ELEPHANT

Manufacturer of shut-off and control valves

TECHNICAL DATA SHEET

Two-way shut-off and regulating valve ELEPHANT VSR1-21MP-LED-F DN15-100 40 bar steel, flanged, with electric actuator

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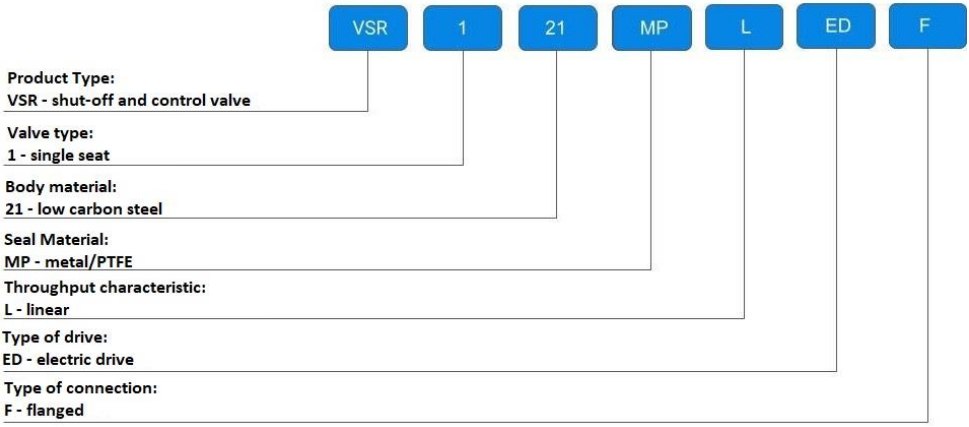
Carrer d'Aragó,264,3-1,08007 Barcelona, Spain

1. GENERAL PRODUCT INFORMATION

1.1. Product name: Two-way shut-off and regulating valve ELEPHANT VSR1-21MP-LED-F DN15-100 40 bar steel, flanged, with electric actuator.
1.2 Purpose. The regulating valve is designed for hermetic shut-off or change of working medium flow rate in the pipeline.
1.3. Operating principle. The valve is controlled by an electric actuator (electric actuator (EIM)). The force developed by the actuator is transmitted through the stem to the plug, which, moving up or down, changes the cross-sectional area in the gate and regulates the flow rate of the working medium.

** the image may differ from the original*

1.4. Deciphering of the designation:



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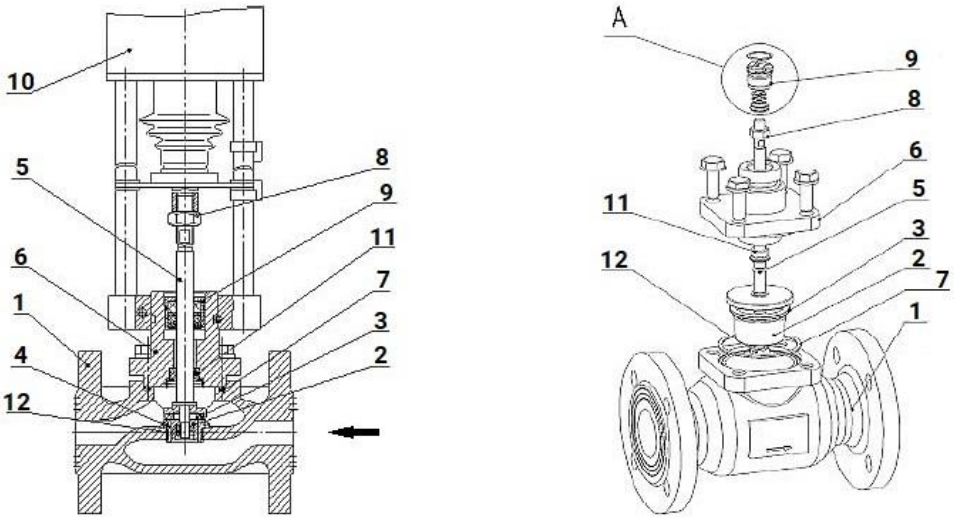
2. BASIC TECHNICAL DATA AND CHARACTERISTICS

