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USER MANUAL		
BALANCING VALVES zSTA	**Fig. 221**	**Version: 1/2022** **Date: 09.05.2022**

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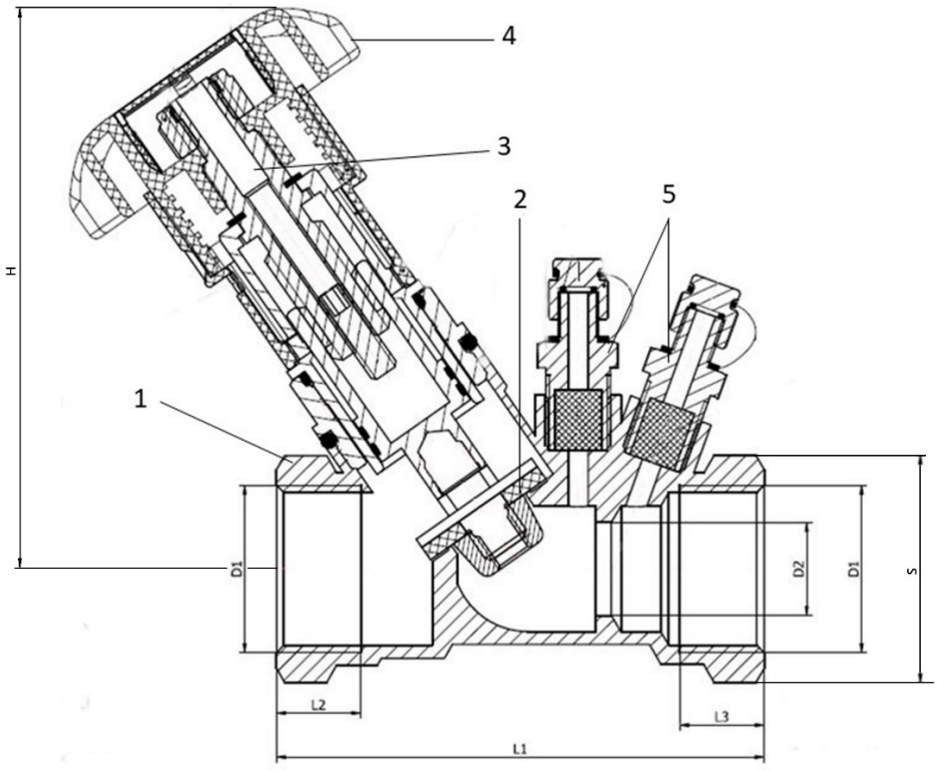
1. PRODUCT DESCRIPTION

Balancing valves Fig.221 are globe valves with threaded connections and an oblique body. They are used for medium flow control. The medium flows in the direction indicated on the valve.

Differential pressure measurement takes place in measuring orifice. The advantage of this solution is, inter alia, the possibility of direct flow measurement. Kv factor of the measuring orifice, where the measurement of the differential pressure is made, is constant and does not change during flow adjustment. In practice, this means that we can balance the system much more easily and faster. When measuring the flow rate, Kv is entered to the measuring device only once (for the specific measuring orifice), and then the flow can easily be adjusted by observing the varying flow on the measuring device. In this way making a flow adjustment is easy and very accurate.

