



*Hygienic*  
*Compact type*  
**Butterfly  
Valves**

## Next-generation sanitary butterfly valves



- Seat ring material covering a wide range  
FM7: High-function fluororubber with excellent liquid resistance and flavoring resistance  
EM7: EPDM with excellent heat resistance and alkali resistance
- Reduction in product weight (Ratio to that of BV type)  
Manual: 15 to 40% less  
Double-action: 10 to 40% less

These compact-size sanitary butterfly valves are valves that have been realized through years of efforts in developing butterfly valves. Pursuing compactness thoroughly as next-generation sanitary butterfly valves based on such accumulated BV type butterfly valve results and know-how provides products you can use without worry.

#### Material

SUS-304 (or equivalent)

SUS-316L (or equivalent)

#### Seat ring material

FM7: High-function fluororubber

EM7: Ethylene propylene rubber

#### Production standard

|  |   |
|--|---|
| Surface finish                         | Internal: #320 to #400 buff polishing<br>External: Areas other than welded area: $Ra \leq 1.6$  |
| Dimensional tolerance                  | Face to face dimension: $\pm 1.5\text{mm}$<br>Parallelism of end faces: $\pm 0.5^\circ$ or less |
| Main body max pressure                 | 0.8MPa (fluid pressure, normal temperature)   |
| Valve max pressure                     | 0.6MPa (fluid pressure, normal temperature)   |
| Automatic valve operating air pressure | 0.4~0.7MPa  |
| Operating air connection hole          | Rc1/8   |
| Heat resistance                        | 95° C<br>(in non-operation condition: 125° C x 30 min/day)                                      |

#### ► Valve selection and ordering

Please use valves according to respective valve specifications. If an application exceeds the range of specifications, high safety design is required. We would be pleased to offer consultation if you provide us with information.

#### ► Ordering

○ Refer to the type symbol table on Page 6 and specify the material, finish, pipe end, size, product name, and quantity.

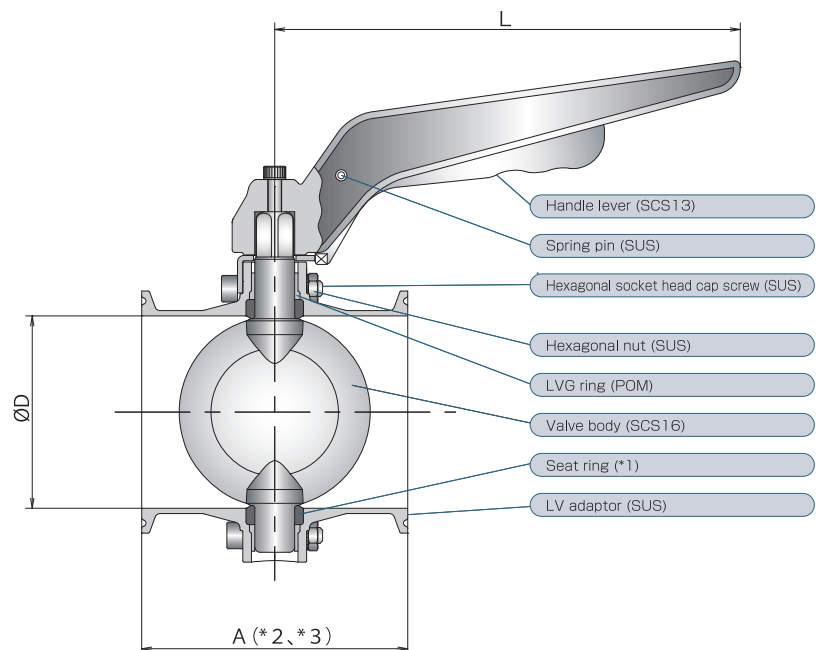
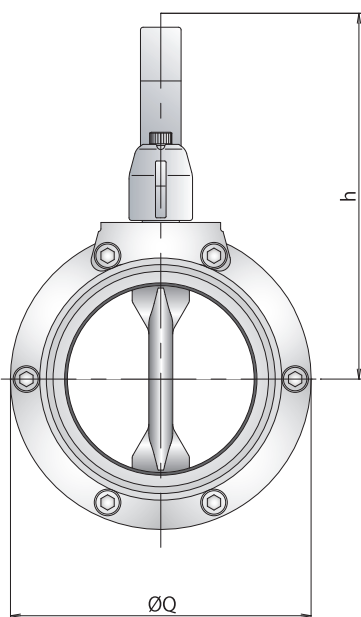
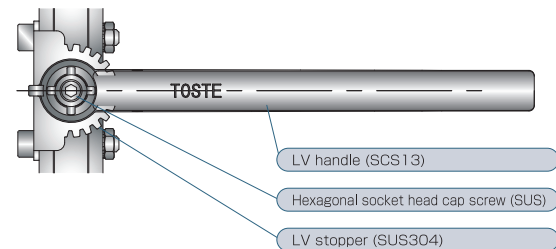
# LVM<sub>type</sub>

