ELEPHANT

Manufacturer of shut-off and control valves

TECHNICAL DATA SHEET

Diaphragm pressure regulator “after itself” with pilot control ELEPHANT PVA1-1313RR-F DN50-200 16 bar cast iron, flanged

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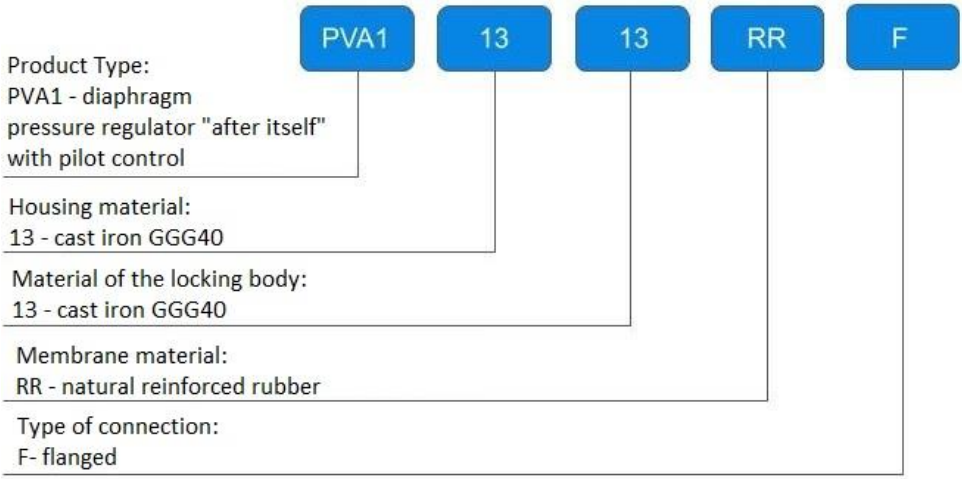
1. GENERAL PRODUCT INFORMATION

1.1. Product name: Diaphragm pressure regulator “after itself” with pilot control ELEPHANT PVA1-1313RR-F DN50-200 16 bar cast iron, flanged.
1.2. Purpose. Diaphragm pressure regulator "after itself" with pilot control (hereinafter - MPPP) is designed to maintain constant, preset pressure at the outlet ("after itself"), regardless of pressure and flow fluctuations at the inlet. The MPPP operates automatically from the pressure in the pipeline, without external energy sources.
1.3. Principle of operation. The value of the output pressure is sensed by the energy of the working medium supplied to a small control valve hydraulically connected to the pipeline, called a pilot. When the pressure in the pipeline rises above the set level, the fluid pressure overcomes the resistance of the spring in the pilot, the opening (port) connecting the pulse tube of the regulator inlet and the control chamber of the valve opens, the control chamber is filled, and the diaphragm in the valve closes the main passage section, resulting in a decrease in the pressure at the regulator outlet. As the pressure in the pipeline downstream of the regulator decreases, the port in the pilot closes, the inlet pressure forces fluid out of the pilot chamber, and the diaphragm in the valve opens, resulting in an increase in pressure to the set level.

** the image may differ from the original*

1.4. Deciphering of the designation:



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2. BASIC TECHNICAL DATA AND CHARACTERISTICS

Table 1: Technical parameters.

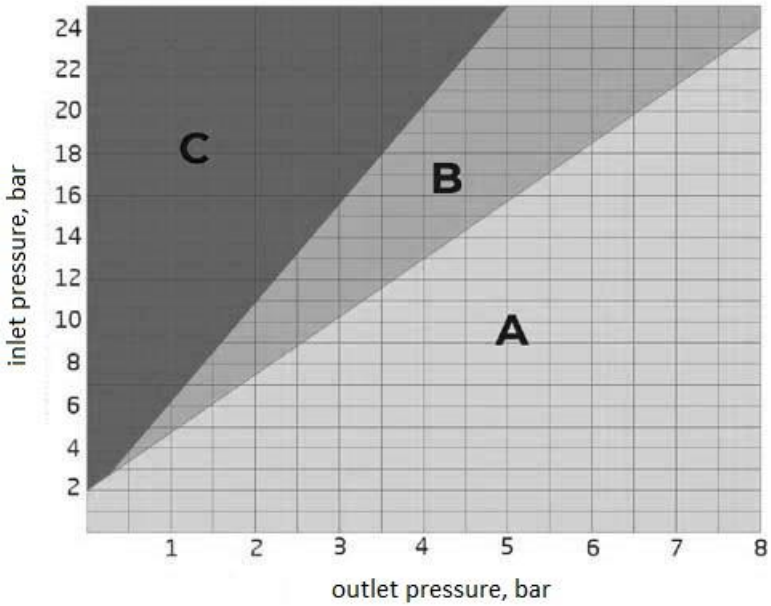
Nominal diameter DN, mm	50 ÷ 200
Nominal pressure PN, bar	16
Setting pressure, bar	0,5 ÷ 10
Working medium temperature t, ºC	-10 to 80
Working medium	cold and hot water, steam, air
Working medium flow direction	arrow on the valve body
Tightness class	A
Pipeline connection	flanged
Mounting position	horizontal / vertical
Body material	cast iron GGG40
Areas of application	heating, water and heat supply, ventilation and air conditioning systems
Average service life, years	10
Completeness	pilot valve; impulse tubes

