

Smart Valve Positioner for Rotary Valve

Model SVX100/SVX102

OVERVIEW

Model SVX is microprocessor-equipped, electropneumatic smart valve positioner for rotary valves.

The SVX receives a DC current signal from control devices and controls pneumatic valves. In addition to this basic function, the SVX has communication capabilities, automatic configuration program, and self-diagnostics functions that will greatly increase productivity and the efficiency of plant operation.

Calibration, configuration and self-diagnostics can be performed by using a HART communicator. (model SVX102 only)

FEATURES

(1) Easy to use

• Auto setup

The auto-setup function is a fully-automatic configuration program which specifies the actuator and adjusts the zero and span of the rotary valve. The program can be turned on simply from a switch so that adjustments to the rotary valve can be performed quickly and safely in hazardous areas.

(2) Valve diagnostic (for model SVX102, software version 4.9 or later)

Following parameters can be monitored by HART communicator or Control Valve Maintenance Support System "Valstaff".

- Stick Slip
- Cycle Count
- Total Stroke
- Shut-off Count
- Travel Histogram
- Max. Travel Speed.



(3) Flexibility in installation

The models SVX100 and SVX102 are available either as a fork lever type or a stroke lever type to facilitate installation on rotary valves.

• Fork lever type

The SVX can be compactly installed on the upper side of the stem.

• Stroke lever type

The valve stem can be adjusted with a pipe wrench. (For manual operation)

• Direct mounting type

The SVX can be installed to NAMUR cylinder actuator without linkage.

(4) Improving rotary valve controllability

Flow characteristics can be freely set for 16 points, which improves the controllability of a rotary valve that has unique flow characteristics.

(5) Forced fully closed settings

The user can set any input signal value as the low threshold which triggers valve shutoff.

The models SVX100 and SVX102 can be used by connecting the input signal cable (4–20 mA) the same as for the conventional type. Figure 1 shows the wiring for the models SVX100 and SVX102.

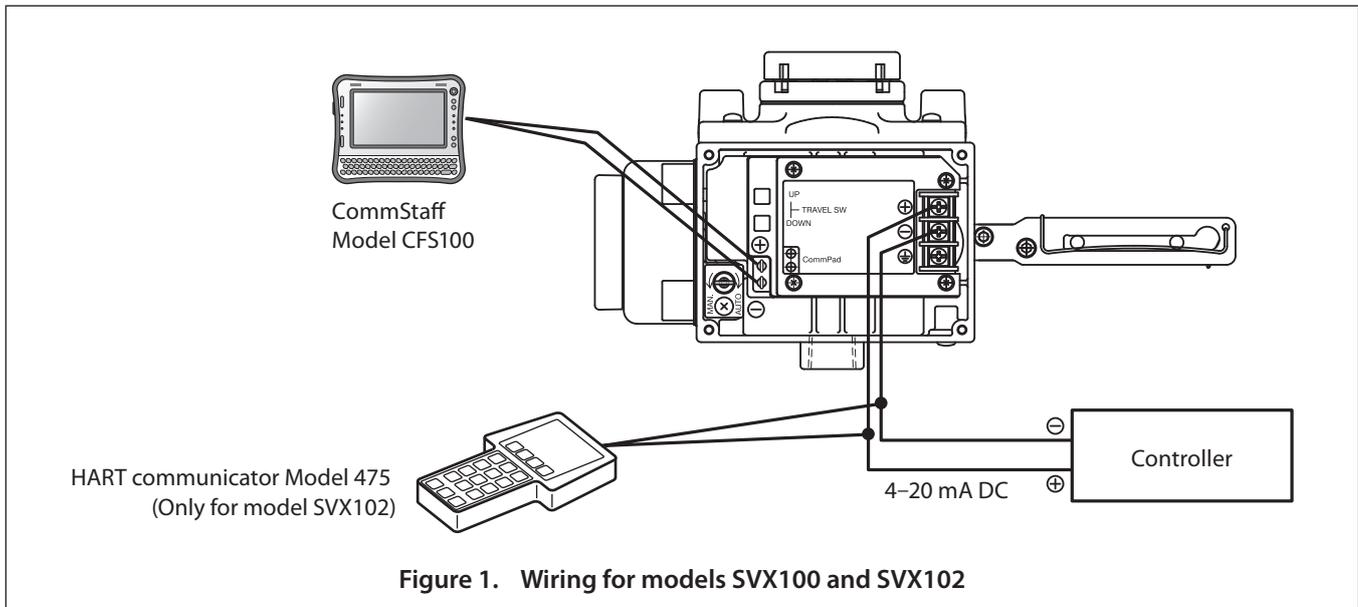


Figure 1. Wiring for models SVX100 and SVX102

List of Features

Item	Function
Forced fully open/closed	The control valve can be fully closed or opened securely when the desired percentage of input signal is reached.
Desired flow characteristics	The relationship between input signal and valve travel that is appropriate for the process can be defined by using a 15-point broken line.

Standard Specifications

Item	Function	
Applicable actuator	Pneumatic single and double acting, linear and rotary motion actuator	
Input signal	4–20 mA DC	
Input resistance	SVX100: 300 Ω typically / 20 mA DC (6 V DC between terminals) SVX102: 400 Ω typically / 20 mA DC (8 V DC between terminals)	
Lightning protection	Peak value of voltage surge: 12 kV Peak value of current surge: 1000 A	
Flow characteristics	Linear, Equal percentage, Quick opening, Custom user characteristics (15 segments)	
Manual operation	Auto/Manual external switch (For single acting actuator only)	
Supply air pressure	140 to 700 kPa	
Air consumption	10 L/min (N) or less: with steady supply air pressure of 400 kPa and output of 50 %	
Maximum air deliver flowrate	250 L/min (N) at 400 kPa	
Output balanced pressure	55±5 % for double acting actuator only	
Air connections	Rc1/4 or 1/4NPT internal thread	
Electrical connections	G1/2, 1/2NPT or M20×1.5 internal thread	
Ambient temperature limits	–40 to +80°C	
Ambient humidity limits	10 to 90 %RH	
Finish and color	Finish: Baked acrylic Color: Dark blue	
Material	Cast aluminum	
Weight	1.8 kg (2.2 kg with pressure gauge)	
Performance	Accuracy	±1%F.S. (±2.5% with custom output characteristics)
	Turning range	50 to 90°
Enclosure classification	JIS C 0920 watertight NEMA type 4X	
Configuration tools	HART communicator model 475 (According to need, please update a software and device description files.) Field Communication Software CommStaff model CFS100	

