

## USER MANUAL

**BELLOW VALVE**

**Fig. 234, 235, 237**

**Edition: 3/2020**

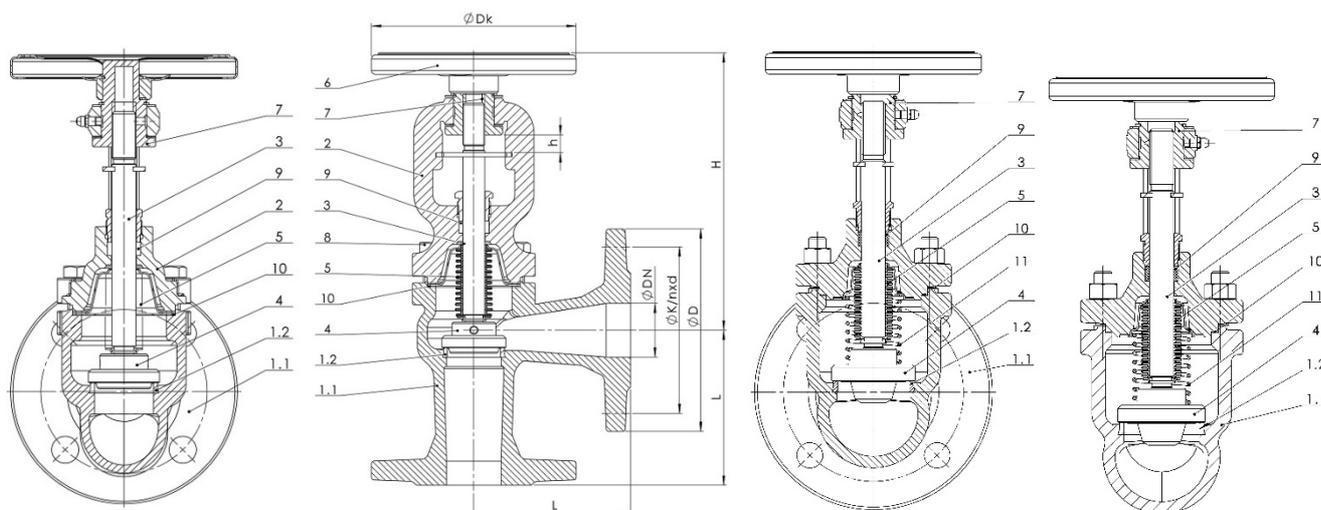
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### 1. PRODUCT DESCRIPTION

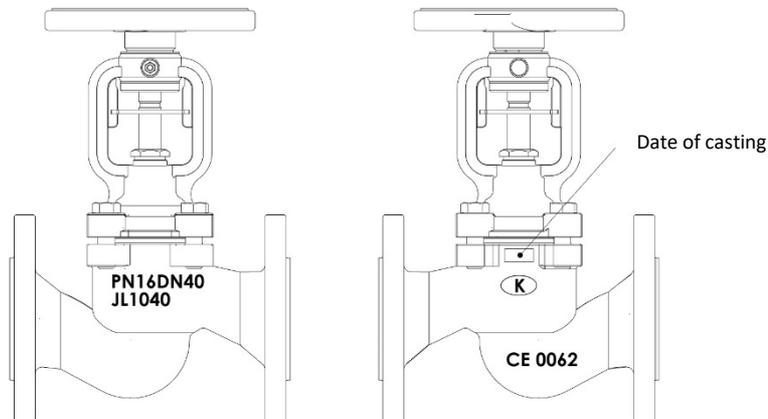
Bellow sealed globe valves are made in various variants, they act as stop valves and throttling valves. Stop valves are only used to close and open the flow, throttling valves are used for flow control. Stem sealing is performed by flexible bellow and additional protecting gland.



No.	Part name	Material			
		EN – GJL-250 5.1301 (ex. JL1040)	EN – GJS-400 – 18-LT 5.3103 (ex.JS1025)	GP240GH 1.0619	G-X5CrNiMo19-11-2 1.4408
1.1	Body				
1.2	Ring / Padding weld	X20Cr13 1.4021		G19-9 LSI/ stellite	
2	Bonnet	EN – GJS-400 – 18-LT 5.3103 (ex.JS1025)		GP240GH 1.0619	G-X5CrNiMo19-11-2 1.4408
3	Stem	X20Cr13 1.4021			X6CrNiMoTi17-12-2 1.4571
4	Disc	X20Cr13 +QT 1.4021			X6CrNiMoTi17-12-2 1.4571
5	Bellow	X6CrNiMoTi-17-12-2 1.4571			
6	Handwheel	Steel			
7	Sleeve	11SMnPb30 1.0718			
8	Hexagonal bolt	5.6	A2-70	24CrMo4 1.7218	A4-70
9	Gland packing	graphite			
10	Gasket	graphite + CrNiSt			
11	Spring	X17CrNi16-2 1.4057			