## ● Compact type manual butterfly valve



This butterfly valve is a manual valve equipped with a stopper mechanism to allow you to perform opening adjustment of valve body on both right and left sides. This valve features stopper grooves at 15° increments between fully open and fully closed.

- These valves can be used for flow channel shut-off valves and flow control valves.
- Pushing down the handle lever unlocks and operates the valve as it is.
- LV adapter is symmetry in both horizontal and vertical directions, which allows it to be mounted compatibly at any angle.



\*1: Refer to the seat ring material for compact type butterfly valves on Page 6.

\*2: Between-surface dimensions vary depending on type of pipe end.

\*3: These valves can be produced with the same between-surface dimensions as the BV type butterfly valve (catalog No. 3).



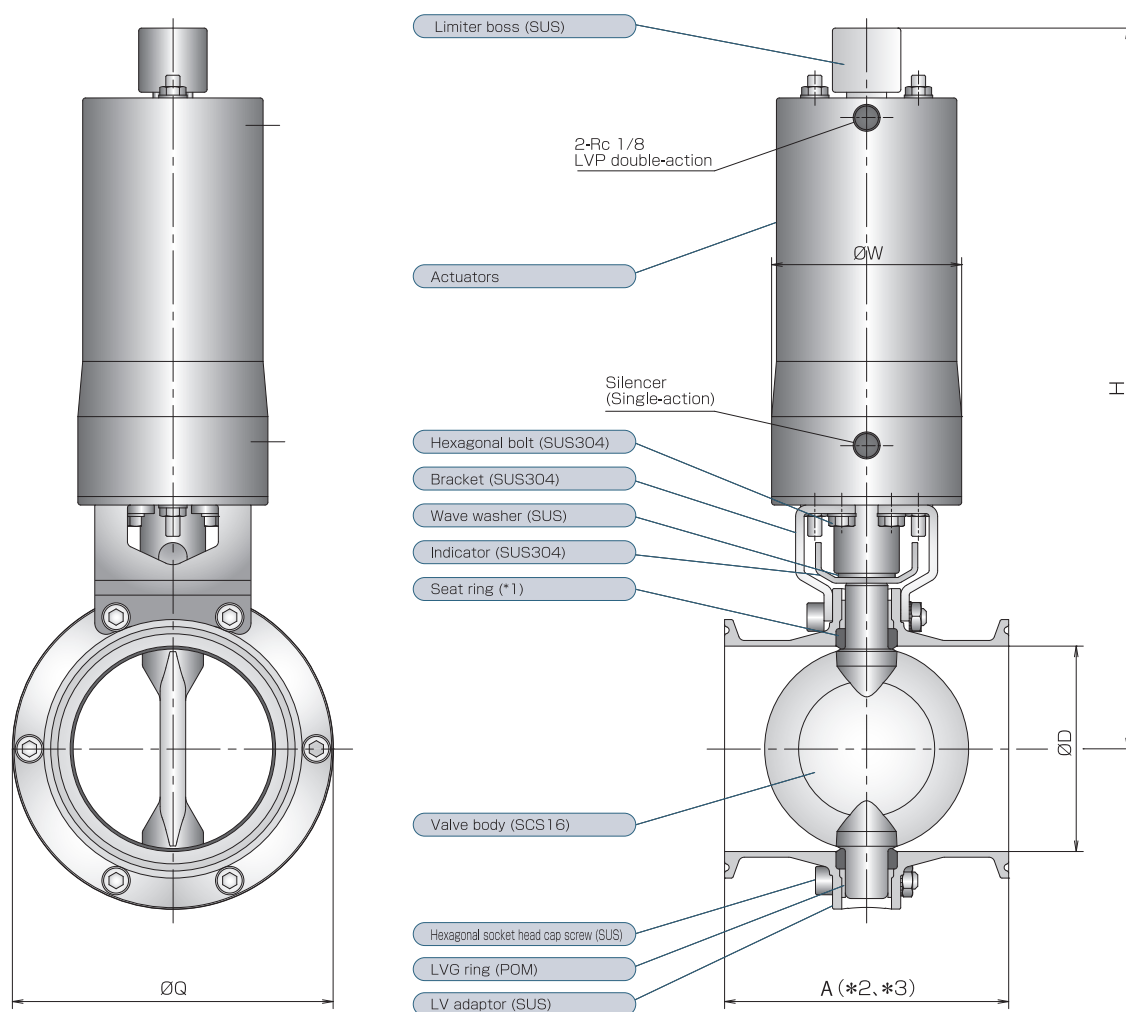
# LVP/LVC/LVO type

- Compact type automatic butterfly valve  
(Vertical SUS external torque actuator)



This is a valve which is equipped with a vertical SUS external torque actuator and is resistant to atmosphere. LVP (double-action), LVC (single-action N.C.), LVO (single-action N.O.) are available.

- This valve can be used as a flow shut-off valve.
- Various feedback units can be mounted.
- The main body consists of the same components as the manual type.



| (mm) |      |     |       |     |                   |       |                       |       |            |           |          |                 | (kg)                        |                   |                     |
|------|------|-----|-------|-----|-------------------|-------|-----------------------|-------|------------|-----------|----------|-----------------|-----------------------------|-------------------|---------------------|
