

ENCLOSURE 5

User Safety Instructions for the
eV Products CPC-48 Thickness Gauge

DOCUMENT

User Safety Instructions for the CPC-48 Thickness Gauge

I. Introduction to the CPC-48

1. The CPC-48 is an advanced design instrument that provides a high performance weight and thickness measurement that can fulfill many industrial measurement applications. The CPC-48 has been designed for ease of maintenance and use and, above all, safety. These user safety instructions will familiarize you with the unit's characteristics and give you important instructions for the safe and proper use of this equipment. **Each recipient of a CPC-48 is required to familiarize himself with these instructions and comply with the license information that follows.**
2. eV PRODUCTS has pioneered the development of efficient, highly reliable and safe-to-use digital radioisotope gauging systems. The CPC-48 contains state-of-the-art digital microelectronics to create a gauge with exceptional performance, size and safety characteristics.

IMPORTANT NOTICE

The CPC-48 emits potentially dangerous radiation from the front of the instrument when the safety shutter is opened.

Be certain at all times to keep persons from being in front of the instrument when the radiation shutter is opened. Persons shall not stand any closer than 5 feet from the front of the instrument when the shutter is opened.

Shutter tests are required at least every six months. See instructions below (Section II.4.c) on how to perform shutter tests.

A leak test is required at least every six months. This test must be performed by eV Products or an eV Products authorized representative (see Section II.4.d).

II. General Safety and License Information

1. The CPC-48 contains a radiation source consisting of 50 millicuries of the isotope Cadmium-109, which emits radiation primarily in the form of gamma and X-rays. This source can represent a potential health and safety hazard if it is used improperly, so adherence to the safety instructions in this manual is important. If you have any further questions concerning the safety of this

product or any provision of these instructions, do not hesitate to call eV PRODUCTS for assistance (eV Products' phone number is 724-352-4455).

2. The main safety feature of the CPC-48 is its integral, automatic, fail-safe radiation blocking shutter mechanism. This shutter, when covering the source end of the instrument, inhibits the Cadmium-109's radiation from escaping from the unit and therefore maintains the radiation levels at a safe level for maintenance and service of the CPC-48. The open or closed state of the shutter is indicated by a red warning lamp at the base of the instrument or by the shutter being off-center with respect to the device (refer to the accompanying diagram to see what the CPC-48 looks like in the shutter open and shutter closed positions). When operating the safety shutter, it is a necessary safety practice to position your body to the side of the CPC-48 and keep your body and face away from the front of the CPC-48 to avoid any unnecessary exposure to radiation. Lock the safety shutter closed with a padlock on the shutter arm when the instrument is not being used.
3. Possession and use of this product are authorized for the end user by the terms and conditions of a general license. A copy of the NRC rules concerning the general licensing provisions is appended to these instructions (see Enclosure 1). These rules stipulate certain conditions concerning the possession, transfer and use of this product.
4. The following are some general safety guidelines and a few essential procedures that should be followed when using the CPC-48.
 - a. Wear eye protection when performing shutter tests or product cleaning. Safety glasses are recommended.
 - b. Make certain that the shutter is closed before any shutter tests or product cleaning are performed. The shutter is closed when the shutter is positioned squarely over the end of the instrument and completely covers the radiation source. Refer to the accompanying diagram to see what the CPC-48 looks like in the shutter open and shutter closed positions.
 - c. **Shutter Test Procedure:** Test the operation of the shutter at least once every six months. To do this, energize the manual override switch and send a measurement signal to the instrument by depressing the measurement switch or selecting "measure" on your control computer console, depending on the type of installation that you have. Position your body to the side of the CPC-48, stay at least 5 feet away from the instrument, and keep your body and face away from the front of the CPC-48 when operating the shutter to avoid any unnecessary exposure to radiation. The shutter should move by swinging to the side approximately 20 degrees to allow the radiation beam to exit the gauge. The red "shutter open" lamp should illuminate as soon as the shutter begins to move to the side. Next, de-energize the air solenoid by switching off the manual override switch and observe that the shutter quickly swings back to its original position over the source and that the red lamp goes out. With the shutter closed, inspect the spring and shutter pivot arm for signs of wear, such as abrasion, bushing grindings, or other signs of metal fatigue, and look for loose or worn air fittings or electrical wires. If any problem is observed with the shutter or if any of these other check points indicates a problem, post a warning sign to keep personnel at least five feet from the unit and call eV PRODUCTS at (724) 352-4455 for assistance and further instructions. Record the results of this test in your company records.

