

Pressure Gauge with Switch G52D-8-P10-□

INSTRUCTION MANUAL

SM-368713-A/3



- Read this Instruction Manual before using the product.
- Read the safety notes carefully.
- Keep this Instruction Manual in a safe and convenient place for future reference.

PREFACE

Thank you for purchasing CKD's "**G52D-8-P10-□**" **pressure gauge with switch**.

This Instruction Manual contains basic matters such as installation and usage instructions in order to ensure optimal performance of the product. Please read this Instruction Manual thoroughly and use the product properly.

Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

- The product is intended for users who have basic knowledge about materials, piping, electricity, and mechanisms of pneumatic components. CKD shall not be responsible for accidents caused by persons who selected or used the product without knowledge or sufficient training.
- Since there are a wide variety of customer applications, it is impossible for CKD to be aware of all of them. Depending on the application or usage, the product may not be able to exercise its full performance or an accident may occur due to fluid, piping, or other conditions. It is the responsibility of the customer to check the product specifications and decide how the product shall be used in accordance with the application and usage.

SAFETY INFORMATION

When designing and manufacturing any device incorporating the product, the manufacturer has an obligation to ensure that the device is safe. To that end, make sure that the safety of the machine mechanism of the device, the pneumatic control circuit, and the electric system that controls such mechanism is ensured.

To ensure the safety of device design and control, observe organization standards, relevant laws and regulations, which include the following:

ISO 4414 and JIS B 8370 (the latest edition of each standard)




In order to use our products safely, it is important to select, use, handle, and maintain the products properly.

Observe the warnings and precautions described in this Instruction Manual to ensure device safety.

Although various safety measures have been adopted in the product, customer's improper handling may lead to an accident. To avoid this:


**Thoroughly read and understand this Instruction Manual
before using the product.**

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER", "WARNING", and "CAUTION".

| | |
|--|---|
|  DANGER | Indicates an imminent hazard. Improper handling will cause death or serious injury to people. |
|  WARNING | Indicates a potential hazard. Improper handling may cause death or serious injury to people. |
|  CAUTION | Indicates a potential hazard. Improper handling may cause injury to people or damage to property. |

Precautions classified as "CAUTION" may still lead to serious results depending on the situation. All precautions are equally important and must be observed.

Other general precautions and tips on using the product are indicated by the following icon.

| | |
|---|--|
|  | Indicates general precautions and tips on using the product. |
|---|--|

Precautions on Product Disposal

CAUTION

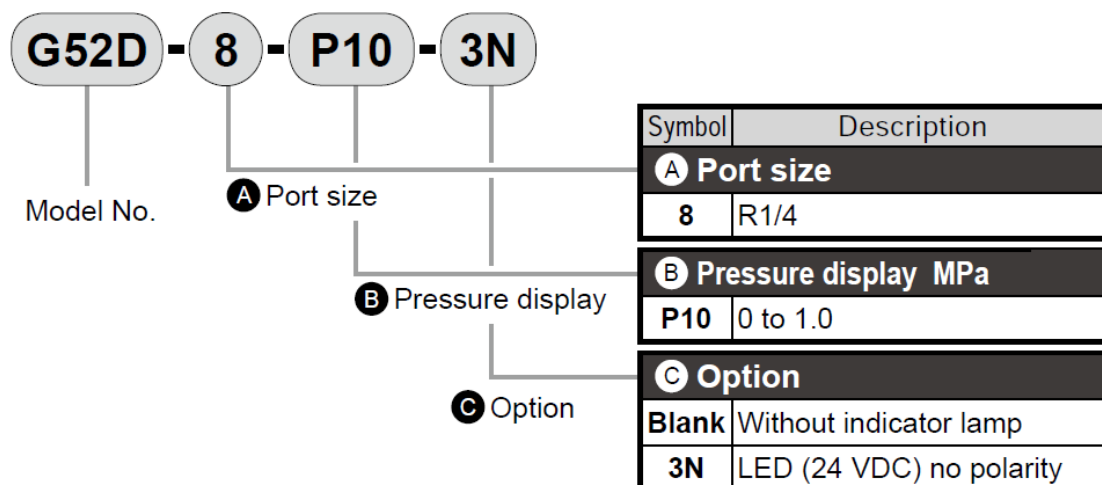
When disposing of the product, comply with laws pertaining to disposal and cleaning of wastes and have an industrial waste disposal company dispose of the product.