| SIZE | ϕD   | ϕQ  | h     | L   | Double-action LVP |       | Single-action LVC/LVO |       | A          |           |          |                 | LV type weight (clamp type) |                   |                     |
|      |      |     |       |     | W                 | H     | W                     | H     | Clamp type | Male type | Male nut | Sanitary flange | Manual type LVM             | Double-action LVP | Single-action LVC/O |
| 1    | 23.0 | 72  | 107.0 | 140 | 67                | 232.6 | 67                    | 254.5 | 64         | 74        | 100      | 124             | 1.3                         | 2.7               | 3.1                 |
| 1½   | 35.7 | 72  | 107.0 | 140 | 67                | 232.6 | 67                    | 254.5 | 72         | 82        | 103      | 122             | 1.2                         | 2.6               | 3.0                 |
| 2    | 47.8 | 86  | 114.0 | 140 | 67                | 239.6 | 67                    | 261.5 | 72         | 82        | 103      | 122             | 1.5                         | 2.9               | 3.3                 |
| 2½   | 59.5 | 100 | 126.0 | 175 | 67                | 246.6 | 91.2                  | 293.3 | 76         | 86        | 112      | 146             | 2.1                         | 3.5               | 6.0                 |
| 3    | 72.3 | 113 | 132.5 | 175 | 67                | 253.3 | 91.2                  | 300.0 | 100        | 100       | 112      | 150             | 2.5                         | 3.9               | 6.4                 |
| 4    | 97.6 | 138 | 145.0 | 175 | 91.2              | 291.2 | 91.2                  | 312.3 | 104        | 104       | 126.5    | 150             | 4.3                         | 6.4               | 7.2                 |

