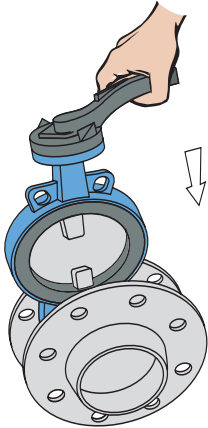


# MONTAGEHINWEISE

INSTALLATION INSTRUCTIONS · NOTICE D'INSTALLATION · INSTRUCCIONES DE INSTALACIÓN

①



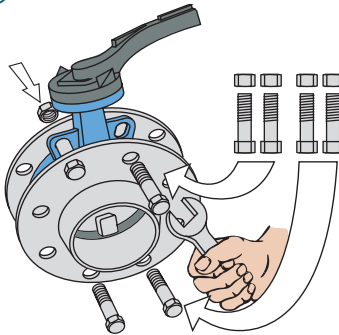
Absperrklappe zwischen die Flansche bringen

Place valve between the flanges.

Insérer la vanne entre les brides.

Situar la válvula entre las bridas.

②



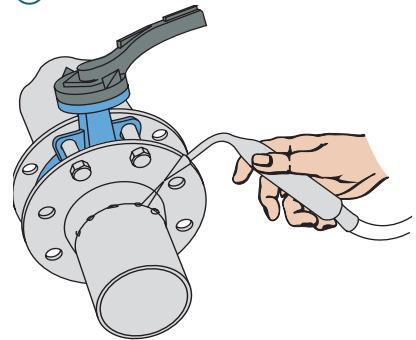
und mit 4 Flanschschrauben leicht anziehen und ausrichten.

Align and fix loosely by means of four flange bolts and nuts.

Serrer légèrement la boulonnerie et centrer la vanne.

Alinear la válvula con la ayuda de los tornillos.

③



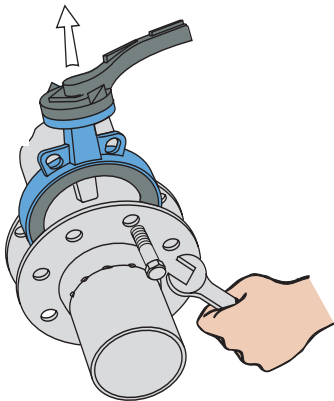
Die Rohrleitungsflansche mit elektr. Punkt-schweißung an die Rohrleitung anheften.

Spot weld pipe flanges to the pipe.

Pointer les soudures des brides sur la tuyauterie.

Soldar la brida a la tubería con un pequeño punto.

④



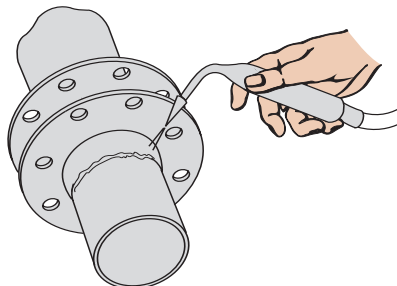
Absperrklappe wieder ausbauen.

Remove the valve.

Démonter la vanne.

Quitar la válvula.

⑤



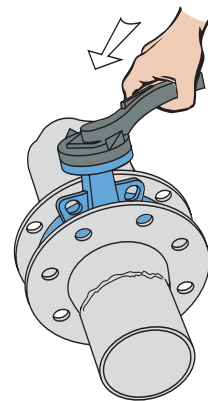
Flansche an die Rohrleitung anschweißen.

Weld flanges to the pipe.

Souder les brides à la tuyauterie.

Soldar por completo la brida a la válvula.

⑥



Nach dem Abkühlen der Flansche Absperrklappe einbauen. Die Armatur muss sich leicht zwischen die Flansche schieben lassen, damit die Manschette nicht beschädigt wird. Klappenscheibe leicht geöffnet lassen.

Let flanges cool down and re-install the valve. The valve must move easily between the flanges to prevent damage to the collar. Leave valve disc slightly open.

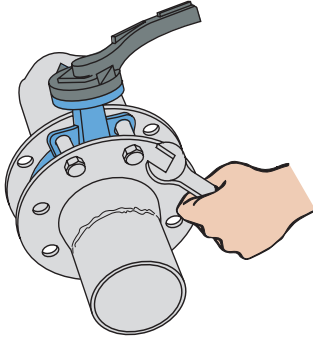
Laisser refroidir les soudures et remonter la vanne. La vanne doit se glisser facilement entre les brides afin que la manchette ne soit pas détériorée. Ouvrir légèrement le papillon.

Dejar que la brida y la tubería se enfrie. Situar nuevamente la válvula entre las bridas. Abrir ligeramente la válvula.

# EINBAUANLEITUNG

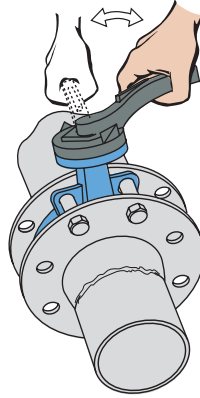
INSTALLATION INSTRUCTIONS · NOTICE D'INSTALLATION · INSTRUCCIONES DE INSTALACIÓN

⑦



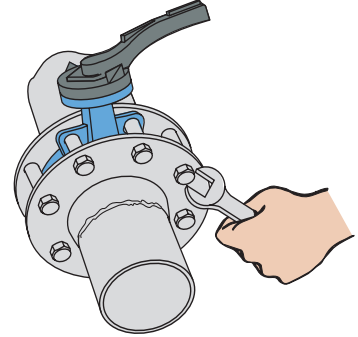
Absperrklappe ausrichten und 4 Flanschschrauben leicht anziehen.  
Align valve and fasten 4 flange bolts loosely.  
Positionner la vanne et visser la boulonnerie.  
Alinear la válvula con ayuda de los tornillos y apretar los ligeramente.

⑧



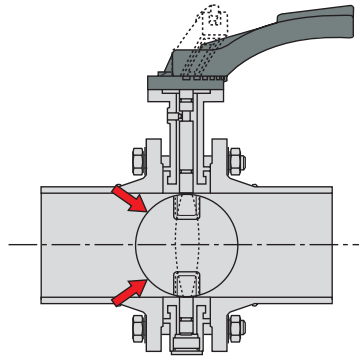
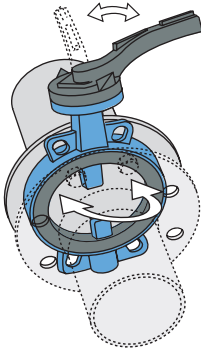
Klappenscheibe öffnen und prüfen, ob diese frei beweglich ist. Klappenscheibe leicht geöffnet lassen.  
Open valve disc and check free movement. Leave valve disc slightly open.  
Tester la vanne, vérifier que le papillon se manoeuvre facilement. Laisser le papillon ouvert.  
Abrir y cerrar la válvula un par de veces y dejarla ligeramente cerrada.

⑨



Sämtliche Flanschschrauben über kreuz fest anziehen.  
Fasten all flange bolts tightly and crosswise.  
Serrer la boulonnerie en étoile.  
Apretar finalmente los tornillos diagonalmente.

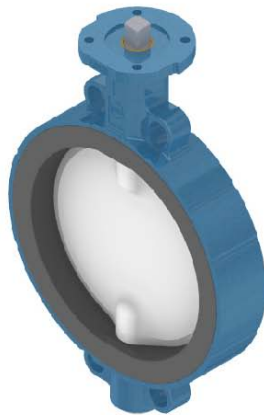
⑩



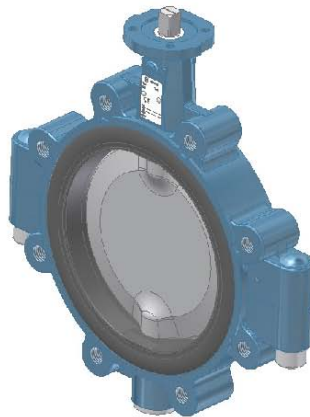
Ordnungsgemäße Funktion überprüfen.  
Achtung! Scheibe darf nicht an die Rohrleitung anschlagen.  
Check proper operation. Attention: make sure disc does not hit the pipe.  
Vérifier le fonctionnement de la vanne. Attention: vérifier que le papillon ne cogne pas la tuyauterie.  
Accionar la válvula para verificar su funcionamiento y comprobar que el disco no roce con la tubería.

