Smart Valve eXplorer

Smart Valve Positioner for Rotary Valve

Model SVX100 / SVX102

OVERVIEW

Smart Valve eXplorer (SVX) models SVX100 and SVX102 are microprocessor-equipped, current-pneumatic 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

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 an switch so that adjustments to the rotary valve can be performed quickly and safely in hazardous areas.

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

Flexibility in installation

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

• Direct mounting type

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

• Stroke lever type

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

• Fork lever type

The SVX can be mounted compactly on the upper part of the valve stem.
This type of installation complies with the VDI/ VDE3845.

High reliability

• Positive seating

The positive seating function completely shuts off the valve if the input signal becomes lower than previously set. This in turn enhances the full shut-off capabilities of the valves.

• Self-diagnostic

The self-diagnostic function provides with the ability to check the status of the positioner at any time and to alert in case of failure.

Single model for multiple specifications

The SVX settings can be changed without replacing any parts. A single model can be modified to suit any application.

- **Flow characteristic:** Linear, EQ%, quick opening or custom user characteristics (16 points)
- **Actuator type:** Double or single acting actuator

HART communication

HART communicator model 275 can be used for calibration, configuration and self-diagnostics.

FUNCTIONAL SPECIFICATIONS

Control signal input
4-20 mA DC

Input resistance
Approx. 300 Ω / 20 mA DC: Model SVX100
(voltage between terminals 6V DC)

Approx. 600 Ω / 20 mA DC: Model SVX102
(voltage between terminals 12V DC)

Approvals

KEMA/ATEX Intrinsically safe approval (Model SVX102 only)
II 1 G EEx ia IIC T4
Approval No. 04ATEX1176X
The barriers should be ATEX certified types and comply with the following conditions as follows.
Input circuit (terminals I IN)
Ui=29V, Ii=95mA (resistively limited), Pi=690mW, Ci=10nF, Li=220μH
From the safety point of view the supply/input circuit shall be considered to be connected to earth.

FM Intrinsically safe approval (Model SVX102 only)
Intrinsically safe for Class I, II, III, Division 1, Groups A, B, C, D, E, F and G, T4 Ta=80°C
Intrinsically safe for Class I, Zone 0, AEx ia IIC T4
Nonincendive for Class I, Division 2, Groups A, B, C and D, T4
Suitable for Class II, III, Division 2, Groups F and G, T4
Approval No. 3020628
The barriers should be FM approved types and comply with the following conditions as follows.
Input circuit: Vmax=30V, Imax=100mA, Pi=1W, Ci=15nF, Li=0.22mH
Installation should comply with NEC.

Output characteristics
- Linear, Equal percentage, Quick opening
- Custom user characteristics (16 points).

Bypass operation
Auto/Manual switch (For single acting actuator only)

Air supply pressure
140 to 700 kPa (20 to 100 psi)

Air consumption
At stable output: 50%
10 ℓ/min.(N) maximum at 400 kPa (60 psi)

Maximum delivered air flowrate
250 ℓ/min.(N) at 400 kPa (60 psi)

Output balanced pressure
55 ± 5%

Lightning protection
Peak value of voltage surge: 12 kV
Peak value of current surge: 1000A

Vibration tolerance
2 G (5 to 400 Hz)
(with standard mounting kit on Yamatake HA actuator)

Feedback lever angle
± 4º to ± 20º

Ambient temperature limits
-40°C to 80°C for general model
KEMA/ATEX Intrinsically safe: -40°C to 60°C
FM Intrinsically safe: -40°C to 80°C

Ambient humidity limits
10% to 90% RH

Configuration tools
Model SFC160 or SFC260 (SFC Smart Field Communicator, Software version 7.5 or later)
HART communication model 275 (According to need, please update a software and device description files.)

CE conformity
Electromagnetic compatibility
EN 61326: 1997 (CE marking)

PERFORMANCE SPECIFICATIONS

Accuracy
± 1.0% F.S.
(± 2.5% F.S. with custom output characteristics)

Turning range
50° to 90°

PHYSICAL SPECIFICATIONS

Enclosure rating
JISC 0920 watertight
NEMA type 4X
IP66 FM

Finish
Baked acrylic

Color
Dark blue

Material
Cast aluminum

Weight
Without pressure gauge : 1.8 kg
With pressure gauge : 2.2 kg

INSTALLATION

Air Connections
Rc1/4 or 1/4NPT internal thread

Electrical Connections
G1/2 or 1/2NPT

Conditions of Supply Air

Particles
Maximum diameter 3 µm

Oil Mist
None acceptable

Dew Point
10ºC below ambient temperature

TYPICAL INSTALLATION

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 model SVX100 and Figure 2 shows the wiring for the model SVX102.

