ELEPHANT

Manufacturer of shut-off and control valves

TECHNICAL DATA SHEET

Rotary pneumatic actuator
ELEPHANT PA-DA-105-1
double-acting with handwheel

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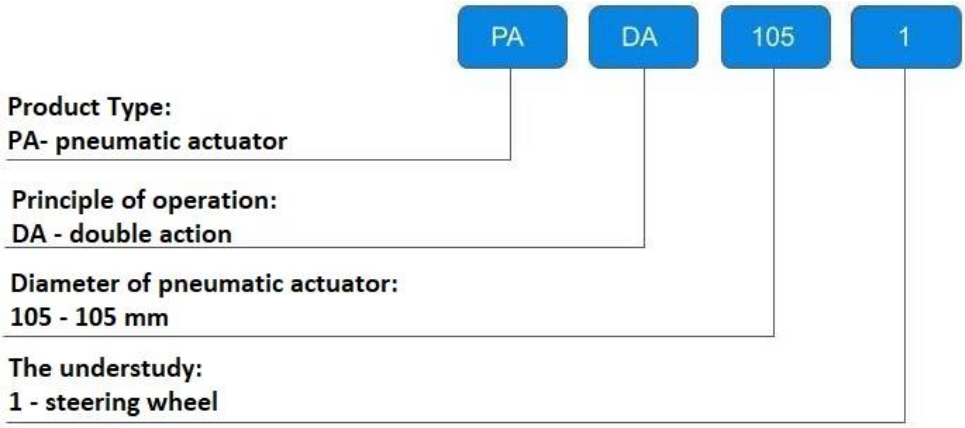
Carrer d'Aragó,264,3-1,08007 Barcelona, Spain

1. GENERAL PRODUCT INFORMATION

1.1. Product name: Pneumatic actuator ELEPHANT PA-DA-105-1 double-acting rotary actuator with hand wheel.
1.2 Purpose. The rotary pneumatic actuator is designed for automation of industrial valves control process.
1.3. Operating principle. The principle of operation of double-acting pneumatic actuator is based on the movement of the built-in piston due to compressed air, which enters the system from the compressor line prepared. Double action implies that opening and closing of the valve connected to the mechanism is carried out by alternating compressed air supply through one of the two connecting fittings. For easy and quick installation of a pneumatic valve, limit switch unit or positioner, all mounting holes in the actuator are made in accordance with NAMUR requirements.

1.5. Deciphering of the designation:



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2. BASIC TECHNICAL DATA AND CHARACTERISTICS

Table 1: Main parameters

Type of pneumatic actuator	double action
Control pressure, bar	2 ÷ 8
Control medium	prepared air not exceeding class 5
Operating temperature, ° C	-20 to +80
Visual position indicator	open / closed
Manual control	handwheel
Swivel angle, °	90 ± 5
Top connection standard	NAMUR
Air connection standard	NAMUR
Air supply connection thread	G 1/4″
ISO flange type	F07/F10
Stem square, mm	22x22
Weight, kg	9
Average life, closing/opening cycles	300 000

3. BASIC MATERIALS

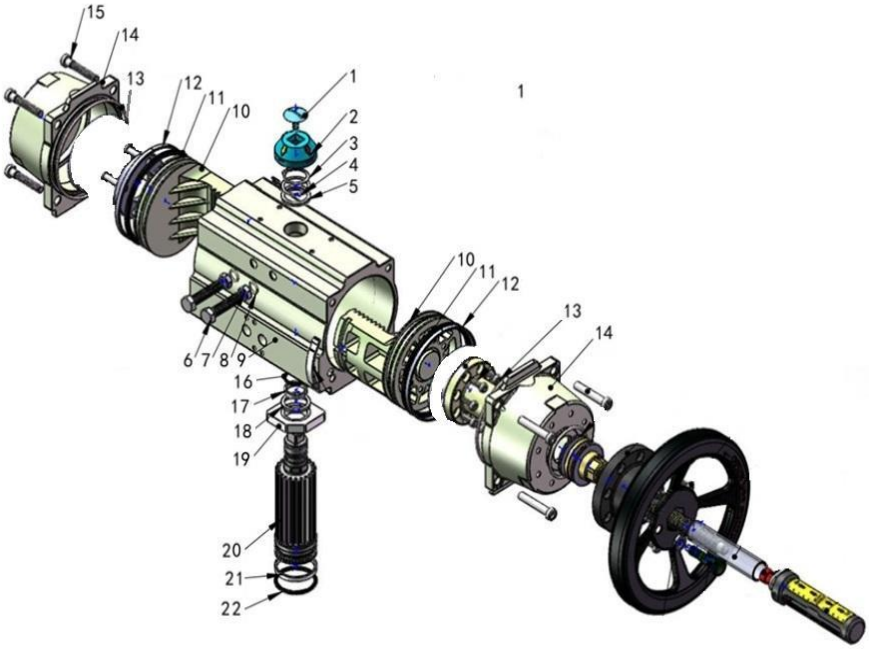

Figure 1 - Detail

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Table 2. Material specification

