

USER MANUAL

**PRESSURE REDUCING
REGULATOR**

Fig. 226

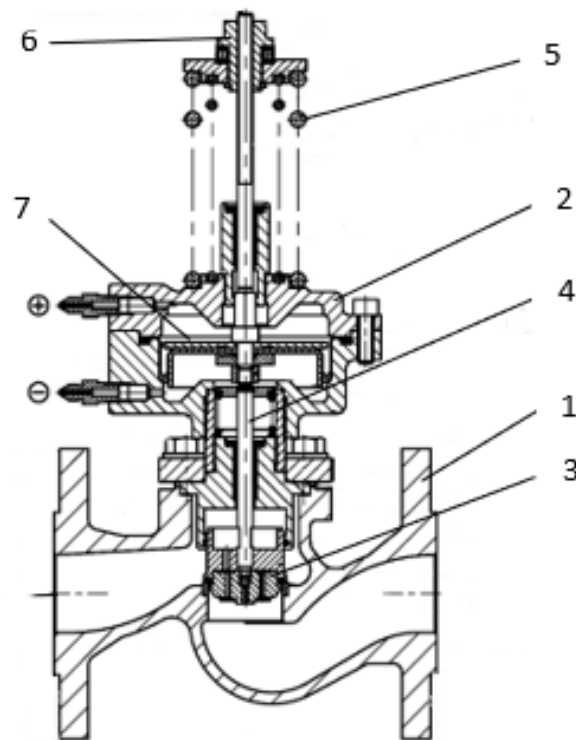
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1. PRODUCT DESCRIPTION

Type 10



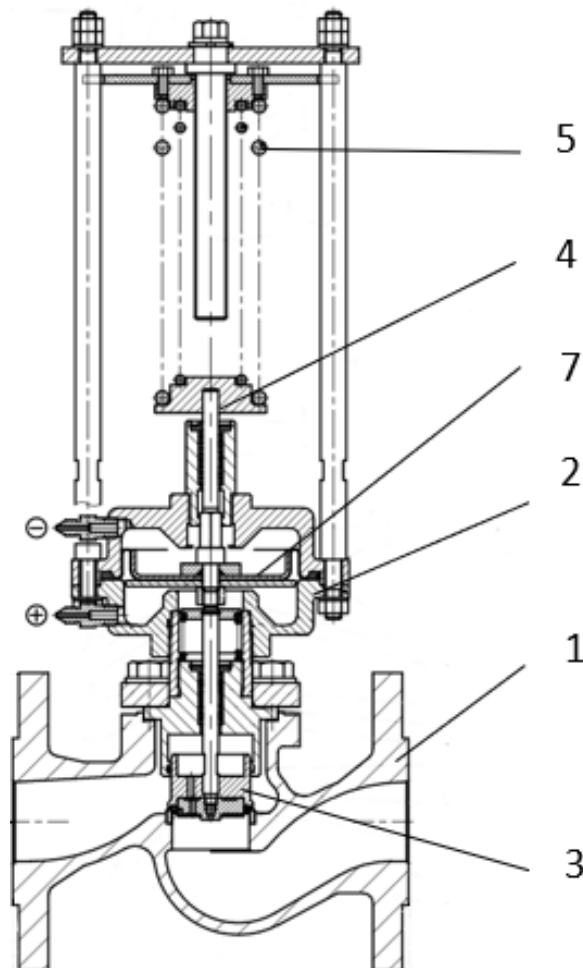
Drawing no. 1

The materials from which the valve is made are given in the table no. 1.

Table no. 1

	Material	A	
	type	10	
1	Body	EN-GJL-250	JL 1040
2	Membrane casing	EN-GJL-250	JL 1040
3	Disc	X20Cr13	1.4021
4	Stem	X20Cr13	1.4021
5	Adjustment spring	60SI7	
6	Adjustment screw	1.0503	
7	Membrane	EPDM	
Max. temperature		150°C	

