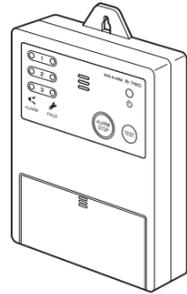


## Detector for B-780

### Service Manual (For Service Technicians)

To ensure the safe and correct usage by the customer of the detector connected to this alarm, be sure to carefully read this service manual for performing the specified installation.



## 1 Safety Information

This service manual uses safety symbols to ensure that the detector is installed correctly, protect you and the customer from potential hazards, and prevent property damage. The appearance of these safety symbols and their meanings are shown below. Be sure that you fully understand their meanings before reading the information in this manual.

**WARNING** This indicates work that, if not performed correctly, could result in death or serious injury to the installation technician or user.

**CAUTION** This indicates work that, if not performed correctly, could result in a minor or moderate injury to the installation technician or user, or result in property damage.

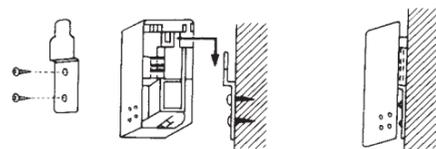
## 2 Detector Operation Notes

- Certain compounds could adversely affect the gas sensor. In particular, never use silicone-based compounds. (This applies for non-explosion-proof work as well.)
- If gas is constantly found in the area around the detector, sensor sensitivity may be reduced. Also, sensor performance and service life could be adversely affected in locations exposed to chlorine gas, sulfur gas, vapor that includes silicone compounds, and similar substances.
- The recommended replacement cycle for the sensor unit is three years. For usage in a clean atmosphere, as a general guideline, replace the sensor unit every three years. The sensor unit replacement cycle of three years is an estimate that assumes the conducting of proper maintenance and no exposure to gases in high concentrations or gases or vapors that could adversely affect the sensor unit as described above, and this does not constitute a warranty of any kind.

## 3 Installing the GD-1B

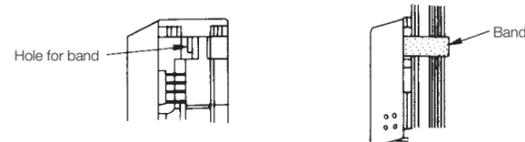
### 3-1 Using the Installation Plate

Use the wood screws to secure the installation plate to the installation location, and mount by sliding into the notch on the rear side of the detector.



### 3-2 Using the Band

Pass the band through the hole on the rear side of the detector, and tighten and secure to the pipe section of a gas pipe or similar object.



## 4 Example of Work Procedure for KD-5G, KD-5T, KD-5GM, and KD-5M

### 4-1 Cable Routing Notes

**Explosion-proof models (KD-5G and KD-5GM), Weather-resistant models (KD-5T and KD-5M)**

- (1) Use CVW 1.25 mm<sup>2</sup> 3-core cables.
- (2) Place the cables in steel conduits for protection in environments exposed to mice, corrosion, heat, vibrations, impact, or other adverse conditions.
- (3) Fully and securely tighten the gland packing so that it locks into place.

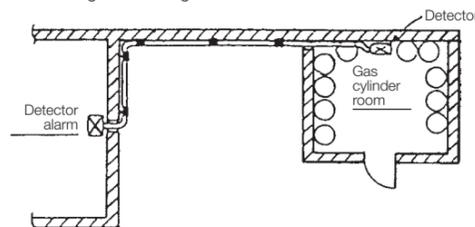
**Explosion-proof models (KD-5G and KD-5GM)**

The gas detection unit has a pressure-resistant, explosion-proof structure because it is installed in hazardous locations where gas leaks can occur. Perform the wire routing work in compliance with the "Recommended Practices for Explosion-Protected Electrical Installations" by the Ministry of Health, Labour and Welfare.

- (1) To prevent the flow of gas in passageways from hazardous locations to non-hazardous locations, seal the passageways and the inside of the protective pipes. (Do not use silicone-based materials for the sealants.)
- (2) It is preferable to avoid cable-to-cable connections as much as possible, but in those cases only where the circumstances require direct connection of cables, branched connection, or connection of cables with insulated cables using pressure-resistant, explosion-proof metal pipe lines, connection is possible within a connection box with a pressure-resistant, explosion-proof structure.

