



**INSTRUMENTS**

# **30-0951-ST Sample Draw Aspirator Adapter Operator's Manual**

*Part Number: 71-0458*

*Revision: 0*

*Released: 5/29/20*

## **WARNING**

Read and understand this instruction manual before operating detector. Improper use of the detector could result in bodily harm or death.

Periodic calibration and maintenance of the detector is essential for proper operation and correct readings. Please calibrate and maintain this detector regularly! Frequency of calibration depends upon the type of use you have and the sensor types.

Typical calibration frequencies for most applications are between 3 and 6 months, but can be required more often or less often based on your usage.

# 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 the 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. Parts must be returned to RKI Instruments, Inc. for repair or replacement. 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) Pump diaphragms and valves
- b) Fuses
- c) Batteries
- d) Filter elements

Warranty is voided by abuse including mechanical damage, alteration, rough handling, or repair procedures not in accordance with instruction manual. This warranty indicates the full extend 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 only 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. Warranty covers parts and labor performed at RKI Instruments, Inc. only, and does not cover field labor or shipment of parts back to RKI Instruments, Inc.

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## Overview

This manual describes the 30-0951-ST sample draw aspirator adapter. It also describes how to install and use the adapter. A spare parts list at the end of this manual lists replacement parts.

The detector chamber and detector adapter in this assembly are made of PVC instead of aluminum. This allows the aspirator adapter to be used in applications where the target gas would normally be absorbed by aluminum parts.

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## Specifications

Table 1 lists specifications for the sample draw aspirator adapter.

**Table 1: Specifications**

<b>Applicable Detectors</b>	<ul style="list-style-type: none"><li>• 65-2302-CL2</li><li>• 65-2302-CL2-05</li><li>• 65-2302-CL2-10</li><li>• Consult RKI Instruments, Inc. for other detectors</li></ul>
<b>Maximum Inlet Pressure</b>	300 psi
<b>Outlet Pressure to Aspirator</b>	5 - 50 psi adjustable (determined by required flow rate)
<b>Recommended Flow Rate</b>	3 SCFH (standard cubic feet per hour)

