

MODEL	TIMING [s]	POWER SUPPLY [Vac]	CONTROL
MVB26	60	230	Floating
MVB46	60	24	Floating
MVB46P	60	24	Floating with potentiometer. (1 K $\Omega$ )
MVB22	37	230	Floating
MVB28	370	230	Floating
MVB36	60	24	pot. (165 $\Omega$ )
MVB52	37	24	proportional
MVB56	60	24	proportional

Timing refers to 16.5 mm standard stroke. For different strokes use the following formula:

$$\text{Stroke time [s]} = \text{Timing} \times (\text{Stroke [mm]} / 16.5)$$

## APPLICATION AND USE

The actuators are equipped with a reversing synchronous motor and an electronic board available in three different models respectively for:

- floating control;
- proportional control (potentiometric);
- proportional control (voltage or current).

Due to their versatility MVB actuators can be mounted both on new Controlli globe valves up to DN 2" as well as on different manufacturer valves, having stroke from 10.8 to 20 mm.

Valve body	Nominal diameter	Model
PN 16	DN 1/2 "...2"	VSB (2 way)
PN 16	DN 1/2 "...2"	VMB (3 way)

## OPERATION

An additional feature is provided on voltage/current proportional models: an output signal (0...10 V-, 10...0 V- and 0...200 mA) indicating the valve stem position. An internal jumper allows reversing the rotation direction.

Moreover, a device switches off the motor supply every time the actuator must carry out a torque/force exceeding the one for a long time working life of the equipment.

All models are equipped with a manual override device and a microswitch module (MVBD) is available on request.

It is assembled on the manual control and it is possible to connect it to a supervisor or an outside controller in order to communicate whether the actuator is in "manual" or "automatic" mode.

MVB46P model is supplied with 1 K $\Omega$  aux. potentiometer. The poten-



tiometer presents 0 ohm between W3 and W2 and 1000 ohm between W2 and W1, when the actuator is in upper position (see Fig. 1), and a 50 ohm variation for every mm of stroke, increasing between W2 and W3 and decreasing between W2 and W1.

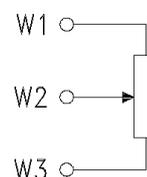


FIG. 1

## TECHNICAL CHARACTERISTICS

<b>Power supply</b>	24 or 230 V~ $\pm 10\%$
<b>Power consumption</b>	5 VA
<b>Frequency</b>	50/60 Hz
<b>Max stroke</b>	21 mm (mechanical stroke end)
<b>Timing</b>	see available models
<b>Close off force</b>	450 N
<b>Temperature limits</b>	Operating 5T50 $^{\circ}$ C Storage 25T65 $^{\circ}$ C
<b>Max fluid temperature</b>	120 $^{\circ}$ C (140 $^{\circ}$ C with MVBHT)
<b>Allowed room moisture</b>	80% R.H.
<b>Class protection</b>	II (CEI 107-10)
<b>Terminal board</b>	screw-type for 1.5 to 2.5 mm <sup>2</sup> wires

<b>N.2 conduit opening</b>	with a rubber membrane break through hole ( $\varnothing=16$ mm) replaceable by PG11 compression glands
<b>Protection degree</b>	IP 50 for environments with normal pollution according to IEC730-1 (93)/6.5.3
<b>Weight</b>	0.8 Kg.

#### CONTROL SIGNAL

<b>Floating</b>	2 SPST connections
<b>Proportional (pot.)</b>	165 Ohm
<b>Proportional control</b>	
- voltage (max 0.1 mA)	8...11 V/4...7 V/6...9 V/0...10 V/2...10V/1...5 V
- current (250 Ohm)	4...20 mA

#### OUTPUT SIGNAL INSTRUMENT

<b>voltage</b>	0...10 /10...0 V- (0,2 mA max)
<b>current</b>	0...200 $\mu$ A

Product conforms, for CE marking, to the following directives:  
EMC 2014/30/UE according to the EN61326-1 standard.  
LVD 2014/35/UE according to the EN61010-1 standard for 230 V powered products.

### MANUFACTURING CHARACTERISTICS

The actuator has been manufactured using thermoplastic materials: in particular new technopolymers have been used for the most stressed parts, allowing a reduction in weight of the device while granting the necessary mechanical features.

The printed circuit board is placed in an easy access position together with the optional auxiliary microswitch, fully adjustable on the whole stroke.

### POSSIBLE COMBINATIONS AND CONNECTIONS

The actuators can be connected to "Controlli" DIGITROLL 4000, 7000 and series 200, 300, 400 and 500 controllers. They can also be connected to any other controller having a driving signal as showed in the "technical Characteristics" paragraph.

### ACCESSORIES

<b>244</b>	Stem heater (24 V ~ - 18VA). Avoid mounting on V_B.F DN15 valves.
<b>D36</b>	Auxiliary microswitch with adjustable cam (SPDT 10 (3) A-250 V ~). Disconnection 1B according to IEC730-1 (93) 6.4.3.2.
<b>AG22</b>	Linkage for V2/V3-500 valves.
<b>AG40</b>	Linkage for VB7000 valves.
<b>MVBHT</b>	Spacer to reduce the direct exposure of the actuator with high temperature fluids.
<b>MVBD</b>	SPDT 5 (0,5) A - 250 V microswitch activated by manual control knob. Only factory-mounted.
<b>MVBC</b>	Rainproof protection. The actuator must always be mounted vertically. Protection degree: IP53.

