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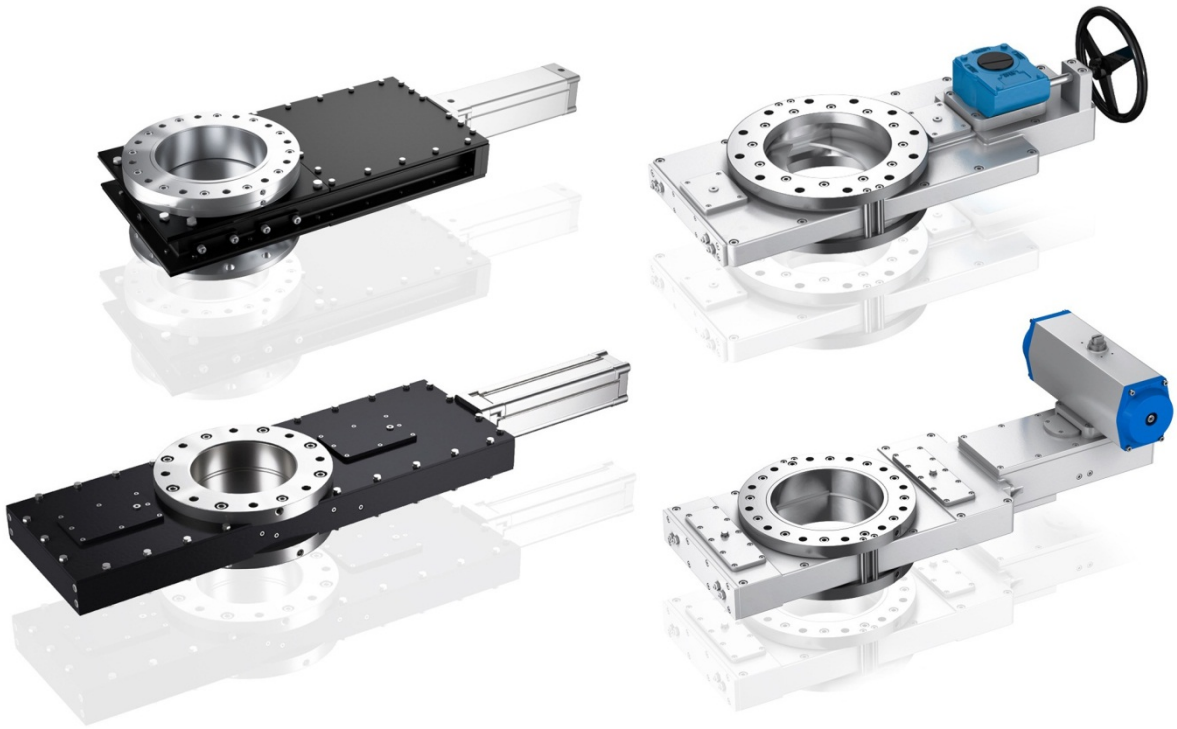

ORIGINAL OPERATION, MAINTENANCE AND ASSEMBLY INSTRUCTION

SLIDE GATE VALVES

IMPORTANT!

Read these instructions carefully before initial operation!

IMPRINT

Details in this documentation are provided to specify products,
not to warrant any specific qualities.

BURGMER
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CONTENTS DIRECTORY

1 Introduction

The valves described below are intended for industrial applications. The following standards were used: EN 558-1, DIN EN 593, EN 1092-1, EN 60529-1 and AD-2000 Regulation.

In case of use outside Germany, the operating company is responsible for ensuring the compliance with all national regulations.

ATTENTION!
The valves 410 F-EP/ 420 F-EP U/ 460 F-EP FM are not suitable for use in potentially explosive atmospheres according to - ATEX-regulation 2014/34/EU!

The valves 430 DBS/ 440 DBS-E/ 450 F-DK are outside the scope of directive 2014/34/EU. At intended use they does not have its own potential ignition source.

For the application range of the Pressure Equipment Directive – DGRL 2014/68/EU, only valves which bear a CE marking can be used! (observe category!)

ATTENTION!
When removing and / or disguising our nameplate, all guarantee and liability will expire.
If the nameplate is replaced by the costumer, it is his responsibility to ensure the traceability of the product!
It is not allowed to remove or replace nameplates of valves provided with CE markings!

The use of these operating instructions requires a proper qualification by the user. Please refer to chapter 4.4 “Qualified staff”
Operating staff is to be instructed according to operating instructions.

