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American National Standard

bases for gm counter tubes

interrelationship of quartz-fiber electrometer type exposure meters and companion exposure meter chargers

ANSI N42.5-1965 — ANSI N42.6-1980

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American National Standard Bases for GM Counter Tubes

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American National Standard Interrelationship of Quartz-Fiber Electrometer Type Exposure Meters and Companion Exposure Meter Chargers

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Foreword

(This Foreword is not a part of ANSI N42.6-1980, American National Standard Interrelationship of Quartz-Fiber Electrometer Type Exposure Meters and Companion Exposure Meter Chargers.)

The first version of this standard was approved as ANSI N3-1965 on September 20, 1965 after being letter ballotted on June 2, 1964 by ANSI Technical Committee N 3 (Now N 42). It was reaffirmed in 1971, based on N 42 letter ballot of December 14, 1970, and was redesignated as N 42.6. The standard has been revised and the revision approved by N 42 letter ballot of May 16, 1977.

At the time it approved this standard, the American National Standards Committee N 42 on Radiation Instrumentation had the following personnel:

Louis Costrell, *Chairman* **David C. Cook,** *Secretary*

Organization Represented	*Name of Representative*
American Chemical Society	
American Conference of Governmental Industrial Hygienists	Jesse Lieberman
American Industrial Hygiene Association	
American Nuclear Society	Frank W. Manning
American Society of Mechanical Engineers	P. E. Greenwood
American Society of Safety Engineers	
Atomic Industrial Forum	
Health Physics Society	J. B. Horner Kuper Robert L. Butenhoff (*Alt*)
Institute of Electrical and Electronics Engineers	Louis Costrell D. C. Cook (*Alt*) P. J. Spurgin (*Alt*) J. Forster (*Alt*)
Instrument Society of America	M. T. Slind J. E. Kaveckis (*Alt*)
Lawrence Berkeley Laboratory	Lee J. Wagner
Manufacturing Chemists Association	
National Electrical Manufacturers Association	Theodore Hamburger
Oak Ridge National Laboratory	Frank W. Manning D. J. Knowles (*Alt*)
Scientific Apparatus Makers Association	
US Department of the Army, Materiel Command	Abraham E. Cohen
US Department of Commerce, National Bureau of Standards	Louis Costrell
US Civil Defense Preparedness Agency	Carl R. Siebentritt, Jr
US Department of Energy	
US Naval Research Laboratory	David C. Cook
Members-at-Large	J. G. Bellian O. W. Bilharz S. H. Hanauer John M. Gallagher, Jr Voss A. Moore R. F. Shea E. J. Vallairo

Carl R. Siebentritt, Jr, of the US Civil Defense Preparedness Agency served as project leader for this standard and the following constituted the review group:

Argonne National Laboratory	Health Physics Division
Air Force Systems Command	Harley Piltingsrud
Army Electronics Command	A. E. Cohen
Baird Atomics	Dosimeter Products Specialist
Battelle Northwest Laboratory	Lyle Carter
Brookhaven National Laboratory	Charles Meinhold
Dosimeters, Inc	Thomas Jackson
National Bureau of Standards	Thomas Loftus
Naval Electronic Systems Command	C. S. Hollander
Nuclear Associates	H. Glasser
Oak Ridge National Laboratory	John Auzier
US Civil Defense Preparedness Agency	E. F. Williams
Victoreen Instrument Co	J. G. Johnston

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ANSI
N42.5-1965

American National Standard Bases for GM Counter Tubes

Standard bases for GM counter tubes shall be as follows:

(1) 3-Pin "Pee Wee" base (JETEC-A3-1) with the following pin connections:

Pin No.	Connection
1	Cathode
2	Anode
3	No Connection

(2) 4-Pin "Medium" base (JETEC-A4-9) with the following pin connections:

Pin No.	Connection
1	No Connection
2	Anode
3	No Connection
4	Cathode

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American National Standard Interrelationship of Quartz-Fiber Electrometer Type Exposure Meters and Companion Exposure Meter Chargers

1. Purpose and Scope

The purpose of this standard is to specify interrelating mechanical and electrical properties so that quartz-fiber exposure meters may be used with any charger. Other characteristics peculiar to these devices but not affecting the interrelationship between chargers and exposure meters are purposely omitted. These are described in ANSI N13.5-1972.

2. Quartz-Fiber Exposure Meters

2.1 zero set voltages. The voltage required for zero set shall be in the range of 140 V to 195 V.

2.2 distance to charging electrode. The distance from the end of the exposure meter to the charging electrode shall be 5.59 ± 0.76 mm (0.220 ± 0.030 in) in the charging position, and 3.81 mm (0.150 in) minimum in the normal position (see Fig 1).

2.3 force to close switch in exposure meter. The charging electrode shall make electrical contact with the internal electrometer under an applied force of from 2½ lb (11 N) to 5½ lb (25 N) over a temperature range of −10 °C to 50 °C (14 °F to 122 °F).

2.4 charging recess diameter. The diameter of the charging recess shall be 9.27 ± 0.13 mm (0.365 ± 0.005 in) to a depth of at least 4.83 mm (0.190 in).

The diameter of the charging recess shall be a minimum of 9.14 mm (0.360 in) to a depth of at least 6.60 mm (0.260 in).

2.5 outside diameter. The exposure meter shall be a uniform right cylinder and shall have an outside diameter, exclusive of the clip and marking, of 15.9 mm (0.625 in) maximum and 12.57 mm (0.495 in) minimum.

2.6 length. The exposure meter shall not exceed 115 mm (4.5 in) in length.

