



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/ests 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

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
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, 1/4 (Option M: with M5 female thread)
Fluid ⁽¹⁾		Air
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)
Contact		±0.08 MPa (5 to 60°C). No freezing
Wiring		Without light: 1a (Normally open)
Indicator light	AC	With light: 1a (Normally open)
	DC	Lead wire (Length: 300mm)
Enclosure		Neon light
Weight		Light emitting diode (LED)
		Equivalent to IP40
		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.

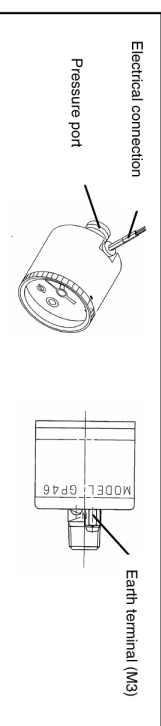
(Note 3) Make sure to provide a minimum difference of 0.1 MPa between the set pressure and the operating pressure (including the pressure drop). If the difference is smaller, it could lead to improper operation. Refer to 4 Settings and Programming for details on how to set the setting needle. Use caution: 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.

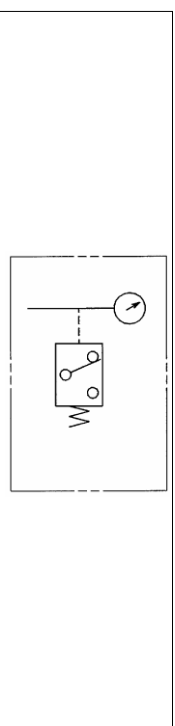
Micro-switch Rated Voltage

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 1/4	12 to 14

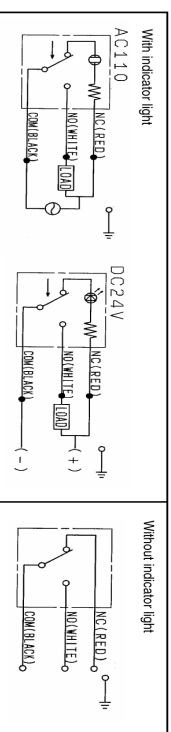
3.3 Electrical connection

▲ 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

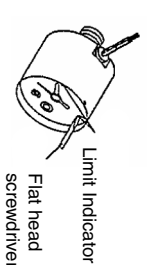
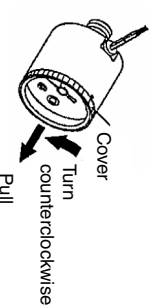
- Do not mount the pressure gauge in the following environments.
 - The cover is made from polycarbonate. Do not use the pressure gauge in an environment which may contain or be exposed to synthetic oil, acetone, alcohol, organic solvent like Ethylene chloride, chemicals such as sulphuric and nitric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

4 Settings and Programming

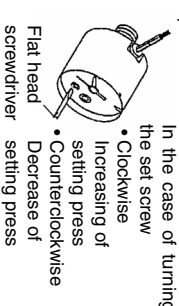
▲ CAUTION

Procedure for setting the Limit Indicator and the Setting Needle

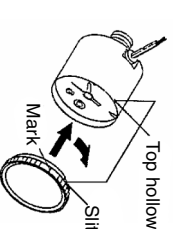
- Before setting the limit indicator and the (green) setting needle, turn the cover counterclockwise (approximately 6 to 7 mm) until it stops. Then, remove by pulling it towards you.
- Use a flat hard screwdriver (with a 2.9 mm blade width) to set the (green) limit indicator. Be careful not to bend the 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
Austria	(43) 2262-62 280
Belgium	(32) 3-355 1464
Czech Republic	(420) 5-414 24611
Denmark	(45) 70 25 29 00
Finland	(358) 207-513 513
France	(33) 1-64 76 1000
Germany	(49) 6103 4020
Greece	(30) 1-342 6076
Hungary	(36) 1-371 1343
Ireland	(353) 1-403 9000

Country	Telephone
Italy	(39) 02-92711
Netherlands	(31) 20-531 8888
Norway	(47) 67 12 90 20
Poland	(48) 22-548 50 85
Portugal	(351) 2 610 89 22
Spain	(34) 945-18 4100
Sweden	(46) 8-603 0700
Switzerland	(41) 52-396 3131
Turkey	(90) 212 221 1512
United Kingdom	(44) 1908-56 3888

7.2 Websites

SMC Corporation www.smcworld.com
SMC Europe www.smc.eu.com