

## **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*

# Contents

	Page
<b>E) GENERAL</b>	<b>3</b>
<b>E1 EXPLANATION OF SYMBOLS</b>	<b>3</b>
<b>E2 IMPORTANT NOTE</b>	<b>3</b>
<b>E3 PERSONNEL REQUIREMENTS</b>	<b>4</b>
<b>E4 PERSONAL PROTECTIVE EQUIPMENT</b>	<b>4</b>
<b>E5 SPECIAL DANGERS</b>	<b>5</b>
<b>E5.1 ELECTRIC CURRENT (IF ELECTRIC ACTUATOR IS MOUNTED)</b>	<b>5</b>
<b>E5.2 HYDRAULIC FLUID (IF HYDRAULIC ACTUATOR IS MOUNTED)</b>	<b>5</b>
<b>E5.3 COMPRESSED AIR (IF PNEUMATIC ACTUATOR IS MOUNTED)</b>	<b>6</b>
<b>E5.4 MANUAL OPERATION (IF HAND LEVER IS MOUNTED)</b>	<b>6</b>
<b>E5.5 MOVING COMPONENTS</b>	<b>6</b>
<b>E6 SAFETY DEVICES</b>	<b>6</b>
<b>E7 INSTALLATION DIAGRAM FOR CENTRIC VALVE</b>	<b>7</b>
<b>E8 VALVE DISASSEMBLY</b>	<b>7</b>
<b><u>VALVES WITH ONE-PIECE BODY (NOT SERIES Z600!) AND EXCHANGEABLE ELASTOMER LINER</u></b>	<b>8</b>
<b>E9 DISASSEMBLY AND REPLACEMENT OF PARTS</b>	<b>8</b>
<b>E10 DRAWING OF CENTRIC VALVE <i>TYPE WITH SPLIT SHAFT</i></b>	<b>9</b>
<b>E11 PARTS LIST FOR CENTRIC VALVE <i>TYPE WITH SPLIT SHAFT</i></b>	<b>9</b>
<b>E12 DRAWING OF CENTRIC VALVE <i>TYPE WITH THROUGH-GOING "TS"-SHAFT</i></b>	<b>10</b>
<b>E13 PARTS LIST FOR CENTRIC VALVE <i>TYPE WITH THROUGH-GOING "TS"-SHAFT</i></b>	<b>10</b>
<b><u>VALVES SERIES Z600 WITH SPLIT (TWO-PIECE) BODY AND EXCHANGEABLE ELASTOMER LINER</u></b>	<b>11</b>
<b>E14 DISASSEMBLY AND REPLACEMENT OF PARTS</b>	<b>11</b>
<b>E15 DRAWING OF VALVE TYPE Z611</b>	<b>12</b>
<b>E16 DRAWING OF VALVE TYPE Z614</b>	<b>12</b>
<b>E17 PARTS LIST FOR VALVE TYPES Z611 - Z614</b>	<b>13</b>

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> .....must be adhered to</p>
 XXXXX	<p><b>Danger / Caution / Warning</b> ... 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> ... indicates an instruction that must be observed.</p>
	<p><b>Information</b> ... 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

 <b>Warning</b>	<p><b>Warning! Risk of injury to inadequately qualified personnel!</b>                  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>                  To protect against falling and flying parts, and against escaping liquids and gases.</p>
	<p><b>Safety shoes</b>                  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>                  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)**

 Danger!	<p><b>Danger to life from electric current!</b>                  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)**

 Warning!	<p><b>Warning! Danger due to misuse!</b>                  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)**

 Warning!	<p><b>Warning! Danger due to misuse!</b>                  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)**

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

 Warning!	<p><b>Warning! Risk of injury from moving components!</b>                  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>
---	---

