2-3 way valves PN 16

VSBT-VMBT

PART NUMBER 2-way	PART NUMBER 3-way	SIZE DN	FLOW RATE Kvs m^3/h
VSBT3	VMBT3	3/4"	6,3
VSBT4	VMBT4	1"	10
VSBT5	VMBT5	1 1/4"	13
VSBT6	VMBT6	1 1/2"	16

APPLICATION AND USE

VSBT (2-way) and VMBT (3-way) valves can be used for fluid control in heating and air conditioning plants for both residential and industrial use, as well as with machines for products thermic treatment.
3-way valves will only be used for mixing. Angle way (B-AB) is never to be used for control.

OPERATION

Valve is normally closed (straight way A-AB).
MVT actuator pushes the stem down and opens the straight (A-AB) way in 2-way models, while with 3-way models also the angle way (B-AB) gets simultaneously closed.

MANUFACTURING CHARACTERISTICS

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

ACTUATORS

VSBT and VMBT are actuated by CONTROLLI MVT actuators.

VALVES 2-way	VALVES 3-way	ACTUATORS ΔPmax (KPa) MVT
VSBT3	VMBT3	170
VSBT4	VMBT4	100
VSBT5	VMBT5	70
VSBT6	VMBT6	50

ΔPmax = max. differential pressure secured by acturator for regular working conditions.

100 Kpa = 1 bar

TECHNICAL CHARACTERISTICS

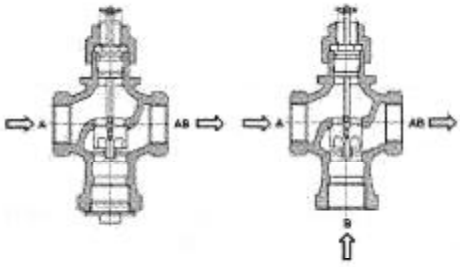
Working pressure	1600 Kpa max (16 bar)
Control characteristic	linear
Rangeability (Kvs/Kvm)	≥ 50
Leakage	
VSBT	< 0,03% of Kvs
VMBT	
straight way	< 0,03% of Kvs
angle way	< 2% of Kvs
Connections	Female threaded
Stroke	5,5 mm
Fluids allowed	
water	
max temperature	95 °C
min. temperature	5 °C
glycole added	max 50%
Weight	See 'Overall Dimensions'

CONTROLLI
ISO 9002

factory and headquarter:
16010 sant'olcese, genova
via c. levi, 52

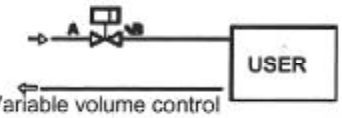
INSTALLATION

Before valves are mounted, make sure that pipes are clean, free from welding scales and that they are perfectly lined up with valve body. Valves must not be subject to vibrations.
When mounting, conform to flow directions as shown by letters on valve bodies (see ill. 1 and 2).

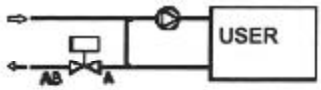


DIAGRAMS ILL. 1 ILL. 2

VSBT valves



940425F1 a) Variable volume control

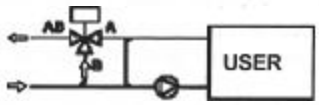


b) Constant volume control on injection circuits

940425F2

VMBT valves

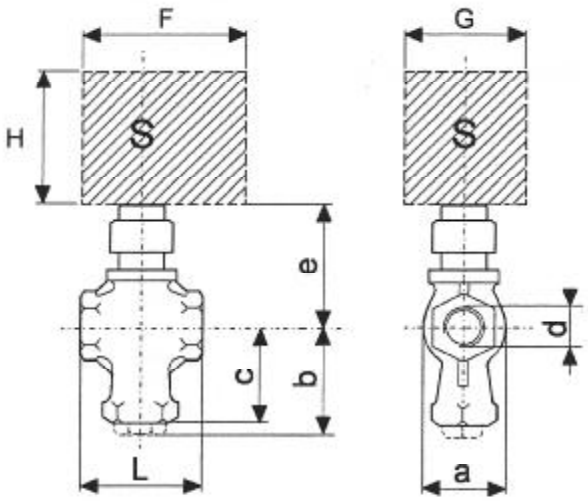
940425F3 c) Variable volume for mixing unit



d) Constant volume for mixing unit on either injection or tap circuits.

940425F4

OVERALL DIMENSIONS (mm)



S = Minimum overall dimensions required for actuator mounting.

VALVE DIMENSIONS (mm)										Weigh t
		VSBT				VMBT				(kg)
DN	d	L	a	e	b	L	a	e	c	--
3/4"	G 3/4	85	54	78	79	85	54	78	67,5	1,1
1"	G1	95	62	83	83	95	62	78	67,5	1,2
11/4 "	G11/4	108	70	87	90	108	70	87	78,5	2
11/2"	G11/2	120	81	94	98	120	81	94	85,5	2,7

ACTUATOR DIMENSION S (mm)			
	H	F	G
MVT4	85	76,5	50
MVT5	85	109	50

Terminal unit and zone valve actuators

MVT

CE

PART NUMBER	CONTROL SIGNAL	POWER SUPPLY
MVT44	3 position	24 V~
MVT441	3 position without cable	
MVT56	proportional 0…10/6…10/1…5/2…10 4…7/6…9/8…11V-	
MVT57	proportional 0…10V-	
MVT56A	proportional 4÷20 mA	

TABLE 1

APPLICATION

MVT actuator is designed to provide, with 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

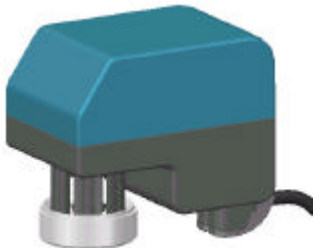
The actuator consists of a base and a housing made of syntetic materials which contain motor, gear box, magnetic coupling, valve driving screw spindle.
A ring nut M30x1.5 is placed on the lower part; it allows an easy coupling to the valve without special tools.
The actuator is equipped with a cable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

POSSIBLE COMBINATIONS AND CONNECTIONS

MVT actuators are to be used with CONTROLLI VST, VMT, VTT, VSBT, VMBT valves.
The MVT4. 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).

