

# **RP-6 Pump for the GX-2001 Operator's Manual**

***Part Number: 71-0068RK***

***Edition: First, Revision P0***

***Released: 9/25/02***

---

## Product Warranty

RKI Instruments, Inc., warrants gas alarm equipment sold by us to be free from defects in materials, workmanship, and performance for a period of one year from date of shipment from RKI Instruments, Inc. Any parts found defective within that period will be repaired or replaced, at our option, free of charge. 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. Examples of such items are:

- a) Absorbent cartridges
- b) Pump diaphragms and valves
- c) Fuses
- d) Batteries
- e) Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with the operator's 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 WARRANTY 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 RKI INSTRUMENTS, INC., INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL RKI INSTRUMENTS, INC., BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL LOSS OR DAMAGE OF ANY KIND CONNECTED WITH THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.*

This warranty covers instruments and parts sold to users by authorized distributors, dealers, and representatives as appointed by RKI Instruments, Inc.

We do not assume 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.

---

# Table of Contents

<b>Overview</b> .....	<b>4</b>
<b>Specifications</b> .....	<b>4</b>
<b>Description</b> .....	<b>5</b>
Pump Unit .....	5
Coiled Hose .....	6
Sample Adapter .....	6
Rubber Sample Nipple .....	7
Optional Hose & Probe .....	7
<b>Operation</b> .....	<b>8</b>
Normal Operation .....	8
Low Flow Alarm .....	10
<b>Maintenance</b> .....	<b>11</b>
Replacing the Battery .....	11
Replacing the Cotton Dust Filter .....	11
Replacing the Hydrophobic Disk Filter and Wire Mesh Disk .....	12
<b>Parts List</b> .....	<b>14</b>

---

**WARNING:** *Understand manual before operating and for proper battery type. Substitution of components may impair intrinsic safety. To prevent ignition of a hazardous atmosphere, batteries must only be changed in an area known to be nonhazardous. Not tested in oxygen enriched atmospheres (above 21%).*

---

---

## Overview


This manual describes the RP-6 Pump. This manual also describes how to operate the RP-6 with the Model GX-2001 and maintain the RP-6. A parts list at the end of this manual lists replacement parts and accessories for the RP-6.

---

## Specifications

Table 1 lists specifications for the RP-6 Pump.

