

# Vacuum Pad/ Bowl Shape with Non-slip Feature

**Bowl Shape**     $\varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63, \varnothing 80, \varnothing 100$

**Bowl Bellows Shape**     $\varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63, \varnothing 80, \varnothing 100$

RoHS

## Longer life (More than twice the life of urethane pads)

Pad material: **FS61** (Fluoro-based rubber) with excellent abrasion resistance  
Reduced number of pad replacements

## Non-slip special ribs

Diagonal ribs are radially arranged to secure the gripping force in all directions.

- Prevents workpiece slippage
- Secure adsorbing and transferring are possible.

## Bowl shape with excellent flexibility

Curved workpieces can also be adsorbed.

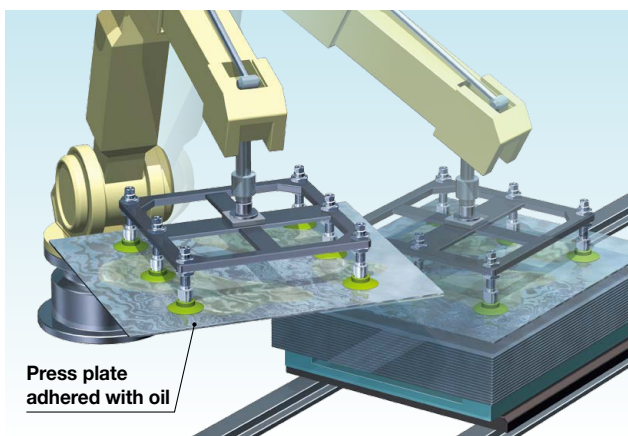
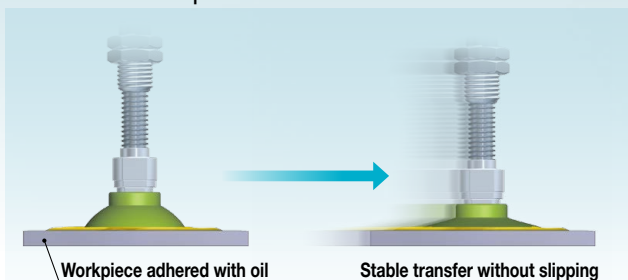
Horizontal holding force: 387 N (Pad diameter  $\varnothing 100$ )\*1

Suitable for high-temperature workpieces (200°C)\*1

\*1 For details, refer to the specifications on pages 4 and 11.

## Suitable for workpieces with oil film

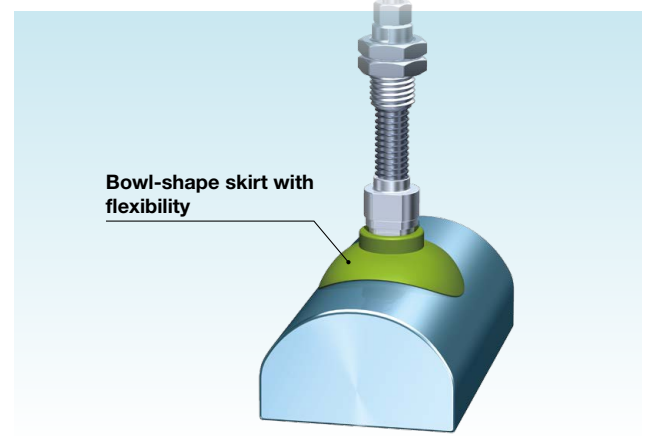
As oil is ejected to the grooves between special ribs, the lateral slipping of workpiece can be suppressed even on a steel plate with oil film.



**New** Bowl bellows shape

## The bowl shape can handle curved workpieces.

The pad follows the workpiece shape, making stable adsorption possible.



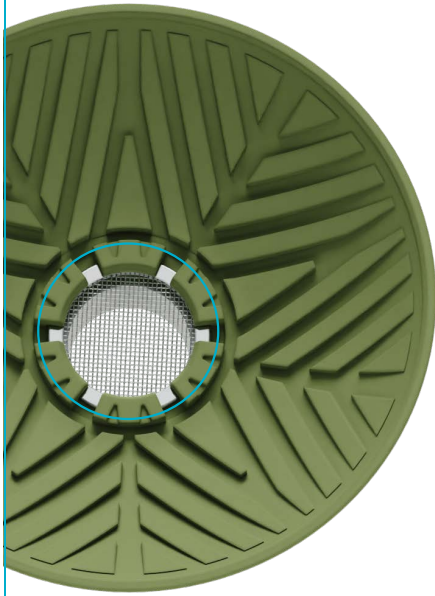
**ZP3M Series**

**SMC**

CAT.ES100-147B A

# Vacuum Pad/Bowl Shape with Non-slip Feature *ZP3M Series*

## Mesh filter (Option)



- Reduced suction of foreign matter into the vacuum pump and ejector
- Detachable
- Opening: 250  $\mu$ m

## Installation from below is possible.



## Insert-molded pad to prevent the pad from falling out of the adapter

### Bowl bellows shape

Discharge time maximum reduced by **40%** during adsorption horizontal transfer

Transfer conditions

Pad diameter:  $\phi$ 50, Workpiece mass: 1.3 kg, Supply pressure: -85 kPa, Acceleration/Deceleration: 5 [G]

ZP3M (Bowl bellows shape)



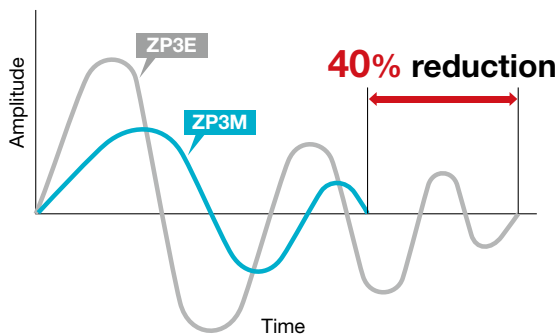
Deflection **Small** Discharge time **0.18 s**

ZP3E (Bellows type)


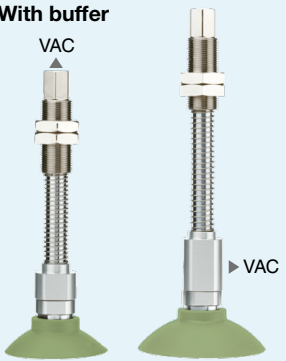


Deflection **Large** Discharge time **0.30 s**


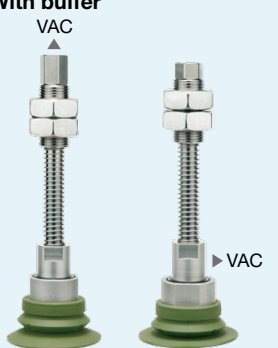
Relationship between the amplitude and time



## Bowl Shape Variations

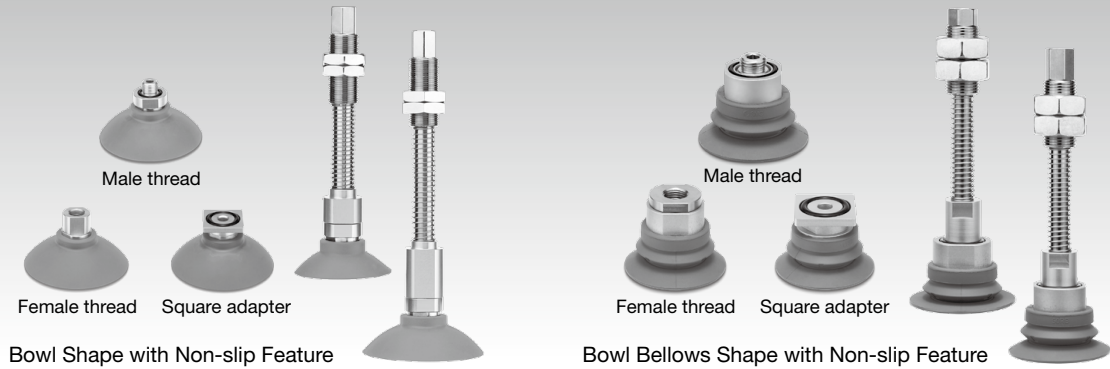
| Type   | Mounting        | Vacuum inlet direction | Connection    |  | Vacuum inlet  |  | Page  |   |
|--|-----------------|------------------------|---------------|--|---|--|-------|---|
|  |                 |                        | Type          | Size   |   | Size   |       |   |
|  |                 |                        |               | Pad diameter: $\varnothing 32$ to $\varnothing 50$ | Pad diameter: $\varnothing 63$ to $\varnothing 100$ | Pad diameter: $\varnothing 32$ to $\varnothing 50$ |       | Pad diameter: $\varnothing 63$ to $\varnothing 100$ |
|   | Direct mounting | Vertical               | Male thread   | M10 x 1.0  | M16 x 1.5   | Use the connection thread.                         | p. 4  |   |
|  |                 |                        | Female thread | G1/4   |   |  |       |   |
|  |                 |                        |               | M14 x 1.0  |   |  |       |   |
| Square adapter   | $\square 31.8$  |                        |               |  |   |  |       |   |
|  | Plate mounting  | Vertical               | Male thread   | M18 x 1.5  | M22 x 1.5   | M5 x 0.8   | Rc1/8 |   |
|  |                 | Lateral                |               |  |   |  |       |   |

## Bowl Bellows Shape Variations

| Type  | Mounting        | Vacuum inlet direction | Connection    |  | Vacuum inlet  |  | Page  |   |
|---|-----------------|------------------------|---------------|--|---|--|-------|---|
|   |                 |                        | Type          | Size   |   | Size   |       |   |
|   |                 |                        |               | Pad diameter: $\varnothing 32$ to $\varnothing 50$ | Pad diameter: $\varnothing 63$ to $\varnothing 100$ | Pad diameter: $\varnothing 32$ to $\varnothing 50$ |       | Pad diameter: $\varnothing 63$ to $\varnothing 100$ |
|  | Direct mounting | Vertical               | Male thread   | M10 x 1.0  | M16 x 1.5   | Use the connection thread.                         | p. 11 |   |
|   |                 |                        | Female thread | G1/4   |   |  |       |   |
|   |                 |                        |               | G3/8   |   |  |       |   |
| Square adapter  | $\square 31.8$  |                        |               |  |   |  |       |   |
|  | Plate mounting  | Vertical               | Male thread   | M18 x 1.5  | M22 x 1.5   | M5 x 0.8   | Rc1/8 |   |
|   |                 | Lateral                |               |  |   |  |       |   |

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## Vacuum Pad/ Bowl Shape with Non-slip Feature *ZP3M Series*



### • Bowl Shape with Non-slip Feature

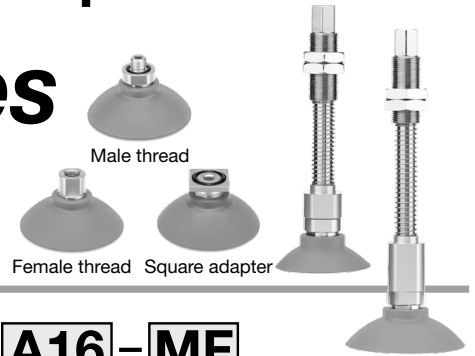
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### • Bowl Bellows Shape with Non-slip Feature

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# Vacuum Pad/ Bowl Shape with Non-slip Feature ZP3M Series



## How to Order

With adapter

ZP3M - T 63 R FS - A16 - MF

With buffer

ZP3M - T 63 R FS JB 30 - MF

① Bowl shape      ② With buffer

### ① Vacuum inlet direction

|   |          |
|---|----------|
| T | Vertical |
| Y | Lateral  |

### ④ Buffer stroke

| Stroke [mm] | Pad size  |  |
|-------------|-----------|--|
|             | All sizes |  |
| 10          | ●         |  |
| 30          | ●         |  |
| 50          | ●         |  |

### ⑥ Mesh filter

|     |                  |
|-----|------------------|
| Nil | None             |
| MF  | With mesh filter |

### Mesh filter unit

| Part no.    | Pad diameter |             |
|-------------|--------------|-------------|
|             | ø32 to ø50   | ø63 to ø100 |
| ZPMF-60-D13 | ●            | —           |
| ZPMF-60-D18 | —            | ●           |

### ② Pad diameter

|     |      |
|-----|------|
| 32  | ø32  |
| 40  | ø40  |
| 50  | ø50  |
| 63  | ø63  |
| 80  | ø80  |
| 100 | ø100 |

### ③ Material

| Symbol | Material                   | Color |
|--------|----------------------------|-------|
| FS     | FS61 (Fluoro-based rubber) | Green |

### ⑤ Connection thread and type

| Mounting        | Type           | Symbol | Size      | Pad diameter |             |
|-----------------|----------------|--------|-----------|--------------|-------------|
|                 |                |        |           | ø32 to ø50   | ø63 to ø100 |
| Direct mounting | Male thread    | A10    | M10 x 1.0 | ●            | —           |
|                 |                | A16    | M16 x 1.5 | —            | ●           |
|                 |                | AG02   | G1/4      | ●            | ●           |
|                 | Female thread  | B14    | M14 x 1.0 | ●            | ●           |
|                 |                | BG02   | G1/4      | ●            | ●           |
|                 |                | BG03   | G3/8      | ●            | ●           |
|                 | Square adapter | S32    | □31.8     | ●            | ●           |

\* The adapter and pad are adhered to each other and cannot be disassembled.