Table 2. Hydraulic characteristics.

	Conditional flow capacity Kv, m3/h	Maximum flow rate, m3/h
DN50	39	50
DN65	66	75
DN80	100	115
DN100	156	200
DN150	350	350
DN200	622	622

***** values are given for water with a density of 1000 kg/m3 at a pressure drop of 1 bar.

Cavitation chart



A – recommended operating range
B - initial cavitation
C - cavitation noise

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3. BASIC MATERIALS

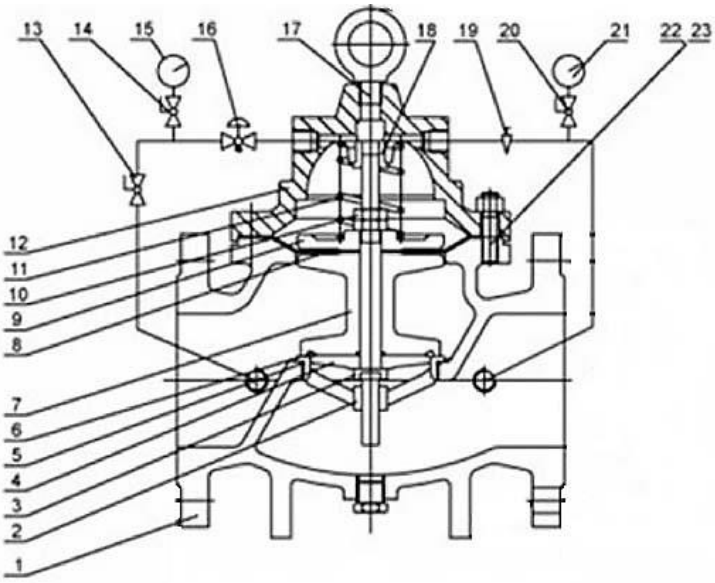

Table 3: Specification of materials.

№	Part Name	Material
1	Body	cast iron GGG40
2	Seat	stainless steel 304
3	Stem	stainless steel 304
4	Sealing washer	cast iron GGG40
5	O-ring seal	NBR
6	O-ring seal	NBR
7	Disc	cast iron GGG40
8	Diaphragm	natural rubber reinforced
9	Diaphragm washer	cast iron GGG40
10	Screw	bronze
11	Spring	stainless steel 304
12	Cap	cast iron GGG40

Continuation of Table 3

№	Part name	Material
13	Ball valve	(not included)
14	Ball valve	(not included)
15	Pressure gauge	(not included)
16	Pilot valve	bronze
17	Hanger ring	steel
18	Pilot cartridge	bronze
19	Needle valve	(not included)
20	Ball valve	(not included)
21	Pressure gauge	(not included)
22, 23	Pin or bolt	steel

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4. WEIGHT AND DIMENSIONAL PARAMETERS

