



# Installation & Maintenance Manual

## Air Catch Sensor

### Series ISA2



### 1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

	<b>Caution</b>	CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	<b>Warning</b>	WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	<b>Danger</b>	DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

This product is class A equipment that is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

### Warning

- Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.
- Do not operate the product outside of the specifications. Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.
- Do not operate in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. This product is not designed to be explosion proof.
- Do not use the product in a place where static electricity is a problem. Otherwise it can cause failure or malfunction of the system.
- If using the product in an interlocking circuit:
  - Provide a double interlocking system, for example a mechanical system
  - Check the product regularly for proper operation. Otherwise malfunction can result, causing an accident.
- The following instructions must be followed during maintenance:
  - Turn off the power supply
  - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance. Otherwise an injury can result.

### Caution

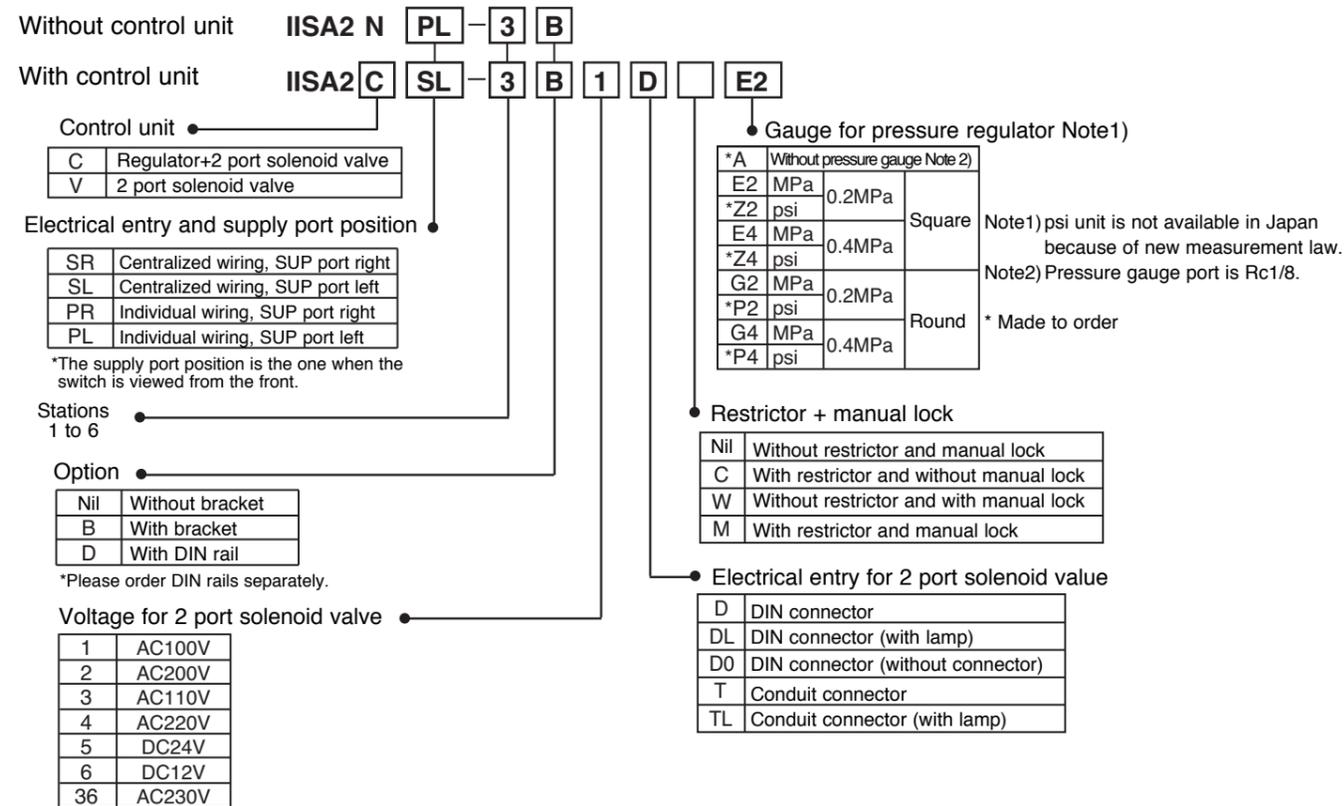
- Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the product can result.
- After maintenance is complete, perform appropriate functional inspections and leak tests. Stop operation if the equipment does not function properly or there is a leakage of fluid. When leakage occurs from parts other than the piping, the product might be faulty. Disconnect the power supply and stop the fluid supply. Do not apply fluid under leaking conditions. Safety cannot be assured in the case of unexpected malfunction.

