size	Cup area [cm <sup>2</sup> ]
15x35	4.8
25x60	13.7
35x80	25.4

**(5) When a bagged workpiece is lifted, the skirt changes its shape according to the changing shape of the workpiece.**

As the suction cup skirt changes its shape, the actual lifting force may be below the theoretical lifting force. Before use, please conduct testing with the customer’s actual equipment.

**(6) When the suction cup is pressed onto the workpiece, make sure it stays within the stroke range.**

Using exceeding the max. stroke of the suction cup will place an excessive load on the cups or attachments, causing malfunction.

**(7) When the achieved vacuum pressure is low (approx. -20 [kPa]), the suction cup does not completely operate its stroke.**

The cup may vibrate when transporting the workpiece, which may result in early damage to the cup.



## ZP3P-WJT Series

### Specific Product Precautions

Be sure to read this before handling the products.

For safety instructions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: <https://www.smcworld.com>

#### Handling

**(8) Use the product within the operating temperature range.**

The heat resistant temperature of the attachment (made of synthetic resin) is 90°C. Operate within the specified operating temperature range (-30 to 90°C).

**(9) Do not interfere with the suction cup stroke with an external stopper.**

The suction cup will become deformed, resulting in adsorption failure or breakage. In some cases, the workpiece will separate from the cup and fall.

**(10) Suction cups are consumable. Please replace them when cracks, wear, or deformation is confirmed during periodic maintenance.**

**(11) Before use, please check the transfer conditions with the customer's actual equipment.**

The transfer ability varies depending on the workpiece material, the friction between the cup and workpiece, moment, wind, vibration, etc. Testing with the customer's actual equipment is necessary.

**(12) When supplying vacuum release air, do so at a release flow rate of 110 [L/min (ANR)] or less. Failure to do so may result in damage to the suction cups.**

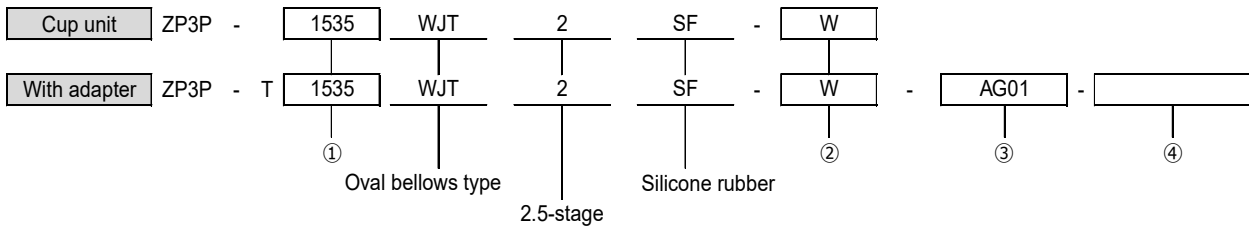
## 1.1 About product

### 1.1 Product application range

This product is a suction cup for adsorption transfer of workpieces with film packaging.

### 1.2 How to order

How to order designation method is shown below.



① Cup size

1535	15x35
2560	25x60
3580	35x80

② Attachment

Nil	Without attachment
W	With attachment
WF	With flat attachment

#### With adapter

③ Connection thread / ④ Vacuum inlet

Type	③ Connection thread			④ Vacuum inlet			Cup size	
	Thread	Symbol	Connection thread	Thread	Symbol	Connection thread	15x35	25x60, 35x80
Direct mounting	Male thread	<b>AG01</b>	G1/8	-	Nil	Use the connection thread	●	-
		<b>AG02</b>	G1/4				-	●
	Female thread	<b>BG01</b>	G1/8				●	-
		<b>BG02</b>	G1/4				-	●
		<b>B5</b>	M5x0.8				●	-
		<b>B8</b>	M8x1.25				-	●
Plate mounting	Male thread	<b>A10</b>	M10x1	Female thread	<b>B6</b>	M6x1.0	●	-
		<b>A14</b>	M14x1		<b>B01</b>	Rc1/8	-	●

Mounting nuts and flat attachment are included but do not come assembled.

### 1.3 Product Specifications

Product specifications are shown below.