## **Centric Valves Series Z, F, M, TW, BE**

**Z011**



**Z614**



**F012**



---

Example illustrations, not all possible type variants are shown!

---

## **Maintenance Instructions**

### **Supplement to Mounting and Operating Instructions BA 1.0 - DGRL/MRL**

*English language version*

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If necessary, additional information can be downloaded from

[www.ebro-armaturen.com](http://www.ebro-armaturen.com)

or requested from the following addresses:





EBRO ARMATUREN GmbH  
 Karlstrasse 8  
 D-58135 Hagen  
 ☎ (02331) 904-0  
 Fax (02331) 904-111

## E) General

**General:** EBRO valve types Z, F, M, TW, BE are maintenance-free. Only for valves with PTFE lining should the flange screws be retightened in accordance with the specified screw tightening torques shortly after commissioning (see section D5 of the relevant Operating Instructions). The reason for this is the flow characteristics of PTFE under pressure and temperature loads.

### E1 Explanation of symbols


Notes in these instructions are denoted by symbols:

|  |   |
|--|---|
|           | <p><b>Unconditional prohibition</b><br/>.....must be adhered to</p>   |
| <br>XXXXX | <p><b>Danger / Caution / Warning</b><br/>... indicates a hazardous situation, which can result in death or severe injuries of persons and/or damage to the pipe system.</p> |
|         | <p><b>Note</b><br/>... indicates an instruction that must be observed.</p>  |
|         | <p><b>Information</b><br/>... provides useful tips and recommendations</p>  |

Failure to observe these notes, cautions and warnings could result in dangers and invalidation of the manufacturer's warranty.

### E2 Important note


These Maintenance Instructions, as a supplement to the Mounting and Operating Instructions, are intended to enable professional mounting and maintenance of EBRO process and chemical valves, as well as trouble-free operation.

|   |  |
|---|--|
|  | <p><b>The relevant Operating Instructions are an elementary part of these Maintenance Instructions and must be observed.</b></p> |
|---|--|

Failure to observe the Operating or Maintenance Instructions constitutes negligence in important cases and releases the manufacturer EBRO ARMATUREN from its product liability.

**Read the Operating and Maintenance Instructions before commencing all work!**

**E3 Personnel requirements**

|   |   |
|---|---|
| <br><b>Warning</b> | <p><b>Warning! Risk of injury to inadequately qualified personnel!</b><br/>                 Incorrect handling can result in severe injuries and damage to property.</p> <ul style="list-style-type: none"> <li>• Activities may only be performed by qualified personnel, "instructed personnel" are inadequately qualified to perform such activities!</li> <li>• Keep unqualified personnel away from the danger zones.</li> </ul> |
|---|---|

**Qualified personnel**

On the basis of their technical training, knowledge and experience, as well as their knowledge of the pertinent regulations, are capable of executing the tasks assigned to them, and can autonomously identify potential dangers.

**Instructed personnel**





Have been provided with instruction by the operator in respect of the tasks assigned to them and potential dangers arising from incorrect behaviour.

**E4 Personal protective equipment**

During work, personal protective equipment necessary to minimize health risks must be worn.

- The protective equipment necessary for the respective task must always be worn during work.
- Observe information signs relating to personal protective equipment present in the work area.


In principle, the following should always be worn during work:

|   |   |
|---|---|
|  | <p><b>Protective clothing</b> is tight-fitting work clothing with low tear strength, narrow sleeves and no protruding parts. It serves primarily to protect against friction, grazes, punctures or deeper injuries, as well as contact with hot surfaces, corrosive or hot liquids and gases.</p> |
|  | <p><b>Protective helmet</b><br/>                 To protect against falling and flying parts, and against escaping liquids and gases.</p>   |
|  | <p><b>Safety shoes</b><br/>                 To protect against heavy falling parts, contact with hot surfaces, corrosive or hot liquids and gases, and skidding on a slippery surface.</p>  |
|  | <p><b>Safety gloves</b><br/>                 To protect the hands from friction, grazes, punctures or deeper injuries, as well as contact with hot surfaces, corrosive or hot liquids and gases.</p>  |

Special protective equipment is required for the performance of specific tasks. This is indicated separately. These special safety precautions are explained below.


## E5 Special dangers

### E5.1 Electric current (if electric actuator is mounted)

|  |   |
|--|---|
| <br>Danger! | <p><b>Danger to life from electric current!</b><br/>                 Imminent danger to life in case of contact with live components. Damage to insulation or individual components can pose a lethal hazard.</p> |
|--|---|


- In the event of damage to the insulation, switch off the power supply immediately and repair the damage.
- Work on the electrical system may only be performed by qualified electricians.
- Before commencing work, carefully read and observe the operating instructions for the electrical system.
- For all work on the electrical system, disconnect the system and verify safe isolation from the supply.
- Before carrying out maintenance, cleaning or repair work, switch off the power supply and secure it to prevent restarting.
- Do not bridge or decommission safety devices.

### E5.2 Hydraulic fluid (if hydraulic actuator is mounted)

|   |  |
|---|--|
| <br>Warning! | <p><b>Warning! Danger due to misuse!</b><br/>                 Any use exceeding the intended use and/or other use of the actuator can lead to hazardous situations and cause substantial damage to property and the environment.</p> |
|---|--|



- In case of damage to the pressure lines, switch off the supply immediately and repair the damage.
- Work on the hydraulic system may only be performed by skilled personnel.
- Before commencing work, carefully read and observe the operating instructions for the actuator and the attachments.
- For all work on the hydraulic system, depressurize the system and verify depressurization.
- Before carrying out maintenance, cleaning or repair work, shut off and secure the pressure supply.
- Do not bridge or decommission lines.

**E5.3 Compressed air (if pneumatic actuator is mounted)**


|   |   |
|---|---|
| <br>Warning! | <p><b>Warning! Danger due to misuse!</b><br/>                 Any use exceeding the intended use and/or other use of the actuator can lead to hazardous situations.</p> |
|---|---|

- In case of damage to the compressed air lines, switch off the compressed air supply immediately and repair the damage.
- Work on the pneumatic system may only be performed by skilled personnel.
- Before commencing work, carefully read and observe the operating instructions for the actuator and the attachments.
- For all work on the pneumatic system, depressurize the system and verify depressurization.
- Before carrying out maintenance, cleaning or repair work, shut off and secure the compressed air supply.
- Do not bridge or decommission lines.