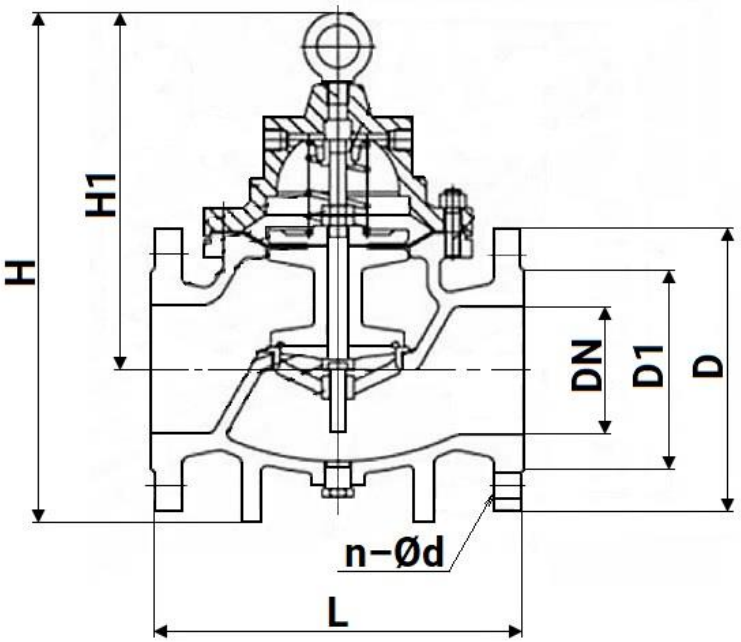

Table 4: Dimensional and weight characteristics.

DN	L, mm	H, mm	H1, mm	D, mm	D1, mm	n–Ød, mm	Weight, kg
50	190	265	200	165	125	4–Ø18	8,5
65	210	310	205	185	145	4–Ø18	10,0
80	240	350	245	200	165	8–Ø18	13,0
100	272	460	305	220	180	8–Ø18	18,0
150	325	570	415	285	240	8–Ø22	31,0
200	380	840	510	340	295	12–Ø22	53,0

5. PILOT WIRING DIAGRAM

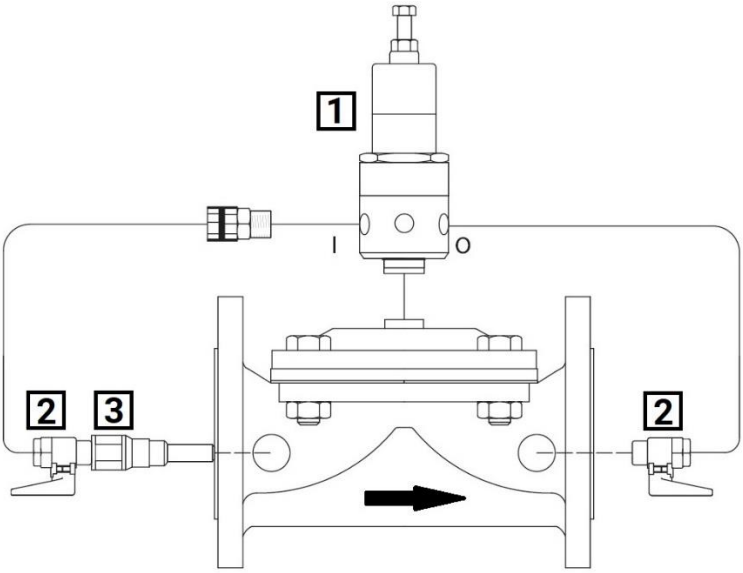

Table 5: Elements of pilot strapping.

№	Product Name
1	Pilot
2	Ball valve (not included)
3	Filter (not included)

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6. УКАЗАНИЯ ПО МОНТАЖУ

6.1. Safety during installation and operation of the MRPP must be observed in accordance with the company's established procedures.
6.2. The MRPP may be installed, operated and serviced by personnel who have studied the MRPP design, safety regulations and the requirements of this data sheet.
6.3. Before installation MRPP are subjected to inspection and testing, it is necessary to make sure that there are no foreign objects in the internal cavities of MRPP.
6.4. In the place of installation MRPP should not experience loads from the pipeline (bending, compression, tension, torsion, distortion, vibrations, uneven tightening of fasteners, etc.).
6.5. The MRPP installation location should provide free access to it for installation, dismantling and maintenance works.
6.6. The MRPP must be positioned on the pipeline so that the direction of the arrow on the body coincides with the direction of the medium. MRPP can be installed both on a horizontal section of the pipeline (with the cover upwards) and on a vertical section.
6.7. To prevent foreign matter from entering the MRPP, it is recommended to install a filter upstream of the MRPP.
6.8. The process medium must not contain air and therefore air vents must be provided upstream and downstream of the main valve. This will avoid the formation of air pockets during operation and will also allow air to escape when the system is filled and drain safely without damaging the piping due to vacuum in the pipeline.
6.9. When installing the MRPP on a pipeline it is necessary to:

- provide conditions for its inspection, maintenance and repair works;
- use its surfaces intended for moving MRPP;
- thoroughly flush and blow out the pipeline if sand, cement, welding spatter and other foreign bodies are found in it;
- on all flange connections bolts should be tightened gradually in alternating crosswise order using a torque wrench when the valve is open;
- connecting flanges of the pipeline.

