Three-way globe mixing valves

VM - 3V

CE In compliance with 97/23/CE PED

USE

VM-3V series valves are used to control fluids belonging to the group showed in the table in accordance to article 9 of 97/23/CE (PED) directive, in air-conditioning, thermoventilation and heating plants and in industrial processes; therefore, they cannot be used as safety valves.

MANUFACTURING CHARACTERISTICS

They consist in a 3-way valve body to be assembled on electrical bidirectional actuator, driving mechanical connection with elastic pin and position indicator.

MOTORIZED VALVES TECHNICAL CHARACTERISTICS AND PERFORMANCES

	VMB16 DN25÷150	**VMS DN25÷65 3VSA DN80**	**VMSTS DN25÷65 3VSATS DN80**	**3VAA DN25÷125**	**3VAACP DN25÷125**
Construction	PN16	PN25	PN25(3)	PN40(7)	PN40(7)
Body	cast iron	spher. cast iron	spher. cast iron	steel	steel
Seat	as above	stainless steel	stainless steel	stainless steel	stainless steel
Plug	forged brass	as above	as above	as above	as above
Stem (Ø 9mm.)	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel
Control characteristic	direct way=equal perc. angle way= linear	direct way=equalp.(DN25÷65) linear (DN80) angle way= linear	direct way=equalp.(DN25÷65) linear (DN80) angle way= linear	linear	linear
Stem packing	Viton O-ring(5)	Teflon V-ring	stainl. steel bellows	Teflon V-ring	(2)
Max fluid temp.°C	150	230	300	230	350
Min fluid temp. °C	-10(1)	-10(1)	-10(1)	-10(1)	-20(1)(4)
Fluid (6)	Group 2	Group 2	Group 1	Group 2	Group 1
Connections	flanged PN16	flanged PN25	flanged PN25	flanged PN40	flanged PN40
Leakage Kvs %	direct way 0,03 angle way 2	0,02	0,02	0,02	0,02

(1) For applications with possible ice formation on stem and packing, see 245 accessory.
(2) Graphite packing for high temperatures; forced lubrication on extended neck. Teflon packing for low temperatures, see (4).
(3) Due to the bellows presence, the max applicable pressure must not be higher than 5 bar
(4) For applications on fluids from -10 to -20 °C add letter B to the model name, e.g. 3VAACP50B. In such case the max temperature is 230°C
(5) Double O-ring and graphite teflon scraper ring.
(6) Group 1: water, overheated water, steam, diathermic oil.
For different fluids belonging to group 1, please contact our Sales Support.
Group 2: water, overheated water, steam.
For different fluids belonging to group 2, please contact our Sales Support
(7) PN25 only for 3VAA125 and 3VAACP125

CONTROLLI
ISO 9000
CONTROLLI
16010 SANT'OLCESE Genova - Italy
Tel.: +39 01073061 Fax: +39 0107306870/871
E-mail: info@controlli.org Web: www.controlli.org

*MAX DIFFERENTIAL AND CLOSE-OFF PRESSURE (bar) ****

DN	Kvs			VMB16					VMS				
mm	VMB16	VMS	3V	SH/ST	MVL	MVLA/C*	MVF58	MVF515	SH/ST	MVL	MVLA/C*	MVF58	MVF515
25R	4	4	4	15,5	16	8,1	9	16	25	25	12	14	25
25I	6,3	6,3	6,3	15,5	16	8,1	9	16	14,5	17	6	7	17
25	10	10	10	15,5	16	8,1	9	16	14,5	17	6	7	17
32	-	19	16	-	-	-	-	-	9,5	11,5	4	4,5	11,5
40R	19	-	-	8,7	10	4,6	5,2	10	-	-	-	-	-
40	25	25	22	8,7	10	4,6	5,2	10	7	8	2,8	3,2	8
50	40	40	32	5,6	6,5	3	3,4	6,5	4,5	5	1,8	2	5
65	63	63	70	3,3	3,8	1,7	2	3,8	2,5	3	1	1,1	3
80	100	-	110	2,1	2,5	1,1	1,2	2,5	-	-	-	-	-
100	130	-	140	1,4	1,6	0,7	0,8	1,6	-	-	-	-	-
125	200	-	250	0,9**	1	0,4	0,4	1	-	-	-	-	-
150	300	-	-	0,6**	0,7	0,3	0,3	0,7	-	-	-	-	-