These instructions shall help you to install, operate and maintain the butterfly valves and provide you with all the necessary information for performing these tasks.
They should be read and kept very carefully. Hints and warnings must be strictly observed!

ATTENTION!

The following symbols are used to indicate warnings and other important notes in these operating instructions:

Means that death, severe body injuries or considerable material damage **will** ensue if the corresponding precautions are not taken.

Means that death, severe body injuries or considerable material damage **may** ensue if the corresponding precautions are not taken.

Means that light body injuries or material damage may ensue if the corresponding precautions are not taken.

These operating instructions are subject to technical improvements and alterations at any time.

2 Description

Gate valves can be used for **BLOCKING** / **DOSING** and/or **DISCHARGING** of fluids, gases, pasty media and bulk materials with different physical features.
The valves can be attached to silos, pipelines, product shafts or conveyors.

However, this requires that the gate valves are designed and manufactured in accordance with the working conditions and the consumer specification.
Materials, types of actuation and driving power must be suitable for the respective application.

The applications listed above are grouped below under the term “system”.

2.1 Validity of these operating instructions

These operating instructions are valid for all BURGMER gate valves of types DBS-E/DBS/F-EP U/F-DK designed for use in the areas described under chapter “1. Introduction“.
Included are the following different types of design:
Gate valves

- with manual actuation
- with hand worm gear
- foreign operated (pneumatic-/ electric driven)

2.2 Responding documents

The offer/work order form drawn up for each butterfly valve as well as all pertinent documents are an integral part of the internal documentation.
It contains the following information:

- medium / pressure / temperature / state of aggregation
- temperature class
- identification no. of operator or facility (if required)
- nameplate(s) (if required or necessary)
- technical information concerning the butterfly valve and its application

Further responding documents are:

- Assembly, operating and maintenance instructions for all specified attached parts
- Declarations of manufacturer and certificates of conformity

2.3 Marking of gate valves

All gate valves are marked with information located on a nameplate on the casing.

BURGMER Apparatebau GmbH		Refer to imprint in operating instructions for address
Type	e.g. DBS-XX	Type of butterfly valve
Serial-No	e.g. 218XXXX-1	Digits 1-7: Burgmer order no., digits 8-9: item no.
Date	e.g. 2018	Date of manufacture
DN	numerical value e.g. 250	Diameter of the valve
PN	numerical value e.g. 10 bar	Necessary nominal pressure levels of counter flanges. **ATTENTION! Don't apply this pressure onto the valve!**
PS	numerical value e.g. 8 bar	Max. permitted internal working pressure of valve
ΔP	numerical value e.g. 4 bar	Max. permitted difference pressure
TS	numerical value e.g. -20°C /+80°C	Upper / lower temperature limit
Body	e.g. EN-AC 51100	Body material
Slide plate	e.g. 1.4571	Slide plate material
Seat	e.g. Polyurethan	Material of inner coating / sealing

3 Intended use

The noncompliance with the precautions described in this chapter may endanger the life of the user and cause damage in the system.

Once incorporated into the system, the gate valves are to be used only for shutting off, conduction or adjustment.

The gate valves are exclusively intended for the application range described in the documentation enclosed to order (order/commission number).

It is not permitted to use the gate valves for other purposes than those described in the specification.

Don't exceed by any means the permitted pressure and temperature range of the valves!

Don't exceed by any means the permitted temperature class.

Chapter 4 "Safety hints" is to be strictly observed.

4 Safety hints

4.1 General safety hints

The safety hints applying to the system, into which the butterfly valve is incorporated, apply also to the gate valve itself.

These operating instructions provide only safety hints to be observed additionally for the gate valves. Please ensure to read and observe also the enclosed operating and maintenance instructions of the attached parts.

4.2 Safety hints for operator

Compliance with the safety hints as listed below lies within the sole responsibility of the operator:

- Please take care to observe all safety regulations valid for the country of operation and / or the operating company.
- The gate valve is to be used solely for the intended purpose as described in chapter 3 “Intended use”.
- The whole system must be installed and checked periodically by qualified staff**.** (**Refer to chapter 4.4 “Qualified staff”**)
- **Appropriate measures are to be taken to avoid human extremities being entrapped by moving parts of the system!**

- **Warning signs or barriers must be put up if necessary!**
- **An accidental starting or stopping of the system is strictly to be avoided!**
- Additional pipeline forces or torques acting on the gate valves are not permitted and must be previously agreed with the manufacturer.
- The correct function of safety appliances provided by the customer (e.g. emergency stopping, safety valves, etc.) is to be verified and ensured prior to start-up!
- The gate valves are to be started up only when fully incorporated into the system and only by **qualified staff** of the operating company.
- The valve may conduct only media previously agreed with its manufacturer!
- Abnormal working conditions like vibrations, cavitation, water hammers, etc. are not permitted.

