
LUDLUM MODEL 43-44-1 AIR PROPORTIONAL PROBE

November 2010



LUDLUM MEASUREMENTS, INC.
501 OAK STREET, P.O. BOX 810
SWEETWATER, TEXAS 79556
325-235-5494, FAX: 325-235-4672

STATEMENT OF WARRANTY

Ludlum Measurements, Inc. warrants the products covered in this manual to be free of defects due to workmanship, material, and design for a period of twelve months from the date of delivery. The calibration of a product is warranted to be within its specified accuracy limits at the time of shipment. In the event of instrument failure, notify Ludlum Measurements to determine if repair, recalibration, or replacement is required.

This warranty excludes the replacement of photomultiplier tubes, G-M and proportional tubes, and scintillation crystals which are broken due to excessive physical abuse or used for purposes other than intended.

There are no warranties, express or implied, including without limitation any implied warranty of merchantability or fitness, which extend beyond the description of the face there of. If the product does not perform as warranted herein, purchaser's sole remedy shall be repair or replacement, at the option of Ludlum Measurements. In no event will Ludlum Measurements be liable for damages, lost revenue, lost wages, or any other incidental or consequential damages, arising from the purchase, use, or inability to use product.

RETURN OF GOODS TO MANUFACTURER

If equipment needs to be returned to Ludlum Measurements, Inc. for repair or calibration, please send to the address below. All shipments should include documentation containing return shipping address, customer name, telephone number, description of service requested, and all other necessary information. Your cooperation will expedite the return of your equipment.

**LUDLUM MEASUREMENTS, INC.
ATTN: REPAIR DEPARTMENT
501 OAK STREET
SWEETWATER, TX 79556**

**800-622-0828 325-235-5494
FAX 325-235-4672**

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Introduction

The Ludlum Model 43-44-1 is an air proportional probe used for the detection of alpha radiation. The probe requires an instrument with a 2 mV or less input sensitivity and a minimum of 2500 volt power supply, such as a Ludlum Model 12.

The probe will detect alpha energy of 3 MeV or greater, with an 8% efficiency (4π), when used with a 39 inch connecting cable. Shorter connecting cables will produce greater counting efficiency.

The detector chamber is environmentally sealed and vented to a drying agent to reduce moisture problems. The window is secured to the body of the probe by 12 screws. The window is covered by 0.4 mg/cm^2 metallized mylar and has an active area of 100 cm^2 . The desiccants can be replaced by removing the two screws holding the desiccant holder and inserting the fresh dehydrators.

The operating voltage for the Model 43-44-1 is 2,050 volts at sea level, decreasing approximately 50 volts per 2,000 ft. altitude.

The handle is secured by four screws and is designed so it can be positioned two different ways for user convenience.

The unit is strung with 8 equally spaced 0.001 diameter platinum wires with tension of approximately 2 ounces. The wire is soldered to standoffs which place the wire midway between the window and the floor of the chamber.

Unpacking and Repacking

Remove the calibration certificate or detector functional check certificate and place it in a secure location. Remove the detector(s) and accessories (if applicable) and ensure that all

items listed on the packing list are in the carton. If multiple detectors are included, refer to the calibration certificates for serial number (SN) matches. To return an instrument or detector for repair or calibration, provide sufficient packing material to prevent damage during shipment and affix appropriate warning labels to promote careful handling. The following items and information should also be included to ensure quick turnaround time of your equipment:

- instrument(s) and related cable(s)
- brief description as to the reason for return
- description of service requested
- return shipping address
- customer name and telephone number

Specifications

Window: 0.4 mg/cm²

Window Area: Active – 100 cm²

Efficiency for ²³⁹Pu: 8% (4π)

Operating Voltage: Altitude Dependent

2,050 volts at sea level

2,000 volts at 2,000 feet

1,925 volts at 5,000 feet

1,875 volts at 7,000 feet

Finish: Anodized

Size: 10.2 x 8.9 x 23.6 cm (4 x 3.5 x 9.3 inches)(H x W x L)