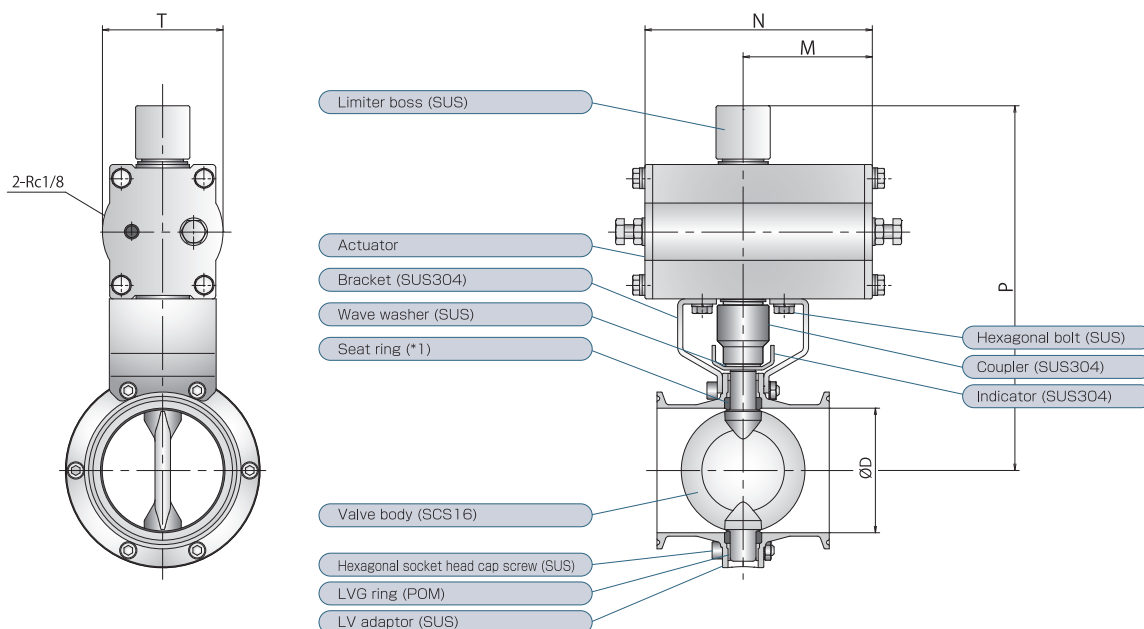
Single-action N.C. is different from single-action N.O. in cylinder type. (Not compatible)

Operating air pressure: 0.4 to 0.7MPa

# LVB type



- LV type automatic butterfly valve (Horizontal aluminum torque actuator)



This valve is a valve equipped with a horizontal aluminum double-action torque actuator to minimize the height.

- This valve can be used as a flow channel shut-off valve.
- Various feedback units can be mounted.
- The main body consists of the same components as the manual type.

|       | (mm) |       |      |      |      | (kg)   |
|-------|------|-------|------|------|------|--------|
| SIZE  | ØD   | P     | M    | N    | T    | Weight |
| 1     | 23.0 | 162.3 | 54.5 | 92.5 | 54   | 1.7    |
| 1 1/2 | 35.7 | 162.3 | 54.5 | 92.5 | 54   | 1.6    |
| 2     | 47.8 | 169.3 | 54.5 | 92.5 | 54   | 1.9    |
| 2 1/2 | 59.5 | 203.1 | 75   | 132  | 70.4 | 3.5    |
| 3     | 72.3 | 209.6 | 75   | 132  | 70.4 | 3.9    |
| 4     | 97.6 | 231.1 | 84.5 | 149  | 78.4 | 5.5    |