## Specifications

### Pad Material

| Material                       | FS61 (Fluoro-based rubber) |
|--------------------------------|----------------------------|
| Color of rubber                | Green                      |
| Rubber hardness (Shore A: ±5°) | 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

### Adapter Specifications

| Connection   | Male thread                         |                   | Female thread             | Square adapter |
|--------------|-------------------------------------|-------------------|---------------------------|----------------|
| Pad diameter | ø32 to ø50                          | ø63 to ø100       | ø32 to ø100               | ø32 to ø100    |
| Size         | M10 x 1.0<br>G1/4                   | M16 x 1.5<br>G1/4 | M14 x 1.0<br>G1/4<br>G3/8 | □31.8          |
| Vacuum inlet | Use the connection thread and type. |                   |                           |                |

### Buffer Specifications

| Pad diameter               | ø32 to ø50                 |    |    | ø63 to ø100                |     |      |      |      |
|----------------------------|----------------------------|----|----|----------------------------|-----|------|------|------|
| Non-rotating specification | JB: Rotating, With bushing |    |    | JB: Rotating, With bushing |     |      |      |      |
| Stroke [mm]                | 10                         | 30 | 50 | 10                         | 30  | 50   |      |      |
| Connection thread          | M18 x 1.5                  |    |    | M22 x 1.5                  |     |      |      |      |
| Spring reactive force      | At 0 stroke                |    |    | 10.0                       |     |      |      |      |
|                            | At full stroke             |    |    | 6.5                        | 8.5 | 10.5 | 11.5 | 13.5 |

### Pad Specifications

| Part no.     | Horizontal holding force [N]*1 |          | Minimum curvature radius for adsorption [mm]*2 |
|--------------|--------------------------------|----------|--|
|              | Without oil                    | With oil |  |
| ZP3M-T32RFS  | 47                             | 21       | 14   |
| ZP3M-T40RFS  | 81                             | 53       | 15   |
| ZP3M-T50RFS  | 111                            | 74       | 20   |
| ZP3M-T63RFS  | 170                            | 108      | 27.5   |
| ZP3M-T80RFS  | 231                            | 178      | 36   |
| ZP3M-T100RFS | 387                            | 224      | 46   |

\*1 These are actual measurement values when flat workpieces were adsorbed at a setting vacuum pressure of -60 kPa; however, they are not guaranteed values. (According to SMC's tests)

The values vary depending on the conditions (shape, surface roughness, oil type, oil amount, and other conditions) of the workpiece.

\*2 These are actual measurement values when cylindrical workpieces were adsorbed at a setting vacuum pressure of -85 kPa; however, they are not guaranteed values. (According to SMC's tests)

### Mesh Filter Specifications

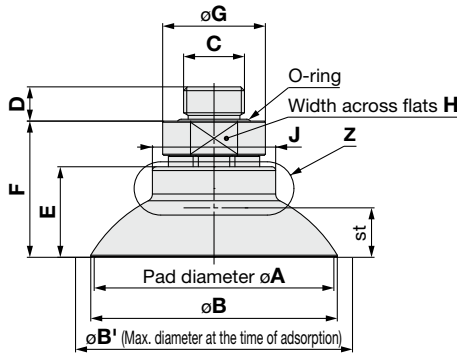
|             |        |
|-------------|--------|
| Mesh filter | 60     |
| Opening     | 250 μm |

Buffer assembly part no. p. 10

# ZP3M Series

## Dimensions/Models

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



ZP3M - T **63** R **FS** - **A16** - **MF**

① ② ③ ④



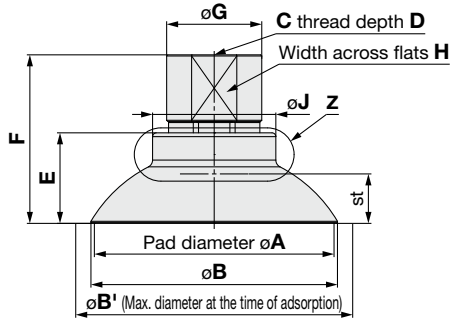
|             |           | Pad diameter [mm]      |                         |
|-------------|-----------|------------------------|-------------------------|
|             |           | $\phi 32$ to $\phi 50$ | $\phi 63$ to $\phi 100$ |
| <b>A10</b>  | M10 x 1.0 | ○                      | —                       |
| <b>A16</b>  | M16 x 1.5 | —                      | ○                       |
| <b>AG02</b> | G1/4      | ○                      | ○                       |

| Model                  |                |       |               |                     |               | A    | B    | B <sup>1</sup> *2 | C         | D    | E    | F    | G        | H     | J    | K | st*2 | Min. opening hole size of the adapter | Weight [g] |
|------------------------|----------------|-------|---------------|---------------------|---------------|------|------|-------------------|-----------|------|------|------|----------|-------|------|---|------|---------------------------------------|------------|
| Vacuum inlet direction | ① Pad diameter | Form  | ② Material *1 | ③ Connection thread | ④ Mesh filter |      |      |                   |           |      |      |      |          |       |      |   |      |                                       |            |
| ZP3M                   | T              | R     | FS            | Nil                 | MF            | 32   | 33.2 | 38.3              | M10 x 1.0 | 7    | 14.3 | 23.8 | 20       | 17    | 20.4 | 5 | 6    | $\phi 5$                              | 16.1       |
|                        |                |       |               |                     |               |      |      |                   | G1/4      | 6.5  |      | 24.1 | 25       | 22    |      |   |      |                                       | 24.5       |
|                        |                |       |               |                     |               | 40   | 41.3 | 47.8              | M10 x 1.0 | 7    | 17.8 | 27.3 | 20       | 17    | 21   | 5 | 8.4  | $\phi 5$                              | 17.3       |
|                        |                |       |               |                     |               |      |      |                   | G1/4      | 6.5  |      | 27.6 | 25       | 22    |      |   |      |                                       | 25.7       |
|                        |                |       |               |                     |               | 50   | 51.6 | 58.6              | M10 x 1.0 | 7    | 19.4 | 28.9 | 20       | 17    | 21.4 | 5 | 10.4 | $\phi 5$                              | 21.1       |
|                        |                |       |               |                     |               |      |      |                   | G1/4      | 6.5  |      | 29.2 | 25       | 22    |      |   |      |                                       | 29.5       |
|                        | 63             | 64.8  | 73.3          | M16 x 1.5           | 9             | 24.1 | 36.1 | 27                | 24        | 32.4 | 8    | 12   | $\phi 8$ | 47.1  |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 6.5           |      | 35.6 |                   |           |      |      |      |          | 14.4  | 46.7 |   |      |                                       |            |
|                        | 80             | 81.8  | 92.2          | M16 x 1.5           | 9             | 27.1 | 39.1 | 27                | 24        | 33   | 8    | 14.4 | $\phi 8$ |       | 61.3 |   |      |                                       |            |
|                        |                |       |               | G1/4                | 6.5           |      | 38.6 |                   |           |      |      |      |          | 60.9  |      |   |      |                                       |            |
|                        | 100            | 102.2 | 113.4         | M16 x 1.5           | 9             | 33.9 | 45.9 | 27                | 24        | 34.4 | 8    | 20.1 | $\phi 8$ | 96.7  |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 6.5           |      | 45.4 |                   |           |      |      |      |          | 100.4 |      |   |      |                                       |            |

\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

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



ZP3M - T **63** R **FS** - **B14** - **MF**

① ② ③ ④



|             |           | Pad diameter [mm]       |  |
|-------------|-----------|-------------------------|--|
|             |           | $\phi 32$ to $\phi 100$ |  |
| <b>B14</b>  | M14 x 1.0 | ○                       |  |
| <b>BG02</b> | G1/4      | ○                       |  |
| <b>BG03</b> | G3/8      | ○                       |  |

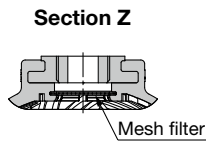
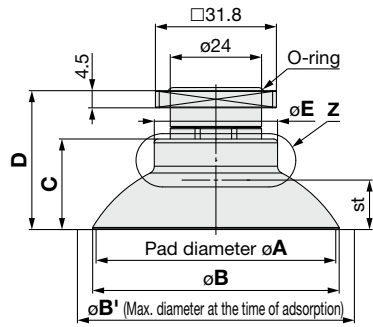
| Model                  |                |       |               |                     |               | A    | B    | B <sup>1</sup> *2 | C         | D    | E    | F    | G        | H    | J    | K | st*2 | Min. opening hole size of the adapter | Weight [g] |
|------------------------|----------------|-------|---------------|---------------------|---------------|------|------|-------------------|-----------|------|------|------|----------|------|------|---|------|---------------------------------------|------------|
| Vacuum inlet direction | ① Pad diameter | Form  | ② Material *1 | ③ Connection thread | ④ Mesh filter |      |      |                   |           |      |      |      |          |      |      |   |      |                                       |            |
| ZP3M                   | T              | R     | FS            | Nil                 | MF            | 32   | 33.2 | 38.3              | M14 x 1.0 | 8    | 14.3 | 31.6 | 23       | 19   | 20.4 | 5 | 6    | $\phi 5$                              | 20.9       |
|                        |                |       |               |                     |               |      |      |                   | G1/4      | 11   |      | 33.6 | 20       | 17   |      |   |      |                                       | 19.1       |
|                        |                |       |               |                     |               |      |      |                   | G3/8      | 11.4 |      | 34.1 | 26       | 22   |      |   |      |                                       | 26.3       |
|                        |                |       |               |                     |               | 40   | 41.3 | 47.8              | M14 x 1.0 | 8    | 17.8 | 35.1 | 23       | 19   | 21   | 5 | 8.4  | $\phi 5$                              | 22.1       |
|                        |                |       |               |                     |               |      |      |                   | G1/4      | 11   |      | 37.1 | 20       | 17   |      |   |      |                                       | 20.3       |
|                        |                |       |               |                     |               |      |      |                   | G3/8      | 11.4 |      | 37.6 | 26       | 22   |      |   |      |                                       | 27.5       |
|                        | 50             | 51.6  | 58.6          | M14 x 1.0           | 8             | 19.4 | 36.7 | 23                | 19        | 21.4 | 5    | 10.4 | $\phi 5$ | 25.9 |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 11            |      | 38.7 | 20                | 17        |      |      |      |          | 24.1 |      |   |      |                                       |            |
|                        |                |       |               | G3/8                | 11.4          |      | 39.2 | 26                | 22        |      |      |      |          | 31.3 |      |   |      |                                       |            |
|                        | 63             | 64.8  | 73.3          | M14 x 1.0           | 8             | 24.1 | 41.6 | 23                | 19        | 32.4 | 8    | 12   | $\phi 8$ | 42.2 |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 11            |      | 42.6 | 22                | 19        |      |      |      |          | 42.5 |      |   |      |                                       |            |
|                        |                |       |               | G3/8                | 11.4          |      | 44.6 | 25                | 22        |      |      |      |          | 46.4 |      |   |      |                                       |            |
|                        | 80             | 81.8  | 92.2          | M14 x 1.0           | 8             | 27.1 | 44.6 | 23                | 19        | 33   | 8    | 14.4 | $\phi 8$ | 56.4 |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 11            |      | 45.6 | 22                | 19        |      |      |      |          | 56.7 |      |   |      |                                       |            |
|                        |                |       |               | G3/8                | 11.4          |      | 47.6 | 25                | 22        |      |      |      |          | 60.5 |      |   |      |                                       |            |
|                        | 100            | 102.2 | 113.4         | M14 x 1.0           | 8             | 33.9 | 51.4 | 23                | 19        | 34.4 | 8    | 20.1 | $\phi 8$ | 92.3 |      |   |      |                                       |            |
|                        |                |       |               | G1/4                | 11            |      | 52.4 | 22                | 19        |      |      |      |          | 92.6 |      |   |      |                                       |            |
|                        |                |       |               | G3/8                | 11.4          |      | 54.4 | 25                | 22        |      |      |      |          | 96.5 |      |   |      |                                       |            |