DN	Kvs			VMSTS				3VSA				
mm	VMB16	VMS	3V	MVL	MVLA/C*	MVF58	MVF515	SH/ST	MVL	MVLA/C*	MVF58	MVF515
25R	4	4	4	5	5	5	5	-	-	-	-	-
25I	6,3	6,3	6,3	5	5	5	5	-	-	-	-	-
25	10	10	10	5	5	5	5	-	-	-	-	-
32	-	19	16	5	5	5	5	-	-	-	-	-
40R	19	-	-	-	-	-	-	-	-	-	-	-
40	25	25	22	5	3,8	4,3	5	-	-	-	-	-
50	40	40	32	5	2,4	2,7	5	-	-	-	-	-
65	63	63	70	3,5	1,3	1,5	3,5	-	-	-	-	-
80	100	-	110	-	-	-	-	1,9	2,2	0,9	1	2,2
100	130	-	140	-	-	-	-	-	-	-	-	-
125	200	-	250	-	-	-	-	-	-	-	-	-
150	300	-	-	-	-	-	-	-	-	-	-	-

DN	Kvs			3VSATS				3VAA/3VAACP			
mm	VMB16	VMS	3V	MVL	MVLA/C*	MVF58	MVF515	MVL	MVLA/C*	MVF58	MVF515
25R	4	4	4	-	-	-	-	19	7	8	19
25I	6,3	6,3	6,3	-	-	-	-	19	7	8	19
25	10	10	10	-	-	-	-	19	7	8	19
32	-	19	16	-	-	-	-	12	4,3	5	12
40R	19	-	-	-	-	-	-	-	-	-	-
40	25	25	22	-	-	-	-	7,5	2,8	3,2	7,5
50	40	40	32	-	-	-	-	5,5	1,9	2,2	5,5
65	63	63	70	-	-	-	-	3,2	1,1	1,2	3,2
80	100	-	110	2,2	0,8	0,9	2,2	2	0,7	0,8	2
100	130	-	140	-	-	-	-	1,3	0,4	0,4	1,3
125	200	-	250	-	-	-	-	0,8	0,3	0,3	0,8
150	300	-	-	-	-	-	-	-	-	-	-

NOTE In order to avoid wear between plug and seat, we recommend not to overcome the differential pressure as follows:
VMB16 = 2 bar
VMS = 8 bar
3VAA/3VAACP = 12 bar

Kvs is the flow rate expressed in m^3/h of water at a temperature between 5 °C and 40°C passing through a valve open at the nominal stroke with 100 kPa (1 bar) differential pressure.

* MVLA in emergency closes direct way; MVLC in emergency opens direct way.

** Only for ST actuator.

Note The max operating pressures at different temperatures for PN various classes must correspond to the UNI 1284 table.

MODEL	STROKE TIME FOR CONTROLLI VALVES			POWER SUPPLY (Vac)	CONTROL
	16,5 mm	25 mm	45 mm		
MVL3K	26 s	40 s	70 s	24 V	proportional
	300/60 s	300/60 s	300/60 s		floating

APPLICATION AND USE

MVL actuators have linear characteristic (linear ratio between input signal and valve coupling joint movement). They are used for fluid control in air-conditioning and heating systems and in industrial processes. The control signal can be set as proportional or floating by acting on the dip switches. They are designed for direct coupling on all CONTROLLI globe valves and they may also be used easily on other manufacturers' valves having a stroke between 0 and 52 mm.
The very high force of the actuator (3000 N) enables high performances.

OPERATION

The actuators are equipped with bidirectional electrical motor, they self-adjust according to the valve stroke, granting a constant torque at the valve mechanical stroke ends regardless of their position.
All models are also provided with a feedback output signal indicating the valve position.

MANUFACTURING CHARACTERISTICS

The actuator consists in a die-cast aluminium housing, which includes mounting bracket for connection to valve body.
Reduction gears supported by ball bearings. Movement is transmitted to a rack-and-pinion mechanism connected to the valve stem through a suitable joint.
Internal electronic card with easily accessible terminals for electrical connections.
The manual control knob is placed on the front part of the actuator; the knob is in thermoplastic material.
The actuator is maintenance-free.

POSSIBLE COMBINATIONS AND CONNECTIONS

All actuators can be connected to any controller, providing that the relevant output signal complies with the requirements at "Technical Characteristics" paragraph. In particular they can be connected to CONTROLLI 500-line controllers, DIGITROLL 2000, 3000, and 200, 300, 400-line controllers and all MicroNet models.