- **The max. permitted ambient temperature for operating the valves is –20°C to +40°C. Other temperatures must be previously agreed with the manufacturer!**
- In case of operating temperatures below -20°C or above +50°C, the valve is to be provided with a protection against accidental contact.

- **ATTENTION! Don't exceed by any means the max. permitted torques indicated in item 8.1 "Torques"!**
- We point out, that there are still risks for the user of gate valves, even if they are designed and manufactured with the highest possible care. Nevertheless, damage to persons and parts can only be a result of improper handling.

4.3 Special hazards

- **Please ensure to eliminate completely any pressure existing in the system before removing the gate valve or unscrewing any bolted connections on the attached parts.**
- Please ensure to evacuate completely any medium to prevent any escapes when removing the gate valve. Proceed with special care in case of hazardous or harmful substances!

ATTENTION!

Residues may accumulate in any parts of the system and the dead spaces in the valves.

4.4 Qualified staff

Must be individuals familiarized with transport, assembly, initial operation, operation and maintenance of valves and provided of the proper qualification for their activities and duties.

This qualification includes, among others:

- Indoctrination and commitment to comply with all national, local and internal requirements and provisions.
- Indoctrination or training, in accordance to safety standards, in the proper use and care of the reasonable safety and personal protective equipment.

5 Transport and storage

Gate valves are to be handled, transported and stored with absolute care (protected against shocks, impacts and vibrations)!

All bare parts must be protected against corrosion!

Storage and transport temperature must be within the range of –20°C to +40°C.

ATTENTION! Don't store the valves in aggressive atmosphere.

The gate valves should be transported in their protective packaging to the place of incorporation.

6 Assembly, initial operation, handling, disassembly

SAFETY HINTS!

Read chapters 3 "Intended use" and 4 "Safety hints" before starting to assemble and/or disassemble the gate valve.

6.1 Assembly

BURGMER gate valves are to be installed or attached between or to flanges, according to EN 1092-1 and DIN EN 1759-1, with sealing bars of shapes B1 or B2, which are plane parallel machined and have to align. Other types of flanges and sealing bars may only be used after the manufacturer has checked their technical viability.
The seal faces of body and counter flanges must be smooth and clean.
In BA and collar II seals, the sealing insert acts at the same time as flange seal. Please make sure to use counter flanges with diameters suited to support the seals of the gate valves.
The inner diameter of the counter flanges is intended to cover at **least** 2/3 of the seal face and at **most** the clear width of the valve.
Don't use additional flange for this type of sealing.

ATTENTION! In case of use as end valve, the seal face located on the outside has to be supported by a suitable through flange. Moreover, in normal operation, especially in case of hot, gaseous and/or hazardous media, a blind flange must be installed or the valve bolted safely in the position ("CLOSED").

It is forbidden to weld the flanges to the system or other pipeline/conveyor parts after the gate valve is installed (seal insert can burn!).

INSTALLATION INSTRUCTIONS!

- Check the gate valves for transportation damages. Don't install the valves if it's damaged.
- **Make sure to install only gate valves, which technical specifications (permitted pressure, temperature class, etc.) fulfil the installation requirements.**

- **The gate valve must be mounted that no big forces may absorb through the casing. The bulk material must enter the gate valve vertically!**
- The gate valves can be installed in a position with regard to the medium flow direction (marked with a red arrow on the casing).
- The valve may not serve as fixed point; it is supported by the pipeline system.
- Please ensure to insert the gate valves centred between the counter flanges.
- Huge and heavy actuators **must** be stabilized.
- Clean the flange faces and install flange seals appropriate to the quality of the valve seal. (**IMPORTANT!** see also item 6.1.)
- **If the valves are provided with grounding screws, shaft and body of the valve must be integrated mandatorily into the potential equalisation of the whole system. Shaft and body are provided for this with a specially marked threaded hole. The grounding cable must have then a cross section of at least 4mm² for nominal widths 50-350 Furthermore, the 90° rotational movement of the shaft is to be taken into account when dimensioning the length of the shaft grounding cable!**

- Thermal expansions in the system are to be compensated through compensators.

- **All flange connections are to be tightened with the torques [Ma in Nm] specified in the following table.** The use of torque wrenches ensures that the necessary tightening torques are adjusted, but not exceeded. Align flanges in plane parallel first. Tighten then connecting screws crosswise in 3 steps.