\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

## Dimensions/Models

### With adapter Direct mounting type (Square adapter)



ZP3M - T **①** **②** R **③** FS - S32 - MF

①

②

③

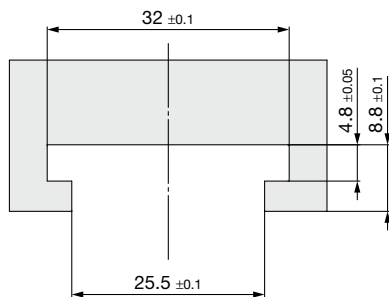


|      | Vacuum inlet direction | Model          |      |               |                   |               | A     | B     | B <sup>*2</sup> | C    | D    | E    | st <sup>*2</sup> | Min. opening hole size of the adapter | Weight [g] |
|------|------------------------|----------------|------|---------------|-------------------|---------------|-------|-------|-----------------|------|------|------|------------------|---------------------------------------|------------|
|      |                        | ① Pad diameter | Form | ② Material *1 | Connection thread | ③ Mesh filter |       |       |                 |      |      |      |                  |                                       |            |
| ZP3M | T                      | 32             | R    | FS            | S32               | Nil MF        | 32    | 33.2  | 38.3            | 14.3 | 26.3 | 20.4 | 6                | φ5                                    | 26.1       |
|      |                        | 40             |      |               |                   |               | 41.3  | 47.8  | 17.8            | 29.8 | 21   | 8.4  | φ5               | 27.3                                  |            |
|      |                        | 50             |      |               |                   |               | 51.6  | 58.6  | 19.4            | 31.4 | 21.4 | 10.4 | φ5               | 31.1                                  |            |
|      |                        | 63             |      |               |                   |               | 64.8  | 73.3  | 24.1            | 36.8 | 32.4 | 12   | φ8               | 48.7                                  |            |
|      |                        | 80             |      |               |                   |               | 81.8  | 92.2  | 27.1            | 39.8 | 33   | 14.4 | φ8               | 62.8                                  |            |
|      |                        | 100            |      |               |                   |               | 102.2 | 113.4 | 33.9            | 46.6 | 34.4 | 20.1 | φ8               | 97.4                                  |            |

\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

### Square adapter mounting groove dimensions (Recommended)

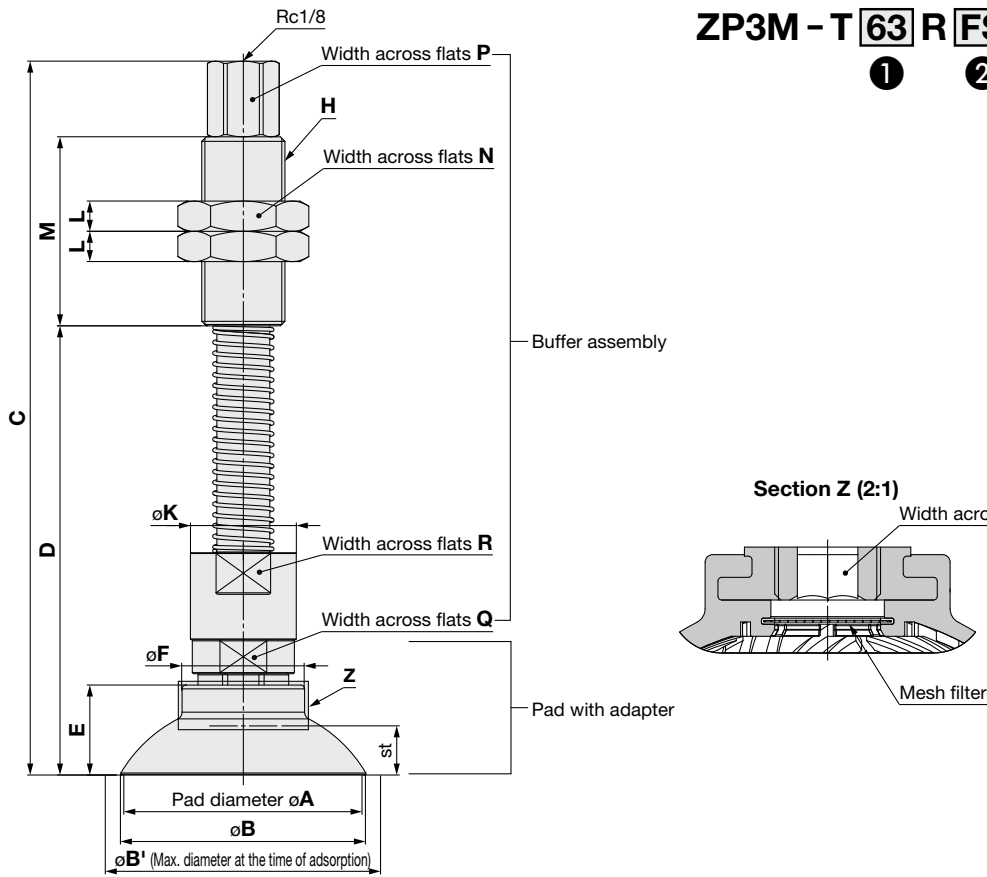


\* For details on how to use the square adapter, refer to "Mounting" on page 18.

# ZP3M Series

## Dimensions/Models

**With buffer** Plate mounting type (Vacuum inlet direction: Vertical)



ZP3M - T **63** R **FS** **JB** **10** - **MF**

① ② ③ ④ ⑤

**JB** Rotating, With bushing

| Model                  |                |      |               |                |                 |               | A     | B     | B <sup>*2</sup> | C     | D     | E    | F         | H         | J  | K  | L  | M  | N  | P  | Q  | R    | st <sup>*2</sup> | Min. opening hole size of the adapter | Weight [g] |       |
|------------------------|----------------|------|---------------|----------------|-----------------|---------------|-------|-------|-----------------|-------|-------|------|-----------|-----------|----|----|----|----|----|----|----|------|------------------|---------------------------------------|------------|-------|
| Vacuum inlet direction | ① Pad diameter | Form | ② Material *1 | ③ Buffer spec. | ④ Buffer stroke | ⑤ Mesh filter |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
| ZP3M                   | T              | R    | FS            | JB             | 10              | Nil MF        | 32    | 33.2  | 38.3            | 123.3 | 71.3  | 14.3 | 20.4      | M18 x 1.5 | 5  | 19 | 11 | 35 | 27 | 14 | 17 | 16   | 8.4              | ø3                                    | 205        |       |
|                        |                |      |               |                | 30              |               |       |       |                 | 148.3 | 96.3  |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 219.5      |       |
|                        |                |      |               |                | 50              |               |       |       |                 | 168.3 | 116.3 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 231        |       |
|                        |                |      |               |                | 10              |               |       |       |                 | 126.8 | 74.8  |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 206.2      |       |
|                        |                |      |               |                | 30              |               |       |       |                 | 151.8 | 99.8  |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 220.7      |       |
|                        |                |      |               |                | 50              |               |       |       |                 | 171.8 | 119.8 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 232.2      |       |
|                        |                | 50   | 10            | 128.4          | 76.4            | 210           |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                |      | 30            | 153.4          | 101.4           | 224.5         |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                |      | 50            | 173.4          | 121.4           | 236           |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                |      | 10            | 164.1          | 94.1            | 210           |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                |      | 30            | 189.1          | 119.1           | 236           |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                |      | 50            | 209.1          | 139.1           | 246           |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        | 63             | 10   | 167.1         | 97.1           | 210             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                | 30   | 192.1         | 122.1          | 236             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                | 50   | 212.1         | 142.1          | 246             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                | 10   | 173.9         | 103.9          | 210             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                | 30   | 198.9         | 128.9          | 236             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        |                | 50   | 218.9         | 148.9          | 246             |               |       |       |                 |       |       |      |           |           |    |    |    |    |    |    |    |      |                  |                                       |            |       |
|                        | 80             | R    | FS            | JB             | 10              | Nil MF        | 80.6  | 81.8  | 92.2            | 167.1 | 97.1  | 27.1 | 33        | M22 x 1.5 | 8  | 28 | 8  | 50 | 30 | 17 | 24 | 24   | 14.4             | ø4                                    | 355        |       |
|                        |                |      |               |                |                 |               |       |       |                 | 30    | 189.1 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 119.1      | 383.8 |
|                        |                |      |               |                |                 |               |       |       |                 | 50    | 209.1 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 139.1      | 406.7 |
|                        |                |      |               |                |                 |               |       |       |                 | 10    | 167.1 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 97.1       | 369.2 |
|                        |                |      |               |                |                 |               |       |       |                 | 30    | 192.1 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 122.1      | 397.9 |
|                        |                |      |               |                |                 |               |       |       |                 | 50    | 212.1 |      |           |           |    |    |    |    |    |    |    |      |                  |                                       | 142.1      | 420.9 |
| 100                    | R              | FS   | JB            | 10             | Nil MF          | 100           | 102.2 | 113.4 | 173.9           | 103.9 | 33.9  | 34.4 | M22 x 1.5 | 8         | 28 | 8  | 50 | 30 | 17 | 24 | 24 | 20.1 | ø4               | 404.6                                 |            |       |
|                        |                |      |               |                |                 |               |       |       | 30              | 198.9 |       |      |           |           |    |    |    |    |    |    |    |      |                  | 128.9                                 | 433.4      |       |
|                        |                |      |               |                |                 |               |       |       | 50              | 218.9 |       |      |           |           |    |    |    |    |    |    |    |      |                  | 148.9                                 | 456.3      |       |

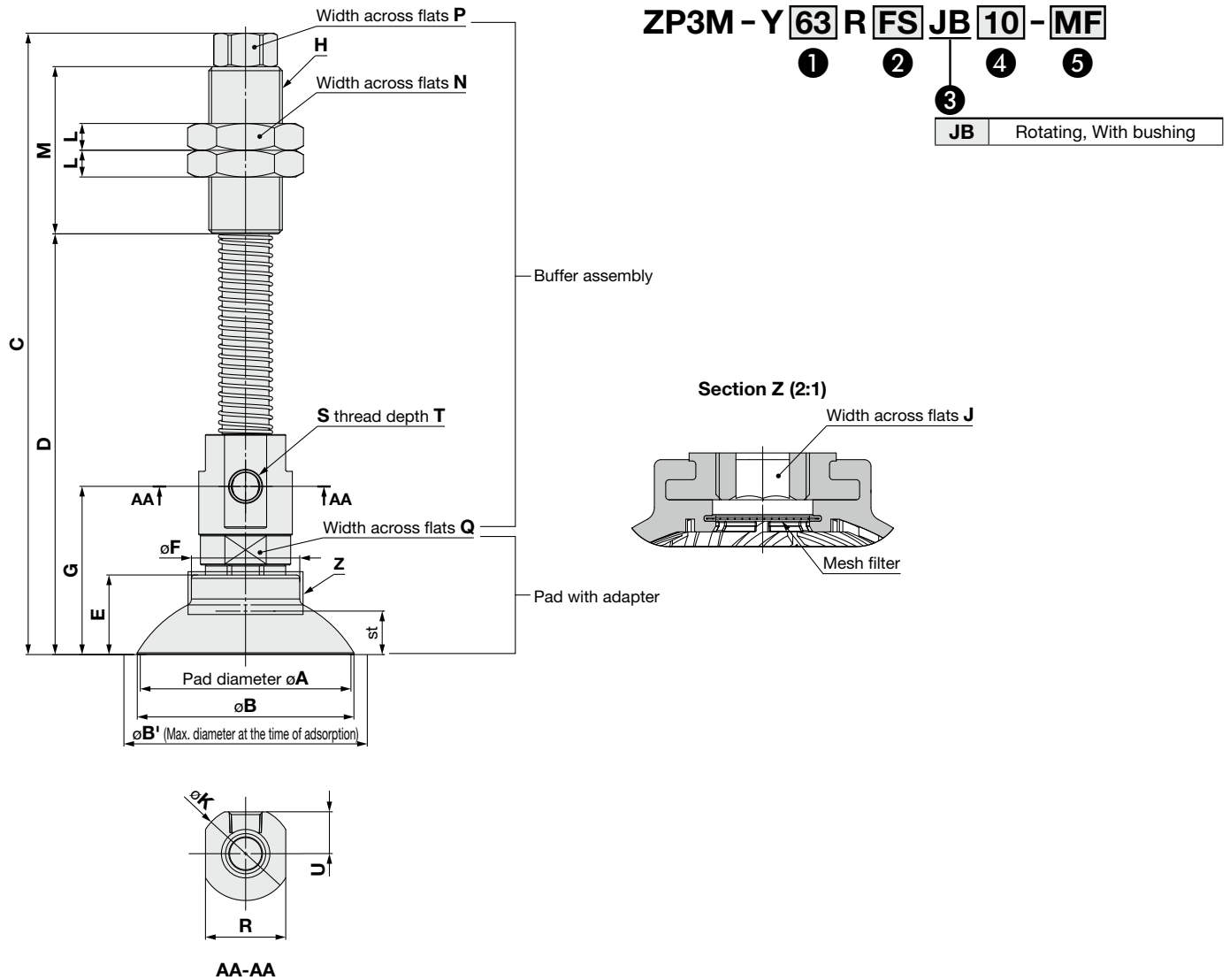
\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.