№	Наименование детали	Material
1	Indicator screw	ABS - plastic
2	Position indicator	ABS - plastic
3	Spring clip	stainless steel 304
4	Washer	stainless steel 304
5	External washer	engineering plastic
6	Adjustment screw	stainless steel 304
7	Nut	stainless steel 304
8	Washer	stainless steel 304
9	Body	extruded aluminum alloy
10	Piston	die-cast aluminum alloy
11	Piston sealing ring	NBR
12	Bearing group	engineering plastic
13	O-ring end cap	NBR
14	End cap	cast aluminum alloy coated with polyester
15	Fixing screw	304 stainless steel
16	Internal washer	engineering plastic
17	Sealing ring	NBR
18	Bearing	engineering plastic
19	Retainer	alloy steel
20	Gear	alloy steel
21	Bearing	engineering plastic
22	O-ring	NBR

4. OVERALL AND CONNECTION DIMENSIONS

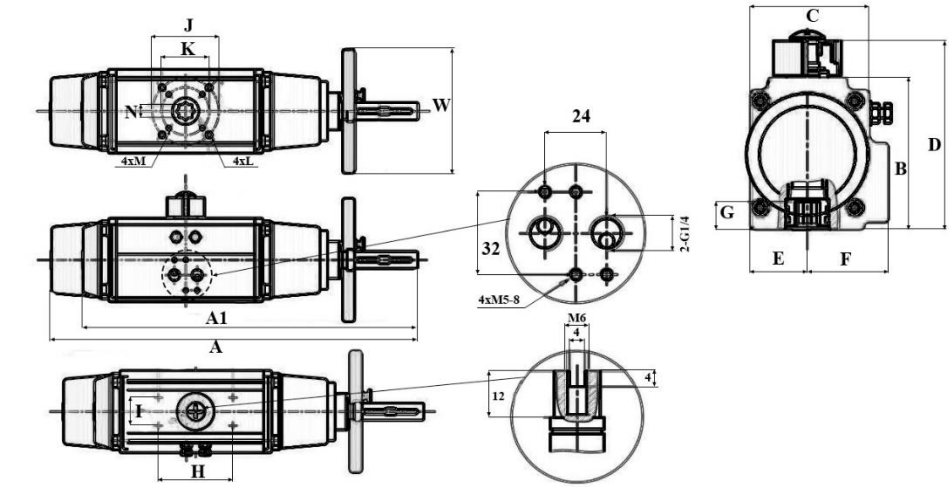

Figure 2 - Dimensions

Table 3: Dimensions of the pneumatic actuator

A	A1	B	C	D	E	F	G
mm							
495	461,5	133	109,5	153	57,5	64	26

Continuation of Table 3

H	I	N	W	J	K	L	M
mm							
80	30	22	200	102	70	M10x16	M8x13

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5. TORQUE VALUES DEPENDING ON CONTROL MEDIUM PRESSURE

Table 4: Values of pneumatic actuator torques

Media supply pressure, bar										
2	2,5	3	3,5	4	4,5	5	5,5	6	7	8
Output torque, N*m										
67,2	84	100,8	117,6	134,4	151,2	168	184,8	201,6	235,2	268,8

6. INSTALLATION AND OPERATING INSTRUCTIONS

6.1. Safety precautions during installation and operation of pneumatic actuators must be observed in accordance with the procedure established at the enterprise.
6.2 The pneumatic actuators may be installed, operated and serviced by personnel who have studied the design of pneumatic actuators, safety rules and requirements of this data sheet.
6.3 The pneumatic actuators can be mounted on various quarter-turn valves according to further instructions. The flanges must correspond to the parameters established in the company.
6.4 Installation procedure:

6.4.1 Check the actuator pinion - valve stem connection.
6.4.2 Ensure that the valve and actuator are in the closed position before proceeding with the installation.
6.4.3 Place the mounting bracket on the valve and tighten all fasteners. Do not fully tighten the bolts until the entire assembly is properly centered and installed.
6.4.4 Mounting with brackets: Align the valve and actuator to eliminate forces on the system. Tighten all assembly fasteners.
6.4.5 Direct mounting: position the actuator on the valve, taking care when inserting the valve stem into the actuator pinion. Insert the screws on the underside of the flange and hand tighten and align to eliminate forces on the system. Tighten all retaining screws.
6.4.6 Operate the unit several times to ensure that it operates properly. If the unit does not operate properly, disassemble the unit and repeat steps 6.4.1 through 6.4.4.
6.4.7 After completing the installation work, the actuator travel should be set by means of travel limiters to ensure that the valve operates correctly. Pneumatic actuators have an adjustment range of $\pm 5^{\circ}$.

