LFS-113 LOW FLOW AIR SAMPLING PUMP

OPERATION MANUAL

SENSIDYNE®

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⚠ WARNINGS

READ AND UNDERSTAND ALL WARNINGS AND INSTRUCTIONS BEFORE USE

Failure to read, understand, and comply with ALL accompanying literature, product labels, and warnings could result in property damage, severe personal injury, or death.

Read and understand ALL applicable environmental health and safety laws and regulations. Ensure complete compliance with ALL applicable laws and regulations before and during use of this product.

DO NOT remove, cover, or alter any label or tag on this product, its accessories, or related products.

UNDER NO CIRCUMSTANCES should this product be used except by qualified, trained, technically competent personnel.

DO NOT operate this product should it malfunction, require repair, or have a cracked or broken case. DO NOT repair or modify, except as specified in Operation Manual. No user servicable parts located within case. Service to be performed by Sensidyne Authorized Service Departments only.

Use ONLY specified Sensidyne parts when performing maintenance procedures described in this manual. Intrinsic safety certifications become void by substitution of components, unauthorized repair or alteration.

This product is intended for both indoor and outdoor use when protected from splashed or wind blown liquids. The unit is not waterproof so NEVER submerge the unit in water. Pump failure or faulting may result.

Possible static hazard. Do not rub with dry cloth.

DO NOT charge battery in an explosive atmosphere.

This product uses rechargeable Nickel-Metal-Hydride batteries. ALWAYS fully charge before use. Use only battery pack and chargers specified in Operation Manual. DO NOT insert any foreign objects into contact slot. Shorting contacts will blow protective fuse.

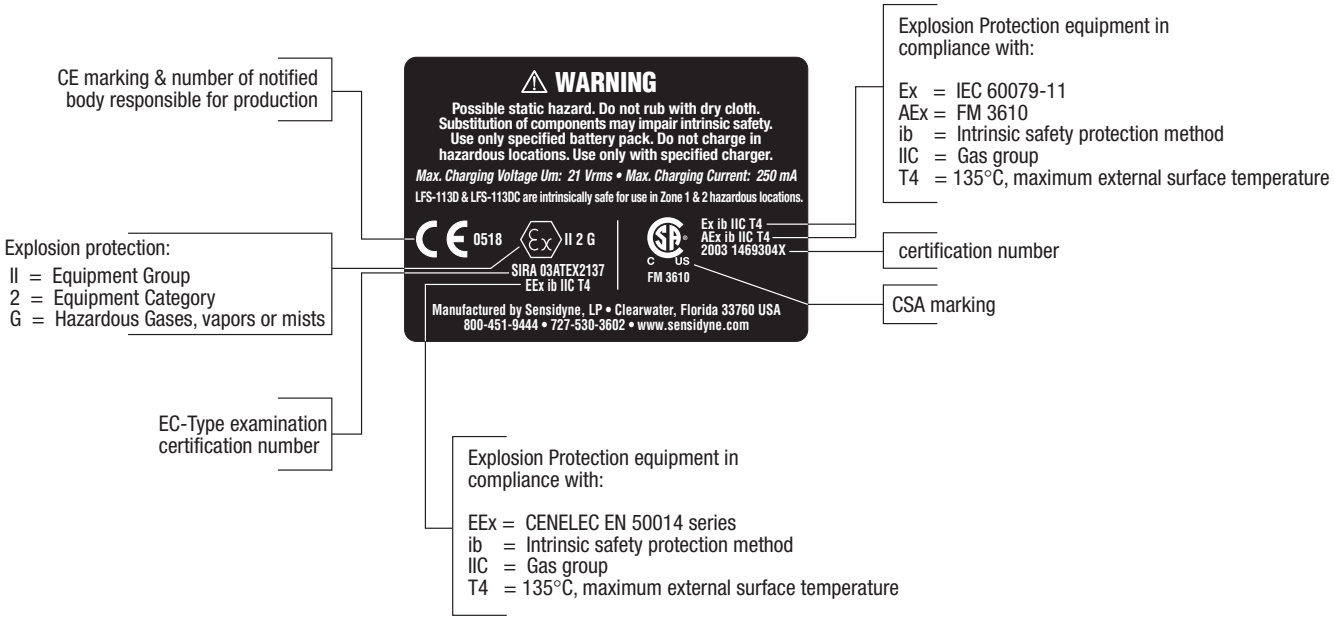
If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Examples of aggressive substances are acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials. Examples of suitable precautions are regular checks as part of routine inspections or establishing from material data sheets that it is resistant to specific chemicals.