#### Material specifications

Ambient temperature range		-30 to 90°C
Cup	Material	Silicone rubber <sup>*1 *2 *5</sup>
	color	Blue
	Rubber hardness (Shore A: ±5°)	60
Attachment	Material	Synthetic resin <sup>*3 *4 *5</sup>
	color	white

- \*1 Uses a material compliant with a dissolution test of the FDA (U.S. Food and Drug Administration) regulation 21CFR§177.2600 for “Rubber articles intended for repeated use.”
- \*2 Uses a material compliant with the standards for “Rubber apparatus (excluding baby drinking apparatus) and containers/packaging” (D3) (Partial revision: Japanese Ministry of Health, Labour, and Welfare Notification No. 595, 2012) in Section 3 “Apparatus and Containers/Packaging” of the Japan Food Sanitation Act, Article 18 “Specifications and Standards for Food and Food Additives, etc.” (Japanese Ministry of Health and Welfare Notification No. 370, 1959)
- \*3 Uses materials compliant with FDA (U.S. Food and Drug Administration) 21CFR§177
- \*4 Uses materials compliant with the standards for “Synthetic resin apparatus and containers/packaging” (D2) in Section 3 “Apparatus and Containers/Packaging” of the Japan Food Sanitation Act, Article 18 “Specifications and Standards for Food and Food Additives, etc.” (Japanese Ministry of Health and Welfare Notification No. 370, 1959)
- \*5 Uses materials compliant with Regulation (EC) No. 1935/2004 (regulation on materials and articles intended to come into contact with food)

#### Cup Specifications

size	Effective adsorption area [cm <sup>2</sup> ]	Removal force [N] <sup>*1</sup>		Internal capacity [cm <sup>3</sup> ]
		Without attachment	With attachment	
15x35	4.8	11.7	21.2	2.6
25x60	13.7	32.9	52.0	11.6
35x80	25.4	65.9	97.5	27.5

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

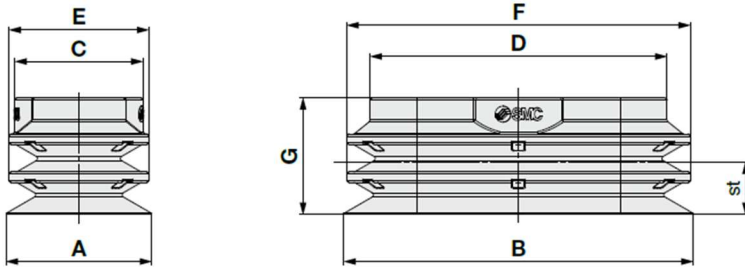
## 1.4 Dimensions/Models

The product dimensions and models are shown below.

### Cup unit

ZP3P - 1535 WJT 2 SF - W

①
②
③



	Model					A	B	C	D	E	F	G	st <sup>*1</sup>		Weight [g] <sup>2</sup>
	① Cup size	Form	Bellows stages	② Cup material	③ Attachment								Attachment : Without	Attachment : W,WF	
ZP3P	1535	WJT	2	SF	Nil	15	35	14.6	31	14.6	34.6	12	4	3	2.9
	2560				W	25	60	22	51	24	59	20	9	6	11.4
	3580				WF	35	80	24	69	34	79	24	11	8	25.7

\*1 (st) indicates achieved vacuum pressure: Reference at -90 [kPa].