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1. PRODUCT OVERVIEW

1.1 Model Number Indication



1.2 Specifications

| Descriptions | | Pressure gauge |
|----------------------------------|----------------|--|
| Working fluid | | Compressed air |
| Fluid temperature | | 5°C to 60°C |
| Ambient temperature | | -5°C to 60°C (no freezing) |
| Accuracy ^{Note 1} | | JIS Class 3 or equivalent (± 3%FS) |
| Shape | | DT type (rear side screw, piping joint: hexagon) |
| Material | Piping joint | Brass |
| | Bourdon tube | Phosphor bronze |
| | Housing | Steel plate + chrome plating |
| | Lens | Polycarbonate resin |
| | Setting needle | ABS resin (green) |
| Pressure range ^{Note 2} | | 0 MPa to 1.0 MPa |
| Port size | | R1/4 |
| Weight | | 150 g |

Note 1: The pressure indication accuracy is guaranteed at 20°C ± 15°C.

Note 2: Do not apply pressure that exceeds the maximum pressure indicated on the dial face. Otherwise, operation faults may occur.

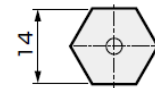
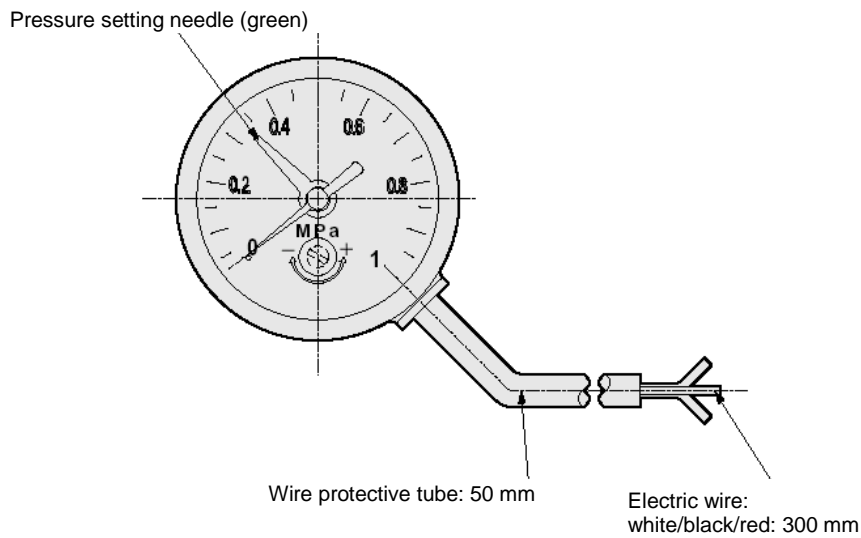
| Descriptions | | Pressure switch |
|----------------------|--|---|
| Set pressure | | 0.1 MPa to 0.8 MPa |
| Hysteresis | | 0.07 MPa |
| Contact array | | Without indicator lamp: 1ab (normally open, normally closed) With indicator lamp: 1a (normally open) |
| Setting needle error | | ± 0.05 MPa |
| Lead wire | | 300 mm |
| Connection | | Without indicator lamp: 3 lead wires With indicator lamp: M12 connector (4-pin) |
| Indicator lamp (DC) | | LED, 24 VDC (Load current: 8 mA to 30 mA) |

Micro switch rating

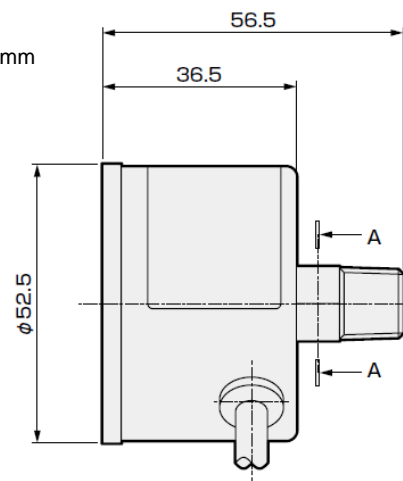
| Load | Resistance load | |
|-------------------------|-----------------|--------------|
| Rated voltage | 30 VDC | 125 VAC |
| Operating current range | 0.1 A to 1 A | 0.1 A to 1 A |