### 2 Specification

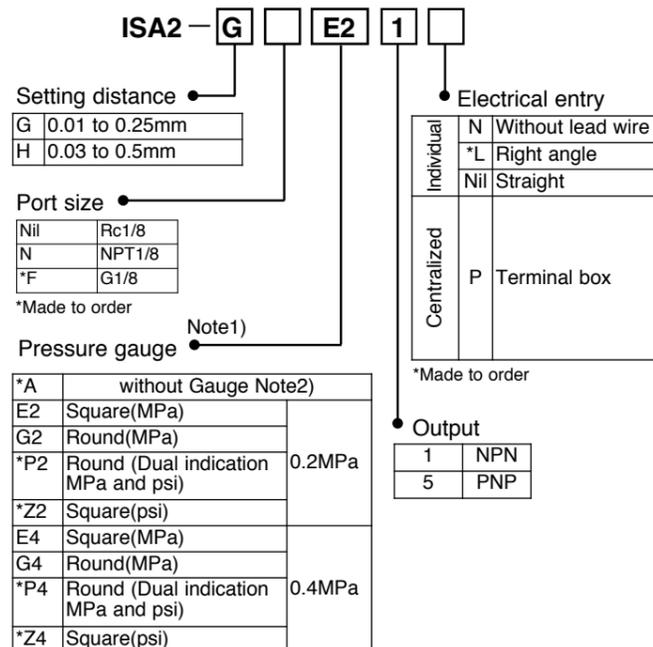
Model	ISA2-G**1*	ISA2-G**5*	ISA2-H**1*	ISA2-H**5*
Fluid	Dry air ( Filtered through a 5µm filter )			
Operating pressure range	30 to 200kPa		50 to 200kPa	
Detection Zone	0.01 to 0.25mm		0.03 to 0.5mm	
Detection nozzle size	φ 1.5		φ 2	
Repeatability including temperature characteristics	± 0.01mm or less Detection distance : 0.01 to 0.15mm Supplied pressure : 100 to 200kPa		± 0.01mm or less Detection distance : 0.03 to 0.15mm Supplied pressure : 100 to 200kPa	
Hysteresis	0.01mm or less Detection distance : 0.01 to 0.15mm		0.01mm or less Detection distance : 0.03 to 0.15mm	
Power supply voltage	12 to 24VDC ( Ripple ± 10% or less )			
Current consumption	15mA or less at 24VDC			
Output	NPN open collector	PNP open collector	NPN open collector	PNP open collector
Max. load current	80mA			
Max. load voltage	30VDC ( NPN Output )			
Residual voltage	1.5V or less at 80mA			
Indicator light	"LED level meter ( Red : 1, Green : 2 ) ( Green is lit when red disappears. )"			
Lead wire ( for independent wiring )	"For M12 pre-wired connector with 4 pins, Length is 5m"			
Terminal board box ( for centralized wiring )	Front wiring ( Electrical entry size : φ 21 )			
Operating temp. range	0 to 60°C ( No condensation, No freezing )			
Operating humidity range	35 to 85%RH			
Flow consumption l/min ( ANR )	Supplied pressure	50kPa	100kPa	200kPa
		50kPa	100kPa	200kPa
		5 or less	8 or less	12 or less
		5 or less	15 or less	22 or less
Withstand voltage	1000VAC 50/60Hz for 1minute between lead block and case			
Insulation resistance	2M Ω or more between lead block and case ( 500VDC M )			
Port size	Nil : Rc1/8 N : NPT1/8 F : G1/8			
Enclosure	"IP66 ( Solenoid valve : IP65, Pressure gauge and regulator doesn't have protective structure )"			
Weight	540g ( for independent wiring including 5m cable with straight connector )			