## Dimensions/Models

**With buffer** Plate mounting type (Vacuum inlet direction: Lateral)



| Model                  |                |       |               |                |                 |               | A    | B    | B <sup>*2</sup> | C     | D     | E    | F    | G    | H         | J  | K  | L     | M  | N    | P    | Q  | R     | S        | T | U   | st <sup>*2</sup> | Min. opening hole size of the adapter | Weight [g] |
|------------------------|----------------|-------|---------------|----------------|-----------------|---------------|------|------|-----------------|-------|-------|------|------|------|-----------|----|----|-------|----|------|------|----|-------|----------|---|-----|------------------|---------------------------------------|------------|
| Vacuum inlet direction | ① Pad diameter | Form  | ② Material *1 | ③ Buffer spec. | ④ Buffer stroke | ⑤ Mesh filter |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
| ZP3M                   | Y              | R     | FS            | JB             | 10              | Nil           | 32   | 33.2 | 38.3            | 118.3 | 74.3  | 14.3 | 20.4 | 33.7 | M18 x 1.5 | 5  | 19 | 11    | 35 | 27   | 14   | 17 | 16    | M5 x 0.8 | 5 | 8.5 | 8.4              | ø5                                    | 203.2      |
|                        |                |       |               |                | 30              |               |      |      |                 | 143.3 | 99.3  |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 219.1      |
|                        |                |       |               |                | 50              |               |      |      |                 | 163.3 | 119.3 |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 231.6      |
|                        |                |       |               |                | 10              |               |      |      |                 | 121.8 | 77.8  |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 204.4      |
|                        |                |       |               |                | 30              |               |      |      |                 | 146.8 | 102.8 |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 220.3      |
|                        |                |       |               |                | 50              |               |      |      |                 | 166.8 | 122.8 |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 232.8      |
|                        |                | 10    | 123.4         | 79.4           | 208.2           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        |                | 30    | 148.4         | 104.4          | 224.1           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        |                | 50    | 168.4         | 124.4          | 236.6           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        |                | 10    | 161.1         | 101.1          | 204.4           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        |                | 30    | 186.1         | 126.1          | 220.3           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        |                | 50    | 206.1         | 146.1          | 232.8           |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 10             | 164.1 | 104.1         | 208.2          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 30             | 189.1 | 129.1         | 224.1          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 50             | 209.1 | 149.1         | 236.6          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 10             | 170.9 | 110.9         | 204.4          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 30             | 195.9 | 135.9         | 220.3          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 50             | 215.9 | 155.9         | 232.8          |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       |            |
|                        | 100            | 102.2 | 113.4         | 195.9          | 135.9           | 33.9          | 34.4 | 60.4 | M22 x 1.5       | 8     | 28    | 8    | 50   | 30   | 17        | 24 | 24 | Rc1/8 | -  | 12.5 | 14.4 | ø8 | 400.9 |          |   |     |                  |                                       |            |
|                        |                |       |               |                |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 425.9      |
|                        |                |       |               |                |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 405.2      |
|                        |                |       |               |                |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 436.4      |
|                        |                |       |               |                |                 |               |      |      |                 |       |       |      |      |      |           |    |    |       |    |      |      |    |       |          |   |     |                  |                                       | 461.3      |

\*1 FS: FS61 (Fluoro-based rubber)

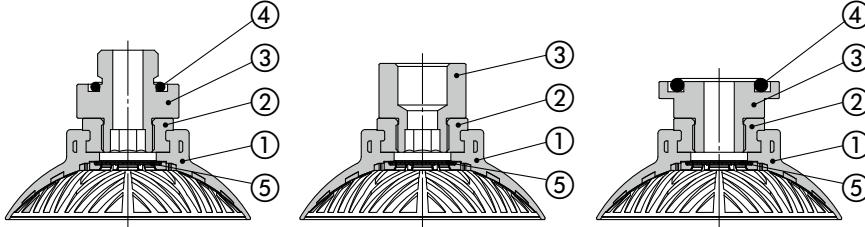
\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

# ZP3M Series

## Construction

### With adapter

ZP3M-T□RFS-A□ ZP3M-T□RFS-B□ ZP3M-T□RFS-S32



### Component Parts

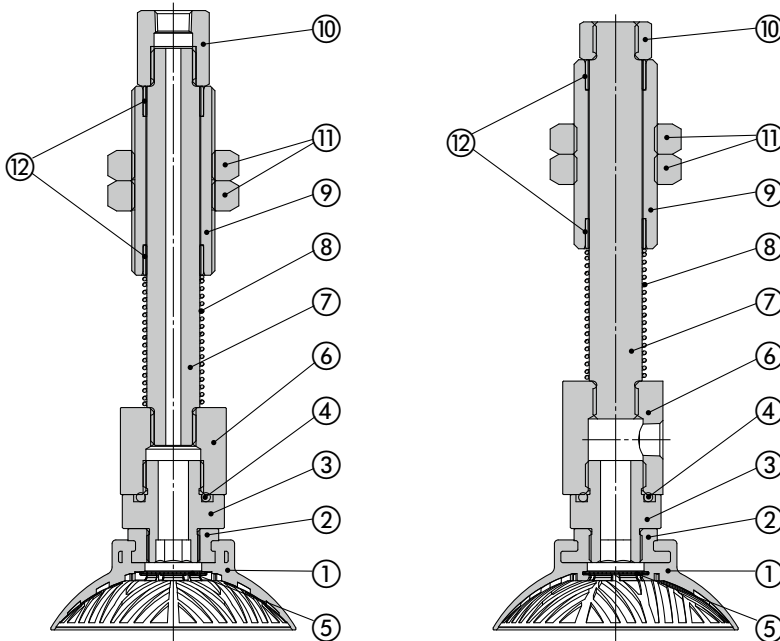
| No. | Description    | Material                   |
|-----|----------------|----------------------------|
| 1   | Pad            | FS61 (Fluoro-based rubber) |
| 2   | Insert adapter | Aluminum alloy             |
| 3   | Adapter        | Aluminum alloy (Anodized)  |
| 4   | O-ring         | FKM                        |
| 5   | Mesh filter    | Stainless steel            |

\* The parts 1, 2, and 3 are adhered to each other and cannot be disassembled.

### With buffer

ZP3M-T□RFSJB□-□

ZP3M-Y□RFSJB□-□



### Component Parts

| No. | Description    | Material                                    |
|-----|----------------|---|
| 1   | Pad            | FS61 (Fluoro-based rubber)                  |
| 2   | Insert adapter | Aluminum alloy                              |
| 3   | Adapter        | Aluminum alloy (Anodized)                   |
| 4   | O-ring         | FKM   |
| 5   | Mesh filter    | Stainless steel                             |
| 6   | Adapter        | Aluminum alloy (Anodized)                   |
| 7   | Piston rod     | Structural steel (Hard chrome plating)      |
| 8   | Return spring  | Stainless steel                             |
| 9   | Buffer body    | Brass (Electroless nickel plating)          |
| 10  | Buffer adapter | Brass (Electroless nickel plating)          |
| 11  | Nut            | Steel (Zinc chromated) M18 x 1.5            |
|     |                | Structural steel (Nickel plating) M22 x 1.5 |
| 12  | Bushing        | -   |

\* The parts 1, 2, and 3 are adhered to each other and cannot be disassembled.

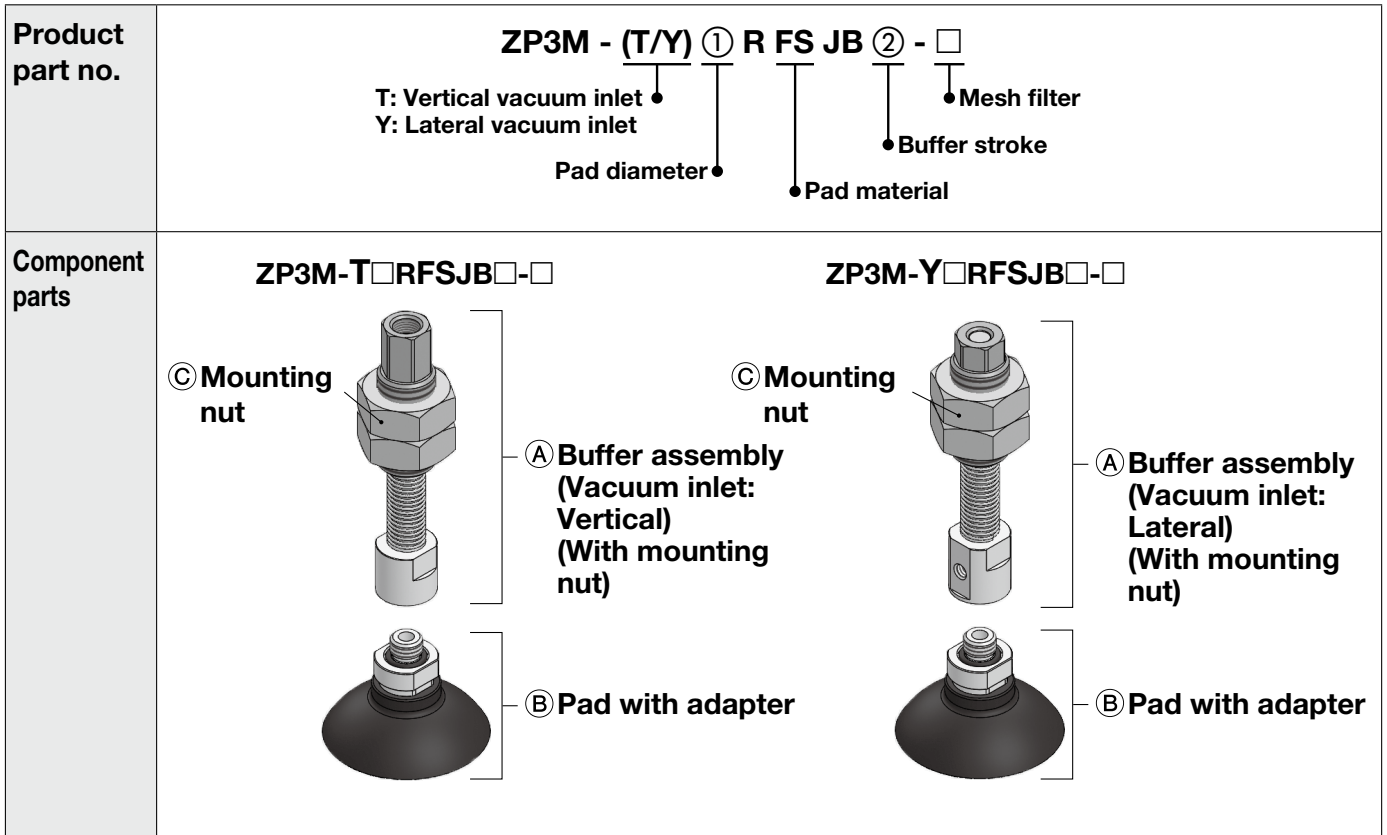
### Replacement Parts: Mesh Filter Unit

| Part no.    | Pad diameter |             |
|-------------|--------------|-------------|
|             | ø32 to ø50   | ø63 to ø100 |
| ZPMF-60-D13 | ●            | -           |
| ZPMF-60-D18 | -            | ●           |



