6 Gas, Sample Draw With PID, IR & Super Toxic Sensors

Gas Detection For Life — **GX-6000**

Features

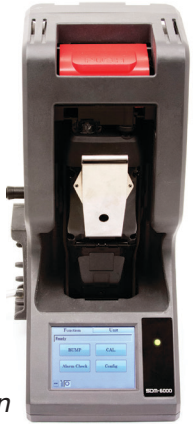
- 6 Operating modes
- Smallest 6 gas sample draw
- 2 Interchangeable smart sensor slots
- 4 PID options: 10.6 (2 ranges) eV, 10.0 eV, and 11.7 eV lamps
- PID library of over 600 VOCs
  - — Easily switch target VOC from customizable user list or a recently used list
- Benzene specific version
- PPM Leak Check mode
- LEL sensor protection mode
- Man-down alarm
- Panic alarm
- Auto display rotation
- Peak-bar display
- LED Light source
- Internal sample pump
- Light weight, small, rugged IP-67 design
- Interchangeable battery packs (Li-ion / alkaline)
- Operates up to 14 hours on Li-ion battery pack, fully recharges in 3 hours; 8 hours operation with alkaline pack
- Field replaceable sensors, batteries, filters and pump
- Intrinsically safe ATEX / IECEx / cCSAus

Applications

- Confined space entry
- Hazmat response teams
- Arson investigation
- Remediation sites
- Perimeter monitoring
- Leak detection
- Landfill monitoring
- Wing tank entry

Simply put, the GX-6000 is a game changer. This powerful hand-held instrument is capable of simultaneously monitoring up to 6 gases. In addition to the standard 4 confined space gases which include combustibles, O2, CO, & H2S, the GX-6000 has 2 additional smart channels that accept PID, IR or super toxic sensors. Equipped with a strong internal sample pump, a man-down alarm, a panic alarm, an LED flashlight, and large auto rotating LCD display, the GX-6000 can operate as a single gas PID unit or a multifunctional tool utilizing all 6 channels. The GX-6000 with a PID sensor will come equipped with a library of over 600 VOC gases to choose from as standard. Choosing from the library is easy with a personalized favorites list of 30 commonly used VOC's as well as a list of 8 of the most recently used VOC's. A benzene-specific version is available using a pre-filter tube for detecting low levels of benzene. Four PID sensors are available, 10.0 eV, 10.6 eV (low or high range), and 11.7 eV. Any combination of two PID sensors can be installed.

The GX-6000 has a rugged design built for the nastiest environments. It is equipped with a removable impact-resistant rubber boot and a dust and water resistant enclosure with an IP-67 rating. With 5 bright LED lights on 3 sides of the instrument, alarms are easily seen from a variety of perspectives. With vibration and loud audible alarm, GX-6000 will easily alert users when needed.



SDM-6000 Calibration Station

RKI Instruments, Inc. • 33248 Central Ave. Union City, CA 94587 • Phone (800) 754-5165 • (510) 441-5656 • Fax (510) 441-5650

World Leader In Gas Detection & Sensor Technology
www.rkiinstruments.com

GX-6000

Gases & Detectable Ranges

Gas		Measuring Range	Reading Increment	Alarm Set Points	Accuracy (which ever is greater)
PID Sensors					
10.6 Lamp	600 VOC's	0 - 50,000 ppb	1 ppb: (< 5000 ppb) 10 ppb: (> 5,000 ppb)	A1: 5,000 ppb A2: 10,000 ppb	± 10% of reading, ± 1 digit
		0 - 6,000 ppm	0.1 ppm: (< 600 ppm) 1 ppm: (> 600 ppm)	A1: 400 ppm A2: 1,000 ppm	
10.0 Lamp	Benzene Specific	0.1 - 50 ppm	0.01 ppm (0 ~ 10 ppm) 0.1 ppm (10 ~ 50 ppm)	No Alarms	
	300 VOC's	0 - 100 ppm	0.01 ppm (0 ~ 10 ppm) 0.1 ppm (10 ~ 100 ppm)	A1: 5 ppm A2: 10 ppm	
11.7 Lamp	High Voltage Lamp	0 - 1000 ppm	0.1 ppm	A1: 400 ppm A2: 1,000 ppm	
Galvanic					
Oxygen (O2)		0 - 40.0% Vol.	0.1% Vol.	A1: 19.5 Vol. A2: 23.5 Vol.	± 0.5% O2
Electro Chemical					
Carbon Monoxide (CO)		0 - 500 ppm	1 ppm	A1: 25 ppm A2: 50 ppm TWA 25 ppm STEL 200 ppm	± 5% of reading or ± 5 ppm
Hydrogen Sulfide (H2S)		0 - 100.0 ppm	0.5 ppm	A1: 5.0 ppm A2: 30.0 ppm TWA 1.0 ppm STEL 5.0 ppm	± 5% of reading or ± 2 ppm
Toxics (EC Sensors)					
Ammonia (NH3)		0 - 400.0 ppm	0.5 ppm	A1: 25 ppm A2: 50 ppm	± 10% of reading or ± 5% of full scale
Chlorine (Cl2)		0 - 10.00 ppm	0.05 ppm	A1: 0.5 ppm A2: 1.0 ppm	
Hydrogen Cyanide (HCN)		0 - 15.0 ppm	0.1 ppm	A1: 5 ppm A2: 10 ppm	
Nitrogen Dioxide (NO2)		0 - 20.00 ppm	0.05 ppm	A1: 3 ppm A2: 6 ppm	
Sulfur Dioxide (SO2)		0 - 99.90 ppm		A1: 2 ppm A2: 5 ppm	
IR Sensors					
Carbon Dioxide (CO2)		0 - 10,000 ppm	20 ppm	A1: 5,000 ppm TWA 5,000 ppm	± 5% of reading or ± 2% of full scale
		0 - 10.00% Vol.	0.02%	A1: 0.50% Vol A2: 3.00% Vol STEL 3.00% Vol TWA 0.50% Vol	
Methane (CH4)		0 - 100% LEL 0 - 100% Vol.	1% LEL/ 0.5% Vol	A1: 10% LEL A2: 50% LEL	
Hydrocarbons		0 - 100% LEL 0 - 30% Vol.			
Catalytic					
Hydrocarbons (CH4, std)		0 - 100% LEL	1% LEL	A1: 10%LEL A2: 50%LEL	± 5% of reading or ± 2% LEL

Common Specifications

	Gas alarm	**Man-down**	**Trouble**
Alarm Types	Low and high adjustable	1st - self reset 2nd - latching	Low flow Sensor connection Low battery Circuit error Calibration range
Sample Method	Sample draw pump, flow rate 0.45 LPM, 50 foot sample range		
Display	Digital LCD, autobacklight, peak bar display, auto display rotation, and customize order of gases		
Audible Alarm	95 dB at 1 ft.		
Languages	English, Spanish, French, German, Italian, Japanese, Korean, Portuguese, Russian		
Continuous Operation	14 hours on Lithium-ion battery pack. Complete recharge in 3 hours. 8 hours Alkaline battery pack (3 AA size within each pack)		
Operating Temp. & Humidity	-4°F to 122°F (-20°C ~ +50°C), 0- 95% RH non condensing		
Dimensions	2.6" W x 7.8" H x 2" D (H200 x W68 x D52 mm) 14 ounce (400g) (with lithium battery pack)		
Case Material	Dust and water resistant with IP-67 approval (exclude sample hose and probe)		
Safety Design / Approvals	Explosion proof: IECEx , ATEX , TIIS , cCSAus Explosion class :Ex ia IIC T4 Ga Others: CE Marking		
Standard Features	2 Smart sensors slots auto recognize sensor changes Library of over 600 VOC's User defined VOC list. Up to 30 frequently used Recent VOC list for last 8 selected gases Pump and circuit status indicators User & station ID selection menu Datalogging (interval, alarm trend, station and user ID) Snap logging - on demand data logging Demand zero / Auto zero BUMP and CAL expiration alarm Flashlight IrDA communication LEL sensor protection mode		
Standard Accessories	• Rubber boot • Belt clip • Hand strap • Tapper nozzle • Probe with hydrophobic & dust filter 3' teflon lined hose • Benzene pre-filter tubes and holder (benzene versions)		
Optional Accessories	• SDM-6000 calibration station • Bundles with instrument carrying case and accessories • Flexible probes • Up to 50 foot sample hoses • Filter set • IrDA cable		
Warranty	Two years material (including sensors) and workmanship. One year for PID sensor (Two months for 11.7 eV lamp)		

RKI INSTRUMENTS

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Authorized Distributor:

GX-6000 Quick Reference Card

1-6 Gas Instrument

Turning on your instrument

- Press and hold POWER/ENTER button. Release it when the instrument beeps.
- When warm-up sequence is completed, the normal operating screen is displayed.

Note: If a failure occurs, press and release the RESET button. The failed channel's gas reading will be replaced by "- - -". Replace the failed sensor as soon as possible.

- If Cal Reminder or Bump Reminder are set to on and a calibration or a bump test is due, see operator's manual for warm-up sequence.

Performing a fresh air adjustment

- Press and hold the AIR button in a fresh air environment. The LCD displays "HOLD AIR KEY".
- Release the AIR button when the LCD prompts you to.
- The instrument will set the fresh air reading for all channels.

Normal operating mode

- The gas concentration is displayed.
- Battery charge level is indicated in upper left corner.
- The heart symbol displayed in the upper left corner flashes while the instrument is functioning properly.
- Fan symbol in upper right corner spins while pump is on.

Turning the instrument off

- Press and hold the POWER/ENTER button for approximately five seconds to turn off the unit.

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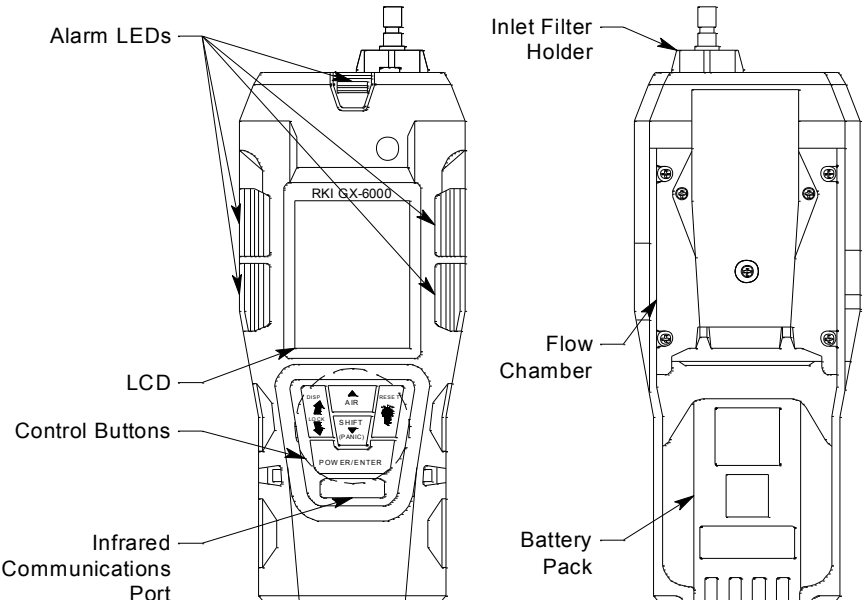
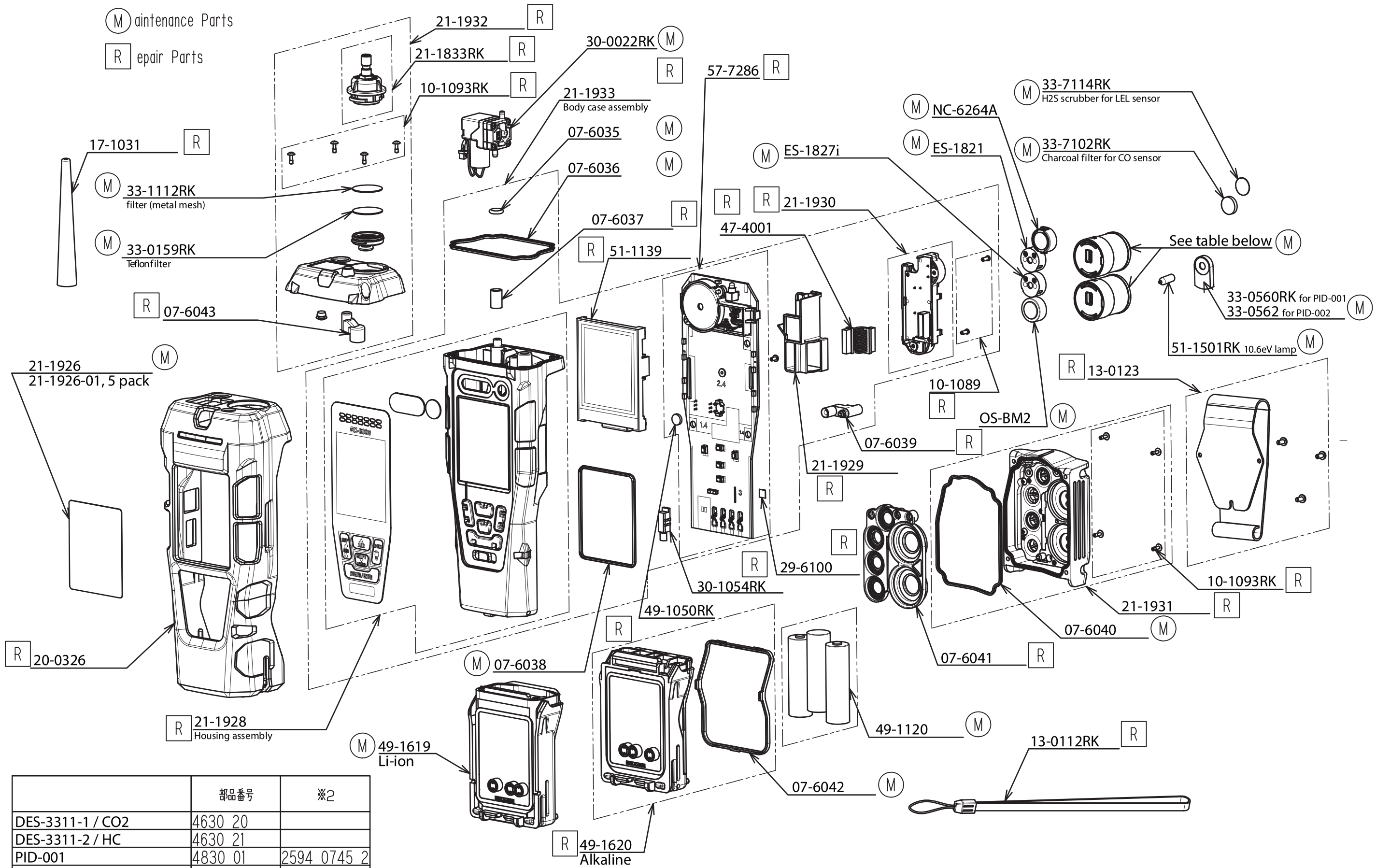
GX-6000 Quick Reference Card

