THREE-WAY ELECTROMAGNETIC VALVE type R372

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1. SECURITY INSTRUCTION

1.1. Application

The three-way electromagnetic valve type R372 is designed for remote switching of working medium (air) from one electric circuit to another one. The valve can also be used as the valve suitable for cutting the working medium off.

1.2. Instructions and warnings

Body damage and/or serious material damages might be formed if user doesn't keep of instructions and warnings. Servicing staff have to be instructed and acquaint with whole safety instructions and warnings.

For well and safe valve's working there has to be assured right transport, storage, assembly, starting and conservation's instruction.

Main attentions of safety in mentioned operation and maintenance manual were marked as pictograms:

	**This sign means: Pointer.** „Pointer" indicates on action or any process important for well-working of product. Material damages might be formed if user doesn't keep of instructions.
	**This sign means: Warning.** „Warning " indicates on action or any process, which might be danger for staff or makes material damages if those aren't made correctly.

2. SCOPE OF TECHNICAL PRODUCT DOCUMENTATION

The scope of technical product documentation covers the parameters, design, working rules, the conditions of assembling (mounting), transporting, storing and exploitation of the three-way electromagnetic valve.

3. PRODUCT DENOTATION

TABLE OF VERSIONS

Catalogue no.	Kind of version, depending on the voltage supply
R372-A001	230 V 50 ... 60 Hz
R372-A002	230 V of direct current
R372-A003	110 V 50 ... 60 Hz
R372-A004	110 V of direct current
R372-A005	24 V of direct current

4. TECHNICAL DATA

Working pressure	0 ... 1,6 MPa
Nominal diameter of the straight-through ducts	4 or 6 mm
Connectors: type R903 type R904	For copper tubes Ø 6x1 mm For copper tubes Ø 8x1 mm
Capacity at working pressure of 1,6 MPa with connector type R903 and pressure drop of 6 kPa	Min. 5000dm^3/h
Permissible deviation of supply voltage	+5 ... –15%
Power consumption for versions: A001, A003 A002, A004, A005	 max. 11.5 VA max. 10 W
Mass	3,2 kg

Supply of R372-A001	230 V 50 ... 60 Hz
Supply of R372-A002	230 V D C
Supply of R372-A003	110 V 50 ... 60 Hz
Supply of R372-A004	110 V D C
Supply of R372-A005	24 V D C

The overall dimensions of three-way valve are shown in the drawing no. 2.