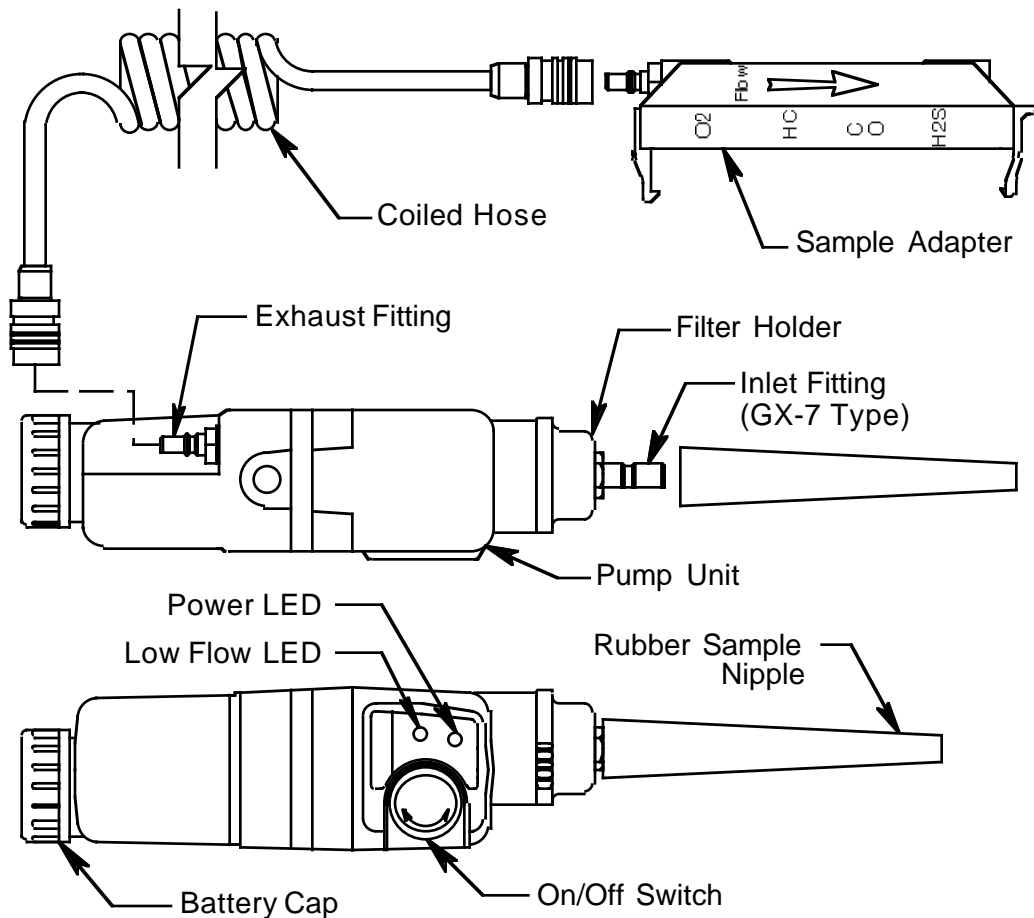
**Table 1: Specifications**

Power Supply	1 ea. AA size alkaline
Operating Time	5 hours minimum at 20°C
Operating Temperature & Humidity	-10°C to +40°C, 0 - 80% Relative Humidity (non-condensing)
Dimensions	33 (D) x 34 (W) x 134 (H) mm, tapered nozzle not included
Weight	Approximately 150 g (including alkaline battery)
Sample Flow Rate	0.5 LPM (liters per minute)
Alarm Indications	Low Flow & Low Battery
Safety/Regulatory	 C US 186718 CSA classified, "C/US", as Intrinsically Safe. Exia. Class I, Groups A, B, C, &D. Class I, Zone 0. Temperature Code T4C.

---

## Description

The RP-6 Pump is a sample drawing accessory for the RKI Instruments Inc. Model GX-2001 Gas Monitor. It consists of the pump unit, the sample adapter, the coiled hose, and the rubber sample nipple.



**Figure 1: RP-6 Pump Component Location**

### Pump Unit

The pump unit is housed in a red plastic case. A GX-7 type male quick connect fitting is located on one end of the pump unit. This is the inlet fitting to the pump unit. The GX-7 quick connect is installed in a removable clear plastic filter holder. A cotton dust filter is inside the filter holder. The filter holder may be removed by turning it counterclockwise and pulling it away

from the pump unit. Two flat membrane disk hydrophobic filters and a wire mesh disk are located in the pump unit on the filter holder end.

The battery compartment is located on the other end of the pump unit. An AA alkaline battery is installed in the battery compartment and held in place by a black plastic battery cap. The battery cap may be removed for access to the battery by pushing it down, turning it counterclockwise, and pulling it away from the pump unit.

The exhaust fitting, a male quick connect, is located near the battery cap end of the pump unit and is smaller than the inlet fitting.

A rotating ON/OFF switch, a power indication LED, and a low flow LED are located near the inlet end of the pump unit. The power LED is on when the pump unit is on. The low flow LED flashes when the pump is experiencing a low flow condition.

Inside the pump unit case are the circuit board and diaphragm pump. There are no user serviceable components inside the pump unit case except for the battery accessible through the battery cap and the wire mesh and hydrophobic disk filters accessible through the filter holder.

## **Coiled Hose**

A 6 ft. coiled polyurethane hose is provided with the RP-6. It has a female quick connect fitting on each end. This hose connects to the pump unit exhaust fitting on one end and to the sample adapter on the other end.

## **Sample Adapter**

The sample adapter is a black plastic cup which snaps onto the sensor face of the GX-2001. When installed, it seals to the sensor face with integral O-rings. It has a label on the front of it to indicate the gas names **O<sub>2</sub>**, **HC**, **CO**, and **H<sub>2</sub>S**. These gas names must match up with the same gas names on the front of the GX-2001 when the sample adapter is installed.

A male quick connect fitting is located on the top of the sample adapter which mates to the coiled hose.

## **Rubber Sample Nipple**

A cone shaped 4 inch long rubber sample nipple is included with the RP-6 and is normally installed on the inlet fitting by pushing the larger end over it. The smaller end can be inserted in a hole or some other access to an enclosed area to sample the environment.

## **Optional Hose & Probe**

When desired, the rubber sample nipple may be removed and a sample hose and probe with GX-7 fittings (optional accessories) may be connected to the inlet fitting. Sample hose lengths are available from 10 feet to 30 feet (see Parts List at the end of the manual).