6.10. Install the MRPP in the following sequence:

- install and fasten the regulator between the mating flanges of the pipeline in accordance with the installation drawing of the facility. Ensure that the direction of the pointer arrow on the body coincides with the direction of the working medium flow;
- install gaskets between the flanges and fasten the flanges with fasteners. The gaskets should be installed without misalignment and correspond to the DN of the product.

6.11. To avoid the formation of water hammer and pressure surges it is necessary to open the shut-off valves at the valve inlet with smooth and slow movements, without jerks.

6.12. To start the MRPP it is necessary to smoothly open the stop valves upstream and downstream of the valve and fill the pipelines and internal cavities of the valve with medium up to the operating pressure.

6.13. To configure MRPP, proceed as follows:

- make sure that the shut-off valves upstream and downstream of the valve are fully open;
- tighten the pilot spring using the adjusting bolt;
- loosen the nut on the valve cover until the air is completely displaced from the chamber and screw it back in;
- slowly turn the adjusting bolt to loosen the pilot spring tension until the valve setting pressure is reached;
- tighten the pilot locking nut.

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7. MAINTENANCE INSTRUCTIONS

7.1. After start-up and setting the required value of the regulated parameter, MRPP does not require further maintenance during its operation, except for periodic external inspection at the time set by the schedule, depending on the system operation mode, but at least once every six months.
7.2. During the inspection the correctness of adjustment, presence or absence of leaks of the working medium, external mechanical damage and foreign objects interfering with the MRPP operation are checked.

8. REPAIR INSTRUCTIONS

8.1. Routine repairs are carried out to ensure or restore MRPP functionality and consist of replacing the diaphragm, seals and gaskets. Routine repairs are carried out using a non-disassembled method that preserves the identity of the component parts to a specific instance of the MRPP.
8.2. When disassembling and assembling MRPP, it is necessary to protect sealing and guiding surfaces of assembly units and parts, threads from mechanical damage.
8.3. Personnel performing routine repairs must have the qualification of a fitter of repair or mechanical assembly work not lower than the third grade.
8.4. If a fault is detected, MRPP for current repair must be removed from the pipeline. It is allowed to replace failed components without removing the MRPP from the pipeline, if it is possible to take the MRPP out of operation for the period of repair (pressure shutdown).

9. SECURITY MEASURES

9.1. Safety requirements for installation and operation of the MRPP in accordance with the company's established procedure.
9.2. The MRPP may only be operated in the presence of operating documentation and safety instructions approved by the head of the consumer company and taking into account the specifics of the MRPP application in a particular technological process.
9.3. Operating personnel may only be authorized to operate the MRPP after receiving the relevant safety instructions.
9.4. The pressure and temperature of the process medium of the facility where the MRPP is installed and the spring of the operating regulator may pose a danger to the life and health of the operating personnel.
9.5. It is strictly forbidden to carry out any work when the MRPP is under pressure from the process medium.
9.6. In order to avoid injuries, it is not allowed to perform any work in the area of the spring of the operating MRPP.

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10. POSSIBLE MALFUNCTIONS AND REMEDIES

Table 6: Possible faults and remedies.

№	Fault	Possible cause	Remedy
1	MRPP does not open.	Shut-off valves installed upstream and downstream of the MRPP are closed.	Open the shut-off valves.
		Ball valves in the MRPP piping are closed (if any).	Open the ball valves in the piping.
		Excessive compression of the pilot valve spring.	Using the pilot valve adjusting bolt, adjust the pressure as described in section 6.13.
2	MRPP does not close.	The ball valves in the MRPP piping are closed (if any).	Open the ball valves or adjust the needle valve.
		Pilot spring is not compressed.	Use the pilot valve adjusting bolt to adjust the pressure as described in section 6.13.
		*Damage of the MRPP diaphragm.	Replace the diaphragm.
3	Unstable adjustment.	Air is present in the MRPP control chamber.	Remove air. To do this, open the drain hole on the MRPP cover.