Conditions of supply air (JIS C 1805-1 (2001))

Item	Specification
Particles	Maximum diameter 3 μmm
Oil mist	Less than 1 ppm at mass
Humidity of the air supply	The dew point should be at least 10 °C lower than the temperature of this device.

To meet the above specifications for instrument air, install the air purification devices listed below properly in the specified installation location.

Examples of air purification devices

Installation	Air purification device	SMC corporation	CKD corporation
Compressor outlet or main line	Line filter	AFF series	AF series
	Mist separator	AM series	
Terminal device	Mist separator	AM150 or AM250 series	M3000S type

Model Selection

Basic model number

SVX100	Analog signal (4 to 20 mA DC)
SVX102	Analog signal (4 to 20 mA DC) HART communication protocol

Selection

		Selection				Option				
Structure	Standard	X								
Connection	Electrical connection	Air piping connection	Mounting thread							
	G1/2	Rc1/4	M8	G						
	1/2NPT	1/4NPT	M8	N						
	1/2NPT	1/4NPT	5/16-18UNC	U						
Finish	Standard finish	S								
Feedback lever type	Fork lever type			R	X					
	Stroke lever type			S	X					
	Direct mounting type			D	X					
Pressure gauge joint	No selection					X				
	With T type joint *4					T				
Supply air pressure type	No pressure gauge *5						X			
	200 kPa (Supply air pressure: 130≤Ps≤150 kPa) *4						1			
	400 kPa (Supply air pressure: 150≤Ps≤300 kPa) *4						2			
	600 kPa (Supply air pressure: 300≤Ps≤450 kPa) *4						3			
	1000 kPa (Supply air pressure: 450≤Ps≤700 kPa) *4						4			
Pressure units	No selection *5							X		
	kPa *5							A		
	(kgf/cm ²)*1 *5							B		
	MPa *5							C		
	bar *5							D		
	(psi)*1 *5							E		
Option	No selection								X	X
	For single acting actuator (with plug for OUT2) *2								P	D
	With mounting bracket *3								B	A
	With NAMUR joints for direct mounting type *6								M	D

*1. No domestic sales in Japan due to Non-SI unit.

*2. In case of using the device as a single acting actuator, close the output air pressure connecting plug (OUT2). (The device cannot be used when the output air pressure plug (OUT1) is closed.)

*3. Please select a mounting bracket model (model SVA).

*4. In the case of selecting the pressure gauge, select with T type joint in pressure gauge joint.

*5. In the case of selecting "No pressure gauge" in "Supply air pressure type", select "No selection" in "Pressure units".

*6. Please select a "code D - Direct mounting type (For rotary valves)" as shown in selection "Feedback lever type".

Model selection of mounting bracket

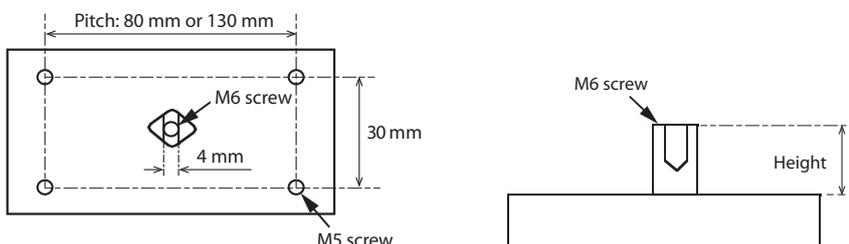
Model SVA

1				
	0			
	1			

Mounting bracket material	SUS304	
	SS400 standard zinc plated (bolt and nut is SUS304)	1
Mounting thread	Metric thread (Select when SVX thread connection code is "G" or "N.")	0
	Unify thread (Selection when SVX thread connection is "U")	1