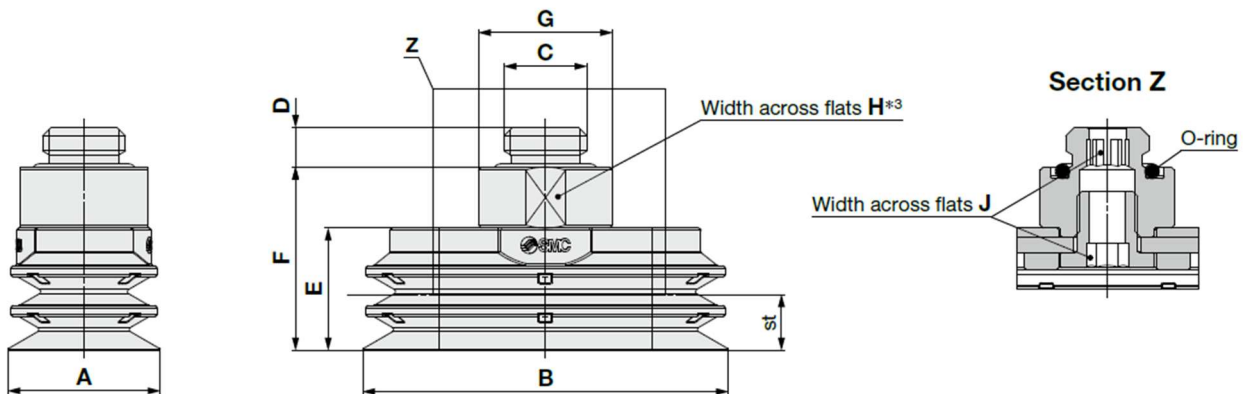
\*2 The attachment weight is not included. For the type with Attachment, add the weight to the part weight.

### With adapter Direct mounting type (Male thread)

ZP3P - T 1535 WJT 2 SF - W - AG01

①
②
③
④

		Cup Size	
		15x35	25x60, 35x80
AG01	G1/8	○	-
AG02	G1/4	-	○



	Vacuum inlet direction	Model						A	B	C	D	E	F	G	H	J	st <sup>*1</sup>		Min. opening hole size of the adapter	Weight [g] <sup>2</sup>	
		① Cup size	Form	Bellows stages	② Cup material	③ Attachment	④ Connection thread										Attachment: Without	Attachment: W,WF			
ZP3P	T	1535	WJT	2	SF	Nil W WF	AG01	15	35	G1/8	5.5	19	14.5	14	14	4	4	3	Φ3.6	7.8	
		2560					25	60	G1/4	6.5	30	22	21	21	6	9	6	11	8	Φ6	26.8
		3580					35	80													

\*1 st indicates achieved vacuum pressure: Reference at -85 [kPa].

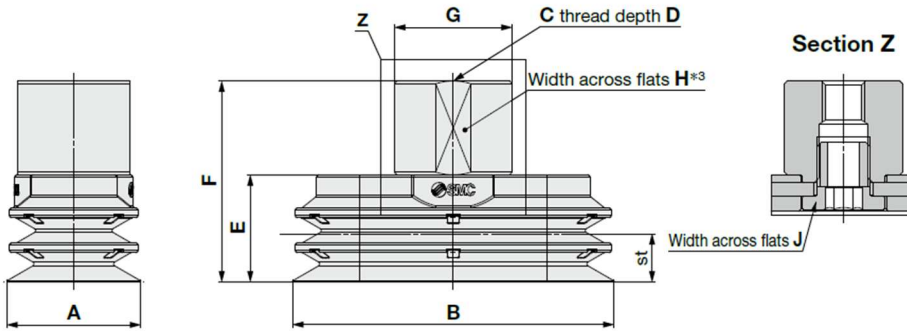
\*2 The attachment weight is not included. For the type with Attachment, add the weight to the part weight.

\*3 The direction of the width across flats H varies depending on the product.

## With adapter Direct mounting type (Female thread)

ZP3P - T 1535 WJT 2 SF - W - BG01

		Cup Size	
		15x35	25x60, 35x80
BG01	G1/8	○	-
B5	M5x0.8	○	-
BG02	G1/4	-	○
B8	M8x1.25	-	○



Model										st <sup>*1</sup>		Min. opening hole size of the adapter	Weight [g] <sup>2</sup>											
Vacuum inlet direction	Cup size	Form	Bellows stages	Cup material	Attachment	Connection thread	A	B	C	D	E			F	G	H	J	Attachment: Without	Attachment: W,WF					
ZP3P	T	1535	WJT	2	SF	Nil W WF	BG01	15	35	G1/8	7.4	27	14.5	14	4	4	3	Φ3.6	9.3					
							B5			M5x0.8	5	25											9.6	
							BG02			G1/4	11	40												32.5
	T	2560	WJT	2	SF	Nil W WF	B8	25	60	M8x1.25	8	20	37.5	22	21	6	9	6	Φ6	32.8				
							BG02			G1/4	11	44												46.8
							B8			M8x1.25	8	24	41.5											
T	3580	WJT	2	SF	Nil W WF	B8	35	80	M8x1.25	8	24	41.5												

\*1 st indicates achieved vacuum pressure. Reference at -85 [kPa].