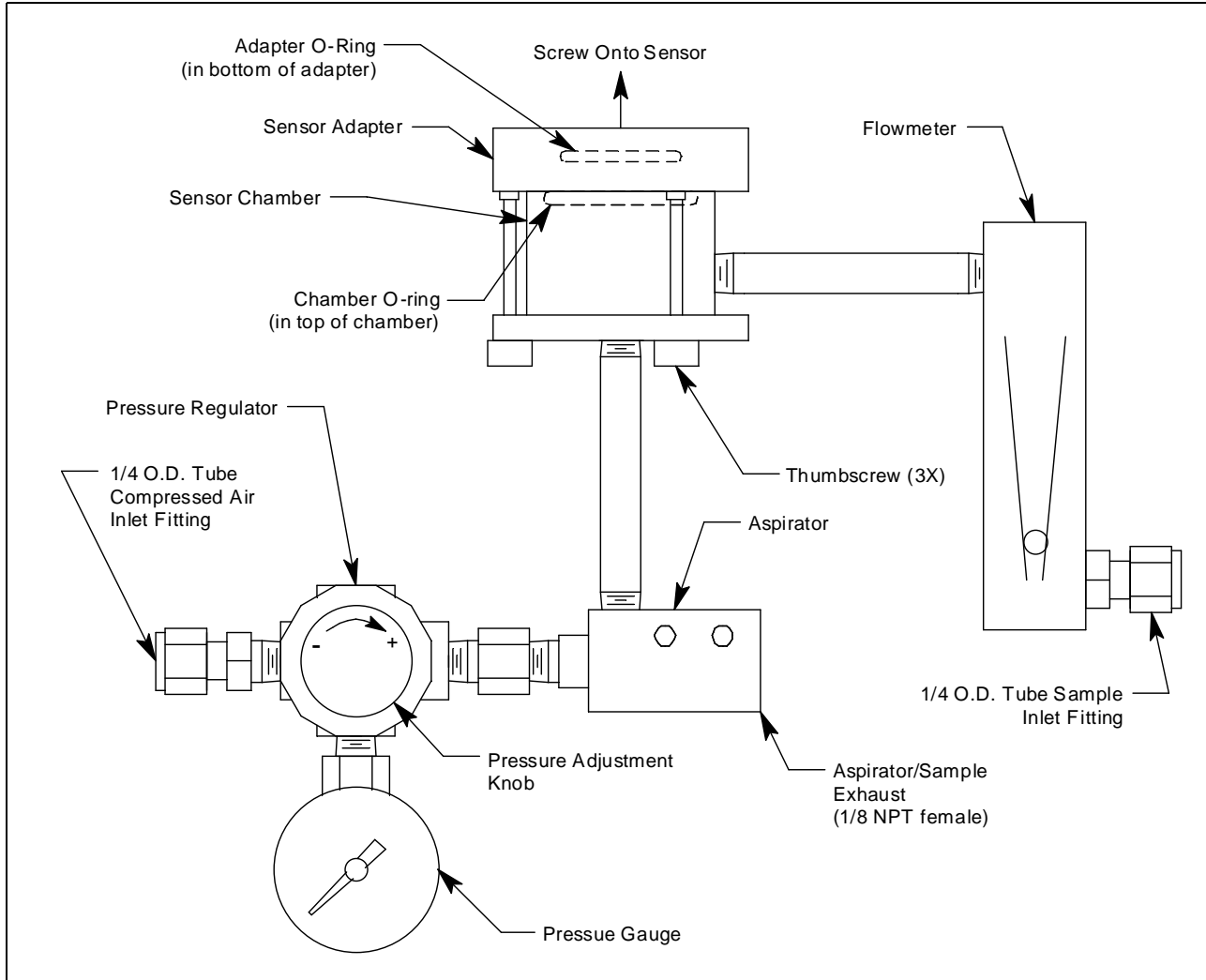
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**WARNING:** *When using the 30-0951-ST, you must follow the instructions and warnings in this manual to assure proper and safe operation of the 30-0951-ST and to minimize the risk of personal injury. Be sure to maintain and calibrate the 30-0951-ST as described in this manual.*

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## Description

The sample draw aspirator adapter uses compressed air flowing through a venturi to draw air into a sample chamber. The sample draw adapter screws directly onto the gas detector.



**Figure 1: Component Location**

The sample draw adapter consists of five major components (see Figure 1): the regulator, aspirator, detector adapter, detector chamber, and flowmeter.

### Regulator

The regulator has an inlet port on its left side with a 1/4" tube fitting. The maximum allowable inlet pressure is 300 psi. A gauge at the bottom of the regulator indicates the output pressure. The output pressure, and detector flow, can be adjusted using the knob on the front of the regulator. The detector flow rises or falls as the output pressure is increased or decreased.

### Aspirator

The aspirator inlet is connected to the output port on the right side of the regulator and the vacuum port on top is connected to the detector chamber. It has a venturi tube inside it which generates a vacuum at

its top port when compressed air flows through it. The compressed air and the air drawn from the detector chamber into the top port of the aspirator both exhaust at the right side of the aspirator.

### Detector Adapter

The detector adapter is made out of PVC and screws directly onto the detector. It is installed hand tight. It has an O-ring inside it which seals against the detector. When removing this adapter to change the detector, be sure not to lose this O-ring.