Table 1

Nominal diameter DN, mm	15 - 100
Nominal pressure PN, bar	40
Working medium temperature t, ºC	5 to 150
Working medium	non-flammable, explosion-proof, non-toxic, chemically neutral to materials of parts liquids and gases, water, aqueous solutions of ethylene glycol and propylene glycol with concentration up to 60%
Direction of medium flow	valve body arrow
Ambient temperature, ºC	5 to 50
Relative humidity of the circling environment, %	30 ÷ 80
Connection to pipeline	flanged
Actuator voltage, V	220V / 24V
Body material	WBC steel
Sealing material in the gate	metal+PTFE
Cover material	steel
Stem material	steel
Stem seal	rubber-fluoroplastic
Tightness class	A
Areas of application	heating, water supply and ventilation systems
Average service life, years	10

3. BASIC DETAILS AND DESCRIPTION OF OPERATION



Non-pressurized valve DN15 - 40. Version A.

Table 2

№	Part name
1	Body
2	Plunger
3	Gasket
4	Seat
5	Stem
6	Cover
7	Cover seal
8	Locking nut
9	Stem seal nut
10	EMI
11	Guide sleeve
12	Nut

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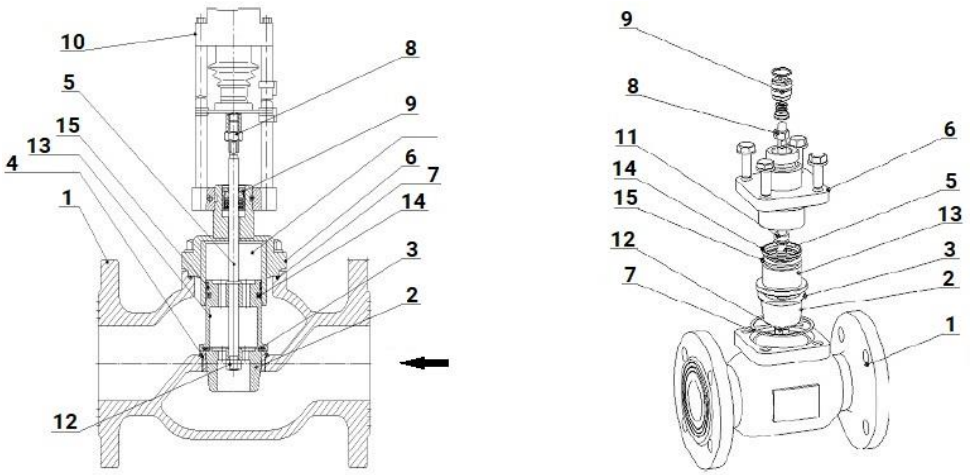
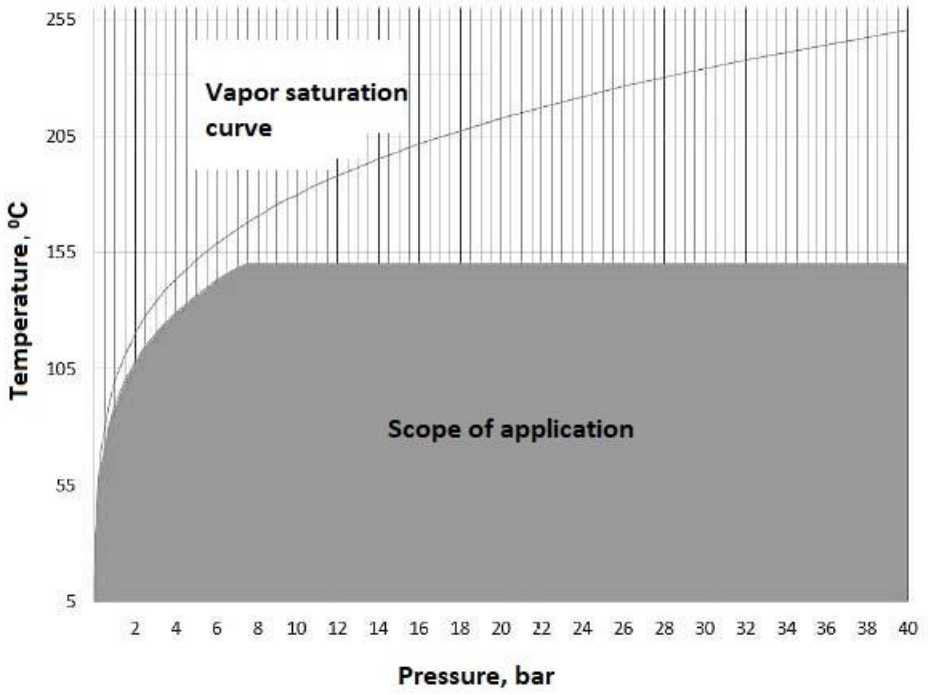