**E5.4 Manual operation (if hand lever is mounted)**

|   |   |
|---|---|
| <br>Warning! | <p><b>Warning! Danger due to misuse!</b><br/>                 Any use exceeding the intended use and/or other use of the manual actuator can lead to hazardous situations.</p>  |
| <br>Warning! | <p><b>Warning! Danger due to misuse!</b><br/>                 Ensure secure clamp fastening or complete locking of the hand lever. The hand lever clamping must guarantee secure fixing for all occurring operating conditions. Inadequate clamping can lead to hazardous situations.</p> |

**E5.5 Moving components**

|   |   |
|---|---|
| <br>Warning! | <p><b>Warning! Risk of injury from moving components!</b><br/>                 Moving components can cause severe injuries. Only operate the valve after complete installation in the relevant system. Operating the valve when not installed can lead to hazardous situations.</p> |
|---|---|

**E6 Safety devices**

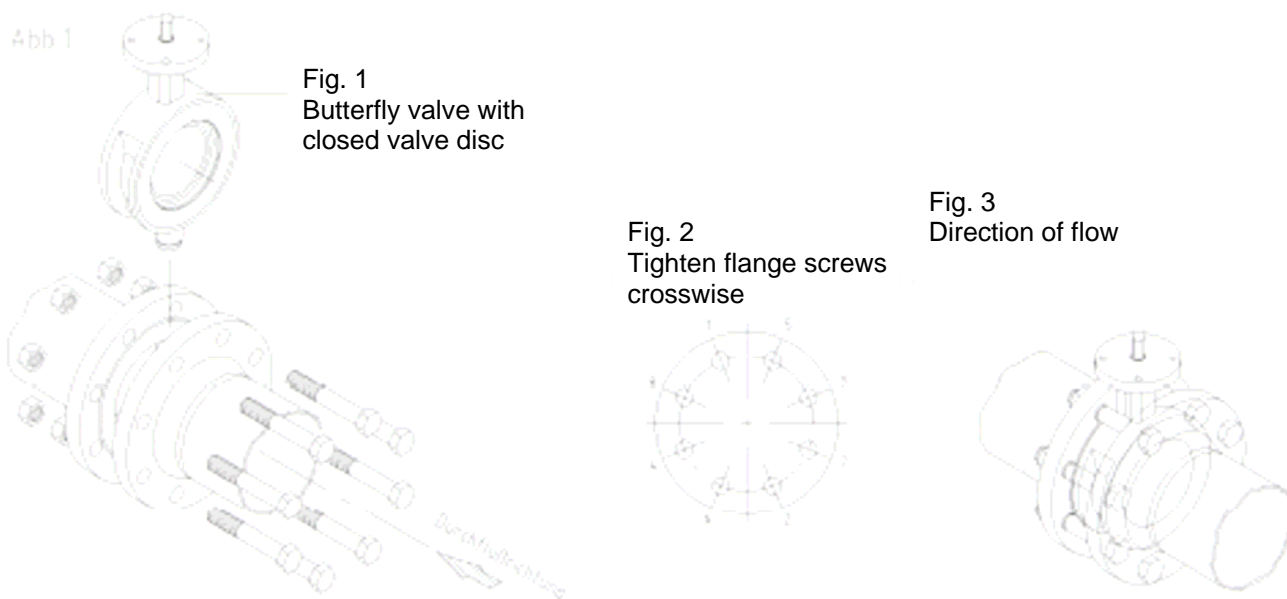
|   |  |
|---|--|
| <br>Warning! | <p><b>Warning! Danger to life from non-operational safety devices!</b><br/>                 Safety devices ensure maximum safety during operation. Even if safety devices make work processes more laborious, they must never be overridden. Safety is only guaranteed if the safety devices are intact.</p> |
|---|--|

- Before commencing work, check that the safety devices are functional and correctly installed.



**E7 Installation diagram for centric valve**

Example type 011



**Observe installation note EW 1806 for elastomer-lined valves and installation note EW 1807 for PTFE-lined valves, as well as screw tightening torques.**

*See note in section D5 of the relevant operating instructions.*

**E8 Valve disassembly**

1. Observe notes and safety regulations as well as section B5 of the relevant operating instructions.
2. The butterfly valve may only be removed from the pipe with the valve disc closed.
3. Please note that medium can still be present in the dead spaces of the valve.
4. Ensure that you have appropriate lifting tools to secure the valve and remove it from the pipe.
5. Loosen the flange screws crosswise.
6. Take care that the flange sealing surfaces are not scratched during disassembly of the valve.
7. Remove the flange screws.
8. Spread the flange with a tool.
9. Remove the valve and store well-protected. Protect sealing surfaces.



**For additional explanations, please refer to the relevant operating instructions and the technical data sheets.**


It is recommended that butterfly valves which permanently remain in one position are operated at regular intervals, in order to ensure mobility.

## Valves with one-piece body (not series Z600!) and exchangeable elastomer liner


(for valves with vulcanized liner please contact the manufacturer EBRO ARMATUREN)

### E9 Disassembly and replacement of parts


1. Unscrew setscrew.
2. Remove upper shaft from body.
3. Unscrew threaded plug.
4. Remove sealing ring from threaded plug, inspect and replace if necessary.
5. Remove lower shaft from body, with the assistance of a screw-in threaded rod if required.

|   |   |
|---|---|
|  | <p><b>After removing the upper and lower shaft, the valve disc moves freely in the liner. Please make sure that it cannot fall out!</b></p> |
| <b>Caution</b>  |   |

6. Inspect O-rings on upper and lower shaft and replace if necessary.
7. Press valve disc out of the liner.
8. Lever the liner out of the body using a suitable blunt tool.
9. Inspect liner and replace if necessary.

|   |   |
|---|---|
|  | <p><b>Before installation, apply talcum powder to the body side of the liner!</b></p> |
|---|---|

1. Press one shaft duct of the liner (cylindrical bead) exactly into the lower counter-bore on the body.
2. Press half of the liner into the body, so that the upper shaft duct (cylindrical bead) is exactly flush with the upper counter-bore of the body.
3. Press liner all the way into the body.
4. Check that upper and lower shaft ducts of the liner are properly located (flush with upper and lower counter-bores on the body).
5. Apply a suitable lubricant to the upper and lower shaft in the area of the O-rings (e.g. valve grease Bernlub Hydrohaf 2).
6. Position the valve disc in the liner so that the shaft receptacles for the valve disc (square at top, hole at bottom) are flush with the upper and lower counter-bores on the liner and the body.
7. Insert the lower shaft into the body: loosely screw in the threaded plug with the sealing ring.
8. Insert the upper shaft into the body so that the upper notch is flush with the top of the body-flange, and the groove on the square of the shaft is parallel to the position of the valve disc.

|   |  |
|---|--|
|  | <p>If the upper shaft springs back when inserted into the body, air is compressed in the upper shaft receptacle of the valve disc. Keeping the upper shaft pressed in, carefully press a suitable tool (e.g. blunt screwdriver) between the liner and the upper valve receptacle of the valve disc, to allow the compressed air to escape.</p> |
|---|--|

9. Press in the upper shaft until the upper notch is flush with the top of the body flange.
10. Screw in the setscrew and turn slightly against the upper shaft.

11. Unscrew the setscrew by half a turn and check rotatability of shaft and valve disc.
12. Mount the actuator element.
13. When mounting the hand lever and locking disc as well as continuous fine adjustment, you must ensure that the handle lever is mounted parallel to the position of the valve disc. Open valve - left-hand direction of rotation, close valve - right-hand direction of rotation.
14. Before installing the repaired valve, carry out a leak test in accordance with section B4 of the relevant operating instructions.

**E10 Drawing of centric valve**

*Type with split shaft*



**E11 Parts list for centric valve**

*Type with split shaft*

- |                         |                    |
|-------------------------|--------------------|
| 1 Body                  | 7 Setscrew DIN 915 |
| 2 Liner                 | 8 Disc             |
| 3/4 Bearing bush        | 9/10 Shafts        |
| 5 Sealing ring DIN 7603 | 11 O-ring          |
| 6 Screw plug DIN 908    |                    |

EBRO butterfly valves have a modular design. The example parts list shown here for type Z 011-A applies unchanged for types M 015-A, Z 014-A and F 012-A (F 012: vulcanized liner).  
If ordering spare parts for other types, please contact the technicians in the factory.