Mounting bracket *2	KITZ B series B-1, BS-1, BSW-1 *4	B	K	T	1
	KITZ B series B-2, BS-2, BSW-2 *4	B	K	T	2
	KITZ B series B-3, BS-3, BSW-3 *4	B	K	T	3
	KITZ B series B-4, BS-4, BSW-4 *4	B	K	T	4
	KITZ B series B-5, BS-5, BSW-5 *4	B	K	T	5
	KITZ B series B-6, BS-6, BSW-6 *4	B	K	T	6
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AK09, 09S, 12, 12S, 15, 15S *4	K	A	K	1
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG06, 06S *4	K	A	G	1
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG09, 09S *4	K	A	G	2
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG13, 13S *4	K	A	G	3
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW13, AW13S *4	K	A	W	1
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW17, 17S *4	K	A	W	2
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW20, 20S *4	K	A	W	3
	Zomox (EL-O-MATIC) E25, 40, 65, 100, 200, 350 *4	E	M	E	1
	Zomox (EL-O-MATIC) E600, 950, 1600, P2500, 4000 *4	E	M	E	2
	Tomoe Valve Z series Z-06, 08, 11, 13 *4	C	B	F	1
	Tomoe Valve T-matic 3Q-1, 2, 3, 4, 3I-1, 2, 3, 4 *4	C	B	T	1
	KITZ B series B-1, BS-1, BSW-1 *1	B	K	T	G
	KITZ B series B-2, BS-2, BSW-2 *1	B	K	T	H
	KITZ B series B-3, BS-3, BSW-3 *1	B	K	T	J
	KITZ B series B-4, BS-4, BSW-4 *1	B	K	T	K
	KITZ B series B-5, BS-5, BSW-5 *1	B	K	T	L
	KITZ B series B-6, BS-6, BSW-6 *1	B	K	T	M
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AK09, 09S, 12, 12S, 15, 15S *1	K	A	K	B
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG06, 06S *1	K	A	G	D
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG09, 09S *1	K	A	G	E
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AG13, 13S *1	K	A	G	F
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW13, AW13S *1	K	A	W	G
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW17, 17S *1	K	A	W	H
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW20, 20S *1	K	A	W	J
	Pentair Valve and Control Japan (Formerly Kitamura Valve) AW28, 28S *1	K	A	W	K
	Tomoe Valve Z series Z-06, 08 *1	C	B	F	D
	Tomoe Valve Z series Z-11 *1	C	B	F	E
	Tomoe Valve Z series Z-13 *1	C	B	F	F
	Tomoe Valve T-matic 3Q-1, 2, 3, 4, 3I-1, 2, 3, 4 *1	C	B	T	B
	NAMUR STANDARD (pitch 80 mm, height 20 mm) *1 *3 Zomox (EL-O-MATIC) E-25, 40, 65, 100, 200, 350 Nihon Koso 6300 series 63A2, AT series AT20	R	U	M	1
	NAMUR STANDARD (pitch 80 mm, height 30 mm) *1 *3 Zomox (EL-O-MATIC) E600, 950, 1600, P2500, 4000 Nihon Koso 6300 series 63A4, AT series AT40	R	U	M	2
	NAMUR STANDARD (pitch 130 mm, height 30 mm) *1 *3 Zomox (EL-O-MATIC) E600, 950, 1600, P2500, 4000 Nihon Koso 6300 series 63A4, AT series AT40	R	U	M	3
	NAMUR STANDARD (pitch 130 mm, height 50 mm) *1 *3 Nihon Koso 6300 series 63A5, AT series AT50	R	U	M	4
	NAMUR STANDARD (pitch 80 mm, height 20 mm) *3 *5	R	U	M	A
	NAMUR STANDARD (pitch 80 mm, height 30 mm) *3 *5	R	U	M	B
	NAMUR STANDARD (pitch 130 mm, height 30 mm) *3 *5	R	U	M	C
	NAMUR STANDARD (pitch 130 mm, height 50 mm) *3 *5	R	U	M	D

*1. For fork lever type. (Mounting bracket material is only SUS304) *2. Select mounting bracket depend on the feedback lever type.
*3. Confirm the pitch and height for NAMUR standard actuator. *4. For stroke lever type *5. For direct mounting type

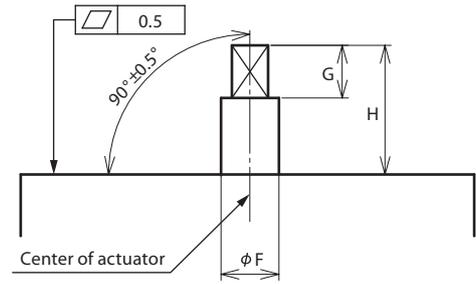
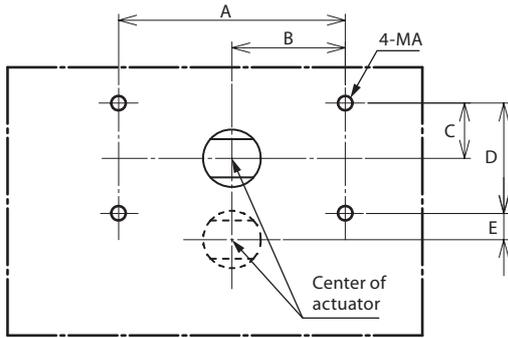


Code	RUM1	RUM2	RUM3	RUM4
Pitch	80	80	130	130
Height	20	30	30	50

DIMENSIONS

Actuator type A

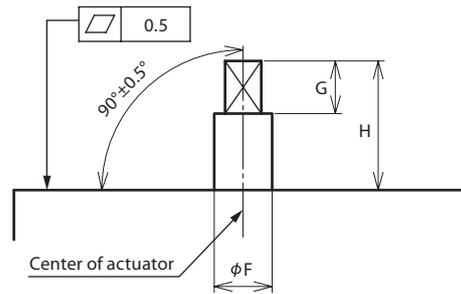
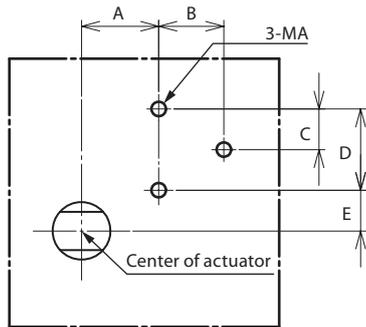
Unit: mm



Actuator manufacturer	Model No.	A	B	C	D	E	H	G	MA	SVX mounting bracket model No.
KITZ	B-1, BS-1, BSW-1	35.4	17.7	35.4	17.7	—	89	12	4-M6	BKTA
KITZ	B-2, BS-2, BSW-2	35.4	17.7	35.4	17.7	—	94	17	4-M6	BKTB
KITZ	B-3, BS-3, BSW-3	60	30	60	30	—	99	23	4-M10	BKTC
KITZ	B-4, BS-4, BSW-4	88.4	44.2	88.4	44.2	—	122	32	4-M12	BKTD
KITZ	B-5, BS-5, BSW-5	88.4	44.2	88.4	44.2	—	86	—	4-M12	BKTE
KITZ	B-6, BS-6, BSW-6	107.5	53.8	107.5	53.8	—	77	—	4-M10	BKTF
Pentair Valve and Control Japan	AW13	210	105	23	46	26	74	32	4-M6	KAWA
Pentair Valve and Control Japan	AW17	110	55	40	80	—	99	60	4-M16	KAWB
Pentair Valve and Control Japan	AW20	120	60	100	50	—	109	70	4-M20	KAWC

