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## **MVA21 AND MVA41**

Thermo-electric actuators for zone valves.

# MVA21 AND MVA41

Thermo-electric actuators for zone valves.

- + Easy and quick installation
- Extremely silent operation
- 3-year warranty



## PRODUCTION RANGE

### ACTUATOR WITHOUT AUXILIARY MICRO SWITCH

Code	Power supply	Model	Power absorbed	Frequency	Electrical protection
360.00.10	110÷230 Vac	MVA21	5 VA	50/60 Hz	IP31
360.00.20	24 Vac	MVA41	5 VA	50/60 Hz	IP31

### ACTUATOR WITH BUILT-IN AUXILIARY MICRO SWITCH

Code	Power supply	Model	Power absorbed	Frequency	Electrical protection
360.00.30	110÷230 Vac	MVA21	5 VA	50/60 Hz	IP31
360.00.40	24 Vac	MVA41	5 VA	50/60 Hz	IP31

## DESCRIPTION

**RBM electrothermal actuators** are used in combination with RBM zone valves series 112 - 113 - 114, installed on heating, air conditioning and hot water systems.

## OPERATION

Operation is of the piston type.

The actuation of the thrust force, in the opening of the valve, is given by the increase in volume of a synthetic wax heated by a "PTC thermostat" (in the type of electronic resistors with fixed limit temperature).

The increase in volume of the synthetic wax is carried out vertically, within a "bellows" container.

A metal rod is attached to the bellows, which controls the raising of the push piston used to open the valve.

The metal rod is not pushed directly onto the zone valve, but through a rigid plastic polymer spool which has a notch on one end to control a micro switch.

When, during the opening of the valve, the rod reaches approximately 50% of its travel, the micro switch closes the electrical circuit and

consequently activates an electrical device (pump or circulator) connected to it.

The control is of the on-off type (open / closed).

The power supply remains switched on throughout the entire opening period, with a power consumption of 5 VA.

The **actuators** are equipped with a guillotine fastening system that allows easy coupling to the valve by tightening a screw.

The opening and closing time of the valve can be influenced by the environment where the zone valve is installed, conditioning the degree of heat dissipation of the electrothermal control.

## WARNINGS

- Provide for the application of suitable electrical protection;
- Avoid applying the electrothermal actuator upside down;
- RBM thermostats or programmable thermostats should be used to control this equipment.

## CONSTRUCTION FEATURES

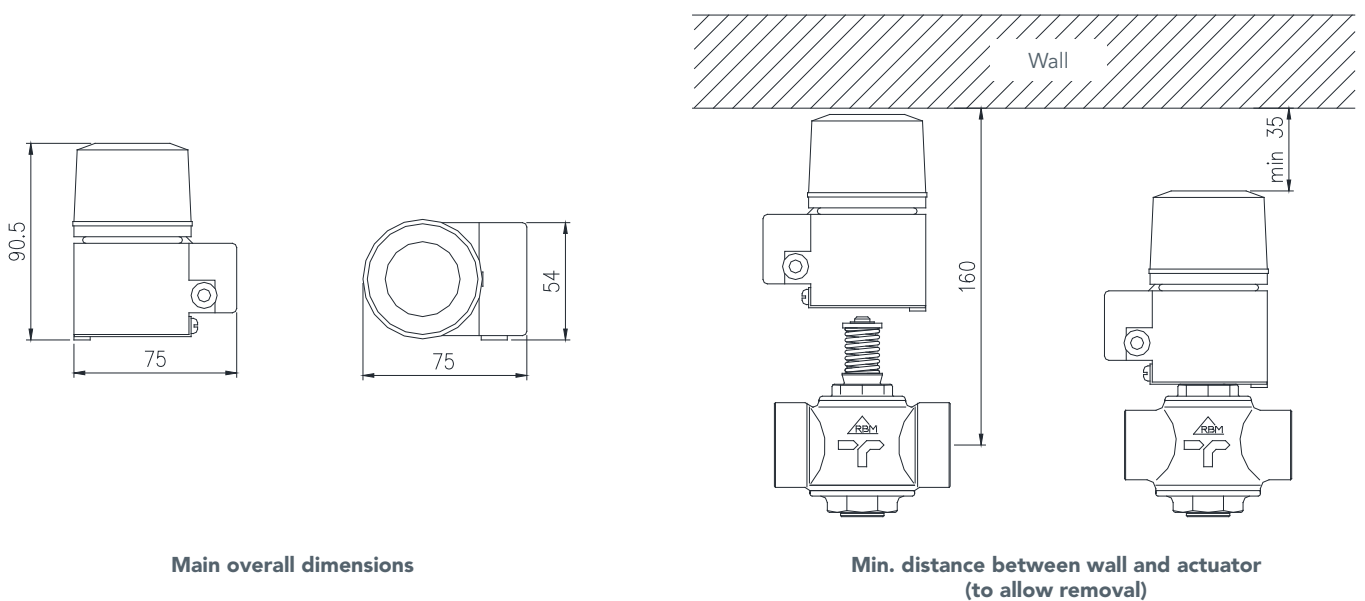
RBM's MVA actuators consist of a base and two covers made of thermoplastic material (PA6 - 30% glass fibre). A thermostatic element heated by a PTC thermistor is fitted inside the actuator. The actuators are equipped with a guillotine fastening system at the bottom which allows easy coupling to the valves by tightening a screw.