Pressure-relief valve DN50 - 100. Version B.

Table 3

№	Part name
1	Body
2	Plunger
3	Gasket
4	Seat
5	Stem
6	Cover
7	Cover seal
8	Locking nut
9	Stem seal nut
10	EMI
11	Guide sleeve
12	Nut
13	Unloading piston
14	Chamber seal
15	Guide ring
16	Unloading chamber

3.1. The valve is controlled by an electric actuator 10. The force developed by the actuator is transmitted through the stem 5 to the plug 2, which, moving up or down, changes the cross-sectional area in the gate and regulates the flow rate of the working medium. The force required for movement is considerably reduced due to the pressure relief of the stem provided by the pressure relief piston 13.
3.2 The tightness of the valve against the external environment is ensured by gaskets and stem seal 9.



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4. WEIGHT AND DIMENSIONAL PARAMETERS

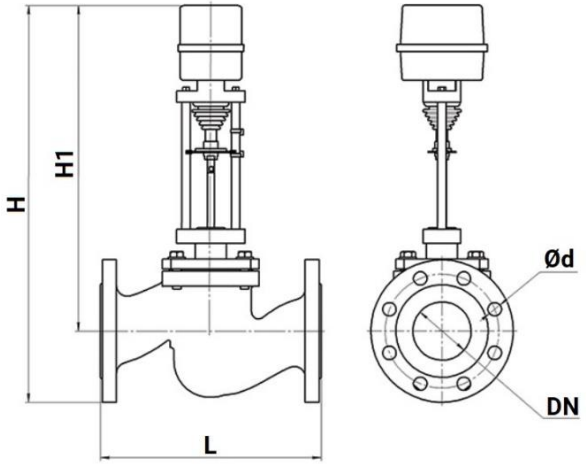

Table 4

Parameter	EIM model	DN, mm								
		15	20	25	32	40	50	65	80	100
H, mm (not more)	DAV-1500	390	400	410	432	452	465	-	-	-
	DAV-2500	-	-	488	510	530	543	573	585	633
	TW-500	395	400	415	435	455	465	500	510	-
H1, mm (not more)	DAV-1500	342	347	352	362	377	382	-	-	-
	DAV-2500	-	-	430	440	455	460	480	485	515
	TW-500	345	350	355	365	380	385	405	415	-
L, mm	-	130	150	160	180	200	230	290	310	350

Table 5

Parameter	EIM model	DN, mm								
		15	20	25	32	40	50	65	80	100
Ød, mm	DAV-1500	14	14	14	18	18	18	18	18	22
	DAV-2500									
	TW-500									
Number of holes	DAV-1500	4	4	4	4	4	4	8	8	8
	DAV-2500									
	TW-500									
Weight, kg	DAV-1500	5,9	6,3	7,2	8,6	10,6	13,0	-	-	-
	DAV-2500	-	-	9,8	11,2	13,2	15,6	26,3	30,0	45,2
	TW-500	5,3	5,7	6,6	8,0	10,0	12,4	23,1	26,8	-

5. TECHNICAL PARAMETERS

Table 6. Maximum differential pressures at which full closure of the IMU is guaranteed PWM closure.