* If there are ball valves in the MRPP piping, close the valves in the pilot piping and open the drain hole on the MRPP cover. If water continues to leak, the diaphragm is damaged.

11. УСЛОВИЯ ТРАНСПОРТИРОВКИ И ХРАНЕНИЯ

11.1. MRPP can be transported by any type of transport in accordance with the current rules of cargo transportation and mandatory compliance with the following requirements:

- transportation conditions should correspond to storage conditions in accordance with the procedure established at the enterprise по ГОСТ 5761-2005;
- MRPP must be packed and secured inside the crate;
- during loading and unloading, the packing crate must not be thrown or tilted.

11.2. MRPP should be stored in the manufacturer's packaging in closed warehouses at temperatures from 5 to 50°C and relative humidity up to 80%, ensuring safety of the packaging and serviceability of the valves during the warranty period. Packing variant in accordance with the procedure established at the enterprise.

11.3. MRPPs in long-term storage are subject to periodic inspection at least once a year. In case of violation of preservation, perform preservation again. Apply preservation lubricant on degreased clean and dry surface of parts. Degreasing should be performed with a clean rag soaked in gasoline.

11.4 To put into operation the MRPP, which has been completely preserved for long-term storage, it must be deconserved by removing the preservation lubricant with a rag and then degreasing it with gasoline in accordance with the procedure established at the enterprise.

12. UTILIZATION

12.1. The product is disposed of in accordance with the procedure established at the enterprise (remelting, burial, resale).

12.2. Before sending the valve for disposal, the residual working medium shall be removed from the valve. Methods of removal of the working medium and decontamination of the valve must be approved in accordance with the established procedure at the company operating the valve.

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13. WARRANTY OBLIGATIONS

13.1. Warranty period - 12 months from the date of commissioning, but not more than 18 months from the date of sale.
13.2. The warranty applies to equipment installed and used in accordance with the installation instructions and product specifications described in this data sheet.
13.3. The manufacturer guarantees compliance of the product with safety requirements, provided that the consumer complies with the rules of transport, storage, installation and operation.
13.4. The warranty covers all defects caused by the fault of the manufacturer.
13.5. The warranty does not apply:

- parts and materials of the product subject to wear and tear;
- for cases of damage caused by:
    - modifications to the original design of the product;
    - violation of general installation recommendations;
    - faults caused by improper maintenance and storage; improper operation and use of the equipment.

14. WARRANTY TERMS

14.1. Claims to the quality of the goods may be made during the warranty period.
14.2. Defective products are repaired or exchanged for new ones free of charge during the warranty period. ELEPHANT decides whether to replace or repair the product. The replaced product or its parts resulting from the repair shall become the property of 'ELEPHANT'.
14.3. Costs related to dismantling, installation and transport of the defective product during the warranty period shall not be reimbursed to the Buyer.
14.4. If the claim is unfounded, the Buyer shall pay the costs of diagnostics and expertise of the product.
14.5. Products are accepted for warranty repair (as well as for return) fully assembled.

WARRANTY CARD №____

№	Product Name	Packs

Name and address of the trading organisation

_____

Date of sale _____ Seller's signature _____

Stamp or seal of the trading organisation Acceptance stamp

I agree with the terms and conditions of the warranty:
Buyer _____ (signature)

Warranty period - 12 months from the date of commissioning, but not more than 18 months from the date of sale.

For warranty repairs, complaints and product quality claims, please contact ELEPHANT at: Carrer d'Aragó,264,3-1,08007 Barcelona, Spain E-mail address: sales@valveelephant.com.

When making a complaint about the quality of goods, the buyer shall present the following documents:

1. A free-form application, which shall specify:
   - name of the organisation or full name of the buyer, actual address, contact telephone numbers;
   - name and address of the organisation that carried out the installation;
   - basic parameters of the system in which the product was used;
   - a brief description of the defect.
2. Document confirming the purchase of the product (delivery note, receipt)..
3. Act of hydraulic test of the system in which the product was installed.
4. This completed warranty card.

A note on the return or exchange of goods _____

Date: «___»_____202__r. Caption _____

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