Type 20



Drawing no. 2

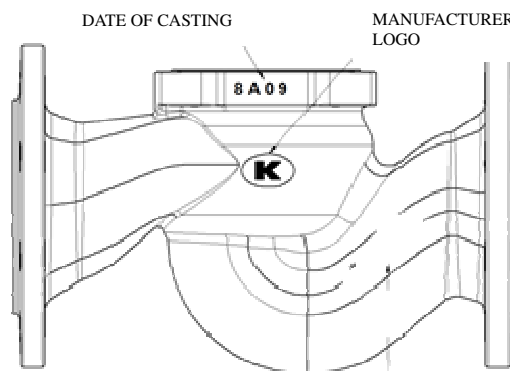
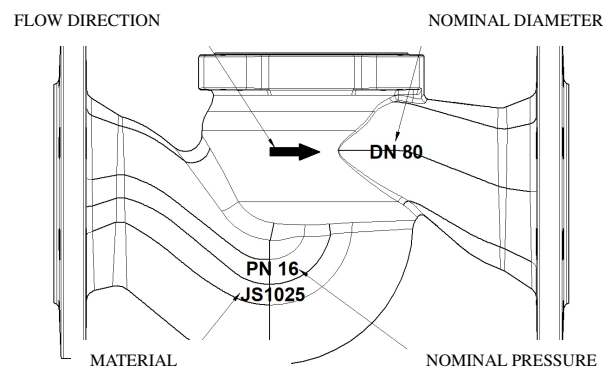
The materials from which the valve is made are given in the table no. 2.

Table no. 2

	Material	A	
	type	20	
1	Body	EN-GJL-250	JL 1040
2	Membrane casing	EN-GJL-250	JL 1040
3	Disc	X20Cr13	1.4021
4	Stem	X20Cr13	1.4021
5	Adjustment spring	60Si7	
6	Adjustment screw	1.0503	
7	Membrane	EPDM	
Max. temperature		150°C	

Valves manufactured by ZETKAMA, including pressure regulators, 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,



2. REQUIREMENTS FOR MAINTENANCE STAFF

Staff assigned to assembly, operating and maintenance should be qualified to perform this work.

During the operation of regulators, hot parts, such as parts of the body or cover, can cause burns. The user should, if necessary, place insulating covers and warning labels.

3. TRANSPORT AND STORAGE

Transport and storage should be carried out at temperatures from -20o to 65oC, and the valves must be protected against external forces and damage to the paint coat. The paint coating is designed to protect the fittings 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.



It is unacceptable to attach lifting devices to the springs or holes in the flanges.

4. FUNCTION

Direct-acting regulators use the energy of the flowing medium to operate. The principle of operation is to balance the elastic deformation force of the spring and the force caused by the pressure difference in the membrane casing chambers.

A typical application of regulators is to maintain a certain pressure difference between the supply and return pipelines of the heat carrier in heat supply systems. As a reducer, the pressure regulators are used to maintain the set pressure drop behind the valve by changing the liquid flow rate. Adjustment takes place only when the flow rate of the working medium is present. After the flow has ceased, the regulator closes (type 10) or opens (type 20).

5. APPLICATION

- group 2 liquids and gases
- cold and hot industrial water
- ethylene glycol
- pro-oxygen glycol
- neutral factors
- heating

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

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

Differential pressure controller Fig. 226

Acc to EN 1092-2		Temperature [° C]	
Material	PN	-10 to 120	150
EN-GJL250	16	16 bar	14,4 bar

Protection against exceeding the permissible pressure and temperature limits:

Where, under reasonably foreseeable conditions, the allowable limits would be exceeded, the pressure equipment must be fitted with appropriate safety devices or it must be possible to attach them, unless the equipment is to be protected by other safety devices within the assembly.

The operating pressures and the corresponding temperatures listed in the table are of non-shock character. Sudden pressure spikes are not allowed.



The installation designer is responsible for the correct selection of the fittings to the working conditions.

6. INSTALLATION

The following rules must be observed during installation:

- before installation, determine whether the valves are not damaged during shipment or storage, and make sure that the used valves are suitable for working conditions and media in the given plant,
- remove plugs if there are any.
- check that the inside of the valve 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 expansion joints to reduce the influence of thermal expansion of pipelines,



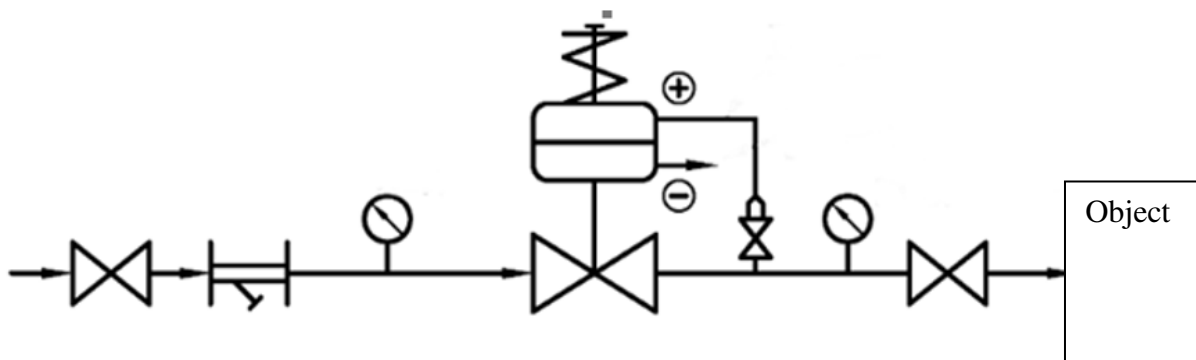
Install the valve in the way that the direction of flow was the same as indicated by an arrow on the body.