1.3 Dimensions

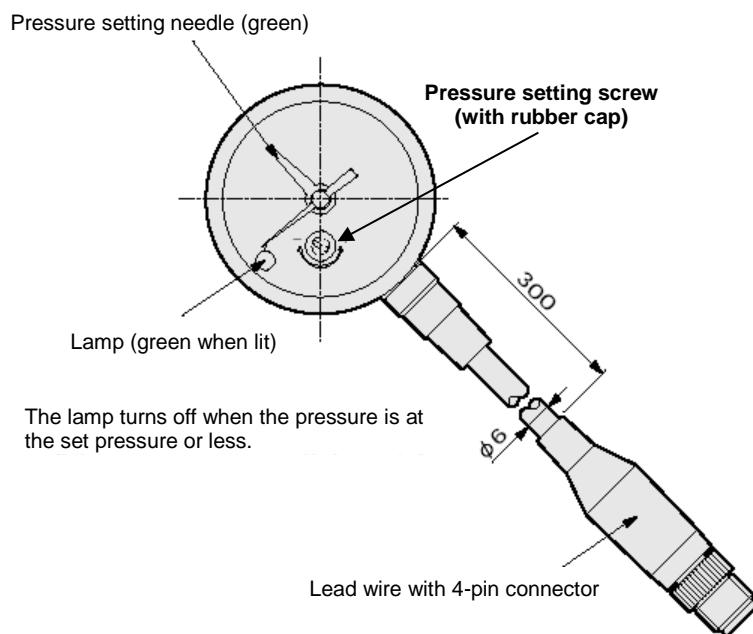
Without indicator lamp



Cross-section A-A



With indicator lamp



2. INSTALLATION

2.1 Environment

WARNING

Do not use the product in an atmosphere where organic solvents or chemicals are present or in a place where they may adhere to the product.

Chemicals may cause damage to the product and lead to an accident.

Do not use the product in an environment where:

- Ambient temperature is outside the specified working temperature range of the product
- Atmosphere contains a lot of dust
- Atmosphere contains siloxane
- Atmosphere contains corrosive gas
- Atmosphere contains spatter
- It is exposed to direct sunlight, rain, wind, or water
- There is a heat source in the surrounding area and heat is radiated
- Bending and tension are repeatedly applied to the lead wire
- It is subject to vibrations or shocks

2.2 Unpacking

⚠ CAUTION

Do not open the packing of the product until just before piping.
Foreign matters may enter the product and cause a failure or malfunction.

- Check that the model number ordered and the model number indicated on the product are the same.
- Check the exterior of the product for any damage.

2.3 Piping

⚠ CAUTION

Do not drop or hit the product during installation.
Tighten the pipes with the appropriate tightening torque.
Excessive screwing torque or load may cause damage.
Hold the piping joint (the hexagon connection) during piping.
Holding the body when piping may cause damage.

2.3.1 Pipe cleaning

Before piping, blow air into the pipes to clean the interior and to remove cutting chips and foreign matters.

