Neles BW series metal seated high performance butterfly valve with one piece body design, for both control and tight shut-off applications. Multiple body options make it particularly well suited for the refining, power, petrochemical and chemical industries. The BW provides extended operational life in control, tight shut-off and critical applications such as high cycle, high temperature, cryogenic, oxygen and abrasive applications, etc. Rating from ASME 900 to 2500 makes the BW a sound control or shut-off valve in severe service applications.

**Excellent on-off capabilities**
- Uniquely functioning full metal seat design assures tightness over long time periods.
- Contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure.
- Long term tightness is maintained even in high cycle rate services. Tightness is not compromised by large thermal cycling either.
- Low friction and excellent wear resistance.
- Lowered operational torque reduces actuator size.
- Heavy-duty stem and ingenious bearings design extends service life and is insensitive to thermal cycles and impurities.

**Excellent flow control capabilities**
- Good controllability via smoothly rising installed characteristic curve at both very small openings and nearly full Cv positions. Series BW provides very wide rangeability in fairly low pressure drop services.
- Good dynamic stability in both flow directions.
- Available with a variety of actuators, positioners and accessories for single source responsibility. Mounting face according to ISO 5211.

**Abrasion resistant construction**
- Solid, sturdy all metal seat design is based on metal-to-metal contact. No resilient parts are needed for seating.

**Low emissions**
- The live loaded gland packing is located right after the outer bearing maximizing the tightness. The emissions are well below the international standards.
- Furthermore, there are no resilient parts exposed to the medium.

**Extremely wide pressure and temperature range**
- Differential pressure/temperature ratings in accordance with ASME B16.34.
- Extremely wide temperature range up to +1150°C / +2100 °F.

**Low cost of ownership**
- Extremely high cycle life minimizes the need for maintenance, and increases Mean Time Between Failure (MTBF) value.
- Interchangeable seat can be replaced without disassembling the disc and shaft. Seat replacement does not require any adjustment or special tools.

**Certified emission and fire safe performance**
- Emission certified according to industry standard, ISO 15848-1 class B in shut-off applications.
- Fire safe certification according to API 607, 6th edition

**Certified safety performance**
- SIL certification to meet IEC61508 requirements
- Capable to SIL 3 level
Applications

The BW series butterfly valve is suitable for the following industries and applications.

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<tr>
<th>Industry</th>
<th>Application</th>
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<td>Refinery</td>
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<td>Off-shore</td>
<td>Flammable media, process, gas</td>
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<td>Gas and crude gas</td>
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<td>Conventional power</td>
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Special features

Metso has provided solutions for special applications including, but not limited to following examples:

- Valve with heating jacket together with purging
- Valve with double sealing element
- Double block and bleed applications (DBB)
- Flashing and purging of the sealing elements and bearings
- Solid proof design including protection for bearings and sealing element
- Live-loading with seal gas connection

Emergency shut-down design (ESD) for safety applications

TECHNICAL SPECIFICATIONS

Valve ratings

- ASME 900, 1500 and 2500
- EN/DIN PN150, PN250, PN400
- ISO PN150, PN250, PN400

Engineering standards

In accordance with ASME B16.34 and the valve meets the requirements of the European Directive 97/23/EC relating to pressure equipment directive (PED).

Sizes and end connection types

ASME cl. 900 is available in sizes 6” - 24”.
ASME cl. 1500 is available in sizes 6” - 24”.
ASME cl. 2500 is available in sizes 6” - 18”.
Other sizes on request

Inherent flow characteristic

Standard: Equal percentage

Standard shut-off classifications

Standard tightness:
- ISO 5208, rate D

Optional tightness

- ANSI Class V
- ANSI Class VI
- API 598

Safety features

- Fire-tested per API 607, 6th edition
- Fugitive emission control with live loaded stem sealing as standard, ISO 15848, TA-Luft/VDI 2440 and Shell 77/312
- Rugged single piece body eliminates potential leak paths associated with jointed bodies
- Positive shaft blow-out prevention
- Quadruple bearing construction eliminates jamming

Flow Data

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### Flange types:
- Doubleflange (as in drawing)
- Monoflange
- Lug or Wafer type
DIMENSIONS

### L1 (short pattern, double flanged)

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### 1. sign | PRODUCT SERIES / DESIGN
- BW: Metal seated holes butterfly valve, available as double flanged, lug, wafer or butt weld end type.