- correct operation of the valve requires the appropriate length of straight sections: 5 x DN before and 2 x DN after the valve, 10 x DN before, if there is a pump
- protect plastic parts and valve scale when painting the pipeline
- valves can be mounted on a horizontal section of the pipeline in any position up to $T_{max.90^{\circ}C}$. Above this temperature, the valves should be mounted with the diaphragm casing downwards.
- before starting the installation, rinse the pipeline through with the valve fully open
- installing a strainer before the valve increases the certainty of its proper functioning and is absolutely required.
- connect the impulse supply tube with the tip marked "+" and leave the tip marked with "-" open.
- perform the valve test using cold water

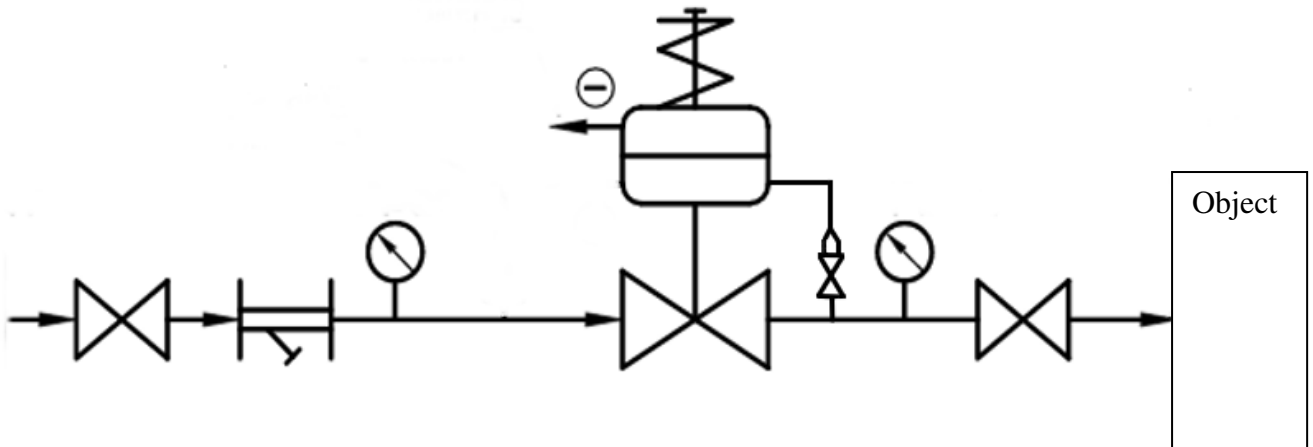


It is not allowed to change the connection of impulse tubes.

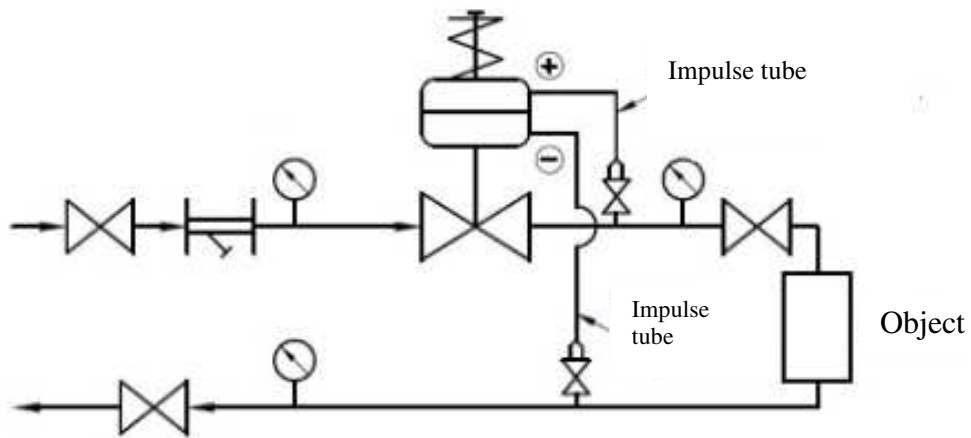
Connection diagram of the differential pressure controller after installation on the supply pipe for type 10.