6.5 Operation of the actuator at temperatures higher or lower than stated on the data sheet, or at pressures outside the designated limit, may result in damage to internal and external components and be potentially hazardous to operating and maintenance personnel.
6.6 **CAUTION**: Do not remove the actuator cover while the actuator is pressurized.

6.7 To perform manual operation via the handwheel, pull the spring locking pin toward you and rotate it 45 degrees.

7. MAINTENANCE SERVICE

7.1. Disassembly procedure to replace o-rings, bearings, piston rings, and thrust block:

7.1.1. Disconnect the air supply to the actuator.

7.1.2 Remove the actuator from the mounting bracket in a clean area.

7.1.3 After removing the cover bolts, remove the side covers.

7.1.4 Remove the O-rings from the end covers and check for wear and lubrication.

7.1.5 Remove the adjusting screw, nut and O-ring located on the side of the housing.

7.1.6. Using the wrench on top of the pinion, turn the pinion counterclockwise to the pistons.

7.1.7. Carefully, so as not to damage the pistons, remove them by hand or with pliers.

7.1.8 Remove the o-rings, O-ring and piston guide.

7.1.9. Remove the spring clip and indicator. Press down firmly on the top of the gear with a wooden stop to prevent damage.

7.1.10. Remove the cam and bearing from the housing.

7.1.11. Remove the pinions.

7.1.12. Remove the o-rings and bearings from the pinion.

7.1.13. Inspect and replace wear parts as necessary.

7.2 Install the o-rings:

7.2.1. Disassemble the actuator as described in 8.1.

7.2.2 Remove the following actuator components using a screwdriver: piston, plug; O-ring; O-ring.

7.2.3 Using alcohol or other mild solvent, remove grease from all actuator parts and thoroughly clean all surfaces before inserting a new set of o-rings.

7.2.4 Separate the o-rings to mark their installation position.

7.2.5. Install the o-rings. They may be slightly stretched and lubricated to facilitate this operation. When installing the cover, position the O-ring well, otherwise it may be pinched while installing the plug.

7.2.6 Lubricate the following internal parts of the actuator: actuator internal bore, piston surfaces (seal, guide ring), piston rack, toothed gear, gear wear surfaces and O-rings.

7.2.7 Assemble the actuator as described in section 8.3.

7.3 Assemble the pneumatic actuator:

7.3.1. Insert the o-rings and bearings onto the pinion.

7.3.2 Install the pinion into the housing (bottom hole).

7.3.3 Insert the cam and bearing onto the pinion, push until the pinion is fully inserted into the housing (upper hole).

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7.3.4 Use a wrench to turn the pinion at its top. Make sure it rotates freely.

7.3.5. Insert the o-rings, piston ring and piston guide onto the left and right piston.

7.4 Install the actuator:

7.4.1. Place the actuator on a level surface, placing the top of the actuator on the right side.

7.4.2. Manually apply pressure to the piston as this will help compress the opposite piston.

7.4.3. Continue to apply pressure with a wrench on the appropriate mill at the top of the pinion and turn the pinion counterclockwise. A click should sound at this stage due to the locking between the piston and the pinion tooth post. Be sure to create a separate sound per pinion.

7.4.4 After each separate sound, rotate the pinion clockwise; make sure the NAMUR pinion travel is about 10° perpendicular to the housing axis.

7.4.5. Double check the correct assembly of the actuator, confirming that the open positions of the piston are equidistant from the cylinder border.

8. TRANSPORTATION AND STORAGE CONDITIONS

8.1. Storage of pneumatic actuators should be carried out in accordance with the procedure established at the enterprise.

8.2 Transportation of pneumatic actuators is carried out in the manufacturer's packing in accordance with the procedure established at the enterprise.

9. UTILIZATION

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

10. WARRANTY OBLIGATIONS

10.1. Warranty period - 12 months from the date of commissioning, but not more than 18 months from the date of sale.
10.2. The warranty applies to equipment installed and used in accordance with the installation instructions and product specifications described in this data sheet.
10.3. The manufacturer guarantees compliance of the product with safety requirements, provided that the consumer complies with the rules of transport, storage, installation and operation.
10.4. The warranty covers all defects caused by the fault of the manufacturer.
10.5. 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.

11. WARRANTY TERMS

11.1. Claims to the quality of the goods may be made during the warranty period.
11.2. 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'.
11.3. Costs related to dismantling, installation and transport of the defective product during the warranty period shall not be reimbursed to the Buyer.
11.4. If the claim is unfounded, the Buyer shall pay the costs of diagnostics and expertise of the product.
11.5. 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 _____