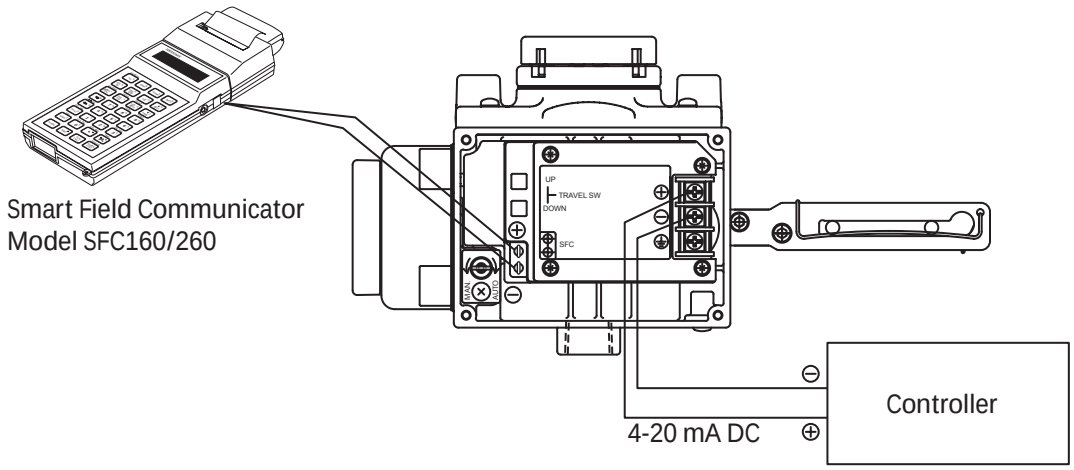


Figure 1 Wiring for model SVX100

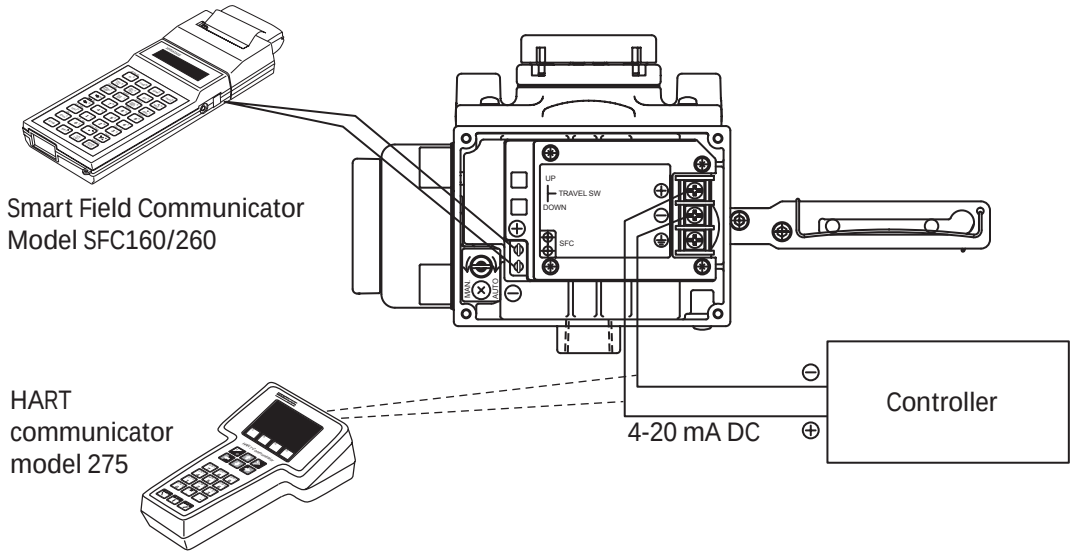


Figure 2 Wiring for model SVX102

MODEL SELECTION

Model		Selection										Option	
SVX100	Analog signal (4-20 mA DC)	-					X	-				-		
SVX102	Analog signal (4-20 mA DC) with HART protocol													