DN, mm		15	20	25	32	40	50	65	80	100
Construction		unloaded					unloaded			
Stroke, mm		10		20			15	25		40
Differential		ΔP, bar (cannot exceed pressure)								
EIM	DAV-1500	16	12	10	7	5	11	-	-	-
	DAV-2500	30	26	25	12	11	25	12	10	7
	TW-500	16	12	10	7	5	11	6	3	-

Table 7

DN, mm			15	20	25	32	40	50	65	80	100
Stroke, mm			10		20			15	25		40
Cavitation onset coefficient, Z			0,6			0,55		0,5		0,45	0,4
Control range			50:1								
Conditional throughput capacity, Kvy, m3/h											
Conditional throughput capacity, Kvy, m3/h		0,16	●								
		0,25	●								
		0,4	●								
		0,63	●								
		1,0	●								
		1,6	●	●	●						
		2,5	●	●	●						
		3,2	●								
		4,0	●	●	●						
		6,3		●	●	●					
		10		●	●	●	●	●			
		12,5									
		16				●	●	●	●		
		25					●	●	●		
		32						●	●		
		40						●	●	●	
		50									
		63							●	●	●
		80								●	●
		100								●	●
		125									●
		160									●

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Table 8

DN, mm	15	20	25	32	40	50	65	80	100
Stroke, mm	10		20			15	25		40
Actuator model	Closing time, s (max.)								
DAV-1500 (220V/24V)	43		87			65	-		-
DAV-2500 (220V/24V)	60		120			90	130		240
TW-500 (220V/24V)	10/20		20/40			15/30	25/50		40/80

7. INSTALLATION AND OPERATING INSTRUCTIONS

7.1. All work on installation, maintenance and repair of control valves must be carried out by personnel with sufficient qualifications and authorization for this type of work, in accordance with the procedure established by the company.
7.2 To ensure safe operation, it is strictly prohibited to:

- - operate the valve in the absence of operating documentation;
- - perform installation and dismantling of valves, maintenance work when the working medium is pressurized in the pipeline and the actuator is connected to the power supply;
- - use the valve for a working medium other than that specified in the operating documentation;
- - use valves at pressures and temperatures outside the limits specified in the operating documentation;
- - use valves with the direction of the process medium not in accordance with the arrow on the body;
- - use valves as a support on the pipeline;
- - place individual parts and tools on the valve;
- - use extensions to tighten fasteners;
- - close the valve during pressure testing of the pipeline;
- - operate the valve without grounding;
- - subject pressurized valves to shock loads;
- - dismantle and repair valves (or actuator), tighten and loosen any fasteners when pressurized by the process medium, and disassemble valves without decontaminating surfaces that have come into contact with corrosive media;
- - replace stem seals, tighten flange connections when the system is pressurized and use larger or smaller O-rings and cross-sections.

7.3. The valve may only be operated in the presence of a safety manual, approved by the head of the customer's company and taking into account the specifics of the valve application.
7.4 The installation position of the valve in relation to the pipeline is arbitrary (with downward position, prevent condensate from getting on the actuator. When installing on vertical sections and with a slope of more than 30° , on a horizontal section, place supports under the actuator).
7.5 The flanges and the outer surface of the valve body should be used for hanging and other work during installation. It is forbidden to use electric actuator for this purpose.
7.6 It is recommended to install a filter before the valve to protect its parts from damage caused by foreign solid particles. In the presence of mechanical impurities with particle sizes greater than 70 microns in the working medium, the installation of a filter upstream of the valve is mandatory.