Actuator type B

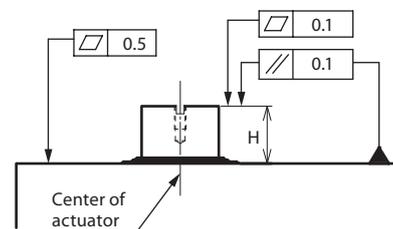
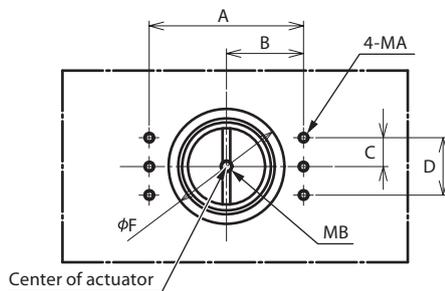
Unit: mm



Actuator manufacturer	Model No.	A	B	C	D	E	H	G	MA	SVX mounting bracket model No.
Pentair Valve and Control Japan	AG06	42	45.2	23	46	9.5	32	13	3-M6	KAGA
Pentair Valve and Control Japan	AG09	57	45	23	46	23	35	16	3-M6	KAGB
Pentair Valve and Control Japan	AG13	77	65	23	46	50	48.5	28	3-M6	KAGC

Actuator type C

Unit: mm

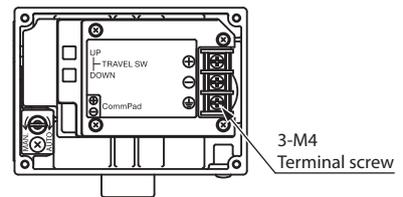
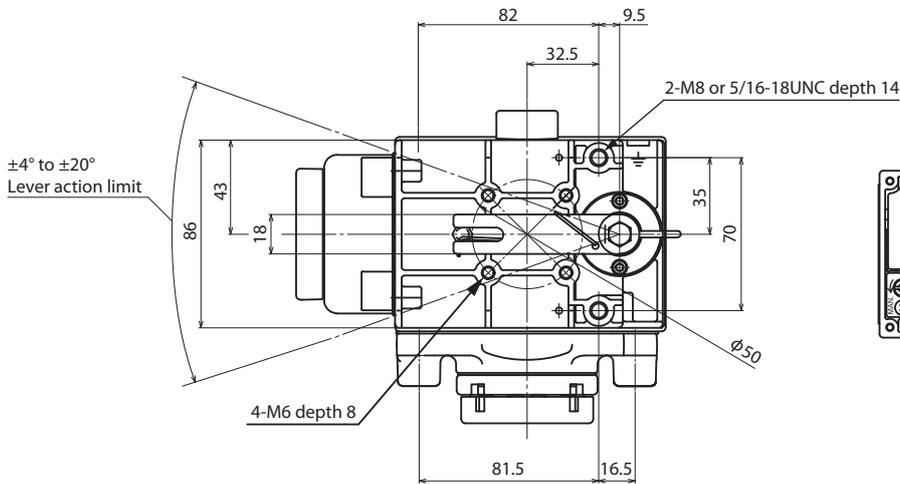
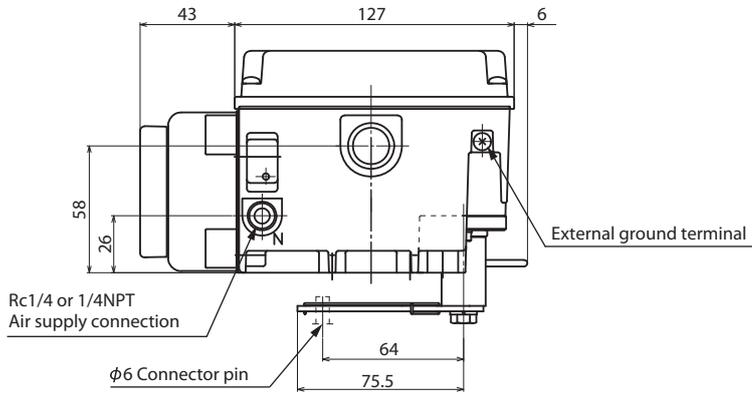
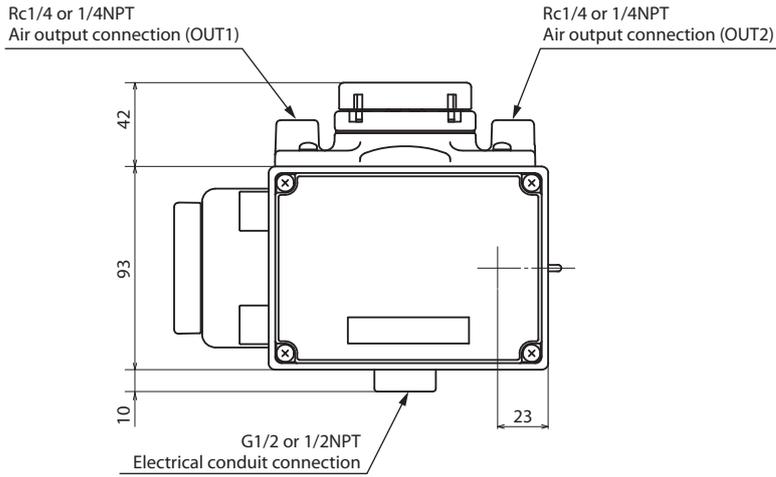
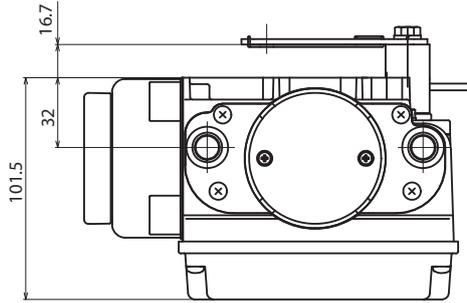