DO NOT operate with a dirty or blocked inlet filter or kinked tubing. Pump failure or faulting may result.

Caution: Both charger and battery become warm during charging.

If further translation is required, please contact Schauenburg Electronic Technologies GmbH, the Sensidyne EU Authorized Representative.

CERTIFICATIONS



- **COMPONENTS**
- **See Figures 1.1 and 1.2**

(1) Inlet Boss
The Inlet Boss is located on the filter housing and provides a built-in means of attaching tubing for suction sampling.

(2) Air Inlet Pump Filter
A 10 Micron Nylon Air Inlet Pump Filter protects the pump assembly from dirt.

(3) Flow Adjustment (requires slotted screwdrivwer).

(4) Battery Check
This green LED (B) indicates that sufficient battery power is available to run the pump for an 8 hour period under normal load conditions.

(5) On/Off Switch

(6) Fault Indicator
This red LED (F) indicates a flow fault due to excessive pressure or insufficient battery voltage to maintain flow.

(7) Clock Display (DC Model only)
The Clock Display shows the continuous run-time (in minutes, to two decimal places), and will lock-in the sample time upon fault indication. The time will reset to zero when the power switch is turned OFF and then back ON again.

(8) Outlet Port
The Outlet Port provides a receptacle for the discharge (bag sampling) boss accessory. The cap screw prevents dirt from entering the Outlet Port when not in use.

(9) Discharge (Bag Sampling) Boss
This is an accessory which, when installed into the Outlet Port, provides a means for filling air sampling bags.

(11) Charging Jack
The Charging Jack receptacle is used to connect a charger for recharging the internal battery pack.

(12) Belt Clip

(13) Rechargeable Battery Pack

(14) Tube Breaker Assembly.

(15) Mode Indicator
The Mode Indicator visually confirms the sampling mode selected (via a Black/White indicator)

(16) Mode Selector
The Mode Selector is used to change the sampling mode. The selector is used for unlocking, indexing, and re-locking the mode selector valve while changing from Constant Flow Mode to Constant Pressure (Multi-Flow) Mode.