1-6 Gas Instrument





	部品番号	※2
DES-3311-1 / CO2	4630 20	
DES-3311-2 / HC	4630 21	
PID-001	4830 01	2594 0745 2
PID-002	4830 02	2594 0746 0
ESS-03DH-SO2	4486 02	
ESS-03DH-NO2	4486 03	
ESS-03DH-HCN	4486 04	

GX-6000

6 gas, sample draw with PID & Super Toxics

1

Monitor up to 6 Gases
- H2S, CO, O2, LEL
- 2 smart sensor slots
  - PID for VOC's
  - IR for CH4, HC, & CO2
  - EC for NH3, Cl2, HCN, NO2, & SO2

6 operating modes
- Normal
- Leak check
- Inert
- Bar hole
- Snap Log
- Benzene Specific Mode

LEL Protection mode
Shields LEL sensor from damaging VOC exposure

PID library of more than 600 VOC's
- Accepts 10.6 and / or 10.0 PID lamps
- 50,000 ppb / 6,000 ppm ranges
- 10.0 Lamp for Benzene Specific
- 11.7 Lamp available
- 11.7 Lamp for carbon tetrachloride, acrylonitrile, chloroform, methanol, and refrigerants (R-143, R-132A)
- PID sensors can be combined
- Easily choose a target VOC
  - User defined VOC list of 30
  - Recently used VOC list last 8

LCD display
- Auto flip display
- Peak bar graphs
- Adjustable auto backlight
- Customize order of gases
- Single gas view with large font & auto sequence

2

Smallest 6 gas sample draw
- Lightweight & Ergonomic
- High impact rubber boot
- Ergonomic design fits comfortable in hand

Intrinsically Safe
- ATEX / IECEX
- cCSAus

Interchangeable battery options
- Lithium-ion pack operates 14 hours
  - Complete recharge in 3 hours
- Alkaline pack operates 8 hours

LED Flashlight
- On demand light source

Alarms
- 2 adjustable gas alarms per channel Plus STEL & TWA
- Man Down alarm
- Panic Alarm
- 4 alarm LED's
- Audible and vibration alarms
- Trouble alarms for low flow, sensor connection, low battery, circuit error & calibration

Weather & Dust Resistant
- IP-67

9 Languages
- English, German, Italian, French, Portuguese, Spanish, Japanese, Korean, Russian

3

Sensors

Smart Sensor Slots

Standard 4 Gas Sensors

4

Smart Sensor Technology

Smart Electrochemical (ESS-03DH-XXX)

GAS	RANGE
Ammonia (NH3)	0-400 ppm
Chlorine (Cl2)	0-10ppm
Hydrogen Cyanide (HCN)	0-15ppm
Nitrogen Dioxide (NO2)	0-20 ppm
Sulfur Dioxide (SO2)	0-99.9 ppm

Monitor a wide variety of toxic gases. Smart plug and play sensors are auto recognized and can be remotely calibrated

Photo Ionization Detection PID

	GAS	RANGE
10.6 Lamp	600 VOC's	0-50,000 ppb
		0-6,000 ppm
10.0 Lamp	Benzene Specific	0.1-50 ppm
	300 VOC's	0-100 ppm

Monitor low ppm VOC gases.

Infrared (DES-3311-1/2)

GAS	RANGE
Carbon Dioxide (CO2)	0-10,000 ppm 0-10% Vol.
Methane (CH4)	0-100% LEL 0-100% Vol.
Hydrocarbons	0-100% LEL 0-30% Vol.

Monitor Combustible gases in inert environments. Monitor wide range of CO2.

*Priority order for instruments using both Smart Sensor slots:

- PID 10.6 eV low range
- PID 10.0 eV benzene
- PID 10.6 eV high range
- CL2
- All other sensors

5

Calibration & Maintenance

6

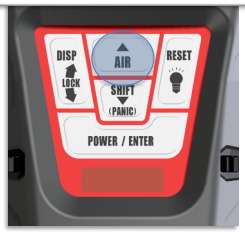
Calibration, Standard 4 Gas Unit

- Press and hold **POWER/ENTER** button to turn on GX-6000

7

Calibration, Standard 4 Gas Unit

- Once warmed up, perform an AIR adjustment by pressing and holding the **AIR** key until "RELEASE AIR KEY" is displayed.



8

Calibration, Standard 4 Gas Unit

- Briefly press and hold the **SHIFT** key then press the **DISP** key. "CAL" will be displayed at the top of the LCD indicating that the GX-6000 is in calibration mode.

  -AIR CAL, AUTO CAL, SINGLE CAL and NORMAL MODE will be displayed

Calibration

- Press the **SHIFT** key to select AUTO CAL then press the **POWER/ENTER** key.

Calibration

- You will now see CONCENTRATION, GAS SELECT and ESCAPE.

11

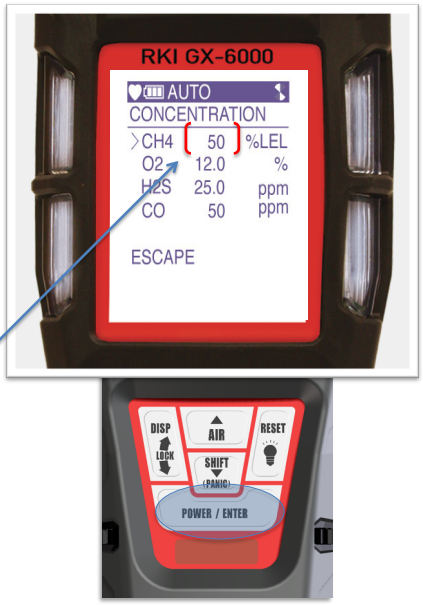
Calibration

- Press the **POWER/ENTER** key to select CONCENTRATION to verify that the gas concentrations programmed in the instrument match the cylinder values.

12

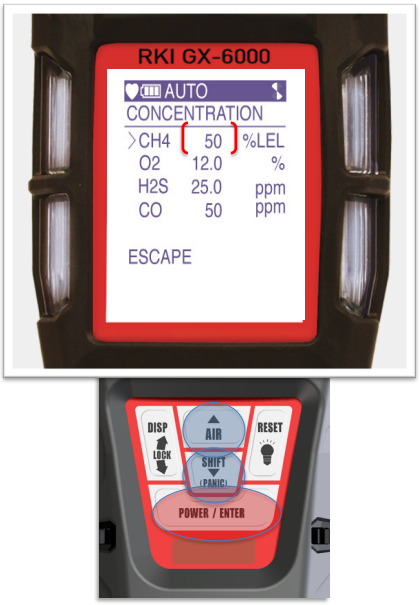
Calibration

- The cursor will be next to CH4. If the displayed value does not match the cylinder value, press the **POWER/ENTER** key to select CH4. The gas value will start blinking.



Calibration

- Using the **AIR** or **SHIFT** keys, raise or lower the reading to match the gas value in the cylinder.
- Once completed, press the **POWER/ENTER** key to set.



Calibration

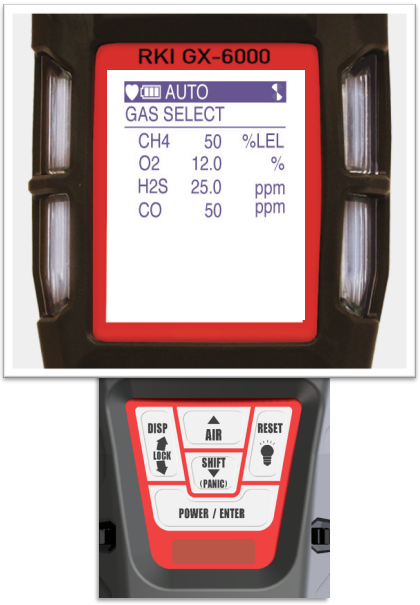
- Press the **SHIFT** key to scroll to the next gas.
- Adjust as required. Once completed use the **SHIFT** key to scroll to ESCAPE then press the **POWER/ENTER** key.

Calibration

- Press the **SHIFT** key to select GAS SELECT.
- Press the **POWER/ENTER** key.

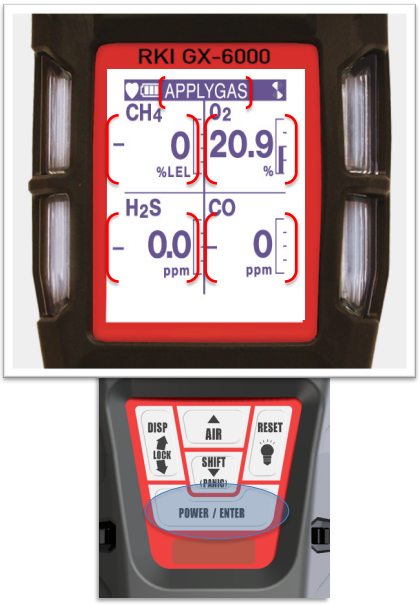
Calibration

- All gases and calibration values will be displayed.



Calibration

- Press the **POWER/ENTER** key and "APPLYGAS" will be flashing on the top of the LCD and all gases values will be *flashing* indicating that the instrument is ready for calibration gas.



Calibration

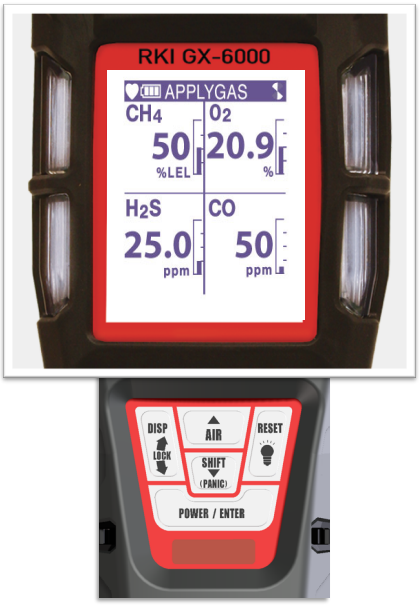
- Remove the rubber nozzle from the top of the instrument and attach tube from gas cylinder to inlet fitting. Note: Must use a demand flow regulator or gas bag.
- Allow gas to flow for a maximum of two minutes.

Calibration

- Once reading stabilizes, press the **POWER/ENTER** key to calibrate the unit. The unit will either "PASS" or "FAIL"

Calibration

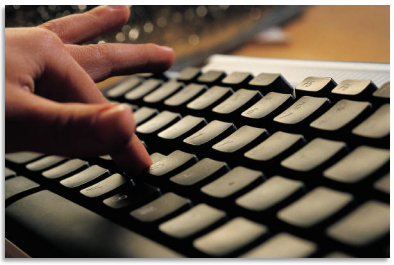
- Once completed, the GX-6000 will show you the calibrated values.



