

LUDLUM MODEL 239-1F

FLOOR MONITOR

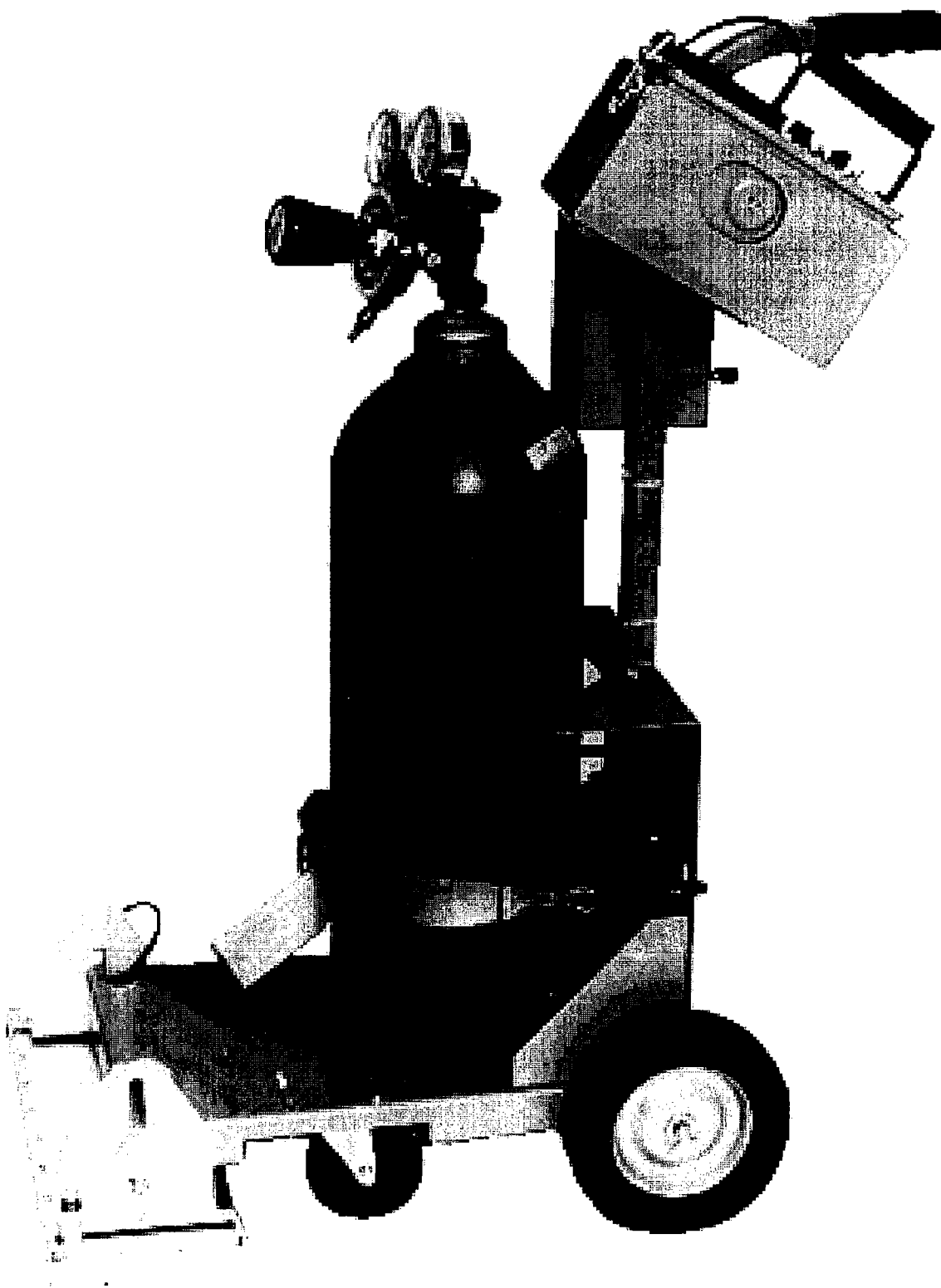