### 4-2 Cable Routing Procedure

- (1) Route the cable along the building material.



### CAUTION

- The supports for the cable on the building material should be at intervals of 1 meter or less.
- Avoid routing in locations with doors or where a large number of people pass through or where objects could get in the way.
- To protect the cable sheath, place bushings or other objects on the ends of protective pipes installed at locations passing through building materials.
- To prevent ingress of water into the protective pipes, implement measures such as installation of seals or other protection at the pipe ends.

- (2) Protection by conduits

- Use conduits to protect the cables in locations where the cable could be subjected to damage or in locations where the cable passes through walls or other objects.
- For the conduits, use rigid PVC conduits (JISC 8430) or steel conduits (JISC 8305) (thin steel conduits or thick steel conduits).
- When passing the conduit from a hazardous location to a non-hazardous location, apply seals to the inside of the conduit, such as by using a sealing fitting.

## 5 Installation Locations for KD-5GM and KD-5M Detectors

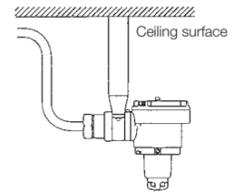
Install the gas detection unit in a location where the leaked gas is likely to accumulate by taking into account the specific gravity of the detection target gas, conditions and height for the gas equipment, and other factors. Do not install in the following locations.

- Locations where things could drop from above the detector or where the detector could be hit by objects.
- Well-ventilated locations such as near intake or outtake ports, passageways, and doors, or where drafts enter.
- (KD-5GM) Locations where the temperature is -10°C or lower or 60°C or higher.
- (KD-5M) Locations where the temperature is -10°C or lower or 50°C or higher.

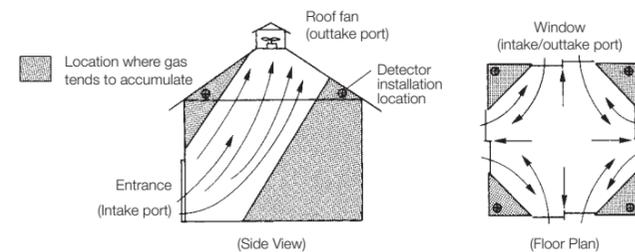
## 5-1 Installation Height

The detector should be installed on the ceiling or within 30 cm from the ceiling surface in a state where it can be easily accessed for inspection of the detector and for replacement of the sensor unit as shown in figure below.

**KD-5GM (Pressure-resistant, explosion-proof model)**  
**KD-5M (Weather-resistant model)**



## 5-2 Indoor Installation



Example of installation location for indoors

## 5-3 Outdoor Installation

For outdoor installation, consider the installation locations and number of gas detection units to be installed by taking into account that the dispersion direction of the leaked gas will change based on the wind direction and speed. (When installing outdoors, be sure to always mount the rainproof cover and rainproof cap.)

## 6 Pressure-Resistant, Explosion-Proof Pipe Routing Work

The KD-5G and KD-5GM gas detection units have a pressure-resistant, explosion-proof structure. Perform the wire routing work in compliance with the "Recommended Practices for Explosion-Protected Electrical Installations" by the Ministry of Health, Labour and Welfare.

### CAUTION

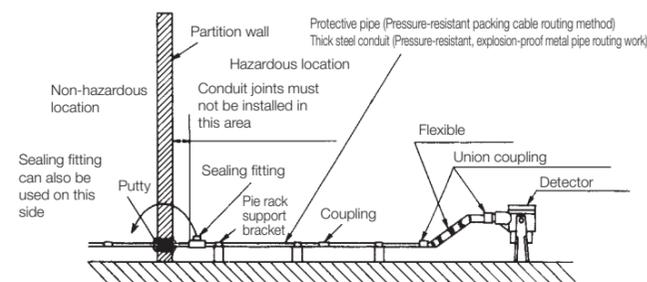
The pressure-resistant packing has a standard inner diameter of 11 mm. When using cables other than those specified, use those with an outer diameter of 10.0 to 10.9 mm.

