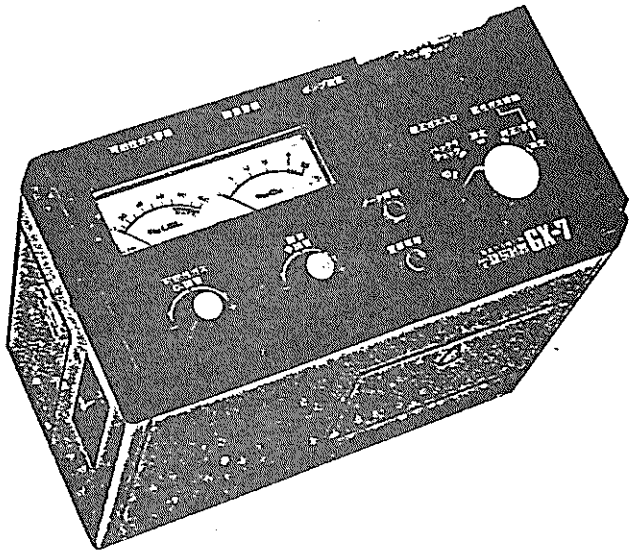
# INSTRUCTION MANUAL

# FOR

# RIKEN PORTABLE COMBINATION GAS INDICATOR

## MODEL GX-7

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## 1. GENERARION DESCRIPTION

The Model GX-7 is a intrinsically safe designed, compact and battery operated portable instrument that can be used for taking an air sample and simultaneously analyzing for the presence of combustible gas and carbon monoxide and existence of oxygen deficiency. The measurement method of carbon monoxide on model GX-7 is special designed multilayered gas detector tube.
Samples of the atmospher under test are drawn into the instrument continuously by means of built-in pump, analyzed for combustible gas, oxygen and carbon monoxide.
Abnormal conditions of oxygen deficiency or presence of combustible gas are indicated by audible signals and coloured lights.
Power for operation of the instrument is provided by dry batteries. Low battery condition is notified by audible tone. A gas sampling probe with extension hose permit withdrawal of samples from remote locations and the entire instrument fits in a compact carrying case with over-the- shoulder carrying strap.

## 2. DESIGNATIONS

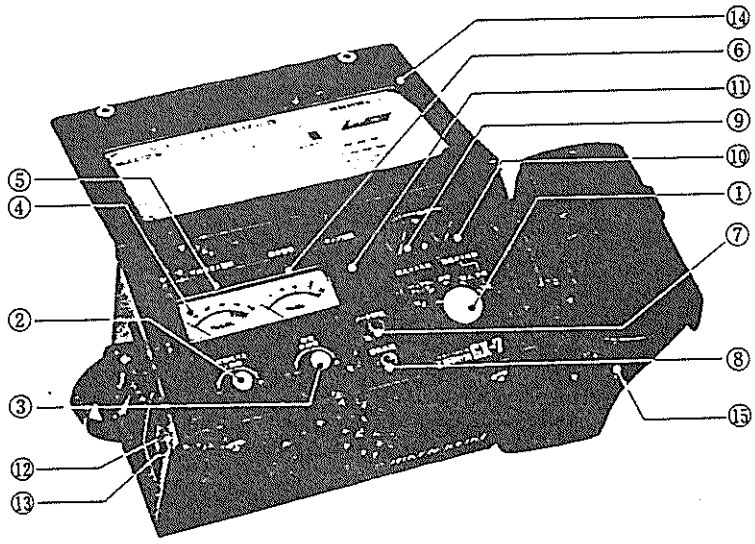


Fig. 1

① Function switch knob
② Zero adj. knob for combustible gas
③ Oxygen calibration knob
④ Combustible gas indicator
⑤ Alarm light for combustible gas
⑥ Alarm light for oxygen deficiency
⑦ Meter illumination switch
⑧ Alarm buzzer reset switch
⑨ Calibration gas inlet
⑩ Detector tube receptacle
⑪ Flow monitor
⑫ Sample gas inlet
⑬ Dust filter
⑭ Instrument case
⑮ Accessory case

## 3. OPERATION

### 1) Preparation

Before taking instrument on the job, check to verify normal operation, including following steps;

① Check battery voltage. To check, turn switch from OFF to BATT CHECK position. Meter should rise to the green band near top of scale. If it reads close to the bottom of band, batteries need replacement. Do not attempt to use instrument at all if reading is below lower end of band.