Calibration

- Remove the tubing from the top of the GX-6000 and reattach the rubber nozzle.
- Remove the demand flow regulator from the cylinder and store kit for future use.

Programming Modes



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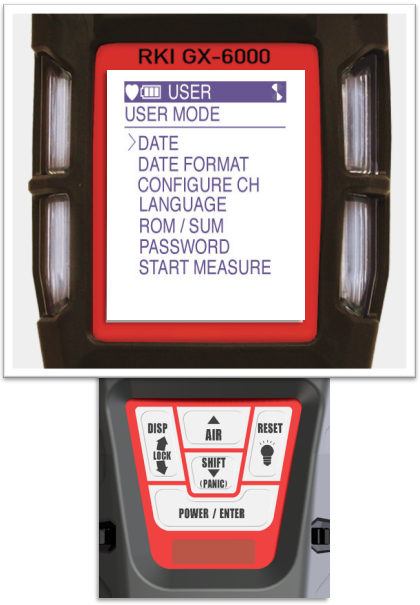
USER Mode

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn on.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **POWER/ENTER** key to select.

24

USER Mode

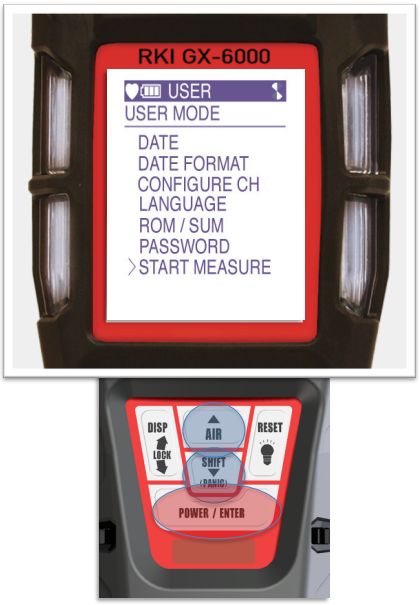
- USER will be displayed on the top.
- The following menu will be displayed:



25

USER Mode

- Using the **AIR** or **SHIFT** keys, select the function that you want and press the **POWER/ENTER** key to select.
- When completed use the **SHIFT** key to scroll to START MEASURE to return to normal operation.



26

MAINTENANCE Mode

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

27

MAINTENANCE Mode

- INPUT PASSWORD will be displayed.
- The password is 0006
  -press ENTER 3 times, and AIR 6 times.
- Enter the password then press **POWER/ENTER**.

28

MAINTENANCE Mode

- MAINTE will be displayed and the following menu will appear:

29

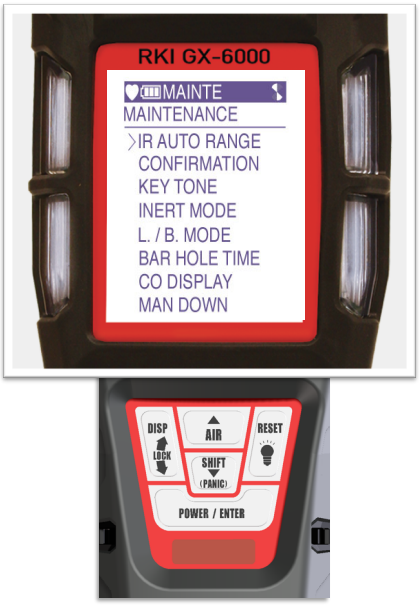
MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED

30

MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED



31

MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED

32

MAINTENANCE Mode

- Use the **SHIFT** or **AIR** keys to select the feature you would like.
- Press the **POWER/ENTER** key to select.
- Once completed, use the **SHIFT** key to scroll to START MEASURE to return to normal operation.

33

MAINTENANCE Mode 2

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

34

MAINTENANCE Mode 2

- INPUT PASSWORD will be displayed.
- The password is 2014

-Enter the password then press **POWER/ENTER**.

35

MAINTENANCE Mode 2

- MAINTE 2 will be displayed and the following menu will appear:

36

MAINTENANCE Mode 2

- Use the **SHIFT** or **AIR** keys to select the feature you would like.
- Press the **POWER/ENTER** key to select.
- Once completed, use the **SHIFT** key to scroll to START MEASURE to return to normal operation.

37

Factory Mode

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.
  - Note: There are two modes selected by unique passwords.

38

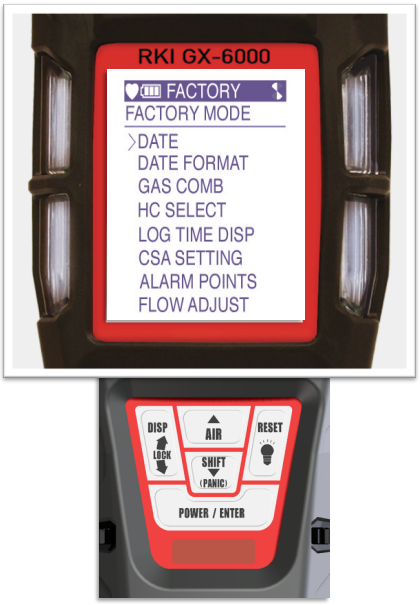
Factory Mode

- INPUT PASSWORD will be displayed.
- Enter: 1994

39

Factory Mode

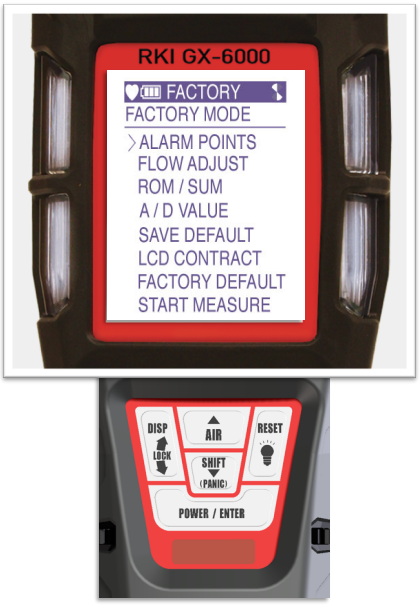
- FACTORY will be displayed and the following menu will appear:



40

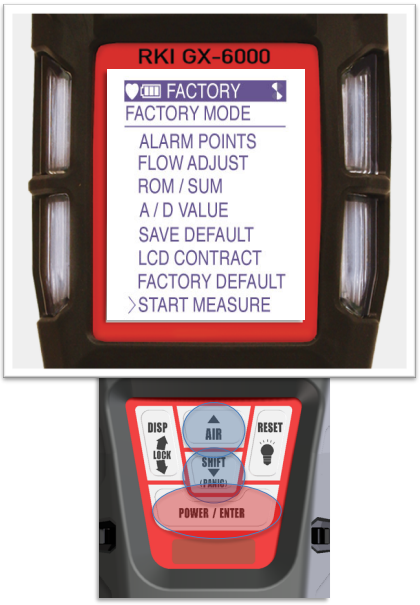
Factory Mode

- FACTORY MODE CONTINUED



Factory Mode

- Using the **AIR** or **SHIFT** key, scroll to the function that you want to view then press the **POWER/ENTER** key.
- When completed, use the **SHIFT** key to scroll to START MEASURE then press the **POWER/ENTER** key to return to normal operation.



Keystrokes Summary

- **Calibration Mode**
  - Press SHIFT and then DISP
    - *From Normal Operation mode*

- **User Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*

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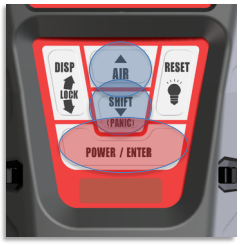
Keystrokes Summary

- **Maintenance Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*
  - Password 0006 (Mode 1)
  - Password 2014 (Mode 2)

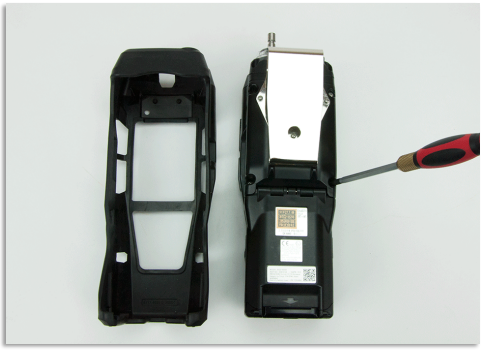


- **Factory Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*
  - Password 1994

44

Sensor Replacement

- Turn GX-6000 OFF
- Remove rubber boot covering instrument
- Loosen screws over flow chamber.
- No need to remove the 3 belt clip screws.



Sensor Replacement

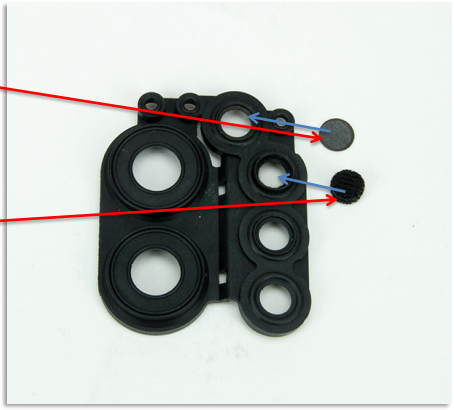
- Remove flow chamber exposing sensor gasket and scrubbers.

Sensor Replacement

- Remove sensor gasket exposing sensors.
- Remove and replace sensors as needed.

Replacement of Sensor Scrubbers

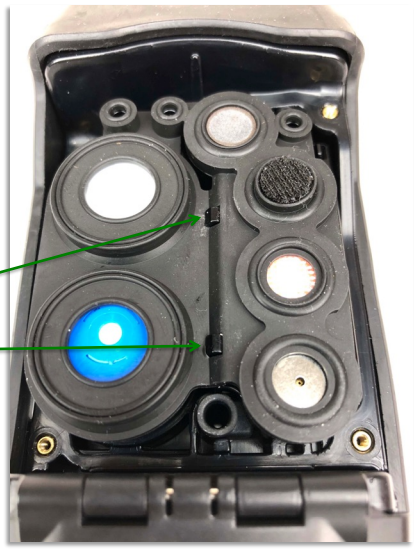
- H2S scrubber for LEL sensor
  - P/N 33-7114RK
- H2S scrubber for CO sensor
  - P/N 33-7102RK



Replacing sensor scrubbers and gasket

CORRECT

- Use fingers or a flat head screwdriver to align gasket underneath tabs.



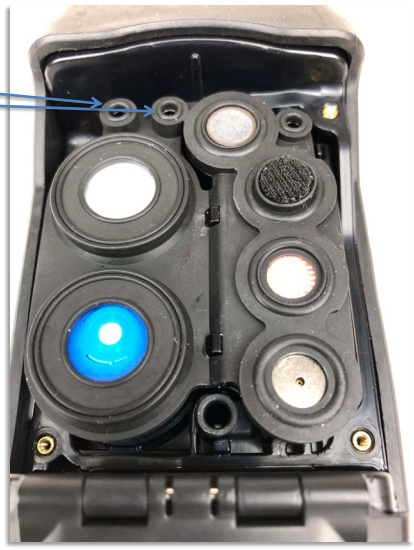
Replacing sensor scrubbers and gasket

INCORRECT

- Notches not seated properly, and unaligned.
- Sensor scrubbers not secured in place

Replacing sensor scrubbers and gasket

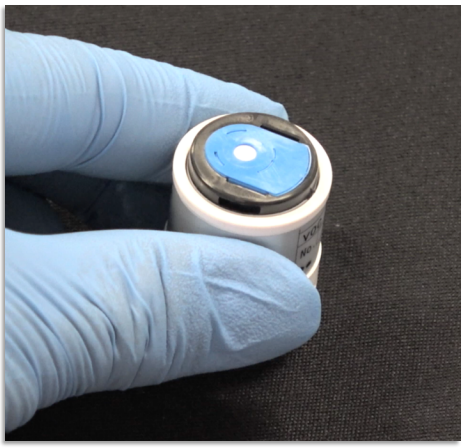
- Verify these two ports are completely vertical and not canted at an angle. Otherwise, low flow may result.



51

PID Lamp Cleaning

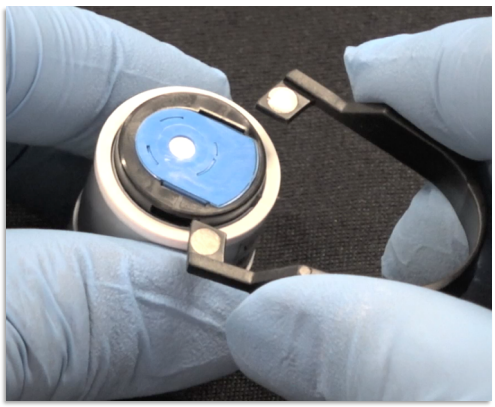
- Locate PID sensor and remove it out of the sensor socket.
- Place the PID sensor on a flat clean working surface
- Wear gloves to prevent body oils from contaminating the sensor.