## TECHNICAL FEATURES

<b>Power supply</b>	4 Vac $\pm$ 10% (model MVA41) or 110÷230 Vac $\pm$ 10% (model MVA21)
<b>Consumption</b>	5 Va (in operation) 13 Va (at start-up)
<b>Frequency</b>	50/60 Hz
<b>Switch contacts capacity</b>	5A 250 Vac
<b>Intervention time</b>	2' (from ignition to first rod movement)
<b>Opening stroke time</b>	3'
<b>Closing stroke time (cooling)</b>	8'
<b>Force</b>	110 N
<b>Electrical protection</b>	IP31
<b>Operating temperature</b>	+ 5 ... 50 °C
<b>Storage temperature</b>	-25 ... 65 °C

Conforms with EMC directive 89/336 according to standards: EN 50081-1 (for emission) EN 50082-1 (for immunity).

## DIMENSIONAL FEATURES



## ACCESSORIES / AUXILIARY COMPONENTS

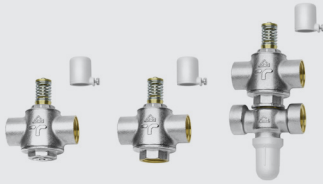
Code	Description
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313.00.02

**Valve auxiliary limit switch model D41.**

Accessory of thermo-electric actuators code 360.00.10 and 360.00.20;  
Already incorporated in actuator models code 360.00.30 and 360.00.40



112.0X.70  
113.0X.70  
114.0X.70  
114.0X.20

**2 - 3 - 4 Way motorised zone valves.**

Normally closed valve with mounted actuator not energised.



386.00.22 (T)  
2726.00.02 (C)  
1552.00.X2 (T)  
1553.00.X2 (C)

**Thermostats (T) and programmable thermostats (C).**

Available in wall-mounted or recessed versions.

### INSTALLATION

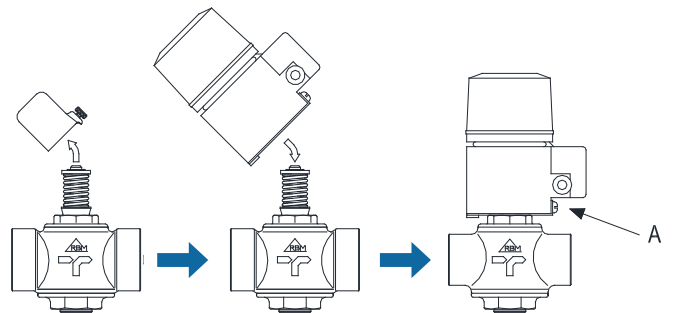
**COUPLING TO THE VALVE BODY:**

- remove the protective plastic handwheel / manual override mounted on the valve spring;
- position the actuator on the valve cover, orienting it to the desired position;
- screw in the appropriate screw A of the guillotine coupling to lock the position;
- connect the cable as shown in the wiring diagrams below.

The servo control is interchangeable on all previous productions (requires **2-wire control**).

**Attention: Do not supply power to the actuator if it is not coupled to the valve body.**

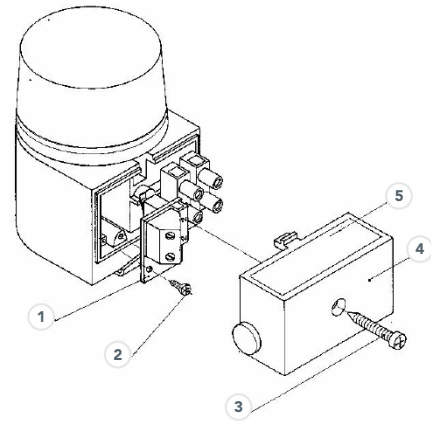
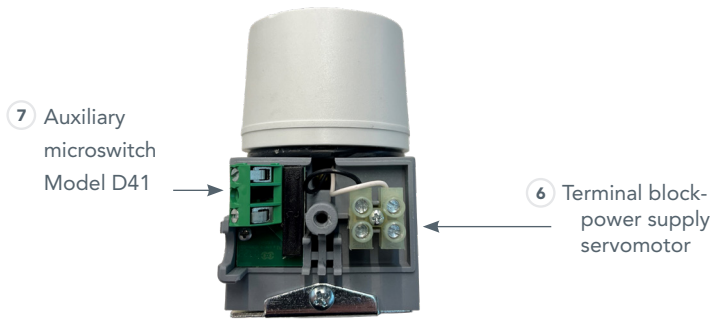
Once the actuator has been coupled to the valve body, to ensure that the valve closes tightly, run a cycle by powering the actuator for a few minutes.



