

MODEL	CONTROL SIGNAL	POWER SUPPLY	MAX. STROKE
MVC203	3 Point - ON/OFF	230 Vac	16 mm
MVC403		24 Vac	
MVC503	Proportional		



## APPLICATION AND USE

MVC actuator can be used with valves push/pull (using auto stroke calibration) or with valves with spring return using fixed stroke to control hot/cool water flow rate in two/four pipes terminal units, zone and solar plants, small reheating and dehumidification coils.

## OPERATION

MVT is an electrical bidirectional actuator. The valve stem is activated through a synchronous motor and a gear train optimised in order to have high performances and minimal noise ejections. The actuator is equipped with a movement of limit force which is able to stop the power supply when the force of 300N is reached. If configured as auto calibration stroke, the software of the proportional models enables the stroke calibration, so it can be used on any valve, as long as it respects the maximum stroke limit allowed (look at the above table).

Moreover proportional models are equipped with 3 LEDs whose operation is explained in the table at page 4.

### "MAX STROKE LIMIT" function (only for MVC503 model)

Stroke Limit" function is activated to prevent the escape of the screwjack.

- At startup, the actuator is initialized in the UP position (red-greenyellow LED ON).
- If is controlled downward by control signal, when the maximum stroke is exceeded, it will automatically be repositioned UP.

This operation is performed 3 times, then the actuator enters in block mode (yellow LED ON, others OFF).

To reset it, the actuator must be powered down and powered up again.

## POSSIBLE CONNECTIONS AND MATCHES

I modelli MVC203, MVC403 e MVC503 sono impiegati con valvole tira/spingi Controlli serie VSB.T-VMB.T e 2-3TGB.B. Questi servocomandi sono dotati di un giunto che permette una connessione solida con lo stelo della valvola.

MVC203 and MVC403 models can be connected to any controller with a 3-point control signal that complies with the paragraph "TECHNICAL CHARACTERISTICS".

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MVC503 model is proportional and can work with 0-10 Vdc, 2-10 Vdc, 0-5 Vdc, 6-10 Vdc and 4-20 mA working fields.

MODEL	VALVE WITHOUT SPRING			
	VSB.T-VMB.T 3/4" .. 2" STROKE 5,5 mm	2-3TGB15B 1/2" STROKE 11,5 mm	2-3TBB.T 1/2" .. 2" STROKE 11,5 mm	VALVES OF OTHER MANUFACTURERS STROKE up to 16 mm
MVC203	●	● (AG74-03)	●	●
MVC403	●	● (AG74-03)	●	●
MVC503	●	● (AG74-03)	●	●

## MANUFACTURING CHARACTERISTICS

The actuator housing is made of a polymeric fireproof material; a metal ring M30x1,5 is dedicated to the assembling with the valve. The actuator is equipped with a cable for electric connection.

## SAFETY PRESCRIPTIONS

- Install on the power supply line a protecting device to avoid short circuits (fuse or magneto-thermic) according to the specifications in force;
- in case of accidental removal of the cover and/or of the connector cover, make sure that power is disconnected before working on the actuator or near it;
- the products are maintenance free.

## OPTIONS

**PS107** actuator with M28x1,5 modified ring nut.

The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.



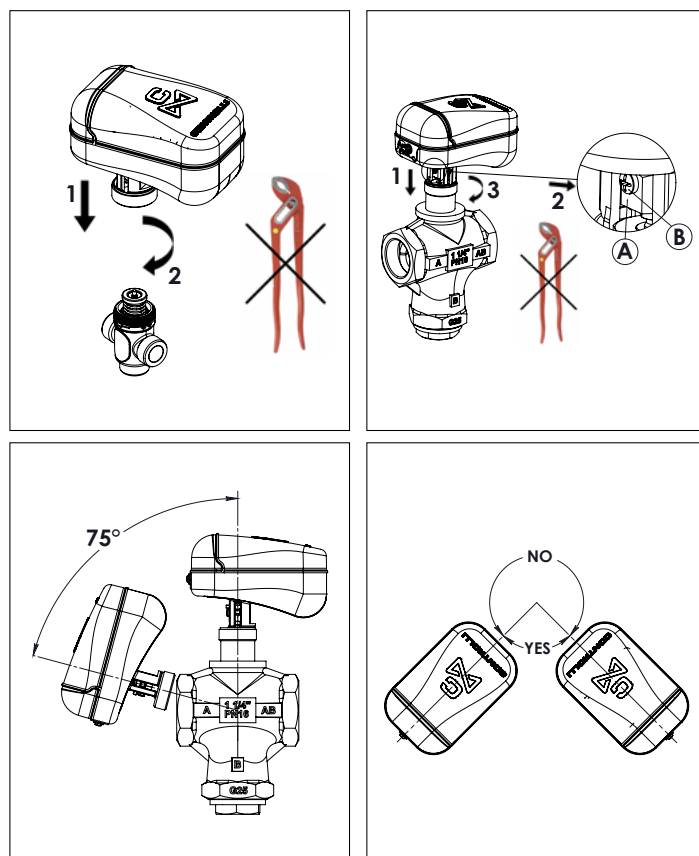
## ACCESSORIES

**AG74-03** 2-3TGB.B Controlli valves adaptor  
(N.B. to be used in replacing of the spindle extension provided with the valves).