(17) Hex Key

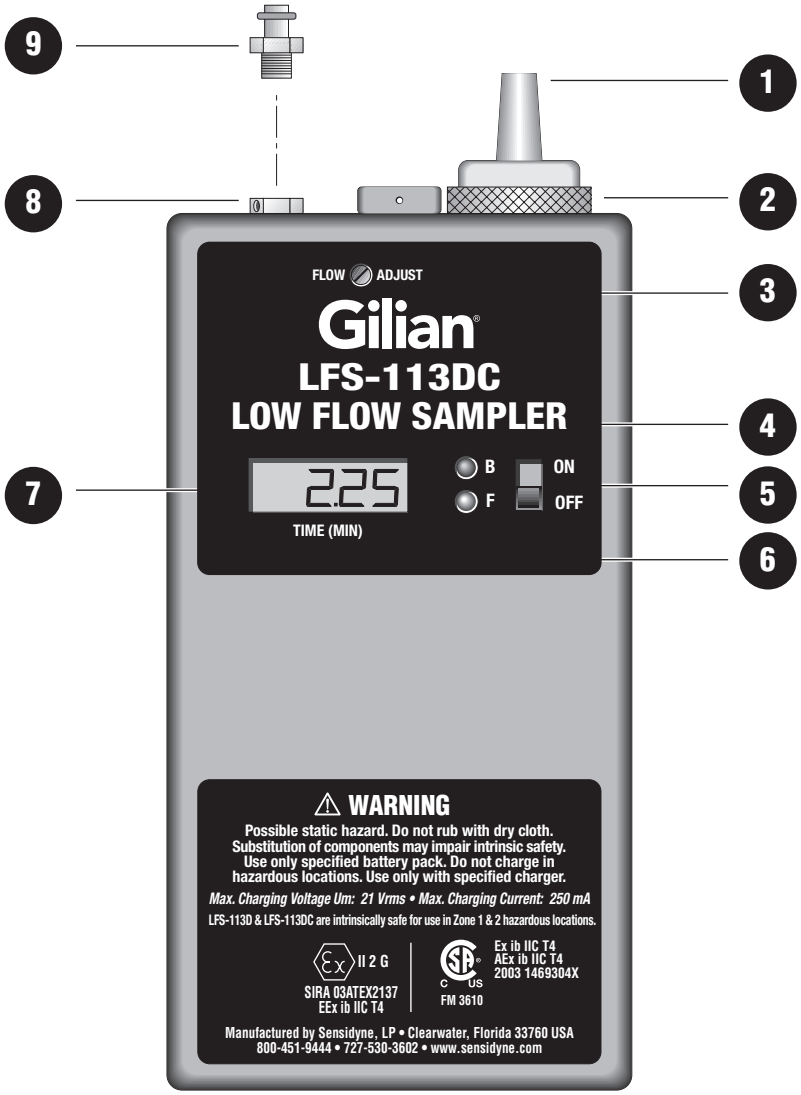


Figure 1.1
LFS-113 Air Sampling Pump: Front View

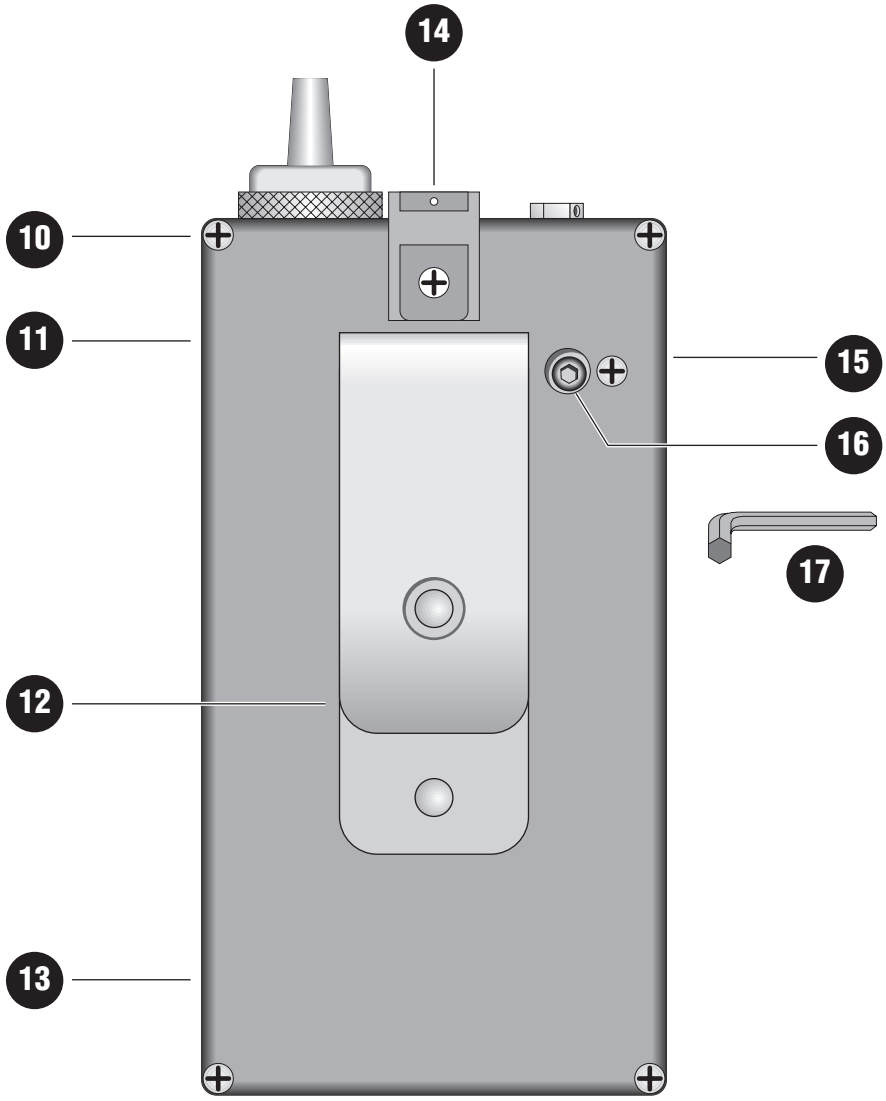


Figure 1.2
LFS-113 Air Sampling Pump: Rear View

SECTION TWO
PUMP OPERATION

2.1 Equipment Set-Up

1) Use an LFS-113 pump with a fully charged battery pack.

2) Attach tubing to the pump.

3) Connect a constant flow [3A] or Multi-Flow [3B] collection device to the tubing.