The bellows sealed valves have a permanent marking in accordance with the requirements of the standard PN-EN19. Marking facilitates technical identification and includes:

- nominal diameter DN (mm),
- nominal pressure PN (bar),
- identification of the body and cover material,
- arrow indicating the direction of flow,
- symbol of the manufacturer,
- date of casting,
- CE mark for valves subject to Directive 2014/68/UE. The CE mark only from DN32

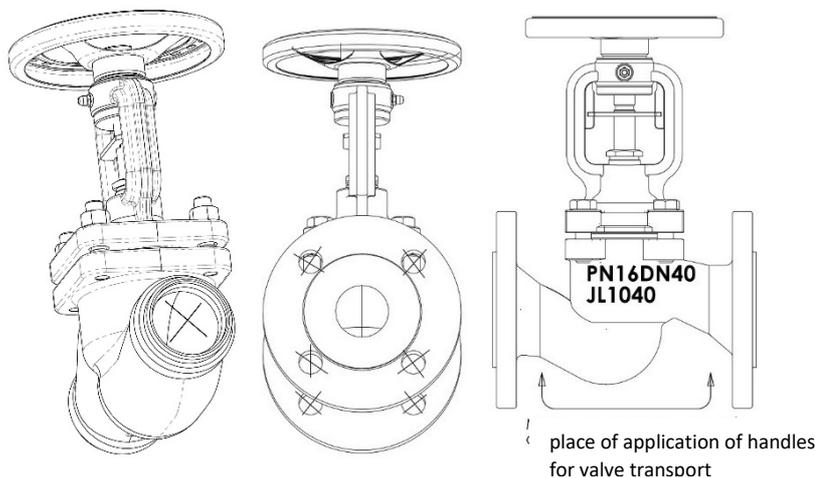


## 2. REQUIREMENTS FOR MAINTENANCE STAFF

Staff assigned to assembly, operating and maintenance should be qualified to perform this work. When using actuators on the valve, the operating instructions for actuators must be observed. If during the operation of the valves, hot parts of the valve, e.g. the handwheel, parts of the body or the cover may cause burns, the user is obliged to protect them against touching..

## 3. TRANSPORT AND STORAGE

Transport and storage should be carried out at temperatures from  $-20^{\circ}$  to  $65^{\circ}$ C, and the valves must be protected against external forces and damage to the paint coat. The paint coating is designed to protect the valves against corrosion during transport and storage. The valves should be stored in rooms free of dirt and protected against atmospheric influences. In damp areas, use a drying agent or heating to prevent condensation. The valves should be transported in such a way as not to damage the handwheel or valve stem.



**It is unacceptable to fasten lifting devices to connection holes and internal through holes.**

## 4. FUNCTION

The valve types with a stop disc are used to shut off the flowing medium. The shut-off-return valves not only function as stop valves, but also as check valves. Versions with a throttling disc allow for flow control.

## 5. APPLICATION

- industry
- heating
- power industry
- cooling and air conditioning
- cold and hot industrial water installations
- steam
- compressed air
- industrial oils
- neutral factors

The medium causes an order or a ban on the use of certain materials. Valves are designed for normal conditions of use. In the case of working conditions exceeding these requirements, such as in the case of aggressive or abrasive agents, the user should ask before placing an order with the producer.

When selecting valves for a specific medium, the "List of Chemical Resistance" available on the manufacturer's website next to the catalogue cards may be helpful.

The operating pressure must be adjusted to the maximum temperature of the medium as per the table below.

Acc. to EN 1092-2	PN		---	-10°±120°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C	
<b>EN-GJL-250</b>	16	bar	---	16	14,4	12,8	11,2	9,6	---	---	---	
<b>EN-GJS-400-18 LT</b>	16		---	16	15,5	14,7	13,9	12,8	11,2	---	---	
	25		---	25	24,3	23	21,8	20	17,5	---	---	
Acc. to EN 1092-1			-20°±<-10°C	-10°±50°C	100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
<b>GP240GH</b>	40	bar	30	40	37,1	35,2	33,3	30,4	27,6	25,7	23,8	13,1
Acc. to EN 1092-1			---	-60°±<-10°C	-10°C±100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
<b>G-X5CrNiMo19-11-2</b>	40		---	40	40	36,3	33,7	31,8	29,7	28,5	27,4	---



The system designer, construction contractors and the user are responsible for the correct selection of valves for the working conditions, their arrangement and assembly.



The valves are designed for applications independent of external conditions. If there is a risk of corrosion caused by external conditions (weather, aggressive vapors, gases, etc.), special anti-corrosion protection or special design of the valves is recommended.