Structure	Standard				X	
	FM Intrinsically safe (Model SVX102 only)				F	
	KEMA/ATEX Intrinsically safe (Model SVX102 only)				L	
Connection	Electrical connection	Air piping connection	Mounting thread			
	G1/2	Rc1/4	M8	G		
	1/2NPT	1/4NPT	M8	N		
	1/2NPT	1/4NPT	5/16-8UNC	U		
Finish	Standard				S	
Feedback lever type	Fork lever type (For rotary valves)					R
	Stroke lever type (For linear valves / rotary valves)					S
	Direct mounting type (For rotary valves)					D

Pressure gauge joint	No selection		X	
	With T type joint (Note 4)		T	
Supply air pressure classification	No pressure gauge (Note 5)	X		
	200kPa (30psi) (Supply air pressure: 130kPa≤Ps≤150kPa (19psi ≤Ps≤22psi)) (Note 4)	1		
	400kPa (60psi) (Supply air pressure: 150kPa<Ps≤300kPa (22psi<Ps≤44psi)) (Note 4)	2		
	600kPa (90psi) (Supply air pressure: 300kPa<Ps≤450kPa (44psi<Ps≤65psi)) (Note 4)	3		
	1000kPa (150psi) (Supply air pressure: 450kPa<Ps≤700kPa (65psi<Ps≤100psi)) (Note 4)	4		
Scale unit	No selection (Note 5)			X
	kPa (Note 5)			A
	(kgf/cm^2) (Note 1) (Note 5)			B
	MPa (Note 5)			C
	bar (Note 5)			D
	(psi) (Note 1) (Note 5)			E

Option	No selection	X	X
	For single acting actuator (with plug for OUT2) (Note 2)	P	D
	With mounting bracket (Note 3)	B	A
	With NAMUR joints for direct mounting type (Note 6)	M	D

Note) 1: No domestic sales in Japan due to non-SI unit.
2: In the case of using the device as a single acting actuator, close the output air pressure connection 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 classification", select "No selection" in "Scale unit".
6: Please select a "code D - Direct mounting type (For rotary valves)" as shown in selection (4) feed back lever type.