---

*CAUTION: Sample hose lengths of more than 30 feet are not recommended for the RP-6 because of flow rate reduction.*

---

---

# Operation

## Normal Operation

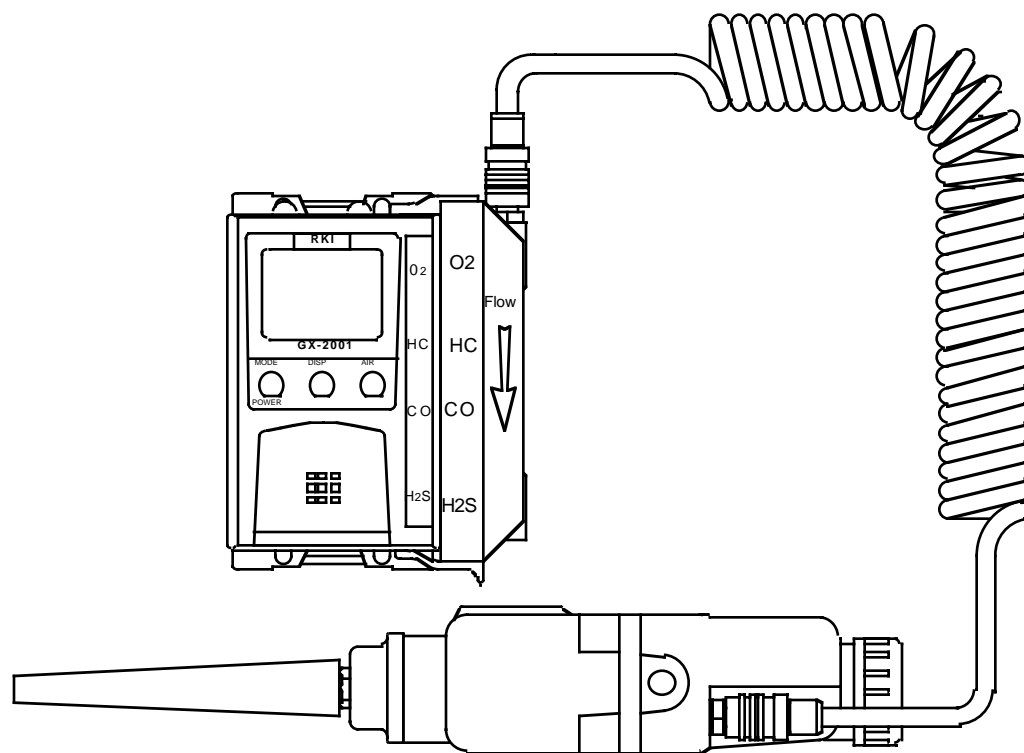
1. Start up the GX-2001 and enter normal operation as described in the GX-2001 manual.
2. Snap the sample adapter onto the sensor face of the GX-2001. Make sure the gas name labels on the GX-2001 match up with the gas name labels on the sample adapter and that the sample adapter is fully engaged on the instrument. When fully engaged, there should be no gap between the GX-2001's red plastic case and the sample adapter.

---

*CAUTION: If the sample adapter is not fully engaged, the unit will not respond to the target gases properly.*

