

## 0 Introduction

These operating instructions are intended to help the user of model AK/DVGW Herberholz shutting valves install, operate and service fittings.

### Important!

**Ignoring the following caution warnings and cautions may result in danger** and render the manufacturer's warranty invalid. If you have any questions, please do not hesitate to get in contact with the manufacturer (see Section 8 for the address).

## 1 Intended Use

The **model AK/DVGW** shutting valves are exclusively intended for shutting off or passing media within the allowed pressure and temperature limits or regulating flow-through after being installed on or between the flanges of a pipeline system and after connecting the actuator to the control mechanism. You can see the allowed pressure and temperature ranges on the nameplate. These valves have to be installed with parallel faces and be flush on or between the flange in conformity with EN 1092-1 with form A, form B or form E seals. Other flanges and/or other seal forms may only be used with the approval of the manufacturer *HERBERHOLZ*.

Please also observe the instructions in Section 2.2 <Safety Information for the Operator> when using fittings.

## 2 Safety Information

### 2.1 General Safety Information

The same safety regulations apply to fittings, the pipeline system they are built into and the control system that the actuator is connected up to. These operating instructions only provide additional safety information for fittings while the operating instructions for actuator subassemblies include additional safety information for them.

### Important!

Please avoid cavitation under all circumstances.

### 2.2 Safety Information for the Operator

#### Danger to Life and Limb!

Do not use fittings with a pressure/temperature range that is not sufficient for the operating conditions (to be found on the nameplate). It is mandatory to get approval of the manufacturer for using it outside of this range. **Ignoring this regulation could mean a danger to life and limb while damaging the pipeline system.**

**Herberholz GmbH**

Pregelstraße 6

D – 58256 Ennepetal

e-Mail: [info@herberholz.com](mailto:info@herberholz.com)

Internet: <http://www.herberholz.com>

Telefon 02333 / 9898-0

Telefax 02333 / 9898-48

The logo for Herberholz, featuring the word "HERBERHOLZ" in a bold, black, sans-serif font. The letter "B" is significantly larger and more stylized than the other letters, with a vertical line extending upwards from its top.

## Danger to Life and Limb!

Please ensure that the materials selected for the components of fittings in contact with media are suited to the media used. The manufacturer will not accept any liability for damage caused by corrosion from aggressive media. **Ignoring this regulation could mean a danger to life and limb while damaging the pipeline system.** Please ensure the following things when using the fittings since they are not the responsibility of the manufacturer:

- that fittings are only used as intended (as described in Section 1),
- that the actuator units subsequently attached to the fittings are adapted to the fittings and are correctly adjusted in both fitting end positions (especially the off position),
- that the pipeline system has been properly laid and is checked on a regular basis. The wall thickness of the housing of the fittings is dimensioned taking the normal additional pipeline forces and momentum into account in properly laid lines,
- that the fittings are properly connected up to these systems,
- that the operating times of the fittings/actuator unit are adapted to the requirements of the pipeline system,
- that the normal flow-through velocities are not exceeded in permanent operation in this pipeline system and that the manufacturer has been notified of abnormal operating conditions such as vibrations, water hammer, cavitation and solid matter in the medium (especially closing),
- that fittings operated at temperatures  $> 50^{\circ}\text{C}$  or  $< -20^{\circ}\text{C}$  are protected against contact along with the pipeline connections, and
- that they are only operated and serviced by personnel trained in pressure pipelines.

## 2.3 Special Hazards

### Danger to Life and Limb!

To ensure that the medium does not escape uncontrolled from the line, **the pressure in the pipeline on the fitting side has to be reduced entirely** before loosening the seal screw (or the cover) on the housing or before removing the fittings from the pipeline.

### Danger!

*Fittings used as end valves:*

**A blind flange** has to be mounted **on the open connection ending** or the fittings have to be safely locked in the CLOSED position in normal operation, especially with gaseous, hot and/or hazardous media.

### Danger!

Please be extremely cautious opening fittings as an end valve in a pressure line to ensure that the **medium splashing out** does not cause any damage. Please also be careful closing the end valve since there is danger of being crushed between the valve disc and the housing.

## Danger!

Medium may escape from the line or fittings when removing fittings from a pipeline. The pipeline should be completely evacuated before removing the fittings if the media are hazardous or damaging to health. Please also be cautious with **residues that may continue flowing**.