\*2 The attachment weight is not included. For the type with Attachment, add the weight to the part weight.

\*3 The direction of the width across flats H varies depending on the product.

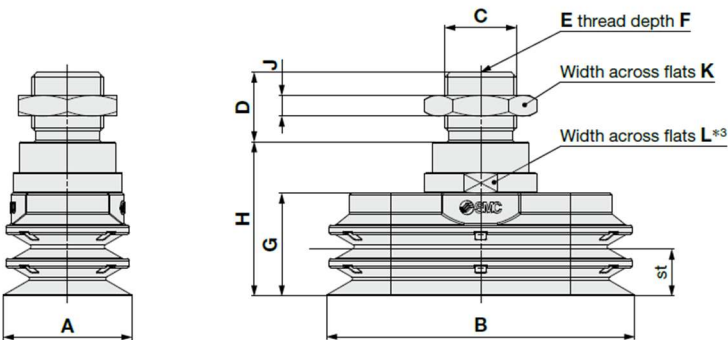
## With adapter Plate mounting type (Male thread)

ZP3P - T 1535 WJT 2 SF - W - A10 - B6

		Cup Size	
		15x35	25x60, 35x80
A10	M10x1	○	-
A14	M14x1	-	○

		Cup Size	
		15x35	25x60, 35x80
B6	M6x1.0	○	-
B01	Rc1/8	-	○



Model										st <sup>*1</sup>		Min. opening hole size of the adapter	Weight [g] <sup>2</sup>											
Vacuum inlet direction	Cup size	Form	Bellows stages	Cup material	Attachment	Connection thread	Vacuum inlet	A	B	C	D			E	F	G	H	J	K	L	Attachment: Without	Attachment: W,WF		
ZP3P	T	1535	WJT	2	SF	Nil W WF	A10	B6	15	35	M10x1.0	10	M6x1.0	6	12	19	3	14	14	4	3	Φ3.6	11.0	
							A14	B01	25	60	M14x1.0	13.5	Rc1/8	-	20	30	4	19	21	9	6		Φ6	31.9
									35	80					24	34				11	8			

\*1 st indicates achieved vacuum pressure. Reference at -85 [kPa].

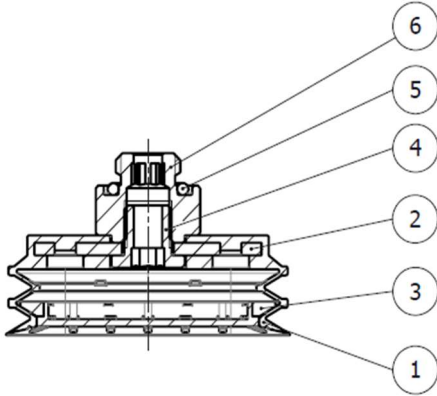
\*2 The attachment weight is not included. For the type with Attachment, add the weight to the part weight.

\*3 The direction of the width across flats H varies depending on the product.

## 1.5 Construction

The product construction is shown below.

Direct mounting type (Male thread)  
ZP3P-T□WJT2SF-A□



Direct mounting type (Female thread)  
ZP3P-T□WJT2SF-B□

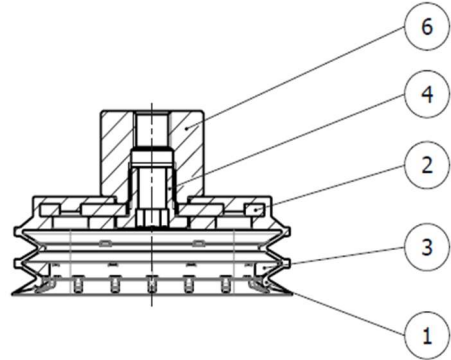
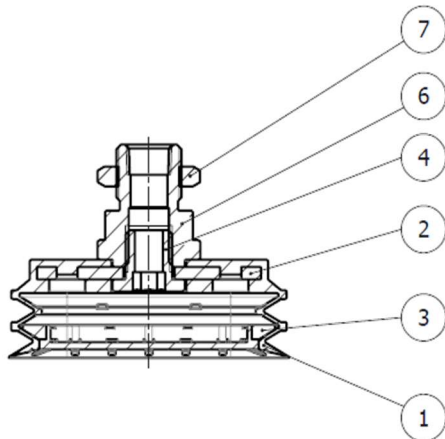