Actuator manufacturer	Model No.	A	B	C	D	φF	H	MA	MB	SVX mounting bracket model No.
—	NAMUR	80	40	15	30	65	20	4-M5	M6	RUM1
—	NAMUR	80	40	15	30	65	30	4-M5	M6	RUM2
—	NAMUR	130	65	15	30	115	30	4-M5	M6	RUM3
—	NAMUR	130	65	15	30	115	30	4-M5	M6	RUM4
Pentair Valve and Control Japan	AK05, 07, 09, 12, 15	100	50	30	60	—	37, 45	4-M6	M6	KAKA
KITZ	T-matic	64	32	—	—	—	30	2-M6	M6	CBTA
KITZ	Z06, 08, 11	152	76	18	36	—	47, 52	4-M6	M8	CBFB
KITZ	Z13	152	76	18	36	—	65	4-M6	M8	CBFC

DIMENSIONS

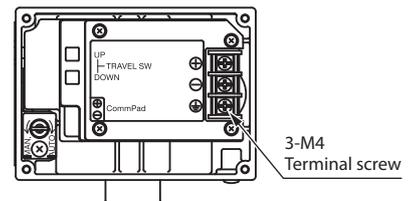
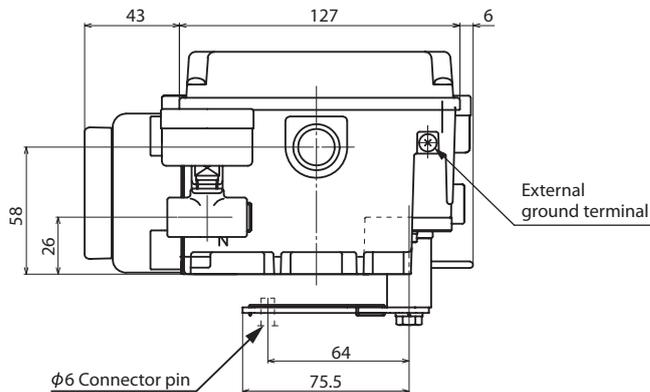
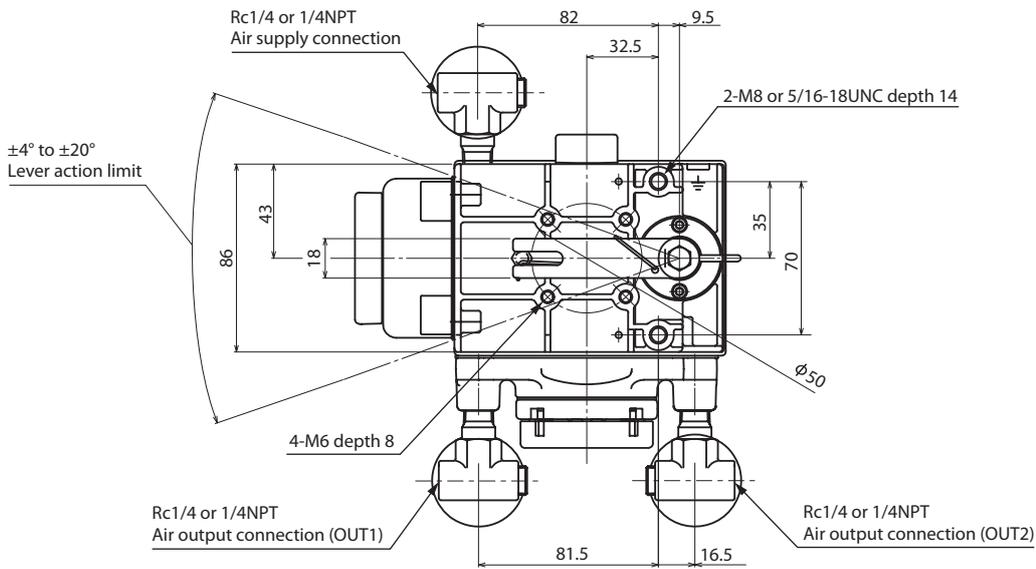
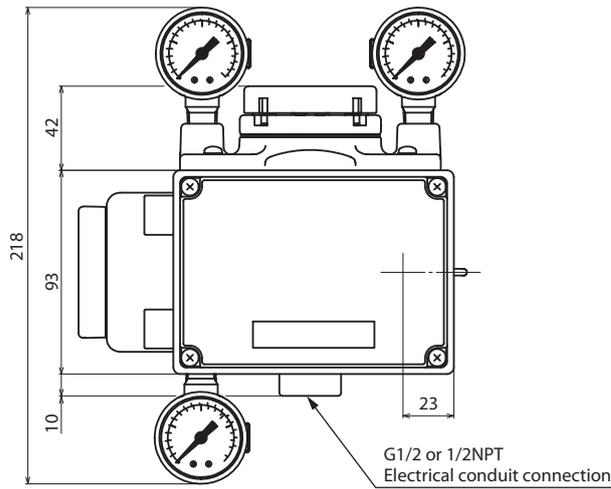
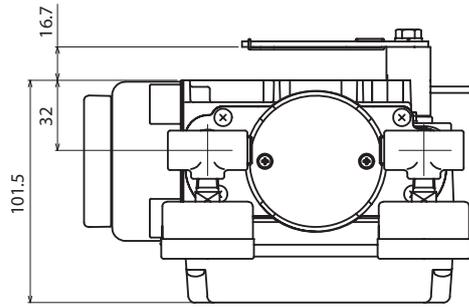
Fork lever type (without pressure gauge)