# ZP3M Series

# Mounting Bracket Assembly



|                                       |                 | Symbol            | ① Pad diameter    |                   |                   |                   |                    |     |
|---------------------------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-----|
|                                       |                 |                   | 32                | 40                | 50                | 63                | 80                 | 100 |
| ① Buffer assembly (With mounting nut) | ② Buffer stroke | 10                | ZP3EB-(T/Y)1JB②   |                   |                   | ZP3EB-(T/Y)2JB②   |                    |     |
|                                       |                 | 30                |                   |                   |                   |                   |                    |     |
|                                       |                 | 50                |                   |                   |                   |                   |                    |     |
| ② Pad with adapter                    | M10 x 1.0       | ZP3M-T32RFS-A10-□ | ZP3M-T40RFS-A10-□ | ZP3M-T50RFS-A10-□ | -                 |                   |                    |     |
|                                       | M16 x 1.5       | -                 |                   |                   | ZP3M-T63RFS-A16-□ | ZP3M-T80RFS-A16-□ | ZP3M-T100RFS-A16-□ |     |
| ③ Mounting nut (Single unit)          | M18 x 1.5       | ZPNA-M18          |                   |                   |                   |                   |                    |     |
|                                       | M22 x 1.5       | -                 |                   |                   |                   |                   |                    |     |
|                                       |                 |                   | ZPNA-M22          |                   |                   |                   |                    |     |

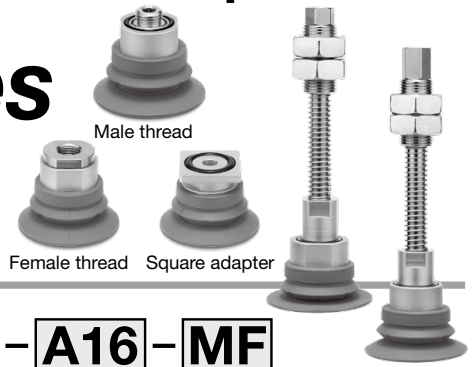
**[Buffer assembly part number example]**

Product part no. **ZP3M - T63RFS JB 10**

Buffer assembly **ZP3EB - T2 JB 10**

② Buffer stroke

# Vacuum Pad/ Bowl Bellows Shape with Non-slip Feature ZP3M Series



## How to Order

With adapter

ZP3M - T 63 RB FS - A16 - MF

With buffer

ZP3M - T 63 RB FS JB 30 - MF

1 Bowl bellows shape 2 With buffer 3 4 5 6

### 1 Vacuum inlet direction

|   |          |
|---|----------|
| T | Vertical |
| Y | Lateral  |

### 4 Buffer stroke

| Stroke [mm] | Pad size  |  |
|-------------|-----------|--|
|             | All sizes |  |
| 10          | ●         |  |
| 30          | ●         |  |
| 50          | ●         |  |

### 6 Mesh filter

|     |                  |
|-----|------------------|
| Nil | None             |
| MF  | With mesh filter |

### Mesh filter unit

| Part no.    | Pad diameter |             |
|-------------|--------------|-------------|
|             | ø32 to ø50   | ø63 to ø100 |
| ZPMF-60-D13 | ●            | —           |
| ZPMF-60-D18 | —            | ●           |

### 2 Pad diameter

|     |      |
|-----|------|
| 32  | ø32  |
| 40  | ø40  |
| 50  | ø50  |
| 63  | ø63  |
| 80  | ø80  |
| 100 | ø100 |

### 3 Material

| Symbol | Material                   | Color |
|--------|----------------------------|-------|
| FS     | FS61 (Fluoro-based rubber) | Green |

### 5 Connection thread and type

| Mounting        | Type          | Symbol | Size      | Pad diameter |             |
|-----------------|---------------|--------|-----------|--------------|-------------|
|                 |               |        |           | ø32 to ø50   | ø63 to ø100 |
| Direct mounting | Male thread   | A10    | M10 x 1.0 | ●            | —           |
|                 |               | A16    | M16 x 1.5 | —            | ●           |
|                 |               | AG02   | G1/4      | ●            | ●           |
|                 | Female thread | BG02   | G1/4      | ●            | ●           |
|                 |               | BG03   | G3/8      | ●            | ●           |
|                 |               | S32    | □31.8     | ●            | ●           |

\* The adapter and pad are adhered to each other and cannot be disassembled.

## Specifications

### Pad Material

| Material                       | FS61 (Fluoro-based rubber) |
|--------------------------------|----------------------------|
| Color of rubber                | Green                      |
| Rubber hardness (Shore A: ±5°) | 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

### Pad Specifications

| Part no.      | Horizontal holding force [N]*1 |          | Minimum curvature radius for adsorption [mm]*2 |
|---------------|--------------------------------|----------|--|
|               | Without oil                    | With oil |  |
| ZP3M-T32RBFS  | 35.8                           | 18.0     | 12.5   |
| ZP3M-T40RBFS  | 37.5                           | 25.2     | 17.5   |
| ZP3M-T50RBFS  | 63                             | 46       | 27.5   |
| ZP3M-T63RBFS  | 86                             | 59       | 27.5   |
| ZP3M-T80RBFS  | 122                            | 91       | 34   |
| ZP3M-T100RBFS | 184.1                          | 149.1    | 60   |

\*1 These are actual measurement values when flat workpieces were adsorbed at a setting vacuum pressure of -60 kPa; however, they are not guaranteed values. (According to SMC's tests)  
The values vary depending on the conditions (shape, surface roughness, oil type, oil amount, and other conditions) of the workpiece.

\*2 These are actual measurement values when cylindrical workpieces were adsorbed at a setting vacuum pressure of -85 kPa; however, they are not guaranteed values. (According to SMC's tests)

### Adapter Specifications

| Connection   | Male thread                         |                   | Female thread | Square adapter |
|--------------|-------------------------------------|-------------------|---------------|----------------|
| Pad diameter | ø50                                 | ø63, ø80          | ø32 to ø100   | ø32 to ø100    |
| Size         | M10 x 1.0<br>G1/4                   | M16 x 1.5<br>G1/4 | G1/4<br>G3/8  | □31.8          |
| Vacuum inlet | Use the connection thread and type. |                   |               |                |

### Buffer Specifications

| Pad diameter          | ø32 to ø50                 |                            |    | ø63 to ø100 |                            |      |      |      |
|-----------------------|----------------------------|----------------------------|----|-------------|----------------------------|------|------|------|
|                       | Non-rotating specification | JB: Rotating, With bushing |    |             | JB: Rotating, With bushing |      |      |      |
| Stroke [mm]           | 10                         | 30                         | 50 | 10          | 30                         | 50   |      |      |
| Connection thread     | M18 x 1.5                  |                            |    | M22 x 1.5   |                            |      |      |      |
| Spring reactive force | At 0 stroke                |                            |    | 10.0        |                            |      |      |      |
|                       | At full stroke             |                            |    | 6.5         | 8.5                        | 10.5 | 11.5 | 13.5 |

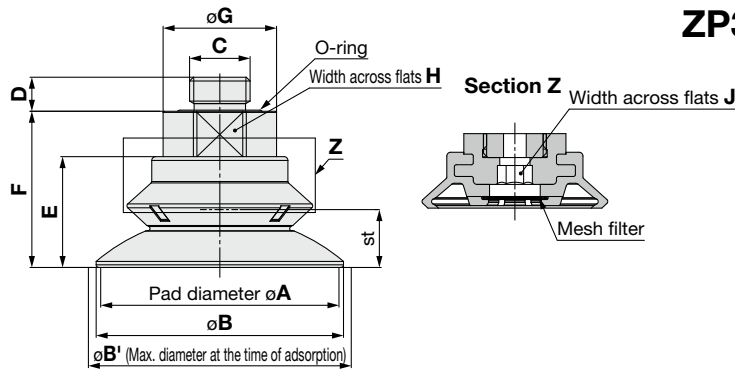
### Mesh Filter Specifications

|             |        |
|-------------|--------|
| Mesh filter | 60     |
| Opening     | 250 μm |

Buffer assembly part no. p. 17

## Dimensions/Models

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



**ZP3M - T** 63 **RB** FS - A16 - MF

1    
 2    
 3    
 4



|             |           | Pad diameter [mm] |             |
|-------------|-----------|-------------------|-------------|
|             |           | ø32 to ø50        | ø63 to ø100 |
| <b>A10</b>  | M10 x 1.0 | ○                 | -           |
| <b>A16</b>  | M16 x 1.5 | -                 | ○           |
| <b>AG02</b> | G1/4      | ○                 | ○           |

| Model                  |  |      |   |   |   |     | A    | B     | B <sup>1</sup> *2 | C     | D    | E    | F  | G  | H | J    | st*2  | Min. opening hole size of the adapter | Weight [g] |
|------------------------|--|------|---|---|---|-----|------|-------|-------------------|-------|------|------|----|----|---|------|-------|---------------------------------------|------------|
| Vacuum inlet direction | <span style="border: 1px solid black; padding: 2px;">1</span> Pad diameter | Form | <span style="border: 1px solid black; padding: 2px;">2</span> Material *1 | <span style="border: 1px solid black; padding: 2px;">3</span> Connection thread | <span style="border: 1px solid black; padding: 2px;">4</span> Mesh filter |     |      |       |                   |       |      |      |    |    |   |      |       |                                       |            |
| ZP3M                   | T  | RB   | FS  | A10   | Nil MF  | 32  | 34   | 34.9  | M10 x 1.0         | 7     | 19   | 28   | 22 | 19 | 5 | 9    | ø5    | 29.9                                  |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | ø6    |      |      |    |    |   |      | 31.7  |                                       |            |
|                        |  |      |   | A10   |   | 40  | 41.8 | 43.9  | M10 x 1.0         | 7     | 19.8 | 28.8 |    |    |   | 10   | ø5    | 31.4                                  |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | ø6    |      |      |    |    |   |      | 33.1  |                                       |            |
|                        |  |      |   | A10   |   | 50  | 52.4 | 55.6  | M10 x 1.0         | 7     | 24.9 | 36.9 |    |    |   | 11.8 | ø5    | 68.6                                  |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | 70.3  |      |      |    |    |   |      |       |                                       |            |
|                        |  |      |   | A16   |   | 63  | 65.4 | 69.5  | M16 x 1.5         | 9     | 29.3 | 41.3 |    |    |   | 15.2 | ø6    | 86.3                                  |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | 80.1  |      |      |    |    |   |      |       |                                       |            |
|                        |  |      |   | A16   |   | 80  | 82.6 | 87.5  | M16 x 1.5         | 9     | 37.9 | 49.9 |    |    |   | 22.1 | 119.3 |                                       |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | 113.1 |      |      |    |    |   |      |       |                                       |            |
|                        |  |      |   | A16   |   | 100 | 103  | 107.1 | M16 x 1.5         | 9     | 44.6 | 56.6 |    |    |   | 25.8 | 166.5 |                                       |            |
|                        |  |      |   | G1/4  |   |     |      |       | 6.5               | 160.4 |      |      |    |    |   |      |       |                                       |            |

\*1 FS: FS61 (Fluoro-based rubber)

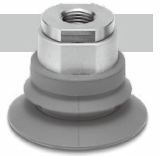
\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

# ZP3M Series

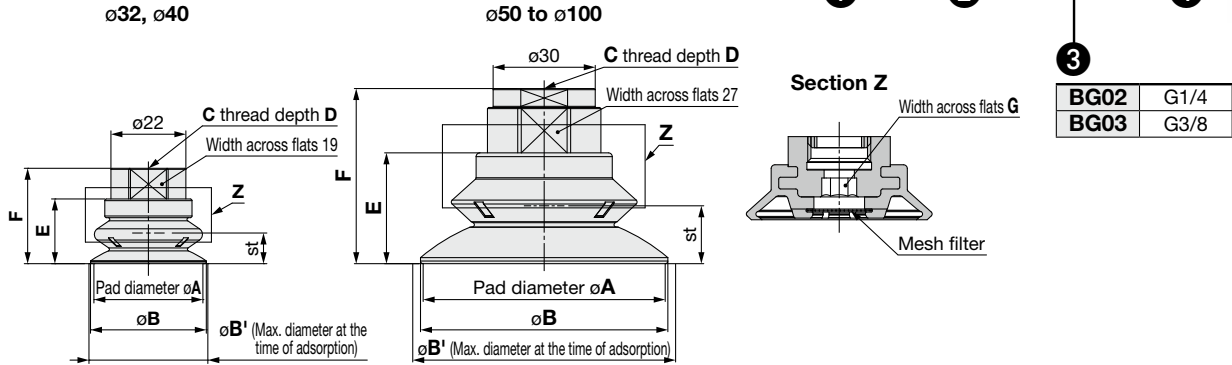
## Dimensions/Models

**With adapter** Direct mounting type (Female thread)

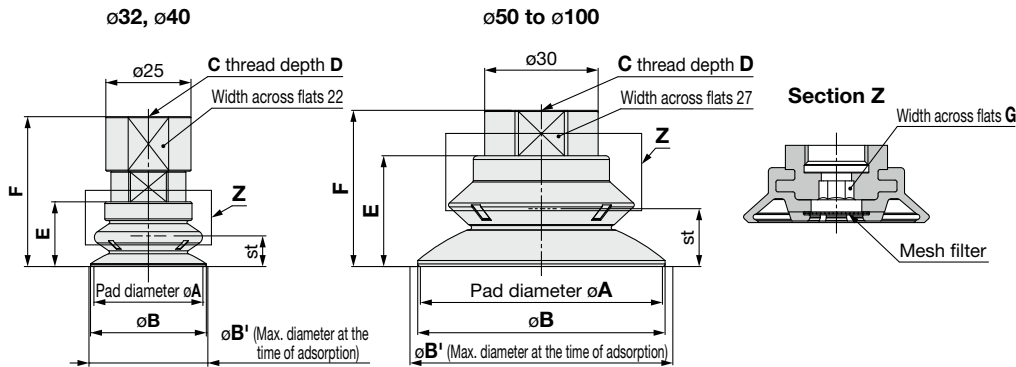
ZP3M - T **63** RB **FS** - **BG02** - **MF**