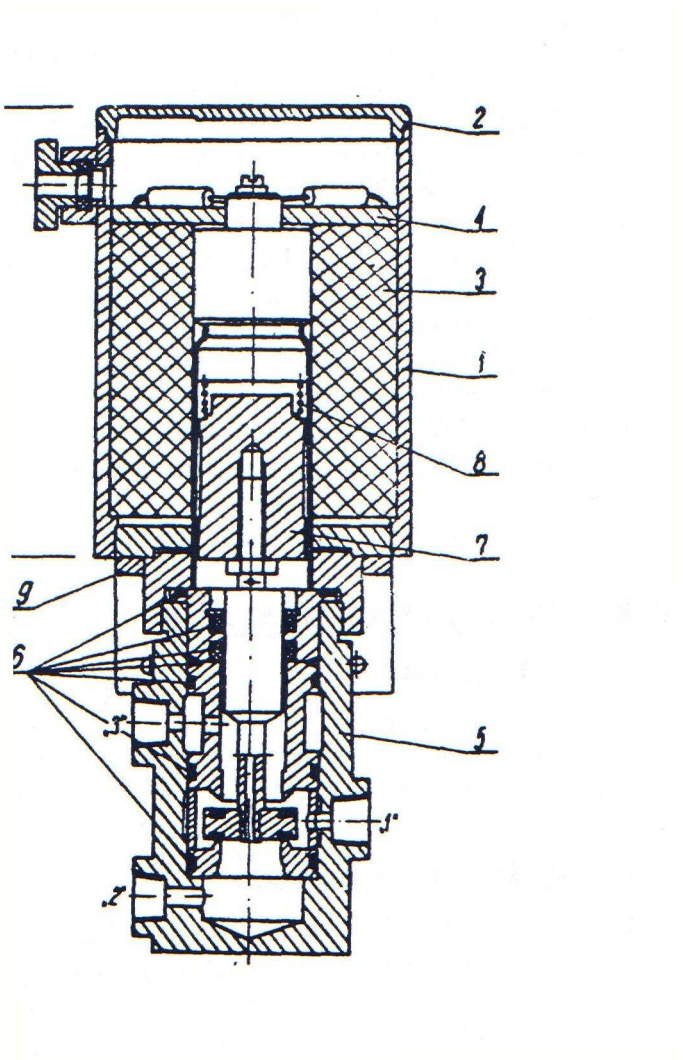
5. DESIGN AND WIRKING RULES

5.1. Design

The electromagnetic valve consists of the two main assemblies (look at drawing no. 1):

a) Assembly of the complete electromagnet coil (electric assembly)
b) Assembly of the three-way valve (pneumatic assembly)

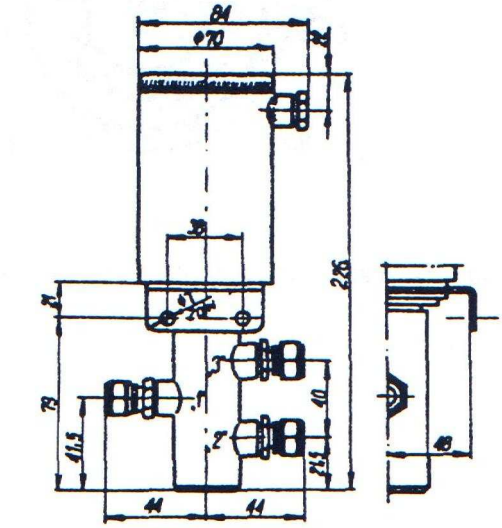
- **The electromagnet coil assembly** consists of the body assembly (1), cover (2) with electric circuit diagram, coil (3), guide and rectifier (4). The housing (body assembly 1) has got on its upper part a gland which serves for leading of electric wires out to power the coil and ground wire.
- **The pneumatic assembly** consists of the body (5), plunger (7), spring (8), sealing rings (6). There are three threaded holes StB 1/8" marked with digits "1", "2" and "3" on the cylindrical part of the body (5), they are designed for screwing-in of connectors type R903 or R904, of straight-through diameter ϕ 4 or 6 mm. An angle bar is screwed with the valve, by means of two holes ϕ 7 mm for fixing the instrument on the wall.



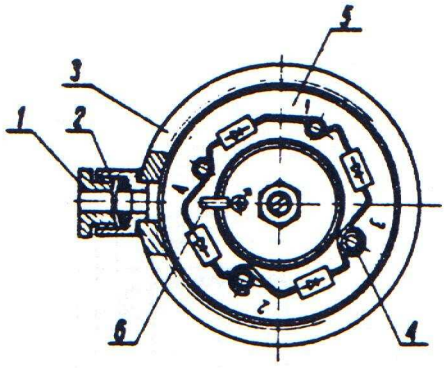
Drawing no. 1

5.2. Working rules

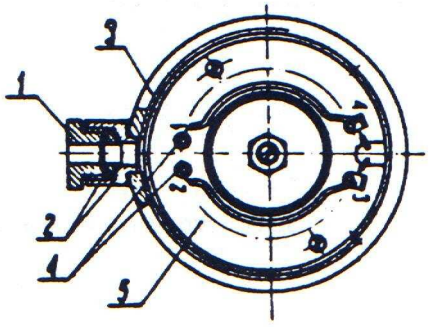
When control voltage is switched off, electromagnet - plunger (7) is placed in its lower position. This position is provided by the spring (8). Two holes are connected then: „1" and „3", while the hole „2" is cut off. At the moment of control voltage switching on, the coil (3) generates magnetic stream acting on the plunger in such way that it causes its shifting upwards. By shifting the plunger upwards we obtain connecting of holes „1" , „2" while the hole „ 3 " is cut off then. Construction of the valve provides unloading of all pressures. The pressure applied to the end „2" is at the same time applied through the hole in the plunger to the cell over the gaskets and acting on the upper plunger surface causes its unloading. In similar way, pressure applied to the end "3" is unloaded, because it acts on the valve seat surface and plunger surface – equal to that one. Forces acting on the plunger with valve are so selected that at full working pressure range from 0 to 1,6 MPa the valve closing provides complete tightness of connection, independently of that where the pressure is present.