Valves made of GP240GH cast steel operating at temperatures above 400°C, due to material creep, cannot operate in these conditions for more than 100,000 hours

## 6. ASSEMBLY

The following rules must be observed during installation:

- before installation, determine whether the valves are not damaged during shipment or storage,
- make sure that the used valves are suitable for working conditions and media in the given plant,
- remove plugs if there are any,
- for welding the valves must be protected from splashes and the used plastics from excessive heat,
- steam lines must be routed in such a way as to prevent the accumulation of water; to prevent water hammer, use a condensate separator,
- when painting the pipeline, protect the valve stem components,
- valves can be installed in any position, recommended position of the valve with the handwheel up,
- before starting the system, and in particular after repairs, flush the pipeline system with the valve fully open to remove solids or welding spatter harmful to the sealing surfaces,
- installing a strainer before the valve increases the certainty of its proper functioning.



The GP240GH cast steel valves must not be installed as the end element of the pipeline if the valve temperature is lower than minus 10°C or higher than 400°C.



The pipeline to which the valves are fitted should be arranged and mounted in a way that the valve body is not subjected to bending moment and stretching

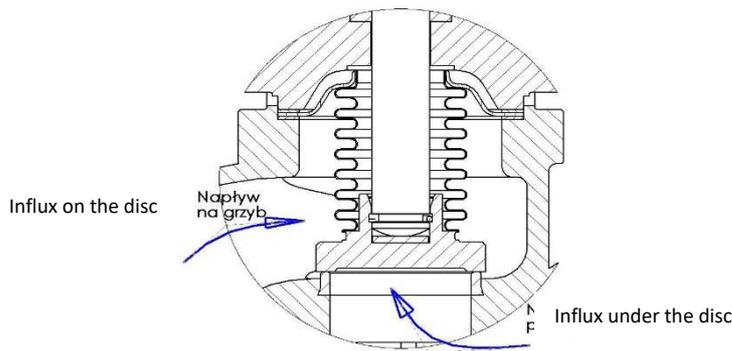


Bolted connections on the pipeline must not introduce additional strength stresses resulting from their excessive tightening, and the type of materials of the fasteners must be adapted to the operating parameters of the installation,



Pay attention to the medium flow direction, marked with an arrow on the body, and the flow direction is determined according to the following rules:

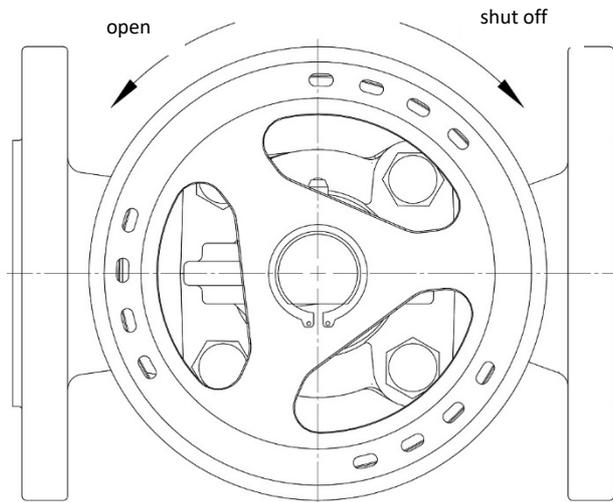
	Stop valve	Throttling valve	Stop valve
	PN6 – PN25	PN16 – PN25	PN40
<b>Under the disc</b>	DN15 – DN150	DN15 – DN200	DN15 – DN100
<b>On the disc</b>	DN200–DN250	-	DN125 – DN200



## 7. OPERATION

During operation, the following rules should be observed:

- commissioning process - commissioning should be conducted in a way that eliminates the occurrence of sudden changes of temperature and pressure,
- valves with an influx on the disc should be opened in such a way as to first open the relieving disc and bring the pressure equilibrium on both sides of the main plug, and only after pressure equalization, open the valve completely,
- the valve is closed by turning clockwise when looking at the handwheel from above (in the direction marked on the handwheel),



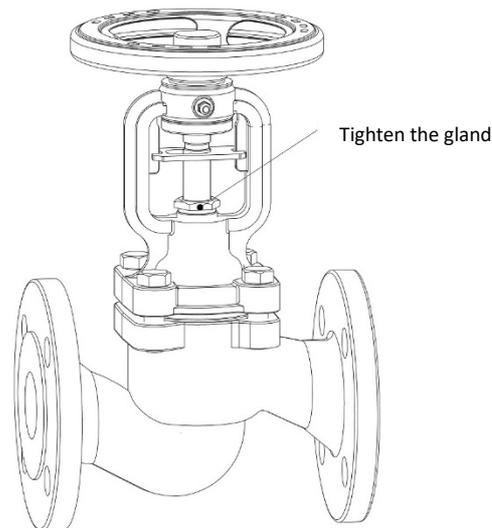
- opening occurs when turning to the left,



The use of additional leverage when turning the handwheel is prohibited.