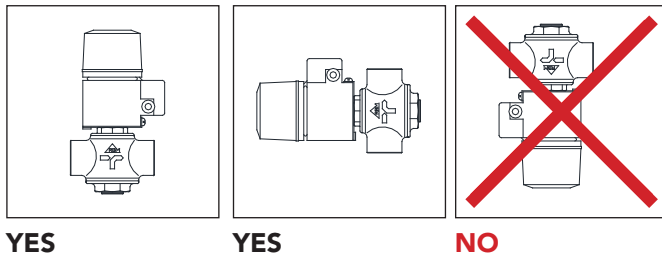
### AUXILIARY MICRO SWITCH INSTALLATION:

To apply the auxiliary micro switch model D41, proceed as follows:

- unscrew the screw (ref. 3) and remove the terminal cover (ref. 4);
- apply the printed circuit board with micro (ref. 1) as shown and secure it with the screw (ref. 2);
- make the connections, fit the terminal cover (ref. 4) and tighten the screw (ref. 3);
- apply the auxiliary contact identification plate as indicated (ref. 5).



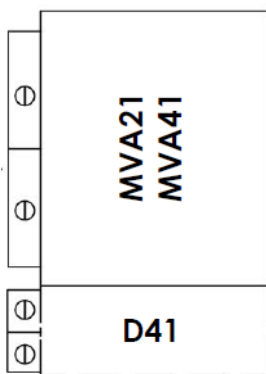
### WARNINGS



### PRECAUTIONS FOR POSITIONING THE ACTUATOR:

- install in a non-aggressive environment protected from rain and dripping;
- avoid a downward facing actuator position.

### ELECTRICAL CONNECTIONS

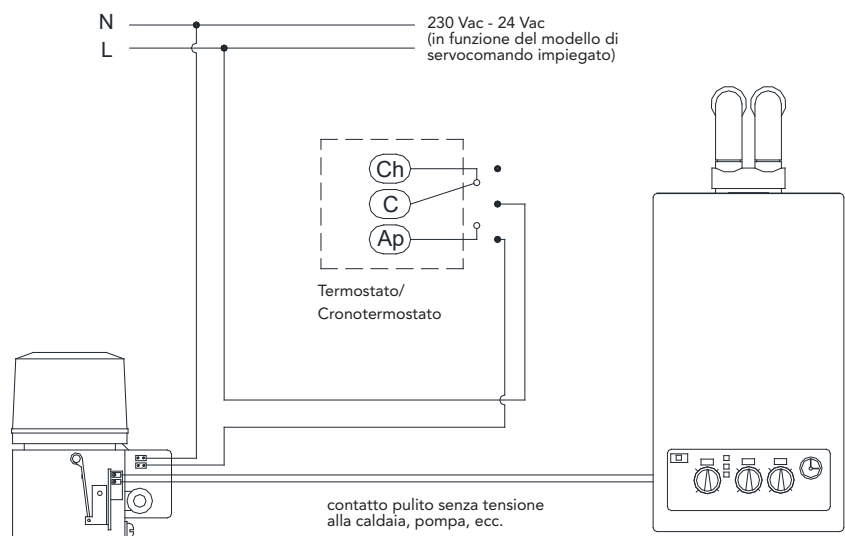


#### Power supply:

MVA21: 110+230 Vac

MVA41: 24 Vac

Accessory auxiliary switch (dry contact).



Representative wiring diagrams of the actuator equipped with auxiliary micro switch and with programmable thermostat in **OFF position: (no thermal demand).**

## OPERATING PRINCIPLE AUXILIARY MICRO SWITCH

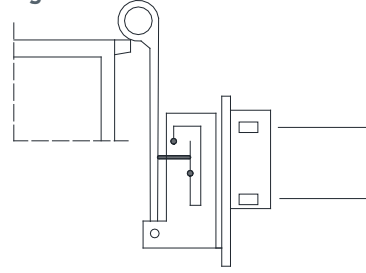
The auxiliary micro switch is normally open with the actuator unpowered;

When the plug stem is at about 50% of its travel (actuator energized and therefore valve open), the contact is closed, thus allowing current to flow.