### 3 Model Indication Method

#### Manifold



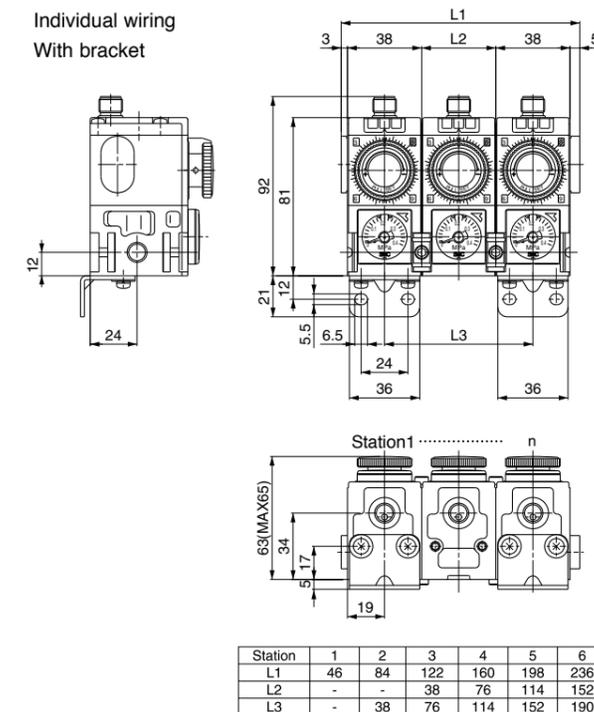
#### Stations or additional stations



Note1) psi unit is not available in Japan because of new measurement law.  
Note2) Pressure gauge port is Rc1/8.

\*Made to order

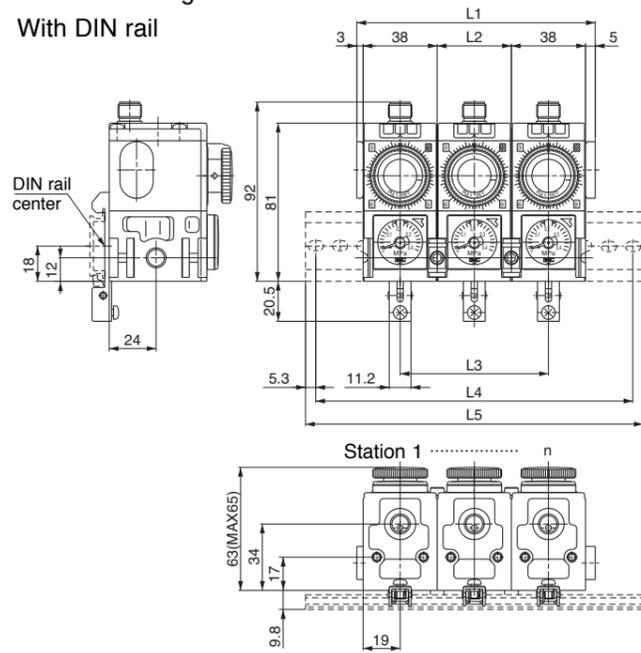
### 4 Outline View with Dimensions



4 Outline View with Dimensions (continued)

Individual wiring

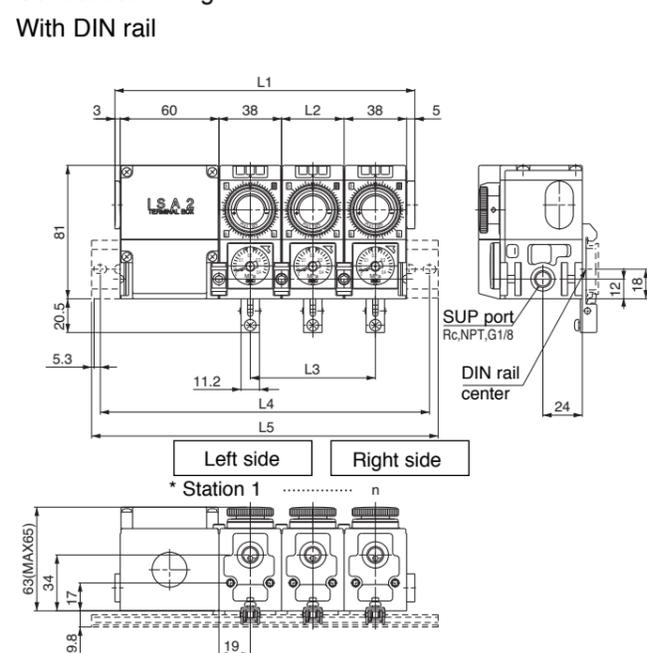
With DIN rail



Station	1	2	3	4	5	6
L1	46	84	122	160	198	236
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190
L4	62.5	120	162.5	200	237.5	275
L5	73	135.5	173	210.5	248	285.5
DIN rail No.	ISA-5-*					
*	1	2	3	4	5	6