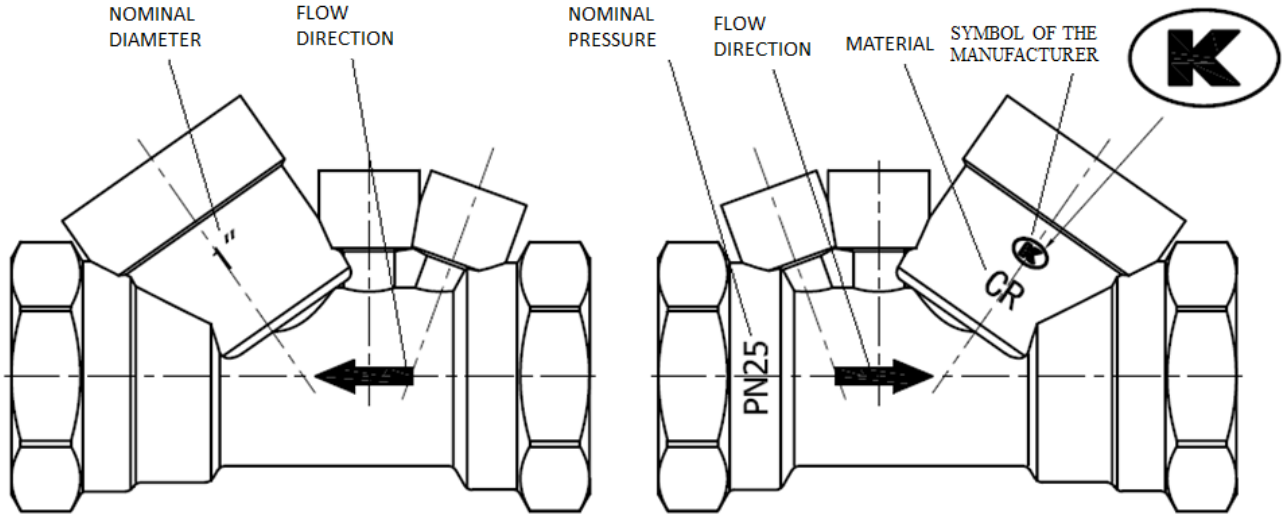
H version (brass)



	Body material	H
	Type	**60**
1	Body	CuZn36Pb2As
2	Disc	CuZn36Pb2As
3	Stem	CuZn36Pb2As
4	Hand-wheel	Poliamid
5	Pressure tap	CuZn36Pb2As + EPDM
Max. temperature		**120°C**

Fittings manufactured by ZETKAMA, including balance valves, have a permanent marking in accordance with the requirements of the PN-EN19 standard. Marking facilitates technical identification and includes:

- nominal diameter DN (inch),
- nominal pressure PN (bar),
- identification of the body and cover material,
- arrow indicating the direction of flow,
- symbol of the manufacturer,



2. REQUIREMENTS FOR OPERATORS

Staff assigned to assembly, operating and maintenance should be qualified to perform this work.
During valve operation hot parts of the valve, e.g. body or cover parts could cause burn. If necessary the user should fit insulation shields and warning signs..

3. TRANSPORT AND STORAGE

Transport and storage should be carried out at temperatures from -20^0 to 65^0C, and the valves must be protected against external forces. The valves must be stored in dirt-free and weather protected rooms. In humid areas drying agent or heating should be applied to prevent formation of condensation. The valves should be transported in a manner that does not damage the handwheel.

4. FUNCTION

Balancing valves are used to control the hydraulic system. The valves can be installed in either the supply or the return pipelines.

5. APPLICATION

- heating
- refrigeration and air conditioning
- glycol
- industrial water
- neutral fluids

Operating medium requires or prohibits the use of certain materials. The valves are designed for normal conditions of use. In case that operating conditions exceed these requirements, e.g. in the case of aggressive or abrasive mediums, a user should make an inquiry to the manufacturer before ordering.

Operating pressure should be adjusted to the maximum temperature of the medium, as shown below.

Balancing valve Fig. 221 H (brass)

Acc. to EN 1092-2		Temperature [° C]
Material	PN	-10 to 120
CuZn36Pb2As	25	25 bar

6. INSTALLATION

The following rules must be observed during installation of balance valves:

- before installation, determine whether the valves are not damaged during shipment or storage, make sure that the valves to be used are suitable for working conditions and media in the given plant,
- remove plugs if there are any,
- check whether the valve inside is free from foreign objects,
- for welding the valves must be protected from splashes and the used plastics from excessive heat

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.

- use compensators in order to reduce the impact of thermal expansion of pipelines,

While installing, pay attention to the direction of flow, indicated by an arrow on the body.