Revised January 1999



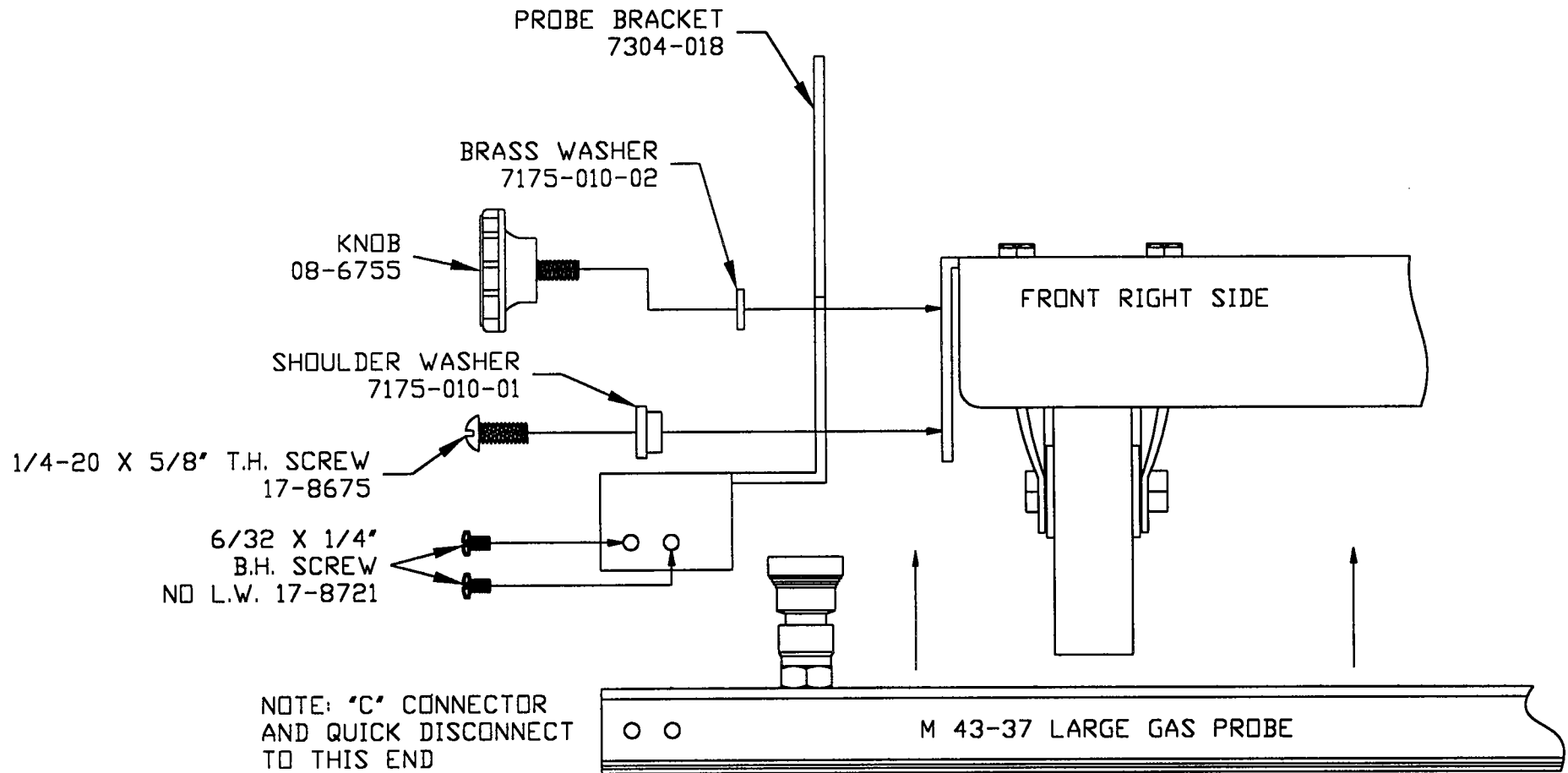
LUDLUM MEASUREMENTS, INC.