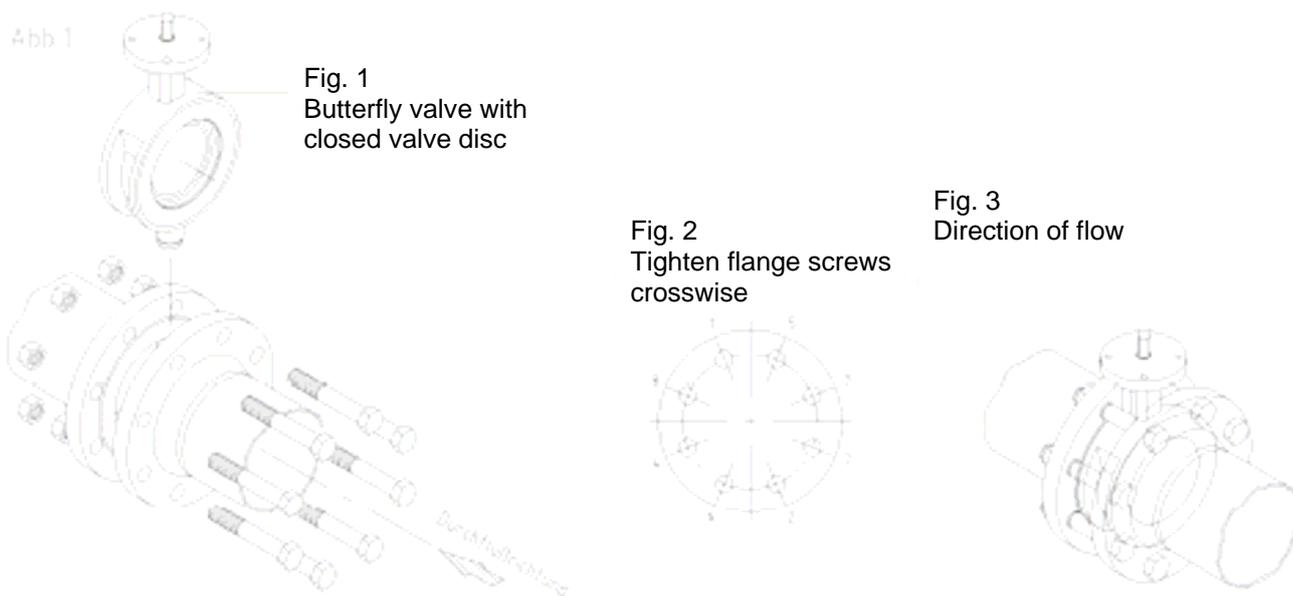
**E6 Safety devices**

 Warning!	<p><b>Warning! Danger to life from non-operational safety devices!</b>                  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>
<p><b>Caution</b></p>	

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.

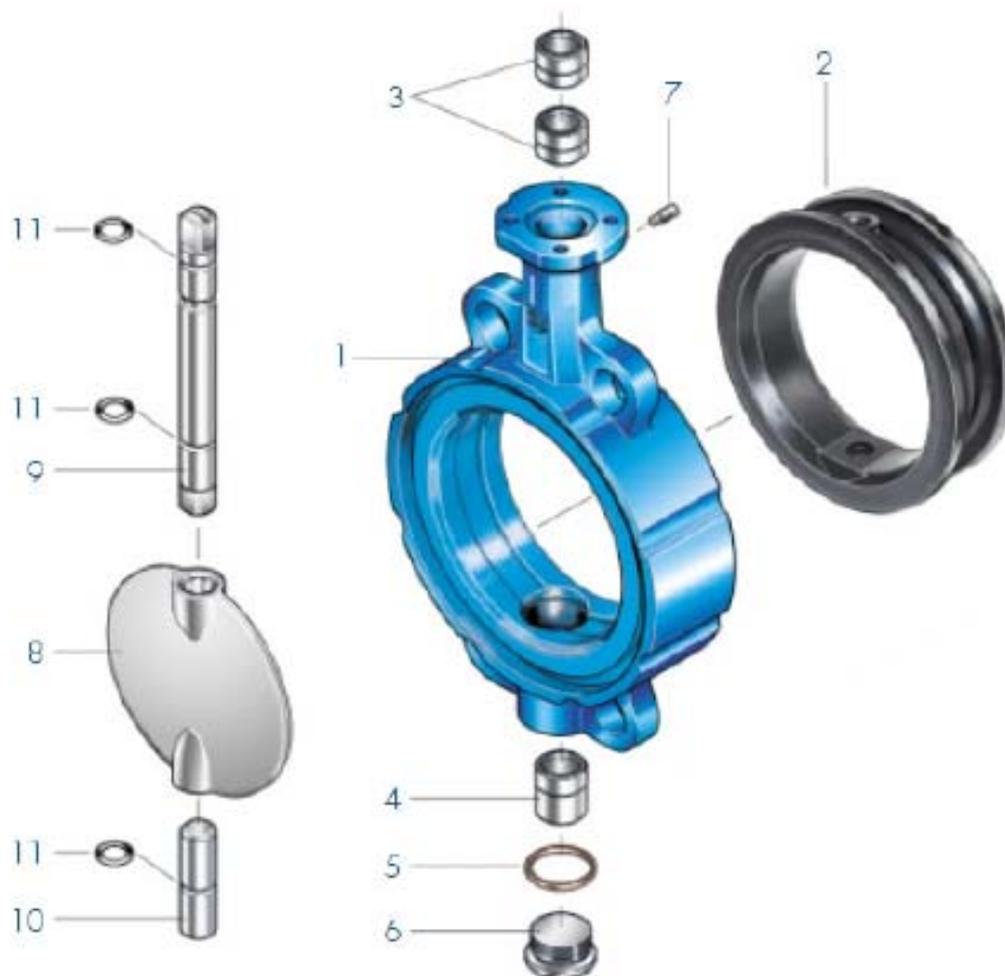
	<p>If the upper shaft springs back when inserted into the body, air is compressed in the upper shaft receptacle of the valve disc. Keeping the upper shaft pressed in, carefully press a suitable tool (e.g. blunt screwdriver) between the liner and the upper valve receptacle of the valve disc, to allow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