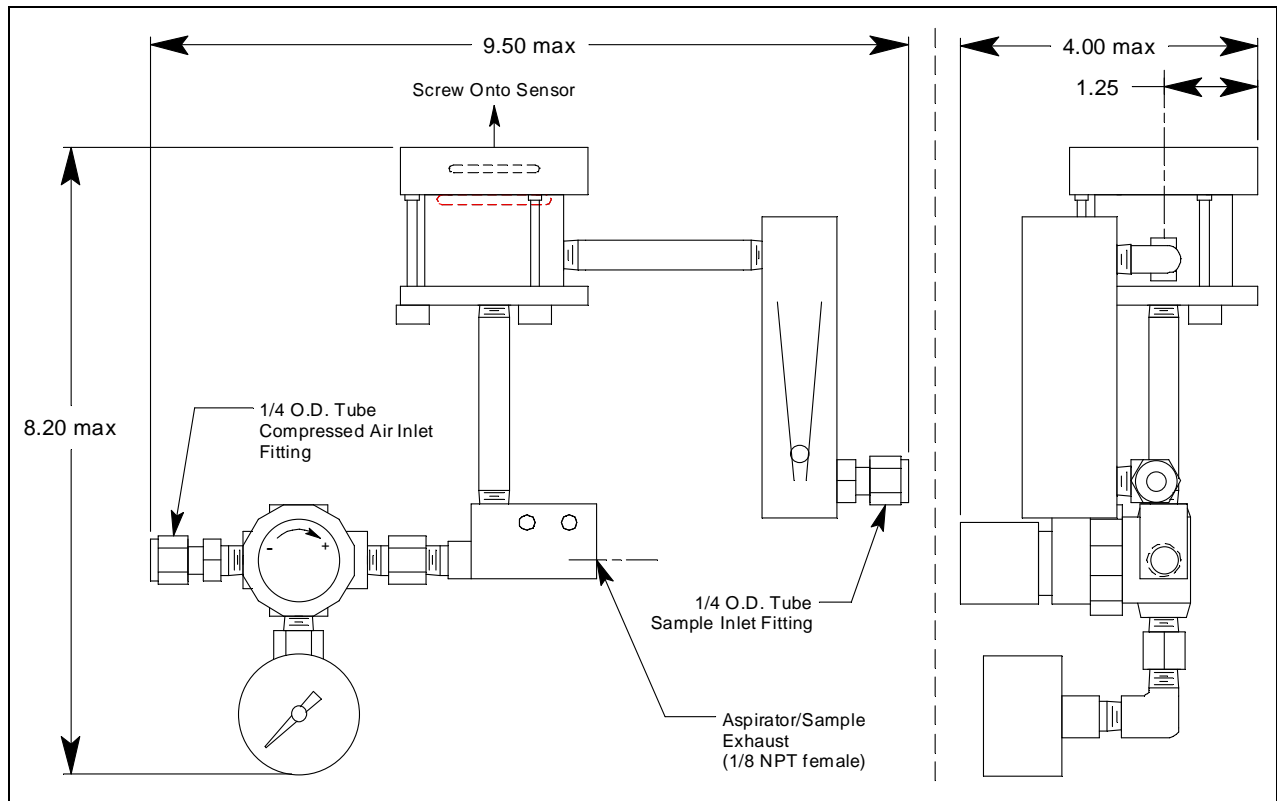
### Detector Chamber

The detector chamber is made out of PVC and has three thumbscrews which fasten it to the detector adapter. An O-ring at the top of the chamber seals the chamber/adapter interface. The inlet of the chamber is on the right side and is connected to the exhaust of the flowmeter. The exhaust of the chamber is at the bottom and is connected to the vacuum port of the aspirator.

### Flowmeter

The flowmeter indicates the flow to the detector. It has a 1/4" tube fitting at its inlet port and its exhaust port is connected to the detector chamber. The flowmeter's indication range is 1 - 10 SCFH. It has no flow adjustment valve because the flowrate is controlled by the regulator.

## Installation



**Figure 2: Outline & Mounting Dimensions**

1. Install and startup the detector head as described in the detector head operator's manual. Make sure there is sufficient room between the detector and the mounting surface to install the sample draw adapter.

2. The sample draw adapter is normally shipped installed to the detector. If it is not already installed, screw the detector adapter onto the detector tightening firmly by hand. Then attach the chamber (with the regulator, aspirator and flowmeter attached) onto the detector adapter with the three captive thumbscrews. Be sure that the screws do not get cross-threaded.

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**CAUTION:** *Make sure the detector adapter is installed tightly and after installation is complete, verify that the detector adapter is still tightened firmly onto the detector to avoid possible leaks.*

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3. Connect a sample line from the area to be sampled to the inlet fitting on the flowmeter. The fitting accepts 1/4" OD tubing. PTFE Teflon tubing is recommended for the inlet line. If something other than PTFE Teflon tubing is used, the tubing may absorb the sample gas. The maximum recommended inlet line is 30 ft. Consult RKI Instruments, Inc. for sample lines longer than 30 ft.

