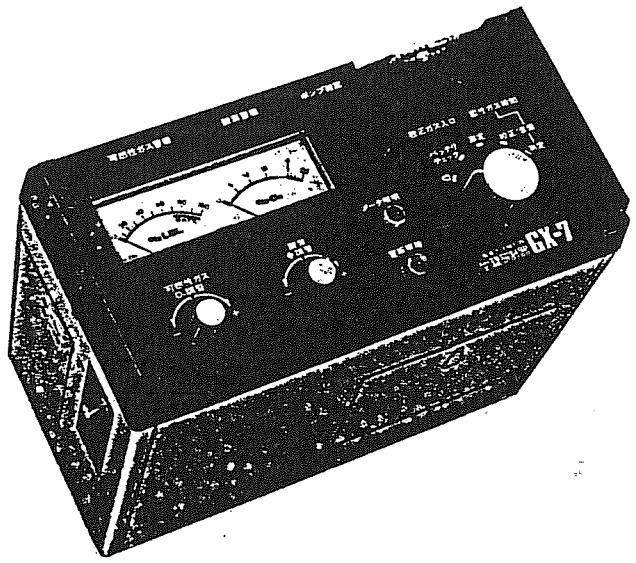
INSTRUMENTS
Gas Detection For Life

RKI INSTRUMENTS, INC.
INSTRUCTION MANUAL

For
PORTBLE MULTIPLE GAS DETECTOR

Model GX-7



The accompanying instrument is sold and serviced in USA by RKI Instruments Inc. Please contact RKI Instruments for any follow up service needs, including questions, warranty issues, repairs, and spare parts and sensors. Thank you for selecting this fine instrument for your use. With proper care and maintenance, it will provide you with many years of reliable service.

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World Leader In Gas Detection & Sensor Technology
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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

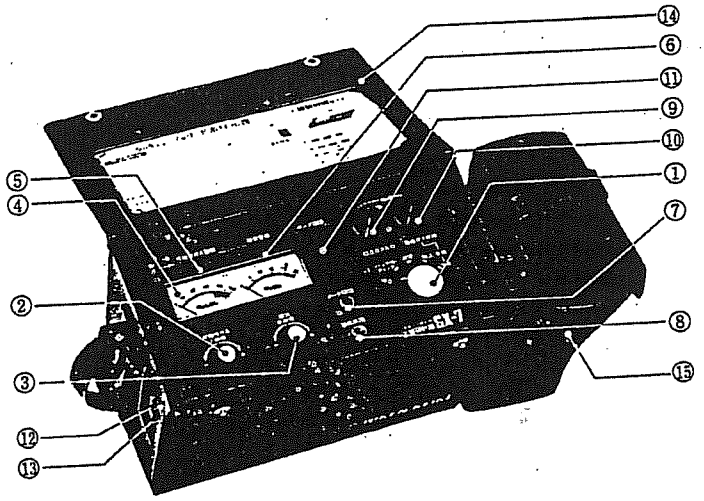


Fig. 1

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. O2) 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.

3) Alarm behavior and alarm release

① Alarm conditions are notified by both audible tone and visual red light with the following patterns :

Combustible gas alarm (Actuated when meter passes 30% LEL)	Alarm light(5)	
	Alarm buzzer	
Oxygen alarm(Actuated when meter passes below 18%)	Alarm light(6)	
	Alarm buzzer	
Simltaneous alarm for combustible gas and oxygen.	Alarm light(5)	
	Alarm light(6)	
	Alarm buzzer	
Low battery alarm	Alarm buzzer	
Completion of CO measurement	Alarm buzzer	

② Alarm release

* In the condition of combustible gas concentration is higher than alarm level (30%) and oxygen concentration is lower than alarm level (18%), alarm can be released during pressing the ALARM RESET switch, but actuates again when dispressing the ALARM RESET swtich.
* Whenever meters return to normal conditions, alarm can be released by pressing the ALARM RESET swtich.

4. CALIBRATION

1) Check battery voltage, verify pump operation and adjust combustible zero with fresh air.

2) Turn switch to COMB.O2 SPAN/CO PREP position.

3) Take off rubber cap from span gas inlet.

4) Insert the nozzle of exclusive gas cylinder to span gas inlet and press if softly.

5) Await until meter becomes stable.

6) Adjust readings to that of span gas concentrations by potentiometer COMB. SPAN and knob of OXYGEN CAL ADJ for combustible gas and oxygen respectively.

7) After adjustments, remove the gas cylinder from the span gas inlet.

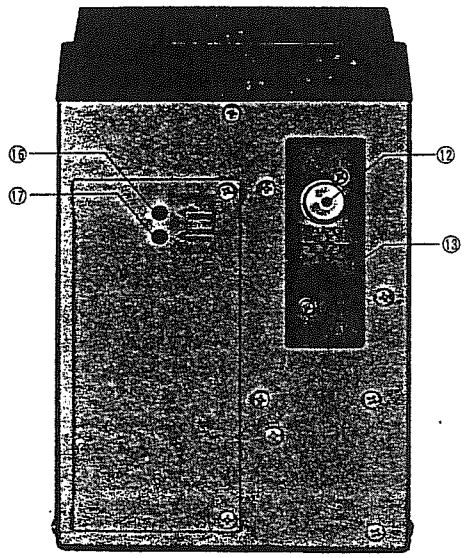


Fig. 2

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.

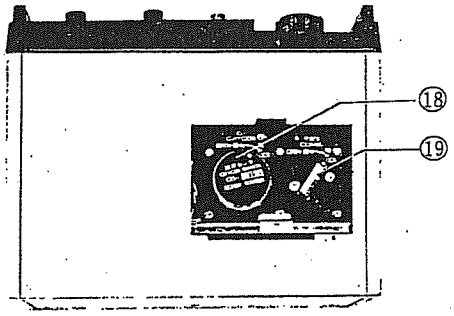


Fig. 3

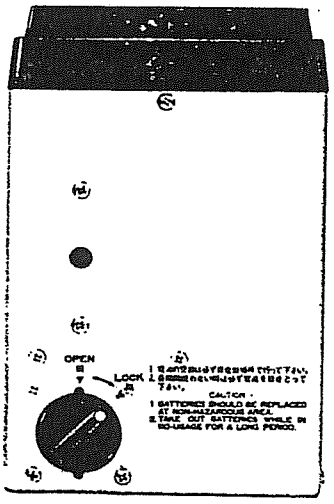
2) Replacement of dust filter (See Fig. 2)

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.



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.