**501 OAK ST., P.O. BOX 810
SWEETWATER, TX 79556
915/235-5494 FAX: 915/235-4672**

M239-1F Floor Monitor
May 1998



REV #	ALTERATIONS	DATE	BY
1	VALID	3-17-99	DDW



DWN DDW	DATE 3-17-99	CHECKED JGW 3-17-99	APPROVED RL 3-17-99
TITLE: M 239-1F PROBE INSTALLATION			
LUDLUM INSTRUMENTS, INC. 301 ONE STREET SHELTON, TEXAS 75686	SERIES 404	SHEET 37A	

**M239-1F Floor Monitor
January 1999**

TABLE OF CONTENTS

1.	GENERAL	1
2.	SPECIFICATIONS	1
3.	OPERATING PROCEDURES	2
4.	MAINTENANCE.....	3
5.	REPLACEMENT PARTS LIST	3

M239-1F Floor Monitor

January 1999

1. GENERAL

The Model 239-1F Floor Monitor is a gas proportional floor monitor detector mounted on a roll-around cart. The instrument features a flow system, quick-connects, a gas bottle mount, and a means to adjust the height of the detector from the floor for optimum performance. A nuclear counting gas bottle, Regulator, and a survey instrument are required for the operation of the floor monitor.

The survey instrument should be capable of supplying 1800 volts to the detector for P-10 type counting gas and 2500 volts for other types of counting gas.

The floor monitor utilizes quick-connects on the supply side of the input flow meter and the external outlet line of the output flow meter for flow operation. An input line to the flowmeter with quick-connect is attached from the portable gas bottle mounted on the frame of the cart.

2. SPECIFICATIONS

- **DETECTOR SIZE:** 18.250" L X 6.250" W X 0.75" D

- **DETECTOR ACTIVE AREA:** 582 cm²

- **ADJUSTABLE HEIGHT:** Detector adjusts from 0.125" to 3" from floor

- **WINDOW MATERIAL:** (a) 0.4 or 0.8 mg/cm² (one or two layers metalized mylar) alpha, beta/gamma; (b) 3.9 mg/cm² (one layer metalized mylar, one layer 3.5 mg/cm² mylar) beta/gamma; (c) 7.9 mg/cm² (one layer metalized mylar, one layer 7.5 mg/cm² mylar) gamma

- **EFFICIENCY:** Alpha, 35%; Beta, 45% (SrY-90); Gamma, 1%. Efficiencies are expressed in 2pi geometry and calculated with a probe using the 0.8 mg/cm² mylar window at a fixed height of 3/16" distance from the floor

- **COUNTER:** Ludlum Model 12 Count Ratemeter, Model 2221 Scaler/Ratemeter, Model 2224 Scaler/Ratemeter, Model 2350-1 Data Logger, Model 2360 Data Logger

- **CONNECTOR:** Series "C" type

- **QUICK-CONNECTS:** Swaglock, 1/8 mpt to 1/4 O. D. tubing

- **GAS CONSUMPTION:** approximately 50 cc/min.

- **FLOW METERS:** Adjustable IN: 20-200 cc/min, OUT: 45-240 cc/min

- **FLOW RATE:** 35 cc/min after purging

- **GAS BOTTLE CYLINDER BRACKET:** Size is 6 inch diameter x 21 inches; 0.24 cu. ft. capacity

- **WIRE:** 0.001 Bar 774 Tungsten

- **STANDOFFS:** Concord 1102-23 - 0019

- **CART:**

- Handle Height: 3.5 ft.

M239-1F Floor Monitor
January 1999

- Length: 26" including wheels, but excluding handle.
- Width: 18.25"
- Wheel Size: Rear 8", front 3" swivel.
- Finish: Computer Beige polyurethane paint.
- Weight: 20 lbs. without gas cylinder and counting instrument.
- ✓ See instrument manual for specifications and instructions for the counting instrument.

3. OPERATING PROCEDURES

- Connect the gas quick-connect from the portable gas supply to the input flowmeter box.
- ✓ **CAUTION:** If the output has a quick-connect fitting, insert a male quick-connect prior to applying the gas supply.
- Turn valve on gas supply bottle to the OPEN position. The high pressure regulator should show the supply pressure from the gas bottle.
- Turn outlet regulator valve clockwise to register 0.5-1 psi.
- Open the flowmeter valve on the cart's input flowmeter. Open the small needle valve on the regulator 1/4 turn (if installed). Monitor the input flowmeter on the flowmeter box for flow indication. Flow should not exceed 200 cc/min for flush. After flush, flow may be reduced to 20-30 cc/min. Allow 60 minutes to purge the system.
- ✓ **NOTE:** Flush time can be reduced by disconnecting the output line at the probe and increasing the flow rate.
- Close the gas supply bottle. Disconnect the input quick-connect. Then disconnect the output quick-connect.
- ✓ **NOTE:** The outlet flow indicator on the flowmeter box will not immediately indicate flow when system is first turned ON. The primary purpose of the outlet flowmeter on the flowmeter box is to check for system leaks.
- Connect the detector to the counting instrument
 - (1) HV is preset at the factory to read alpha, beta, and gamma.
 - (2) Background count will read approximately 1000-1400 cpm.
 - (3) If only alpha detection is required, the HV may be adjusted to where the background will read 0-5 cpm.
- Adjust the height of the detector for optimum performance.

