Two/three-way Valves PN16

VSBT-VMBT

CE

MODELS		DN	FLOW RATE	STROKE
		inches	Kvs	mm
Two-way	**Three-way**		m^2/h	
VSBT3	VMBT3	¾	6,3	5,5
VSBT4	VMBT4	1	10	5,5
VSBT5	VMBT5	1¼	13	5,5
VSBT6	VMBT6	1½	16	5,5

APPLICATION AND USE

VSBT two-way and VMBT three-way valves can be used for fluid control in industrial and residential air-conditioning, thermoventilation and heating plants and in product thermal process machinery.
Three-way valves must be used only as mixers, angle way must never be employed for control purposes.

MANUFACTURING CHARACTERISTICS

G25 cast iron valve body.
Brass plug with Contoured-type profile on direct way and V-port profile on angle way.
CrNi steel stem. Female threaded connections.
Double BUNA O-ring stem packing.

ACTUATORS

VSBT and VMBT valves are actuated by CONTROLLI MVT actuators.

VALVE MODELS		**ACTUATORS**
		D P max (KPa)
Two-way	Three-way	MVT
VSBT3	VMBT3	170
VSBT4	VMBT4	100
VSBT5	VMBT5	70
VSBT6	VMBT6	50

ΔPmax = max differential pressure ensured by the actuator for normal operation.
100 Kpa = 1 bar

TECHNICAL CHARACTERISTICS

Operating pressure	1600 Kpa max (16 bar)
Control characteristic	linear
Rangeability (Kvs/Kvm)	≥ 50
Leakage	
VSBT	< 0,03% of Kvs
VMBT	direct way < 0,03% of Kvs angle way < 2% of Kvs
Connections	Female thread
Stroke	5,5 mm
Allowed fluids	
water	max temperature 95 °C min.temperature 5 °C
glycol-added	max 50%
Weight	See overall dimensions

OPERATION

The valve is normally closed (A-AB way).
By pushing the stem inwards, the actuator opens A-AB way and, in three-way valves, it contemporarily closes the angle way B-AB.

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INSTALLATION

Before mounting, ensure pipes are clean, free from weld slag, perfectly aligned with the valve body and not subjected to vibrations.
As far as valve mounting positions are concerned, follow the instructions given in the actuator data sheets.
While mounting, respect the fluid directions indicated by the letters on the valve body (see fig. 1 and 2).

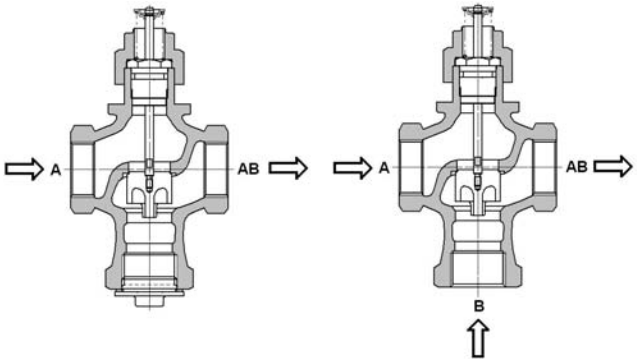
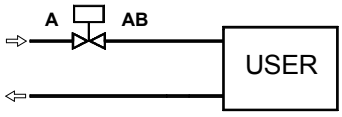


FIG. 1 **FIG. 2**

APPLICATION SCHEMES

VSBT VALVES

a) Variable flow control to the user



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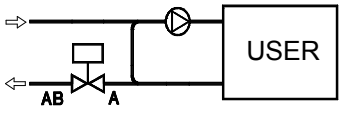
b) Constant flow control to the user in injection circuits



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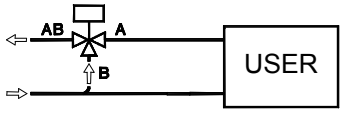
VMBT VALVES

c) Variable flow mixing to the user



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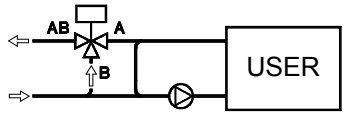
d) Constant flow mixing to the user in injection or tapping circuits



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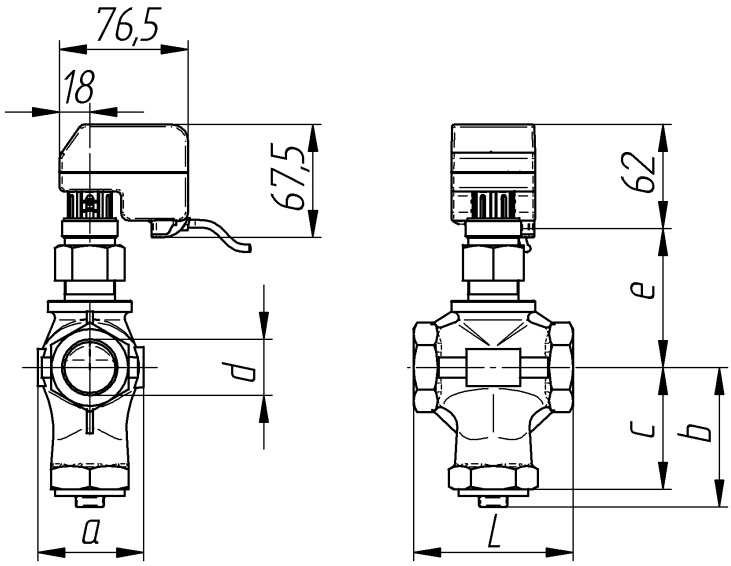
OVERALL DIMENSIONS (mm)