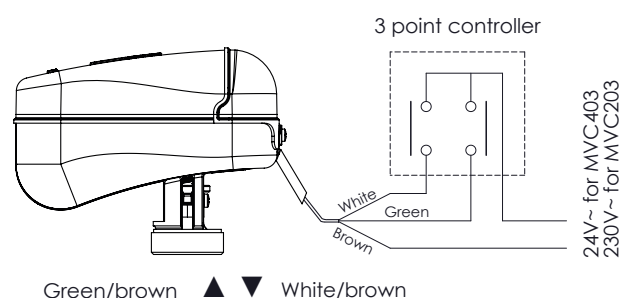
In case of use of non Controlli valves please contact technical office for proper adaptor.

## TECHNICAL CHARACTERISTICS

Power supply	24 Vac $\pm$ 10% (MVC403 and MVC503)
	230 Vac $\pm$ 10% (MVC203)
Consumption:	2,2 VA - 2,2 W (MVC403)
	3,6 VA - 3 W (MVC503)
	16,2 VA - 1,1 W (MVC203)
Frequency:	50/60 Hz
Stroke timing (50 Hz):	60 s : V.XT, VSB.T/VMB.T, VSB.T./VMB.T. 5,5 mm stroke
	100 s : 2TGA.B 8,5 mm stroke
	130 s : 2-3TGB.B 11,5 mm stroke
Speed:	11,5 s/mm at 50 Hz - 9,4 s/mm at 60 Hz
Force:	300 N (UNI 9497: 1989)
Operation temp:	-5T55 °C
Storage temp:	-25T65 °C
Protection class:	II (IEC 60950-1: 2005)
Connection cable:	3 wire 1,5 m for MVC203 and MVC403
	5 wire 1,5 m for MVC503 (CEI 20-22/II)
Protection degree:	IP54 (CEI EN 60529: 1997)
Weight:	0,25 Kg
Feedback signal (for MVC503):	2-10 V (2 V fully retracted in direct action or 2V fully extended in reverse action)
Reference Directives and Standards	EMC 2014/30/UE according to EN 61326-1: 2013. LVD 2014/35/UE according to EN 61010-1: 2010 for MVC2xx.



### MVC 3 point connection



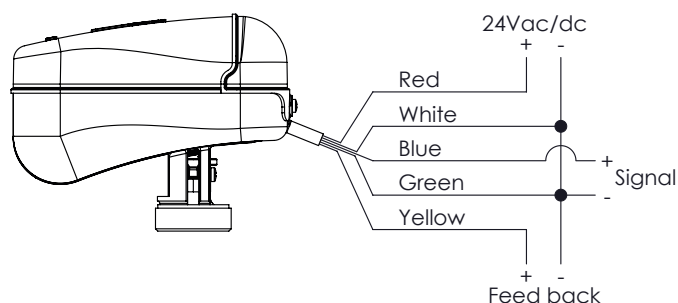
## INSTALLATION AND ASSEMBLING

Mount the actuator on the valve screwing in the ring nut M3x1,5 without locking it; using the manual override make the set-screw go down until to align the actuator spindle slot with the locknut (A), secure with the bolt (B) through not threaded hole in locknut (B). Direct the actuator in the desired position and lock the ring nut M30x1,5.

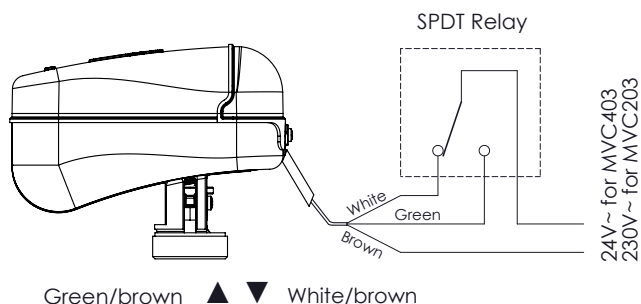
## WIRING DIAGRAMS

Make the electrical connections in compliance with the regulations in force. To check the direction of movement of the pusher, compare the direction of rotation of the manual control with the indication on the base. The movement of the valve stem, it can also be observed through the slots in the fixing ring.

### MVC proportional connection



## ON/OFF connection with external relay



## RANGE SELECTION (ONLY MVT503 MODEL)

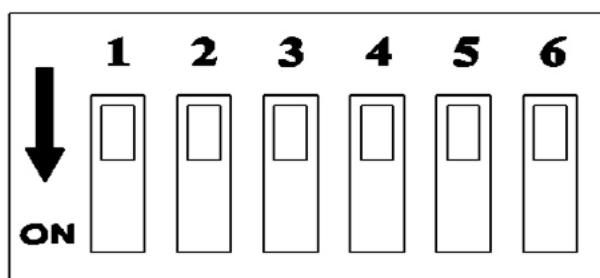
The actuator is supplied prearranged for 0-10V control signal and direct action; to modify this setting, follow these instructions:

1. Remove the cap and the connector (look at the following picture),
2. Change the DIP switches as indicated in the following scheme.