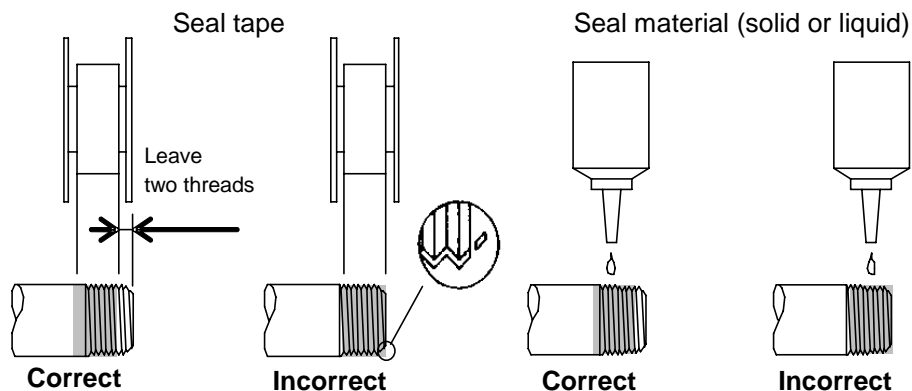
2.3.2 Seal material

Apply a seal tape or seal material to the screw threads leaving two or more threads at the pipe end uncovered or uncoated. If the pipe end is fully covered or coated, a shred of seal tape or residue of seal material may enter inside of the pipes or device and cause a failure.

When using a seal tape, wind it around the screw threads in the direction opposite from the screw threads and press it down with your fingers to attach it firmly.

When using a liquid seal material, be careful not to apply it to resin parts. The resin parts can become damaged and this may lead to a failure or malfunction.

Also, do not apply seal material to the internal threads.

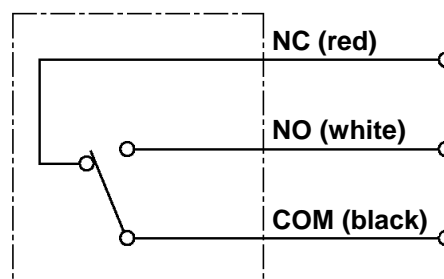


2.4 Wiring

2.4.1 Lead wires

■ Without indicator lamp (option symbol: Blank)

Refer to the electrical wiring diagram on the right.



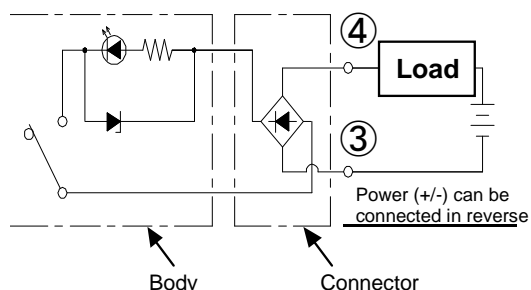
■ With indicator lamp (option symbol: 3N)

For the lead wire connection, use the following connector socket or equivalent products.

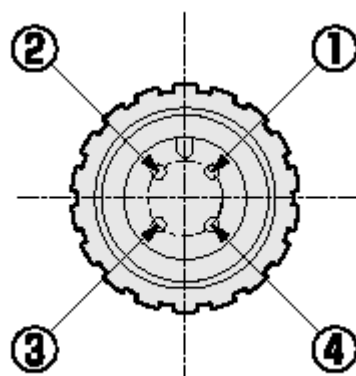
Omron Corporation XS2C model

Since the connector is non-polar, the connection can be reversed.

For the electrical wiring diagram and the terminal layout of the connector, refer to the figures below.



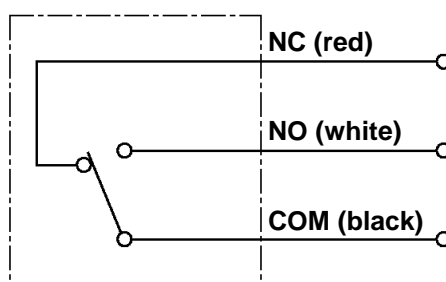
Electrical wiring diagram



Terminal layout of male connector

2.4.2 Contact capacity

Do not use a load voltage or a load current that is outside the specified range. Otherwise, the lamp may go off or the contacts may become welded. Also, if the current falls below the rated current value, the lamp may not turn on. (Note that for a model with the indicator lamp, the internal voltage drop becomes 4 V or less and load current becomes 8 mA to 30 mA at 24 VDC.)



3. USAGE

WARNING

Use clean compressed air that does not contain organic solvents, chemicals, or corrosive gases.

Contaminated compressed air may cause operation faults or damage to the product.

Use the product within the specifications.

Using the product outside the specifications may cause damage to the product or malfunction of terminal devices and lead to accidents.

CAUTION

Check the working circuit and the working fluid.

