


# BA 1.0 / 3.0 - DGRL/MRL


## Risks checklist

### C4.1 Checklist for risk of pressure

- Compliance with the <Intended use> - see section A2 - is a prerequisite for the prevention of risks when using the valve.
- The valve meets the requirements of the design standards <Butterfly valves with metal housing>, EN 593, which is harmonized with the PED 97/38/EC.

 Danger!	The conformity of the butterfly valve with the PED 97/38/EC applies only to the "pressure-retaining envelope" (= housing) of the valve. The use of a butterfly valve as end valve with only inflow-side mounting on a pressurized line is a risk that must be avoided by means of a blank flange on the outflow side or a comparable safeguard. Locking of the drive unit alone only partially reduces the risk and is not sufficient.
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- The identification of the valve is located on the name plate: A labelling sample is shown in section A3.
- The <p/t-Rating> according to the <Intended use> in section A2 and D2 is to be observed by the user. The upper pressure PS and temperature TS limits are also entered in the name plate of the valve. Therefore the nameplate on the valve must be permanently available during operation.
- For pressure test on pipe sections:
  - ▶ the test pressure can exceed the value PS acc. to the name plate, only with open valve disc, the max. admissible limit is 1.5 x PS,
  - ▶ and with closed valve disc the max. admissible limit is 1.1x PS

	Higher test pressures can lead to permanent deformation or breakage of parts of the valve and make it inoperable.
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- The risk of any kind of pressure surges must be covered by the user through appropriate selection of the design pressure PS.

#### **only series HP, not relevant for centred, soft-seated valves**

- *The gland of the valve shaft () is the only part of the valve, which has to be maintained:*
  - ▶ during initial operation,
  - ▶ and then periodically at appropriate intervals

*If leakage is detected, alternately pull tight the two nuts at the gland lid, ¼ of a turn at a time until the leakage stops - overtightening can interfere on the functioning of the valve.*

*In this periodic monitoring the tightness of bolted connections to the valve should be subject of a visual inspection.*
- Repairs on the valve can be performed only
  - ▶ with depressurised and emptied pipe section,
  - ▶ with switched off power supply to the drive (if available),
  - ▶ and should be preferably carried out on a removed valve
  - ▶ if necessary, the valve must be cleaned and decontaminated beforehand.

### C4.2 Risks checklist for operation


- The butterfly valve with hand lever must be quickly operable by hand forces according to EN12570 (formerly DIN 3230): A butterfly valve seals at the end stop of the closed position. The use of higher forces in the closed position and/or the use of lever extension do not achieve better sealing. On the contrary, with locked valve disc damage to the internal parts can be caused.
- The end positions of the valve are adjusted at the factory for the positions OPEN and CLOSED - these settings should not be changed, if the valve is working properly.
- Risk of crushing: The actuation of the butterfly valve, which is not enclosed on both sides by a pipe or equipment section is prohibited. See warning in section C1.
- If a drive unit must be retrofitted, torque, direction of rotation, angle of activation and the setting of the end stops "OPEN" and "CLOSE" of the butterfly valve must be adapted.  
 In particular, retrofitted connecting parts (panel and adapter) with the drive shaft of the butterfly valve must be exactly aligned and a plane parallel mounting of the drive train to the butterfly valve must be ensured.

## C4.3 Checklist for the risk of operating medium

- The choice of wetted materials must be coordinated in advance of the order between the buyer and EBRO-Armaturen.
- These materials used
  - ▶ are available for the user as type-related EBRO-planning documents (e.g. catalogue documents),
  - ▶ are stated in the EBRO order confirmation,
  - ▶ and the most important of these are listed on the name plate (see above) of the valve.
- The design of the <pressure piling case> (= housing, cover) contains in ferritic materials in accordance with the design standards of the valve a corrosion allowance of at least 1 mm, no surcharge on austenitic materials.
- Solids in the medium (even low percentage):  
Can cause damage to the functional surfaces on the seat, bearing bushings and valve shaft:  
Prefix sieves or filters the valve.
- Media that cause deposition on metallic surfaces may cause a malfunction at the seat and in the bearings of the valve - if necessary, the butterfly valve must be removed for cleaning.  
In any case, the valve must be operated periodically and at appropriate time intervals.