Connection thread: BG02



Connection thread: BG03



| Model                  |                |      |                          |                     |               |      | A    | B    | B <sup>*2</sup> | C     | D    | E    | F    | G    | st <sup>*2</sup> | Min. opening hole size of the adapter | Weight [g] |
|------------------------|----------------|------|--------------------------|---------------------|---------------|------|------|------|-----------------|-------|------|------|------|------|------------------|---------------------------------------|------------|
| Vacuum inlet direction | ① Pad diameter | Form | ② Material <sup>*1</sup> | ③ Connection thread | ④ Mesh filter |      |      |      |                 |       |      |      |      |      |                  |                                       |            |
| ZP3M                   | T              | RB   | FS                       | BG02                | Nil MF        | 32   | 34   | 34.9 | G1/4            | 11.0  | 19   | 28.0 | 5    | 9    | ø5               | 17.5                                  |            |
|                        |                |      |                          | BG03                |               |      |      |      | G3/8            | 11.4  |      | 44.0 |      |      |                  | 33.5                                  |            |
|                        |                |      |                          | 40                  |               | BG02 | 41.8 | 43.9 | G1/4            | 11.0  | 19.8 | 28.8 | 10   | 19.0 |                  |                                       |            |
|                        |                |      |                          |                     |               | BG03 |      |      | G3/8            | 11.4  |      | 44.8 |      | 34.9 |                  |                                       |            |
|                        |                |      |                          | 50                  |               | BG02 | 52.4 | 55.6 | G1/4            | 12.5  | 24.9 | 41.9 | 11.8 | 69.1 |                  |                                       |            |
|                        |                |      |                          |                     |               | BG03 |      |      | G3/8            | 11.4  |      | 36.9 |      | 46.4 |                  |                                       |            |
|                        | 63             | BG02 | 65.4                     | 59.5                | G1/4          | 12.5 | 29.3 | 46.3 | 15.2            | 78.8  |      |      |      |      |                  |                                       |            |
|                        |                | BG03 |                          |                     | G3/8          | 11.4 |      | 41.3 |                 | 55.9  |      |      |      |      |                  |                                       |            |
|                        | 80             | BG02 | 82.6                     | 87.5                | G1/4          | 12.5 | 37.9 | 54.9 | 22.1            | 111.9 |      |      |      |      |                  |                                       |            |
|                        |                | BG03 |                          |                     | G3/8          | 11.4 |      | 49.9 |                 | 89.0  |      |      |      |      |                  |                                       |            |
|                        | 100            | BG02 | 103                      | 107.1               | G1/4          | 12.5 | 44.6 | 61.6 | 25.8            | 159.1 |      |      |      |      |                  |                                       |            |
|                        |                | BG03 |                          |                     | G3/8          | 11.4 |      | 56.6 |                 | 136.2 |      |      |      |      |                  |                                       |            |

\*1 FS: FS61 (Fluoro-based rubber)

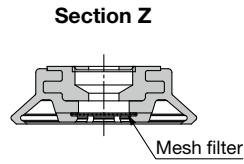
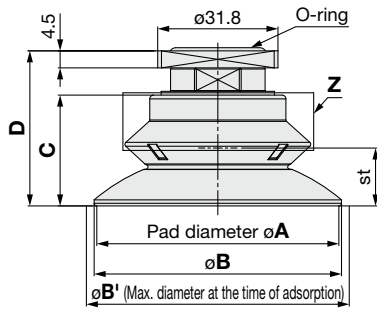
\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.



# ZP3M Series

## Dimensions/Models

### With adapter Direct mounting type (Square adapter)

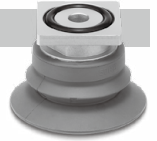


ZP3M - T **63** RB **FS** - S32 - **MF**

1

2

3

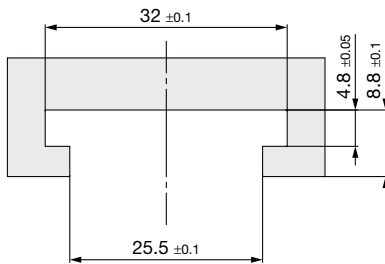


|      | Vacuum inlet direction | Model          |      |                            |                   |               | A   | B    | B* <sup>#2</sup> | C    | D    | st* <sup>#2</sup> | Min. opening hole size of the adapter | Weight [g] |
|------|------------------------|----------------|------|----------------------------|-------------------|---------------|-----|------|------------------|------|------|-------------------|---------------------------------------|------------|
|      |                        | 1 Pad diameter | Form | 2 Material * <sup>#1</sup> | Connection thread | 3 Mesh filter |     |      |                  |      |      |                   |                                       |            |
| ZP3M | T                      | 32             | RB   | FS                         | S32               | Nil MF        | 32  | 34   | 34.9             | 19   | 31.2 | 9                 | ø5                                    | 30.2       |
|      |                        | 40             |      |                            |                   |               | 40  | 41.8 | 43.9             | 19.8 | 32   | 10                |                                       | 31.6       |
|      |                        | 50             |      |                            |                   |               | 50  | 52.4 | 55.6             | 24.9 | 36.6 | 11.8              |                                       | 50.0       |
|      |                        | 63             |      |                            |                   |               | 63  | 65.4 | 69.5             | 29.3 | 41   | 15.2              | ø8                                    | 59.8       |
|      |                        | 80             |      |                            |                   |               | 80  | 82.6 | 87.5             | 37.9 | 49.6 | 22.1              |                                       | 92.8       |
|      |                        | 100            |      |                            |                   |               | 100 | 103  | 107.1            | 44.6 | 56.3 | 25.8              |                                       | 140.0      |

\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

### Square adapter mounting groove dimensions (Recommended)



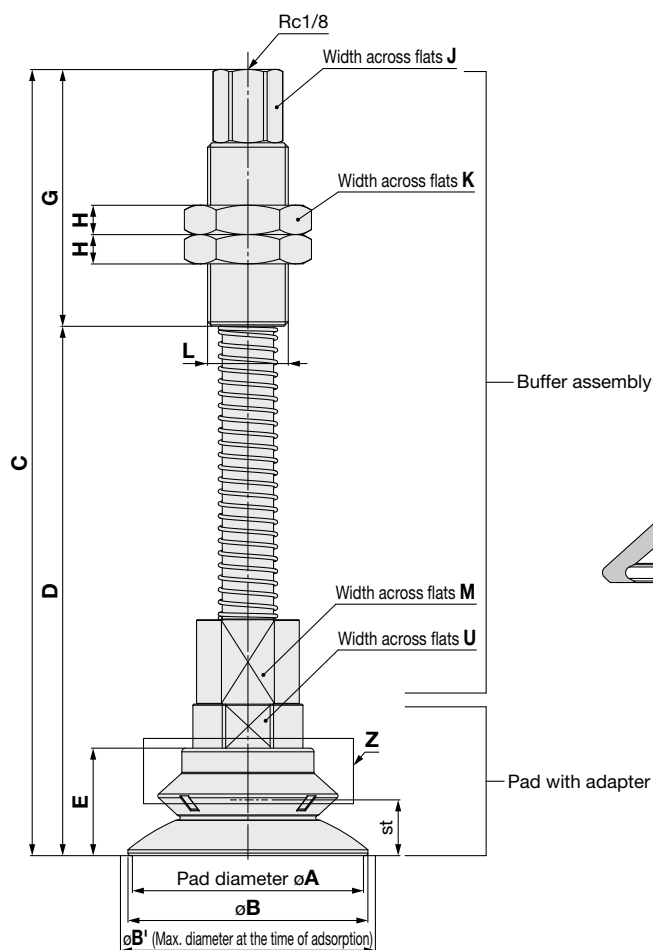
\* For details on how to use the square adapter, refer to "Mounting" on page 18.



# Vacuum Pad/Bowl Bellows Shape with Non-slip Feature **ZP3M Series**

## Dimensions/Models

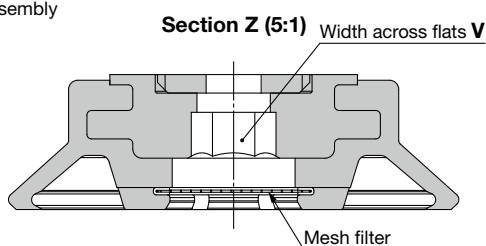
**With buffer** Plate mounting type (Vacuum inlet direction: Vertical)