Plate mounting type (Female thread)  
ZP3P-T□WJT2SF-A□-B□



No.	Description	Material (surface treatment)	Note
1	Suction cup	Silicone rubber	
2	Insert plate	Aluminum alloy	
3	Attachment	Synthetic resin	
	Flat attachment		
4	Set screw	Stainless steel	
5	O-ring	Silicone rubber	For ZP3P-T□WJT2SF-A□
6	Adapter	Aluminum alloy (Anodized)	
7	Nut	Steel (Zinc chromated)	For ZP3P-T□WJT2SF-A□-B□

The replacement parts for the product are listed below.

**Attachment unit**

Part Number	Applicable cup size	Weight [g]
ZP3PW-1535WJT2	15x35	0.3
ZP3PW-2560WJT2	25x60	1.8
ZP3PW-3580WJT2	35x80	3.1

**Flat attachment unit**

Part Number	Applicable cup size	Weight [g]
ZP3PWF-1535WJT2	15x35	0.5
ZP3PWF-2560WJT2	25x60	2.1
ZP3PWF-3580WJT2	35x80	4.8

## 1.6 Mounting bracket assembly

The part number to order the adapter assembly is shown below.

### Adapter assembly: Direct Mounting Type

<b>Product Part number</b>		ZP3P - T <sup>①</sup> WJT2SF - □ - <sup>②</sup> Cup size Attachment Connection thread (Male/Female thread)						
<b>Component parts</b>								
<b>① Adapter</b>	<b>② Connection thread</b>	<b>Type</b>	<b>Size</b>	<b>symbol</b>	<b>① Cup size symbol</b>			
					<b>1535</b>	<b>2560</b>	<b>3580</b>	
		Male thread	G1/8	<b>AG01</b>	<b>ZP3PA-T1WJT-AG01</b>	—		
			G1/4	<b>AG02</b>	—	<b>ZP3PA-T2WJT-AG02</b>		
		Female thread	G1/8	<b>BG01</b>	<b>ZP3PA-T1WJT-BG01</b>	—		
			G1/4	<b>BG02</b>	—	<b>ZP3PA-T2WJT-BG02</b>		
			M5x0.8	<b>B5</b>	<b>ZP3PA-T1WJT-B5</b>	—		
			M8x1.25	<b>B8</b>	—	<b>ZP3PA-T2WJT-B8</b>		

### Adapter Assembly: Plate Mounting Type

<b>Product Part number</b>		ZP3P - T <sup>①</sup> WJT2SF - □ - <sup>②</sup> - <sup>③</sup> Cup size Attachment Connection thread (Male thread) Vacuum inlet										
<b>Component parts</b>												
<b>① Adapter</b>	<b>② Connection screw</b>	<b>Type</b>	<b>Size</b>	<b>symbol</b>	<b>③ Vacuum inlet</b>	<b>Type</b>	<b>Size</b>	<b>symbol</b>	<b>① Cup size symbol</b>			
									<b>1535</b>	<b>2560</b>	<b>3580</b>	
		Male thread	A10X1.0	<b>A10</b>	<b>③ Vacuum inlet</b>	Female thread	M6x1.0	<b>B6</b>	<b>ZP3PA-T1WJT-A10-B6</b>	—		
			M14x1.0	<b>A14</b>			Rc1/8	<b>B01</b>	—	<b>ZP3PA-T2WJT-A14-B01</b>		
		<b>③ Mounting nut (single unit)</b>								<b>ZPNA-M10</b>		<b>ZPNA-M14</b>

Revision history
Edition 1: Addition of cup specifications and description changed. [July 2026]

# SMC Corporation

Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362

URL <https://www.smcworld.com>

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.  
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