52

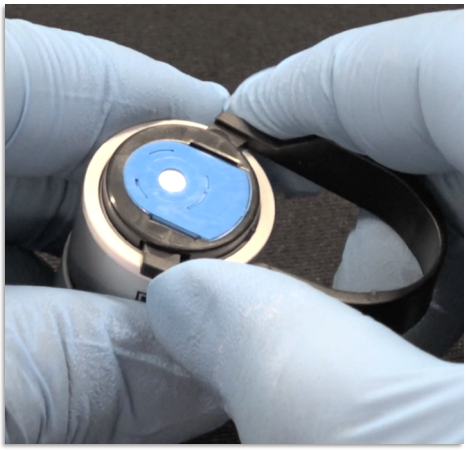
PID Lamp Cleaning

- Locate the tabs on the electrode stack removal tool and insert them into the slots on the side of the PID sensor.



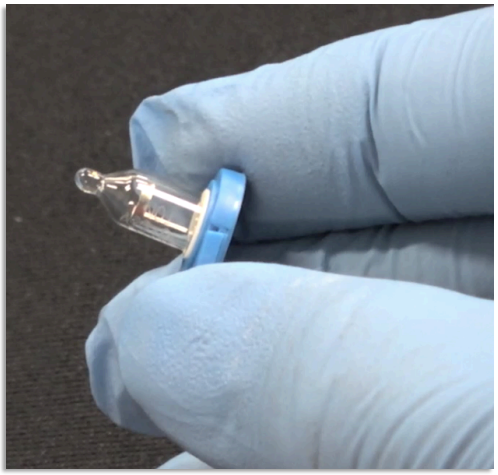
PID Lamp Cleaning

- Squeeze the removal tool to push the tabs into the sensor slots until the electrode stack and lamp are released.



PID Lamp Cleaning

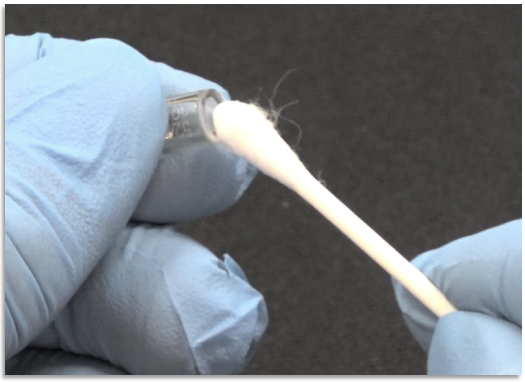
- Handle with care once both the electrode stack and lamp are released.



55

PID Lamp Cleaning

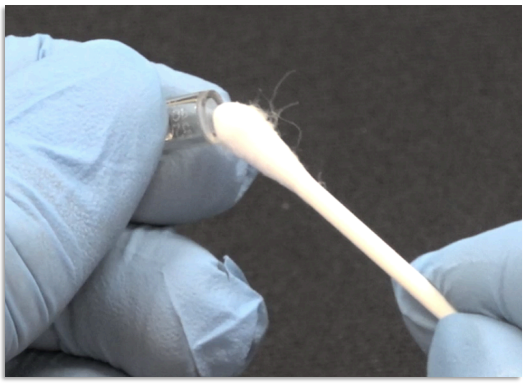
- Collect a small amount of aluminum oxide powder on a cotton swab.
- Use a circular motion, applying light pressure to clean the lamp window.
- Note* Do not touch the lamp window with your fingers



56

PID Lamp Cleaning

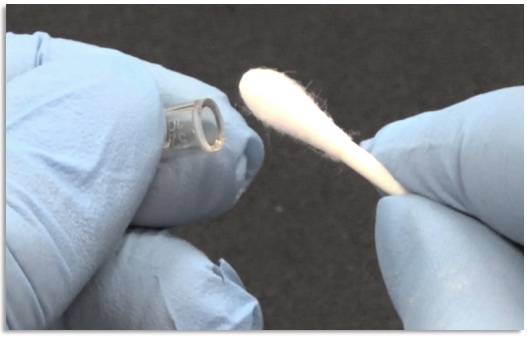
- Continue polishing until you hear a squeaking sound made by the cotton swab moving over the window surface. This usually occurs after about 15 seconds of polishing.



57

PID Lamp Cleaning

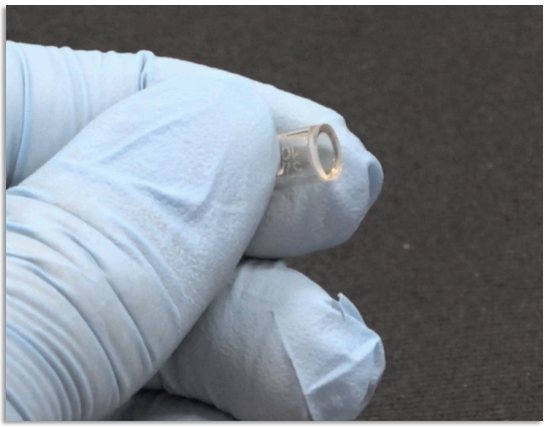
- Remove the residual powder from the lamp window with a clean cotton swab. Take care not to touch the tip of the cotton swab that is used to clean the lamp as this may contaminate it with finger oil.



58

PID Lamp Cleaning

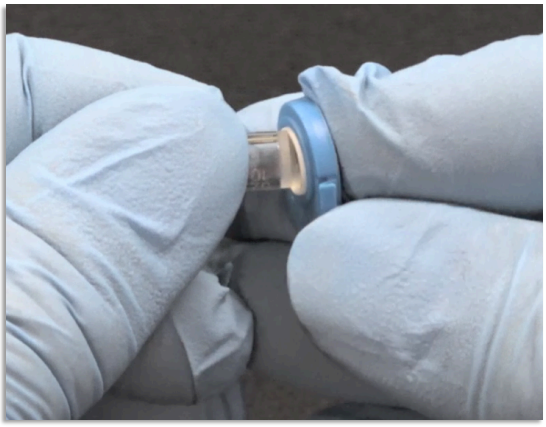
- Ensure the lamp is completely dry and any visible signs of contamination are removed before installing.



59

PID Lamp Cleaning

- Insert the lamp back into the electrode stack.



60

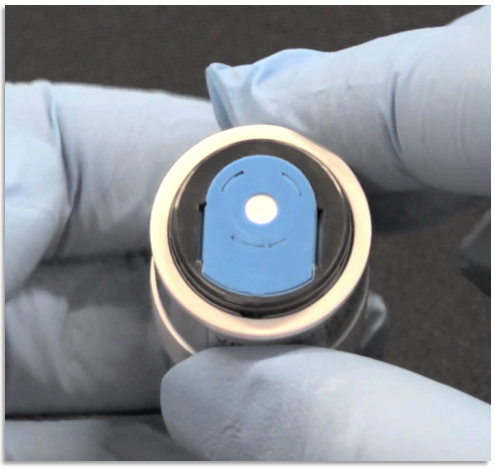
PID Lamp Cleaning

- Return the electrode stack with the lamp firmly attached into the PID body.

61

PID Lamp Cleaning

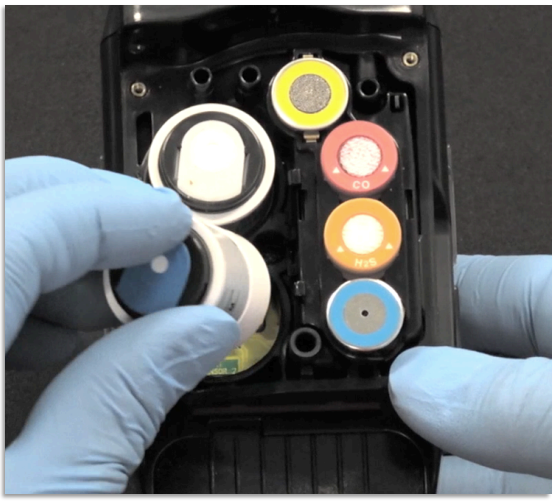
- Line the electrode stack with the PID body and press down firmly until the top of the electrode stack is flush with the PID body.



62

PID Lamp Cleaning

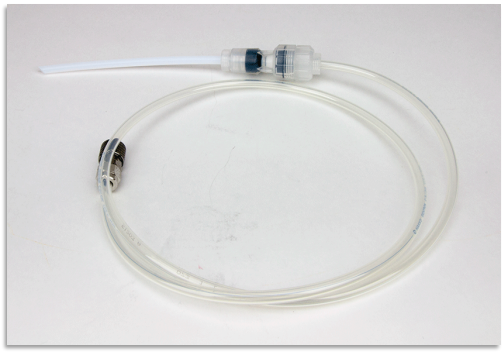
- Return the PID sensor back into the sensor socket.



PID Lamp Cleaning

- Cleaning Kit
  - P/N 82-0300RK
- Includes:
  - *Electrode stack removal tool*
    - P/N 82-0003RK
  - *Aluminum Oxide*
    - P/N 09-0001RK-01
  - *Finger cots*
    - P/N 08-5110RK
  - *Cotton swabs*
    - P/N 08-5100RK

Probe Filter Replacement



65

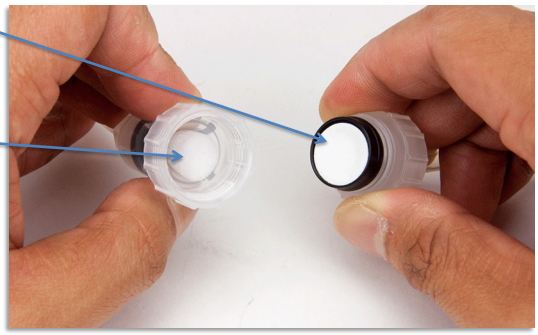
Probe Filter Replacement

- Grasp each end of the clear probe body firmly and unscrew the two halves from each other.

66

Probe Filter Replacement

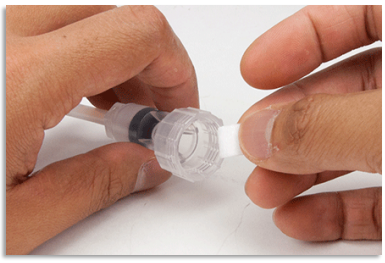
- Hydrophobic Filter Disk
  - P/N 33-0159RK
- Particle Filter
  - P/N 33-3013



67

Probe Filter Replacement

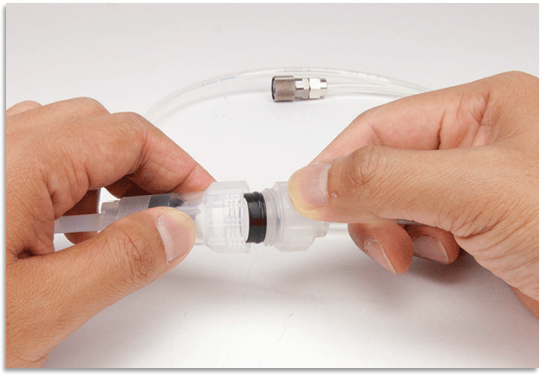
- Replace both filters



68

Probe Filter Replacement

- Screw both the top and bottom half of the probe securely and resume normal operation.



69

Turning On/Off Smart Sensor Channels

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

70

Turning On/Off Smart Sensor Channels

- INPUT PASSWORD will be displayed.
- The password is 2014
- Enter the password then press **POWER/ENTER**.

71

Turning On/Off Smart Sensor Channels

- MAINTE 2 will be displayed and the following menu will appear.
- The cursor is next to GAS COMB, and press the **POWER/ENTER** key.

72

Turning On/Off Smart Sensor Channels

- The Gas Combination Screen appears and all channels are displayed.

73

Turning On/Off Smart Sensor Channels

- Move the cursor by pressing the **SHIFT** key next to SM1 (Smart Sensor 1) or SM2 (Smart Sensor 2) and press the **POWER/ENTER** key.
- Use the **AIR** or **SHIFT** key to change the on/off setting.

74

Turning On/Off Smart Sensor Channels

- When finished making changes, press the **SHIFT** key to move the cursor next to ESCAPE.
- Press the **POWER/ENTER** key.

Turning On/Off Smart Sensor Channels

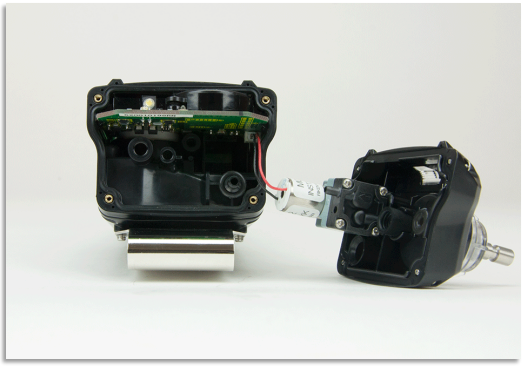
- Move cursor to START MEASURE by pressing the **SHIFT** key and press the **POWER/ENTER** key.
- Instrument will resume to normal operation mode.

Removing the Main PCB

- Remove battery and sensor cover from instrument.
- Remove rubber boot and scrubbers.
- Remove the sensors including sensors that are installed into the Smart 1 and Smart 2 locations.