### ELECTRONIC BOARD

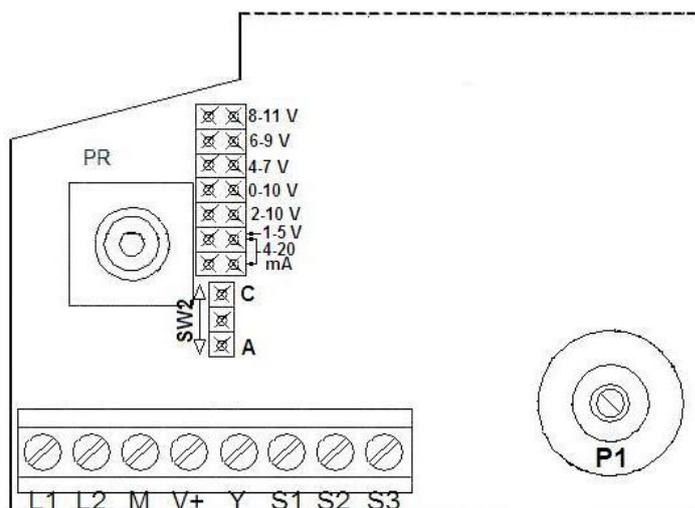


FIG. 2

### INSTALLATION

The actuator can be mounted in any position but the vertical one is preferable; it is necessary to leave at least 10 cm. above the actuator for maintenance.

The electric connections must be performed by removing the cover placed on the knob opposite side according to the existing standards. After completing the connections, supply the motor and make sure the electric operation is regular and that the valve completes the whole stroke.

#### Actuator with electronic board for proportional voltage and current input

The actuators are supplied with a 0...10 V- input signal and with jumper SW2 (rotation direction) on C. In order to select a different signal range, it is necessary to move the SW1 jumper from 0...10 set position to the desired one (see Fig. 2). To select the 4...20 mA field, it is necessary to insert two jumpers, also using the one preset in open position.

**The actuator rotation direction can be reversed by moving the SW2 jumper from C to A position (see Fig. 2).**

#### Actuators with electronic board for proportional potentiometric input

To change the rotation direction, reverse the connections between M and V+ terminals.

#### Mounting on other manufacturer valve bodies

Thanks to its versatility, the actuator can be mounted on different valves having stroke from 10.8 to 20 mm, with M8x1.25 threaded stem and 71 mm distance between the stem top and the actuator linkage support plane.

The actuator linkage to the valve body has a  $\varnothing=30.5$  mm hole. The model with a floating control signal is self-adjusting to different strokes ( the standard one is 16.5 mm).

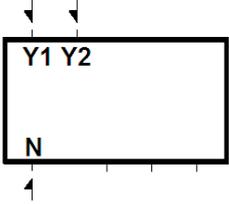
However, if the stroke is different from 16.5, it is necessary to carry out the calibration as follows:

- Remove the cover on the knob opposite side;
- For MVB52/56 only, make sure that jumper SW2 is in A position (Fig. 1);
- Supply the actuator between L1 and L2 terminals with Y terminal disconnected;
- Wait the actuator to reach the lower stroke end;
- Connect the positive of the voltmeter to S2 terminal and the negative to M;
- Rotate P1 trimmer until the voltmeter indicates 0 V.

The actuator can be installed on valves with different coupling assemblies using dedicated linkages, available on request.

**TERMINAL BOARD**

- MVB2. (230 V~)
- MVB46 (24 V~)



**LEGEND**

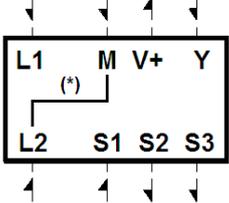
- Y1 = Joint up
- N = Common
- Y2 = Joint down

Control (1)

**TERMINAL BOARD**

- MVB5.
- MVB36

(\*) Internally connected



**LEGEND**

- L1 = Phase
- L2 = M = Common
- M = Common
- V+ = 15 V- output
- Y = Control signal (3)
- S3 = 10...0V- or 200...0  $\mu$ A
- S2 = 0...10V- or 0...200  $\mu$ A
- S1 = Analogue common

(2)

(4)

- (1) With voltage between N (Common) and Y1 (phase from controller contact): the actuator joint moves upwards. With voltage between N and Y2 the joint moves downwards. Without voltage the actuator remains in the position gained.
- (2) For MVB36: connect the controller potentiometer cursor (165  $\Omega$ ) to Y terminal, one end to M and the other to V+ terminal.
- (3) When SW2 jumper is in C position (See Fig. 2) and signal increases, the joint moves downwards.
- (4) Connect the indicator with input current to S3 (or S2) and S1 terminals. Connect the indicator with input voltage to S3 (or S2) and M terminals. The extreme voltage (current) value corresponds to joint up.