TECHNICAL CHARACTERISTICS

Power supply	24 Vac, +25%÷ -20%
Consumption	25 VA
Dimensioning	30 VA
Frequency	50...60 Hz
Stroke	0...52 mm
Stroke time	See available models
Thrust	3000 N
Temperature	
- operating	-15T 50 °C
- storage	-25T 65°C
Allowed room humidity	Class R according to DIN 40040
Terminal board	screw-type 1,5 mm^2 wires
N. 2 conduit opening	plastic punchable, replaceable by PG 13,5 compression glands
Protection degree	IP 55 DIN 40050 (IEC 529) For highly polluted environments according to IEC 730-1(93)/6.5.3
Weight	4 Kg
Control signal	
Floating	2 SPST contacts
Proportional	
- voltage	0...10V (factory setting), 2...10V/ 4...7V/8...11V/1...5V/6...9V
-current	see MVLFS5 accessory
Output indication	
G0-Y	2...10 Vdc (max 2 mA)
Voltage outside power supply output	
G0-G1	16 Vdc (max 25 mA)

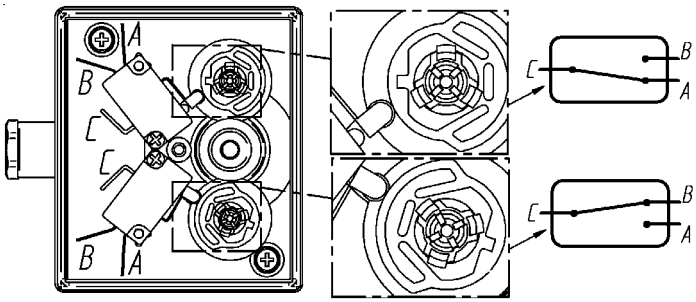
The product complies with EMC 89/336 directive according to the following standards: EN50081-1 for emission, EN50082-1 for immunity.

CONTROLLI
ISO 9000

CONTROLLI
16010 SANT'OLCESE Genova - Italy
Tel.: +39 01073061 Fax: +39 0107306870/871
E-mail: info@controlli.org Web: www.controlli.org

ACCESSORIES

DMVL **(only factory-mounted. To be ordered together with the actuator)**.
2 auxiliary microswitches (SPDT 10 (3) A-250V~) adjustable on the whole stroke. Microdisconnection type 1B according to IEC 730-1(93)/ 6.4.3.2. It is possible to place the cams so that the microswitches act according to the required position. Keep in mind that when the lever is on the cam protruding part, the contact is closed between b and c and open between c and a (see figure below).



Make the electrical connections in compliance with the rules in force.
Attention: during operation, the cables must not interfere with the cams and the gears.

DMVF 2 stroke end microswitches with electronic control, not adjustable.

MVLFS5 Accessory for 4÷20 mA control signal.
This accessory is factory-supplied with MVL56FA/C actuators.

MVLHT Valve body-actuator spacer reducing the actuator direct exposure in case of installation with high-temperature fluids.
Dimensions: Ø 120 mm; h = actuator height + 102 mm

245 Stem heater 24 V~, 50 W (for applications with fluid temperature <-10 °C)

INSTALLATION AND MOUNTING

The actuator can be mounted in the positions shown in Fig. 3. It is advisable to use the motorized valve with MVLHT spacer in order to reduce the actuator working temperature in case of fluids at high temperatures (approximately > 120° C) in the valve body. For fluids over 160°C avoid mounting the actuator in vertical position on the valve so as to avoid the direct exposure to heat sources.
Carry out the electrical connections by removing the cover, in compliance with the rules in force. For valve mounting, follow the assembly instructions inside the package.
These actuators are factory-supplied with 0...10 V- control signal. To select different ranges, move the “DIP” microswitches (see fig. 1 and 2).
For 4...20 mA range it is necessary to select 1...5 V range and use the MVLFS5 accessory.
To reverse the action direction, move the DIP 7 from OFF to ON.

