



Installation and Maintenance Manual

ISG Series General Purpose Pressure switch



Read this manual before using this product

- The information within this document is to be used by pneumatically trained personnel only.
- For future reference, please keep manual in a safe place.
- This manual should be read in conjunction with the current catalogue.

1 SAFETY

1.1 General recommendation

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO4414 (Note1), JIS B 8370 (Note2) and other safety practices.
 Note 1:ISO 4414:Pneumatic fluid power – General rules relating to systems. Note 2:JIS B 8370:Pneumatic system axiom.

⚠ CAUTION: Operator error could result in injury or equipment damage.

⚠ WARNING: Operator error could result in serious injury or loss of life.

⚠ DANGER: In extreme conditions, there is a possible result of serious injury or loss of life.

⚠ WARNING:

- **The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**
 - Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.
- **Only trained personnel should operate pneumatically operated machinery and equipment.**
 - Compressed air can be dangerous if an operator is unfamiliar with it Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.
- **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
 - Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
 - When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
 - Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Bleed air into the system gradually to create backpressure, i.e. incorporate a soft-start valve).
- **Contact SMC if the product is to be used in any of the following conditions:**
 - Conditions and environments beyond the given specifications, or if product is used outdoors.
 - Installations on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
 - An application, which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

1.2 Conformity to standard

This product is certified to and complies with the following standards:
 EC low voltage Directive 73/23/EEC amended by:93/68/EEC, EN 60947-5-1:2004

1.3 Specific recommendations

- This product is intended for the use to check pneumatic, hydraulic, water and other liquid pressures.

2 Intended Conditions of Use

2.1 Major Specifications of Each Model

Open type	Water-tight type	Pressure adjusting range	Hysteresis adjusting range	Proof pressure	Repeatability	Wetted materials	Hysteresis scale plate			
ISG110-030-Q	ISG210-030-Q	MPa 0.02~0.3	MPa 0.01~0.2	MPa 1.0	MPa ±0.006	Brass Phosphor bronze	Without			
ISG110-031-Q	ISG210-031-Q						With			
ISG111-030-Q	ISG211-030-Q					SUS316	Without			
ISG111-031-Q	ISG211-031-Q						With			
ISG120-030-Q	ISG220-030-Q	0.05~0.7	0.02~0.35	1.5	±0.014	Brass Phosphor bronze	Without			
ISG120-031-Q	ISG220-031-Q		0.02~0.45				With			
ISG121-030-Q	ISG221-030-Q		0.02~0.35			SUS316	Without			
ISG121-031-Q	ISG221-031-Q		0.02~0.45				With			
ISG130-030-Q	ISG230-030-Q		0.1~1.0			0.03~0.4	1.5	±0.02	Brass Phosphor bronze	Without
ISG130-031-Q	ISG230-031-Q					0.03~0.6				With
ISG131-030-Q	ISG231-030-Q	0.03~0.4		SUS316	Without					
ISG131-031-Q	ISG231-031-Q	0.03~0.6			With					
ISG190-030-Q	ISG290-030-Q	-10~100kPa	7~53kPa	0.5	±2kPa	Brass Phosphor bronze SUS316	Without			
ISG191-030-Q	ISG291-030-Q									

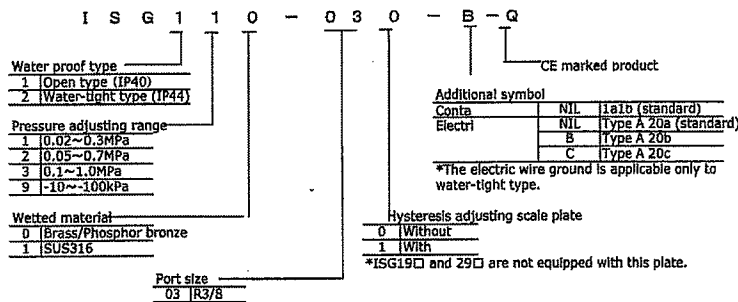
2.2 Specifications

Fluid	Not corrode wetted parts	
Proof pressure	Refer to chapter 3.	
Max. operating pressure	Refer to chapter 3.	
Pressure adjusting range	Refer to chapter 3.	
Scale deviation	Refer to chapter 3.	
Hysteresis	Refer to chapter 3.	
Repeatability	Refer to chapter 3.	
Ambient and fluid temperature	-5 to 80°C (No freezing)	
Contact composition	1a1b	
Wiring specifications	Terminal	
Electrical entry	Open type	Grommet
	Water-tight type	JIS F8801 electric wire ground
Enclosure	Open type	Equivalent to IP40
	Water-tight type	Equivalent to IP44
Weight	Open type	1.3kg
	Water-tight type	1.5kg