Model selection of mounting bracket

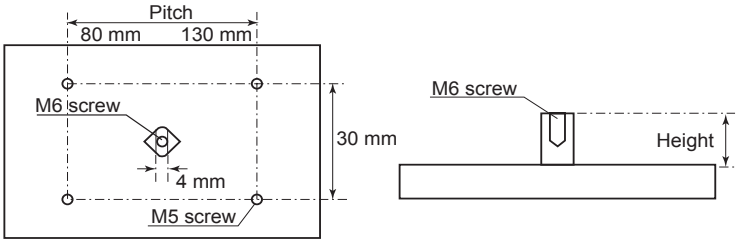
Model					Selection			
SVA	1			-				

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

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

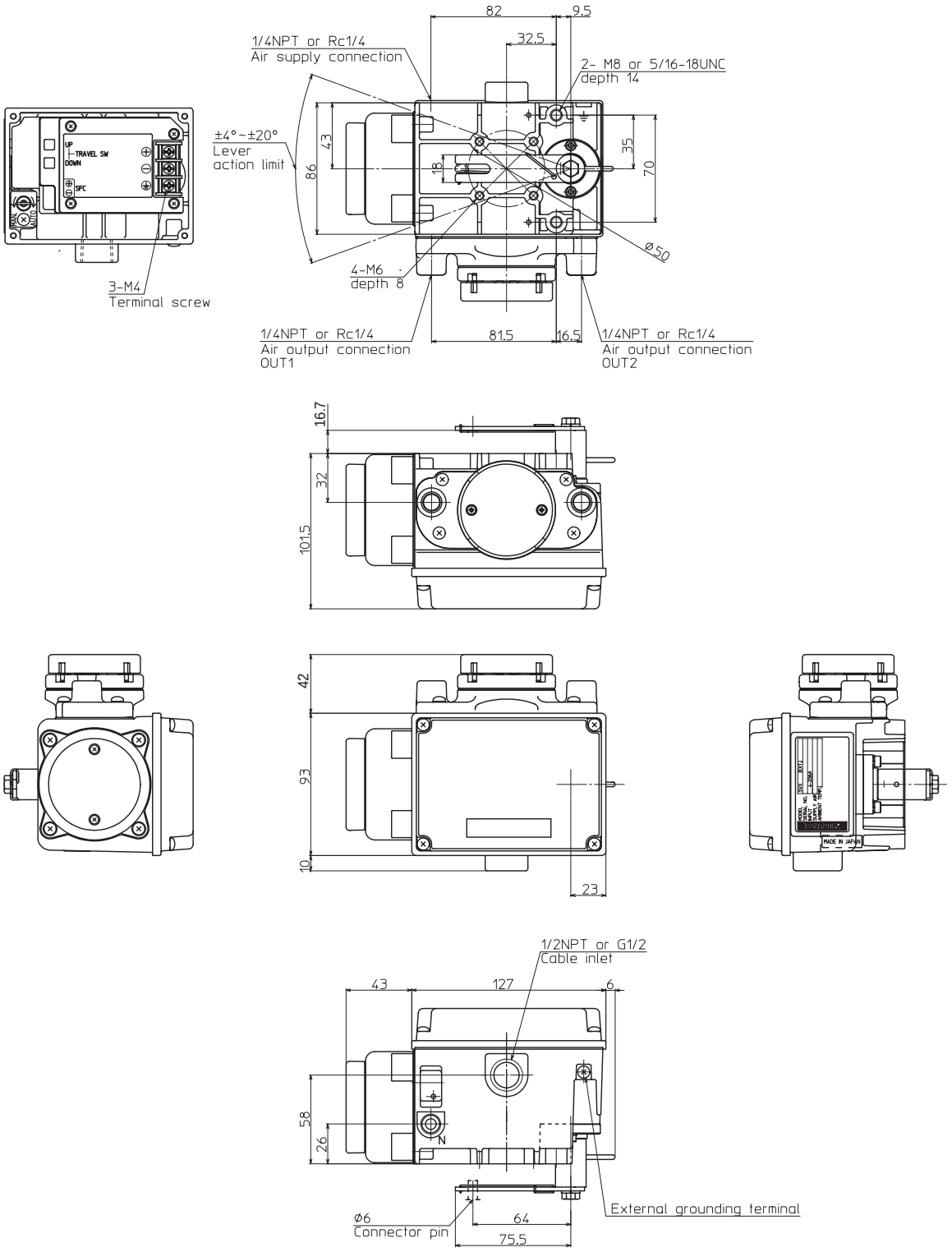
Note) 1: For fork lever type.
2: Select mounting bracket depend on the feedback lever type.
3: Confirm the pitch and height for NAMUR standard actuator.
4: For stroke lever type.
5: For direct mounting type.