Centralized wiring

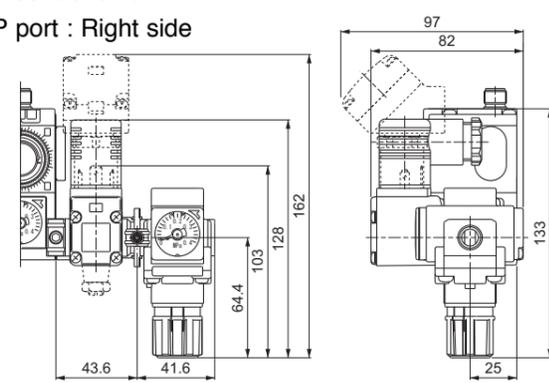
With DIN rail



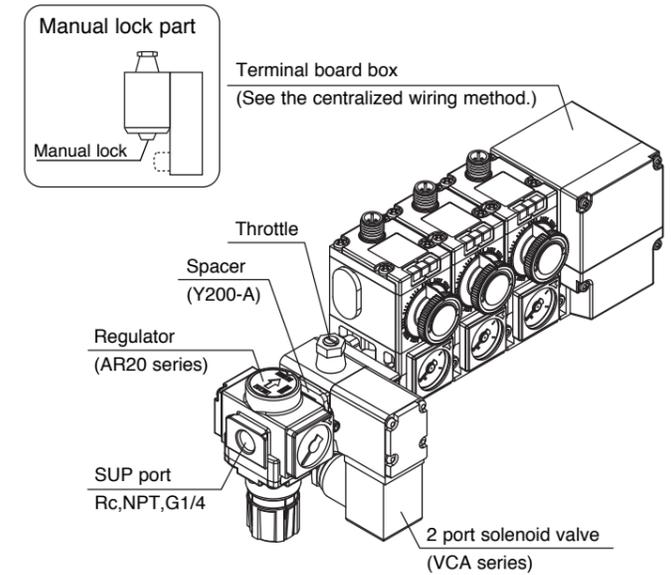
Station	1	2	3	4	5	6
L1	106	144	182	220	258	296
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190
L4	120	162.5	200	237.5	275	312.5
L5	135.5	173	210.5	248	285.5	323
DIN rail No.	ISA-5-*					
*	2	3	4	5	6	7