Operating air pressure: 0.4 to 0.7MPa

## Technical material

### ► LV type butterfly valve seat ring material

| Packing material                        |                            | FKM<br>(Fluororubber)                         | EPDM<br>(Ethylene propylene rubber) |
|---|----------------------------|---|-------------------------------------|
| Material code                           |                            | FM7   | EM7                                 |
| Color                                   |                            | Black   | Black                               |
| Resistance to liquid                    | Steam                      | △   | ○                                   |
|   | Caustic soda               | ○   | ○                                   |
|   | Nitric acid                | ◎   | ○                                   |
|   | Acetic acid                | ○   | ○                                   |
|   | Sodium hypochlorite        | ○   | ○                                   |
|   | Peroxyacetic acid          | ○   | ○                                   |
|   | Fragrance (limonene, etc.) | ○   | ×                                   |
|   | Oil and fats               | ○   | ×                                   |
| Characteristic                          | Dry operation              | Impossible (Impossible to use without liquid) |                                     |
|   | Heat resistance            | (125°C in non-operation condition)95°C        |                                     |
|   | Standard pressure          | ≤0.6MPa                                       |                                     |
| The Food Sanitation Law conformity test |                            | Acceptable                                    |                                     |

### ► Cv values by size

| SIZE  | Cv  | Relationship between Cv value and pressure loss<br>$\Delta P = (11.6 \times Q / Cv)^2$<br>$\Delta P$ = Pressure loss (kPa)<br>Q: Flow rate (m³/hr)<br>Cv: Cv value (Left table)<br>(Approximate value under certain conditions) |
|-------|-----|---|
| 1     | 21  |   |
| 1 1/2 | 37  |   |
| 2     | 140 |   |
| 2 1/2 | 290 |   |
| 3     | 460 |   |
| 4     | 720 |   |

### ► Lubricant application specifications

|                         |  |
|-------------------------|--|
| Standard specifications | To prevent valves from sticking, lubricant should be applied to the valve shoulder part and seat ring shaft hole part. |
| Lubricant               | NOK Kluber PARALIQ GTE 703*1 (NSF category H1)   |

\*1 Conforming to the Food Sanitation Law

The above figures show the heat-resistant range under static conditions. Note that the durability of valves decreases in reverse proportion to liquid temperature.

## Compact sanitary butterfly valve type symbol table

| Name   | Material classification (main body) | Finish classification | Pipe end classification | Size classification | Product name/type |   |   |   |     |
|--------|-------------------------------------|-----------------------|-------------------------|---------------------|-------------------|---|---|---|-----|
| Symbol | <b>304</b>                          | <b>2P</b>             | <b>C</b>                |                     | <b>L V</b>        |   |   |   |     |
|        | ①                                   | ②                     | ③                       | ④                   | ⑤                 | ⑥ | ⑦ | ⑧ | ⑨ ⑩ |

## ① Material classification (main body)

| Category | Symbol      | Details                  |
|----------|-------------|--------------------------|
| Standard | <b>304</b>  | SUS 304 (or equivalent)  |
| Option   | <b>316L</b> | SUS 316L (or equivalent) |

## ② Finish classification (valve main body)

| Category | Symbol        | Details   |                   |
|----------|---------------|---|-------------------|
|          |               | Internal finish                                       | External finish   |
|          | <b>0P</b>     | Pickling wash   | Pickling wash     |
| Standard | <b>2P</b>     | #320 to #400 buff polished finish                     | Machining process |
|          | <b>EP</b>     | Electrolytic polishing finish                         | Machining process |
| Option   | <b>EP (F)</b> | Electrolytic polishing finish + passivation treatment | Machining process |

## ③ Pipe end classification

| Category        | Symbol   | Details                 |       |
|-----------------|----------|-------------------------|-------|
|                 | <b>C</b> | ISO                     | Clamp |
| standard        | <b>M</b> | ISO                     | Male  |
|                 | <b>N</b> | ISO                     | Nut   |
| TOSTE standards | <b>T</b> | Sanitary flange (loose) |       |