Unit: mm



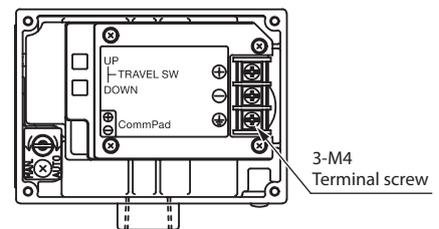
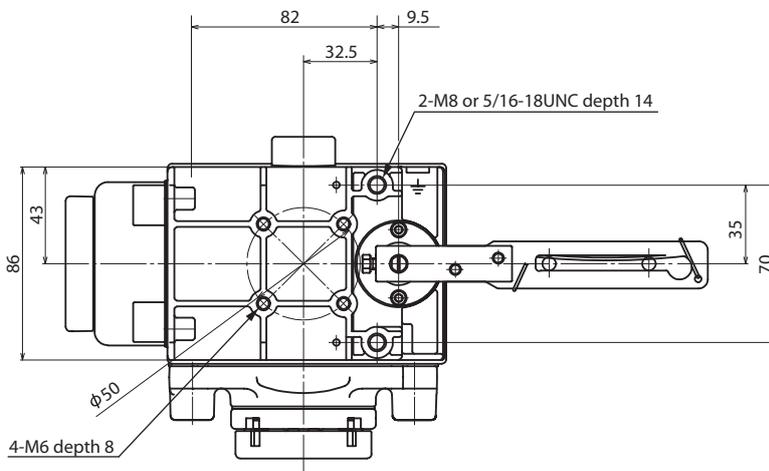
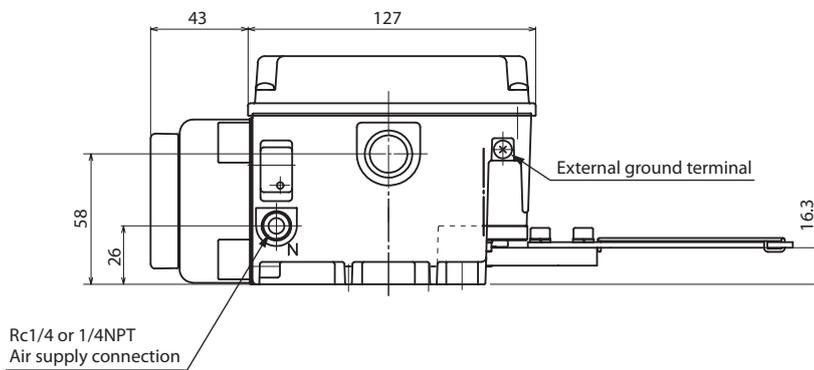
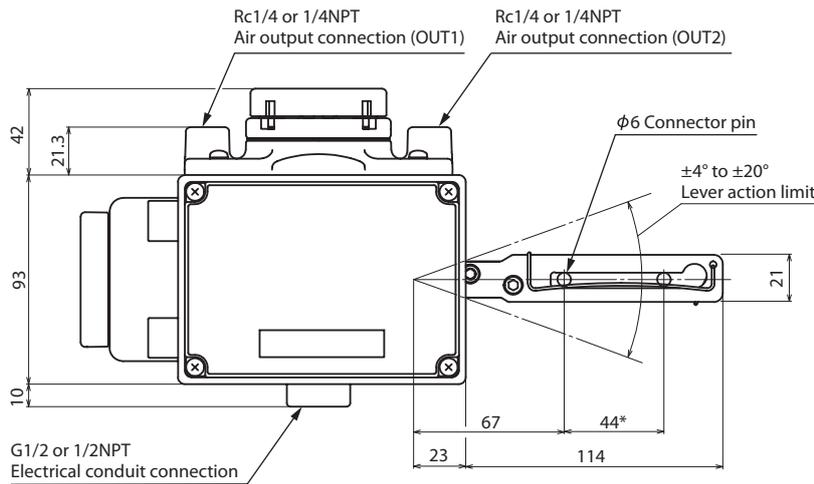
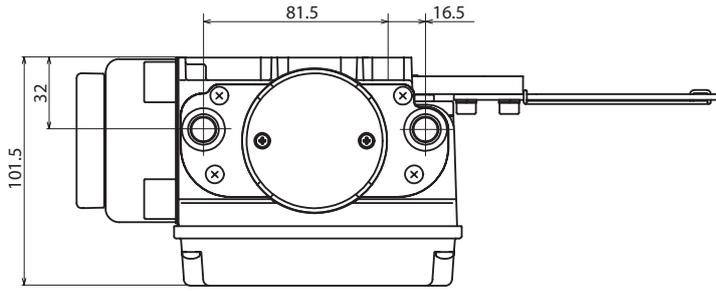
Fork lever type (with pressure gauge)

Unit: mm



Stroke lever type (without pressure gauge)