With control unit

SUP port : Right side

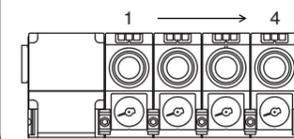


5 Names of Individual parts (continued)

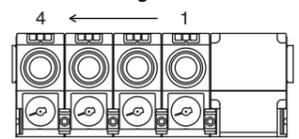


Describing stations

With the terminal board box on the left side

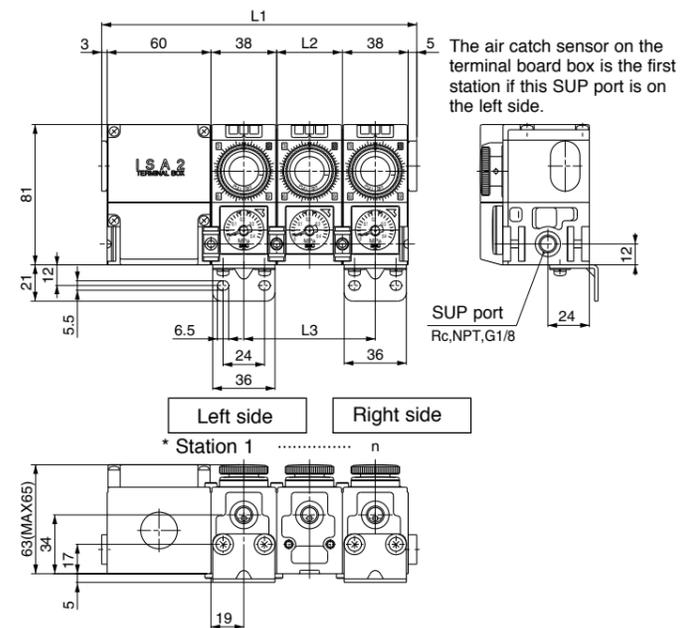


With the terminal board box on the right side



Centralized wiring

With bracket

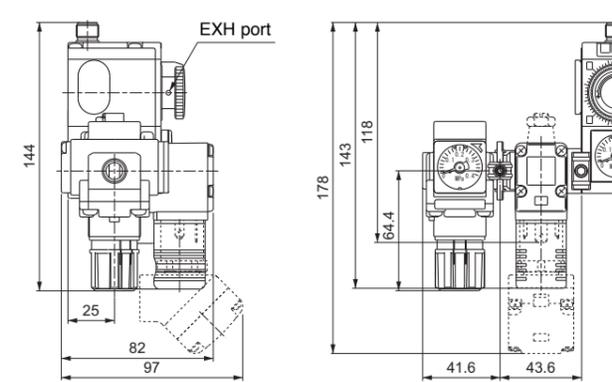


The air catch sensor on the terminal board box is the first station if this SUP port is on the left side.

Station	1	2	3	4	5	6
L1	106	144	182	220	258	296
L2	-	-	38	76	114	152
L3	-	38	76	114	152	190

With control unit

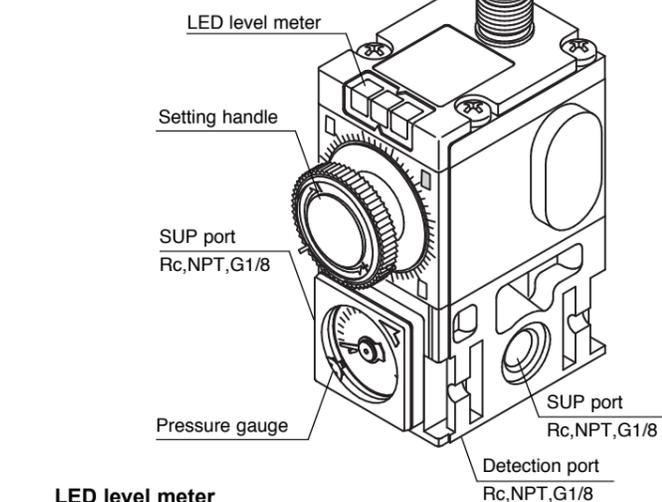
SUP port : Left side



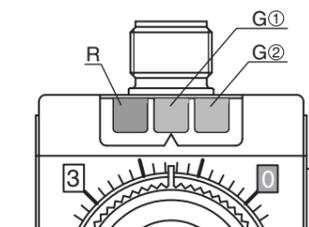
5 Names of Individual parts

Lead wire connector

(Not provided in the centralized wiring method.)  
(See individual wiring method.)



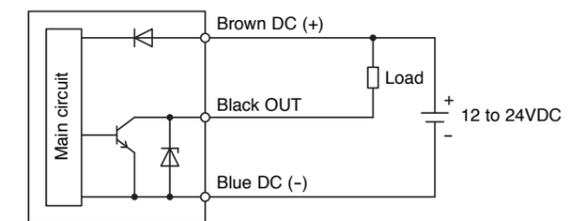
LED level meter



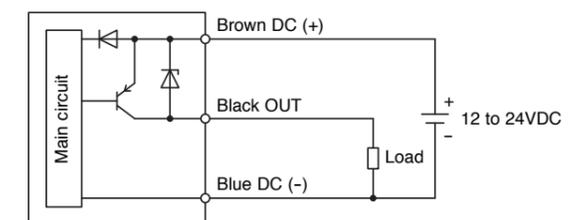
R(Red)	Above set position
G(Green) ①	Appropriate set position
G(Green) ②	Below set position

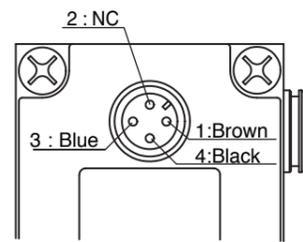
6 Circuit Diagram

NPN open collector output



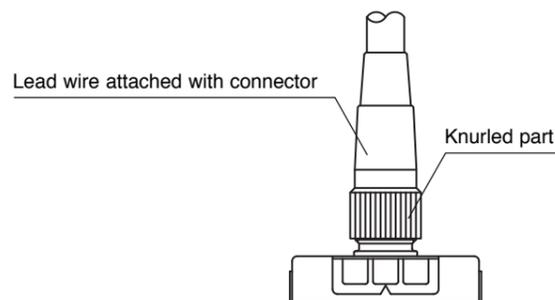
PNP open collector output





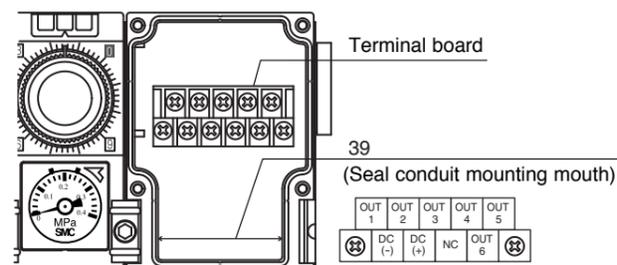
1	Brown	DC(+)
2	-	NC
3	Blue	DC(-)
4	Black	OUT

- ① Insert the lead wire connector in line with the key groove.
- ② Hold the knurled part of the connector and turn it clockwise to tighten it. Do not overtighten.