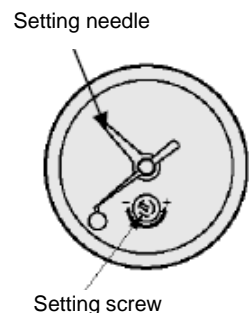
If fluids containing solids or fluids not in the specifications flow into the product, operation faults may occur. Attach a filter to the primary side of the product to prevent solids from entering.

Avoid using the product under conditions where there are repeated occurrences of sudden rise and drop in pressure and under pressure pulsation.

Using the product under such conditions may shorten the service life of the product. Adjust the air circuit to decrease the pressure change.

3.1 Setting the Setting Needle

- 1 Pass a flat blade screwdriver (tip width: 2.9 mm) through the rubber cap on the lens.
- 2 Turn the setting screw with the tip of the screwdriver to set the green setting needle to the desired set pressure.
 To decrease the set pressure, turn the setting screw to the minus (-) side.
 To increase the set pressure, turn the setting screw to the plus (+) side.
 If the setting needle passes the desired set position, turn the needle counterclockwise until it passes the set position and then turn it clockwise to the set position.



- * For the product to perform as intended, make sure that there is a difference of at least 0.1 MPa between the working pressure (including pressure drop) and the set value. If the difference is smaller than 0.1 MPa, a malfunction may occur.
- * Apply a working pressure that is at least equal to the sum of the set pressure, the setting needle error (± 0.05 MPa), the hysteresis (0.07 MPa), and the indication accuracy ($\pm 3\%$ FS). Otherwise, the switch may not turn on even when the pressure rises.
- * For the maximum value of the error between the setting needle and the pointer, add the indication accuracy of the pressure gauge to the setting needle error.

4. MAINTENANCE AND INSPECTION

4.1 Periodic Inspection

- 1** Set up a pressure gauge used for inspection.
- 2** Apply a pressure that is at least equal to the sum of the set pressure, the hysteresis (0.07 MPa), the setting needle error (± 0.05 MPa), and the indication accuracy ($\pm 3\%$ FS) and confirm that the switch operates properly. (For a model with the indicator lamp, the lamp turns on when voltage is applied.)
- 3** Decrease the pressure and check that the switch turns off when the pressure is at the set pressure or less. (For a model with the indicator lamp, the lamp turns off when voltage is applied.)
- 4** Check that there is no external and internal leakage.

5. TROUBLESHOOTING

5.1 Problems, Causes, and Solutions

If the product does not operate as intended, check the table below for a possible solution.

| Problem | Cause | Solution |
|--|--|--|
| Switch does not turn on at set value. | Air pressure is not supplied. Air pressure is insufficient. | Apply pressure that is at least equal to the sum of set pressure, setting needle error, hysteresis, and indication accuracy. |
| | Wiring is disconnected. | Repair the wiring or replace the pressure gauge with switch. |
| | Silicone has adhered to contacts. | Replace and install the pressure gauge with switch away from the operating area of silicone products. |
| Switch does not turn off when pressure is at set pressure or less. | Air pressure is high. | Decrease the air pressure. |
| | Contact is welded. | Change the load and replace the pressure gauge with switch. |

If you have any other questions or concerns, contact your nearest CKD sales office or distributor.

6. WARRANTY PROVISIONS

6.1 Warranty Conditions

■ Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified below, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.

However, following failures are excluded from this warranty:

- Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or this Instruction Manual.
- Failure caused by incorrect use such as careless handling or improper management.
- Failure not caused by the product.
- Failure caused by use not intended for the product.
- Failure caused by modifications/alterations or repairs not carried out by CKD.
- Failure that could have been avoided if the customer's machinery or device, into which the product is incorporated, had functions and structures generally provided in the industry.
- Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
- Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.

■ Confirmation of product compatibility

It is the responsibility of the customer to confirm compatibility of the product with any system, machinery, or device used by the customer.

■ Others

The terms and conditions of this warranty stipulate basic matters.

When the terms and conditions of the warranty described in individual specification drawings or the Specifications are different from those of this warranty, the specification drawings or the Specifications shall have a higher priority.

6.2 Warranty Period

The product is warranted for one (1) year from the date of delivery to the location specified by the customer.