- correct operation of the valve requires suitably long straight sections: 5 x DN up and 2 x DN downstream,
- during pipeline painting valve, parts made of plastic and scale of the valve must be protected,
- valves can be mounted in any position, recommend position of the valve is wheel down,
- before starting the installation, especially after carried out repairs, rinse the pipeline through with the valve fully open
- installation of settling tank - strainer before the valve increases certainty of its correct functioning

Use Teflon tape to seal the valves of composite material

The responsibility for correct selection of the valve to the operating conditions, distribution and installation is borne by system designer, contractor and user.

7. OPERATION

The following rules must be observed during operation:

- start-up process – commissioning should be carried out in a way that eliminates the occurrence of sudden changes in temperature and pressure,
- close the valve by turning it to the right, looking down on the wheel (in the direction marked on the wheel)
- open the valve by turning it to the left

the use of additional leverage when turning the wheel is prohibited
the closing cannot exceed the value of "0 -0" on the wheel

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

To ensure the safe operation of each valve, especially of the ones that are rarely used, they should be regularly monitored. Inspection frequency should be determined by the user.

8. MAINTENANCE AND REPAIR

The balancing valves fig. 221 do not require any maintenance provided that they are used in accordance with their intended use.

Before taking up any maintenance actions, make sure the flow of medium in the pipeline was cut off, the pressure was reduced to ambient pressure, medium was removed and the system was cooled down.

- all maintenance and repair work should be performed by qualified personnel using suitable tools and original spare parts.
- during maintenance and servicing 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,
- each time when the cover is removed, clean the valve sealing surface and apply new gasket of the same type as previously used
- tightening the cover to the body must be made with the valve opened (disc in the upper position)
- before reassembling the valve 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 x nominal pressure of the valve.

9. VALVE SETTING Fig. 221

The valve opening degree can be read on the dial and its lateral part
Number of turns between the closed and fully open positions is: – 4
Locking the setting

- for the proper adjustment of valve opening tables and flow charts drawn up for each valve size should be used,

So adjusted balancing valve can be closed many times now, but its opening is only possible to the set value.

Kv values for various settings for the valve Fig. 221 version H (brass):

DN	15	20	25	32	40	50
Type	60					
Body material	H					
Wheel position	Valve flow Kv coefficient [m^3/h]					
0,5	1,00	2,71	2,48	4,52	5,13	7,07
1,0	1,27	3,55	3,35	6,50	7,76	9,67
1,5	1,43	3,88	3,91	7,72	9,32	11,37
2,0	1,60	4,12	4,35	8,58	10,62	12,98
2,5	1,76	4,33	4,80	9,44	12,01	14,57
3,0	2,00	4,53	5,40	10,31	13,74	16,29
3,5	2,22	4,75	6,17	11,09	15,18	18,26
4,0	2,34	4,94	6,80	12,32	16,53	20,34
K_{sig}	2,28	7,79	11,91	21	33,66	49,81

10. Causes of operating malfunctions and their elimination

When searching for the malfunctioning of the valve safety rules must be observed

Malfunction	Possible cause	Solution
No flow	Valve closed	Open the valve
Low flow	Valve not sufficiently open	Open the valve
	Contaminated filter	Clean or replace the strainer
	Clogged pipeline system	Check the pipe line
Difficult valve control	Dry stem	Oil the stem
Leakage on the stem	Damaged o-rings	Replace the o-rings
Leakage on the seat	Improper closing	Tighten the hand wheel without using auxiliary tools
	Damaged seat or disc	Replace the valve. Contact the supplier or manufacturer
	Too high pressure difference	Check that the valve is installed in accordance with the flow direction marked on the valve.
	Medium contaminated with solid objects	Clean the valve. Install a strainer upstream.

11. Decommissioning

After decommissioning and dismantling the valves must not be disposed of with household waste. Valves are made of recyclable materials. Deliver them to a recycling centre.

12. Warranty conditions

ZETKAMA grants warranty for proper operation of its products, provided that they are installed in accordance with the instruction manual and operated in accordance with the technical specifications and parameters described in the ZETKAMA data sheets. Warranty period is 18 months from the date of installation, but not longer than 24 months from the date of sale.
The warranty does not cover assembly of foreign parts and design changes made by the user, neither natural wear.
The user should inform ZETKAMA about hidden defects of the product immediately after detection.
Complaint must be in writing.

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