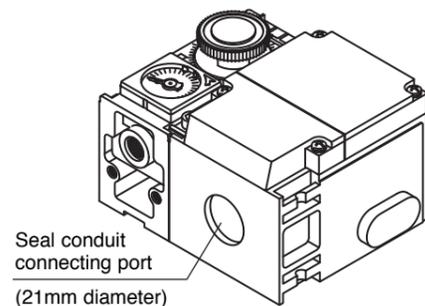


- ③ Install wires of various colors coming out from the end of the cable. Install wires correctly while referring to the circuit diagram and the above table.

Centralized Wiring Method

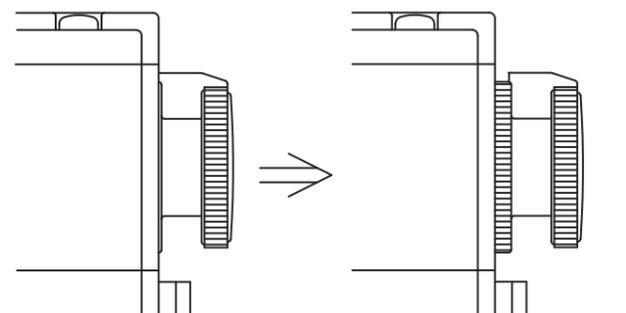


- ① Mount the seal conduit on the terminal board box. Refer to the catalogue and instruction manual of the seal conduit manufacturer for the method to mount the seal conduit.
- ② Insert the cable through the seal conduit and install the wires matching the polarities of the terminal board illustrated above.
- ③ Tighten the seal conduit. Do not hold down the terminal board box or switch while tightening the seal conduit. Tightening torque shall be less than 5N·m.



8 Setting Method

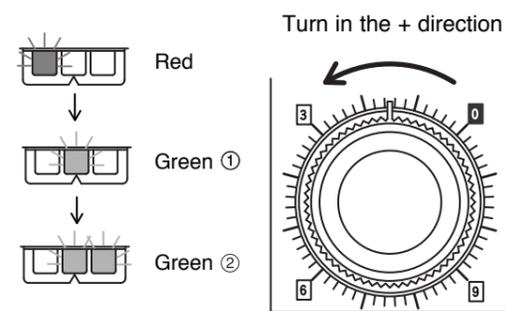
Set the detectable distance using the LED level meter and setting handle. While setting, pull out and turn the setting handle as illustrated below. Releasing the setting handle will return it to its original position and the handle will no longer rotate.



Before pulling out      Setting handle pulled out

1. Apply a clearance gauge onto the detection nozzle to replicate the setting conditions for accurate setting.
2. Confirm that supply pressure is applied. If the setting handle is fully closed, the LED level meter will be OFF.
3. Pull the setting handle and turn in the + direction. The LED level meter lights will turn ON in the following order.

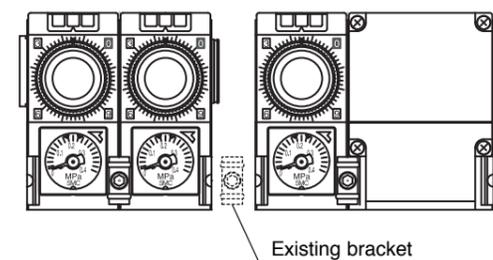
8 Setting Method (continued)



4. When [Red] on the LED level meter turns ON, the sensor output turns ON. Finish setting when [Green ①] is illuminated.
5. Apply a clearance gauge again and check that [Green ②] illuminates.