Drawing no. 2



Drawing no. 3



Drawing no. 4

6. OPERATION CONDITIONS

The electromagnetic three-way valve is designed for work under the following conditions:

a) working medium – air without any dust and contaminations reacting chemically and causing corrosion of constructional steel, copper and aluminum alloys and rubber.
b) Ambient temperature: –20 ... +50^{0}C at relative humidity up to 98%. During the valve idling, the valve is resistant to ambient temperature action from –40 to +60^{0}C at relative humidity up to 98%.
c) permissible value of vibrations: amplitude up to 0.1 mm, frequency up to 50 Hz.
d) working position – vertical.

7. INSTRUCTION OF INSTALLING

One ought to take the valve out of foil bag and remove the plugs (stoppers) from the holes. Screw the valve at its working place. Dimensions and holes spacing, on the mounting angle bar, are given in drawing no. 2. The fixing screws must be resistant to corrosion. After attaching the three-way valve, the tubes for applying and draining of working medium should be connected to the valve.

	Before connecting the tubes one must blow them with dry air in order to dry them and remove contaminations. Remove the cover (2) (acc. to drawing no. 1), unscrew the gland (1) (acc. to drawing no. 3) and remove the washers / inserts (item 2) from the seats. Put the electric wires in and ground wire through the gland hole, washers and seat of the complete electromagnet coil. Un-insulated ends of wires are to be tightened with screws (4) at the terminals marked with symbols 1 and 2 on the mounting plate (5). The ground wire is to be soldered to solder end (6), placed on the mounting plate (5), at the mark of ground. The washers are to be placed in the seat of the complete electromagnet coil, screw the gland in and fix the cover (2) acc. to drawing no. 1.

8. INSTRUCTION OF EXPLOITATION

8.1. Control

Change in connection circuit in the valve is obtained by switching on or off the supply voltage. When the supply voltage is switched off, the hole between the ends “1” and “3” is open through. When the supply voltage is switched on, the hole between the ends “1” and “2 ” is open through.

8.2. Disconnecting from the loop

	Reduce the working pressure up to 0 kPa. Disconnect the tubes supplying the working medium from the ends. Disconnect the supply voltage. Remove the cover of electromagnet coil and disconnect the supply voltage wires from the terminals 1 and 2, screw the gland in and pull the wires from the hole in the coil and gland. Screw the gland in and fix the cover, as well as plug the holes in the connectors.

9. INSTRUCTION OF TRANSPORT

The valve, with Technical Product Documentation, is placed in plastic foil bag, and then put into cardboard box lined with absorbing insert. During the transport ambient temperature should not exceed beyond the range limits –40 ... + 60^0C. Valves in packaging should be protected against direct influence of atmospheric precipitations.

10. INSTRUCTION OF UNPACKING AND STORING

The buyer should check the condition of packaging after receiving of the product shipment. Valves should be stored in factory-made boxes, in a closed room. Air at the storage room should not contain any impurities of aggressive vapours and gases.

11. REPAIRS

Any repairs should be conducted by the manufacturer or authorized service. In the event of the repairs performed by the third persons, the manufacturer shall not bear any responsibility for security and proper operation of the product.

12. SCOPE OF DELIVERY

For three-way electromagnetic valve should be enclosed:

- Technical Product Documentation
- Guaranty card
- Acceptance declaration

CONTROLMATICA ZAP-PNEFAL Sp. z o.o.
ul. Krotoszynska 35; PL-63-400 Ostrow Wlkp., Poland
tel.: +48627372250, fax: +48627372724, controlmatica@controlmatica.com.pl
www.controlmatica.com.pl