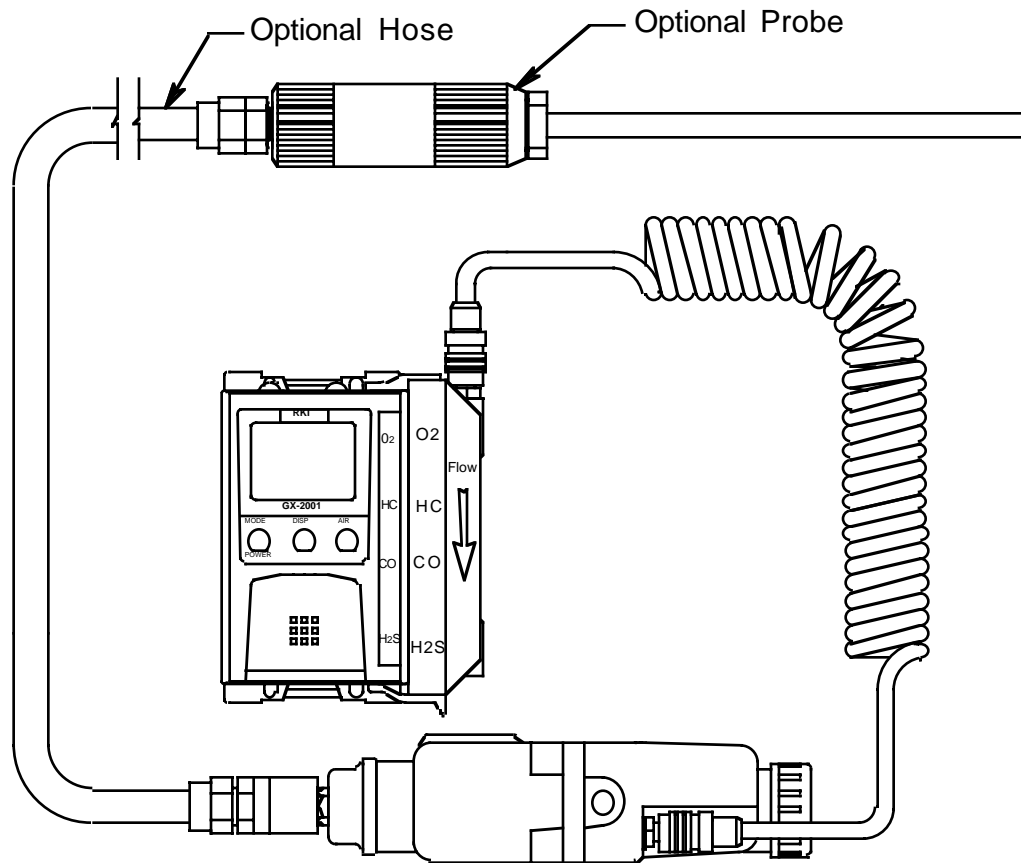
---

3. Connect the coiled hose to the sample adapter and to the exhaust fitting on the pump unit.



**Figure 2: Connecting the RP-6 to the GX-2001**





**Figure 3: Connecting the Optional Hose & Probe**

4. Attach the rubber sample nipple or an optional hose and probe to the inlet fitting.
5. Attach the GX-2001 to your belt or clothing using the belt clip.
6. Turn on the pump unit by turning the ON/OFF switch to the ON position.

---

**CAUTION:** While the sample adapter is installed on the GX-2001, the pump unit must be on and connected to the sample adapter for the GX-2001 to function as a gas detection monitor.

---

7. Go to the area to be sampled.

If the rubber sample nipple is used, use the pump unit to

sample the area of interest by holding it in the area. If sampling from a vessel or an enclosed area is desired, insert the rubber sample nipple into the vessel or enclosed area. Allow the pump unit to sample for 90 seconds for a full response on the GX-2001.

If an optional hose and probe are used instead of the rubber sample nipple, hold the pump unit in one hand while holding the probe in the area to be sampled. To sample from a well or other similar sample area, the hose and probe may be lowered into the sample area. Allow the pump unit to sample for 1 1/2 minutes for a full response on the GX-2001.

---

NOTE: Although the RP-6 pump does have a hydrophobic filter built in, the optional probe does not have a hydrophobic filter. It has a dust filter only.

---

8. Monitor the GX-2001 display for the gas readings and take appropriate action if gas alarms occur.
9. When sampling is complete, go to a fresh air area and turn off the pump unit.
10. Remove the sample adapter from the GX-2001.
11. Remove the GX-2001 from your belt or clothing.
12. Turn off the GX-2001.
13. For convenience, you may leave the pump unit and the sample adapter connected to the hose for storage of the RP-6.

## **Low Flow Alarm**

When pump unit experiences a low flow condition, the Low Flow LED starts flashing and the pump stops operating. Check the rubber sample nipple and filters to make sure they are clear. If a hose and probe are used, check them for kinks or obstructions. To reset the low flow condition, turn the pump unit off and restart it. If the low flow condition persists, the pump may need servicing.

---

# Maintenance

## Replacing The Battery

---

NOTE: To maintain the CSA classification of the RP-6, use Eveready Energizer E91, Duracell MN1500, or Duracell PC1500 alkaline AA batteries.