Step 1: 50% of the respective tightening torque
Step 2: 80% of the respective tightening torque
Step 3: 100% of the respective tightening torque

Tightening values for DIN flange connections

Diameter DN	80	100	150	200	250	300	350	400	500
Tightening torque Ma [Nm]	50	50	60	65	75	85	85	85	85

Instructions for connecting of pneumatic actuators:

- Make sure to control the system pressure of the control lines when using pneumatic actuators. The max. control air pressure specified in the order documents must be strictly observed! **Never exceed it!**

Instructions for connecting of electric actuators:

- The existing connection voltage must relate to the rate of the actuator manufacturer! (see nameplate and operation instructions)
- Check sense of rotation right after connecting (phase balance). Observe sense of rotation arrow in the inspection glass.
- Depending on the design of the electric actuators, safety precautions against overload (thermal switch or torque switch) are to be integrated as well into the control circuit.

Instructions for connecting of ordered accessories:

- Please refer to the corresponding operation instructions of the ordered accessories for the connecting of solenoid valves, positioners, signalling units as well as the specified actuators (pneumatic, electric).

6.2 Initial operation phase

ATTENTION! Prior to commissioning, it must be ensured that the system contains no foreign objects!

A test run without product must be always performed first!
Refer to item 6.5 “Troubleshooting” in case of leaks on the gate valve!
The gate valve may only be used after a successful test run has been performed.

6.3 Handling

The gate valve can be provided with either manual operation (hand lever, hand wheel or hand worm gear) or an actuator (pneumatic or electric) for opening and closing. Normal hand force is sufficient for manual operation.

The functioning of the gate valve can be monitored by inductive or optic limit switches.
IMPORTANT! It is not permitted to use extensions to increase actuating moment.

6.4 Disassembly

IMPORTANT! Disassembly of the gate valves may be performed only after authorisation by the responsible company department and only by qualified staff (decision of the operating company)

6.4.1 Switching off the system

The following points are to be observed mandatorily in addition to the measures indicated in item 6.1 “Assembly”:

- **Relieve pressure in pipeline**
- **Let the medium cool-off**
- **Empty plant completely**
- **Ventilate the pipeline in case of corrosive, aggressive, toxic or inflammable media.**

Gate valves with pneumatic or electric actuation must be duly shut down by “qualified staff” in accordance to the valid occupational safety regulations of country of operation before disassembly.

6.4.2 Carrying out of disassembly

Remove carefully bolted connections on flanges (IMPORTANT! The system must be relieved of pressure!).
Remove gate valve in closed position from the system.
Remove carefully any dirt.
Unrepairable valves are to be disposed of according to the valid environment protection regulations.

6.5 Troubleshooting

Failure	Reason	Elimination
Slide plate(s) do(es) not move	Silencer solenoid valve are blocked	• Dismount and clean silencer
Slide plate(s) do(es) not move	System pressure for pneumatic actuator insufficient	• Check system pressure • Ensure minimum pressure (4 bar)
Slide plate(s) do(es) not move	Service chamber blocked through medium	• **Switch off system (refer to 6.4.1)** • Open cover • Remove medium • Retighten gland packing • Close cover • Functional test
Slide plate(s) do(es) not move	Gland packing worn out	• **Manufacturer-revision necessary**
Slide plate(s) do(es) not move	Slide plate(s) worn out	• **Manufacturer-revision necessary**
Slide plate(s) do(es) not move	Material stick to the slide plates	• **Switch off system (refer to 6.4.1)** • Open cover • Remove medium • Retighten gland packing • Close cover • Functional test
No signal from limit switches	Limit switch or flag damaged	• Renew limit switches • Renew flag

ATTENTION! Observe the safety hints listed in chapter 4 when performing works of any kind on the gate valve!

7 Maintenance

The maintenance includes inspection, maintenance and reparation of the gate valve.

RECOMMENDATION! Extensive maintenance and repair must be done by the manufacturer in order to avoid costs of stand-still.
Relubrication of bearings is not necessary. Bearings are provided with permanent lubrication by the manufacturer.

ATTENTION! When detecting a defect on a valve or its attachments, the system is to be shut down immediately and restarted only after elimination of defect!

7.1 Safety hints

Any kind of work on the gate valves must be done only by "qualified staff" (refer to item 4.4)!

Before starting to work, inform the safety officer.