2.7 center electrode diameter. The charging electrode shall have an outside diameter of from 1.02 mm (0.040 in) to 2.54 mm (0.100 in). If a tube, the electrode shall have a wall thickness of at least 0.25 mm (0.010 in) and the tube shall have a closed end.

2.8 electrode concentricity. The charging electrode shall be coaxial with the charging recess to within 0.13 mm (0.005 in).

3. Exposure Meter Charger

3.1 charger voltage. The charging potential shall be continuously variable between 100 V and 220 V and shall be of positive polarity.

3.2 pedestal height. The overall active height of the pedestal from the top of the charging electrode to the top of the bottoming feature shall be 9.53 ± 1.91 mm (0.375 ± 0.075 in).

3.3 bottom feature. As an exposure meter is moved downward over the charging contact assembly, forces in excess of 8 lb (36 N) shall cause the exposure meter barrel to bottom with the nonmoving mounting of the charging contact assembly.

3.4 charging electrode force. The charging electrode shall be capable of applying a force of between 6½ and 8 lb (29 N and 36 N) to the charging pin of the exposure meter. In no case shall it be possible to apply more than 8 lb (36 N) to the charging pin of the exposure meter.

3.5 light switch force. The force required to activate the light switch (if included) shall be between 0.250 lb (1.1 N) and 1.5 lb (6.8 N).

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3.6 pedestal diameter. The outside diameter of the charging pedestal shall be 8.76 ± 0.13 mm (0.345 ± 0.005 in).

3.7 charging electrode diameter. The diameter of the contact end of the charging electrode shall be 1.91 ± 0.64 mm (0.075 ± 0.025 in).

3.8 charging electrode height. The charging electrode or cap shall extend above the top of the charging pedestal no less than 0.13 mm (0.005 in) and no more than 1.02 mm (0.040 in).

3.9 electrode concentricity. The charging electrode shall be coaxial with the pedestal within 0.13 mm (0.005 in).

3.10 light switch travel. The light shall be turned on when an exposure meter is placed in position on the charging contact assembly and is moved downward a distance no greater than 3.18 mm (0.125 in).

3.11 charging recess. If the pedestal is recessed in a well, the minimum inside diameter of the charging socket well shall be 16 mm (0.630 in).

3.12 contact. The contact resistance between any two surfaces designated to be at the same electrical potential shall not exceed one megohm.

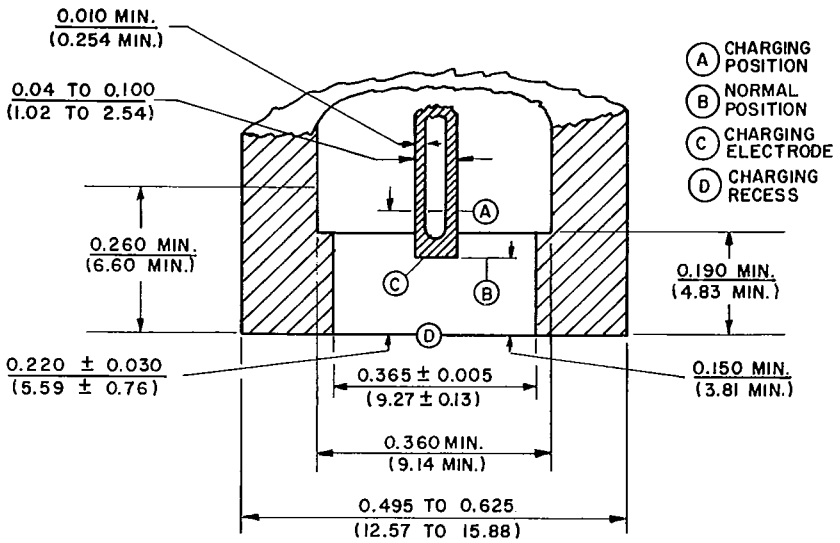
4. Exposure Meter and Charger

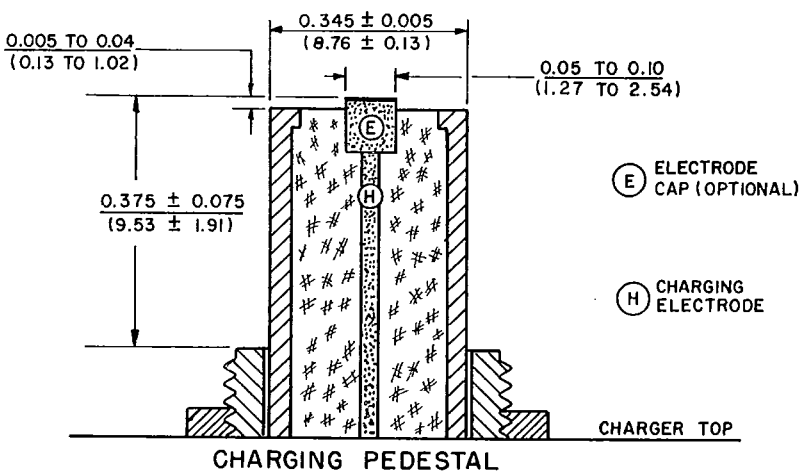
4.1 contact. During the normal charging operation, the exposure meter and charger shall provide for electrical contacts between both the center electrodes and the shells, or cases of each. At no time during the operation shall the contact resistance between the exposure meter and charger exceed one megohm.

4.2 light. The charging unit shall permit the position of the indicating element on the scale of the exposure meter to be clearly resolved. If the charger has self-contained illumination, this criterion shall apply over the life of the battery utilized.

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NOTE: Dimensions in inches and ( ) mm. Original dimensions in inches.

Fig 1
Dimensions for Radiological
Exposure Meter and Exposure Meter Charger

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