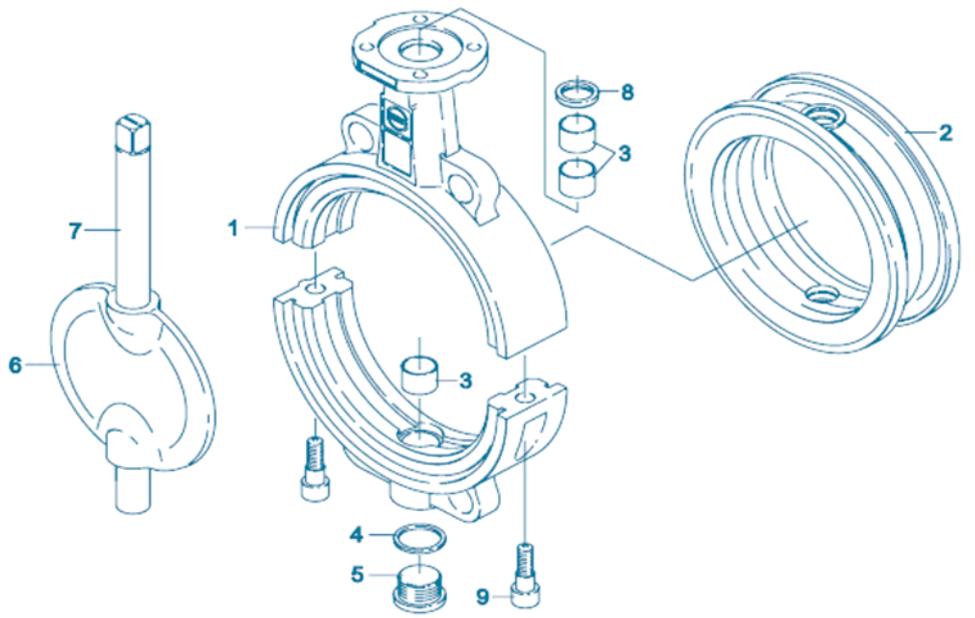
### REINSTALLATION OF THE VALVE DISC AND LINER



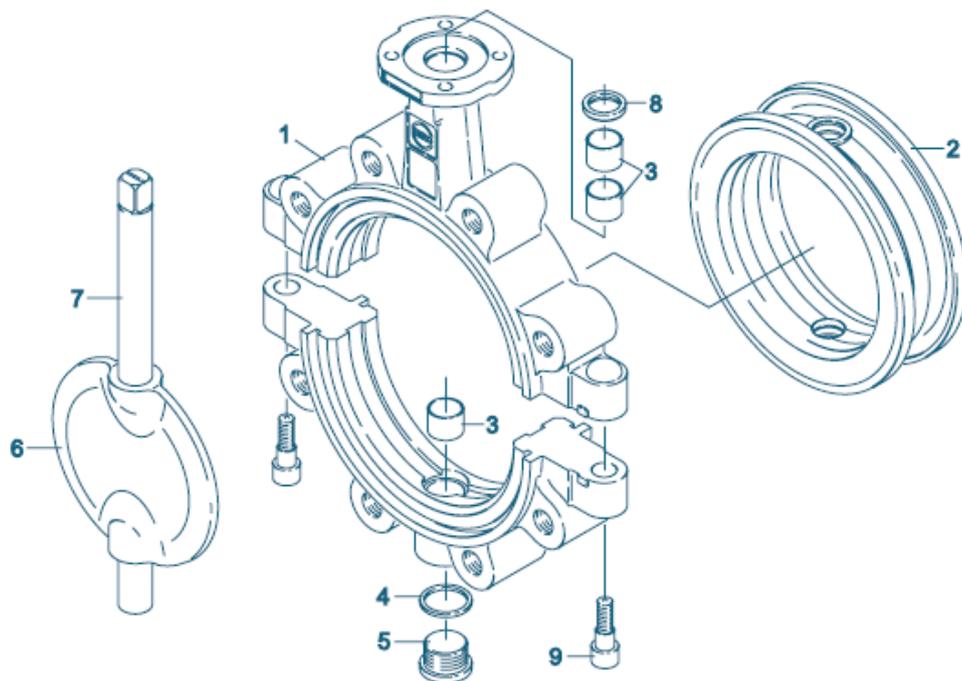
**Before installing the liner, apply talcum powder to the housing side!**

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 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 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						