IR-741 Sample Conditioner

Operator's Manual

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USERS GUIDE

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Introduction

GENERAL DESCRIPTION

The Model IR-741 analyzer is a wall-mounted or counter top gas sample conditioner designed primarily to be used as an accessory to various Infrared Industries gas analyzers. The sample conditioner provides a clean, dry sample of calibration gas to the analyzer at a constant flow rate for pressures up to 25 psig.

The sample conditioner consists of the following:

- Gas selector valve for zero, span and sample gases.
- Particulate filter and liquids trap with drain valve.
- Sample pump.
- Flow indicator with valve for adjusting the gas flow.

The Model IR-741-1 is intended to be used with non-corrosive gases, while the IR-741-2 is constructed of materials suitable for use with most corrosive gases. Both versions are housed in NEMA 1 (general purpose, indoor) enclosures.

In operation, the sample conditioner is designed to be used with gas analyzers to continuously extract up to two gas samples plus two calibration gases and to remove particulates and condensed vapors from the gases. A flow meter is used to both monitor and adjust the flow of gas to an analyzer to between .5 and 5 scfh.

SPECIFICATIONS

Operating voltage - 110 VAC ± 15%, 50/60 Hz 220 VAC ± 15%, 50/60 Hz, optional
Operating temperature range - 0°F to 130°F (-16°C to 55°C)
Maximum inlet temperature - 150°F (66°C)
Maximum inlet pressure - 25 psig (1.76 Kg/cm2)
Flow rate - .5 scfh to 5 scfh (.25 lpm to 2.5 lpm) from -5 psig to 25 psig

MATERIAL OF CONSTRUCTION

Wetted parts - (741-1)Brass, aluminum, polypropylene, polycarbonate, polyethylene, neoprene
Wetted parts - (741-2)316 SS, 304 SS, Viton, Teflon, polypropylene, neoprene

GAS CONNECTIONS

Inlets and outlets1/4 - inch (6.35 mm) tube, compression
Drain - 1/4 - inch (6.35 mm) barbed hose
Weight - 35 lbs (16 Kg)

Chapter

2

Installation

This section provides a description of the installation of the analyzer. When you are setting up the analyzer for the first time check for any damage that may have occurred during shipment.

GENERAL

The IR-741 Sample Conditioner is designed to be mounted indoors on a flat, vertical surface. Because the inlet gas sample pressure is usually below atmospheric, the distance between the sample gas source and the conditioner should be as short as possible to minimize the possibility of air entering and diluting the sample going to the conditioner. To minimize the response time of the analyzing system, the total distance between the gas sample source and the analyzer should be kept as short as possible.

PRECAUTIONS

The area in which the conditioner is to be located should be free from excessive dust, corrosive gases, or moisture. The temperature around the conditioner should be maintained between 0°F (-16°C) and 103°F (55°C). Install the conditioner on a firm, flat vertical surface free from direct sunlight and any other radiating heat source. If necessary, use a sun or heat shield to protect the conditioner.

CAUTION

The IR-741 is not designed to be intrinsically safe, and should therefore never be installed in a hazardous location.

MECHANICAL

Open the conditioner and locate the four 9/32-inch mounting holes on the rear panel. Use 1/4-inch (6mm) diameter bolts or screws to attach the conditioner, using panel holes as a template. Allow at least 6 inches below the conditioner to route the gas lines. If accumulated condensate in the filter holder is to be drained directly below the conditioner, do not install the conditioner above any equipment which may be affected by the condensate.

Use 1/4-inch tubing of a material compatible with the gas stream and the environment between the sample source and the analyzer. Route the gas lines to the bottom of the conditioner and install the tubing as per the instructions in the **Fitting and Installation** paragraph. If the sample contains condensable vapors, route the inlet sample line such that there are no downward loops between the sample source and the conditioner. If the condensate is to be drained away from the conditioner, attach a 1/4-inch hose to the bottom of the drain valve and route the hose such that there are no upward loops between the drain valve and the area where the drain is exhausted.

NOTE: Both the zero and span gases should have regulators set for approximately 5 psig.

ELECTRICAL

For 115 VAC units, plug the AC line cord into an outlet supplying 115 VAC ±15%. For 230 VAC units, an AC plug must be attached to end of the line cord. To install the plug, refer to the attached instruction card. Plug the cord into an outlet supplying 230 VAC ± 15%.

FITTING AND INSTALLATION

The sample-in, sample-out, and calibration gas connections are made through 1/4-inch compression tube fittings. To install tubing to these fittings, cut the tubing square and de-burr as necessary. Insert the tubing into the fitting (cap in place) as far as it will go. Use one open-end wrench to hold the body of the fitting and another to rotate the cap 1 1/4 turns past finger-tight. DO NOT OVER TIGHTEN. When reinstalling the tubing, rotate the cap no more than 1/8 turn past finger-tight.

