

USERS MANUAL

BELLOW VALVE

zBEL

Fig. 237

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CONTENTS

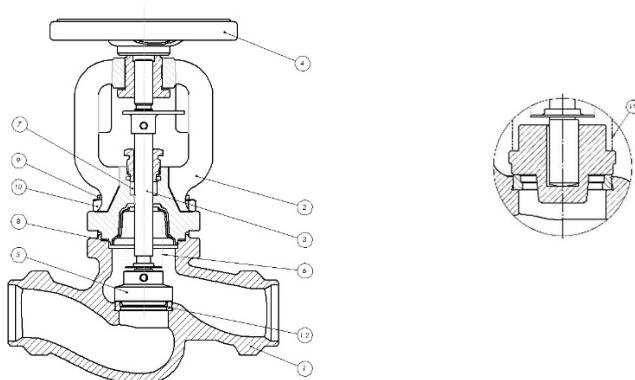
1. Product description
2. Requirement for maintenance staff
3. Transport and storage
4. Function
5. Application
6. Assembly
7. Maintenance
8. Service and repair
9. Reasons of operating disturbances and remedy
10. Valve service discontinuity
11. Warranty terms



1. PRODUCT DESCRIPTION

Stop valves are manufactured at different executions, they are used as stop valves, throttling valves, SDNR valves.

Stem sealing is done by a bellows and additional packing.

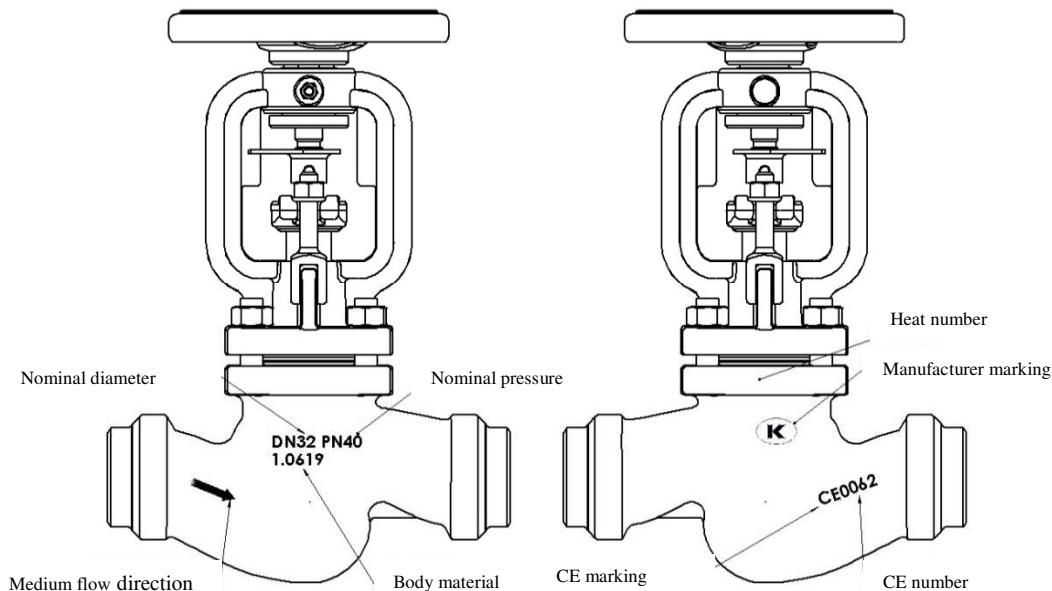


| | Body material | F | I |
|------------------|--|---|---|
| Type | 01;04;31 | 09;10;40 | |
| 1 Body | GP240GH 1.0619 | G-X5CrNiMo 19-11-2 1.4408 | |
| 1.2 Seat ring | DN15 – 50 X20Cr13 1.4021 DN65- 100 stellit | DN15 – 50 X5CrNiMo 17-12-2 1.4401 DN65 -100 pading weld | |
| 2 Bonnet | GP240GH 1.0619 | G-X5CrNiMo 19-11-2 1.4408 | |
| 3 Stem | X20Cr13 1.4021 | X6CrNiMoTi 17-12-2 1.4571 | |
| 4 Hand-wheel | stal | | |
| 5 Disc | X20Cr13 1.4021 | X6CrNiMoTi 17-12-2 1.4571 | |
| 6 Bellow | X6CrNiMoTi-17-12-2 1.4571 | | |
| 7 Gland packing | grafit | | |
| 8 Bonnet gasket | Grafit + CrNist. | | |
| 9 Stud bolt | 24CrMo4 | A4 - 70 | |
| 10 Nut | C35E 1.1181 | A4 | |
| 11 Spring * | X17CrNi6-2 1.4057 | | |
| Max. temperature | 450°C | 400°C | |

*for type 31,40

Valves are provided with casted marking according to requirements of PN-EN19 standard. The marking facilitates technical identification and contains:

- diameter nominal DN (mm),
- pressure nominal PN (bar),
- body and bonnet material marking,
- arrow indicating medium flow direction,
- manufacturer marking,
- heat number,
- CE marking, for valves subjected 97/23/EC directive. CE marking starts from DN32



2. REQUIREMENTS FOR MAINTENANCE STAFF

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs. If the valve is provided with mechanical actuators, operating manual of actuator should be obeyed. If during valve operation heat parts of the valve, for example handwheel, body or bonnet parts could cause burn, user is obliged to protect them against touch.