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7.7 When installing flanges on the pipeline it is necessary that the pipeline flanges are installed without misalignment. It is not allowed to eliminate misalignment by tightening, leading to deformation of the flanges of the valve body.
7.8 It is recommended to install the valve on pipelines with straight sections before and after the valve at least 5 nominal valve bore.
7.9 Before installing the valve check the following:

- - condition of packing, completeness of delivery, availability of operating documentation;
- - condition of internal cavities of the valve and pipeline, accessible for visual inspection. If foreign objects are found in the valve or pipeline, the valve should be flushed and purged;
- - condition of fastening connections.

7.10. **Attention!** The valve must be installed in such a way that the arrow on the body coincides with the direction of flow of the medium.
7.11. Before starting up the system, immediately after installation, the valve should be opened and the system should be thoroughly flushed and purged.
7.12. Before handing over the system to the customer, it is necessary to check the tightness of gasket joints and stem seals according to the methodology of the company conducting the tests, as well as the operability of the valve according to paragraph 7.18 of this passport.
7.13. **Attention**! In order to avoid damage to the seals it is prohibited to carry out welding work on the pipeline with the installed valve.
7.14. During operation it is necessary to carry out periodic inspections (routine work) in the terms established by the schedule, depending on the mode of operation of the system, but at least once every 6 months.
7.15. During inspection it is necessary to check:

- - general condition of the valve;
- - condition of fasteners.

7.16. Work on the electric actuator must be carried out in accordance with the instructions for installation, adjustment and operation of the electric actuator.
7.17. During operation, the temperature at the valve installation site should be monitored to avoid overheating of the actuator.
7.18. Tightness tests of gasket joints and valve stem seals should be carried out by applying water pressure to the inlet pipe with the gate open and the outlet pipe plugged. Duration of holding at steady pressure: for valves with a nominal bore up to 50 mm inclusive - 1 min; for the rest - 2 min.
7.19. Performance tests should be carried out by five times actuating the valve with an electric actuator for the value of full stroke without supplying the medium in the valve. Moving moving parts should be smooth, without jerks and seizures.

8. VALVE ASSEMBLY AND DISASSEMBLY

8.1. When disassembling and reassembling the valve, be sure to:

- - follow the safety instructions;
- - Protect sealing, threaded and guiding surfaces against damage.

8.2. STEM SEAL REPLACEMENT

8.2.1. Disconnect power supply, disconnect electric conduit and grounding wire of the actuator.
8.2.2 Make sure that there is no pressure of the working medium in the pipeline.
8.2.3 Dismantle electric actuator 10.
8.2.4 Remove the lock nut 8 from the valve stem 5, unscrew the sealing nut 9 and carefully remove it from the valve stem 5.
8.2.5 Clean the hole in the valve cover and the valve stem 5 of dirt.
8.2.6 Carefully slide the new sealing nut assembly 9 onto stem 5 and screw it into the cover.
8.2.7. Further assembly of the valve should be performed in the reverse order to disassembly.

8.3. PLUG REPLACEMENT

8.3.1. Disconnect the power supply, make sure that there is no pressure of the working medium in the pipeline.
8.3.2 Remove the valve cover 6 from the valve body (together with the actuator 10).
8.3.3 Unscrew nut 12, holding stem 5 with a wrench in the upper part, remove plug 2 from stem 5.
8.3.4 Install the new plug on the stem and secure with nut 12.
8.3.5. Reassemble the valve in the reverse order of disassembly.
8.3.6 When reassembling the valve cover seal 8 should be replaced.

8.4. The possibility of contamination and foreign objects getting into the internal cavity of the valve during assembly must be excluded. Before assembly, all parts should be thoroughly cleaned of dirt and rinsed.
8.5 The assembled valve should be subjected to the following tests:

- - tightness of joints and stem seals;
- - shutter tightness.