### 2. sign | BODY CONSTRUCTION
- 2 Flanged, long pattern
- 3 Flanged, short pattern
- 4 Lug or mono flange or single flange
- 6 Wafer
- 7 No entry + butt weld ends
- 8 Top entry, side access + butt weld ends
- 9 Top entry, top access + butt weld ends
- Y Special to be specified

### 3. sign | BODY PRESSURE RATING
- G ASME class 900
- H ASME class 1500
- M ASME class 1500
- T ASME class 2500

### 4. sign | SEAT DESIGN
- 1 U-Type metal seat with coating (sign 11).
- 2 Double seat, metal + soft (Tmax limited by soft seat). Max pressure 100 bar.
- 4 Double seat on valve body + leak off connection between the seat.
- 8 Solid proof. One sealing ring on the disc + seat on the body.
- Y Special construction

### 5. sign | BEARING AND BODY DESIGN
- A Soft bearings, PTFE or eq. on metal net Tmax 250 °C, trim rating max #600.
- 8 Metallic or carbon bearings for high temperature, (e.g. GGG-CrNi or stellite or high performance carbon bearings). Tmax 500 °C. 
- H Metallic or carbon bearings for high temperature, (e.g. GGG-CrNi or stellite or high performance carbon bearings). Temp: 500-850 °C.
- HH H + cooling ribbons. (e.g. GGG-CrNi or stellite or high performance carbon bearings) cooling ribbons. Temp: 850-1150 °C.
- S Construction B + steam jacket.
- Y Special construction

### 6. sign | SIZE
- Note: Pressure rating = ASME -> inch sizes
- Pressure rating = PN -> metric sizes
- BW
- Inch: 04, 06, 08, 10, 12, 14, 16, 18, 20, 24, bigger sizes on request
- Metric: 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, bigger sizes on request

### 7. sign | BODY
- A ASTM A351 CF8M / 1.4408
- P ASTM A216 WCB / 1.0619

### 8. sign | DISC
- A ASTM A351 CF8M / 1.4408
- N2 ASTM A487 CA6NM / 1.4317

### 9. sign | SHAFT, PINS AND KEY
- N ASTM A479 XM-19
- C ASTM SA564 Gr. 630
- C2 ASTM A638_660 / 1.4980

### 10. sign | SEAT MATERIAL
- F ASTM A182 gr. F6NWW/1.4133 + silver coated T= -75 °C … +425 °C
- D U-type metallic seat, UNS 07718 + silver coated T= -200 °C … +850 °C
- E U-type metallic seat, 1.4021 + silver coated T= -20 °C … +400 °C
- C 1.4923 + silver coated T= 0 °C … +600 °C

### 11. sign | PACKING CONSTRUCTION
- T3 Live loaded PTFE packing
- T2 Live loaded PTFE double packing with one 1/4" NPT leak off connection for shaft seal
- G3 Live loaded graphite packing, compatible to GOX/LOX.*
- G2 Live loaded graphite packing, inherently firesafe

### 12. sign | SURFACE FINISH FOR PIPE FLANGE FACE
- Ra 3.2 - 6.3, standard, without sign Cover:
  - EN 1092-1 Type B1 (Ra 3.2 - 12.5)
  - ASME B16.5, Ra 3.2 - 6.3 (125 - 250 μm)
  - DIN 2526 Form E (Ra 4)

### 13. sign | SPECIAL FLANGE FACING TYPES/FORMS always check suitability from factory
- 05 Ring joint
- 06 DIN EN 1092-1 Form F (tongue)
- 16 ANSI B16.5 large tongue (Ra 3.2)
- Y Special, to be specified

### 14. sign | FLANGE in marked flanges always check suitability from factory
- without sign according to valve body pressure rating
  - PN-rating
    - EN1092-1 ASME-rating
      - ASME B 16.5 #150 - #1500 size 24 - 2500 size max 12”
      - ASME B 16.5 #150 - #1500 size 2500 size 24 - 2500 size max 48”
      - Bigger flange drilling has to be agreed with the factory.
      - Butt weld end acc. ASME B16.25, Pipe diameter and pipe class to be defined
- A ASME 16.47 Series A (size 26" and bigger), pls consult factory for suitability
- Y To be specified

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**NOTE:**
- The factory will keep the right to change the material if the material is same e.g. from casting to forged.
- With slash “/” the materials are double marked.

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**NOTE:**
Check the recommend material combination from the factory.

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