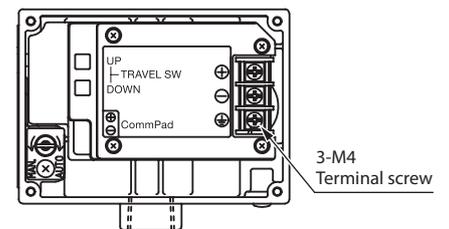
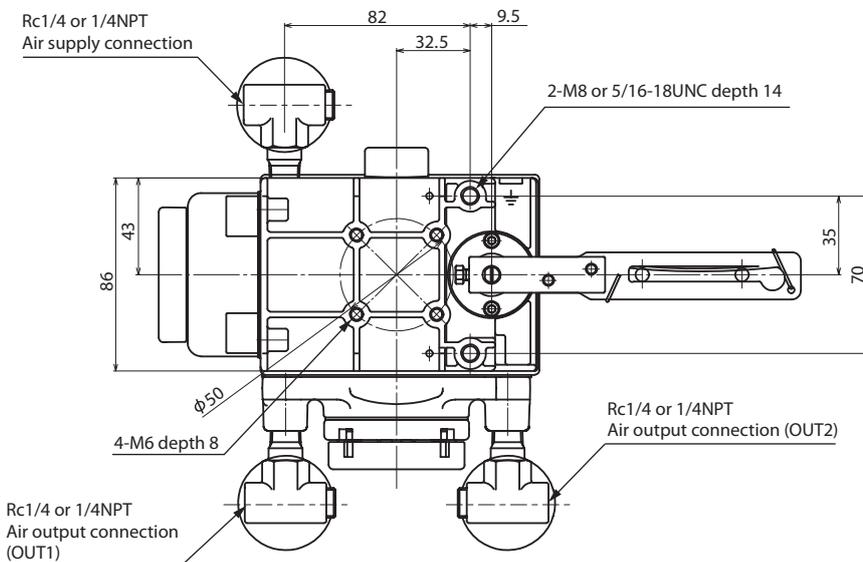
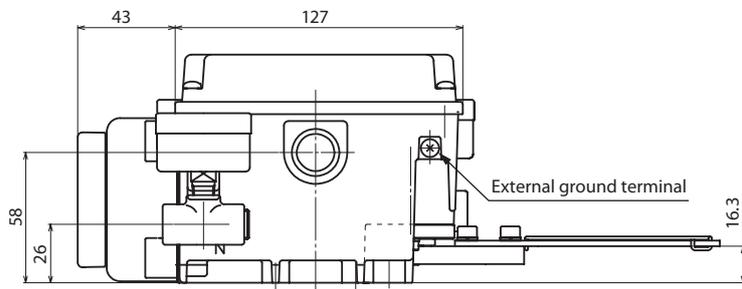
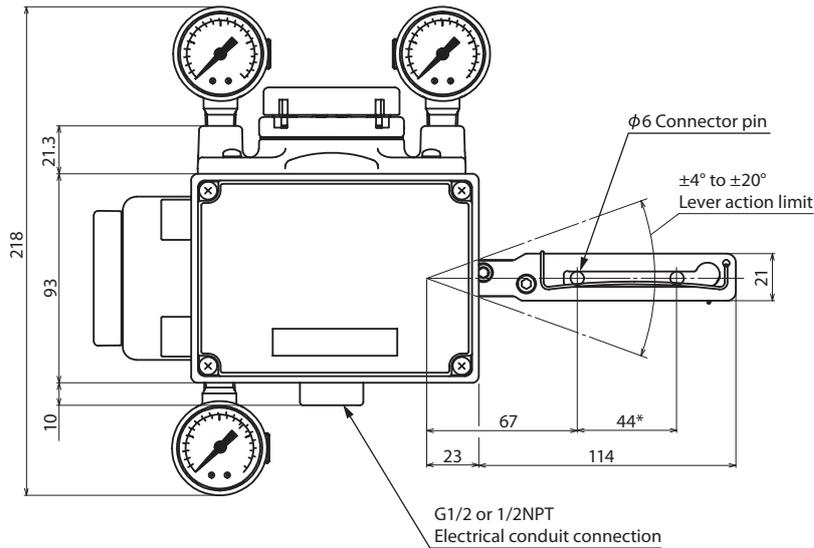
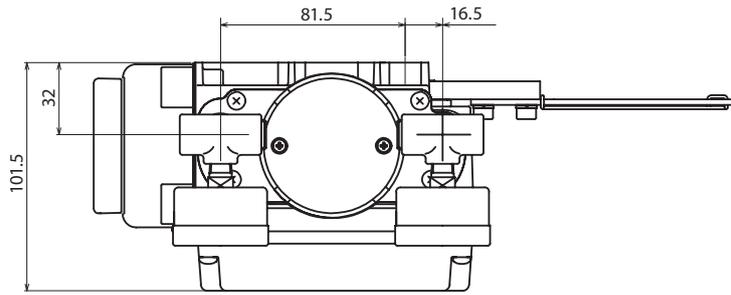
Unit: mm



* Connector pin should be installed within this range when mounting model SVX to an actuator.

Stroke lever type (with pressure gauge)