**Fig. 1**

Valve closed, actuator not energised - **auxiliary contact open**: No current circulation between "micro" and boiler/circulator.

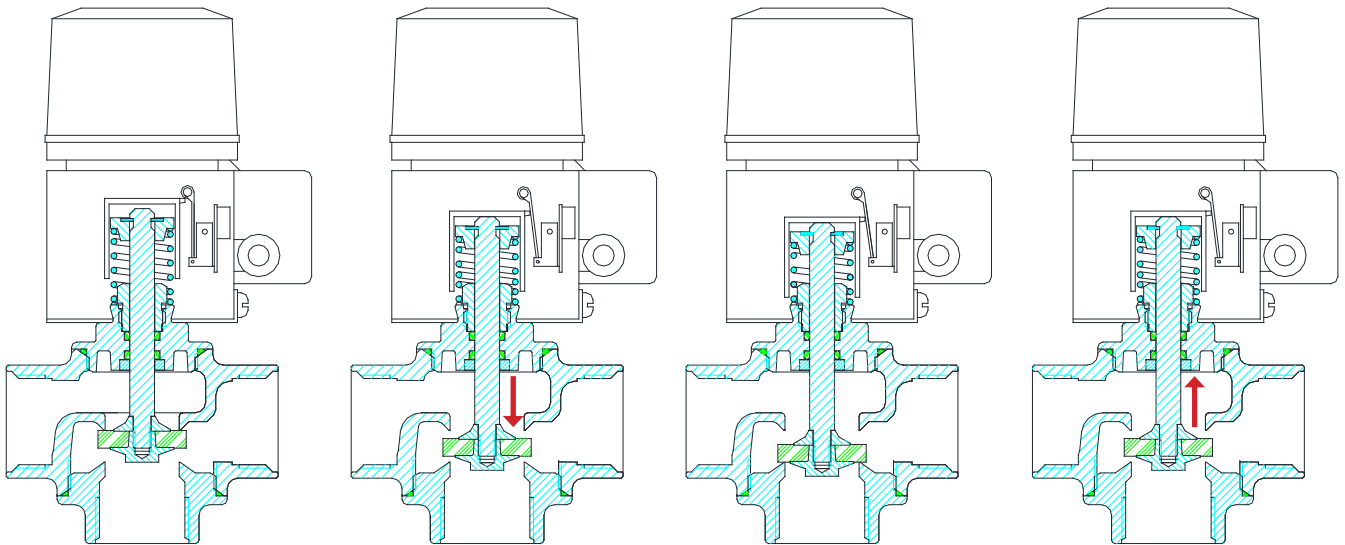
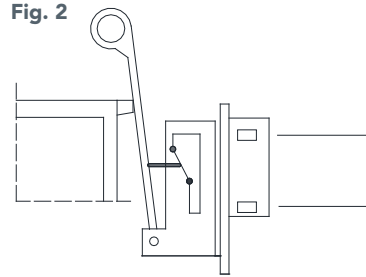
**Fig. 1**



**Fig. 2**

Valve open, actuator powered - **auxiliary contact closed**: Current circulation between "micro" and boiler/circulator.

**Fig. 2**



**Valve closed:**

The micro switch has already broken the connection.

**Valve open (towards opening):**

The micro switch switches on when the valve plug is about halfway up.

**Full opening valve:**

The micro switch maintains the ignition command.

**Valve open (towards closure):**

The micro switch intervenes to break the connection when the valve plug is about halfway up.



The operations described in this technical data sheet should only be carried out by specialised personnel or by the installer, strictly observing the safety regulations and laws in force.



Switch off the power supply before connecting or disconnecting the electrothermal actuator to the electrical circuit.



The electrothermal actuator cannot be removed for repair. Tampering with it causes permanent damage.

## SPECIFICATIONS

### SERIES 360

Thermo-electric On-Off actuator command for zone valves. Prepared for insertion of auxiliary micro switch. Electric connection via internal terminal board. Power supply 24 Vac (or 110÷230 Vac). Consumption 5 VA. Frequency 50/60 Hz. IP31 electrical protection. Max ambient temperature 5...50 °C. Triggering time ~120 seconds. Shockproof ABS enclosure.

### SERIES 313

Valve auxiliary limit switch. Closed contact with actuator powered. Contacts capacity 2(5)A 250 Vac.

*RBM spa reserves the right to improve and change the described products and related technical data at any moment and without prior notice: always refer to the instructions attached with the supplied components; this sheet is an aid, should the instructions be extremely schematic. Our technical office is always at your disposal for any doubt, problem or explanation.*

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