NELES MAPABLOC, BM SERIES
BUTTERFLY VALVE WITH DOUBLE BLOCK AND BLEED SEALING SYSTEM

Metso’s Neles Mapabloc butterfly valve has been especially designed for use in temperatures, ranging from -200 °C up to 1000 °C. The double block and bleed sealing system gives the valve a safe, extra tight seal.

Valve end connections
The valve is available as flanged, wafer, wafer-lug or with butt weld ends.

Shaft and drive shaft design
The Series BM butterfly valve has a two piece shaft design which gives a high flow coefficient. Both shafts have two pairs of bearings. The axial bearings ensure the correct alignment of the disc. The bearings are made of ceramic coating, which eliminates galling and pickup. High safety factor has been included to bearing design.

The gland packing is live-loaded to ensure minimum emissions and it’s located after the outer bearing. The shaft to disc connection exceeds the strength of the top of the shaft. Overload will result in the failure of the external part of the shaft.

Sealing element
The two metal sealing elements are located on the disc edge. Tight, reliable seal is ensured by using materials with similar thermal expansion for both disc and sealings. The surface of the sealing elements are hard coated giving excellent resistance to wear and erosion.

When the valve closed, the drain hole in the body is positioned between the two sealing elements with the two functions: firstly to check for leakage from the valve in the closed position and secondly the hole can also be used to add additional sealing fluid if required. The Mapabloc butterfly valve is of a fire safe design from both sides.

ISO 5211 mounting face
Mapabloc butterfly valve can be assembled with following type of actuators:
- manual gear actuator
- electric actuator
- pneumatic actuator
- hydraulic actuator

Optionally BM series valve can be supplied with any additional control equipment such as a solenoid valve, limit switch or positioner.
### Applications
The butterfly valve is suitable for the following industries and applications.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>Process, tail gas, waste water</td>
</tr>
<tr>
<td>Chemical</td>
<td>Fluegas, styrene, acrylic acid</td>
</tr>
<tr>
<td>Refinery</td>
<td>Flammable media, process, gas</td>
</tr>
<tr>
<td>Off-shore</td>
<td>Flammable media, process, gas</td>
</tr>
<tr>
<td>Off-shore</td>
<td>Gas and crude gas</td>
</tr>
<tr>
<td>Gas</td>
<td>Natural gas, sour gas</td>
</tr>
<tr>
<td>Nuclear power</td>
<td>Steam, gas, water</td>
</tr>
<tr>
<td>Conventional power</td>
<td>Steam, gas, water</td>
</tr>
</tbody>
</table>

### Special features
Neles can also offer turn-key solutions for difficult problems such as:
- Valve with heating jacket
- Fire safe design
- Design which allows for the flashing and purging of the sealing elements and bearings.
- Sealing for bearings
- Live-loading with seal gas connection
- Quick shut-down valve for safety applications.

---

*Fig 1. Assembly drawing of the double block and bleed butterfly valve, MAPABLOC.*
Neles butterfly valve, series BM (MAPABLOC)

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
<th>12.</th>
<th>13.</th>
<th>14.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM</td>
<td>3</td>
<td>G/D</td>
<td>1</td>
<td>A</td>
<td>56</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td>G</td>
<td>/</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. sign

2. sign

PRODUCT SERIES / DESIGN

BM

Double block and bleed valve, double excentric available as Double flanged, Lug, Wafer or But weld end type, metal seated, 4 bearings, two piece shaft