Chapter

3

Operation

DESCRIPTION OF CONTROLS (refer to Figure 3 – 1)

The Gas selector valve selects between one of two sample gas stream inlets, the zero or purge gas, and the span or calibration gas. The valve on the flow meter is used to adjust the gas flow to the analyzer. The power switch is used to turn off the sample pump. The circuit breaker protects the wiring in case of excessive current.

SET UP (NDIR analyzers)

Depress the power switch. The power switch should illuminate and the pump should turn on. Rotate the gas selector valve to the SAMPLE position corresponding to the line attached to the process, and adjust the valve on the flow meter for the appropriate flow to the gas analyzer (see analyzer manual).

Rotate the gas selector valve to zero or purge position and adjust the regulator on the zero gas bottle for the same flow as above.

Rotate the gas selector valve to the span gas position and adjust the regulator on the span gas bottle for the same flow as above.

The system is now ready to calibrate and operate the gas analyzer.

SET UP (IR-2200 oxygen analyzers)

Depress the power switch. The power switch should illuminate and the pump should turn on. Rotate the gas selector valve to the SAMPLE position corresponding the line attached to the process, and open the valve on the flow meter fully counterclockwise. Adjust the pressure regulator on the back of the oxygen analyzer as required for the appropriate flow to the analyzer (see analyzer manual).

Rotate the gas selector valve to the zero or purge position and adjust the regulator on the zero gas bottle for the same flow as above. Rotate the gas selector valve to the span gas position and adjust the regulator on the span gas bottle for the same flow as above.

The system is now ready to calibrate and operate the gas analyzer.

OPERATION

Use the gas selector valve as needed to check the calibration of the analyzer. Check the particulate filter often at first, and then as required for signs of liquid condensation and filter contamination. To drain the condensate from the filter holder, rotate the gas selector value to the zero or purge position and depress the power switch to turn the power off to the pump. Open the drain valve on the bottom of the conditioner until the filter bowl is empty. Close the drain valve. Depress the power switch to turn the pump back on.

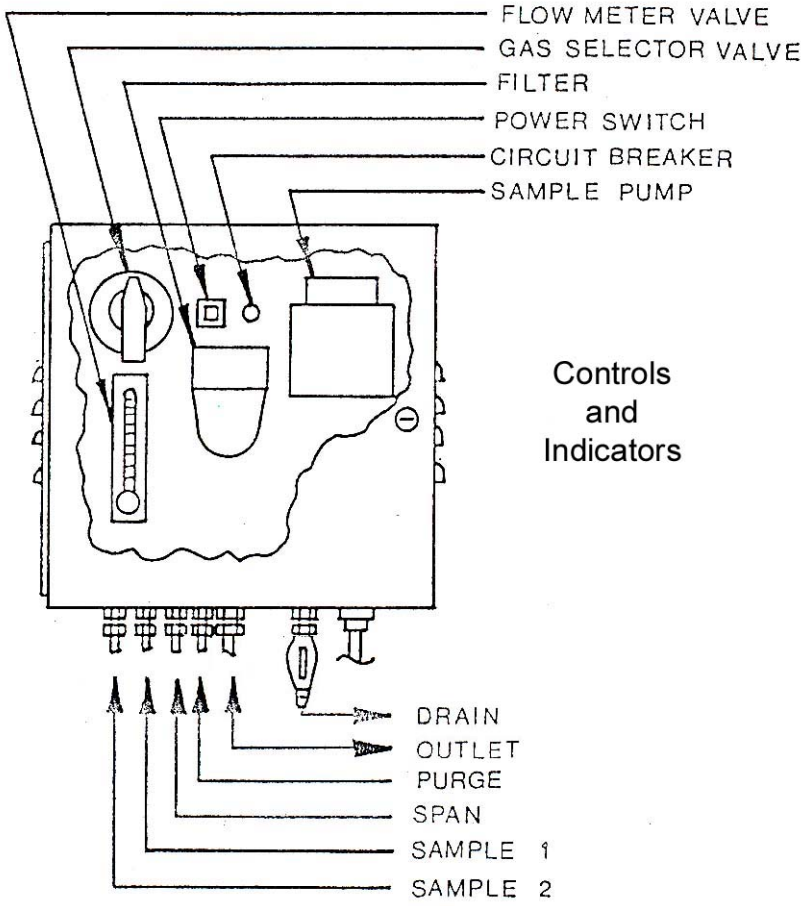
FLOW METER VALVE
GAS SELECTOR VALVE
FILTER
POWER SWITCH
CIRCUIT BREAKER
SAMPLE PUMP
Controls
and
Indicators
DRAIN
OUTLET
PURGE
SPAN
SAMPLE 1
SAMPLE 2

Figure 3-1

Chapter

4

Maintenance

FILTER REPLACEMENT

Examine the particulate filter regularly to check for condensed liquids and contamination of the filter element. Replace the filter element if the flow from the conditioner drops appreciably or if upon examination the particulate filter shows signs of excessive contamination.

