

Datasheet

Butterfly valve for marine cargo systems

Si-206 EN

Edition: 2013-05

| | |
|-------------------------|------------------------|
| Type MTV | Wafer design |
| Type MTVL | Lugged design |
| Nominal pressure | PN 10 - 25 |
| | Class 150 |
| Nominal size | DN 80 - 400 |
| Material | Stainless steel |

- **Advanced triple eccentric design**
- **Designed for manual and remote operated applications**
- **Designed for applications up to 350° C (662 °F)**
- **Tightness class in accordance with EN 60534-4 Class V as standard**
- **Solid seat made of stainless steel**

Option

- **PTFE-seat**

SOMAS butterfly valves, type MTV and MTVL are designed for manual and remote operations. This valve is designed to handle a wide range of liquids and gases within a broad temperature range.

The MTV valve can be supplied in wafer as well in lugged design (MTVL).

The valves have an advanced triple eccentric design including a unique shape of the disc allows the use of a solid stainless steel seat. The solid seat remains un-affected by high flow velocities and temperatures. A good valve function is achieved even on difficult applications.

The SOMAS valves are delivered ready for installation and operation. The manual valves are delivered with lever or gear unit and the remote operated valves can be delivered with hydraulic or pneumatic actuator on request.



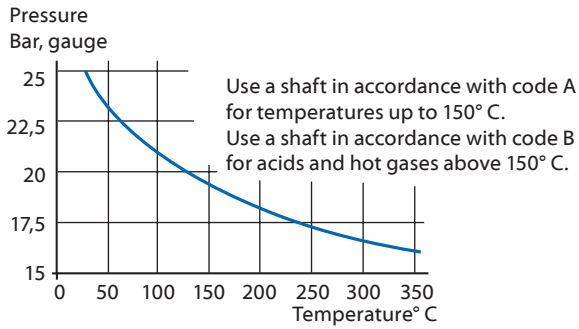


Tightness class

The tightness class is related to the chosen material in the seat ring.

| | | |
|------------|--------|--|
| Metal seat | Code D | EN 60534-4 V (ASME B16-104 Class V) |
| PTFE seat | Code A | EN 60534-4 VI (ASME B16-104 Class VI) (Option) |

Pressure and temperature rating

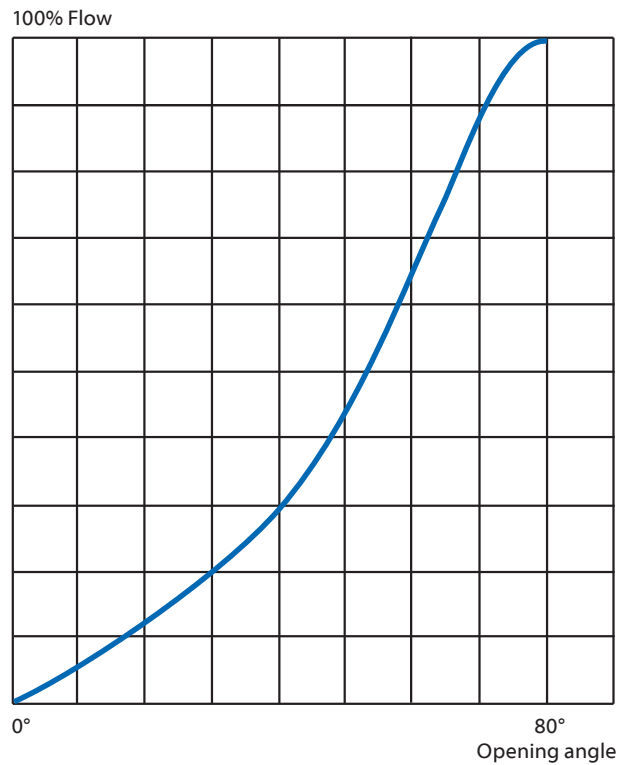


Max. allowable pressure drops/torque figures

Maximum allowable pressure drops are valid at 20° C.