**E12 Drawing of centric valve**

*Type with through-going shaft*



**E13 Parts list for centric valve**

*Type with through-going shaft*

|                         |                           |
|-------------------------|---------------------------|
| 1 Body                  | 7 Setscrew DIN 915        |
| 2 Liner                 | 8 TS-shaft                |
| 3/4 Bearing bush        | 10 Sleeve                 |
| 5 Sealing ring DIN 7603 | 11 O-ring                 |
| 6 Screw plug DIN 908    | 12 Retaining ring DIN 471 |

EBRO butterfly valves have a modular design. The example parts list shown here for type Z 011-A applies unchanged for types M 015-A, Z 014-A and F 012-A (F 012: vulcanized liner). If ordering spare parts for other types, please contact the technicians in the factory. This version is used for high operating pressures and large nominal widths (example: operating pressure 16 bar, DN>150).

## Valves in series Z600 with split (two-piece) body and exchangeable elastomer liner

(for valves with PTFE liner please use Maintenance Instructions WA 2.0)

### E14 Disassembly and replacement of parts

1. Unscrew screws (9).
2. Remove body halves (1).
3. Unscrew the screw plug (5).
4. Remove sealing ring (4), inspect and replace if necessary.
5. Carefully clamp the shaft (7) to the square and remove liner (2) if necessary.
6. Inspect liner (2) and replace if necessary.
7. Apply suitable lubricant to the liner (2) at the shaft ducts (e.g. valve grease Bernlub Hydrohaf 2).
8. Carefully insert the long end of the shaft (7) with the square or dihedron through one of the greased shaft ducts. (ATTENTION: take care not to damage the seal or sealing bead in the bore.)
9. Clamp the inserted shaft end in a clamping fixture (e.g. vice). (ATTENTION: Protect shaft surface from damage.)
10. Pull the liner with the free shaft duct over the short end of the shaft.

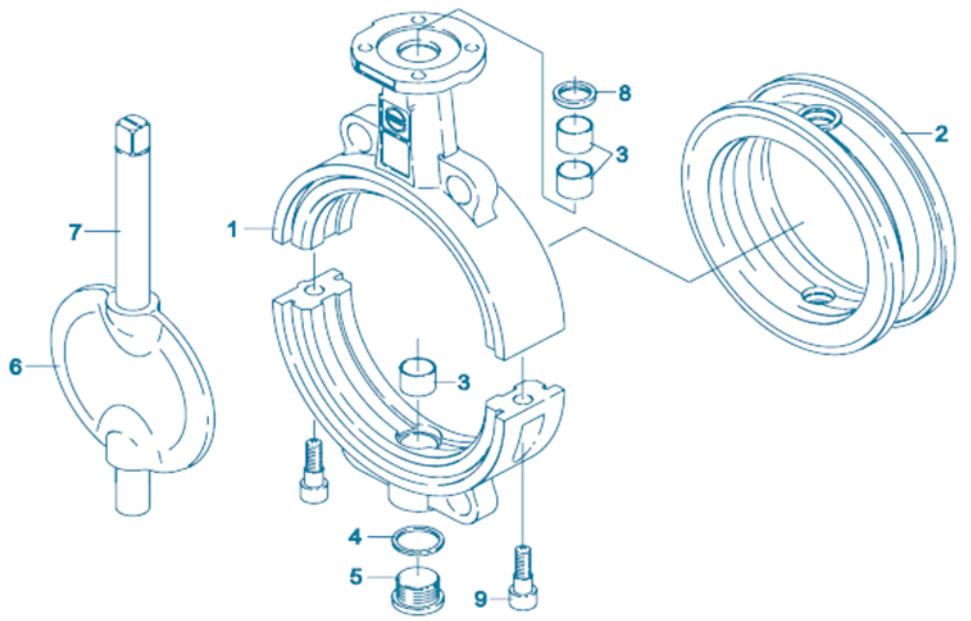
### REINSTALLATION OF THE VALVE DISC AND LINER



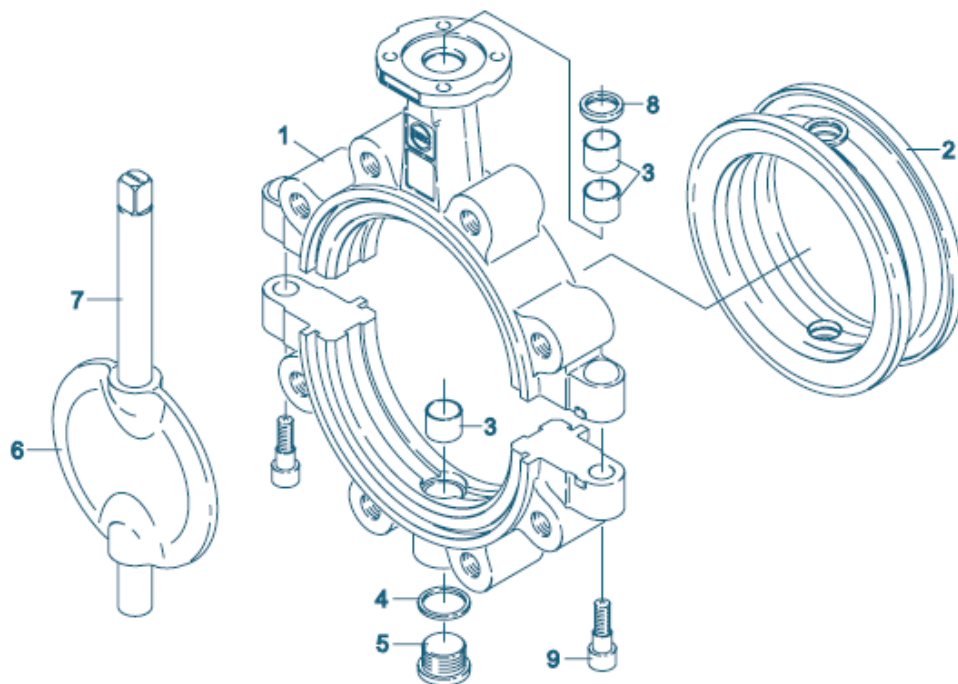
**Before installing the liner, apply talcum powder to the housing side!**

11. Press shaft duct of the liner (cylindrical bead) exactly into the counter-bores on the body.
12. Re-mount both body halves (1).
13. Check that the upper and lower shaft ducts of the liner are properly located (flush with upper and lower counter-bores on the body).
14. Re-insert the liner (2) into the circumferential clamping groove, using a suitable tool if required (e.g. blunt screwdriver)
15. Lightly lubricate the body screws (9) with a suitable grease, re-insert and tighten gradually.
16. Lightly lubricate the screw plug (5) with a suitable grease and screw back in with the sealing ring (4).
17. Mount actuator element.
18. When mounting the hand lever and locking disc as well as continuous fine adjustment, you must ensure that the hand lever is mounted parallel to the position of the valve disc (8).  
 Open valve - left-hand direction of rotation  
 Close valve - right-hand direction of rotation
15. Before installing the repaired valve, carry out a leak test in accordance with section B4 of the relevant operating instructions.