- **Secure the gate valves against accidental start up, cut off pneumatic, electric connections!**
- **Do not grasp into the open gate valve!**
- **Gate valves mounted under vessels have to be secured by an emergency shutoff before working on them!**
- **Keep vessels, pipes and feeding parts of plant free of product when doing extensive maintenance or repair works on the gate valves.**
- **Avoid after-running of product by closing stop valves or taking other convenient actions.**

7.2 Inspection list and maintenance works

Action	weekly	monthly (every 4-5 weeks)	half-yearly
Visual control of electric and pneumatic connections	●		
Check air-tightness of solenoid valves and pneumatic connections		●	
Check bolted connections (actuators, control elements, flanges) and tighten them if necessary		●	
Checking for leaks in cover area of valve: Gases and dusts: Check for leaks using leak detection spray! Liquids: Check visually for leaks! **ATTENTION! When detecting a leak, shut down plant as soon as possible and repair valve!**	●		
Tightening the gland packing Additional to the main manual shut-off valve			● Unless otherwise noted!

LUBRICATION

Apply accordingly to double gate valves 440 DBS with bolt-on gear box.

Every 30.000 cycles of every 12 month the lubrication must be replaced or refilled. Therefore is a lubrication nipple between the two cap screws, which can be found on each side of the gear box, below the actuator.

RECOMMENDATION! Use a high-performance grease “OKS 470” for use with a temperature range of -30°C up to +120°C or a similar lubricant! The amount of lubricant to be used is appr. 20 ml.

8 Annex

8.1 Necessary nominal pressure level “PN“ of counter flanges

The “PN“ detailed on the nameplate refers only to the necessary nominal pressure level of counter flanges.

ATTENTION! Don’t apply this pressure onto the valve!

8.2 Material compatibility of valve

ATTENTION! The valve may conduct only with media agreed previously with its manufacturer!

The admitted media must be specified in the documentation enclosed to order!

8.3 Thread locking

The screws at the gate valves have been provided with thread locking LOXEAL 24-18.

After maintenance, the released screws must again be provided with thread locking!

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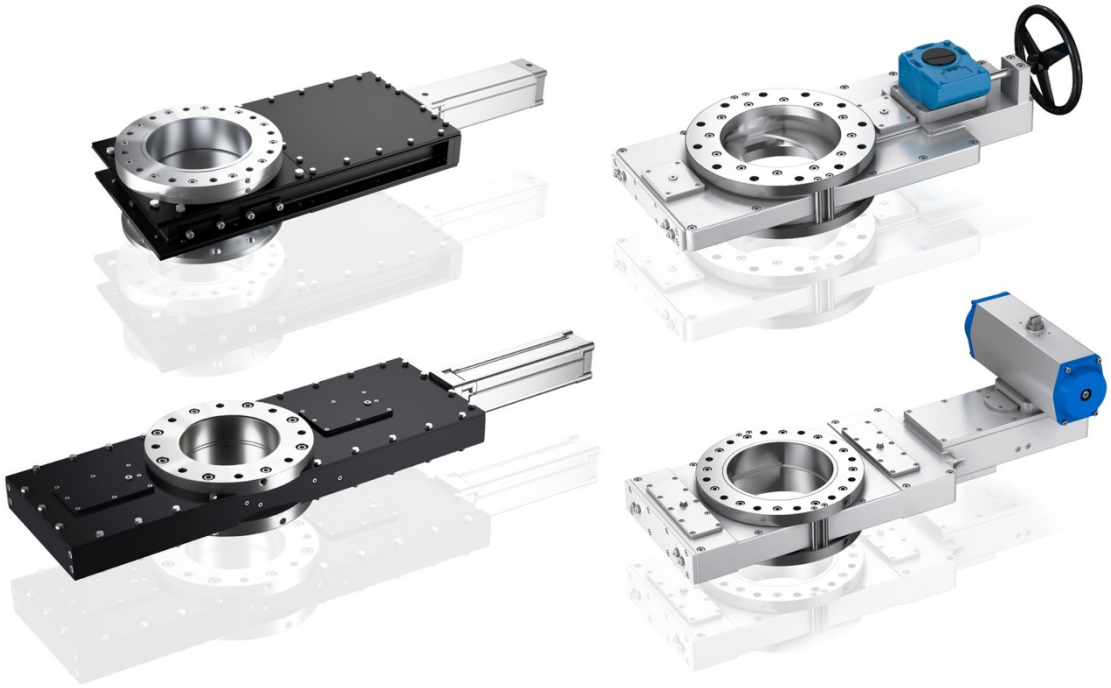

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