| Valve DN | PN | Max. pressure drop bar at opening angle | | Torque (shaft) | |
|----------|----|---|------|----------------|------|
| | | 0° | 80° | Nm | Nm |
| 80 | 25 | 25 | 4.4 | 120 | 150 |
| 100 | 25 | 25 | 4.4 | 165 | 220 |
| 125 | 25 | 25 | 5.8 | 220 | 220 |
| 150 | 25 | 25 | 2.7 | 250 | 300 |
| 200 | 25 | 25 | 1.1 | 290 | 350 |
| 250 | 25 | 25 | 1.05 | 500 | 600 |
| 300 | 25 | 20 | 1.05 | 620 | 750 |
| 350 | 25 | 20 | 1.09 | 1000 | 1200 |
| 400 | 25 | 20 | 1.43 | 1350 | 1600 |

Flow characteristics



Capacity factor Kv and Resistance factor ξ for butterfly valve type MTV/MTVL

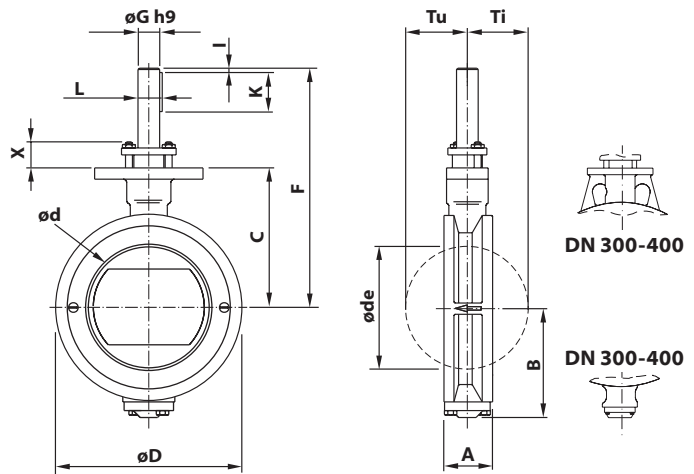
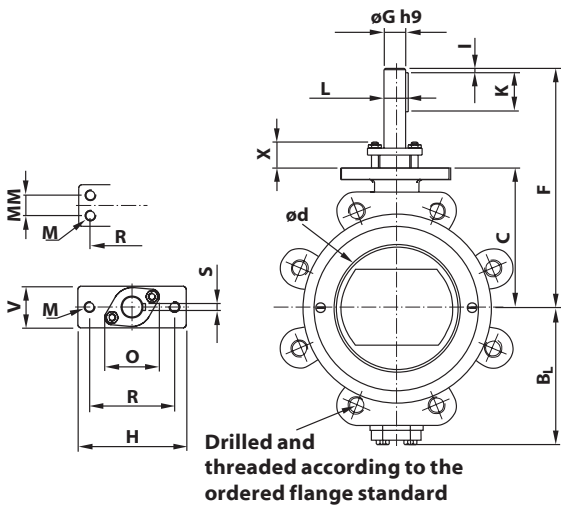
| DN | Opening angle | | | | | | | | | |
|-----|---------------|-----|------|------|------|------|------|------|------|-----------|
| | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° | ξ 90° |
| 80 | 14 | 31 | 48 | 73 | 108 | 165 | 203 | 235 | 205 | 1.18 |
| 100 | 21 | 45 | 70 | 107 | 158 | 240 | 324 | 375 | 326 | 1.13 |
| 125 | 35 | 75 | 116 | 177 | 262 | 400 | 520 | 605 | 523 | 1.06 |
| 150 | 50 | 108 | 168 | 256 | 379 | 580 | 780 | 905 | 784 | 0.98 |
| 200 | 89 | 193 | 299 | 457 | 675 | 1030 | 1390 | 1610 | 1397 | 0.99 |
| 250 | 142 | 307 | 476 | 727 | 1076 | 1650 | 2211 | 2555 | 2222 | 0.95 |
| 300 | 207 | 446 | 692 | 1058 | 1566 | 2400 | 3219 | 3720 | 3235 | 0.93 |
| 350 | 279 | 602 | 934 | 1427 | 2111 | 3230 | 4341 | 5020 | 4362 | 0.95 |
| 400 | 371 | 800 | 1242 | 1898 | 2809 | 4300 | 5775 | 6675 | 5805 | 0.91 |