9 Method of Additiona Manifold Stations

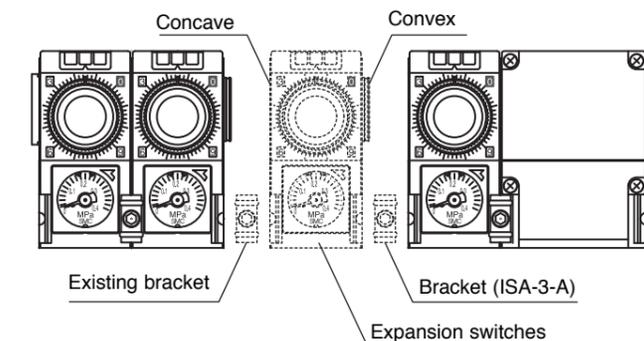
1. Disassemble



- ① Loosen the screws and remove the 2 brackets on the front and back surface.
- ② Dis-assemble the switch slowly so as not to detach the O-ring on the SUP port.

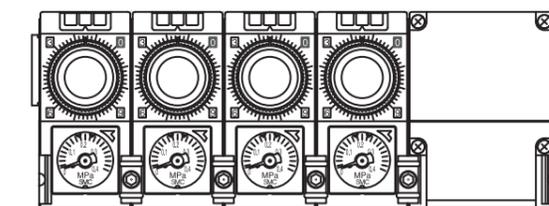
9 Method of Additiona Manifold Stations (continued)

2. Insertion



- ① Fit seal for additional station (ISA-7-B) in the recess of the SUP port of the additional switch.
- ② Mount the protrusion of the additional switch onto the existing switch.
- ③ Mount the two brackets (ISA-3-A) to their positions. NOTE : Fasten the screws temporarily.
- ④ Confirm that the seal is set in the recess of the existing switch SUP port.
- ⑤ Fit the protrusion of the existing switch into the recess of the additional switch.
- ⑥ Mount the existing bracket. NOTE : Fasten the screws temporarily.

3. Tightening

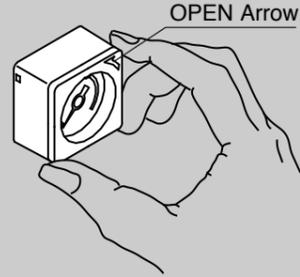


- ① Tighten the joint fasteners by specified torque 1.2N·m.
- ② Install air pipe and confirm that there is no air leakage from new piping.

**Handling and setting of limit gauge indicator**

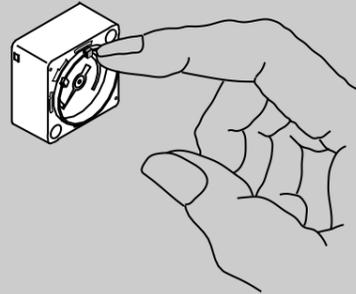
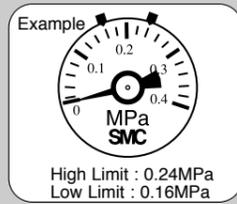
**1. Cover removal**

Hold the edge of the front cover and turn the cover in the OPEN arrow direction till it stops (15°). Pull the cover in front direction to remove it.



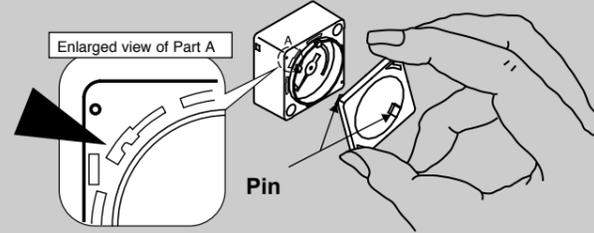
**2. Setting reference needles**

Move the reference needles by the fingertip. Adjust high and low limits of pressure by two green reference needles.

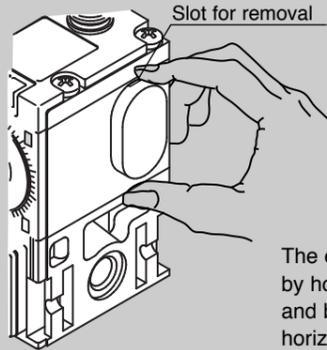


**3. Cover mounting**

After setting the reference needles, mount the cover back to its original position with the OPEN arrow upper right. Insert the cover pin into the hole in the case (mark ▲ in enlarged view of Part A) and turn it clockwise till it stops. (Direction opposite the OPEN arrow direction) Confirm that the cover is held securely.



**How to remove the end plate**



The end plate can be removed by hooking fingers in the top and bottom slot, and pulling horizontally.

**10 Contacts**

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888

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