4) Connect the tubing from the collection device to a Gilibrator 2.

5) Set up and turn on the Gilibrator 2.

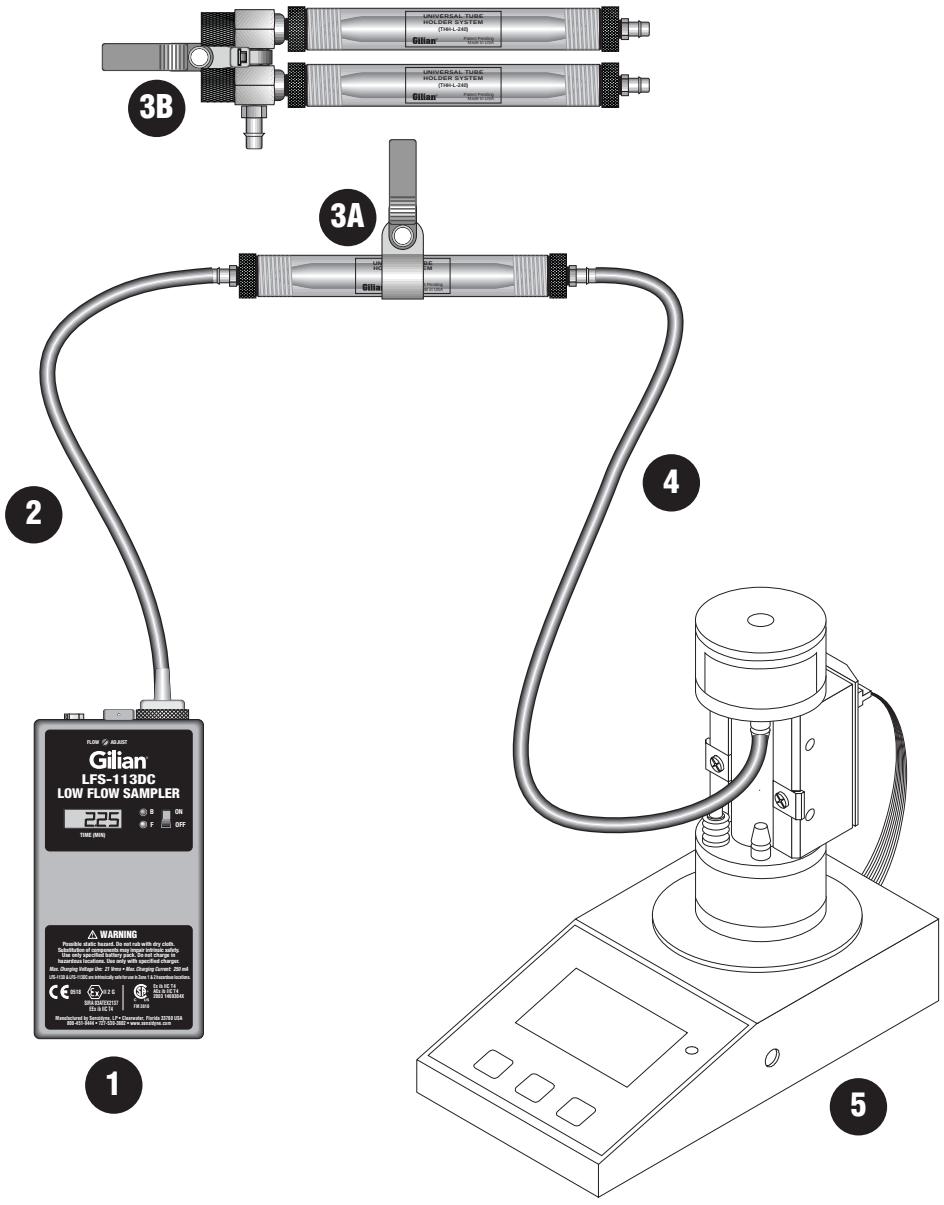


Figure 2.1
Field Calibration Equipment Set-Up

2.2 Field Calibration/Flow Verification

Field calibration (flow rate verification) must be performed before sampling and when setting the flow rate.

- **See Figure 2.2 for Constant Flow**
- **See Figure 2.3 for Multi-Flow**

1) Insert the hex key [1] into the hex head screw on the pump.

2) Turn the key counterclockwise [2] to change the mode.

3) Continue turn the key until the mode indicator shows black for constant flow [Fig. 2.2, #3] or white for multi-flow [Fig. 2.3, #3].