Relation between Kv and Cv: $K_v = 0.86 \times C_v$



Lugged design

Wafer design



Butterfly valve type MTV

| DN | A | B | BL | C | ød | øde | øD | F | øG | H | I | K | L | M | MM | O | R | S | V | X | Tu | Ti | Weight | |
|-----|-----|-----|------------------|-----|-----|-----|-----|-----|----|-----|---|----|------|-----|----|-----|-----|----|----|----|-----|-----|--------|------|
| | | | | | | | | | | | | | | | | | | | | | | | MTV | MTVL |
| 80 | 46 | 86 | 86 | 111 | 70 | 60 | 133 | 226 | 20 | 125 | 5 | 45 | 22.5 | M12 | - | 61 | 98 | 6 | 40 | 30 | 41 | 38 | 5 | 10 |
| 100 | 52 | 99 | 129 | 128 | 90 | 86 | 160 | 243 | 20 | 125 | 5 | 45 | 22.5 | M12 | - | 61 | 98 | 6 | 44 | 30 | 52 | 48 | 6 | 11.5 |
| 125 | 56 | 113 | 137 | 146 | 116 | 110 | 188 | 261 | 20 | 125 | 5 | 45 | 22.5 | M12 | - | 61 | 98 | 6 | 48 | 30 | 64 | 60 | 9 | 15.5 |
| 150 | 56 | 127 | 158 | 161 | 140 | 138 | 215 | 276 | 25 | 125 | 5 | 45 | 28 | M12 | - | 66 | 98 | 8 | 48 | 30 | 77 | 73 | 11 | 18.5 |
| 200 | 60 | 153 | 191 ¹ | 191 | 187 | 186 | 270 | 306 | 25 | 125 | 5 | 45 | 28 | M12 | - | 66 | 98 | 8 | 48 | 30 | 100 | 96 | 17 | 21* |
| 250 | 68 | 188 | 226 | 225 | 236 | 235 | 324 | 360 | 30 | 150 | 5 | 60 | 33 | M12 | 24 | 72 | 123 | 8 | 50 | 40 | 124 | 120 | 26 | 45 |
| 300 | 78 | 261 | 261 | 265 | 285 | 285 | 374 | 400 | 35 | 150 | 3 | 50 | 38 | M12 | 24 | 75 | 123 | 10 | 60 | 40 | 149 | 145 | 39 | 70 |
| 350 | 78 | 287 | 287 | 294 | 331 | 330 | 432 | 449 | 40 | 150 | 3 | 50 | 43 | M12 | 40 | 95 | 123 | 12 | 70 | 50 | 172 | 167 | 59 | 100 |
| 400 | 102 | 339 | 339 | 330 | 382 | 380 | 485 | 530 | 50 | 170 | 3 | 80 | 53.5 | M16 | 55 | 105 | 136 | 14 | 87 | 50 | 199 | 194 | 82 | 129 |