② Normally, when instrument is turned on, a red light will comes on temporarily, as the circuits warm up and stabilize. Provided the battery voltage is adequate, proceed to next step.

③ Verify pump operation by observing floating of flow monitor. Do not attempt to make gas tests unless sample is flowing.

④ Connect hose and probe or gas sampling probe to sample inlet. Connector used is of the "quick-connect" type, which is released by pulling the knurled shell away from the joint to release the retainer balls.

⑤ Check for leakage in hose, fittings and internal sampling system by putting finger over probe inlet. The flow monitor will gradually slow down and stop if flow system is tight. Track down source of any leaks before operating.

⑥ Turn switch to measurement (COMB. 02) position.

a) Turn COM. ZERO knob to move meter up and down scale. Verify operation of combustibles alarm as meter passes alarm setting (usually 30% LEL). Combustibles alarm is a series of short-long pluses from the buzzer, in synchronism with flashes of the rec COMB. ALARM light. Leave meter exactly at zero.

b) Set meter to 21%, using OXYGEN CAL. ADJ knob. Verify operation of oxygen alarm and indicating circuits. A convenient test is to sample expired air while breathing out continuously through the open month ; it should be possible to reach a reading of 18% or lower, and actuate the alarm. Note that audible alarm is a series of equal length short pulses, and the oxygen alarm light flashes in synchronism.

2) Measurement

Instrument is now adjusted and ready to use. It may be.turned off and carried to the job. To make a gas test, proceed as follows :

* Measurement of combustibles and oxygen

① Turn switch to COMB. O2 MEAS position and allow instrument to stabilize.

② Hold probe within space to be tested. Watch meters and observe readings after about 15 seconds.

③ After completion for test, remove probe from test space, allow instrument to sample from fresh air for 10 seconds, and turn to OFF.

④ When meter reading would be not clear in dark place, push METER LIGHT switch to illuminate the meter scale, in this case, the colour of METER LIGHT switch changes to red.

* Measurement of Carbon Monoxide

① Carry out same manners of operation from 3- 1)-① to 3- 2)-②.

② Turn switch knob from OFF to COMB. O2 MEAS position and leave the instrument for about one minute to substitute the test gas for the air in sampling lines.

③ Turn switch to COMB. O2 SPAN/CO PREP position.

④ Take off rubber cap from the detector tube receptacle.

⑤ Break off the tips of the detector tube with cutter.

⑥ Turn switch to CO MEAS position, and the instrument draws the test gas.

⑦ After about one minute, the pump stops automatically and completion of sample drawing is notified with audible tone(continuous tone). Buzzer sound can be stopped by pushing the ALARM RESET swtich.

⑧ Take off the tube and compare its discolouration with colour-comparsion table.

⑨ After completion of test, make cover the receptacle with rubber cap remove probe from test space, allow instrument to sample fresh air for 10 seconds at switch position of COMB. O2 MEAS, and turn off.

8) Make cover rubber cap onto the span gas inlet.

9) If readings could not be adjusted to that of sapn gas concentrations, replace respective sensor/element with new one.

Note : Whenever replacing sensor/element, please calibrate the instrument according to this step.

## 5. MAINTENANCE

1) Replacement of combustible gas element and oxygen sensor.

① Remove the instrument from its carrying case and open access door on front face of instrument.
② Rotate oxygen sensor and/or combustible gas element counter-clockwise until it comes to marked place of "OPEN".
③ Install new oxygen and/or combustible gas element as before. Please confirm that the dotted mark(●) on the top of oxygen sensor and/or combustible gas element is fitted to the dotted mark(●) of LOCK position.