ACCESSORIES

MVT44C1 Cable for MVT441 3-wire 1,5 m (CEI 20-22/II)



N4149

TECHNICAL CHARACTERISTICS

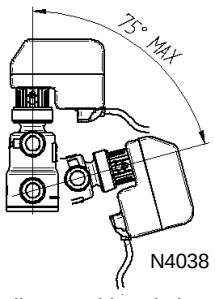
Power supply	24 V ~ ± 10%
Consumption	0,5 VA (MVT4.) 1 VA (MVT5.)
Frequence	50/60 Hz
Stroke timing	100 s for V.T valves having 5,5 mm stroke (at 50 Hz)
Speed	18 s/mm at 50 Hz - 15 s/mm at 60 Hz
Force	200 N (UNI 9497)
Stroke	6,5 mm
Temperature:	
- working	-5T55 °C
- storage	-25T65 °C
Protection class	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



N4038

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.
With 24 V~ voltage between white (common) and brown the actuator lowers the valve stem, between white (common) and green the actuator lifts the valve stem.

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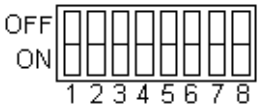
RANGE AND ACTION SELECTION

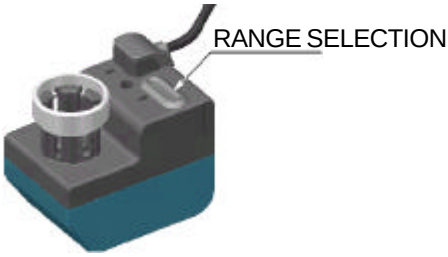


RANGE	DIP NR..
0..10 V	2
6..9 V	3
1..5 V	4
2..10 V	5
4..7 V	6
6..10 V	7
8..11 V	8

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 (V.T and VB.T valves, direct way opened).
- Reverse action: Position DIP N.1 on ON
  Screw spindle raises if signal decreases (V.T and VB.T valves, direct way closed).
- Replace the rubber plug in the previous position.



N4150

MVT57

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

MVT56A

MVT56A actuator has 4..20 mA fixed working signal, direct action.

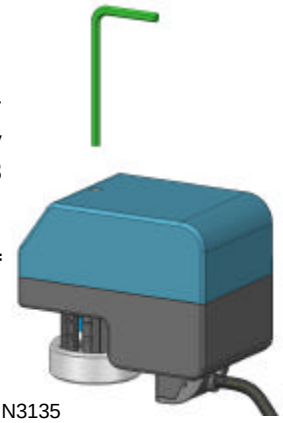
START UP

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 (MVT56,57,56A).

MANUAL CONTROL

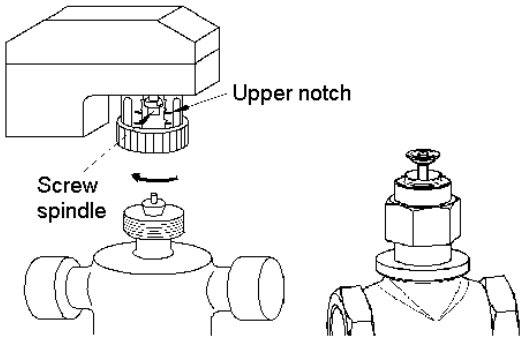
It is possible to start all MVT models with manual control by means of a socket head key (3 mm).

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



N3135

V.T. AND VB.T VALVES-ACTUATOR ASSEMBLY

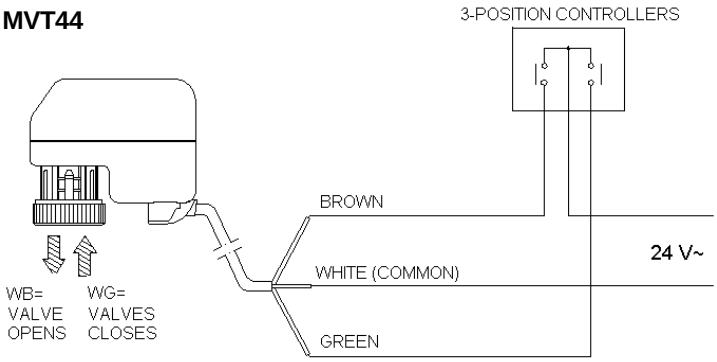


N4039

Fig. 1

ELECTRICAL DIAGRAM

MVT44



N3032

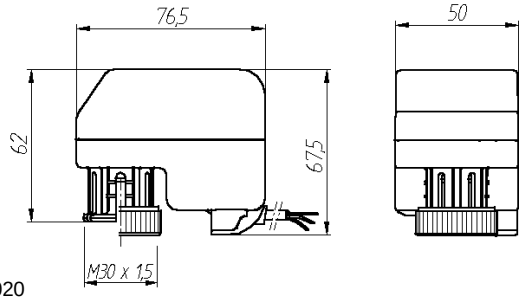
Fig. 2

MVT56/56A/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.)



N4020

MVT - V.T. VALVES ASSEMBLY OVERALL DIMENSIONS

For MVT-valve assembly overall dimensions, make reference to DBL025 data sheet (for V.T valves) and DBL102 (for VB.T valves).

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