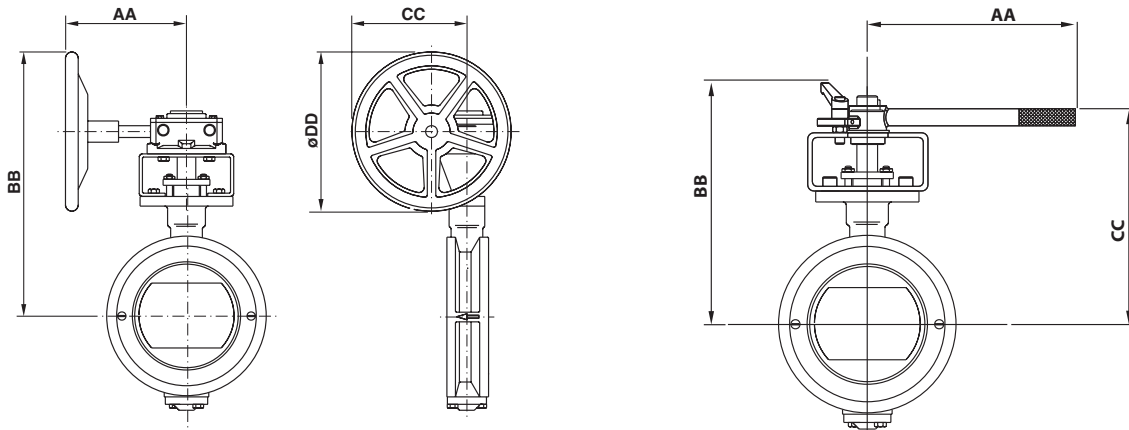
*PN 16/25 = 31kg

A = Face to face dimension according to EN 558 series 20

BL = The B measure for butterfly valves, lugged type

øde = Necessary free diameter for the disc under movement

¹ BL for DN 200 PN 10 and PN 20 is 154



Butterfly valve with gear unit for on-deck application

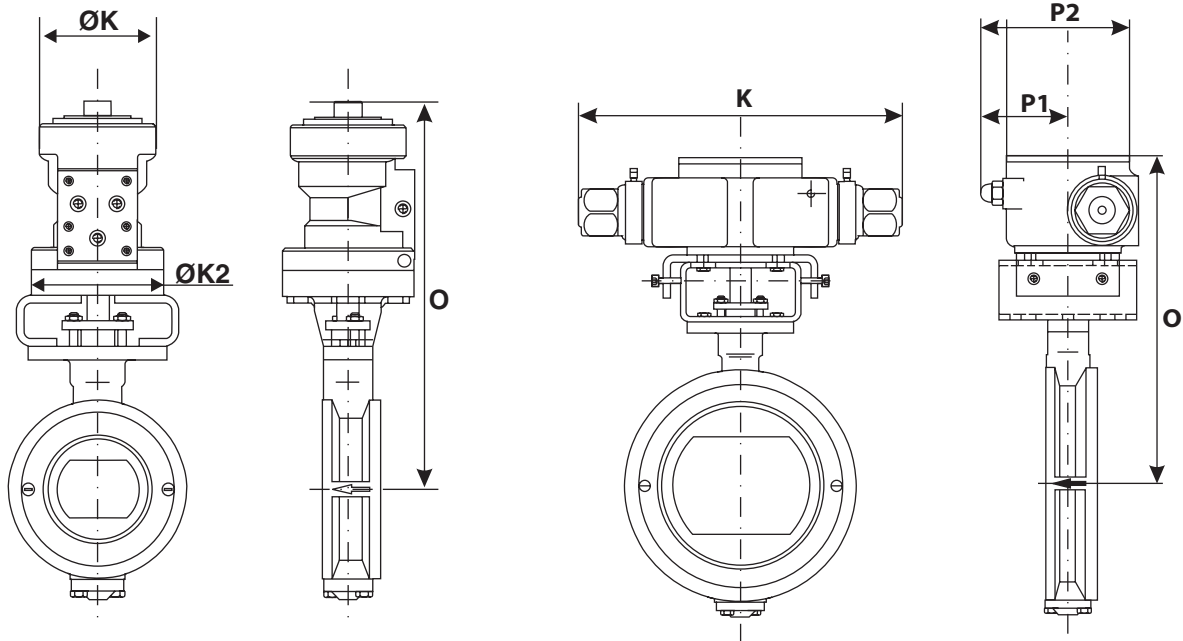
Weight

| DN | Type | AA | BB | CC | øDD | Weight | |
|-----|-------------------|-----|-----|-----|-----|--------|------|
| | | | | | | MTV | MTVL |
| 80 | M10/R10/F07 SL040 | 185 | 350 | 180 | 250 | 13 | 18 |
| 100 | M10/R10/F07 SL040 | 185 | 365 | 180 | 250 | 14 | 19.5 |