## ④ Size classification

| Category | Symbol    | Details                     |
|----------|-----------|-----------------------------|
|          | <b>10</b> | 1S (Inside diameter 23.0)   |
|          | <b>15</b> | 1.5S (Inside diameter 35.7) |
|          | <b>20</b> | 2S (Inside diameter 47.8)   |
| Standard | <b>25</b> | 2.5S (Inside diameter 59.5) |
|          | <b>30</b> | 3S (Inside diameter 72.3)   |
|          | <b>40</b> | 4S (Inside diameter 97.6)   |

## ⑥ Seat ring material

| Category  | Details                    |
|-----------|----------------------------|
| <b>FM</b> | High-function fluororubber |
| <b>EM</b> | Ethylene propylene rubber  |

## ⑤ Type Classification

| Symbol      | Details  |
|-------------|--|
| <b>M</b>    | Manual handle lever type   |
| <b>P</b>    | Double-action vertical torque actuator   |
| <b>C又はO</b> | Vertical torque actuator<br>C: Single-action normally closed type<br>O: Single-action normally open type |
| <b>B</b>    | Double-action horizontal torque actuator   |

## ⑦ Actuator type

| Symbol     | Details  |
|------------|--|
| —          | —  |
| <b>V06</b> | φ60 vertical SUS external torque actuator double-action (1S to 3S)   |
| <b>V08</b> | φ80 vertical SUS external torque actuator double-action (1S to 4S)   |
| <b>V06</b> | φ60 vertical SUS external torque actuator single-action (1S to 2S)   |
| <b>V08</b> | φ80 vertical SUS external torque actuator single-action (2.5S to 4S) |
| <b>T01</b> | Horizontal aluminum torque actuator double-action (1S to 2S)         |
| <b>T20</b> | Horizontal aluminum torque actuator double-action (2.5S, 3S)         |
| <b>T35</b> | Horizontal aluminum torque actuator double-action (4S)               |

## ⑧ Feedback switches classification

| Category | Symbol   | Type/manufacturer  | Usable power voltage range | Operation style | Type or attachment |
|----------|----------|--|----------------------------|-----------------|--------------------|
|          | <b>O</b> | No feedback switch   | —                          | —               | —                  |
| Standard | <b>S</b> | SLI-AXG5 Limit switch made by Azbil  | DC 14~250V<br>AC 125~250V  | NO/NC           | Type with stay     |
|          | <b>W</b> | WLD-2 Limit switch made by OMRON   | DC 8~250V<br>AC 125~600V   | NO/NC           | Type with stay     |
|          | <b>J</b> | IGC2005-ARKG/UP Proximity switch made by Efecter   | DC 10~36V                  | NO              | Type with stay     |
|          | <b>U</b> | FL7M-7J6HD Proximity switch made by Azbil  | DC 10~30V                  | NO              | Type with stay     |
|          | <b>R</b> | FL7M-7K6H Proximity switch made by Azbil   | DC 10~30V                  | NC              | Type with stay     |
| Special  | <b>L</b> | In the case of non-standard-specification limit switch and supplied  |                            |                 |                    |
|          | <b>P</b> | In the case of non-standard-specification proximity switch and supplied  |                            |                 |                    |
|          | <b>B</b> | Asi: For uni-wire system with a solenoid valve: For further details, refer to the catalog of valve control head. |                            |                 |                    |

Note) Above parts may be subject to substitution with equivalent parts due to change in model of switch manufacturer. Select a standard model as much as possible.

## ⑨ Number of switches used

| Symbol   | Details                               |
|----------|---------------------------------------|
| <b>0</b> | No switch                             |
| <b>1</b> | One switch on closed side             |
| <b>2</b> | Two switches on open and closed sides |
| <b>3</b> | One switch on open side               |
| <b>X</b> | Other                                 |

## ⑩ Option

| Symbol   | Details               |
|----------|-----------------------|
| <b>0</b> | None                  |
| <b>S</b> | With speed controller |
| <b>X</b> | Other                 |



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