M239-1F Floor Monitor
January 1999

4. MAINTENANCE

Periodic maintenance consists of checking the general condition of the detector, gas tubing/fittings, signal/HV cable, and the window. Malfunction of the detector could be caused by a gas leak or a broken HV wire inside the detector.

In case of low count, the detector should be checked for gas leaks. Check the input and output flowmeter on the cart. A reduced or no output flow compared to the input would indicate a gas leak in the system. Any holes in the window will allow counting gas to escape causing degradation of detector efficiency. If the window needs replacing in the detector, the detector should be checked both for gas leaks and HV shorts before replacing detector on the cart.

Indication of a broken wire is zero (0) counts on the counting instrument. Foreign particles, wire tails on the standoff posts, or solder peaks can cause excessive counts. Loose wires can cause reduced count.

To replace a broken or loose wire, remove the window, being careful not to tear or puncture the window material. Replace the wire and clean the chamber thoroughly. Inspect the gasket for proper condition before replacing the window. Check for gas leaks and proper operation before installing the detector on the cart

M239-1F Floor Monitor
January 1999

5. REPLACEMENT PARTS LIST

QTY.	DESCRIPTION	PART NO.
MODEL 239-1F FLOOR MONITOR CART		
1 EA	2 Stage-Regulator 8L-350	310017
1 EA	Tie Down Assembly	2310124
1 EA	Model 239 Small Box (M12)	2175-024
1 EA	Model 239 Port. Neoprene Small Box Set	4175-061
1 EA	Model 239 Large Box (M2350/2221)	7175-037
1 EA	M 239-1F Neo Large Box Set	4175-062
1 EA	M 239-1F Welded Cart Assy.	2404-005
2 EA	Shoulder Bushing	7175-010-01
2 EA	Brass Washer	7175-010-02
2 EA	Hand Knob	7175-010-03
2 EA	Stud	7175-010-04
1 EA	Manifold Blocks	7175-014-01
1 EA	Box Side	7175-014-03
1 EA	Box Back	7175-015-01
2 EA	Probe Holder Bracket	7304-013
1 EA	Bottom Bottle Bracket	7404-003
2 EA	Side Bracket	7404-006
1 EA	Main Box Screened	9175-014
1 EA	5 Ft. "C" Cable	8303-022
10 EA	PLT2M Cable Tie	03-5410
4 EA	Stem Fit-B-OC4-D-400	13-7912
2 EA	M Pipe Fit-B-QC4-B-2PM	13-7920
8 EA	6-32 x 1/4 BH Screw	17-8518
1 EA	10-32 x 3/8 BH Screw	17-8526
12 EA	8-32 x 1/2TH	17-8552
2 EA	1/4-20 x 5/8TH Screw	17-8675
3 EA	8-32 x 1/4 BH Screw	17-8721
2 EA	Grommet-2170	18-8774
8 EA	8-32 Reg Pat Nut	20-9006
8 EA	#8 ITL Washer	20-9010
1 EA	Flowmeter-RMA-150-SSV	21-9547
1 EA	Flowmeter-RMA-150	21-9548
15 FT.	Vinyl Tubing 59002	22-9514
12 FT.	Swaglok-B-400-1-2	22-9522
10 EA	Swaglok-Insert B-405-2	22-9639
11 EA	Nut Fitting-#61065 1/4"	22-9689
28 IN.	Edge Trim 8451A53	22-9828

**M239-1F Floor Monitor
January 1999**

QTY.	DESCRIPTION	PART NO.
MODEL 43-37 GAS PROPORTIONAL DETECTOR		
*	Model 43-37	47-1143
1 EA	Face Assembly	4304-017
1 EA	Hex Screen	7304-011
1 EA	Holding Ring	7304-012
1 EA	Screw-In "C" Connector	13-7751
2 EA	Pipe Fitting	13-7920
10 EA	Standoff	18-8807
9.3 FT	Silicone Cord	22-9631