



Installation and Maintenance Manual

GP46 Series

Pressure Gauge with 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 this 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 (Note 1), JIS B 8370 (Note 2) and other safety practices.

(Note 1) ISO 4414, Pneumatic fluid power - General rules relating to systems. (Note 2) JIS B 8370, Pneumatic system axiom.

⚠ DANGER	In extreme conditions, there is a possible result of serious injury or loss of life.
⚠ WARNING	Operator error could result in serious injury or loss of life.
⚠ CAUTION	Operator error could result in injury or equipment damage.

⚠ 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 with specific pneumatic system must be based on specifications after analysis/tests to meet the specific requirements.
- Only trained personnel should operate pneumatically operated machinery and equipment.**
 - Compressed air can be dangerous if an operator is unfamiliar with its 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 all controls are in the off position.
 - When equipment is to be removed, confirm the safety process as mentioned above. Switch off the 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. has been performed (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.

⚠ CAUTION

- Ensure that the air supply system is filtered to 5 micron.

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
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1.3 Specific recommendations

- A pressure switch function has been added to the gauge.
- The pressure switch is equipped with a light for verifying operation.
- The pressure switch gauge is equipped with a limit indicator.
- To be used for verifying the supply pressure.

2 Intended Conditions of Use

2.1 Specifications

Model		GP46	
Gauge	Type	Back side thread	
	Ambient and fluid temperature	-5 to 60°C (No freezing)	
	Indicated pressure range	0 to 1.0 MPa	
	Port size	R1/8, ¼ (Option M: with M5 female thread)	
	Fluid ⁽¹⁾	Air	
Pressure switch	Indication precision	±0.03 MPa	
	Setting range ^{(2) (3)}	0.1 to 0.8 MPa	
	Hysteresis	0.07 MPa	
	Pointer error ⁽⁴⁾	±0.05 MPa (5 to 40°C) ±0.08 MPa (-5 to 60°C) No freezing	
	Contact	With light: 1a (Normally open) Without light: 1ab (Normally open/Normally closed)	
	Wiring	Lead wire (Length: 300mm)	
	Indicator light	AC	Neon light
		DC	Light emitting diode (LED)
	Enclosure	Equivalent to IP40	
	Weight	0.12kg	

(Note 1) Water is not an acceptable fluid. When using other fluids, please consult with SMC for compatibility information concerning corrosion.

(Note 2) Indicates the condition at the lower pressure limit. Set value of pressure switch is indicated by pointer (green). This is the point at which the circuit between N.O. (white) and COM (black) is turned off during pressure decrease. To set the value, turn the needle in the clockwise position. When setting; if desired set position has been passed, turn needle in a counterclockwise direction beyond the desired value and then once again return the needle in a clockwise direction stopping at the desired value. Value must be set while needle is traveling in a clockwise direction.

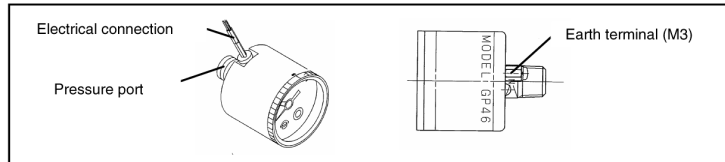
(Note 3) Make sure to provide a minimum difference of 0.1 MPa between the set pressure and the operating pressure (including the pressure drop). If the difference is smaller, it could lead to improper operation. Refer to 4 Settings and Programming for details on how to set the setting needle. Use caution: Operating pressure should be the sum of the pressure of the setting needle error (±0.05 MPa), the hysteresis (0.07 MPa), and the display accuracy (±0.05 MPa) on the set pressure value. If this is not correct the circuit between N.O. (white) and COM (black) may not turn ON while pressure is increasing.

(Note 4) Maximum error value: Add the pressure gauge indicator error of 0.03 MPa to the setting needle error.