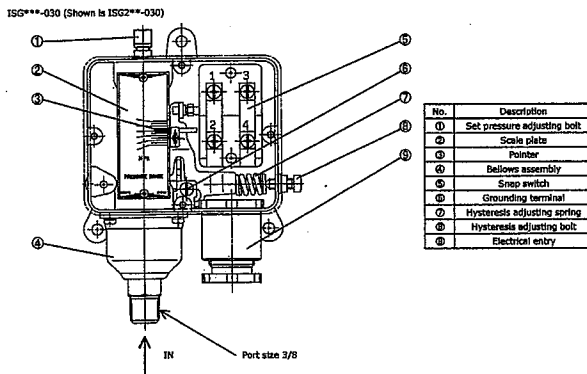
Rated Values of Snap Switch

Rated voltage V	Non-inductive load A		Inductive load A	
	Resistance load	Light load	Inductive load	Motor load
AC110	12	2	12	3
AC220	10	1	10	1.5
DC24	3	2.5	3	2.5
DC48	1.5	1.2	1.5	1.25
DC110	0.5	0.25	0.5	0.2
DC220	0.25	0.1	0.25	0.1

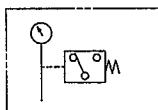
How to Order



2.3 Piping



2.4 Circuit Symbol



3 Installation



WARNING:

- Do not install unless the safety instructions have been read and understood.

3.1 Environment



WARNING:

- Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.
- Do not use in an explosive atmosphere.
- The product should not be exposed to prolonged sunlight. Use a protective cover.
- Do not mount the product in a location where it is subject to strong vibrations and/or shock. Check the product specifications for above ratings.
- Do not mount the product in a location where it is exposed to radiant heat.

3.2 Piping



CAUTION:

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fitting into a port, ensure that sealant material does not enter the port inside. When using seal tape, leave 1.5 to 2 threads exposed on the end of pipe/fitting.

Thread	Appropriate tightening torque (Nm)
R 3/8	22 to 24

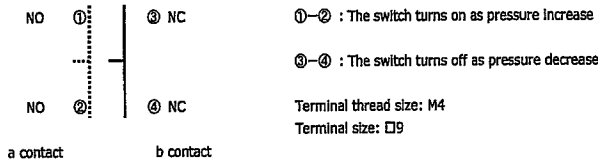
3.3 Electrical connection



WARNING

- Keep specified voltage and current. Use with voltage or current outside of specified range could cause malfunction and damage of the product and electric shock and fire. The product does not build the contact protective circuit. protective circuit.
If the product is used with large volume load such as a motor, a magnet switch or relay should be combined. Otherwise, a snap switch may malfunction in earlier period.
- The grounding terminal is M4. Be sure to connect a protective grounding wire regardless of the operating voltage.
- Use the protective grounding wire having the diameter equal or larger than the wire for the product and compliant with the IEC standard.
- Use the round bare type of crimping terminal compliant with the IEC standard to prevent it from coming off.
- Connect the wiring of snap switch in accordance with symbols on terminal.
The ① and ②, and ③ and ④ do not have the polarity respectively.

Contact composition SPDT 1a1b



4 Settings and Programming



CAUTION

- How to set a pressure
Pressure setting can be performed by rotating a set pressure adjusting bolt. (With across flat: 10)
The pressure will increase by clockwise rotation and decreases by counterclockwise rotation.
- How to set a hysteresis (difference from ON to OFF)
Without hysteresis scale:
Rotate a hysteresis adjusting bolt. (With across flat: 10)
The hysteresis will increase by clockwise rotation and decrease by counterclockwise rotation.
Excessively tightened bolt could let the spring come off.
With hysteresis scale:
Hysteresis adjusting bolt is covered with a screw cap and is adjusted by a flat driver. (With across flat: 1, 2 and Length: 10)
The hysteresis will increase by clockwise rotation and decrease by counterclockwise rotation.
- Pressure indicated on a scale plate is referential.
More exact setting and fine adjustment can be performed with checking on a pressure gauge.

5 Maintenance



WARNING:

- Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.
- Shut-down before maintenance: before attempting any kind of maintenance make sure the supply pressure is shut off and all residual pressure is released from the system to be worked on.
- Start-up after maintenance: apply operating pressure and power to the equipment and check for proper operation and possible leaks. If operation is abnormal, please verify product set-up parameters.
- Do not make any modification to the product
- Do not disassemble the product, unless required by installation or maintenance instructions.

6 Limitations of Use



WARNING:

- Do not exceed any of the specifications laid out in section 2 of this document or the specific product catalogue.

7 European Contact List

7.1 SMC Corporation

Country	Telephone	Country	Telephone
Austria	(43) 2262-62 280	Italy	(39) 02-92711
Belgium	(32) 3-355 1464	Netherlands	(31) 20-531 8888
Czech Republic	(420) 5-414 24611	Norway	(47) 67 12 90 20
Denmark	(45) 70 25 29 00	Poland	(48) 22-548 50 85
Finland	(358) 9-859 580	Portugal	(351) 22 610 89 22
France	(33) 1-64 76 1000	Spain	(34) 945-18 4100
Germany	(49) 6103 4020	Sweden	(46) 8 603 12 00
Greece	(30) 1- 342 6076	Switzerland	(41) 52-396 3131
Hungary	(36) 23 511 390	Turkey	(90) 212 221 1512
Ireland	(353) 1-403 9000	United Kingdom	(44) 1908-56 3888

7.2 Websites

SMC Corporation	www.smcworld.com
SMC Europe	www.smceu.com