| 125 | M10/R10/F07 SL040 | 185 | 330 | 180 | 250 | 17 | 23.5 |
| 150 | M10/R10/F07 SL040 | 185 | 395 | 180 | 250 | 19 | 25.5 |
| 200 | M10/R10/F07 SL040 | 185 | 425 | 180 | 250 | 25 | 39 |
| 250 | M12/R12/F12 SL040 | 225 | 500 | 220 | 300 | 38 | 57 |
| 300 | M12/R12/F12 SL040 | 225 | 540 | 220 | 300 | 51 | 82 |
| 350 | M12/R12/F12 SL040 | 225 | 605 | 220 | 300 | 71 | 112 |
| 400 | M14/R14/F14 SL040 | 250 | 665 | 265 | 350 | 103 | 150 |

Butterfly valve type MTV with hand lever

Weight

| DN | Type | AA | BB | CC | Weight | |
|-----|-------|-----|-----|-----|--------|------|
| | | | | | MTV | MTVL |
| 80 | HSR20 | 355 | 236 | 206 | 8 | 13 |
| 100 | HSR20 | 355 | 251 | 223 | 9 | 14,5 |
| 125 | HSR20 | 355 | 271 | 241 | 12 | 18,5 |



Butterfly valve, type MTV/MTVL with actuator type DAMCOS

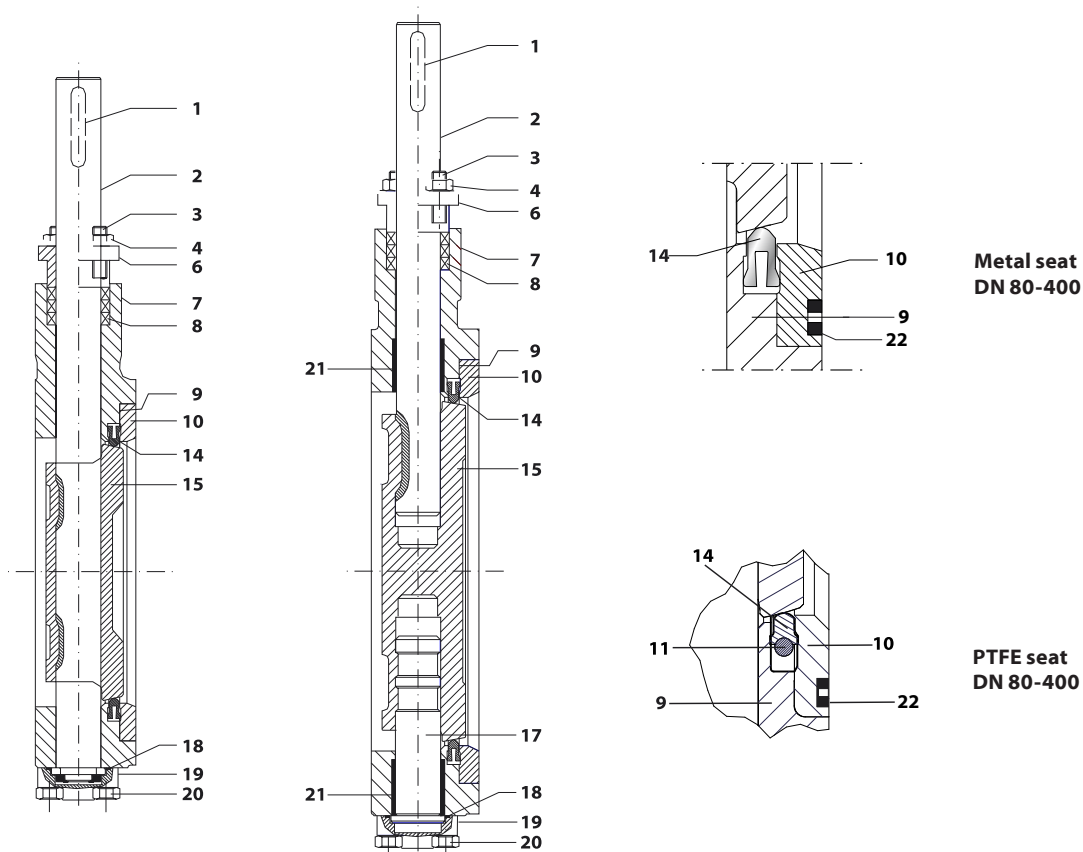
| DN | Type | ØK | O | ØK2 | Weight |
|-----|---------|-----|-----|-----|--------|
| 80 | BRC250 | 104 | 351 | 118 | 15 |
| 100 | BRC250 | 104 | 368 | 118 | 16 |
| 125 | BRC250 | 104 | 386 | 118 | 19 |
| 150 | BRC250 | 104 | 401 | 118 | 21 |
| 200 | BRC500 | 126 | 450 | 132 | 32 |
| 250 | BRC500 | 126 | 504 | 132 | 41 |
| 300 | BRC1000 | 145 | 566 | 160 | 61 |
| 350 | BRC1000 | 145 | 615 | 160 | 81 |
| 400 | BRC2000 | 172 | 726 | 192 | 118 |