### 2.4 Valve Information Identification

Every shutting valve is marked with the following data on the housing or nameplate

for	marking	remarks
manufacturer	Herberholz	refer to Section 8 (Information) for address
fitting model	for instance, AK/DVGW	
conformity	CE	conformity with the Pressure Vessel Directive 97/23 EG
indicator	0045	„quoted point in conformity with the EU directive = TÜV NORD Systems GmbH & Co. KG“
ID number	for instance, 2002-20123	numbers 1-4 mean when ordered numbers 5-9 are the order number
DN	DN (and number)	(housing identification) for instance, DN80
PN	such as PN 10	PN is required rated pressure level for companion flange
temperature limits	TS (and number)	number for upper and lower application range
maximum permissible pressure	PS (and number)	number in bar (at room temperature)
material	such as EN-GJS-400-18	(on the nameplate) material of the valve disc
		(on the nameplate) material of the valve disc

The labels on the housing and nameplate should be preserved so that the fittings can be identified

### 3 Transport and Storage

The fittings have to be handled, transported and stored carefully:

- fittings should be transported and stored in its protective packaging until it is installed
- hoisting equipment (ropes and belts) should only be attached on the housing of the shutting valve, not on the actuator.
- if the fittings are stored before being installed, they should be stored in closed rooms protected from damaging influences such as soiling or moisture.
- the elastomer linings of the flange sealing surfaces may not be damaged during transport or storage. **Do not stack** fittings.
- shutting valves are delivered in a slightly open position and should also be stored in this position. The actuator may not be operated.

## Danger!

*Fittings delivered without an actuator:*

The valve disc position is not safeguarded against being changed. It may not be opened from the off position due to exterior influences (such as shocks).

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Internet: <http://www.herberholz.com>

Telefon 02333 / 9898-0

Telefax 02333 / 9898-48



## 4 Installation into the Pipeline

### 4.1. Introduction

There are the same instructions for installing fittings into a pipeline as connecting pipes and similar pipeline elements. However, there are the following additional instructions for fittings. Please also bear the information in Section 3 above in mind when transporting it to the place of installation.

### Danger!

*There is danger of crushing with shutting valves with an actuator not installed:*

**The actuator may only be connected and operated when the shutting valve is connected to the pipeline.** If fittings are intended as an end valve in a pipeline section, either a cover plate should be mounted at the output or the actuator should be safely locked against unauthorised use to eliminate the danger of crushing.

### Note!

*The sealing surfaces on the housing of the shutting valve are lined with elastomer and designed for sealing the flange connection.* It is therefore necessary for the companion flange to have smooth sealing surfaces (for instance, form A, form B or form E in conformity with the EN 1092-1 standard). The manufacturer should be notified if other flange forms are used. **No additional** flange seal may be used.

### Danger!

*The actuator is adjusted for the operating data in the order:*

Do not change the **setting of the end catch OPEN and CLOSED** without the approval of the manufacturer.

### Danger to Life and Limb!

If fittings have to be installed without an actuator (only in special cases), please ensure that these fittings are not impinged with pressure. If an actuator unit is retrofitted, the torque, direction of rotation, operating angle and the setting of the end catch OPEN and CLOSED should be adapted to the fittings. **Ignoring this regulation could mean a danger to life and limb while also damaging the pipeline system.**

## Important!

*Only for shutting valves with an electrical actuator:*

Please ensure that the actuator is switched off in the end positions **by the signal of the path switch**. If it is switched off with the **signal of the torque switch**, this signal should be also used for a fault signal. *Please refer to the electrical actuator instructions for more information.*

## 4.2 Preparation for Installation

- please ensure that shutting valves are installed whose pressure classes, connection type and dimensions satisfy the conditions of use (refer to the fittings identification).

## Danger to Life and Limb!

Fittings may not be installed if their approved pressure/temperature limits are not sufficient for operating conditions (limits are marked on the fittings). **Ignoring this regulation could mean a danger to life and limb while damaging the pipeline system.** In case of doubt, please contact the manufacturer Herberholz.

- check the fittings and actuator for transportation damage (do not install damaged fittings or actuators).
- the companion flanges of the pipeline have to be flush and have parallel faces.

## Danger!

The clearance width of the companion flange has to allow sufficient space for the opened valve disc to ensure that it is not damaged when it pivots outwards (refer to Table 1).

<b>DN</b>	50	65	80	100	125	150	200	250	300
<b>ØDi</b>	35	51	70	90	118	146	197	248	294

**Table 1: Minimum Required Internal Diameter Di of the Companion Flange**

- the fittings and connecting pipeline have to be cleaned of soiling (especially hard solid matter) before installation.

## 4.3 Installation Steps

## Important!

The fittings have to be inserted into the gap between the pipeline flanges with a closed valve disc. Otherwise, the valve disc could be damaged and the fittings may not be sealed.

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## Danger!

*Only use shutting valves with a spring-opening pneumatic actuator:*

The following has to be done before installation

- the actuator has to be taken out in the open position,
- then manually close the valve disc and install the valve in the pipeline,
- then manually open the valve disc and construct the actuator again

**Ignoring this regulation could mean a danger to life and limb while damaging the pipeline system.**

- it may flow through in either direction. The preferred position for installing valves > DN 200 is with a vertical valve shaft. If possible, the actuator should not be mounted directly below the fittings because leaks on the selector shaft could damage the actuator.
- when installing the fittings into a pipeline already assembled, the distance between the ends of the pipeline has to allow the sealing bulbs of the lining of the housing of the fittings and the sealing surfaces of the companion flange to remain undamaged. However, this should not be more than necessary to avoid creating additional tension in the pipeline when tightening the flange connection.
- the shutting valve should be carefully centred at installation using the flange screws.

## Note!

Various shutting valves require screws of varying lengths for connecting up to the companion flanges.