ZP3M - T **63** **RB** **FS** **JB** **10** - **MF**

① ② ③ ④ ⑤

JB Rotating, With bushing



| Model                  |                |      |               |                |                 |               | A    | B     | B <sup>±2</sup> | C     | D     | E     | G    | H  | J  | K         | L         | M         | U  | V    | st <sup>±2</sup> | Min. opening hole size | Weight [g] |       |
|------------------------|----------------|------|---------------|----------------|-----------------|---------------|------|-------|-----------------|-------|-------|-------|------|----|----|-----------|-----------|-----------|----|------|------------------|------------------------|------------|-------|
| Vacuum inlet direction | ① Pad diameter | Form | ② Material *1 | ③ Buffer spec. | ④ Buffer stroke | ⑤ Mesh filter |      |       |                 |       |       |       |      |    |    |           |           |           |    |      |                  |                        |            |       |
| ZP3M                   | T              | 32   | RB            | FS             | JB              | 10            | 63   | 65.4  | 69.5            | 127.5 | 75.5  | 19    | 35   | 11 | 14 | 27        | M18 x 1.5 | 16        | 19 | 5    | 10               | ø3                     | 221.0      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 152.5 | 100.5 |       |      |    |    |           |           |           |    |      |                  |                        | 235.5      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 172.5 | 120.5 |       |      |    |    |           |           |           |    |      |                  |                        | 246.9      |       |
|                        |                |      |               |                |                 | 10            |      |       |                 | 128.3 | 76.3  |       |      |    |    |           |           |           |    |      |                  |                        | 222.4      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 153.3 | 101.3 |       |      |    |    |           |           |           |    |      |                  |                        | 236.9      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 173.3 | 121.3 |       |      |    |    |           |           |           |    |      |                  |                        | 248.3      |       |
|                        |                | 40   | RB            | FS             | JB              | JB            | 10   | 50    | 52.4            | 55.6  | 136.4 | 84.4  | 19.8 | 35 | 11 | 14        | 27        | M18 x 1.5 | 16 | 19   | 5                | 10                     | ø3         | 259.7 |
|                        |                |      |               |                |                 |               | 30   |       |                 |       | 161.4 | 109.4 |      |    |    |           |           |           |    |      |                  |                        |            | 274.2 |
|                        |                |      |               |                |                 |               | 50   |       |                 |       | 181.4 | 129.4 |      |    |    |           |           |           |    |      |                  |                        |            | 285.6 |
|                        |                |      |               |                |                 |               | 10   |       |                 |       | 169.3 | 99.3  |      |    |    |           |           |           |    |      |                  |                        |            | 399.1 |
|                        |                |      |               |                |                 |               | 30   |       |                 |       | 194.3 | 124.3 |      |    |    |           |           |           |    |      |                  |                        |            | 427.9 |
|                        |                |      |               |                |                 |               | 50   |       |                 |       | 214.3 | 144.3 |      |    |    |           |           |           |    |      |                  |                        |            | 450.8 |
|                        | 50             | RB   | FS            | JB             | JB              | 10            | 50   | 52.4  | 55.6            | 177.9 | 107.9 | 24.9  | 50   | 8  | 17 | 30        | M22 x 1.5 | 24        | 27 | 8    | 22.1             | ø4                     | 432.2      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 202.9 | 132.9 |       |      |    |    |           |           |           |    |      |                  |                        | 460.9      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 222.9 | 152.9 |       |      |    |    |           |           |           |    |      |                  |                        | 483.9      |       |
|                        |                |      |               |                |                 | 10            |      |       |                 | 184.6 | 114.6 |       |      |    |    |           |           |           |    |      |                  |                        | 479.4      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 209.6 | 139.6 |       |      |    |    |           |           |           |    |      |                  |                        | 508.2      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 229.6 | 159.6 |       |      |    |    |           |           |           |    |      |                  |                        | 531.1      |       |
|                        | 63             | RB   | FS            | JB             | JB              | 10            | 63   | 65.4  | 69.5            | 184.6 | 114.6 | 29.3  | 50   | 8  | 17 | 30        | M22 x 1.5 | 24        | 27 | 8    | 22.1             | ø4                     | 479.4      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 209.6 | 139.6 |       |      |    |    |           |           |           |    |      |                  |                        | 508.2      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 229.6 | 159.6 |       |      |    |    |           |           |           |    |      |                  |                        | 531.1      |       |
|                        |                |      |               |                |                 | 10            |      |       |                 | 184.6 | 114.6 |       |      |    |    |           |           |           |    |      |                  |                        | 479.4      |       |
|                        |                |      |               |                |                 | 30            |      |       |                 | 209.6 | 139.6 |       |      |    |    |           |           |           |    |      |                  |                        | 508.2      |       |
|                        |                |      |               |                |                 | 50            |      |       |                 | 229.6 | 159.6 |       |      |    |    |           |           |           |    |      |                  |                        | 531.1      |       |
| 80                     | RB             | FS   | JB            | JB             | 10              | 80            | 82.6 | 87.5  | 184.6           | 114.6 | 37.9  | 50    | 8    | 17 | 30 | M22 x 1.5 | 24        | 27        | 8  | 22.1 | ø4               | 479.4                  |            |       |
|                        |                |      |               |                | 30              |               |      |       | 209.6           | 139.6 |       |       |      |    |    |           |           |           |    |      |                  | 508.2                  |            |       |
|                        |                |      |               |                | 50              |               |      |       | 229.6           | 159.6 |       |       |      |    |    |           |           |           |    |      |                  | 531.1                  |            |       |
|                        |                |      |               |                | 10              |               |      |       | 184.6           | 114.6 |       |       |      |    |    |           |           |           |    |      |                  | 479.4                  |            |       |
|                        |                |      |               |                | 30              |               |      |       | 209.6           | 139.6 |       |       |      |    |    |           |           |           |    |      |                  | 508.2                  |            |       |
|                        |                |      |               |                | 50              |               |      |       | 229.6           | 159.6 |       |       |      |    |    |           |           |           |    |      |                  | 531.1                  |            |       |
| 100                    | RB             | FS   | JB            | JB             | 10              | 100           | 103  | 107.1 | 184.6           | 114.6 | 44.6  | 50    | 8    | 17 | 30 | M22 x 1.5 | 24        | 27        | 8  | 22.1 | ø4               | 479.4                  |            |       |
|                        |                |      |               |                | 30              |               |      |       | 209.6           | 139.6 |       |       |      |    |    |           |           |           |    |      |                  | 508.2                  |            |       |
|                        |                |      |               |                | 50              |               |      |       | 229.6           | 159.6 |       |       |      |    |    |           |           |           |    |      |                  | 531.1                  |            |       |
|                        |                |      |               |                | 10              |               |      |       | 184.6           | 114.6 |       |       |      |    |    |           |           |           |    |      |                  | 479.4                  |            |       |
|                        |                |      |               |                | 30              |               |      |       | 209.6           | 139.6 |       |       |      |    |    |           |           |           |    |      |                  | 508.2                  |            |       |
|                        |                |      |               |                | 50              |               |      |       | 229.6           | 159.6 |       |       |      |    |    |           |           |           |    |      |                  | 531.1                  |            |       |

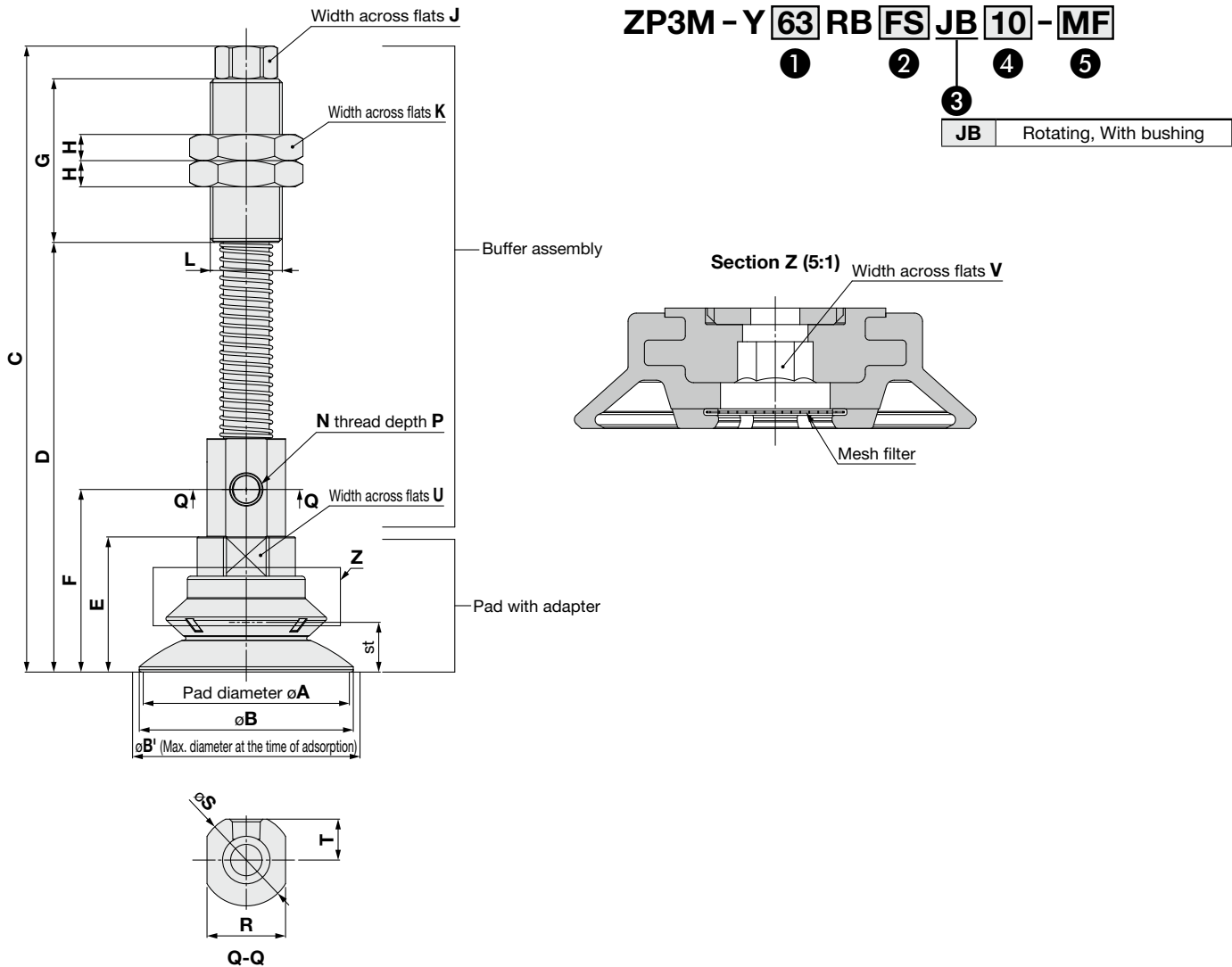
\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

# ZP3M Series

## Dimensions/Models

**With buffer** Plate mounting type (Vacuum inlet direction: Lateral)



|                        |                | Model |                          |                |                 |               | A     | B     | B <sup>*2</sup> | C     | D    | E  | F    | G | H | J | K | L | N | P | R | S | T | U | V | st <sup>*2</sup> | Min. opening hole size | Weight [g] |       |       |
|------------------------|----------------|-------|--------------------------|----------------|-----------------|---------------|-------|-------|-----------------|-------|------|----|------|---|---|---|---|---|---|---|---|---|---|---|---|------------------|------------------------|------------|-------|-------|
| Vacuum inlet direction | ① Pad diameter | Form  | ② Material <sup>*1</sup> | ③ Buffer spec. | ④ Buffer stroke | ⑤ Mesh filter |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
| ZP3M                   | Y              | RB    | FS                       | JB             | 10              | Nil MF        | 32    | 34    | 34.9            | 122.5 | 78.5 | 19 | 37.9 |   |   |   |   |   |   |   |   |   |   |   |   | 9                | ø5                     | 219.4      |       |       |
|                        |                |       |                          |                | 30              |               | 147.5 | 103.5 | 235.2           |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          |                | 50              |               | 167.5 | 123.5 | 247.8           |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          |                | 10              |               | 123.3 | 79.3  | 220.8           |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          |                | 30              |               | 148.3 | 104.3 | 236.7           |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          |                | 50              |               | 168.3 | 124.3 | 249.2           |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        | 50             | 52.4  | 55.6                     | 10             | 131.4           | 87.4          | 24.9  | 46.8  |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          | 30             | 156.4           | 112.4         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       | 258.0 |
|                        |                |       |                          | 50             | 176.4           | 132.4         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       | 273.9 |
|                        |                |       |                          | 10             | 166.3           | 106.3         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       | 286.5 |
|                        |                |       |                          | 30             | 191.3           | 131.3         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       | 400.3 |
|                        |                |       |                          | 50             | 211.3           | 151.3         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       | 431.5 |
| 63                     | 65.4           | 69.5  | 10                       | 174.9          | 114.9           | 29.3          | 55.8  |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       | 30                       | 199.9          | 139.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 456.4 |       |
|                        |                |       | 50                       | 219.9          | 159.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 489.4 |       |
|                        |                |       | 10                       | 181.6          | 121.6           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 480.6 |       |
|                        |                |       | 30                       | 206.6          | 146.6           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 511.8 |       |
|                        |                |       | 50                       | 226.6          | 166.6           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 536.7 |       |
| 80                     | 82.6           | 87.5  | 10                       | 199.9          | 139.9           | 37.9          | 64.4  |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       | 30                       | 219.9          | 159.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 489.4 |       |
|                        |                |       | 50                       | 239.9          | 179.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 522.4 |       |
|                        |                |       | 10                       | 199.9          | 139.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 480.6 |       |
|                        |                |       | 30                       | 224.9          | 164.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 511.8 |       |
|                        |                |       | 50                       | 244.9          | 184.9           |               |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 536.7 |       |
| 100                    | 100            | 103   | 107                      | 10             | 206.6           | 146.6         | 44.6  | 71.1  |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            |       |       |
|                        |                |       |                          | 30             | 226.6           | 166.6         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 511.8 |       |
|                        |                |       |                          | 50             | 246.6           | 186.6         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 536.7 |       |
|                        |                |       |                          | 10             | 206.6           | 146.6         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 480.6 |       |
|                        |                |       |                          | 30             | 231.6           | 171.6         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 511.8 |       |
|                        |                |       |                          | 50             | 251.6           | 191.6         |       |       |                 |       |      |    |      |   |   |   |   |   |   |   |   |   |   |   |   |                  |                        |            | 536.7 |       |

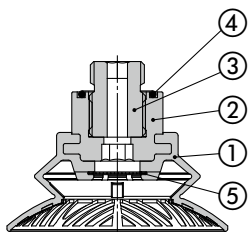
\*1 FS: FS61 (Fluoro-based rubber)

\*2 B': Maximum pad diameter at the time of adsorption, st: The stroke is a guide value at the setting vacuum pressure of -90 kPa.