NOTE! Required supply pressure 130 bar

Butterfly valve, type MTV/MTVL with actuator type Skarpenord

| DN | Type | K | O | P1 | P2 | Weight |
|-----|--------|-----|-----|-----|-----|--------|
| 80 | RA2-07 | 326 | 291 | 82 | 150 | 15 |
| 100 | RA2-10 | 378 | 320 | 102 | 184 | 21 |
| 125 | RA2-10 | 378 | 338 | 102 | 184 | 24 |
| 150 | RA2-10 | 378 | 353 | 102 | 184 | 26 |
| 200 | RA2-10 | 378 | 383 | 102 | 184 | 32 |
| 250 | RA2-12 | 435 | 437 | 105 | 202 | 50 |
| 300 | RA2-12 | 435 | 467 | 105 | 202 | 63 |
| 350 | RA2-14 | 542 | 536 | 121 | 240 | 94 |
| 400 | RA2-14 | 542 | 592 | 121 | 240 | 117 |

NOTE! Required supply pressure 130 bar



Material specification

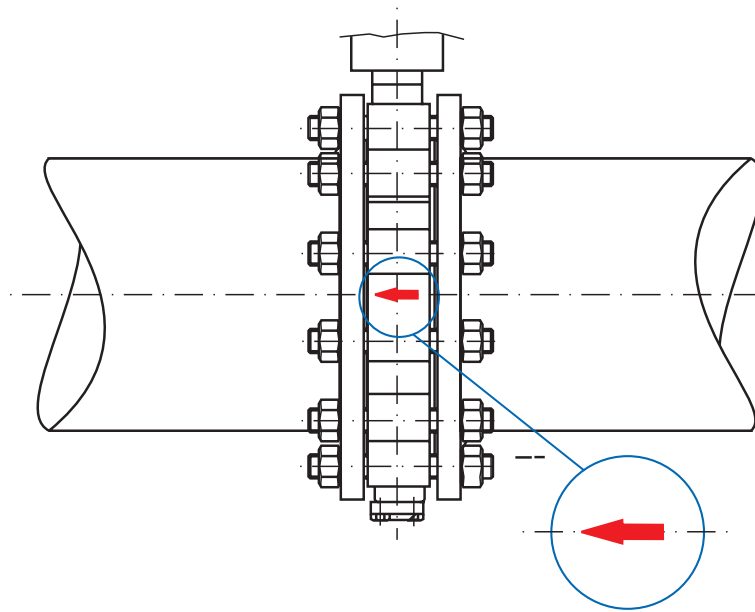
| Item no. | Description | Swedish standard | EN standard | Comparable material USA standard | Included in the spare part kit |
|-----------------|----------------------------------|---------------------------|---------------------------|----------------------------------|--------------------------------|
| 1 | Key | Steel (SS 1650-06) | Steel (C45K) | Steel (ASTM 1045) | X |
| 2 | Shaft | | 1.4460 | AISI 329 | |
| | Shaft ³ | | 1.4460 hard chromed | AISI 329 hard chromed | |
| 4 | Stud | A4 | A4 | AISI 316 | |
| 5 | Nut | A4 | A4 | AISI 316 | |
| 6 | Gland | SS 2343-12 (CF8M) | 1.4408 | A351 (CF8M) | |
| 7 | Valve body | SS 2343-12 (CF8M) | 1.4408 | A351 (CF8M) | |
| 8 | Stuffing box kit | Graphite alternative PTFE | Graphite alternative PTFE | Graphite alternative PTFE | X |
| 9 | Screw | A4 | A4 | AISI 316 | |
| 10 | Cover plate | SS 2343-12 (CF8M) | 1.4436 | AISI 316 | |
| 11 | Support ring | SS 2353 | 1.4435 | AISI 316L | X |
| 12 | Gaskets, kit ⁴ | Graphite | Graphite | Graphite | X |
| 13 | Spring washers, kit ⁴ | 1.4462 | 1.4462 | UNS S31803 | X |
| 14 | Seat | 1.4462, 1.4470 and PTFE | 1.4462, 1.4470 and PTFE | UNS S31803 alternative PTFE | X |
| 15 | Disc | 1.4436/SS2343-12 | 1.4408 | A351 (CF8M) | |
| 17 | Shaft | 1.4460 | 1.4460 | AISI 329 | |
| | Shaft ³ | 1.4460 hard chromed | 1.4460 hard chromed | AISI 329 hard chromed | |
| 18 | Gasket | Graphite | Graphite | Graphite | X |
| 19 | Cover | SS 2343-12 (CF8M) | 1.4408 | A351 (CF8M) | |
| 20 | Screw | A4 | A4 | AISI 316 | |
| 21 ¹ | Bearings sleeve ⁴ | 1.4539 | 1.4539 | AISI 904L | |
| 22 ² | Gasket (DN80-300) | PTFE | PTFE | PTFE | X |

¹ Only for DN 350-400

³ Temp >150 °C

² Only for DN 80-300

⁴ DN 350-400



Mounting

Note!

The preferred flow direction is towards the flat side of the disc. When lugged valves are installed, downstream piping can be removed when the valves are in the closed position. The lugged valve can also be used for end-of-line service, in which case the fluid pressure must flow towards the flat side of the disc.

The preferred flow direction is marked with arrows on both sides of the valve.

Important installation information

- Protection plates should not be removed until the valve is subject to installation.
- Counter flanges should be standard according to European or ASME standard.
- Gaskets should be flat type (not spiral wounded) in a correct quality. For dimensions see page 7 or our Operating and service instruction Mi-205 EN.
- The bolts in the flange connection should be tightened according to figures given in our Operating and service instruction Mi-205 EN.
- Before start up make sure that the pipe system is well cleaned. Remaining impurities can quickly damage seat and disc edge and make the valve untight.
- The valve should be left fully open during pipe cleaning procedure.
- For more details about maintenance see the manual Mi-205 EN.



Flange standard

SOMAS butterfly valve type MTV in this data sheet is of wafer type for mounting between flanges PN 10-25/Class 150.