**E15** Drawing of valve type Z611



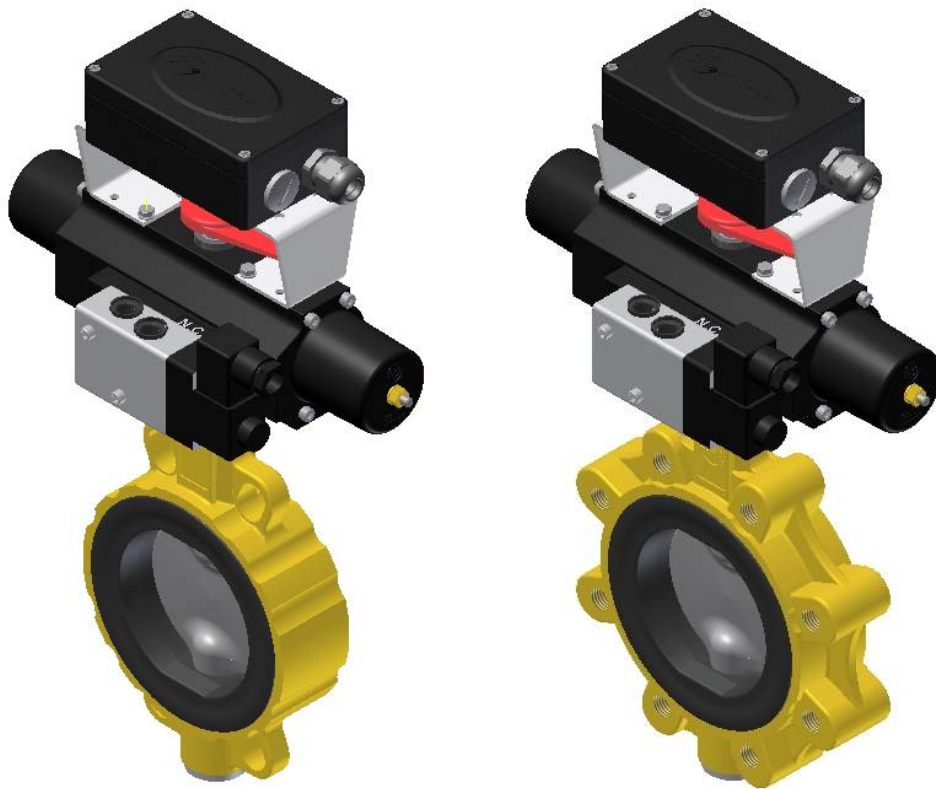
**E16** Drawing of valve type Z614



**E17 Parts list for valve types Z611 - Z614**

| Pos.     | Designation                      | Material<br>ASTM               | Mat. no.          | Pos.     | Designation                             | Material                 | Mat. no. | ASTM |
|----------|----------------------------------|--------------------------------|-------------------|----------|---|--------------------------|----------|------|
| <b>1</b> | <b>Body</b>                      |                                |                   | <b>6</b> | <b>Shaft/disc one-piece design Disc</b> |                          |          |      |
|          | Cast iron                        | GGG-40                         | 0.7040 / 60-40-18 |          |   |                          |          |      |
| <b>2</b> | <b>Liner</b>                     |                                |                   |          | Stainless steel                         | G-X5CrNiMo19-11-2        | 1.4408   | CF8M |
|          | NBR                              | Acrylonitrile-butadiene rubber |                   |          |   | G-X5CrNiMoN26-7-4        | 1.4469   | A995 |
|          | EPDM                             | Ethylene-propylene rubber      |                   |          | Coatings                                | Halar                    |          |      |
|          | CSM                              | Chlorosulfonated polyethylene  |                   |          | Surface finish                          | High gloss mirror polish |          |      |
|          | FPM                              | Fluorocarbon rubber            |                   | <b>7</b> | <b>Shaft</b>                            |                          |          |      |
|          | VSI                              | Silicon rubber                 |                   |          | Stainless steel                         | G-X5CrNiMo19-11-2        | 1.4408   | CF8M |
| AU       | Polyurethane                     |                                |                   |          | X2CrNiMoN22-5-3                         | 1.4462                   | F51      |      |
| <b>3</b> | <b>Bearing bush</b>              |                                |                   |          |   | X5CrNiMo17-12-2          | 1.4401   | 316  |
|          | Brass                            | MS 58                          | 2.0401 B45        | <b>8</b> | <b>Scraper ring</b>                     |                          |          |      |
| <b>4</b> | <b>Sealing ring<br/>DIN 7603</b> |                                |                   |          | PTFE                                    | Polytetrafluoroethylene  | PTFE     | PTFE |
|          | Copper                           | Cu                             | Copper            | <b>9</b> | <b>Screw</b>                            |                          |          |      |
| <b>5</b> | <b>Screw plug DIN 908</b>        |                                |                   |          | Stainless steel                         | A4-70                    | 1.4401   | B8M  |
|          | Stainless steel                  | G-X5CrNiMo19-11-2              | 1.4408            |          | Further materials on request            |                          |          |      |
|          |                                  | CF8M                           |                   |          |   |                          |          |      |

## centric, lined butterfly valves Z 011 / Z014 series with EB actuators



Example illustrations, not all possible type variants are shown!

## Original Installation Instructions with operating instructions and technical appendix

in accordance with EU Machinery Directive (MD)  
2006/42/EC

in accordance with EU Pressure Equipment Di-  
rective (PED) 2014/68/EU

in accordance with EU Gas Appliances Directive  
(GAD) 90/396/EEC

in accordance with EN 161

*Language version: English*



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If required, additional information can be downloaded or ordered from the following addresses:




[www.ebro-armaturen.com](http://www.ebro-armaturen.com)

EBRO ARMATUREN GmbH  
Karlstraße 8  
D-58135 Hagen  
☎ +49 (0) 2331 904-0  
Fax +49 (0) 2331 904-111

## A) General

### A1 *Explanation of symbols*

In these operating instructions, notes are marked with the following symbols:

|  |  |
|--|--|
| <br>XXXXX | <b>Danger/Caution/Warning</b><br>... indicates a dangerous situation that could lead to death or severe injury and/or damage to the piping system. |
|           | <b>Note</b><br>... indicates an instruction that should be obeyed without fail.  |
|           | <b>Information</b><br>... indicates useful tips and recommendations.   |

Ignoring these notes, cautions and warnings could result in danger and the manufacturer's warranty may become void.

### A2 *Intended use*

Butterfly valves in the **Z011 / Z014 series with EB actuators** are intended to shut off, permit or control the flow of media within the permitted upper limits of pressure and temperature after fitting between the flanges of a piping system.

The upper limits of permitted pressure and temperature (depending on the housing and lining materials) are shown on the valve type plate and identified with **PS** and **TS** (see Section A3).

The valve must not be operated until the following documents have been observed:

- <Declaration on EU Directives> – see above
- these installation/operating instructions, which are supplied with the product

Use of the valve in an  potentially explosive atmosphere is only permitted if:

- ▶ the order contains an express statement to this effect.

Non-compliance with this <intended use> is considered negligent in important cases and relieves the manufacturer, EBRO-ARMATUREN, of its product liability.

**Note:** This actuator/valve combination may not be used as an automatic shut-off valve for cooking appliances in accordance with EN 30.

# OPERATING INSTRUCTIONS FOR CENTRIC BUTTERFLY VALVES, Z 011 / Z014 SERIES WITH EB ACTUATOR

## A3 Labelling on the butterfly valve

Each butterfly valve is labelled with the following data on its housing or type plate:



| For                 | Labelling                            | Remarks  |
|---------------------|--------------------------------------|--|
| Manufacturer        | <b>EBRO-ARMATUREN</b>                | Address, see page 2 <Contents>                               |
| Valve type          | e.g. <b>Z011</b>                     | (labelling on housing) see overview, page 1                  |
| Valve class         | e.g. <b>A</b>                        | Classification according to EN 161:2007, 4.1                 |
| Valve group         | e.g. <b>2</b>                        | Classification according to prEN 13611:2005, 4.2             |
| Conformity          | e.g. <b>CE (if PED applicable)</b>   | Conformity with Pressure Equipment Directive 2014/68/EU      |
| Code                | e.g. <b>0036 (if PED applicable)</b> | "Notified Body" according to EU Directive = TÜV Süddeutschl. |
| Ident. No.          | e.g. <b>123456/012/001 *</b>         |  |
| DN                  | <b>DN (and numerical value)</b>      | (labelling on housing) e.g. DN80                             |
| Year of manufacture | <b>MM/YY</b>                         |  |
| PN                  | e.g. <b>PN 16</b>                    | The required PN level of the counterflange                   |
| Temp. limits        | <b>TS (and numerical value)</b>      | Numerical values for upper and lower operating limits        |
| Max. perm. pressure | <b>PS (and numerical value)</b>      | Numerical value in bar (at room temperature)                 |
| Material            | e.g. <b>EN-JS 1030</b>               | (labelling on housing) Housing material                      |
|                     | e.g. <b>1.4408</b>                   | (on type plate) Butterfly disc material                      |
|                     | e.g. <b>1.4104</b>                   | (on type plate) Shaft material                               |
|                     | e.g. <b>NBR</b>                      | (on type plate) Liner material                               |

The type plate should not be covered so that the installed valve remains identifiable.