## Construction

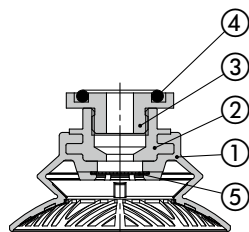
### With adapter

ZP3M-T□RBFS-A□

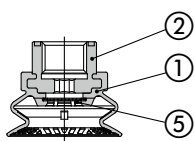


ZP3M-T (32, 40) RBFS-BG02

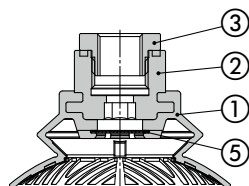
ZP3M-T□RBFS-S32



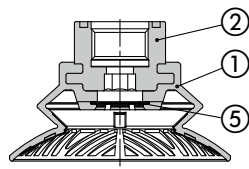
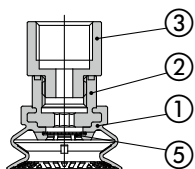
ZP3M-T (50, 63, 80, 100) RBFS-BG02



ZP3M-T (32, 40) RBFS-BG03

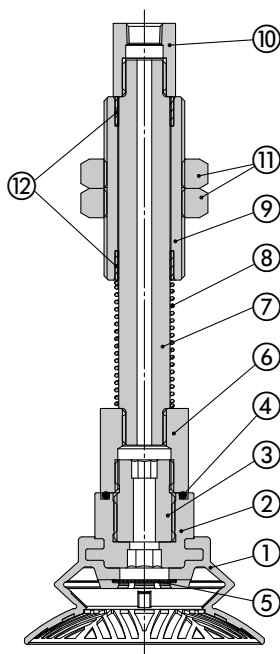


ZP3M-T (50, 63, 80, 100) RBFS-BG03

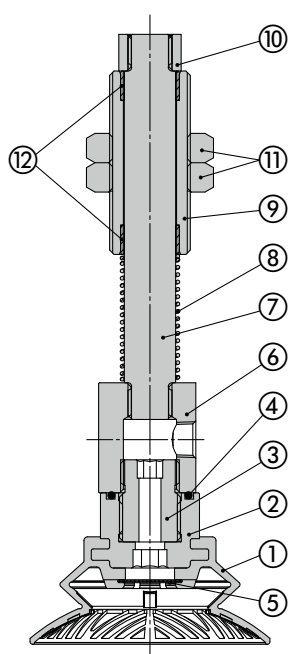


### With buffer

ZP3M-T□RBFSJB□-□



ZP3M-Y□RBFSJB□-□



### Component Parts

| No. | Description    | Material   | Note   |
|-----|----------------|--|--|
| 1   | Pad            | FS61 (Fluoro-based rubber)                           | —  |
| 2   | Insert adapter | Aluminum alloy                                       | —  |
| 3   | Adapter        | Structural carbon steel (Electroless nickel plating) | ZP3M-T (32, 40) RBFS-A□<br>ZP3M-T (50, 63, 80, 100) RBFS- (A□, BG02) |
|     |                | Aluminum alloy (Anodized)                            | ZP3M-T (32, 40) RBFS-BG03<br>ZP3M-T□RBFS-S32                         |
| 4   | O-ring         | FKM  | —  |
| 5   | Mesh filter    | Stainless steel                                      | —  |

\* The parts 1, 2, and 3 are adhered to each other and cannot be disassembled.

### Component Parts

| No. | Description    | Material   | Note |
|-----|----------------|--|------|
| 1   | Pad            | FS61 (Fluoro-based rubber)                           | —    |
| 2   | Insert adapter | Aluminum alloy                                       | —    |
| 3   | Adapter        | Structural carbon steel (Electroless nickel plating) | —    |
| 4   | O-ring         | FKM  | —    |
| 5   | Mesh filter    | Stainless steel                                      | —    |
| 6   | Adapter        | Aluminum alloy (Anodized)                            | —    |
| 7   | Piston rod     | Structural steel (Hard chrome plating)               | —    |
| 8   | Return spring  | Stainless steel                                      | —    |
| 9   | Buffer body    | Brass (Electroless nickel plating)                   | —    |
| 10  | Buffer adapter | Brass (Electroless nickel plating)                   | —    |
| 11  | Nut            | Steel (Zinc chromated) M18 x 1.5                     | —    |
|     |                | Structural steel (Nickel plating) M22 x 1.5          | —    |
| 12  | Bushing        | —  | —    |

\* The parts 1, 2, and 3 are adhered to each other and cannot be disassembled.

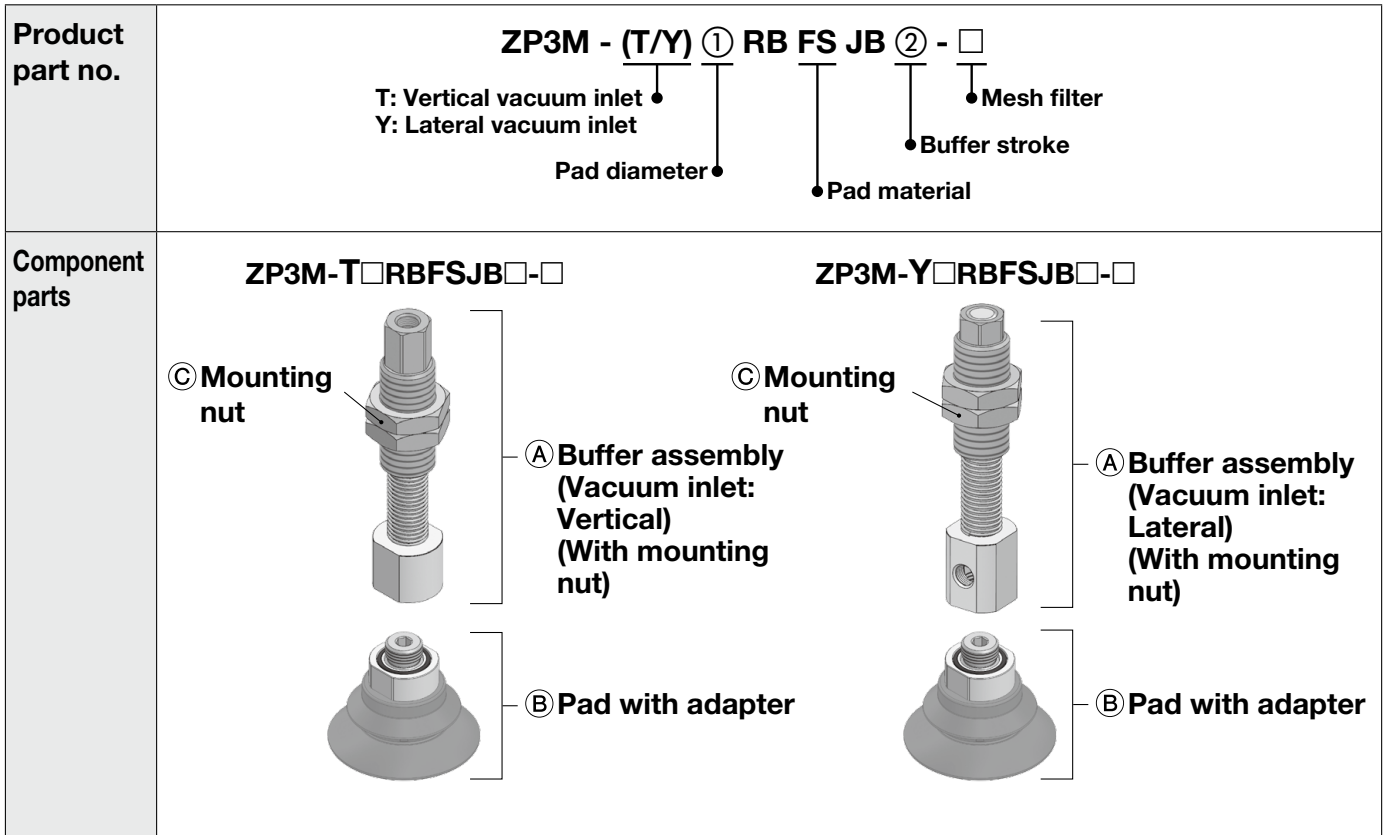
### Replacement Parts: Mesh Filter Unit

| Part no.    | Pad diameter |             |
|-------------|--------------|-------------|
|             | ø32 to ø50   | ø63 to ø100 |
| ZPMF-60-D13 | ●            | —           |
| ZPMF-60-D18 | —            | ●           |



# ZP3M Series

# Mounting Bracket Assembly



|                                       |                 | Symbol             | ① Pad diameter     |                    |                    |                    |                     |     |
|---------------------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|-----|
|                                       |                 |                    | 32                 | 40                 | 50                 | 63                 | 80                  | 100 |
| ① Buffer assembly (With mounting nut) | ② Buffer stroke | 10                 | ZP3EB-(T/Y)1JB②    |                    |                    | ZP3EB-(T/Y)2JB②    |                     |     |
|                                       |                 | 30                 |                    |                    |                    |                    |                     |     |
|                                       |                 | 50                 |                    |                    |                    |                    |                     |     |
| ② Pad with adapter                    | M10 x 1.0       | ZP3M-T32RBFS-A10-□ | ZP3M-T40RBFS-A10-□ | ZP3M-T50RBFS-A10-□ | -                  |                    |                     |     |
|                                       | M16 x 1.5       | -                  |                    |                    | ZP3M-T63RBFS-A16-□ | ZP3M-T80RBFS-A16-□ | ZP3M-T100RBFS-A16-□ |     |
| ③ Mounting nut (Single unit)          | M18 x 1.5       | ZPNA-M18           |                    |                    |                    |                    |                     |     |
|                                       | M22 x 1.5       | -                  |                    |                    |                    |                    |                     |     |
|                                       |                 |                    |                    |                    |                    | ZPNA-M22           |                     |     |

**[Buffer assembly part number example]**

Product part no. **ZP3M - T63RBFS JB 10**

Buffer assembly **ZP3EB - T2 JB 10**

② Buffer stroke



# ZP3M Series

## Vacuum Pad/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. 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 pad and workpiece, moment, wind, vibration, etc. Testing with the customer’s actual equipment is necessary.

#### 2. In cases where the workpieces are heavy or dangerous objects, etc., take measures to address a possible loss of adsorption force (installation of a drop prevention guide, etc.).

#### 3. The oil, chemical, and other substances adhered to the workpiece may not be suitable for the pad material.

Before using this product, sufficiently verify the workpieces in your operating environment.

### 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] |
|------------------------|------------------------|--------------------------------|
| ZP3M-T□(R,RB)FS-A10-□  | M10 x 1.0              | 8 to 10                        |
| ZP3M-T□(R,RB)FS-A16-□  | M16 x 1.5              | 13 to 15                       |
| ZP3M-T□(R,RB)FS-AG02-□ | G1/4                   | 8 to 12                        |

##### With Adapter (Female thread type)

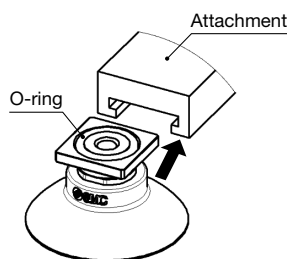
| Model                  | Connection thread size | Proper tightening torque [N·m] |
|------------------------|------------------------|--------------------------------|
| ZP3M-T□RFS-B14-□       | M14 x 1.0              | 11 to 13                       |
| ZP3M-T□(R,RB)FS-BG02-□ | G1/4                   | 8 to 12                        |
| ZP3M-T□(R,RB)FS-BG03-□ | G3/8                   | 15 to 20                       |

##### With Buffer

| Model                    | Connection thread size | Proper tightening torque [N·m] |
|--------------------------|------------------------|--------------------------------|
| ZP3M-(T/Y)□(R,RB)FSJB□-□ | M18 x 1.5              | 28 to 32                       |
|                          | M22 x 1.5              | 45 to 50                       |

#### 2. How to use the square adapter

Use the square adapter by inserting it to an attachment you prepare. If it is difficult to insert the square adapter, apply grease to the O-ring. Prepare retaining measures by yourself.



### Handling

#### 1. Depending on the type of oil or foreign matter, the mesh filter may be clogged at an early stage.

Before using this product, sufficiently verify the mesh filter in your operating environment.

#### 2. Periodically inspect the mesh filter.

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

#### 3. When the vacuum pad is pressed, make sure it stays within the stroke range.

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

#### 4. Vacuum pads are consumable. Please replace them when cracks or deformation is confirmed during periodic maintenance.

#### 5. The workpiece size must be equal to or greater than the minimum curvature radius for adsorption.


If the workpiece size is smaller than the minimum curvature radius for adsorption, an adsorbing malfunction may occur.


#### 6. As the adapter and pad are adhered to each other, they cannot be disassembled.


#### 7. When adsorbing a plane, the pad skirt may be entrained depending on the workpiece with rough friction surface. Before using this product, sufficiently verify the adsorbing condition.

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

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, fuel 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

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.**

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

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

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.

### Revision History

**Edition B** \* Bowl bellows shape: ø50, ø63, and ø80 have been added.

\* The number of pages has been increased from 12 to 20.

BZ

## Safety Instructions

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

## SMC Corporation

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<https://www.smcworld.com>  
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Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.

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