For manual override use allen key of 3 mm.

Change the DIP switches as indicated in the following scheme:



DIP 1	ON = INV action	OFF = DIR action
DIP 2	ON = 2-10/6-10	OFF = 0-10/0-5
DIP 3	ON = Range SEQ	OFF = Range NORM
DIP 4	ON = Non applicabile	OFF = Auto calibr. stroke
DIP 5	ON = 4-20mA	OFF = Voltage range
DIP 6	ON = Learning	OFF = Running

## Direct Reverse action

Through DIP1 is possible to set direct or reverse action. In direct action without control signal the actuator is fully retracted with feedback set to 2V. With reverse action the actuator is fully extended and the feedback without control signal is 2 V in this position.

Through DIP 2,3 and 5 it is possible to set 5 different input ranges. If DIP 5 is ON, the input range is set at 4-20mA and DIP 2 and 3 have no meaning. If DIP 5 is OFF, the possible ranges are: 0-10/2-10 if DIP 3 is OFF and 0-5/6-10 if DIP 3 is ON.

## Automatic stroke calibration (valid only for DIP n. 4 in OFF)

This function helps to calibrate the maximum valve time stroke, so that the actuator can place the valve correctly following the control signal. If the actuator is powered on, this action can be repeated any time DIP 6 goes from OFF to ON and DIP 4 is OFF. During normal operation, it is possible to choose the position of DIP 6: at each start up the stroke calibration will be carried out if DIP 6 is ON; it will be maintained the previous stroke if DIP 6 is OFF.

## Initial positioning

It will be carried out every time the actuator will be powered on and the stroke calibration occurs. This procedure allows the actuator to start from a defined position and then follow the control signal. That position depends on the selection of DIP 1 (DIP 4 in OFF). In case the DIP 4 is ON, the initial position means fully extended.

## Retry function

If an unexpected stop during the stroke occurs, this function has the aim to make it disappear. The actuator will be driven in the opposite direction and then it will try again to reach the position.

## Feedback output (2-10V)

The actuator is equipped with a proper output to transmit the feedback signal relating to the supposed actuator position. This signal can vary from 2 to 10V.

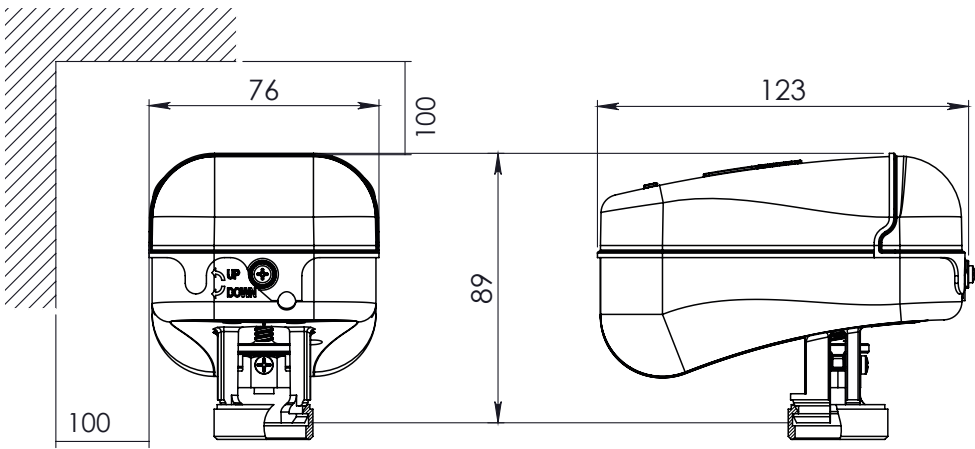
During the "automatic stroke calibration" and "Initial positioning" function it is fixed at 2V.

LEDS OPERATION

LED	CALIBRATION PHASE	INITIAL POSITIONING	UP POSITIONING	END STROKE UP	DOWN POSITIONING	END STROKE DOWN	ACTUATOR STOP	UNEXPECTED STALL	LOW SUPPLY VOLTAGE	ACTUATOR OFF OR UNDER RESET (SUPPLY VOLTAGE LOW)	MAX STROKE LIMIT PHASE
RED	ALTERNATING 5Hz	ALTERNATING 1Hz	OFF	OFF	BLINKING 1Hz	ON	OFF	SIMULTANEOUS 5Hz	OFF	OFF	ON
GREEN			BLINKING 1Hz	ON	OFF	OFF	OFF		OFF	OFF	ON
YELLOW	ON	ON	ON	ON	ON	ON	ON	ON	BLINKING 1Hz	OFF	ON



DIMENSIONS [mm]



The performances stated in this sheet can be modified without any prior notice