## A4 Transport and storage

The following are to be observed for correct transport:

- until the valve is put to use (installed), keep it in the factory packaging
- store the valve in an enclosed area, protected from dirt and humidity
- attach lifting straps in accordance with Fig. 1 to Fig. 3

|   |   |
|---|---|
|  | Do not suspend large valves by the gear mechanism or actuator!<br>Protect the butterfly disc and flange sealing surfaces from any damage.   |
|  | In ISO 2230, the storage conditions for parts with elastomers (complete valve and corresponding spare parts) are described in detail and the permissible storage times are specified. |

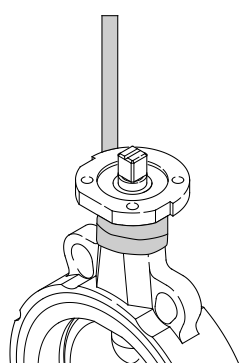


Fig. 1

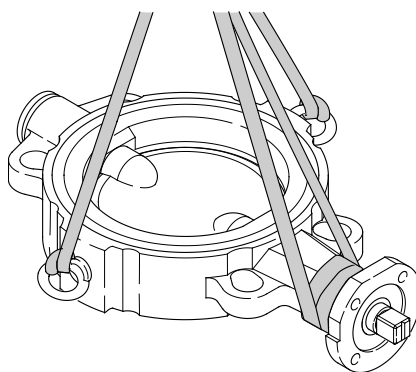


Fig. 2

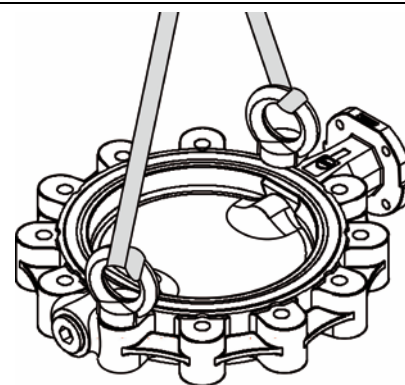



Fig. 3

|   |   |
|---|---|
|  | <b>Valves that are delivered without an actuator:</b><br>The butterfly disc is not secured against movement. It must be transported in such a way that it cannot be opened from the transport position by external influences (e.g. vibration). |
|---|---|

## **B) Installing the valve in the piping / pressure testing**



*These instructions include safety notices for foreseeable risks when installing the valve in a (piping) system.*  
It is the user's responsibility to supplement these notices for other risks specifically linked to the location. Compliance with all requirements for this system is assumed.

### **B1 Safety instructions for installation**



- The installation of valves in the system may be carried out only by qualified personnel. For the purposes of these instructions, qualified personnel are persons who, on the basis of their training, specialist knowledge and professional experience, can correctly assess and execute the work assigned to them and can identify and avoid potential risks.
- The intended function of a valve after installation must be in accordance with the <Intended use> as described in Section A2.
- A valve that is not held in any particular position by an actuator may not be put under pressure.
- Operation of an actuator mounted on a valve is only permissible if the valve is enclosed on both sides by a section of pipe or equipment – any prior actuation entails a risk of crushing and is the sole responsibility of the user.
- A valve used as an <end valve> to terminate a section of pipe under pressure must be made secure with a blanking plate so that no external leakage can occur.

### **B2 Preconditions for installation in the piping**

- Ensure that the butterfly valves installed are of the pressure class and materials required to fulfil the proposed working conditions. See the corresponding labelling on the type plate (*Section A3*).
- As a rule, the butterfly valve must be fitted with an actuator and adjusted ready for use. Only in special cases will a valve be delivered without an actuator for retrofitting at a later stage.
- During storage and transport, a valve without evident transport damage should be kept in the factory packaging and not unpacked until directly before its installation into the pipe section.



**Caution**

***The outer edge of the butterfly disc is machined to the finest tolerances to ensure that the butterfly valve seals tight when closed. It must be ensured during installation that the valve is handled in such a way as to avoid damage to this surface.***

- Flanged valves must be installed on or between flanges compliant with EN 1092-1 or EN 1759-1 with sealing faces of type A or B that are machined plane-parallel and must be in alignment. The use of other flanges and/or other forms of sealing face must be confirmed in the order confirmation from the manufacturer EBRO ARMATUREN.
- The width of the opening in the counterflange must allow sufficient space for the butterfly disc in its open position so that is not damaged when opened and thereby rendered unusable.  
See technical data sheets
- All inner surfaces of the valve must be free of contamination – especially of hard/sharp particles.

# OPERATING INSTRUCTIONS FOR CENTRIC BUTTERFLY VALVES, Z 011 / Z014 SERIES WITH EB ACTUATOR

The pipe sections on either side must be correspondingly clean: To flush out a line with an installed valve, observe the notice in Section B3.



If contamination (welding beads, rust particles etc.) is not removed, the seating for the butterfly disc could be damaged: the valve may become leaky and in the worst case scenario unusable

- The butterfly valve is delivered in an almost closed position and must be left in this position during installation to protect the butterfly disc from being damaged.
- The pipe ends must be in alignment and have plane-parallel surfaces.



*Flange gaskets may not be used for centric butterfly valves:*

the use of additional flange gaskets is not normally necessary. The sealing faces on the butterfly valve housing are lined with elastomer or polymer and designed to seal the flange connection.

To this end, the counterflange must have smooth, continuous sealing faces, e.g. type A or B, according to EN 1092-1 or EN 1759-1.

Other flange types are to be agreed with the manufacturer.

## B3 Installation procedure



The liner in the housing may not come into contact with grease, especially mineral oil-based oils or greases.

- Check the valve and actuator for any transportation damage. Damaged butterfly valves or actuators must not be installed.
- The preferred orientation of the valve when installed is with a horizontal butterfly shaft. The gear mechanism should – if possible – not be positioned directly underneath the valve: any leakage along the shaft could damage the gear mechanism or actuator.
- Butterfly valves for installation between flanges must be carefully centred with the flange bolts during installation. **Also follow the advice on flange bolts in Section D5!**
- If, in special cases, a valve is delivered without an actuator attachment, it must be installed in the closed position and left in this position until the actuator is retrofitted. The installation instructions must be supplied in this case by the manufacturer of the actuator. The nominal torque must be matched to the valve and the settings of the "OPEN" and "CLOSED" end stops must be correctly adjusted.



**Warning**

It must be ensured that this type of butterfly valve is not pressurised before installation of the actuator.

- Butterfly valves can be installed irrespective of the direction of flow of the media.




*Valve with pneumatic <fail safe> actuator (with spring opening):*


A <fail safe> actuator with spring opening must be provided (perhaps temporarily) with a compressed air supply to bring the valve to its closed position for insertion between the counter flanges. In doing so, take note of the installation instructions for the actuator and ensure that the butterfly disc does not suddenly open unintentionally (risk of injury!).

- After installation, the valve should be opened for the piping to be flushed so that the piping section can be flushed clean before the valve is closed again.