The valve can also be delivered in lugged design. The valve can be drilled for mounting between flanges according to ASME.

When ordering, please state the pressure rating of the counter flanges. See valve specification system, code 11.

Seat design

The valves with a nominal size between DN 80-500 have a metal seat (type Y) according to code D.

PTFE seat is available as an option. See the valve specification system, code 6.

Temperature ranges for seat and shaft

| Seat | Max. temp. |
|--------------------------------|------------|
| A = PTFE (10% carbon) | 170 °C |
| D = 1.4470 (metal seat type Y) | 350 °C |

| Shaft | Max. temp. |
|---------------------------|------------|
| A = 1.4460 | 150 °C |
| B = 1.4460 (hard chromed) | 350 °C |

Actuators, gears and accessories

The valves can be fitted with SOMAS gears, levers or hydraulic actuators in accordance with the selection table.

The gear material and painting is customized for on-deck applications. The painting procedure is based upon a proposal from the Jotun Company and it is named BSK-99 Corrosion Class C5 M. The type code is S7.09.

See also data sheet Ti-918 for painting procedure for on-deck applications

The valves will be delivered as tested units ready for installation.

Gasket information

Note!

Use gaskets with the correct inside diameter to ensure that pressure is applied on the cover plate.

Gaskets according to EN 1514-1

| Valve DN | Max. Inside dia. di (mm) | Outside dia. (dy) (mm) | | |
|----------|--------------------------|------------------------|-------|-------|
| | | PN 10 | PN 16 | PN 25 |
| 80 | 89 | 142 | 142 | 142 |
| 100 | 115 | 162 | 162 | 168 |
| 125 | 141 | 192 | 192 | 194 |
| 150 | 169 | 218 | 218 | 224 |
| 200 | 220 | 273 | 273 | 284 |
| 250 | 273 | 328 | 329 | 340 |
| 300 | 324 | 378 | 384 | 400 |
| 350 | 356 | 438 | 444 | 457 |
| 400 | 407 | 489 | 495 | 514 |

For mounting between flanges according to PN 10-25, the inside gasket diameter should not exceed the dimensions specified in the standard EN 1514-1.

Recommendation: Use nominal diameter as inside diameter.

Gaskets according to ASME B 16.21 RF

| Valve DN | Max. Inside dia. di (mm) | Outside dia. (dy) (mm) |
|----------|--------------------------|------------------------|
| | | Class 150 |
| 80 | 89 | 136 |
| 100 | 114 | 174 |
| 125 | 141 | 196 |
| 150 | 168 | 222 |
| 200 | 219 | 279 |
| 250 | 273 | 340 |
| 300 | 324 | 410 |
| 350 | 356 | 451 |
| 400 | 406 | 515 |

For mounting between flanges according to Class 150 dimensions according to the standard ASME B 16.21 RF are valid where the following dimensions refer to the gasket.



Ordering

State desired valve according to the valve specification system below as well as type of actuator, positioner and accessories.

Valve specification system

MTV - A 5 - A A D - A 1 1 - DN... - PN...

1 Type of valve

Wafer design

MTV

Lugged design

MTVL

2 Valve body design

A = Wafer design

F = Lugged design

3 Nominal pressure

5 = PN 25

4 = PN 20/Class 150

4 Material – valve body

A = 2343-12 (CF8M)

5 Material – disc

A = 2343-12¹

6 Material – seat

A = PTFE (10 % carbon²)

D = 1.4470 (metal seat, type Y)

7 Material – shaft

A = 1.4460

B = 1.4460, hard chromed

8 Bearing – valve body/shaft

1 = Without bearing

7 = 1.4539

9 Stuffing box

1 = Graphite

2 = PTFE

10 Valve size, DN

**11 Drilling, counter flanges
PN/Class**

¹ DN 80-200 = 1.4436

² Percentage by weight

Check with SOMAS for further combinations.

SOMAS reserves the right to make improvements without prior notice.



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