77

Removing the Main PCB



- Unscrew the four Phillips screws securing the top of the detector.
- Remove the top exposing the pump.
- Grasp the pump and remove it from the unit.

78

Removing the Main PCB

- Remove screw as shown.

79

Removing the Main PCB

- Pull sensor chamber out and remove ribbon connector from main circuit board.

80

Removing the Main PCB

- Lift second chamber as shown

81

Removing the Main PCB

- Chamber and ribbon cable have been removed.
- Remove rubber joint for pressure sensor. P/N 07-6039

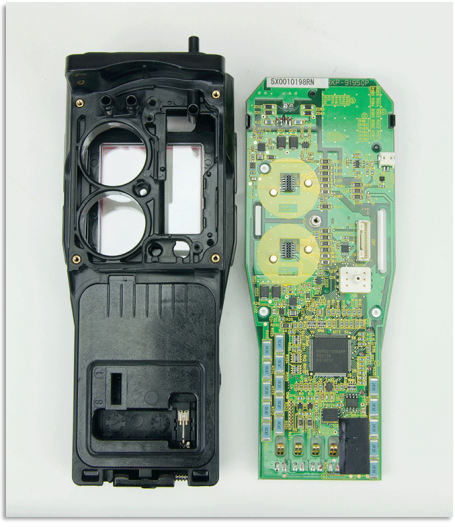
82

Removing the Main PCB

- All parts removed.

83

Removing the Main PCB



- Gently slide circuit board towards the top of the instrument to remove.
- Take care not to damage battery spring contacts.

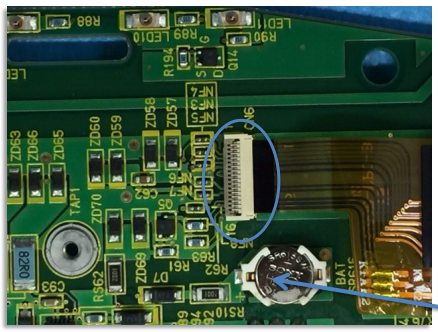
84

Removing the Main PCB

- Main PCB with LCD shown.
- Buzzer facing up.

85

Removing the Main PCB



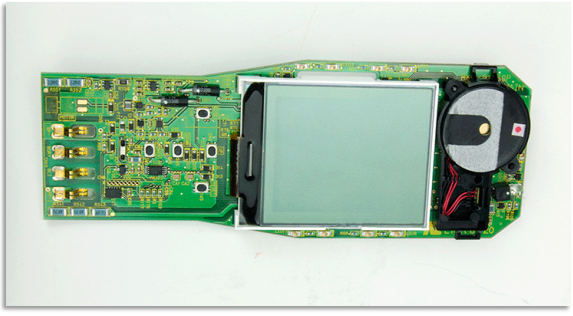
- LCD connector has a lock that needs to be released before ribbon cable can be removed.
- Memory battery shown can be easily replaced.
- P/N 49-1050RK

86

Removing the Main PCB

- LCD P/N 51-1139
- Clean LCD before installing to remove any fingerprints.

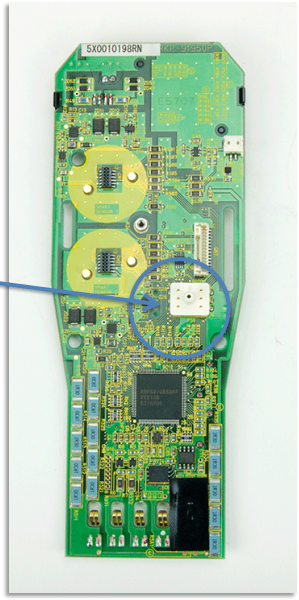
Removing the Main PCB



- Main PCB, Component side.
- P/N 57-1286

Removing the Main PCB

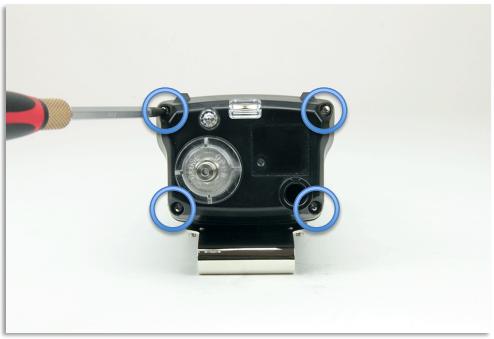
- Main PCB, sensor side shown.
- Differential Pressure switch.



89

Pump Replacement

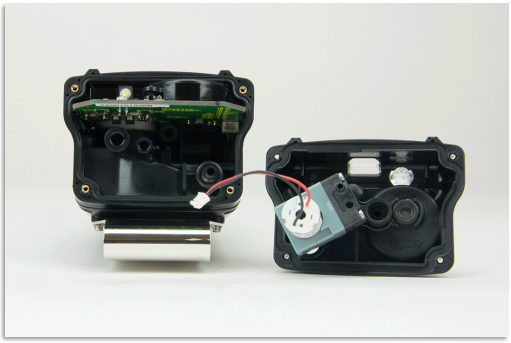
- Using a small Phillips screwdriver, loosen the four screws on the top.
- Pull to separate.



90

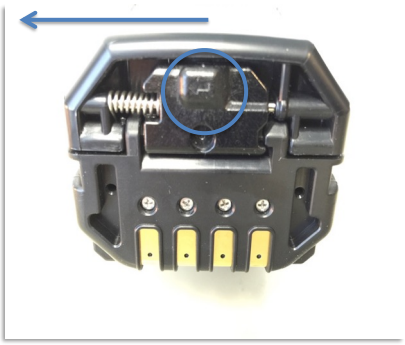
Pump Replacement

- Grasp pump cable and unplug from PCB.
- Remove pump from top.
- Rebuild or replace as needed.



Li-ion Battery Replacement

- Slide battery release tab in the direction of the arrow and push to release battery pack.
- Pull up to remove battery pack.



GX-6000 Exploded View

93

Questions?

94

GX-6000

6 gas, sample draw with PID & Super Toxics

Monitor up to 6 Gases
- H2S, CO, O2, LEL
- 2 smart sensor slots
  - PID for VOC's
  - IR for CH4, HC, & CO2
  - EC for NH3, Cl2, HCN, NO2, & SO2

6 operating modes
- Normal
- Leak check
- Inert
- Bar hole
- Snap Log
- Benzene Specific Mode

LEL Protection mode
Shields LEL sensor from damaging VOC exposure

PID library of more than 600 VOC's
- Accepts 10.6 and / or 10.0 PID lamps
- 50,000 ppb / 6,000 ppm ranges
- 10.0 Lamp for Benzene Specific
- 11.7 Lamp available Q4 2018
- 11.7 Lamp for carbon tetrachloride, acrylonitrile, chloroform, methanol, and refrigerants (R-143, R-132A)
- PID sensors can be combined
- Easily choose a target VOC
  - User defined VOC list of 30
  - Recently used VOC list last 8

LCD display
- Auto flip display
- Peak bar graphs
- Adjustable auto backlight
- Customize order of gases
- Single gas view with large font & auto sequence

Smallest 6 gas sample draw
- Lightweight & Ergonomic
- High impact rubber boot
- Ergonomic design fits comfortable in hand

Intrinsically Safe
- ATEX / IECEX
- cCSAus

Interchangeable battery options
- Lithium-ion pack operates 14 hours
  - Complete recharge in 3 hours
- Alkaline pack operates 8 hours

LED Flashlight
- On demand light source

Alarms
- 2 adjustable gas alarms per channel Plus STEL & TWA
- Man Down alarm
- Panic Alarm
- 4 alarm LED's
- Audible and vibration alarms
- Trouble alarms for low flow, sensor connection, low battery, circuit error, & calibration

Weather & Dust Resistant
- IP-67

9 Languages
- English, German, Italian, French, Portuguese, Spanish, Japanese, Korean, Russian

Sensors

Smart Sensor Slots

Standard 4 Gas Sensors

Smart Sensor Technology

Smart Electrochemical (ESS-03DH-XXX)

GAS	RANGE
Ammonia (NH3)	0-400 ppm
Chlorine (Cl2)	0-10ppm
Hydrogen Cyanide (HCN)	0-15ppm
Nitrogen Dioxide (NO2)	0-20 ppm
Sulfur Dioxide (SO2)	0-99.9 ppm

Monitor a wide variety of toxic gases. Smart plug and play sensors are auto recognized and can be remotely calibrated

Photo Ionization Detection PID

	GAS	RANGE
10.6 Lamp	600 VOC's	0-50,000 ppb
		0-6,000 ppm
10.0 Lamp	Benzene Specific	0.1-50 ppm
	300 VOC's	0-100 ppm

Monitor low ppm VOC gases.

Infrared (DES-3311-1/2)

GAS	RANGE
Carbon Dioxide (CO2)	0-10,000 ppm 0-10% Vol.
Methane (CH4)	0-100% LEL 0-100% Vol.
Hydrocarbons	0-100% LEL 0-30% Vol.

Monitor Combustible gases in inert environments. Monitor wide range of CO2.

*Priority order for instruments using both Smart Sensor slots:

- PID 10.6 eV low range
- PID 10.0 eV benzene
- PID 10.6 eV high range
- CL2
- All other sensors

Calibration & Maintenance

Calibration, Standard 4 Gas Unit

- Press and hold **POWER/ENTER** button to turn on GX-6000

Calibration, Standard 4 Gas Unit

- Once warmed up, perform an AIR adjustment by pressing and holding the **AIR** key until "RELEASE AIR KEY" is displayed.

Calibration, Standard 4 Gas Unit

- Briefly press and hold the **SHIFT** key then press the **DISP** key. "CAL" will be displayed at the top of the LCD indicating that the GX-6000 is in calibration mode.

  -AIR CAL, AUTO CAL, SINGLE CAL and NORMAL MODE will be displayed

Calibration

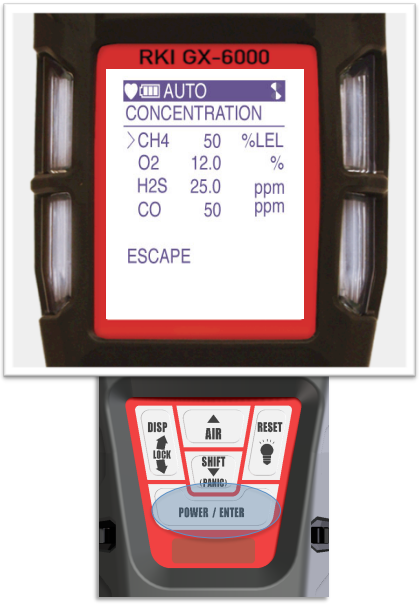
- Press the **SHIFT** key to select AUTO CAL then press the **POWER/ENTER** key.

Calibration

- You will now see CONCENTRATION, GAS SELECT and ESCAPE.

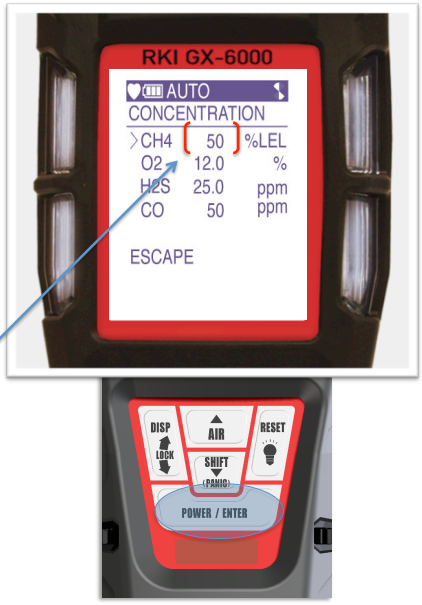
Calibration

- Press the **POWER/ENTER** key to select CONCENTRATION to verify that the gas concentrations programmed in the instrument match the cylinder values.



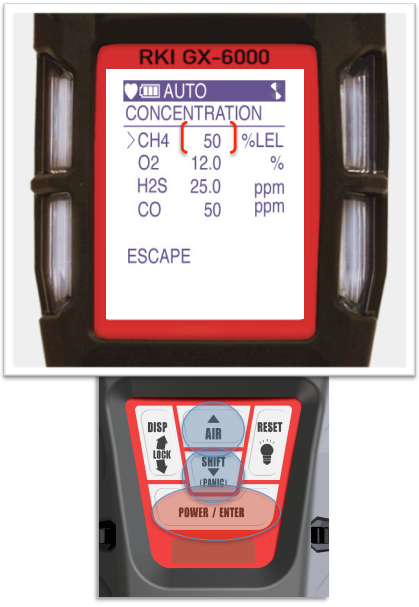
Calibration

- The cursor will be next to CH4. If the displayed value does not match the cylinder value, press the **POWER/ENTER** key to select CH4. The gas value will start blinking.