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**NOTE:** If the sample draw aspirator adapter is installed in a cold area, the sample line will need to be heated in order to prevent condensation and possible freezing of the moisture in the gas sample line or sample draw aspirator adapter.

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4. The aspirator exhaust includes the sample air. It may be routed to a different area where it can be exhausted safely by installing a tube fitting in the exhaust port of the aspirator and running tubing to the "safe" area from this port. The port has 1/8 NPT female threads. Any type of tubing may be used for the exhaust port.
5. Turn the regulator adjustment knob completely counterclockwise and then turn it one turn clockwise so that the flow will start out at a low level when the compressed air is connected and turned on.
6. Connect a compressed air source up to a maximum of 300 psi to the inlet of the regulator. The regulator is only rated up to 300 psi inlet pressure. The regulator inlet fitting accepts 1/4" OD tubing.

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**NOTE:** The compressed air used for the sample draw aspirator adapter must be dry (free from humidity). If wet air is used, at low temperatures, the moisture in the air may freeze in the aspirator and cause the sample draw aspirator adapter to function improperly.

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7. Adjust the regulator adjustment knob so that the flowmeter indicates 3 SCFH. The regulator exhaust pressure indicated by the regulator gauge will vary for a particular flow depending on the length of the sample line and other restrictions such as filters. Typically the pressure will be between 5 and 10 psi for short sample runs. It will be higher for longer sample runs and if filters are used.
8. Calibrate the detector head as described below.

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**NOTE:** Calibrate the detector head with the sample draw adapter installed to ensure an accurate reading.

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## Calibration Frequency

Although there is no particular calibration frequency that is correct for all applications, a calibration frequency of every 3 to 6 months is adequate for most aspirator adapter applications. Unless experience in a particular application dictates otherwise, RKI Instruments, Inc. recommends a calibration frequency of every 3 months.

If an application is not very demanding, for example detection in a clean, temperature controlled environment where the target gas is not normally present and calibration adjustments are minimal at calibration, then a calibration frequency of every 6 months is adequate.

If an application is very demanding, for example if the target gas is present often and in significant concentrations or the environment is not well controlled, then more frequent calibration than every 3 months may be necessary. If potential catalyst poisons are known or likely to be present, more frequent calibration than every 3 months will be necessary.

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## Calibration

1. Follow the instructions in the detector head operator's manual for setting the zero reading and making span adjustments.
2. Apply gas using a gas bag filled with a fixed flow regulator or dispensing valve. See "Parts List" on page 10 for available parts. For toxic gas cylinders, like  $\text{Cl}_2$ , it is important to vent the regulator while installing it onto the cylinder. Venting the regulator during installation helps prevent air from getting into the cylinder and degrading the gas. When filling the gas bag, open the regulator by turning the knob counterclockwise and then install it onto the cylinder.

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**NOTE:** A gas bag is recommended for calibration instead of a demand flow regulator because a demand flow regulator introduces enough flow restriction to significantly reduce the flow. If a demand flow regulator is used, the flow will have to be adjusted up to 3 SCFH while the regulator is connected during calibration and down to 3 SCFH after calibration.