4) Turn the key clockwise [4] to lock your selection into place.

5) Turn on the pump using a pointed instrument such as ball point pen [5].

6) Make sure the Gilibrator 2 is on and working.

7) Set the pump flow rate as follows:

   Constant Flow: Use a slotted screwdriver to make flow adjustments on the pump itself [Fig. 2.2, #6].

   Multi-Flow: Use a slotted screwdriver to make individual flow adjustments on the sampling device [Fig. 2.3, #6].

8) When desired flow rate has been reached, turn off pump and Gilibrator 2. The pump is now ready for sampling.

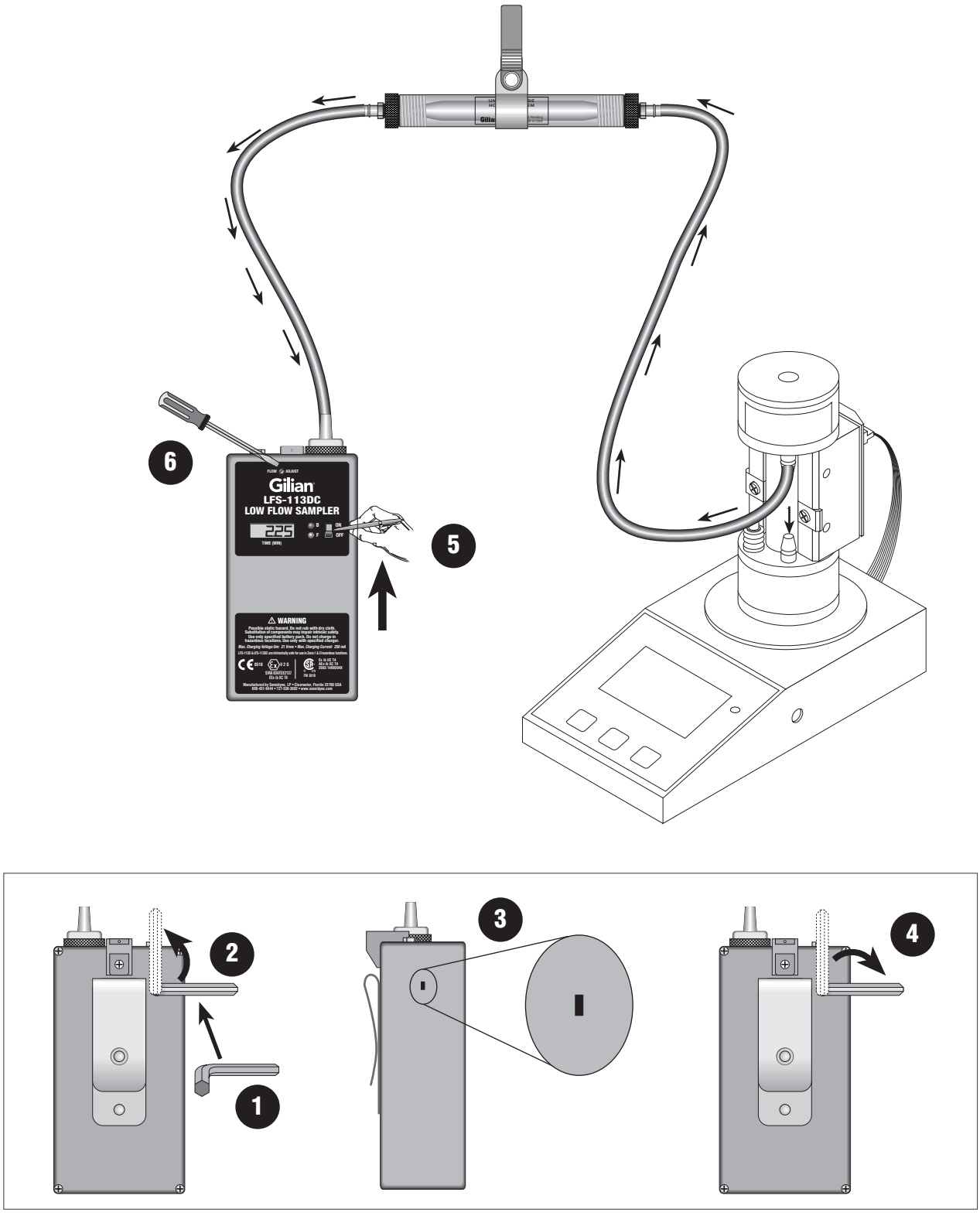


Figure 2.2
Field Calibration: Constant Flow

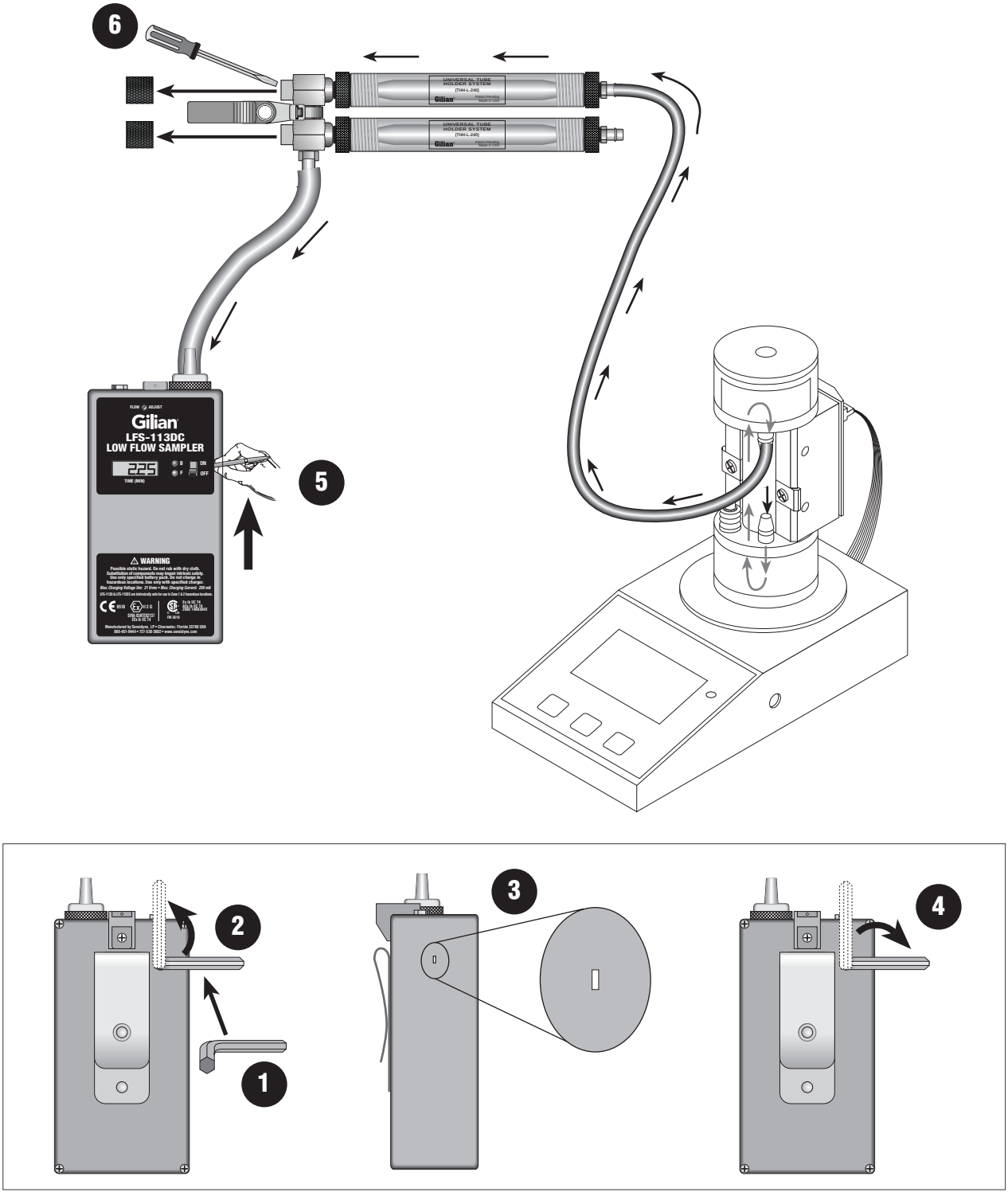


Figure 2.3
Field Calibration: Multi-Flow

2.3 Taking A Sample

1) Use a pointed instrument such as a ball point pen to turn on the pump.

2) Place the pump, tubing and sampling device on the worker as shown in Figure 2.4.

3) When sampling is completed use a pointed instrument such as a ball point pen to turn off the pump. Record the sample data.