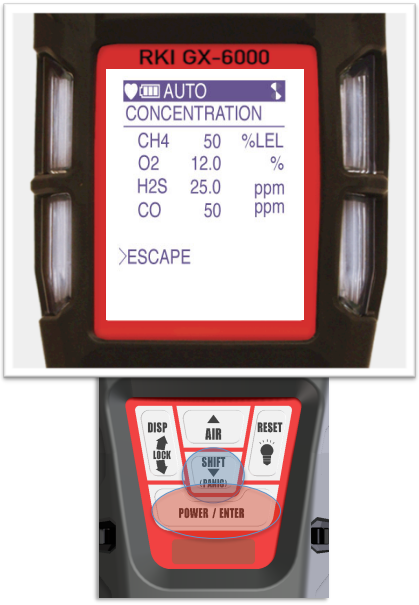
Calibration

- Using the **AIR** or **SHIFT** keys, raise or lower the reading to match the gas value in the cylinder.
- Once completed, press the **POWER/ENTER** key to set.



Calibration

- Press the **SHIFT** key to scroll to the next gas.
- Adjust as required. Once completed use the **SHIFT** key to scroll to ESCAPE then press the **POWER/ENTER** key.

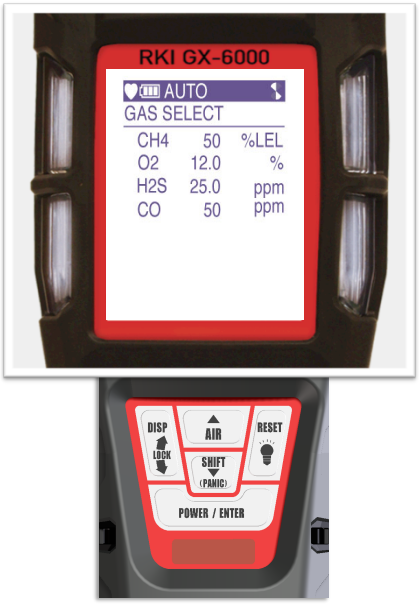


Calibration

- Press the **SHIFT** key to select GAS SELECT.
- Press the **POWER/ENTER** key.

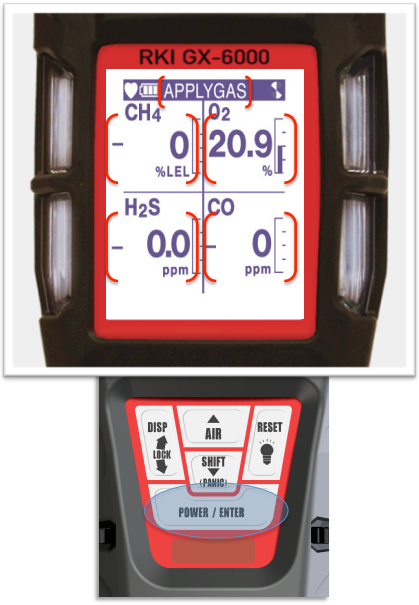
Calibration

- All gases and calibration values will be displayed.



Calibration

- Press the **POWER/ENTER** key and "APPLYGAS" will be flashing on the top of the LCD and all gases values will be *flashing* indicating that the instrument is ready for calibration gas.



Calibration

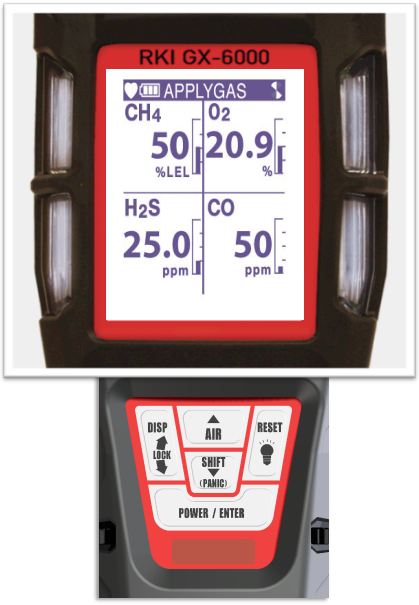
- Remove the rubber nozzle from the top of the instrument and attach tube from gas cylinder to inlet fitting. Note: Must use a demand flow regulator or gas bag.
- Allow gas to flow for a maximum of two minutes.

Calibration

- Once reading stabilizes, press the **POWER/ENTER** key to calibrate the unit. The unit will either "PASS" or "FAIL"

Calibration

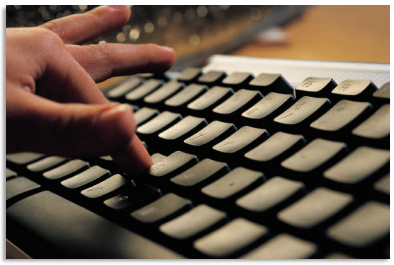
- Once completed, the GX-6000 will show you the calibrated values.



Calibration

- Remove the tubing from the top of the GX-6000 and reattach the rubber nozzle.
- Remove the demand flow regulator from the cylinder and store kit for future use.

Programming Modes

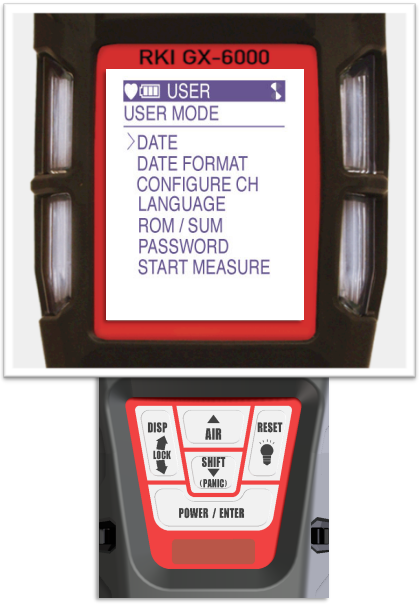


USER Mode

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn on.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **POWER/ ENTER** key to select.

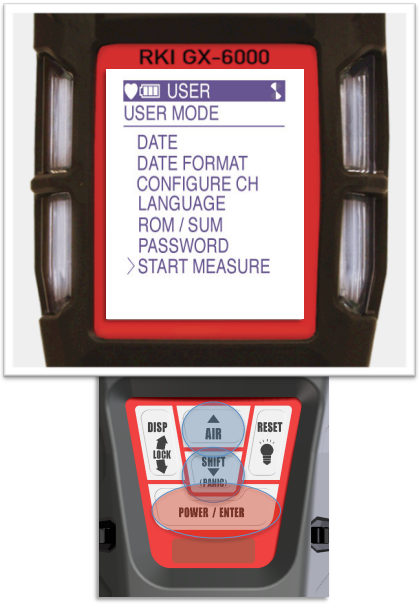
USER Mode

- USER will be displayed on the top.
- The following menu will be displayed:



USER Mode

- Using the **AIR** or **SHIFT** keys, select the function that you want and press the **POWER/ENTER** key to select.
- When completed use the **SHIFT** key to scroll to START MEASURE to return to normal operation.



MAINTENANCE Mode

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

MAINTENANCE Mode

- INPUT PASSWORD will be displayed.
- The password is 0006
  -press ENTER 3 times, and AIR 6 times.
- Enter the password then press **POWER/ENTER**.

MAINTENANCE Mode

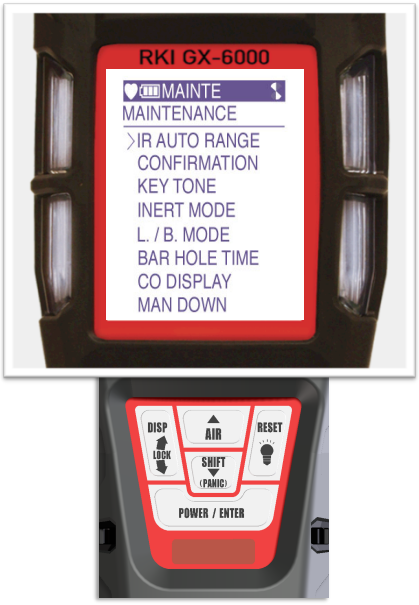
- MAINTE will be displayed and the following menu will appear:

MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED

MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED



MAINTENANCE Mode

- MAINTENANCE MODE CONTINUED

MAINTENANCE Mode

- Use the **SHIFT** or **AIR** keys to select the feature you would like.
- Press the **POWER/ENTER** key to select.
- Once completed, use the **SHIFT** key to scroll to START MEASURE to return to normal operation.

MAINTENANCE Mode 2

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

MAINTENANCE Mode 2

- INPUT PASSWORD will be displayed.
- The password is 2014

-Enter the password then press **POWER/ENTER**.

MAINTENANCE Mode 2

- MAINTE 2 will be displayed and the following menu will appear:

MAINTENANCE Mode 2

- Use the **SHIFT** or **AIR** keys to select the feature you would like.
- Press the **POWER/ENTER** key to select.
- Once completed, use the **SHIFT** key to scroll to START MEASURE to return to normal operation.

Factory Mode

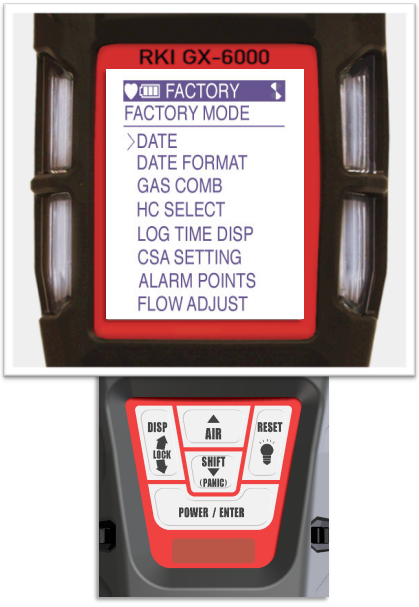
- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.
  - Note: There are two modes selected by unique passwords.

Factory Mode

- INPUT PASSWORD will be displayed.
- Enter: 1994

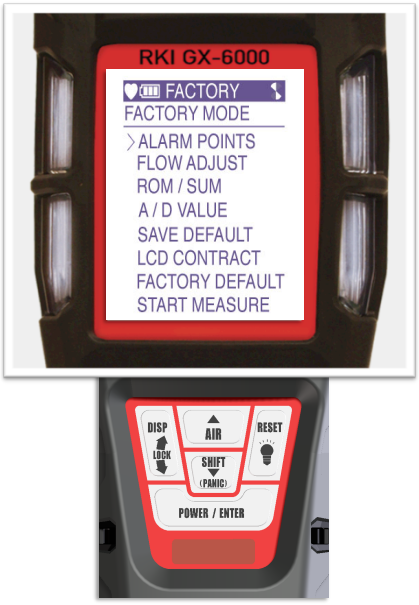
Factory Mode

- FACTORY will be displayed and the following menu will appear:



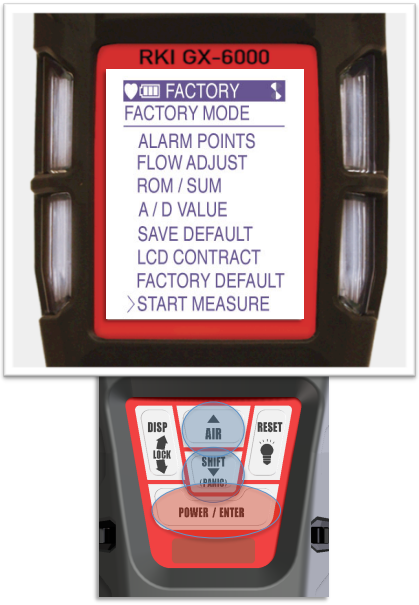
Factory Mode

- FACTORY MODE CONTINUED



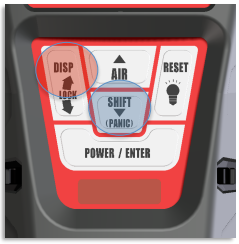
Factory Mode

- Using the **AIR** or **SHIFT** key, scroll to the function that you want to view then press the **POWER/ENTER** key.
- When completed, use the **SHIFT** key to scroll to START MEASURE then press the **POWER/ENTER** key to return to normal operation.

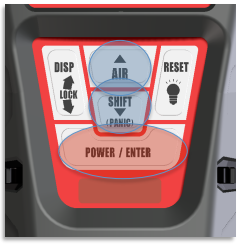


Keystrokes Summary

- **Calibration Mode**
  - Press SHIFT and then DISP
    - *From Normal Operation mode*



- **User Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*



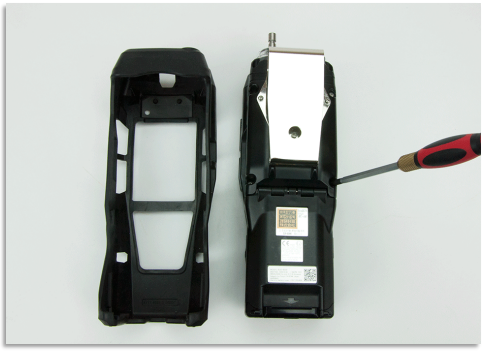
Keystrokes Summary

- **Maintenance Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*
  - Password 0006 (Mode 1)
  - Password 2014 (Mode 2)

- **Factory Mode**
  - Hold AIR & SHIFT and then POWER/ENTER
    - *With the unit off*
  - Password 1994

Sensor Replacement

- Turn GX-6000 OFF
- Remove rubber boot covering instrument
- Loosen screws over flow chamber.
- No need to remove the 3 belt clip screws.