- the operation of installed valves can be checked by repeated opening and closing,

- if there are leaks on the valve stem, tighten the packing gland until the leak stops.



If a leakage occurs at the packing gland, the bellows is damaged. The upper part of the valve should be replaced immediately.

## 8. MAINTENANCE AND REPAIR



To ensure safe operation, each valve, especially the one that is rarely operated, should be regularly inspected and maintained. The frequency of maintenance is determined by the user depending on the operating conditions, but at least once a month. Stem thread should be periodically greased.

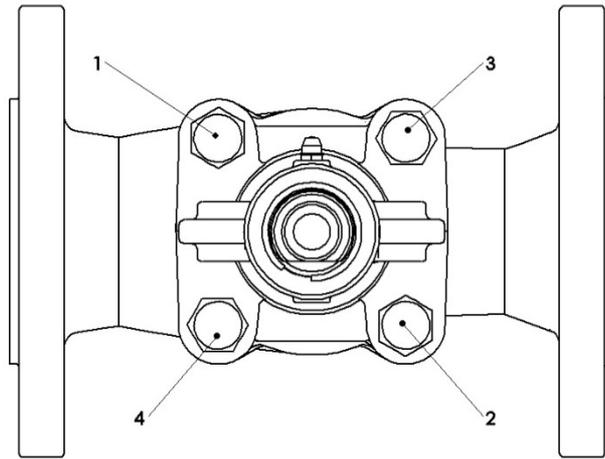
All service and repair works should be performed by qualified personnel using suitable tools and genuine replacement parts. Before removing the complete valve from the pipeline or before maintenance, the given pipeline section should be put out of service. For maintenance and repair work:

- reduce the pressure to zero and the valve temperature to the ambient temperature,
- use personal protective equipment appropriate to the risk involved,
- after removing the valve, replace the seals with which the valve is connected to the pipeline system,



Be careful when touching the gasket between the valve body and the bonnet. The gasket contains stainless steel stripe that may cause injury.

- each time after removing the valve bonnet, clean the surfaces for the gaskets and use new gaskets of the same type as the previously installed ones,
- tightening the bolt connections of the bonnet should be performed with the valve open,
- bolts or nuts should be tightened evenly and crosswise with a torque wrench,



- tightening torques of bolts and nuts

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

- Before re-assembling the valves into the pipeline, it is necessary to check the valve function and the tightness of all connections. The tightness test should be carried out with water at a pressure equal to 1.5 times the nominal pressure of the valve.

## 9. CAUSES OF OPERATIONAL DISTURBANCES AND THEIR REMOVAL

When searching for causes of faulty operation of the valve, it is essential to comply with the safety regulations

Disturbance	Possible cause	Removal
No flow	Closed valve	Open the valve
	The flange caps have not been removed	Remove flange caps
Poor flow	Valve not open enough	Open the valve
	Dirty filter	Clean or replace the mesh
	Pipeline system clogged	Check the pipeline
Difficult valve control	Dry stem	Grease the stem
	Gland packing too tight	Slightly loosen the gland nuts
Leakage on the stem	Damage of the bellow	Tighten the gland until it is tight. Replace the upper part of the valve as soon as possible.
Leakage on the seat	Incorrect closing	Tighten the handwheel without using any auxiliary tools

	Damaged socket or disc	Replace the valve. Turn to supplier or manufacturer.
	Too much pressure difference	Use a valve with a pressure relief disc. Check whether the valve is installed in accordance with the flow direction marked on the valve.
	Medium contaminated with solids	Clean the valve. Install the filter before valve.
Connection flange fracture	The fastening bolts were tightened unevenly	Install a new valve

In the event of leakage of a medium that is not neutral to the environment, protective measures must be taken.

#### **10. VALVE SERVICE DISCONTINUITY**

Valves are made of recyclable materials. Deliver them to a recycling centre.

#### **11. GUARANTEE CONDITIONS**

- ZETKAMA grants a quality guarantee ensuring the proper functioning of its products, provided that they are installed in accordance with the user's manual and operated in accordance with the technical conditions and parameters specified in the ZETKAMA technical sheets. The guarantee period is 18 months from the date of installation, but not longer than 24 months from the date of sale.
- Assembly of third party parts and construction changes made by user as well as natural wear are not covered by the guarantee.
- The user should inform ZETKAMA about hidden defects immediately after they are found.
- The complaint must be made in writing.

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