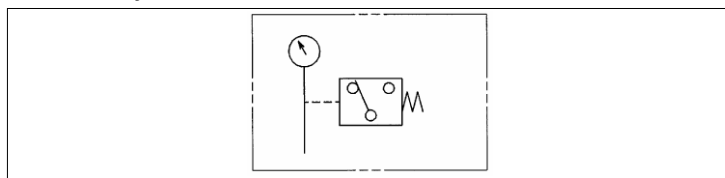
Micro-switch Rated Voltage

Rated voltage	DC30V	AC125V
Operating current range	0.01 to 0.5A	0.01 to 0.3A
Resistance load		

2.2 Piping



2.3 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.
- 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 sealant tape, leave 1.5 to 2 threads exposed on the end of pipe/fitting.

Thread	Appropriate tightening torque (Nm)
R 1/8	7 to 9
R ¼	12 to 14

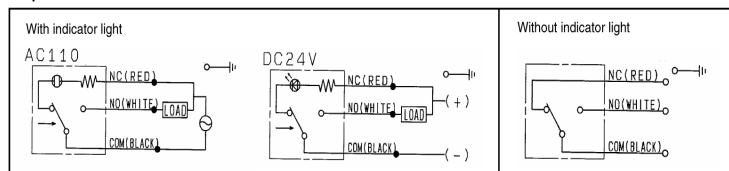
3.3 Electrical connection

⚠ WARNING

- Do not apply high load voltage (current) or current as this can cause the switch to malfunction.
- The earth terminal has an M3 thread. Be sure to connect a protective earth wire regardless of the operating voltage.
- Use protective earth wire with a diameter equal or larger than that of the product and compliant with the IEC standard.
- Use the round crimping terminal connector compliant with the IEC standard.

⚠ CAUTION

- The arrow mark on the drawing below indicates the direction of the increasing pressure.
- The lamp turns OFF at the set pressure and above, and ON below the set pressure.



3.4 Mounting

⚠ WARNING

Do not mount the pressure gauge in the following environments.

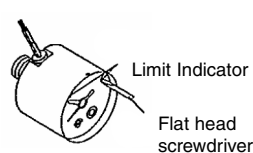
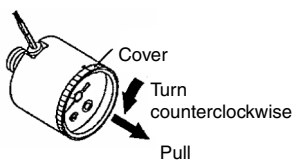
- The cover is made from polycarbonate. Do not use the pressure gauge in an environment which may contain or be exposed to synthetic oil, acetone, alcohol, organic solvent like Ethylene chloride, chemicals such as sulphuric and nitric acid, cutting oil, kerosene, gasoline, thread locking material.

4 Settings and Programming

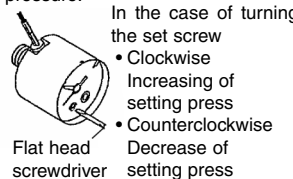
⚠ CAUTION

Procedure for setting the Limit Indicator and the Setting Needle

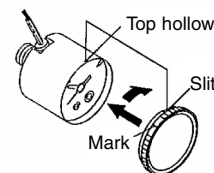
- Before setting the limit indicator and the (green) setting needle, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, remove by pulling it towards you.
- Use a flat hard screwdriver (with a 2.9 mm blade width) to set the (green) limit indicator. Be careful not to bend the other needle or damage the dial plate.



- Before setting the setting needle, use a flat head screwdriver (with a 2.9 mm blade width) to turn the setting needle to the set pressure.



- After completing the setting, replace the cover. Fit the cover by aligning the cutout in the cover to the groove on the top of the black case. Turn the cover clockwise (approximately 6 to 7 mm) until it stops. Make sure that the matching mark on the cover is aligned with the groove on the top of the case.



5 Maintenance

⚠ WARNING

- Not following proper procedures could cause the product to malfunction which could lead to damage of the equipment or machine.

- If handled improperly, compressed air can be dangerous. Assembly, handling and repair of pneumatic system should be performed by qualified personnel only.
- Drain: Remove condensation from the filter bowl on a regular basis.
- Shutdown before maintenance: Before attempting any kind of maintenance make sure the supply pressure is shut off and all residual air pressure is released from the system.
- Start-up after maintenance: Apply operating pressure and power to the equipment and check for correct operation and air 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) 207-513 513	Portugal	(351) 2 610 89 22
France	(33) 1-64 76 1000	Spain	(34) 945-18 4100
Germany	(49) 6103 4020	Sweden	(46) 8-603 0700
Greece	30) 1- 342 6076	Switzerland	(41) 52-396 3131
Hungary	(36) 1-371 1343	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