Pitch	80 mm	80 mm	130 mm	130 mm
Height	20 mm	30 mm	30 mm	50 mm

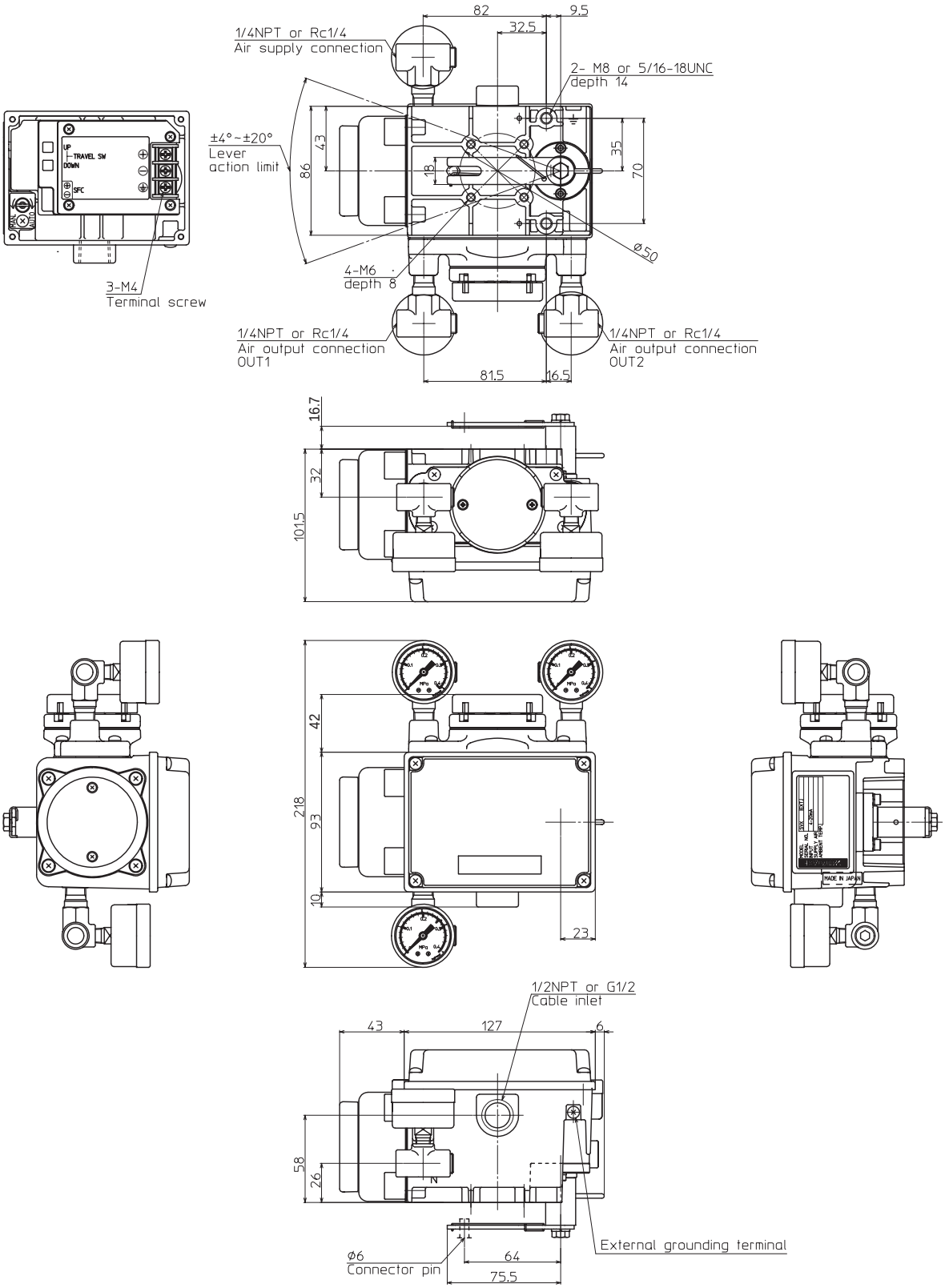


DIMENSIONS

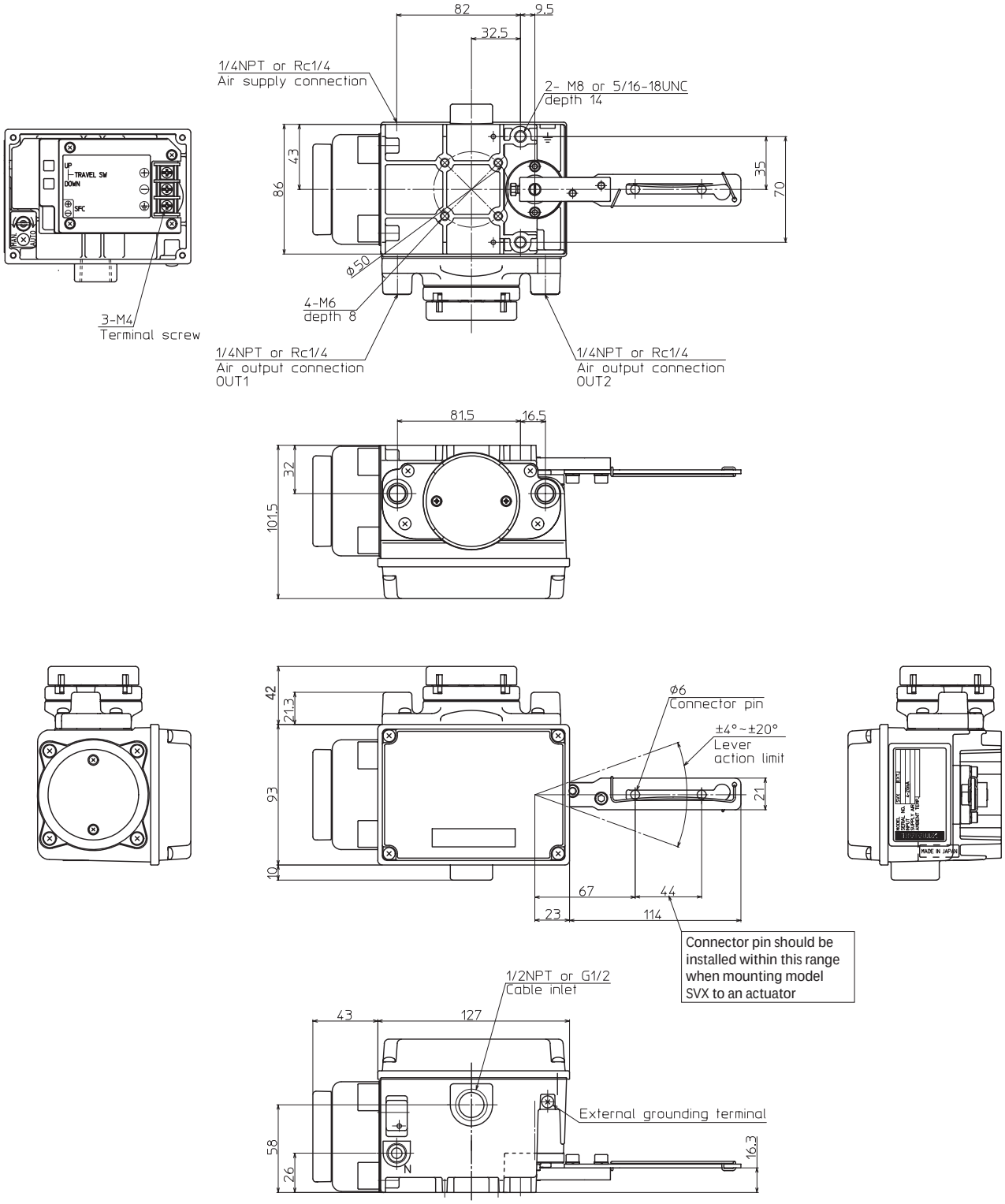
Fork lever type (without pressure gauge) (Under development)