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		VALVE DIMENSION								WEIGHT Kg
		VSBT				VMBT				
DN	Ø d	L	a	e	b	L	a	e	c	
¾""	G ¾""	85	54	78	79	85	54	78	67,5	1,1
1""	G 1""	95	62	83	83	95	62	83	72,5	1,5
1 ¼""	G 1 ¼""	108	70	87	90	108	70	87	78,5	2
1 ½""	G 1 ½""	120	81	94	98	120	81	94	85,5	2,7

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

Terminal unit and zone valve actuators

MVT

CE

PART NUMBER	CONTROL SIGNAL	POWER SUPPLY
MVT28	3 floating	230 V~
MVT44	3 floating	24 V~
MVT56	proportional 0…10/6…10/1…5/2…10 4…7/6…9/8…11V-	
MVT57	proportional 0…10V-	

Table 1

APPLICATION

MVT actuator is designed to provide, with V.XT, V.T and V.BT valve bodies, floating control of hot/cool water in two/four-pipe fan-coil units, zone and solar plants, reheat coils and dehumidification batteries.

OPERATION

MVT actuator is electric bidirectional.
The valve stem movement is produced by rotation of a screw spindle connected, through a gear train, to a synchronous bidirectional motor.
An internal magnetic hysteresis coupling limits the torque on the valve stem, avoiding the usage of microswitches and protecting the actuator from overload.

MANUFACTURING CHARACTERISTICS

The actuator consists of a base and a housing made of syntetic materials which contain motor, gear box, magnetic coupling, valve driving screw spindle.
A ring nut M30x1.5 is placed on the lower part; it allows an easy coupling to the valve without special tools.
The actuator is equipped with a cable for 3-wire electrical connection. It requires no maintenance.

POSSIBLE COMBINATIONS AND CONNECTIONS

MVT actuators are to be used with CONTROLLI V.XT, V.T, V.BT valves.
The MVT28/44 series can be connected to any 3-position controller, with characteristics corresponding to details included in the paragraph “TECHNICAL CHARACTERISTICS”.
The MVT5. series is standard proportional as indicated on table 1. Due to the presence of the magnetic clutch, the actuator could be continuously powered up without damages but, for life increase and energy saving, it is highly reccomended to use a controller equipped with a cut-off function (suggested timing 120% of stroke time).

TECHNICAL CHARACTERISTICS

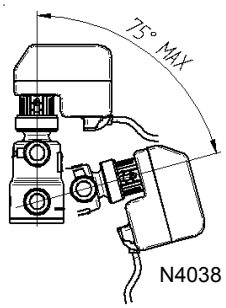
Power supply	24 V ~ ± 10% 230 V ~ ± 10% (MVT28)
Consumption	0,5 VA (MVT44) 1 VA (MVT5.) 5 VA (MVT28)
Frequence	50/60 Hz
Stroke timing	100 s for V.T valves having 5,5 mm stroke (at 50 Hz)
Speed	18 s/mm at 50 Hz - 15 s/mm at 60 Hz
Force	200 N (UNI 9497)
Temperature:	
- working	-5T55 °C
- storage	-25T65 °C
Protection class	III (IEC 950)
Connecting cable	3-wire 1,5 m (CEI 20-22/II)
Protection degree	IP43 CEI EN 60529
Weight	0,2 Kg.

The product conforms to EMC 89/336 directive with reference to the below-mentioned standards:
for emission EN 50081-1 for immunity EN 50082-1

INSTALLATION AND MOUNTING

The actuator can be mounted in the positions indicated below. Before assembling the actuator to the valve, remove the protection cap from valve and make sure that the actuator screw spindle corresponds to the upper notch on the base plate (factory supplied position). Otherwise, it is advisable to consider that, in order to mount the actuator on the valve correctly, the force of the valve internal spring will have to be overcome.Then it should be fixed by tightening the M30X1,5 ring nut on the thread located on the valve body (Fig. 1).

Mounting positions allowed



Perform the electrical connections in compliance with existing rules (Fig. 2)
Through the slits located by the ring nut, it is possible to observe the valve stem movement.