ELECTRONIC BOARD

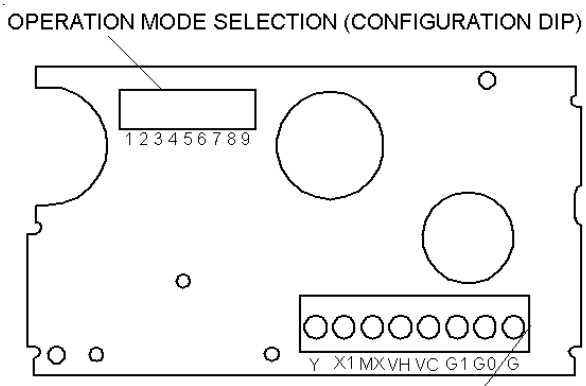


FIG. 1

WIRING DIAGRAMS

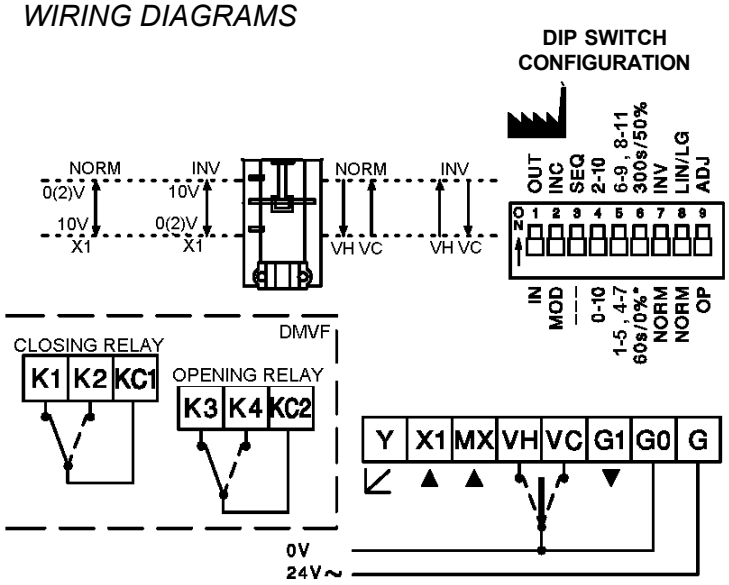


FIG. 2

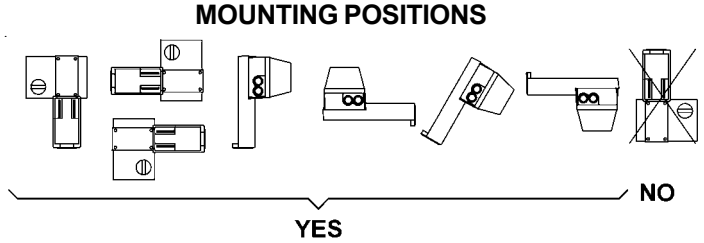


FIG. 3

DELTA P MAX (BAR) WITH CONTROLLI VALVES

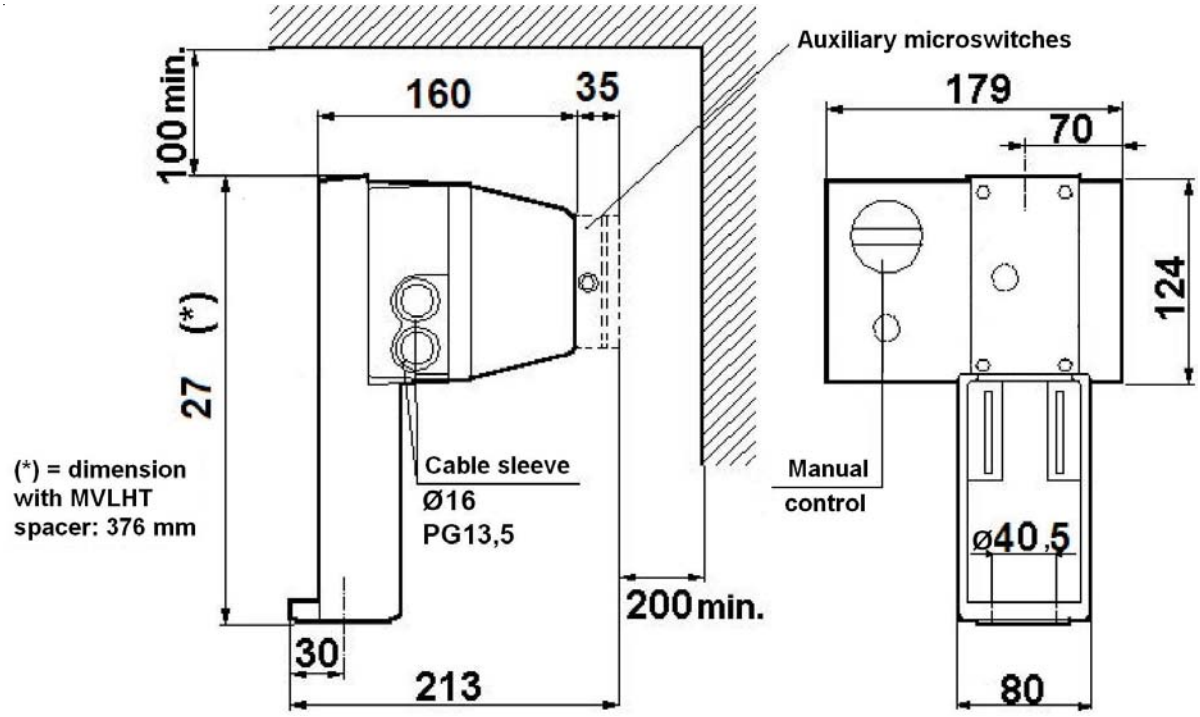
Two-way

	80	100	125	150
SSGA	5,5	3,5	--	--
SSAA/SSAACP	5	--	--	--
VSG	5,7	3,7	2,3	1,6

Three-way

	80	100	125	150
VMB16	5,7	3,7	2,3	1,6
3VSA	5,5	--	--	--
3VSATS	5	--	--	--
3VAA/3VAACP	5,3	3,3	2,1	--

OVERALL DIMENSIONS (mm)



The performance stated in this sheet can be modified without any prior notice due to design improvement.