---

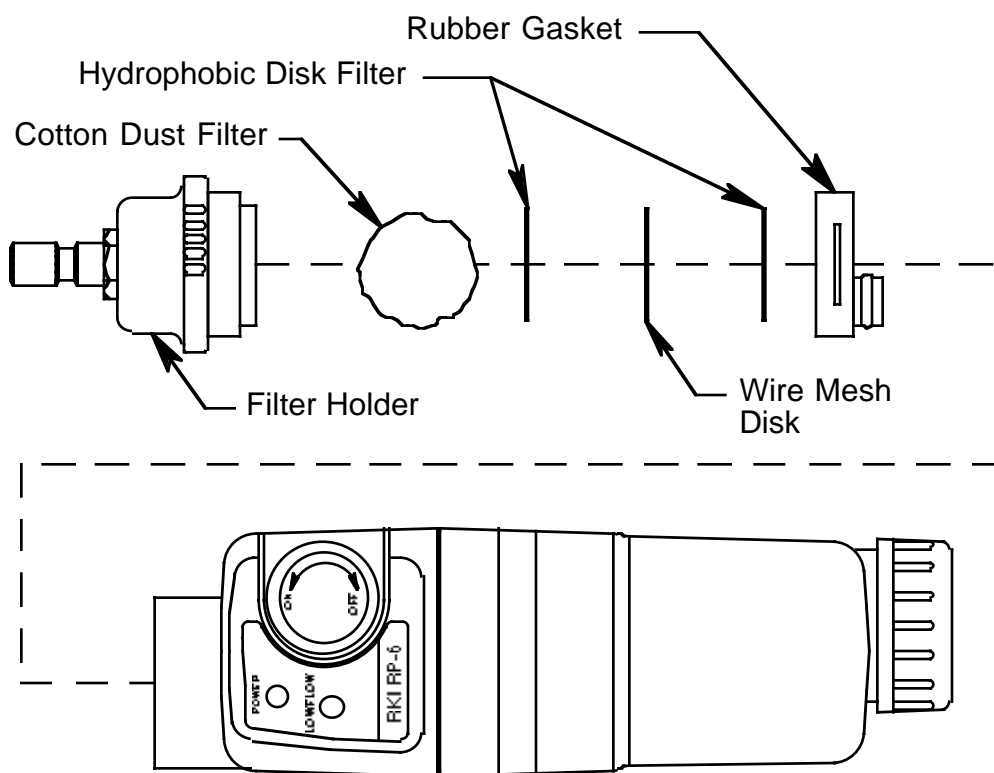
1. Locate the black plastic battery cap on one end of the pump unit.
2. Push down and rotate battery cap counterclockwise until it stops, 1/8 of a turn.
3. Pull the battery cap away from the pump unit.
4. Remove the old battery from the pump unit. It will slide right out.
5. Insert the new battery + end first into the pump unit. Use an AA alkaline. The battery orientation is shown on the pump unit between the serial number label and the battery cap.
6. Slide the battery cap over the battery onto the pump unit, push it down and turn it clockwise until it stops.

## Replacing the Cotton Dust Filter

1. Locate the clear plastic filter holder at one end of the pump unit.
2. Grasp the two ridged sides of the filter holder and turn it about 1/8 of a turn counterclockwise.
3. Pull the filter holder away from the pump unit.
4. Remove the old cotton dust filter from the filter holder and replace it with a new cotton dust filter.
5. Reinstall the filter holder. Align the two tabs on the bottom of the filter holder with the two slots in the pump unit. Push the filter holder into the pump unit and turn it about 1/8 turn clockwise until it snaps into place.

## Replacing the Hydrophobic Disk Filter and Wire Mesh Disk

1. Locate the clear plastic filter holder at one end of the pump unit.
2. Grasp the two ridged sides of the filter holder and turn it about  $1/8$  of a turn counterclockwise.
3. Pull the filter holder away from the pump unit. Do not lose the cotton dust filter.
4. The hydrophobic disk filters and wire mesh disk are located in the pump unit and are retained by a rubber gasket. Pull out the rubber gasket with needle nose pliers.



**Figure 4: Changing the Hydrophobic & Wire Mesh Filters**

5. Remove the old hydrophobic filters and/or wire mesh disk from the gasket. A hydrophobic filter is located on either side of the wire mesh disk.

6. Install the new hydrophobic filters and/or wire mesh disk making sure a hydrophobic filter is located on each side of the wire mesh disk.
7. Reinstall the gasket with the parts into the pump unit.
8. Reinstall the filter holder with the cotton dust filter. Align the two tabs on the bottom of the filter holder with the two slots in the pump unit. Push the filter holder into the pump unit and turn it about 1/8 turn clockwise until it snaps into place.

---

## Parts List

Table 2 lists replacement parts and accessories for the RP-6 Pump.

**Table 2: Parts List**

<b>Part Number</b>	<b>Description</b>
07-2005RK	Gasket, filter/screen retaining
07-6001RK	O-ring, for battery compartment
13-0112RK	Wrist strap
17-1001RK	Tapered rubber nozzle
21-1829RK	Battery cap
21-1832RK	Filter holder, clear plastic
33-0159RK	Hydrophobic disk filter
33-1031RK	Cotton ball 25 pack, for replacement of cotton dust filter
33-1112RK	Wire mesh disk filter
49-1120RK	AA alkaline battery
80-0009RK-XX	Sample hose (optional). Replace "XX" with length in feet. Available lengths for the RP-6 are 10, 15, 20, 25, & 30 feet.
80-0020RK	Coiled sample hose, RP-6 to sample adapter
80-0150RK	Sample probe with dust filter (optional)
81-1106RK	Sample adapter, rigid plastic