3. sign

BODY CONSTRUCTION

3 Flanged

Y Special, to be specified

4. sign

<table>
<thead>
<tr>
<th>Body</th>
<th>BODY PRESSURE RATING</th>
<th>Trim</th>
<th>TRIM PRESSURE RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>ASME class 150</td>
<td>/C</td>
<td>dp max 10 bar</td>
</tr>
<tr>
<td>D</td>
<td>ASME class 300</td>
<td>/C</td>
<td>dp max 10 bar</td>
</tr>
<tr>
<td>J</td>
<td>PN10</td>
<td>/J</td>
<td>PN10</td>
</tr>
<tr>
<td>K</td>
<td>PN16</td>
<td>/J</td>
<td>PN10</td>
</tr>
<tr>
<td>L</td>
<td>PN25</td>
<td>/J</td>
<td>PN10</td>
</tr>
<tr>
<td>M</td>
<td>PN40</td>
<td>/J</td>
<td>PN10</td>
</tr>
</tbody>
</table>

4.5. sign

SEAT DESIGN

4 Double sealing on disc + additional sealing ring

Y Special construction

6. sign

BEARING AND BODY DESIGN

B 4 bearings GGG-CrNi + ceramic coating on shaft bearing surface or eq

BN 4 bearings GGG-CrNi Ni resist+ceramic coating 400 or eq bolting/bearing/clamp ring materials acc to NACE

Y Special construction

7. sign

SIZE

NELES MAPABLOC, BM SERIES BUTTERFLY VALVE WITH DOUBLE BLOCK AND BLEED SEALING SYSTEM

(BM rating = inches / PN rating = mm)

BM Inch: 12, 14, 16, 18, 20, 24, 28, 30, 32, 36, 40, 42, 48, 52, 54, 56, 60, 64, 72

Metric: 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1500, 1600

NOTE: Check the recommend material combination from the Factory.

MATERIAL CODES

Standard materials

<table>
<thead>
<tr>
<th>8. sign</th>
<th>BODY</th>
<th>9. sign</th>
<th>DISC</th>
<th>10. sign</th>
<th>SHAFT &amp; PINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>ASTM A216 WCB / 1.0619 (Casting, mainly for sizes 30&quot; - 48&quot;) type BM (MAPABLOC) (Tmax = 400°C)</td>
<td>N2</td>
<td>ASTM A487 CA6NM or SS 410 or 1.4317</td>
<td>N3</td>
<td>SS 420 or 1.4021</td>
</tr>
</tbody>
</table>

Optional materials

<table>
<thead>
<tr>
<th>1.5415</th>
<th>ASTM A182 Gr F1 / A204 Gr A (Tmax = 400°C, plate, welded construction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7335</td>
<td>ASTM A182 Gr F11 / ASTM A387 Gr F11 (Tmax = 538°C, plate, welded construction)</td>
</tr>
</tbody>
</table>

11. sign

SEAT MATERIAL

S Stellite/stellited sealing attached on disk + stellite/stellited sealing surface

Y Special, to be specified

12. sign

PACKING CONSTRUCTION

G Live loaded graphite packing

Firesafe

Y Special, to be specified

13. sign

SURFACE FINISH FOR JOINTING FACE

- Ra 3.2 - 6.3, standard, without sign cover:
  - EN 1092-1 Type B1 (Ra 3.2 - 12.5)
  - DIN 2526 Form E (Ra 4)
  - ASME B16.47 Series A #150 - 300 size 26" - 60"
  - JIS 10K (14 bar)
  - JIS 16K (27 bar)
  - R10 JS 10K (14 bar)
  - R16 JS 16K (27 bar)
  - R20 JS 20K (34 bar)

Y Special, to be specified

14. sign

FLANGE in marked flanges always check suitabiliy from factory

- without sign according to valve body pressure rating
  - PN rating
    - EN1092-1 ASME rating
      - ASME B 16.5 #150-#300 size 4 - 24
      - ASME B 16.47 Series A #150 - 300 size 26" - 60"
      - Bigger flange drilling has to be agreed with the factory. But weld ends acc. ASME B16.25

B ASME 16.47 Series B (size 26” and bigger), pls consult factory for suitability

J PN 10

K PN 16

L PN 25

R10 JIS 10K (14 bar)

R16 JIS 16K (27 bar)

R20 JIS 20K (34 bar)

Y Special, to be specified

NOTE: Check the recommend material combination from the Factory.