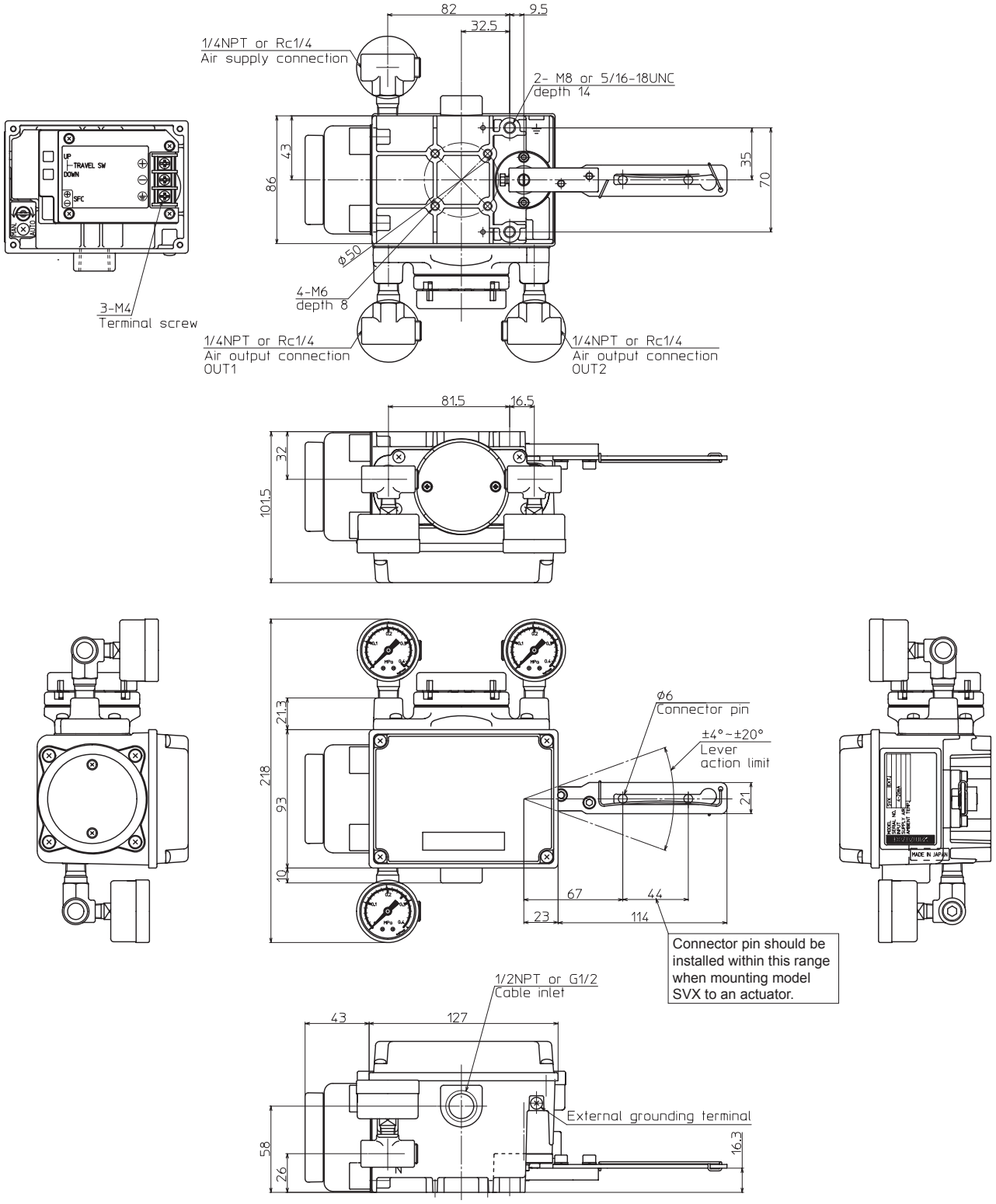
Fork lever type (with pressure gauge) (Under development)