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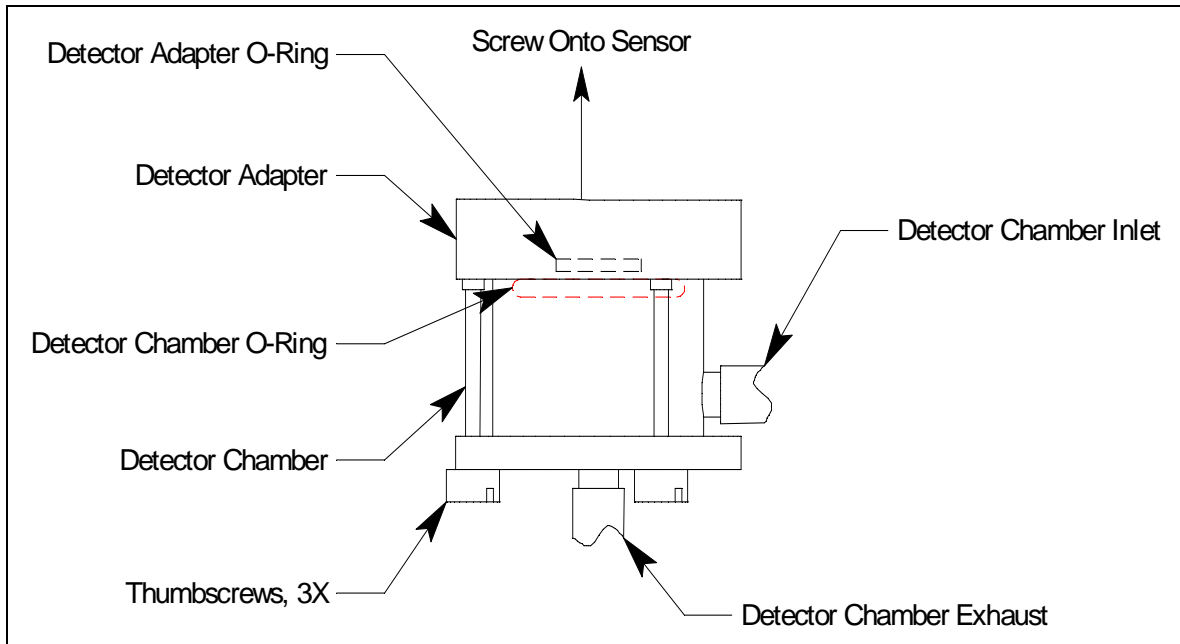
3. Connect the sample bag tubing to the inlet of the flowmeter.
4. Allow the sample draw adapter to draw sample for 2 minutes and then make any calibration adjustments necessary.
5. Disconnect the sample bag from the flowmeter inlet.



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## Detector Replacement

1. Turn the regulator adjustment knob completely counterclockwise.
2. Loosen the thumbscrews that attach the detector chamber to the detector adapter.



**Figure 3: Detector Chamber/Detector Adapter Assembly**

3. Pull the detector chamber away from the detector adapter and let it hang by its inlet and exhaust lines. It may be necessary to remove the inlet, exhaust, and compressed air lines if they are not flexible enough to allow the detector chamber to be removed from the detector adapter.
4. Grasp the detector adapter and unscrew it from the detector.

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**NOTE:** Be sure not to lose the O-ring located between the detector adapter and the detector.

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5. Follow the instructions in the appropriate detector head manual for replacing a detector.
6. Be sure the O-ring in the top of the detector adapter is still installed.
7. Screw the detector adapter onto the new detector hand tight.

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**CAUTION:** *Make sure the detector adapter is installed tightly and after installation is complete, verify that the detector adapter is still tightened firmly onto the detector to avoid possible leaks.*

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8. Reinstall the detector chamber into its appropriate position and tighten the thumbscrews. Be sure that the screws do not get cross-threaded.
9. If necessary, reconnect the inlet, exhaust, and compressed air lines.
10. Turn the regulator adjustment knob clockwise until the flowmeter indicates 3 SCFH.
11. Calibrate the detector.

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## Parts List

Table 2 lists replacement parts and accessories for the sample draw adapter.

**Table 2: Parts List**

<b>Part Number</b>	<b>Description</b>
06-1248RK	Tubing, 3/16" x 5/16", polyurethane, for calibration kit
06-1273RK	Tubing, 1/8" x 1/4", PTFE Teflon, for sample inlet
07-7123RK	O-ring, 1.174 ID x .103, buna, for detector adapter
07-7225RK	O-ring, 1.243 ID x .139, buna, for detector chamber
13-1070RK	Captive panel screw, 10-32 x 1.75
81-0192RK-02	Calibration cylinder, 2 ppm Cl <sub>2</sub> in nitrogen, 58 liter aluminum
81-0192RK-04	Calibration cylinder, 2 ppm Cl <sub>2</sub> in nitrogen, 34 liter aluminum
81-1051RK-60	Regulator with gauge and knob, 6 LPM, for 34 liter and 58 liter aluminum cylinders
81-1127RK	Gas bag with fittings and hosebarb, 12 inches x 12 inches, 5 liters, tedlar