

Model 70726

SPIROMETER USER INSTRUCTIONS



Description:

The Spirometer is used with the DataLab 2000 system to measure airflow and lung capacities in respiratory experiments. The spirometer is a 10 L capacity dry bellows type.

- The Spirometer must be used with the Basic Amplifier (Model 70706).
- The cable for the Spirometer plugs directly into the connector on the front of the Basic Amplifier.
- The Spirometer can be used as a stand-alone device or be connected to the DataLab 2000 system. The Spirometer has a built-in transducer; no displacement transducer is needed for connection to the DataLab 2000 system.
- The Spirometer can be used to measure both inhalation and exhalation.
- Two air hoses are included with the Spirometer. The hoses are reusable and may be steam autoclaved (10 minutes @ 260 degrees F/127 degrees C).
- Replacement air hoses may be ordered as part number 76608H.
- The Spirometer is shipped with a package of 100 disposable mouthpieces.
- Replacement mouthpieces (package of 100) may be ordered as part number 76608MP.
- The hose attaches to the spirometer via the coupler on the bottom side of the spirometer base.
- The mouthpiece attaches to the cuff of the Spirometer hose.
- The transducer for the spirometer is driven by a pulley and chain. In the event that the chain becomes derailed, it can easily be replaced by hand.
- The pulley attached to the potentiometer for the transducer is shipped from the factory in the center of its range. Over the life of the product, the potentiometer may become locked at the end of its range. This can be corrected by manually turning the rear transducer pulley until it reaches the center of its range (see "Note" in calibration procedure).
- **Caution:** The Spirometer is not to be used for prolonged breathing tests. Use on prolonged tests will cause the subject to exhibit symptoms of oxygen deprivation.

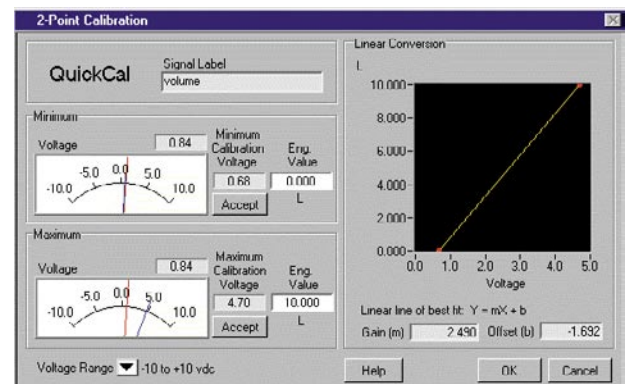


Calibration procedure:

The Spirometer transducer output can be calibrated using the 2-point calibration routine in the DataLab 2000 software. This will allow the data-acquisition screen to show the spirometer output in Liters.

After the hardware is correctly setup:

1. Select Configure>>Channels in the BioBench software.
2. Select the correct channel for the Basic Amplifier with the Spirometer connected.
3. Under Scaling, set the units to "L" (Liters).
4. Select Calibrate.



5. Set the bellows so that the scale reads 0 liters. Click the Accept button for the Minimum Calibration voltage.

Note: For best results, the minimum calibration voltage should be between 0.6 and 0.9 volts. If the reading is out of this range, the rear transducer wheel can be adjusted to this range manually (turn the wheel by hand while making sure the chain does not move).

6. Type the liter value (0) for the Minimum Calibration Engineering Value.

7. Lift the bellows so that the scale reads 10 liters. Click the Accept button for the Maximum Calibration voltage.

8. Type the liter value (10) for the Maximum Calibration Engineering Value. The software will automatically enter gain and offset values.

9. Select "OK" to accept the calibration and exit.

Alternate Calibration for tidal volume tests: Use the same procedure as above except set the bellows to 5 liters for the minimum calibration and enter 0 as the engineering value. Set the bellows to 10 liters for the maximum calibration and enter 5 for the engineering value. Start the respiration test with the bellows at 5 liters (5 liters becomes the zero or reference point). This will allow the display to show positive liters for exhalation and negative liters for inhalation. It will also show actual change in liters instead of the absolute volume calculated from zero.

Data Analysis:

The BioBench analysis tools can be used to determine lung volumes and flow rates from the volume graph.

1. Select Analysis in the BioBench software.

2. Open the file where the lung volume data is stored by clicking on the channel labels on the analysis graphs.

3. BioBench will automatically open the file previously in use in the Acquisition screen. If no file is showing, click the "Open Files" button and select the appropriate file.

4. Select the channel where the lung volume data is stored.

5. Lung volumes can be determined directly from the waveform. Use the mouse to click on an area of the graph. The cursor values for the selected point will show the liter value at that point.

To determine flow rates:

6. Select a region on the graph to analyze. The region should be as linear as possible. For example, the start of the region could be where an inhalation begins and end where the inhalation ends and the wave form levels off or changes direction. The region is selected by clicking on the graph and dragging the cursor over the desired range.

7. With the desired region selected, select "Slope" from the pull-down menu on the right side of the graph. The slope reading represents the flow rate in Liters per second (L/s).

8. The selected region can be narrowed to get a more instantaneous flow rate or expanded to get more of an average flow rate over time.

Specifications:

Bellows capacity:	10 Liters
Measurement Accuracy:	± 0.05 Liters
Output Voltage Range:	0-1 Volts
With Basic Amplifier:	0-10 Volts
Autoclave setting for tubing:	10 min. @ 260°F/127°C

Lafayette Instrument Spiromter

Ordering Information:

All phone orders must be accompanied by a hard copy of your order. All must include the following information:

- 1) Complete billing and shipping addresses
- 2) Name and department of end user
- 3) Model number and description of desired item(s)
- 4) Quantity of each item desired
- 5) Purchase order number or method of payment
- 6) Telephone number

DOMESTIC TERMS

There is a \$50 minimum order. Open accounts can be extended to most recognized educational institutions, hospitals and government agencies. Net amount due 30 days from the date of shipment. Enclose payment with the order; charge with VISA, MasterCard; or pay COD. We must have a hard copy of your order by mail or fax. Students, individuals and private companies may call for a credit application.

INTERNATIONAL PAYMENT INFORMATION

There is a \$50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfer to our account; charge with VISA, MasterCard; or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

RETURNS

Equipment may not be returned without first receiving a Return Goods Authorization Number (RGA).

When returning equipment for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to: Lafayette Instrument Company, 3700 Sagamore Parkway North, Lafayette, IN 47904, U.S.A. Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction.

Please also state the name of the Lafayette Instrument representative authorizing the return. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence.

WARRANTY

Lafayette Instrument guarantees its equipment against all defects in materials and workmanship to the ORIGINAL PURCHASER for a period of one (1) year from the date of shipment, unless otherwise stated. During this period, Lafayette Instrument will repair or replace, at its option, any equipment found to be defective in materials or workmanship. If a problem arises, please contact our office for prior authorization before returning the item. This warranty does not extend to damaged equipment resulting from alteration, misuse, negligence or abuse, normal wear or accident. In no event shall Lafayette Instrument be liable for incidental or consequential damages. There are no implied warranties or merchantability of fitness for a particular use, or of any other nature. Warranty period for repairs or used equipment purchased from Lafayette Instrument is 90 days.

DAMAGED GOODS

Damaged equipment should not be returned to Lafayette Instrument prior to thorough inspection.

When a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. When damage is not detected at the time of delivery, contact the carrier and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for a return authorization for repair or replacement of the damaged merchandise.



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