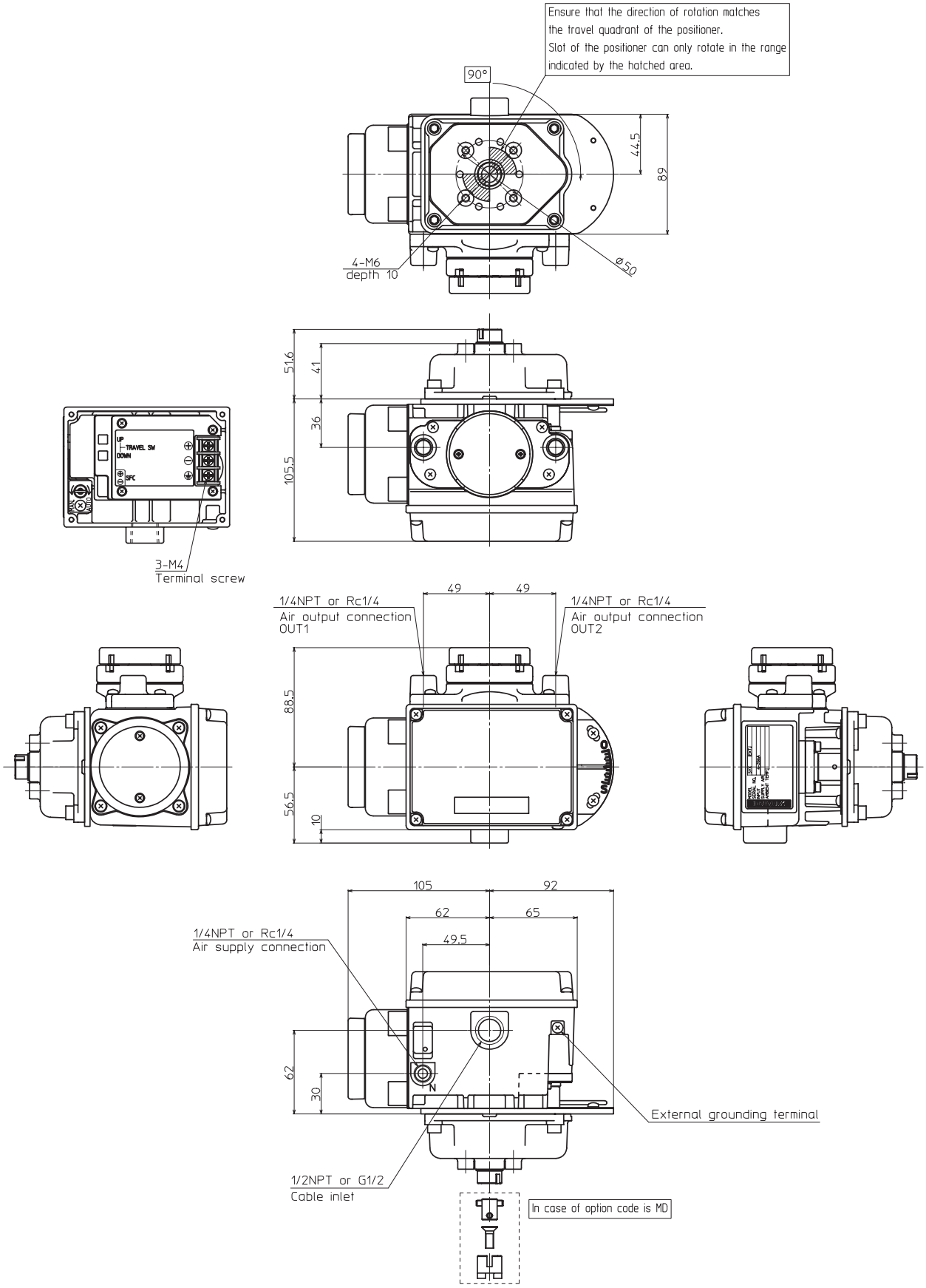
Stroke lever type (without pressure gauge)