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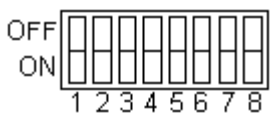
RANGE AND ACTION SELECTION

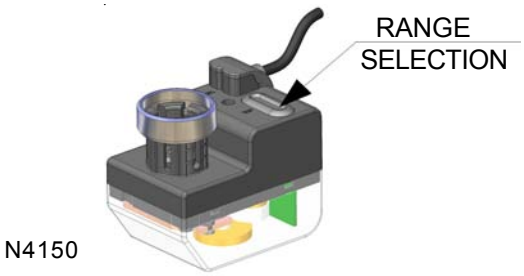


RANGE	DIP NR..
0..10 V	2
6..9 V	3
1..5 V	4
2..10 V	5
4..7 V	6
6..10 V	7
8..11 V	8

MVT56

The actuator is supplied with 0..10 V- signal and direct action. In case a different setting is required:

- Remove the rubber plug (see the figure below)
- Switch on 'ON' position the DIP 2..8 corresponding to the required range.
- Direct action: Position DIP N.1 on OFF
  Screw spindle lowers if signal increases (for 3-way valves the direct way is opened and for 2 way-valves it opens).
- Reverse action: Position DIP N.1 on ON
  Screw spindle raises if signal decreases (for 3-way valves the direct way is closed and for 2 way-valves it closes).
- Replace the rubber plug in the previous position.



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MVT57

MVT57 actuator has 0..10 V- fixed working signal, direct action.

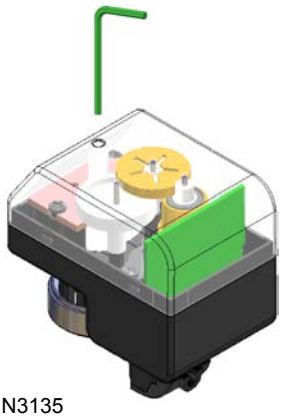
START UP

Supply the controller-actuator system, after having mounted the actuator on the valve body and once the electrical connections are performed and the action ranges selected. When powered, the actuator reaches one stroke end and remains in this position for about 2 min. Afterwards, the actuator will reach the position set by the controller signal (MVT56,57).

MANUAL CONTROL

It is possible to start all MVT models with manual control by means of a socket head key (3 mm).

It is necessary to power off the actuator before starting the manual control.



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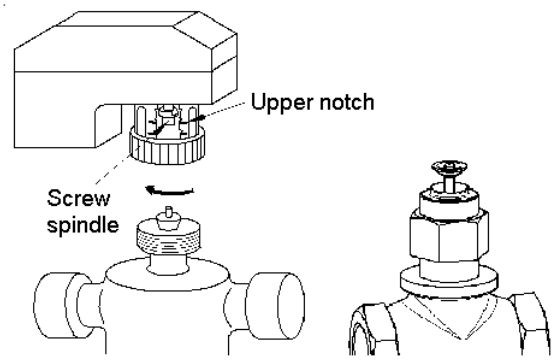
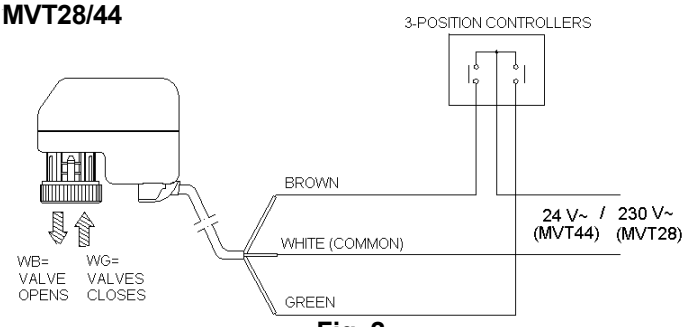
VALVES-ACTUATOR ASSEMBLY



N4039 **Fig. 1**

ELECTRICAL DIAGRAM

MVT28/44



N3032 **Fig. 2**

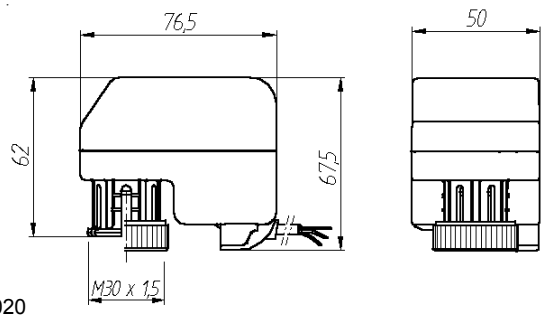
MVT28 actuator is supplied with a screw-safety connector cover. We recommend to carry out the connection with the actuator powered off. At the end of the wiring procedures mount and screw again completely the connector.

MVT56/57

Brown	=	24 V~ 50/60 Hz
White	=	Common
Green	=	V Control signal

Ⓐ Never perform nor change electrical connections when power supply in on.

DIMENSIONS (mm.)



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MVT+VALVES ASSEMBLY OVERALL DIMENSIONS

For MVT-valve assembly overall dimensions, make reference to the following data sheets: DBL216 (for V.XT valves), DBL025 (for V.T valves) and DBL102 (for VB.T valves).