Sensor Replacement

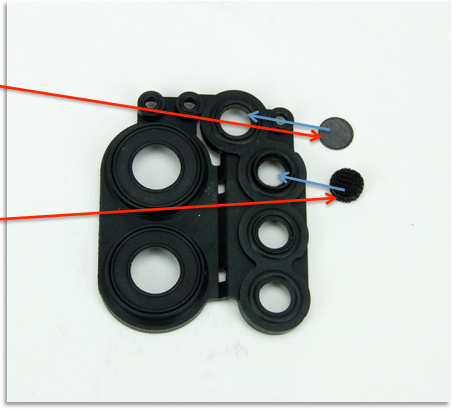
- Remove flow chamber exposing sensor gasket and scrubbers.

Sensor Replacement

- Remove sensor gasket exposing sensors.
- Remove and replace sensors as needed.

Replacement of Sensor Scrubbers

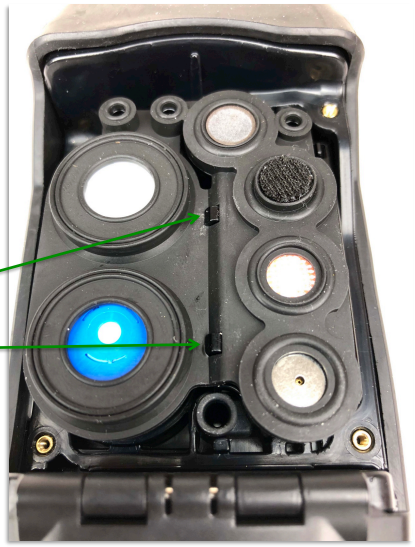
- H2S scrubber for LEL sensor
  - P/N 33-7114RK
- H2S scrubber for CO sensor
  - P/N 33-7102RK



Replacing sensor scrubbers and gasket

CORRECT

- Use fingers or a flat head screwdriver to align gasket underneath tabs.



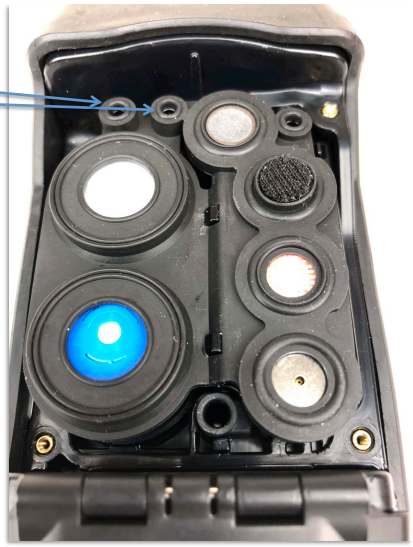
Replacing sensor scrubbers and gasket

INCORRECT

- Notches not seated properly, and unaligned.
- Sensor scrubbers not secured in place

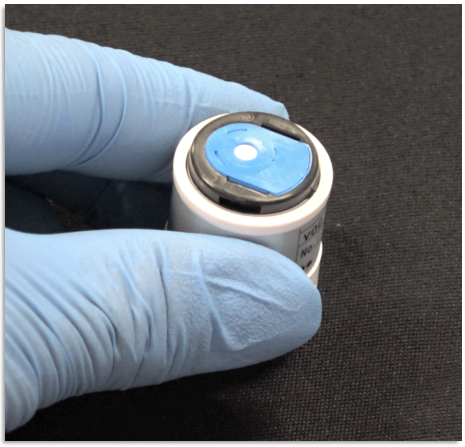
Replacing sensor scrubbers and gasket

- Verify these two ports are completely vertical and not canted at an angle. Otherwise, low flow may result.



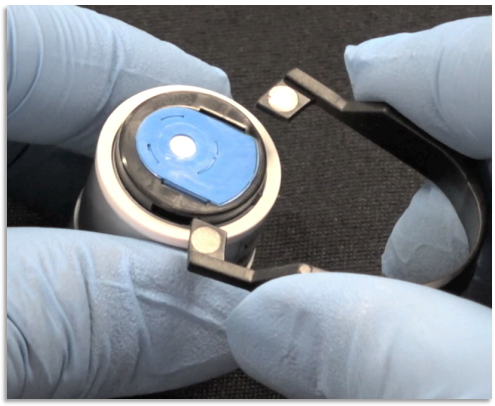
PID Lamp Cleaning

- Locate PID sensor and remove it out of the sensor socket.
- Place the PID sensor on a flat clean working surface
- Wear gloves to prevent body oils from contaminating the sensor.



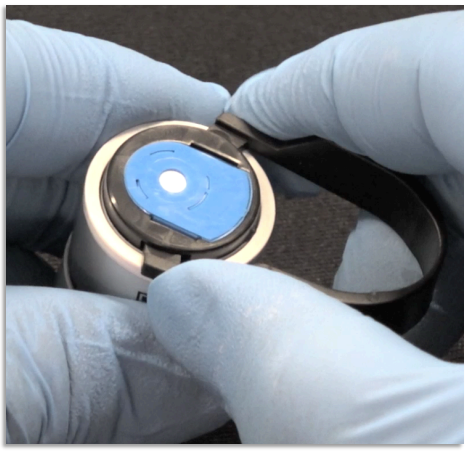
PID Lamp Cleaning

- Locate the tabs on the electrode stack removal tool and insert them into the slots on the side of the PID sensor.



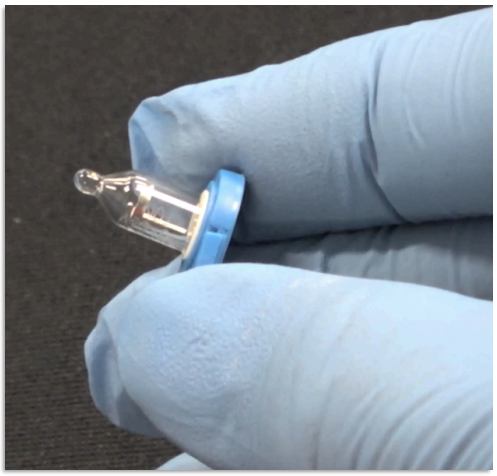
PID Lamp Cleaning

- Squeeze the removal tool to push the tabs into the sensor slots until the electrode stack and lamp are released.



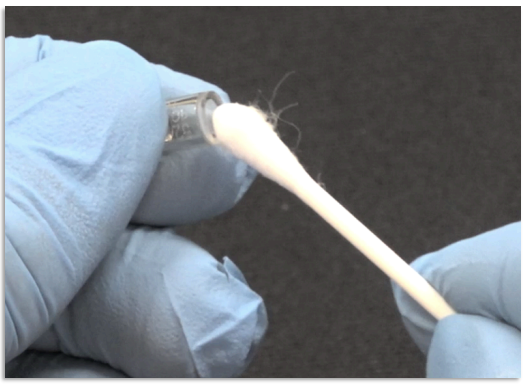
PID Lamp Cleaning

- Handle with care once both the electrode stack and lamp are released.



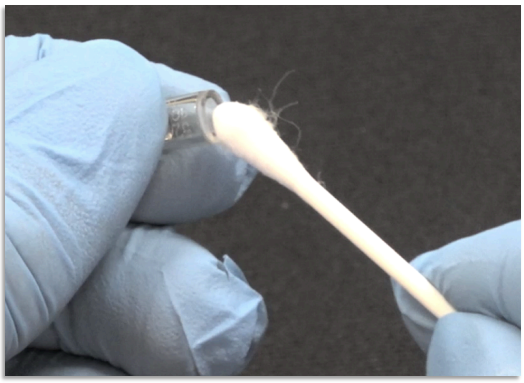
PID Lamp Cleaning

- Collect a small amount of aluminum oxide powder on a cotton swab.
- Use a circular motion, applying light pressure to clean the lamp window.
- Note* Do not touch the lamp window with your fingers



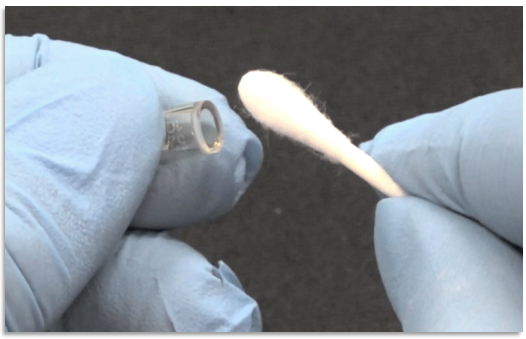
PID Lamp Cleaning

- Continue polishing until you hear a squeaking sound made by the cotton swab moving over the window surface. This usually occurs after about 15 seconds of polishing.



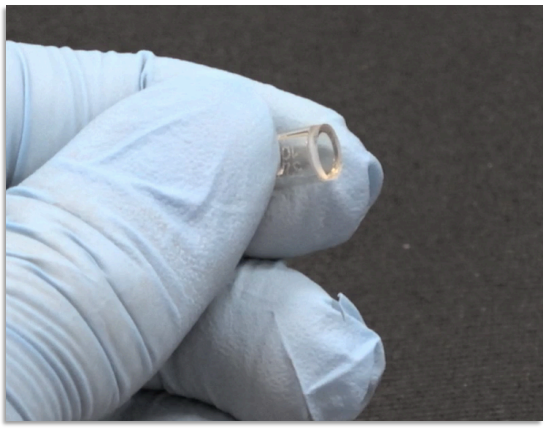
PID Lamp Cleaning

- Remove the residual powder from the lamp window with a clean cotton swab. Take care not to touch the tip of the cotton swab that is used to clean the lamp as this may contaminate it with finger oil.



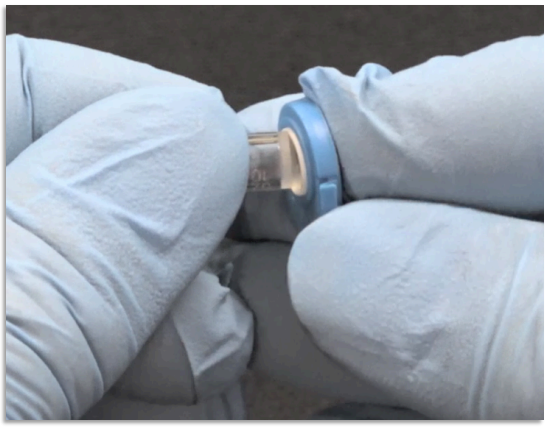
PID Lamp Cleaning

- Ensure the lamp is completely dry and any visible signs of contamination are removed before installing.



PID Lamp Cleaning

- Insert the lamp back into the electrode stack.

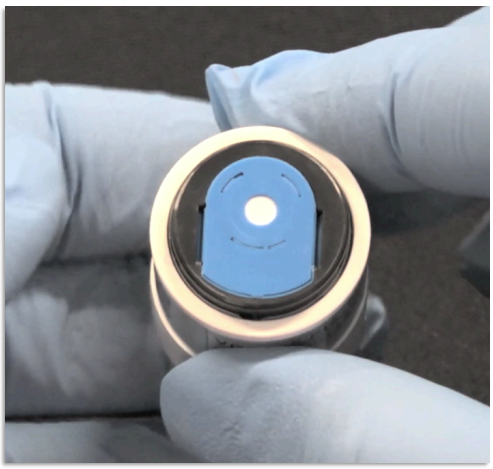


PID Lamp Cleaning

- Return the electrode stack with the lamp firmly attached into the PID body.

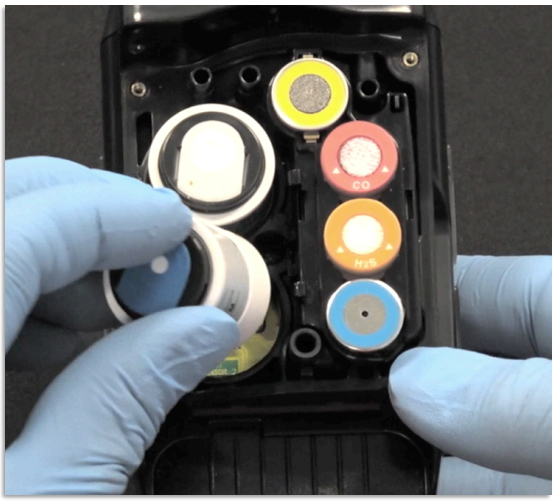
PID Lamp Cleaning

- Line the electrode stack with the PID body and press down firmly until the top of the electrode stack is flush with the PID body.