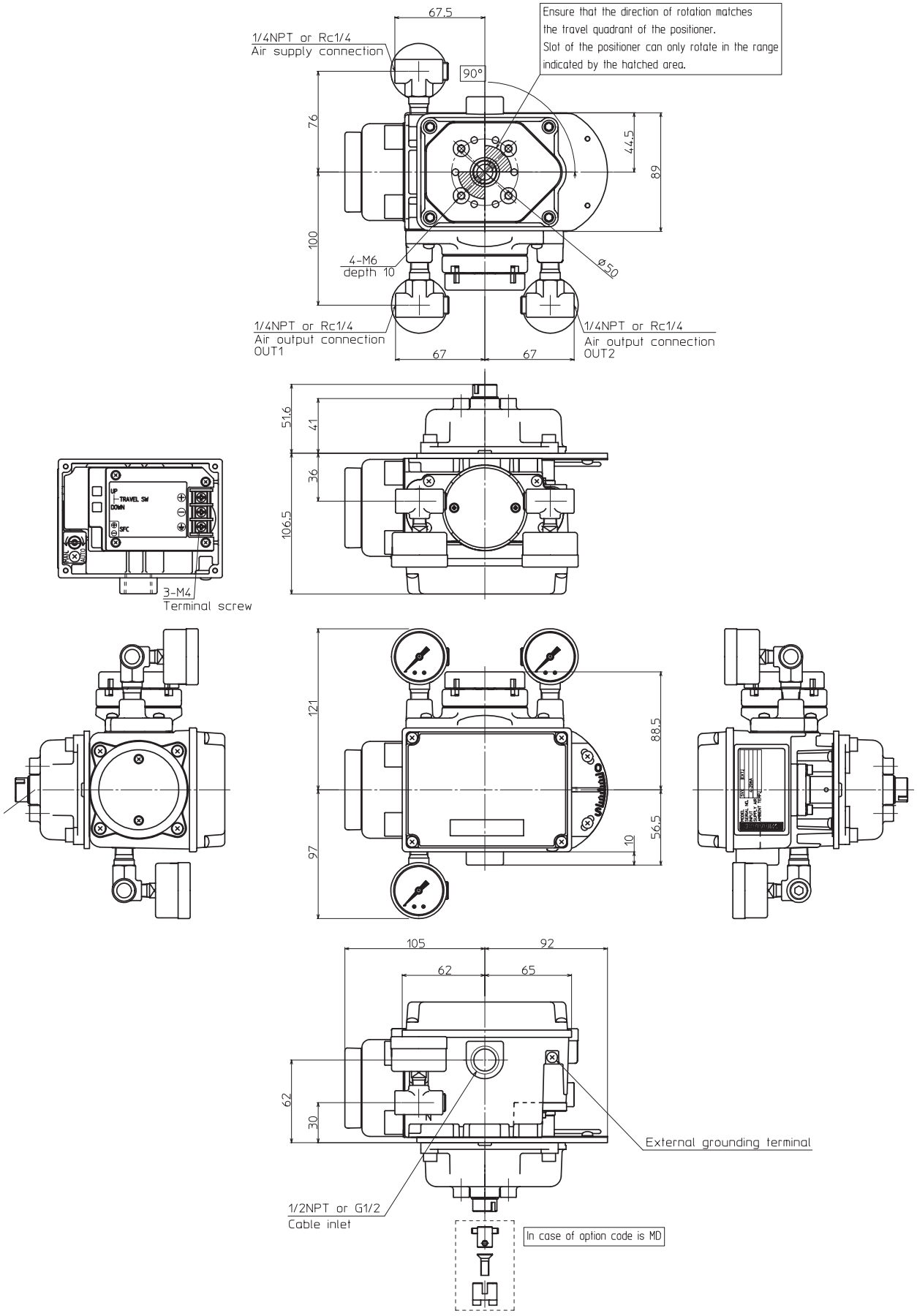
Stroke lever type (with pressure gauge)



Direct mounting type (without pressure gauge)



Direct mounting type (with pressure gauge)



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Yamatake Corporation
Totate international Building
2-12-19 Shibuya
Shibuya-ku, Tokyo 150-8316
Japan
Tel : 81-3-3486-2310
Fax : 81-3-3486-2593

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