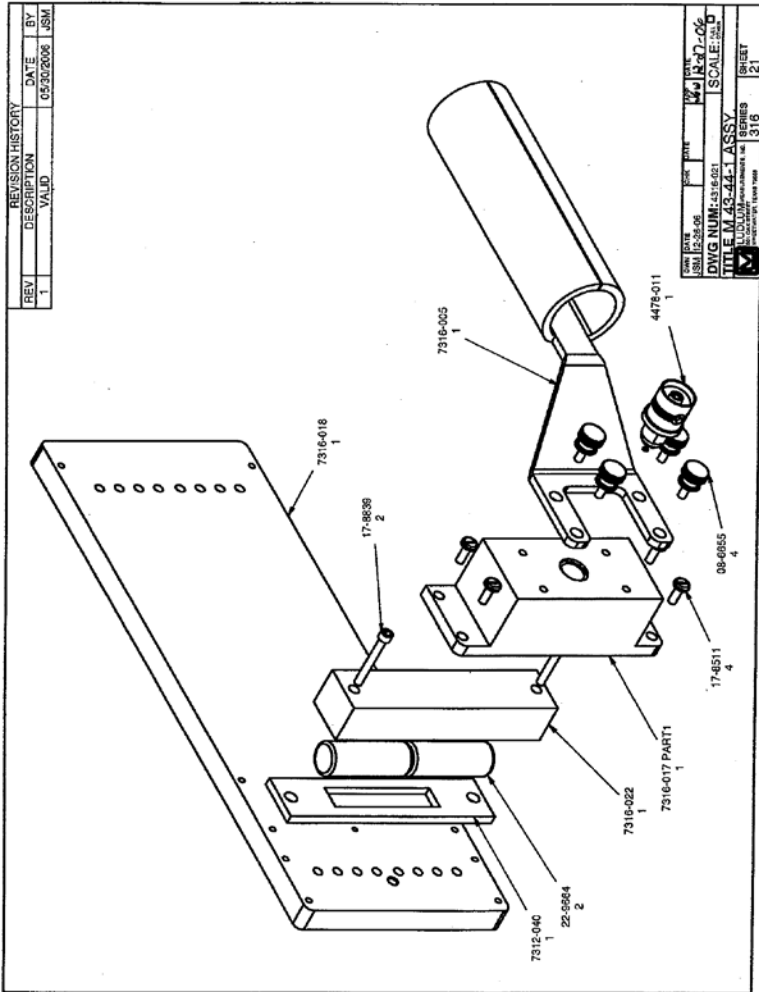
Weight: 0.7 kg (1.5lb)

Parts List

Model 43-44-1 Air Proportional Probe

| <u>Reference</u> | <u>Description</u> | <u>Part Number</u> |
|------------------|---|--------------------|
| UNIT | Completely Assembled Model 43-44-1 Air Proportional Probe | 47-2385 |
| 1 ea | Det. w/o handle | 4316-021 |
| 1 ea | Handle | 7316-005 |
| 1 ea | Detector Screen w/Mylar | 4312-036 |
| 1 ea | Window | 7312-038 |
| 1 ea | Desiccant Hldr. Gasket | 7312-040 |
| 1 ea | Vinyl Cover | 7312-041 |
| 1 ea | Connector Block | 7316-017 |
| 1 ea | Detector Body | 7316-018 |
| 1 ea | Desiccant Holder | 7316-022 |
| 4 ea | 6-32 x 3/8 Brass Screws | 17-8659 |
| 2 ea | Blk. Knob #4 | 08-6655 |
| 1 ea | Recpt-Scrw-In "C" LMI | 4478-011 |
| 2 ea | 4-40 x 7/8 Soc. Cap Screws | 17-8839 |
| 1 ea | Feedthru-111-16-0519 | 18-8814 |
| 16 ea | Feedthru-PM-1495-01-CT-9 | 18-9074 |
| * | 0.001 Bare Wire | 21-9327 |
| * | White Teflon Wire #22 | 21-8993 |
| 2 ea | Dehydrators | 22-9664 |
| * | Neoprene Cord Sponge | 22-9631 |