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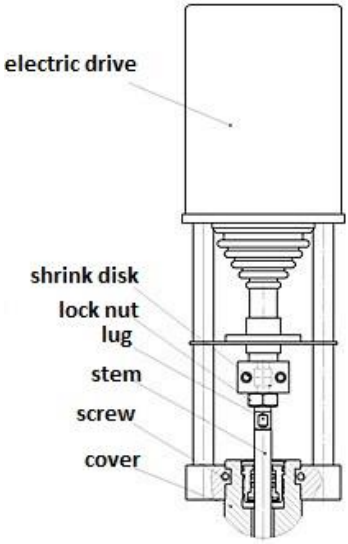
9. POSSIBLE MALFUNCTIONS AND REMEDIES

Table 8

№	Failure	Probable cause	Remedy method
1	No full stroke of the stem	1. The valve is out of adjustment on the stroke. 2. Foreign objects between plug and seat.	1. Adjust the stem stroke by adjusting the electric actuator. 2. Remove the valve cover and remove foreign objects.
2	Stem seal leaks	The stem seal 9 is worn out.	Replace stem seal nut 9.
3	Residual leakage of closed valve above the permissible value.	1. seal 12 in the discharge chamber is worn. 2. Incomplete closing of the valve due to foreign objects between plug and seat. 3. Damage to plug 3 or seat 4.	1. Replace the seal 12 in the discharge chamber. 2. Remove the cover and remove foreign objects. 3. Replace gasket 3 or seat 4.
4	It is difficult to move the stem.	Foreign objects entering the discharge chamber 15.	1. Disassemble the valve, rinse, clean off dirt and foreign matter, clean any possible scoring. Lubricate all moving parts not in contact with the medium, reassemble and adjust the valve. 2. Perform several “open-close” cycles to check the smooth operation (paragraph 7.18).
5	The temperature of the drive motor housing is above 65ºC.	The motor winding is damaged or the power supply circuit is defective.	Replace capacitors or motor.
6	Passage of medium through the connection point between the body and the cover.	1.The housing cover is not tightened sufficiently. 2.Cover seal 8 is damaged.	1.Replace the cover seal 8. 2.Tighten the cover mounting bolts.

10. ELECTRIC DRIVE TW500; DAV-1500/2500



10.1. Dismantling:

- - pull the stem to the center position;
- - disconnect the valve stem and actuator by loosening the shrink disk (without allowing the stem to rotate in the cover by holding the stem by the lugs);
- - then loosen the screws, then remove the actuator from the valve cover;
- - remove the stem locking adapter from the stem.

10.2. Reassemble in reverse order.

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11. TRANSPORTATION AND STORAGE CONDITIONS

11.1. The valves may be transported by any type of transport in accordance with the applicable cargo transportation regulations and in compliance with the following requirements:

- - transportation conditions in accordance with the procedure established at the enterprise;
- - the valve must be packed and secured inside the crate;
- - during loading and unloading it is not allowed to throw and roll the packing crate.

11.2. The valve should be stored at the place of operation in the manufacturer's packaging in closed storage rooms at temperatures from +1 to +50º C and relative humidity from 30 to 80%, ensuring the valve serviceability during the warranty period.

11.3 The valve in long-term storage shall be subjected to periodic inspection at least twice a year. In case of violation of preservation, perform preservation again. All unpainted surfaces (treated and untreated) should be covered with a thin layer of preservation oil. The preservation lubricant should be applied on degreased clean and dry surface of parts. Degreasing should be performed with a clean rag soaked in white spirit.

11.4 The through holes should be closed with plugs. Protection period without reconservation is 3 years.

11.4 To put into operation a valve fully preserved for long-term storage, it should be deconsecrated by removing the preservative grease with a rag followed by degreasing with gasoline in accordance with the procedure established at the company.

12. UTILIZATION

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

12.2 Before the valve is sent for utilization, the residues of the 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 by the company operating the valve

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12.2. Перед отправкой на утилизацию из арматуры удаляют остатки рабочей среды. Методики удаления рабочей среды и дезактивации арматуры должны быть утверждены в установленном порядке на предприятии, эксплуатирующем клапан.

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.

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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__yr. Caption _____