Note for Clock Models

When the pump is shut off after a sample run, the accumulated run time minutes (to the nearest 0.01 minute) are displayed. To calculate totaled air volume sampled, use the following formula:

Total Air Volume (Liters) = Air Flow Rate (cc/min) x Sample Time (minutes) ÷ 1000 cc/Liter

Figure 2.4
Sampling

3.1 Battery Maintenance

NOTE

Do not charge battery pack while in an explosive atmosphere.

The LFS-113 pump uses rechargeable Nickel-Metal-Hydride batteries that must be fully charged and properly maintained for maximum run time. The battery pack is rated at 4.8 Volts (720 mAh).

Make certain charger plug is fully inserted into jack on battery pack (see Figure 1.2, #11 for charger jack location).

CAUTIONS & NOTES

Both charger and battery pack become warm during charging.

Do not short battery terminals. Shorting will blow internal fuse.

All NiMH batteries lose charge when not in use. If battery pack has not been charged for 3-4 days, recharge battery before use. This ensures that batteries are fully charged just prior to sampling. NiMH batteries stored for extended time periods should be recharged every 1-2 months to avoid complete discharge.

Battery pack has an estimated life of 300–500 charge/discharge cycles, depending on use. Table below shows estimated battery life based on usage level.

Pump Usage	Weekly Use	Est. Battery Life
High	40-60 hrs	1.0-1.5 yrs
Medium	20-39 hrs	1.5-2.5 yrs
Low	< 20 hrs	2.5 yrs

- **Chargers**

Single Station Charger

A dual rate charger that can be switched from constant-rate charge to trickle charge.

LFATR Multi-Station Charger

A dual rate charger offering five-station timed constant-rate charging that automatically defaults to trickle charge.

3.2 Filter Maintenance

Under normal operating conditions, the pump filter should be changed after approximately six months or 250 hours of operation, or when needed. Failure to change the filter as it becomes dirty will decrease the pump's back pressure capability and performance envelope.

- **See Figure 1.1, #1**

Blow all dust and debris from around the Filter Housing. Grasp the knurled edge of the filter housing assembly and rotate counterclockwise. Check the new filter housing assembly to make sure that the sealing O-ring is present on the internal boss. Install the new Filter Housing Assembly onto the pump rotating the knurled edge clockwise. *Do Not Overtighten!*

APPENDIX A
PARTS LIST

Accessories

Part Number	*Description*
200504	Tubing, 1/8" ID x 1/16" W (10 ft)
200505	Tubing, 1/8" ID x 1/16" W (3 ft)
800565-4	Diagnostic Panel with Carrying Case (2–50cc, 20–200cc, 50–800cc)
800400	Carrying Case (18" x 13" x 7")
800093	Filter Assembly
800093-3	Filter Assembly (pkg of 3)

Spare Parts

Part Number	*Description*
400324	5-Unit Charger, 120V
298-0005-01	Single Unit Charger, 120V
400373	5-Unit Charger, 230V [CE]
400198-1	Single Unit Charger, 230V, Euro Plug [CE]
800222	Tool Kit
800685	Air Boss Kit (required for bag sampling)
360-0041-01	LFS-113 Manual

APPENDIX B
SPECIFICATIONS

Additional Features	Flow Fault indication LED Batt check LED Belt clip Dual filtration system Sorbent tube end breaker External flow adjust
Options	Elapsed timer clock module (DC models only): LCD display automatic instant-fault shutdown function RFI shielding
Dimensions	2.50" (W) x 1.38" (H) x 4.63" (L) 63.5 mm (W) x 34.9 mm (H) x 117.5 mm (L)
Weight	Main Unit: 12 oz (340 g)
Operating Range (Constant Flow Mode)	5–200 cc/min, back pressures to 25" H_2O
Operating Range (Constant Pressure Mode)	1–350 cc/min, flows adjustable through a single or multiple tube flow controller.
Pressure Range	Backpressure up to 25" H_2O.
Flow Control	± 5% of set point
Battery Type	Rechargeable Nickel-Metal-Hydride battery pack
Battery Output	4.8 v, 720 mAh
Charging	Internal (external with adapter).
Operating Temperature	-20° to 45°C (-4°F to 113°F)
Storage Temperature	-40° to 45°C (-40°F to 113°F)
Charging Temperature	0° to 45°C (32°F to 113°F)

APPENDIX C
SERVICE

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