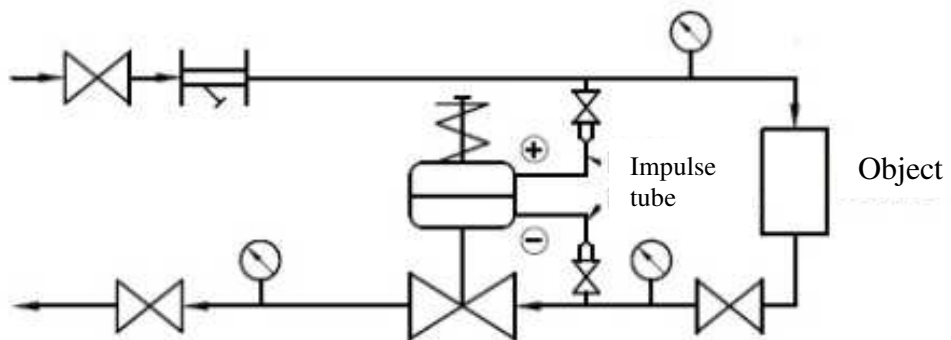
Connection diagram the regulator as a pressure reducer for type 20.



Connection diagram of the differential pressure controller after installation on the supply pipe for type 10.



Connection diagram of the differential pressure controller after installation on the return pipe for type 10.



7. ADJUSTMENT

1. Mount the spring or springs to the required range of operation.
2. Using the gauges, set the required pressure via the adjusting nut.



Do not tighten the nut to the end of the thread. Leave a minimum of 3 mm of thread.

3. If the system pressure varies, reduce the fluctuation by throttling the supply pressure to the membrane casing with a valve mounted on the impulse tube.
If the pressure variation does not decrease, change the needle valve of the impulse tube to another position; the valve should be closed completely and then opened for 1/3 - 1/2 turn.



Operation with fully closed needle valve is not allowed

4. To close the controller, close the shut-off valve and release the pressure on the "+" impulse tube.



To ensure safe operation, each valve and controller should be regularly inspected.

It is not recommended to adjust the regulator close to the extreme values of the setting ranges due to the increase in the adjustment error. When adjusting the regulator near the lower limit of the setting range, one should take into account the errors of the manometers used for regulation.

8. MAINTENANCE AND REPAIR

The fig. 226 pressure regulator do not require maintenance provided they are used as intended.



Before performing any service operations, make sure that the flow of medium to the pipeline has been shut off, that the pressure has been lowered to ambient pressure, that the working medium has been drained, and the installation has cooled down.

- 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 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,
- 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
Medium leaking from the "-" tip	Damaged membrane	Replace the membrane
	Worn or damaged stem seal	Replace the seal
	Damaged membrane seal	Replace the seal
The valve does not maintain the set parameters	Valve incorrectly set	Adjust the settings
	There is a foreign object between the coils of the spring	Check, remove
	Contamination of the interior of the valve	Clean the interior
	Damaged membrane	Replace the membrane
	Damaged stem seal	Replace the seal
	The stabilizing valve on the impulse tube is closed	Adjust the opening of the valve
	Polluted impulse tube	Clean
Leakage on the upper stem	Damaged or worn seal	Replace the O-rings and if necessary - the stem
Leakage on the membrane casing	The screws that the casing is screwed on are too tight.	Tighten the screws
	Damaged membrane	Replace membrane
A leaky connection of impulse tubes	The ends of the tubes are tightened with too little torque	Tighten
	Damaged impulse tubes or connection terminals	Replace
Leakage between the body and the cover	Incorrect tightening torque	Adjust
	Damaged flat gasket	Replace
The pressure in the installation varies	Incorrectly selected valve	Check the correctness of the valve selection.
Difficulties with changing the reducer's setting	Contamination of the thread of the cap or adjusting sleeve	Clean the thread, or replace the damaged elements

10. 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.

11. GUARANTEE CONDITIONS

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.

Correspondence address:

ZETKAMA Sp. z o.o.
ul. 3 Maja12
57-410 Ścinawka Średnia

T +48 74 86 52 111

F +48 74 86 52 101

www.zetkama.com