To replace the filter element, open the conditioner and rotate the gas selector valve to the zero or purge position. Depress the power switch to turn off the power to the pump. Unplug the AC line cord from the outlet. Open the drain valve at the bottom of the conditioner to drain off any accumulated liquids and to purge the filter bowl of any of the process gases.

Detach the tubing from the bottom of the filter bowl and push the tubing aside. With an open-end wrench, rotate the nut at the bottom of the filter holder until the bowl assembly is free.

Remove the bowl assembly and rotate the filter retainer at the bottom of the filter until the retainer and the filter can be removed. In the IR-741-1, the retainer will slide down easily. In the IR-741-2, the retainer must be unscrewed for removal.

Clean the filter bowl if necessary with common soap and water. Install the new filter, the retainer, and the filter bowl assembly by reversing the above procedure. Reattach the tubing from the drain valve to the filter bowl.

B

Warranty

NOTICE TO BUYER AND/OR USER OF THE ANALYZER:

Exclusion of warranties and limitation of damages and remedies

This analyzer is warranted against defects in materials and workmanship under normal use and service for one year from the date of delivery to the original purchaser.

The sole obligation of the seller and/or manufacturer under this warranty is limited to repairing or replacing as the seller or manufacturer may elect, free of charge at the place of business of the seller or manufacturer, any parts that prove, in the seller or manufacturers judgment, to be defective in materials or workmanship within one year after delivery to the original purchaser.

This warranty shall not apply and is void if, in the opinion of the seller and/or manufacturer, the portable analyzer or any component thereof has been damaged by accident, other causes not arising out of defects in materials or workmanship.

Before purchasing and using this analyzer, the user should determine the suitability of the product for his or her intended use and, the user assumes all risks and liabilities whatsoever in connection therewith.

If a product malfunction should occur, you may contact the seller or the manufacturer at:

Infrared Industries, Inc.
25590 Seaboard Lane
Hayward, Ca. 94545
Voice: 510-782-8100 or 800-344-0321
E-mail: service@infraredindustries.com

If it is necessary to return the analyzer, notify the seller in your area or Infrared Industries at the address above. Contact Infrared Industries for an RMA number, which is your authorization to send the unit. Note the RMA number on the outside of the box. Package the instrument carefully and securely. Do not ship the instrument with accessories. Please include a written description of any observation of the malfunction along with your name, address, and phone number. Then proceed to ship the instrument with freight prepaid to the address above.

Warranty Exclusions

THIS WARRANTY AND THE SELLER AND/OR MANUFACTURER'S OBLIGATION HEREUNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR

PURPOSE, AND ALL OTHER REPRESENTATIONS CONCERNING THE SALE, USE AND/OR PERFORMANCE OF THE ANALYZER.

No person is authorized to give any other warranties or to assume any other liability on behalf of the seller or manufacturer. This warranty shall not be extended, altered or varied except by written agreement signed by the seller and the buyer.

Limitations of Damage

IN NO EVENT SHALL THE MANUFACTURER OR SELLER OF THE PORTABLE ANALYZER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH ANY OBLIGATION IMPOSED UPON THE SELLER OR MANUFACTURER IN CONNECTION WITH THIS WARRANTY. SUCH INCIDENTAL AND CONSEQUENTIAL DAMAGES SHALL INCLUDE, WITHOUT LIMITATION, LOSS OF USE, LOSS OF INCOME, LOSS OF PROFIT (INCLUDING LOSSES TO BUSINESS INTERRUPTION), LOSSES SUSTAINED AS THE RESULT OF INJURY (INCLUDING DEATH) TO ANY PERSON, AND LOSS OF OR DAMAGE TO PROPERTY. THE LIABILITY OF THE SELLER AND/OR MANUFACTURER ON THIS WARRANTY IS LIMITED TO ACCEPTING RETURN OF THE PORTABLE ANALYZER, REFUNDING ANY AMOUNT PAID THEREON AND CANCELING ANY BALANCE STILL OWING ON THE EQUIPMENT. THIS REMEDY IS EXCLUSIVE-REPAIR OR REPLACEMENT PROCEDURE