PID Lamp Cleaning

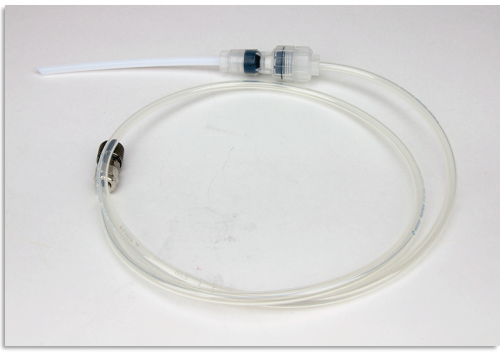
- Return the PID sensor back into the sensor socket.



PID Lamp Cleaning

- Cleaning Kit
  - P/N 82-0300RK
- Includes:
  - *Electrode stack removal tool*
    - P/N 82-0003RK
  - *Aluminum Oxide*
    - P/N 09-0001RK-01
  - *Finger cots*
    - P/N 08-5110RK
  - *Cotton swabs*
    - P/N 08-5100RK

Probe Filter Replacement



Probe Filter Replacement

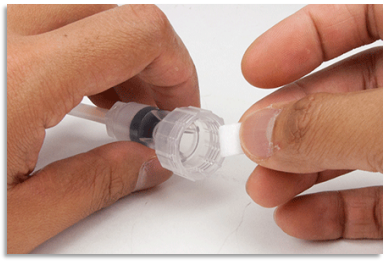
- Grasp each end of the clear probe body firmly and unscrew the two halves from each other.

Probe Filter Replacement

- Hydrophobic Filter Disk
  - P/N 33-0159RK
- Particle Filter
  - P/N 33-3013

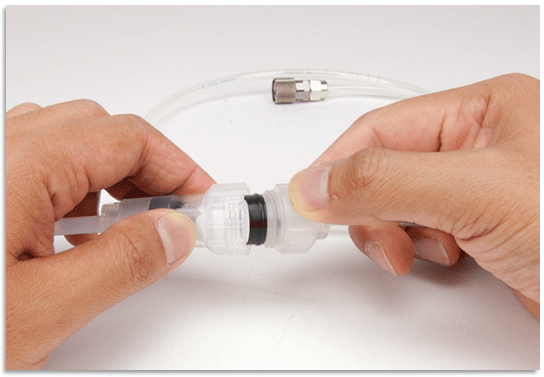
Probe Filter Replacement

- Replace both filters



Probe Filter Replacement

- Screw both the top and bottom half of the probe securely and resume normal operation.



Turning On/Off Smart Sensor Channels

- With the unit OFF, press and hold the **AIR** and **SHIFT** keys.
- Press the **POWER/ENTER** key to turn instrument ON.
- USER MODE and MAINTENANCE mode will be displayed.
- Cursor will be next to USER MODE, press the **SHIFT** key to move cursor to MAINTENANCE, then press **POWER/ENTER**.

Turning On/Off Smart Sensor Channels

- INPUT PASSWORD will be displayed.
- The password is 2014
- Enter the password then press **POWER/ENTER**.

Turning On/Off Smart Sensor Channels

- MAINTE 2 will be displayed and the following menu will appear.
- The cursor is next to GAS COMB, and press the **POWER/ENTER** key.

Turning On/Off Smart Sensor Channels

- The Gas Combination Screen appears and all channels are displayed.

Turning On/Off Smart Sensor Channels

- Move the cursor by pressing the **SHIFT** key next to SM1 (Smart Sensor 1) or SM2 (Smart Sensor 2) and press the **POWER/ENTER** key.
- Use the **AIR** or **SHIFT** key to change the on/off setting.

Turning On/Off Smart Sensor Channels

- When finished making changes, press the **SHIFT** key to move the cursor next to ESCAPE.
- Press the **POWER/ENTER** key.

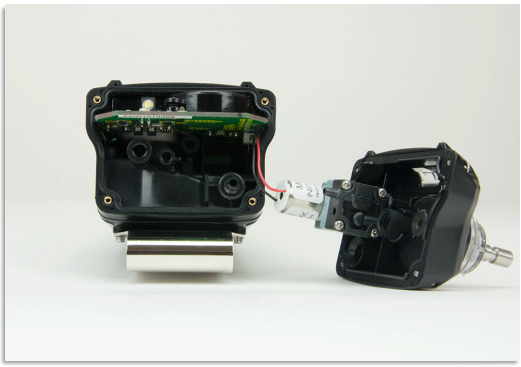
Turning On/Off Smart Sensor Channels

- Move cursor to START MEASURE by pressing the **SHIFT** key and press the **POWER/ENTER** key.
- Instrument will resume to normal operation mode.

Removing the Main PCB

- Remove battery and sensor cover from instrument.
- Remove rubber boot and scrubbers.
- Remove the sensors including sensors that are installed into the Smart 1 and Smart 2 locations.

Removing the Main PCB



- Unscrew the four Phillips screws securing the top of the detector.
- Remove the top exposing the pump.
- Grasp the pump and remove it from the unit.

Removing the Main PCB

- Remove screw as shown.

Removing the Main PCB

- Pull sensor chamber out and remove ribbon connector from main circuit board.

Removing the Main PCB

- Lift second chamber as shown

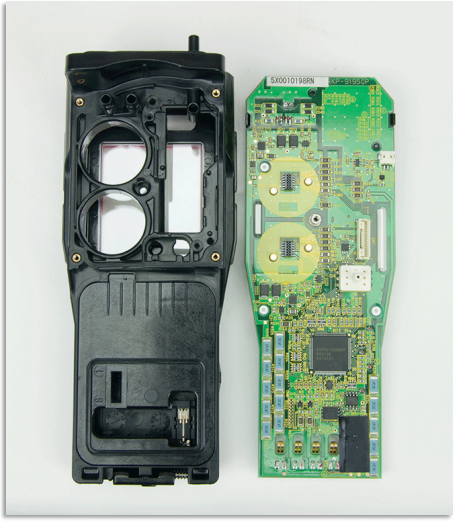
Removing the Main PCB

- Chamber and ribbon cable have been removed.
- Remove rubber joint for pressure sensor. P/N 07-6039

Removing the Main PCB

- All parts removed.

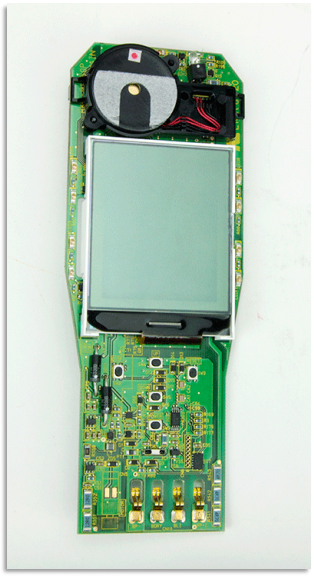
Removing the Main PCB



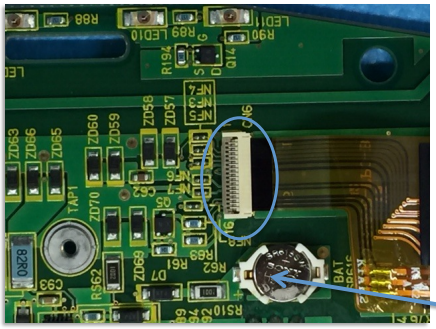
- Gently slide circuit board towards the top of the instrument to remove.
- Take care not to damage battery spring contacts.

Removing the Main PCB

- Main PCB with LCD shown.
- Buzzer facing up.



Removing the Main PCB

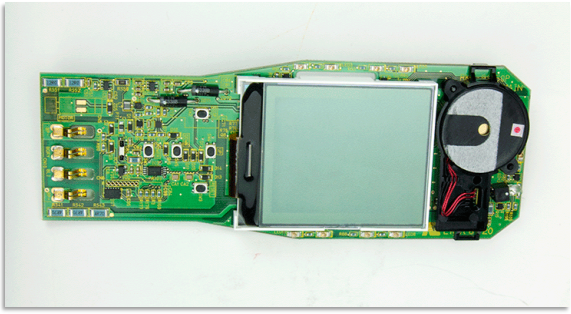


- LCD connector has a lock that needs to be released before ribbon cable can be removed.
- Memory battery shown can be easily replaced.
- P/N 49-1050RK

Removing the Main PCB

- LCD P/N 51-1139
- Clean LCD before installing to remove any fingerprints.

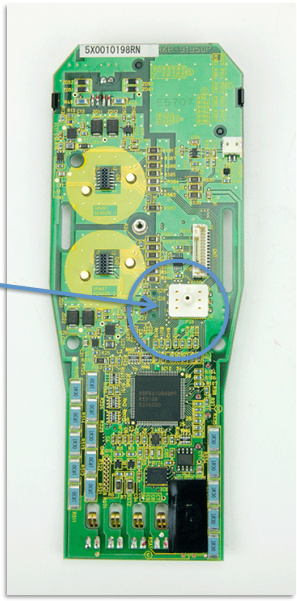
Removing the Main PCB



- Main PCB, Component side.
- P/N 57-1286

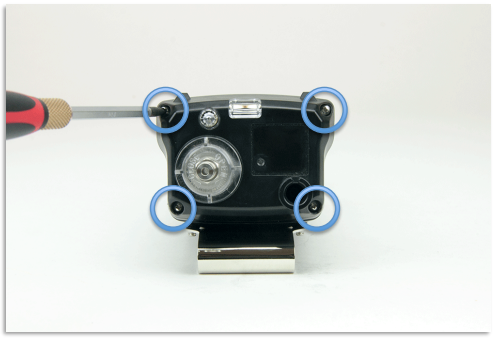
Removing the Main PCB

- Main PCB, sensor side shown.
- Differential Pressure switch.



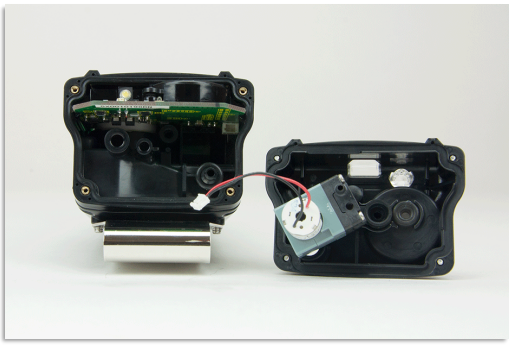
Pump Replacement

- Using a small Phillips screwdriver, loosen the four screws on the top.
- Pull to separate.



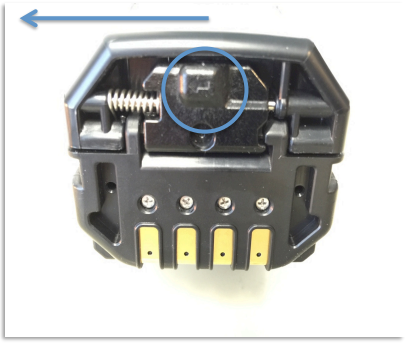
Pump Replacement

- Grasp pump cable and unplug from PCB.
- Remove pump from top.
- Rebuild or replace as needed.

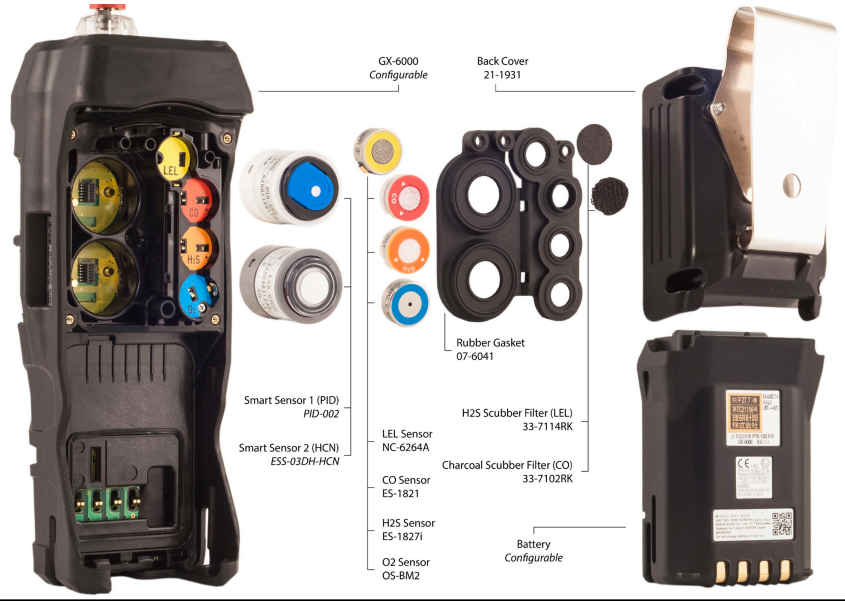


Li-ion Battery Replacement

- Slide battery release tab in the direction of the arrow and push to release battery pack.
- Pull up to remove battery pack.



GX-6000 Exploded View



Questions?

INSTRUMENTS

Gas Detection For Life

Training Notes