# OPERATING INSTRUCTIONS FOR CENTRIC BUTTERFLY VALVES, Z 011 / Z014 SERIES WITH EB ACTUATOR

|   |   |
|---|---|
|  | Before closing for the first time, hard/sharp contamination (welding beads, rust particles etc.) must be cleared from the pipe section. |
|---|---|

- *When installing at the end of a pipe section:*

|   |   |
|---|---|
| <br><b>Danger!</b> | If a butterfly valve is installed as an end valve and pressurised, it must be closed off with a blanking flange to prevent material damage or personal injury in the event of leakage or impermissible opening. |
|---|---|

- For the connection of an actuator to the system controller, follow the instructions provided by the manufacturer of the actuator.

|   |   |
|---|---|
|  | <i>The actuator is adjusted for the operating data given in the order:</i><br>The adjustment of the "CLOSED" end stop on a valve newly delivered from the factory should not be changed so long as the valve remains tight when closed. |
|---|---|

- To conclude the installation, a functional test must be carried out: An actuator that is fitted to the butterfly valve must move smoothly to the <OPEN> and <CLOSED> positions with the marked control data and in accordance with the commands.
- Incorrectly executed commands could be dangerous and cause damage to the piping system. Identifiable system malfunctions must be resolved before commissioning. See also Section C3 <Troubleshooting>.

## **B4 Pressure testing before/during commissioning**

All butterfly valves have undergone a final factory inspection by the manufacturer in accordance with EN12266-1.



For pressure testing a valve in the system, the test conditions for the piping section apply – but with the following restrictions:

- The test pressure for the valve may not exceed **1.5x PS** (as shown on the valve type plate). **During testing, the butterfly disc must be in the open position.**
- If more than **1.1x PS is applied to a closed butterfly valve**, there is a danger that internal parts of the valve will be overloaded. This must be avoided at all costs.

## **B5 Supplementary information: Deinstalling the valve**

The same safety rules apply as for the (piping) system and the installation (see Section B1).

- Check that the piping is free, not under pressure and emptied.
- Close the valve completely, remove the flange bolts. Prise the flange apart with a tool.
- Pull out the valve (when pulling out the valve, do not damage the sealing faces of the flanges) and store in a secure place. Protect the sealing faces.
- For the attachment of lifting straps, see Section A4.


|  |  |
|--|--|
| <br><b>Danger</b> | <i>If a valve must be removed from pipes containing dangerous media and removed from the system: The parts of the valve that have been in contact with the media (butterfly disc, shafts and seat ring) must be professionally decontaminated before repair.</i> |
|                   | <i>After deinstalling the valve:</i><br>The liner in the housing may not come into contact with grease, especially mineral oil-based oils or greases.  |

### **C) Operating instructions**




In accordance with the provisions of the Machinery Directive 2006/42/EC, the planner of the system must draw up a comprehensive risk analysis.

The manufacturer EBRO ARMATUREN provides the following documents for this purpose:

- these installation and operating instructions
- the declaration on EC Directives included at the end

|   |   |
|---|---|
|  | <p>These instructions include safety notices for foreseeable risks arising when using the valves in industrial applications.</p> <p>It is the planner's/operator's responsibility to supplement these instructions for other risks specifically linked to the system.</p> |
|---|---|

#### **C1 Safety instructions for operation and maintenance**

|  |  |
|--|--|
| <br><br><b>Danger</b> | <ul style="list-style-type: none"> <li>• The function of the valve must comply with the &lt;Intended use&gt;, which is described in Section A2.</li> <li>• The conditions of use must comply with the specifications shown on the valve type plate.</li> <li>• All necessary maintenance work to be carried out on the valve is to be carried out only by qualified personnel. For the purposes of these instructions, qualified personnel are persons who, on the basis of their training, specialist knowledge and professional experience, can correctly assess and execute the work assigned to them and can identify and avoid potential risks.</li> <li>• Before undoing a screw plug or screw from the housing cover or before deinstalling the whole valve from the piping system, <b>the pressure in the system or pipe sections on either side of the valve</b> must be reduced to zero so that the medium does not leak out of the piping in an uncontrolled manner.</li> </ul> |
| <br><b>Risk of crushing</b>   | <ul style="list-style-type: none"> <li>• Operation of an actuator mounted on a valve is only permissible if the valve is enclosed on both sides by a section of pipe or equipment – any prior actuation entails a risk of crushing and is the sole responsibility of the user.</li> </ul>  |

#### **C2 Automatic operation**

The valve is closed by rotating the shaft in a clockwise direction and opened by rotating anti-clockwise.

A valve fitted with an actuator is to be operated using signals from the controller. Butterfly valves delivered direct from the factory with an actuator have already been precisely adjusted – this adjustment in the gear mechanism/actuator should not be changed so long as the valve operates faultlessly.

The only maintenance required is a visual inspection of the external tightness of the flange connection at suitable time intervals – in the event of leakage see Section C3 <Troubleshooting>.

In the case of butterfly valves that remain in one position for long periods, it is recommended that they are actuated at regular intervals to ensure freedom of movement.

**C3 Troubleshooting**

| Type of problem                                 | Countermeasure   |
|---|--|
| Leakage at the flange connection to the piping  | <p>Seal the flange connection between the housing and piping:<br/>Observe instructions in operating instructions for the piping system and EBRO installation note EW 1806 (<b>see Section D5</b>).</p> <p><i>If the leak cannot be stopped by tightening the flange joint:</i><br/>Ensure that the piping flanges are in alignment and plane-parallel – and/or change the lining of the housing. Take note of Section B1 &lt;Safety instructions...&gt; and order spare parts and the required instructions from EBRO-ARMATUREN.</p> |
| Leakage at the shaft seal                       | <p><i>If the shaft seal is leaky:</i><br/>it needs to be repaired: replace the shaft seal. Take note of Sections B1 and C1 &lt;Safety instructions...&gt; and order spare parts and the required instructions from EBRO-ARMATUREN.</p>   |
| Leakage in the valve seating (disc/sleeve seal) | <p>Check whether the valve is 100% closed with full actuator torque.</p> <p><i>If the valve is still leaky in its closed position:</i><br/>Open/close the valve several times under pressure.</p> <p><i>If the valve is then still leaking:</i><br/>it needs to be repaired: Replace housing liner (sleeve). Take note of Section C1 &lt;Safety instructions...&gt; and order spare parts and the required instructions from EBRO-ARMATUREN.</p>   |
| Operating fault                                 | <p>Deinstall the valve (take note of Sections B1 and C1 &lt;Safety instructions...&gt;) and inspect.</p> <p><i>If the valve is damaged:</i><br/>it needs to be repaired: order spare parts and the required instructions from EBRO-ARMATUREN.</p>  |

In the event that a repair is required, please contact our Service Department:

e-mail: [service@ebro-armaturen.com](mailto:service@ebro-armaturen.com)



## D) Technical appendix/planning documents

Note:

This appendix is not an integral part of the installation and operating instructions. It is only an extract from the catalogue documents of EBRO-ARMATUREN for this type of valve — to request the full catalogue refer to the addresses in the contents.

### D1 *Technical specification of the valve*

Butterfly valves of the <centric> type meet the constructional standards:

► **EN 593: Industrial valves - Metallic butterfly valves**

### D2 *p/t-Ratings*

Depending on the operating temperature and the housing and liner materials, the maximum operating pressures <PS> can be found in the current EBRO catalogue. Depending on the type and/or use, the appropriate pressure-temperature diagrams must be observed.

### D3 *Drawing / parts list*

The drawings and typical parts lists for the valves can be downloaded from the EBRO "Download menu":

[www.ebro-armaturen.com](http://www.ebro-armaturen.com)

### D4 *Spare parts*

In the parts lists found on the data sheets described in Section **D3**, the spare parts are identified with the indication "**(empfohlenes Ersatzteil / recommended spare part)**". Only EBRO original parts may be fitted. Order spare parts and the required instructions from EBRO ARMATUREN.

### D5 *Flange bolts for centric valves*

The flange bolts and installation notices for the valves are to be found in the EBRO ARMATUREN factory standard sheets EW1806 to EW1810 and EW1830 ff. These can be downloaded from the "Download area" (for address see page 2 or the link below).