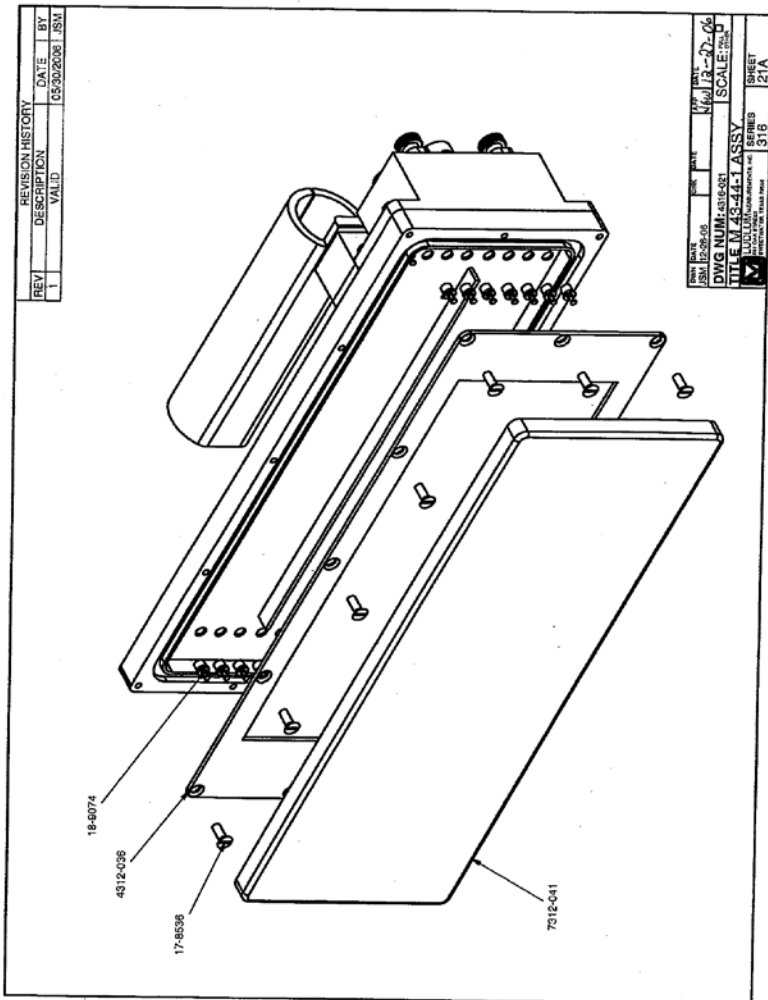
Model 43-44-1 Air Proportional Probe



| REVISION HISTORY | | |
|------------------|-------------|----------------|
| REV | DESCRIPTION | DATE BY |
| 1 | VALID | 05/20/2008 JSM |

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|---------------------------|-------|------------|-------|
| DATE | ISSUE | SCALE | SHEET |
| 05/20/08 | 1 | 1:1 | 21 |
| DWG NUM: 4316-01 | | SCALE: 1:1 | |
| TITLE: M.43-44-1 ASSY | | SERIES | |
| LUDLUM MEASUREMENTS, INC. | | 316 | |
| LUDLUM MEASUREMENTS, INC. | | 21 | |

Model 43-44-1 Air Proportional Probe



| REVISION HISTORY | | | |
|------------------|-------------|------------|-----|
| REV | DESCRIPTION | DATE | BY |
| 1 | VALID | 05-30-2008 | JSN |

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| DATE | REV | BY | SCALE |
| 05-30-08 | 1 | JSN | 1:1 |
| DWG NUM: 4312-038 | | SCALE: 1:1 | |
| TITLE: M 43-44-1 ASSY | | SHEET | |
| LUDLUM MEASUREMENTS, INC. | | 31B | |
| 1100 LUDLUM DRIVE, WILSONVILLE, OR 97154 | | 121A | |