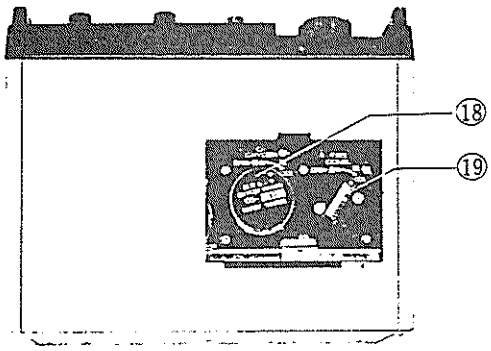


Fig. 3

2) Replacement of dust filter (See Fig. 2)

① Take off the filter cap from the instrument.
② Remove old filter from filter cap and build new filter to the filter cap.
③ Insert the filter cap into the instrument.

3) Replacement of dust filter(See Fig. 4)

① Whenever meter cannot be reached BATT zone or low battery alarm would actuate during operation, replacements with new dry batteries are required.
② To replace ; rotate the cock counter-clockwise until the dotted mark (●) on the cocl comes to OPEN position.
③ Take off the cock and replace batteries with new ones.

Note : Low battery alarm actuates at any switch position except for OFF position.

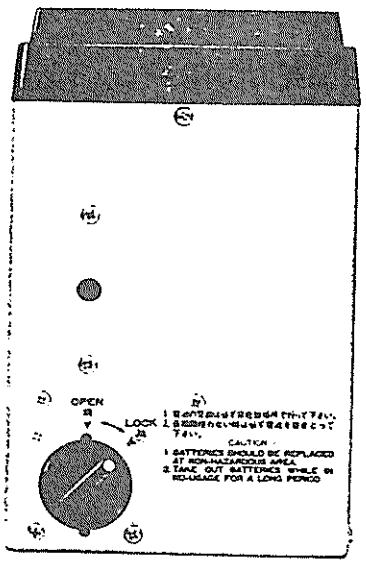


Fig. 4

## 6. NOTICE FOR OPERATION

1) Keep the instrument from water or rain.
2) Replace the dust filter with proper intervals.
3) Detector tube should be stored below 20 ℃ in dark place.

## 7. ACCESSORIES

A) Standard accessories

1) Carring case with shoulder strap.....1 pce

2) Sampling probe.....1 pce

3) Sampling hose (3m).....1 pce

4) CO multi-layered detector tube (10pcs/pk)....1 pk

5) Cutter for above tube.....1 pce

6) Dust (tabacco) filter (10 pcs/pk).....1 pce

7) Dry battery.....4 pcs

8) CO detector tube instruction card.....1 copy

9) Instruction manual.....1 copy

10) Test certificate.....1 copy

B) Optional accessories

a) Canned calibration gas ($CH_4$, $O_2$)

(Banned to export)

b) $CO_2$ detector tube (10 pcs/pk)

c) $H_2S$ detector tube (10 pcs/pk)

d) Floating type gas sampling head

# RIKEN KEIKI STANDARD WARRANTY

# GAS DETECTION INSTRUMENTS

RIKEN KEIKI CO., LTD. warrants gas alarm equipment manufactured and sold by us to be free from defects in materials and workmanship for a period of one year from date of shipment from RIKEN KEIKI CO., LTD. Any parts found defective within that period will be repaired or replaced, at our option, free of charge, F.O.B. Factory. This warranty does not apply to those items which by their nature are subject to deterioration or consumption in normal service, and which must be cleaned, repaired or replaced on a routine basis. Such items may include :

a) Lamp bulbs and fuses
b) Pump diaphragms and valves
c) Absorbent cartridges
d) Filter elements
e) Batteries

Warranty is voided by abuse including rough handling, mechanical damage, operation, alteration or repair procedures not in accordance with instruction manual. This warranty indicates the full extent of our liability, and we are not responsible for removal or replacement costs, local repair costs, transportation costs, or contingent-expenses incurred without our prior approval.

THIS WARRNTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF RIKEN KEIKI CO., LTD. INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RIKEN KEIKI CO., LTD. BE LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCT TO FUNCTION OR OPERATE PROPERLY.

This warranty covers instruments and parts sold (to users) only by authorized distributors, dealers and representatives as appointed by RIKEN KEIKI CO., LTD.

We do not assume the indemnification for any accident or damage caused by the operation of this gas monitor and our warranty is limited to the replacement of parts or our complete goods.