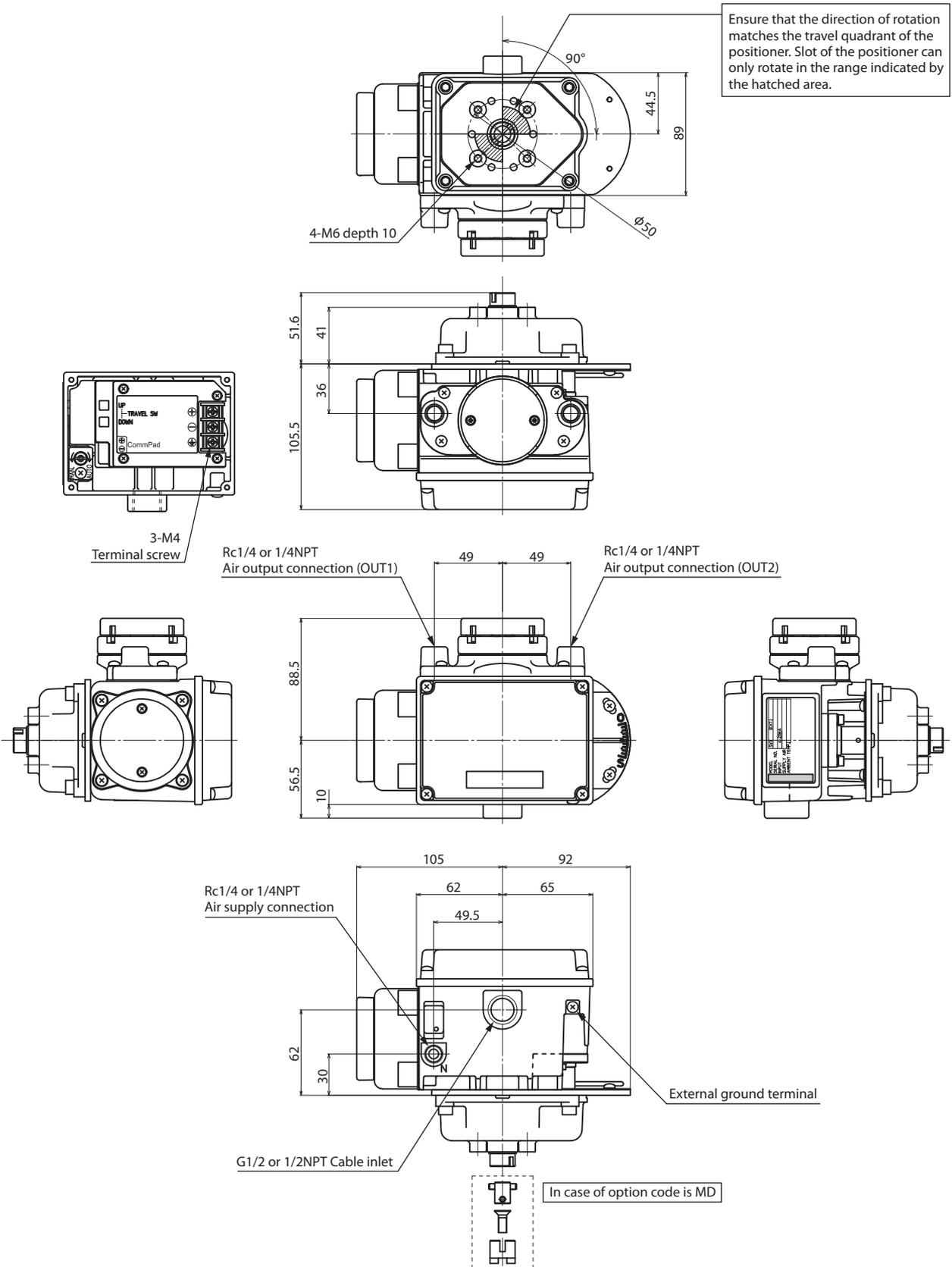
Unit: mm



* Connector pin should be installed within this range when mounting model SVX to an actuator.

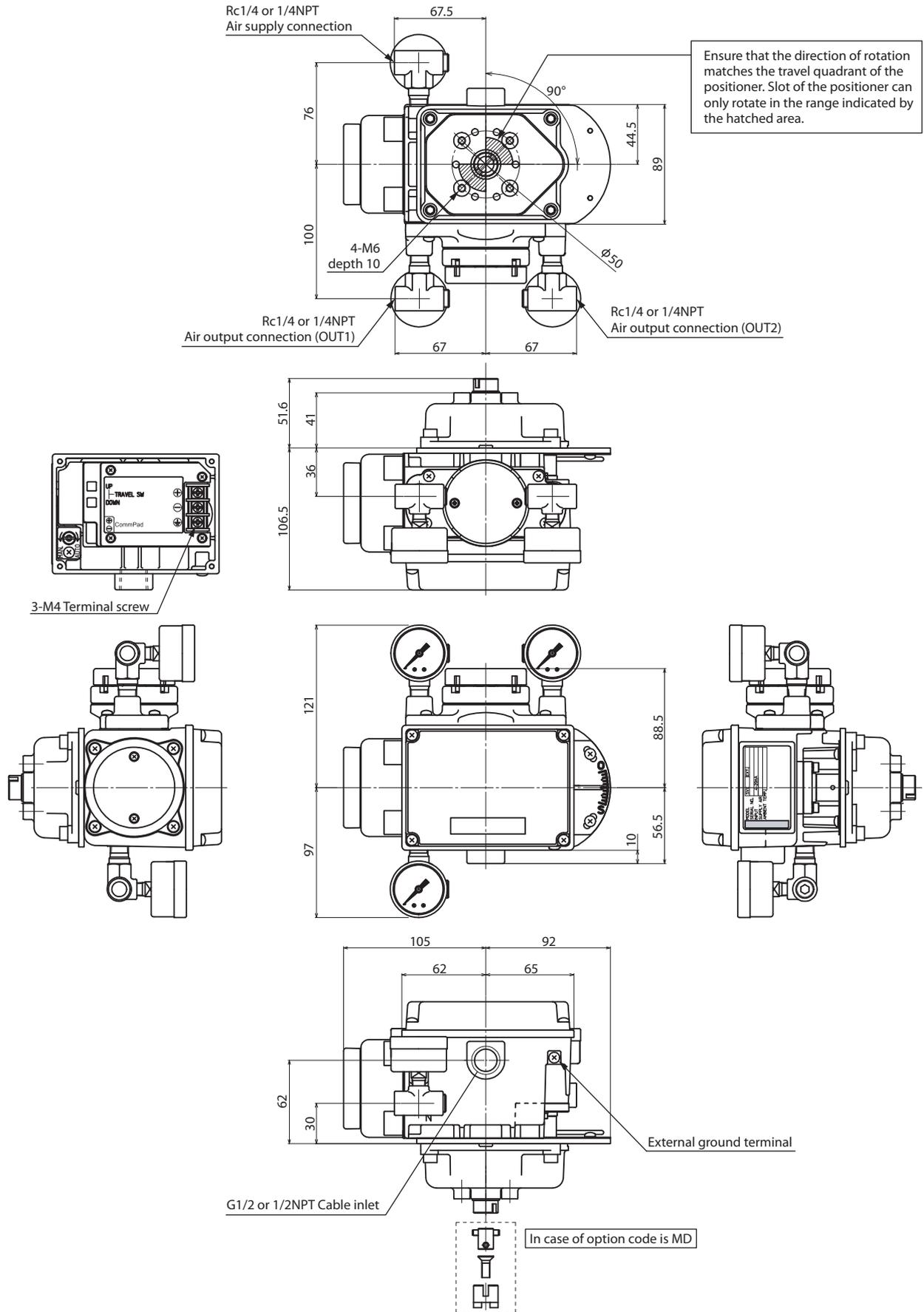
Direct mounting type (without pressure gauge)

Unit: mm



Direct mounting type (with pressure gauge)

Unit: mm



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