[www.ebro-armaturen.com](http://www.ebro-armaturen.com)

The manufacturer

## EBRO ARMATUREN

Gebr. Bröer GmbH  
Karlstrasse 8  
58135 Hagen  
Germany

declares that the valves

**EBRO butterfly valves with a concentric design**

**Series Z011 and Z014**

are manufactured in accordance with the requirements of the following standards:

|                       |  |
|-----------------------|--|
| <b>EN 593 :2011</b>   | <b>Product standard for metallic butterfly valves</b>                      |
| <b>EN 161 :2007</b>   | <b>Automatic shut-off valves for gas burners and gas appliances</b>        |
| <b>EN 12100 :2010</b> | <b>Safety of machinery - Basic concepts, general principles for design</b> |

The following product documents are available:

**Planning documents, technical data sheets, catalogue pages**

These products conform to the following directives:

### **Pressure Equipment Directive 2014/68 EU (MRL)**

The valves conform to this directive. The conformity assessment procedure applied in accordance with Annex III of the Pressure Equipment Directive 2014/68 EU is

- For category IV Modules B +D

|   |                         |          |
|---|-------------------------|----------|
| Name of the notified body: TÜV Süd Industrie Service GmbH | Identification no. 0036 | Module D |
| Name of the notified body: DVGW Cert GmbH                 | Identification no. 0085 | Module B |

### **Machinery Directive 2006/42 EG (MRL)**

1. The products are an "incomplete machine" in the sense of article 2 g) of this directive
2. The table overleaf lists whether and how the requirements of this directive are fulfilled
3. This declaration is the mounting declaration in the sense of this directive

### **Gas Appliances Directive 90/396 EG** [valid if PED 2014/68 EU Article 4 c) or Article 4 d) (3) apply]

The valves conform to this directive and have been tested and certified with an EC-type examination.

|   |                                 |
|---|---------------------------------|
| Name of the notified body: DVGW Cert GmbH | Identification no. CE0085BT0497 |
|---|---------------------------------|

For conformity with the above-named directives, the following apply:

1. The user must comply with the <correct use> as defined in the "Original mounting and operating instructions" (BA 1.161-DGRL/MRL/EN161) included in the delivery and must follow all notices in these instructions. Failure to comply with these instructions can – in serious cases – release the manufacturer from product liability.
2. Commissioning of the valve (and, where applicable, the mounted actuator) is not permitted until conformity of the system in which the valve is installed with all the above-mentioned EC directives is declared by the person responsible. A specific declaration is included in delivery for the above-named actuator.
3. The manufacturer, EBRO-Armaturen, has carried out and documented the required risk analyses. The employee responsible for making this documentation available is Mr Bernhard Mitschke of EBRO-Armaturen.

Hagen, Juli 2016

gez. Lydia Bröer

CEO

This document is from the original German version translated. In case of any doubts the German Version is only valid.

# OPERATING INSTRUCTIONS FOR CENTRIC BUTTERFLY VALVES, Z 011 / Z014 SERIES WITH EB ACTUATOR

|   |   |
|---|---|
| <b>The manufacturer</b>   | <b>EBRO ARMATUREN Gebr. Bröer GmbH, D58135 Hagen</b>  |
| declares that the valves <b>EBRO butterfly valves Z011 / Z014 with a concentric design</b> meet the following requirements:       |   |
| <b>Requirements according to Annex I, Machinery Directive 2006/42/EC</b>  |   |
| 1.1.1., g) Intended use   | See installation & operating instructions   |
| 1.1.2., c) Incorrect use warnings   | See installation & operating instructions   |
| 1.1.2., c) Required protective equipment  | Exactly as for the pipe section in which the valve is installed   |
| 1.1.2., e) Accessories  | No special tool is required for changing worn parts   |
| 1.1.3 Components in contact with media  | All materials coming into contact with the medium are specified in the type data sheet and the order confirmation. It is a prerequisite that the user carries out an appropriate risk analysis.   |
| 1.1.5 Handling  | Fulfilled by the notices in the installation instructions   |
| 1.2 and 6.2.11 Control  | The responsibility of the user and in accordance with the installation instructions for the actuator  |
| 1.3.2 Prevention of breakage risks  | for valve parts withstanding pressure: Certified by declaration of conformity with PED 2014/68/EU<br>For functional components: assured if actuator correctly used  |
| 1.3.4 Sharp corners and edges   | Requirement fulfilled   |
| 1.3.7/8 Risk of injury by moving parts  | Requirement fulfilled if used as intended.<br>Maintenance and repair only if valve/actuator stopped   |
| 1.5.1 — 1.5.3 Power supply  | The responsibility of the user. See also instructions for the actuator  |
| 1.5.5 Exceeding permissible temperature   | See warning notices, installation and operating instructions, Section <Intended use>  |
| 1.5.7 Explosion   | ⊕-protection required. Must be expressly agreed in purchase order.<br>In this case: use only as marked on the valve.  |
| 1.5.13 Emission of hazardous substances   | Not applicable  |
| 1.6.1 Servicing   | See operating instructions Clarify if parts subject to wear are in stock with EBRO-ARMATUREN.   |
| 1.7.3 Marking   | Valve: in accordance with installation instructions<br>Actuator: in accordance with installation instructions   |
| 1.7.4 Operating instructions  | Necessary additions to the overall instructions for the <complete machine> are summarised in the operating Instructions, see Section C of the installation and operating instructions   |
| <b>Requirement according to Annex III</b>   | The valve is not a <complete machine>: it therefore has no CE marking for conformity with the Machinery Directive   |
| <b>Requirements according to Annex IV and Annexes VIII-XI</b>   | not applicable  |
| <b>Requirements according to EN 12100:2010</b>  |   |
| 1. Applicability  | The risk analysis for the valve/actuator is drawn up from the aspect of an <incomplete machine>. The analysis was based on the product standard EN593:<Industrial valves - Metallic butterfly valves> with an actuator in accordance with EN15714-2 or EN15714-3, Class A. Furthermore, it is based on industrial use and an average of >20 years' experience in the use of the above-named type of valves. This analysis led to the notices and warnings in the above-named installation instructions and operating instructions.<br><i>Note:</i><br><i>it is essential that the user carries out a risk analysis of the pipe section and the valves installed therein that is specially adapted to the operating conditions in accordance with Sections 4 to 6 of EN 12100 — such an analysis is not possible for the manufacturer, EBRO ARMATUREN in respect of standard valves.</i> |
| 3.20, 6.1 Inherently safe design  | The butterfly valves are manufactured according to <inherently safe design> principles.<br><Intended use> is a necessary precondition.  |
| Analysis according to Sections 4, 5 and 6   | Experience of faulty operation and misuse documented by the manufacturer in the context of cases of damage (documentation in accordance with ISO9001) was used as the basis.  |
| 5.3 Limits of the machine   | Limiting of the incomplete machine was carried out in accordance with the <Intended use> of both the valve and the actuator.  |
| 5.4 Decommissioning, disposal   | Not within the responsibility of the manufacturer   |
| 6.2.2 Geometric factors   | Since the valve and actuator comprise the functional parts when used as intended, this section does not apply.  |
| 6.3 Technical protective devices  | Only required for special actuators — see confirmation of order.  |
| 6.4.5 Operating instructions  | Since valves with actuators work automatically based on the command signals from the controller, the operating instructions describe those aspects that are <typical of the valve> and must be provided to the manufacturer of the piping system.   |
| 7 Risk analysis   | The risk analysis was carried out in accordance with Annex VII, B) by the manufacturer EBRO ARMATUREN and is documented in accordance with MD Annex VII B).   |
| <b>Requirements in accordance with EN 161 :2007 as shown in supplementary sheet &lt;EN 161 requirements for version 1.161&gt;</b> |   |