3. TRANSPORT AND STORAGE

Transport and storage should be carried out at temperature from -20°C to 65°C , and valves should be protected against external forces influence and destruction of painting layer as well. The aim of painting layer is to protect the valves against rust during transport and storage. Valves should be kept at unpolluted rooms and they should be also protected against influence of atmospheric conditions. There should be applied drying agent or heating at damp rooms in order to prevent condensate formation. The valves should be transported in such a way to avoid handwheel and valve stem damage.

4. FUNCTION

Valves with stop disc are designed to shut off the flow of the medium. Stop-return valves function not only as stop valves but also as return valves. Versions with throttling disc enable to control the flow. Stop-return valves differ from stop valves on the outside by having a circular crack on the nut mounting the circle.

5. APPLICATION

- industry
- shipbuilding industry
- heating
- refrigeration and air conditioning
- glycol
- industrial water
- diathermic oil
- steam
- compressed air
- neutral fluids

The kind of working medium makes some materials to be used or to be prohibited for use. Valves were designed for normal working conditions. In the case that working conditions exceed these requirements (for example for aggressive or abrasive medium) user should ask manufacturer before placing an order.

When selecting the valve for specific medium, "List of Chemical Resistance" can be helpful. It can be found at manufacturer website near catalogue cards.

Working pressure should be adapted to maximum medium temperature according to the table as below.

| | | Temperature [° C] | | | | | | | | | |
|----------|----|-------------------|------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Material | PN | -60 < do <-10 | -10 do 120 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| GP240GH | 40 | 30 bar | 40 bar | 37,1 bar | 35,2 bar | 33,3 bar | 30,4 bar | 27,6 bar | 25,7 bar | 23,8 bar | 13,1 bar |

| | | Temperature [° C] | | | | | | | | | |
|--------------------|----|-------------------|------------|----------|----------|----------|----------|----------|----------|--|--|
| Material | PN | -60 < do <-10 | -10 do 100 | 150 | 200 | 250 | 300 | 350 | 400 | | |
| G-X5CrNiMo 19-11-2 | 40 | 40 bar | 40 bar | 36,3 bar | 33,7 bar | 31,8 bar | 29,7 bar | 28,5 bar | 27,4 bar | | |

Plant designer is responsible for valve selection suitable for working conditions.

Valves were designed for normal working conditions. In the case that working conditions exceed these requirements (for example for aggressive or abrasive medium) user should ask manufacturer before placing an order.

6. ASSEMBLY

During the assembly of balancing valves following rules should be observed:

- to evaluate before an assembly if the valves were not damaged during the transport or storage,
- to make sure that applied valves are suitable for working conditions and medium used in the plant,
- to take off dust caps if the valves are provided with them,
- to protect the valves during welding jobs against splinters and used plastics against excessive temperature,
- steam pipelines should be fitted in such a way to avoid condensate collection; in order to avoid water hammer steam trap should be applied



- **Pipeline where the valves are fitted should be conducted and assembled in such a way that the valve body is not subjected to bending moment and stretching forces.**
 - during pipeline painting valve stem should be protected,
 - stop valves can be assembled in any position, however it is recommended to install the valve with handwheel upwards,



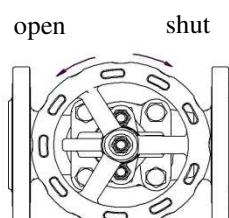
- **It should be take note of medium flow direction, marked with an arrow on the body.**

- before plant startup, especially after repairs carried out, flush out the pipeline through entirely open valve, in order to avoid solid particles or welding splinters which may be harmful for sealing surfaces,
- strainer (wire mesh filter) installed before the valve increases certainty of its correct action.

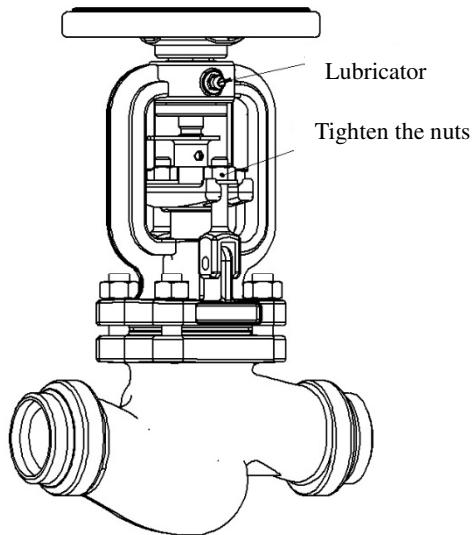
7. MAINTENANCE

During maintenance following rules should be observed:

- startup process – sudden changes of pressure and temperature should be avoided when starting the plant,
- valve is closed by turning the handwheel clockwise when looking from above the handwheel (according to arrow direction marked on the handwheel),



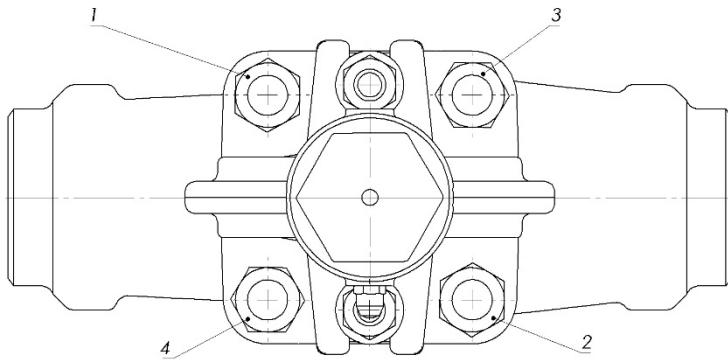
- valve is opened by turning the handwheel counter-clockwise,
- ⚠ It is prohibited to use additional lever when turning the handwheel,**
- performance of fitted valves can be checked by multiple closing and opening, if leakage on stem occurs it is necessary to tighten with moderate force two T-bolt nuts pressing the packing gland until the leakage disappear.



⚠ Leakage on the gland packing means that bellow was damaged. Upper part of the valve should be replaced immediately

8. SERVICE AND REPAIR

- ⚠ In order to assure safety performance, each valve (especially rarely used) should be surveyed on regular basis. Inspection frequency should be laid down by user, but not less than one time per month.**
- All service and repair jobs should be carried out by authorized staff using suitable tools and original spare parts. Before disassembly of complete valve from the pipeline or before service, the pipeline should be out of operation. During service and repair jobs it is necessary to decrease pressure to 0 bars, valve temperature to ambient temperature and to use personal health protectives in pursuance of existing threat.
 - Precautions should be taken when touching gasket between body and valve bonnet. The gasket contains stainless steel stripe that may cause injury,
 - Everytime when valve bonnet was disassembled sealing surface should be cleaned. During assembly it should be applied new gasket of the same type as previously used. Body-bonnet bolt connections should be tighten when the valve is at open position.
 - The bolts should be tighten evenly and crosswise by torque wrench.



- Tighten torques

| Screw | Torque |
|-------|-------------|
| M8 | 15-20 Nm |
| M10 | 35 -40 Nm |
| M12 | 65 – 70 Nm |
| M16 | 140 -150 Nm |

- before valves re-assembly in the pipeline it is necessary to check valve operation and tightness of all connections. Tightness test should be carried out with water pressure of 1,5 nominal pressure of the valve.

9. REASONS OF OPERATING DISTURBANCES AND REMEDY

- When seeking of valve malfunction reasons safety rules should be strictly obeyed

| Fault | Possible reason | Remedy |
|----------------------|--------------------------------|--|
| No flow | Valve closed | Open the valve |
| | | |
| Poor flow | Valve is not open enough | Open the valve |
| | Dirty filter | Clean or replace the screen |
| | Clogged pipeline | Check the pipeline |
| Control difficulties | Dry stem | Grease the stem |
| | Gland packing tighten too much | Slightly slacken gland nuts. Put attention to keep stuffing box tightness |
| Stem leakage | Too much loose on the gland | Tighten the gland until tightness will be reached. If necessary add packing rings in stuffing box. Keep special caution. |
| Seat leakage | Shut off not correct | Tighten the handwheel without any auxiliary tools |
| | Seat or disc damage | Replace the valve and contact supplier or manufacturer |

| | | |
|--|--------------------------------------|--|
| | Pressure difference too much | Check if the valve was assembled according to arrow direction marked on the valve. |
| | Medium polluted with solid particles | Clean the valve. Fit strainer before the valve. |
| | | |

In case of leakage of medium that is not indifferent to the environment, protective measures should be taken.

10. VALVE SERVICE DISCONTINUITY

All obsolete and dismantled valves must not be disposed with household waste. ZETKAMA valves are made of materials which can be re-used and should be delivered to designated recycling centres.

11. WARRANTY TERMS

- ZETKAMA grants quality warranty with assurance for proper operation of its products, providing that assembly of them is done according to the users manual and they are operated according to technical conditions and parameters described in ZETKAMA's catalogue cards. Warranty period is 18 months starting from assembly date, however not longer than 24 months from the sales date.

- warranty claim does not cover assembly of foreign parts and design changes done by user as well as natural wear.
- immediately after detection the user should inform ZETKAMA about hidden defects of the product
- a claim should be prepared in written form.

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