## C4.4 Checklist for risks arising from moving parts

- In general, all moving parts of the valve are covered
  - ▶ either by their housing,
  - ▶ or by the subsequent pipe  
(even in manual mode),


 Warning!	<p>The valve may only be operated when installed between pipe sections on both sides in order to avert the danger of getting jammed between the butterfly disc and the housing.</p>
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## C4.5 Flow rate risks checklist

- *The valve is designed for the usual speeds with water up to max. 4-5 m / s and with comparable dynamic pressure at the gaseous media.*

	<p>Higher speeds can produce vibrations of the functional parts and noise &gt; 85dB and must be avoided - except for opening and closing operations at (for a short time) high differential pressure.</p>
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- *Filling and emptying of pipe sections:*  
These functions must be carried out with a depressurized pipeline.

 Caution	<p>Already when emptying processed liquids or gases with pressures well below 1 bar (g) into the open, this occurs at high speeds, this risk may cause serious injuries to persons and serious damage to property.</p>
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- Choke/regular operation in intermediate position with opening  $\alpha$  angle of the butterfly disc near the closed position (Range of 0 °C <  $\alpha$  < 20 °C) is not approved for continuous operation, due to very high local velocities and erosion of the subsequent line in this area.  
(Use of special valves).

## C4.6 Information on risk from leaking seat of the valve

- The valve has been adjusted at the factory for the tight closing position, tested and delivered with the lowest possible <Leakage rate A, for liquids> according to EN 12266-1.

	<p>This adjustment is made at the end stop of the gear in CLOSED position. The settings should not be changed as long as the valve is leak proofed.</p>
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- If a too high leakage rate is observed in the seat, then this needs to be fixed in the short term, to avoid <erosion> in the seating area of the valve (and if necessary also in the pipe cross section behind).  
For measures see section above C3 <Troubleshooting>

## C4.7 Information regarding the risks of operation

- Valves with actuator: The operating power must remain within the limits, which are marked in in name plate of the drive. Additional information: see instructions of the drive manufacturer.
- Valves with hand wheel/lever: In order not to overload the internal functional parts, only the hand forces specified in the EN 12570 are permitted: Extract from EN 12570:


Ø Hand wheel [mm]	100	125	160	200	250	315	400	500	630	720	800	1000
Length hand lever												
allowable hand force [N]	500	600	600	700	800	800	1000	1000	1000	1000	1000	1000

- The drive is flanged to the interface on the butterfly valve according to ISO 5211. It must be ensured at appropriate intervals that the screw connection is tightened so that there is no "slip" between valve and drive. This verification must be carried out especially for drives which operate the valve very often.
- Drives > 40 kg, which are installed on the valve side, must be supported by appropriate fasteners to keep away bending loads from the valve body.

	In order to close tightly a butterfly valve with electric drive, it must be controlled <u>path-dependent</u> . A signal of the torque switch indicates an excessive overload of the drive, e.g. due to an object that got stuck. Details are given in the drive manufacturer's instructions.
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## C4.8 Information on other risks

- Mechanical loads:**
  - ▶ Valves are not "step ladders": External loads must be kept away from valve, actuator and accessories.
  - ▶ Additional pipeline loads amounting to  $F = (\text{pipe cross-section} \times \text{design pressure of the system})$  are covered in any case by the stability of the housing. Significantly higher pipe loads must be in agreement with EBRO-Armaturen.
  - ▶ The valve is designed for a static load of the pipe line with pressure. Risks of stresses from earthquakes or vibrations from the pipe system are not covered.
- Surface temperatures > 40 °C and low temperatures:**  
Where required, necessary insulation to protect the personnel is not in the responsibility and not supplied by the manufacturer EBRO-Armaturen.
- Corrosion protection of external surfaces:**  
Unless agreed otherwise in writing, the valve is supplied from the factory with a primer coat and has to be protected in the same way as the pipe system.
- Abrasion - especially hard and sharp - solids in the medium:**  
The functional surfaces on the seat, bearing bushes and shaft valves are damaged by such solids within a short time - especially at higher flow rates.  
For what purposes use only special valves (for example, internal soft rubber).
- It is assumed that no decomposition of unstable fluids and no cavitation occur in the pipe section, not even in choke/continuous operation mode (see also limits in section C4.5).
- The valve does not emit hazardous substances within the meaning of Annex I, 1.5.14 of the MRL.
- The clear width of the counter flanges must leave sufficient space for the opened valve disc, so that they are not damaged when they move up and thus become unusable. The minimum diameter of the counter flanges or customer-side pipeline has to be determined and considered based on the dimension "Z" of the corresponding dimensioned drawing/data sheet.
- Each valve is marked with a note that refers to the mandatory required help of the operating instructions in printed form. It is not responsibility of the manufacturer EBRO-Armaturen to forward and put the assembly and operating instructions (and possibly required further copying) at the disposal of the operating staff.

	It is assumed that the assembly and operating instructions is available in the understandable language version for each operator for any handling of the valve, the actuator or the attachment parts.
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