- The torque of the flange screws is designed to allow the shutting valve and companion flange to be tightened on the block to ensure that the elastomer lining on the flanges of the housing is correctly sealed.

## Note!

No other flange seals may be used (especially not to compensate for non-parallel companion flanges).

Please follow the operating instructions for connecting the actuator unit to the control mechanism.

## Note!

The fittings should be removed when doing welding work on the flange of the connecting pipeline and not be installed again until the flange has cooled down to < 50° C.

## Important!

Subsequently constructed drives have to be supported if they exert unplanned bending forces on the assembly unit between the fittings and actuator due to their size and installation position.

- After installation, please check using the signals of the control mechanism to see whether they are in good working order. The fittings have to close and open correctly in accordance with the control commands. Please correct any identifiable malfunctions before putting into service (also refer to Section 7 <Assistance in Case of Malfunctions>).

## Danger!

If control commands are not carried out properly, **this could mean a hazard and/or cause damage to the pipeline system.**

## 5 Making a Pressure Test of the Pipeline Section

The manufacturer already checked the pressure on the fittings. Please bear the following in mind for checking the pressure of a pipeline section with installed fittings:

- please carefully rinse new line systems first to flush out all foreign matter.
- **opened fittings:** the testing pressure may not be in excess of  $1.5 \times (\text{PN or PS})$  (as per nameplate). (*PS = maximum permissible operating pressure*)
- **closed fittings:** the testing pressure may not be in excess of  $1.1 \times (\text{PN or PS})$  (as per nameplate).
- if there are leaks on any fittings, please refer to Section 7 < Assistance in Case of Malfunctions>.
- when the line system has dried out after the pressure test, please ensure that this is done within the pressure/temperature limits approved for the fittings (also refer to Section 1 <Intended Use>).

## 6 Normal Operation and Servicing

The fittings should only be operated with the signals from the control mechanism. Fittings supplied with the actuator from the factory have been precisely adjusted and should not be changed as long as fittings function well. Normal manual force should be sufficient for operating the hand emergency mechanism on the actuator (if there is one) so that extensions should not be used to increase operating torque. Furthermore, regular service is not required on these fittings. There should not any outward leaks when the line section is being checked. If there are leaks, please observe the instructions in Section 7 <Malfunctions>.

We recommend that fittings that stay in the same position should be operated 3 to 4 times a year.

## Danger!

*The shutting valve is not self-locking:*

The actuator may not be removed **as long as the shutting valve is impinged with pressure.**

## Danger!

Piston actuators are not self-locking. Piston actuators have to be **constantly supplied with actuating pressure** for all positions run under actuating pressure.

## 7 Assistance in Case of Malfunctions

Please observe the instructions in Section 2 <Safety Information> for correcting malfunctions.

## Danger!

*When fittings have to be constructed from lines with media and brought out of the plant, the parts of the fittings in contact with the product have to be properly decontaminated before repair.*

type of malfunction	actions	remarks
leak on a flange connection to the pipeline	retighten the flange screws. <i>If this does not remove the leak, the following may be done:</i> replace the elastomer lining of housing. Observe the instructions in Section 2.3 <Special Hazards> and request spare parts and instructions from <i>HERBERHOLZ</i> .	<p><b>Note 1:</b> Please order spare parts using all of the information on the nameplate. Only <i>HERBERHOLZ</i> original parts may be installed. .</p> <p><b>Note 2:</b> If the parts in contact with the medium are discovered to be insufficiently resistant to the medium after removal, please choose parts made of a suitable material.</p>
leak in the seat seal	check whether the actuator closes the fittings 100%. <i>If the shutting valve is closed under complete torque:</i> open and close the fittings several times under differential pressure. <i>If the fittings are still leaky:</i> <i>repair is necessary: replace the elastomer lining of the housing and/or valve disc.</i> Observe the instructions in Section 2.3 <Special Hazards> and request spare parts and instructions from <i>HERBERHOLZ</i>	
leak on the selector shaft	Repair is necessary: Replace the seal of the selector shaft. Observe the instructions in Section 2.3 <Special Hazards> and request spare parts and instructions from <i>HERBERHOLZ</i> .	
malfunction	<i>check the actuator unit and control commands.</i> <i>If the actuator and control mechanism are OK:</i> remove the fittings (observing the information in Section 2.3 <Special Hazards>) and inspect. <i>If fittings are damaged:</i> repair is necessary: Request spare parts and instructions from <i>HERBERHOLZ</i> .	

If a pneumatic actuator with a spring has to be removed	<b><u>Important: Danger of Injury</u></b> Disconnect the actuating pressure before removing the actuator from the fittings	
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Refer to the operating instructions for malfunctions on the actuator unit.

### **8 Further Information**

You can get a copy of these operating instructions, Herberholz model sheets and other information under [www.Herberholz.com](http://www.Herberholz.com) or at the following address:

Herberholz GmbH  
Pregelstraße 6  
D-58256 Ennepetal, Germany  
phone: (+49) 23 33 / 98 98 – 0  
fax: (+49) 23 33 / 98 98 – 48