## 6-1 Pressure-Resistant Packing Cable Routing Method

- Use CVW 1.25 mm<sup>2</sup> 3-core cables, and if necessary, place it inside protective pipes, duct, or other protective devices.
- Avoid cable-to-cable connections. If circumstances require a cable-to-cable connection, make the connection within a connection box with a pressure-resistant, explosion-proof structure.
- If the pressure-resistant packing routing method will be used, use one where the finished outer diameter of the cable matches the inner diameter of the packing, and fully and securely tighten the gland packing so that it locks into place.

## 6-2 Pressure-Resistant, Explosion-Proof Metal Pipe Routing Work

- Pass the wires through thick steel conduits (JISC 8305), install sealing fittings, and fill with compounds (do not use silicone-based compounds) to seal the conduit lines.
- If flexibility is required, use waterproof flexible fittings with a pressure-resistant, explosion-proof structure.
- For connections between conduits and conduit accessories or terminal boxes, use parallel pipe threading JISB 0202 (generally, our pressure-resistant, explosion-proof instruments have PF3/4 female threading), and after at least 5 ridges are joined in the effective section of the threading, tighten securely with a lock nut, and apply waterproofing treatment to the joined section.



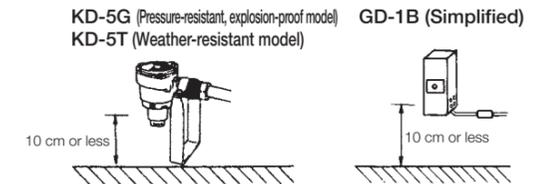
## 7 Installation Locations for KD-5G, KD-5T, and GD-1B Detectors

Install the gas detection unit in a location where the leaked gas is likely to accumulate by taking into account the specific gravity of the detection target gas, conditions and height for the gas equipment, and other factors. Do not install in the following locations.

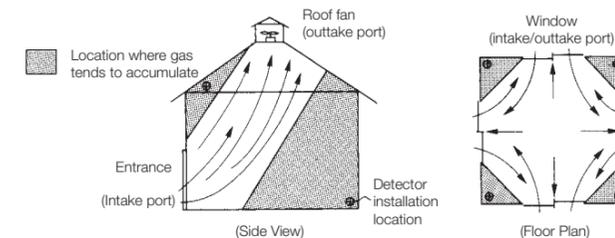
- Locations where objects could drop from above the detector or where the detector could be hit by people.
- Well-ventilated locations such as near intake or outtake ports, passageways, and doors, or where drafts enter.
- (GD-1B) Locations where the temperature is -10°C or lower or 45°C or higher.
- (KD-5G, KD-5T) Locations where the temperature is -10°C or lower or 60°C or higher.

## 7-1 Installation Height

Within 10 cm from the floor surface (for gases with heavy specific gravity such as LPG)



## 7-2 Indoor Installation



Example of installation location for indoors

## 7-3 Outdoor Installation

For outdoor installation, the dispersion pattern of the leaked gas will vary significantly depending on the wind direction, wind speed, and other atmospheric conditions, and so the wind direction and speed need to be taken into consideration together with the gas specific gravity. Consider the installation locations and number of gas detection units to be installed by taking into account the possibility that the wind direction could also be the opposite direction.

### CAUTION

- a. When installing outdoors, be sure to always mount the rainproof cover and rainproof cap.
- b. If installing in low locations, pits, or similar places, pay attention to the installation height to ensure that water does not enter the gas detection unit in case of heavy rains or other causes.

Standards are found in related regulations based on the High Pressure Gas Safety Act, and so refer to these standards when installing.

## 8 Sensor Replacement

### WARNING

Replace the sensor in a state where gas is not being used. After replacing the sensor unit, be sure to always verify operation using the inspection gas.

### ■ Sensor Unit Replacement for KD-5G, KD-5GM, KD-5T, and KD-5M Detectors

- ① Replace the sensor while the power for the B-780 alarm is turned off.
- ② Remove the rainproof cover and rainproof cap.
- ③ Use an M4 hexagonal wrench to loosen the lock screws.
- ④ Remove the sensor guard by turning it 30° in a counterclockwise direction.
- ⑤ Remove the sensor unit by pulling it downward.
- ⑥ Push in a new sensor unit by aligning the marking position, reattach the sensor guard, and firmly tighten the lock screw.
- ⑦ Reattach the rainproof cover and rainproof cap.