- d. **Source Leak Test:** Leak tests are required for the unit at no greater than six-month intervals. eV PRODUCTS or an eV PRODUCTS-authorized representative will perform this test. Keep a written record of these tests in your company's records.
- e. Installation of the CPC-48 can only be done by qualified eV PRODUCTS personnel or by an eV PRODUCTS-authorized representative. Repair of the CPC-48 should not be attempted by anyone other than eV PRODUCTS personnel or an eV PRODUCTS-authorized representative.
- f. The CPC-48 must be returned to eV PRODUCTS, a specific licensee, or commercial radioactive waste disposal company when the unit is no longer wanted.
- g. Make a practice of checking that the red "shutter open" lamp and the automatic safety shutter are working properly on a daily basis. Check for signs of wear or abuse regularly.
- h. Lock the safety shutter closed by putting a padlock on the shutter arm when the instrument will not be used for a period of time.
- i. Save all packaging material for future use if it ever becomes necessary to return the unit to eV PRODUCTS.

III. Returning the CPC-48 to eV PRODUCTS

- 1. Remove electrical power and compressed air supply from the instrument and make certain that the safety shutter is in the safe, closed position. Padlock the safety shutter to keep it in the closed position. Remove the unit from its mounting fixtures and place it in the original packing that was supplied with the unit.
- 2. Contact eV PRODUCTS at (724) 352-4455 to obtain a return authorization number and inform us of your reasons for needing to return the unit. The unit must be shipped in accordance with U. S. Department of Transportation regulations for radioactive devices. Obtain instructions from eV PRODUCTS as to the proper mode of transportation and necessary labeling on the package that contains the unit.

IV. Cleaning the CPC-48

The CPC-48 is a completely sealed device and requires only periodic cleaning of its outside surfaces with a moist towel or cloth and mild, non-abrasive detergent (wetting agent), if desired. Be certain to close the shutter before attempting any cleaning or other maintenance near the CPC-48.

Buildup of material in the measurement area at the front of the instrument can interfere with operation if it is significant. The open end of the instrument should be visually inspected every month. This inspection can be safely performed from a distance of five feet from the open end of the gauge. If accumulation of material on the open end of the instrument is observed, use the following procedure to clean it.

Position your body to the side of the CPC-48, and keep your body and face away from the front of the CPC-48 when the shutter is open to avoid any unnecessary exposure to radiation. Clean the measurement area with a six-inch-log cotton swab or similar item and avoid the use of pointed or

sharp tools, such as screwdrivers. Avoid pressing down very much on the protective front surface of the CPC-48 and perform this operation as quickly as possible to avoid any unnecessary exposure of the fingers to radiation. An occasional cleaning that lasts a few seconds is sufficient for this purpose.

If the protective front surface is damaged (i.e., torn, punctured, etc.), the device must be taken out of service for repair. Follow the instructions for malfunctioning or damaged devices when returning the CPC-48 for repair.

Malfunctioning or Damaged Devices

CAUTION
DO NOT TAMPER WITH OR ATTEMPT
TO MODIFY THE CPC-48

In the event of malfunction or damage to the device, use the following procedures:

1. If the device is intact, and there is no sign of physical damage to the source, package it for return to eV PRODUCTS using the procedures described in the section "Returning the CPC-48 for Service".
2. If it appears that the source housing has been damaged to the extent that the source capsule may have been impaled or ruptured, use the following procedures. The potential for leakage of radioactive material is a concern that must be addressed. Keep personnel away from the area and restrict activity in the area so that further spread of potential contamination is avoided. Contact eV PRODUCTS [Phone Number (724) 352-4455], your local state radiation control agency (see Enclosure 2 for a listing of State agencies) or the USNRC (see Enclosure 3 for a listing of NRC Regional Offices) for instruction as to how to proceed. Write a letter describing the nature of the incident including the time, place, and persons involved and all other relevant facts and send this to eV PRODUCTS.¹ This letter will aid eV PRODUCTS in assessing whether any further steps are necessary to ensure safety. In these cases you must contact eV PRODUCTS [Phone Number (724) 352-4455] to notify us of this situation and obtain any further instructions that may be necessary.
3. If severe damage has occurred that has caused the source to be separated from the housing, or dislodged from its holder, follow these procedures:
 - a. Keep personnel away from the area and restrict activity in the area so that further spread of potential contamination is avoided. Contact eV PRODUCTS [Phone Number (724) 352-4455], your local state radiation control agency (see Enclosure 2) or the U. S. Nuclear Regulatory Commission (see Enclosure 3) for instruction as to how to proceed. The source, the instrument and any potentially contaminated items will need to be removed and sent to a proper facility licensed to handle this material.
 - b. Perform contamination surveys on the surrounding areas.
2. Note all relevant facts, including the details of the incident, the time and place, and the persons involved and contact eV PRODUCTS by telephone [Phone Number (724) 352-4455] as soon as possible. Send a written report, the contamination survey results, the rubber gloves, and the box containing the detector parts to eV PRODUCTS, using the procedures described in the section "Returning the CPC-48 for Service". eV PRODUCTS will often recommend in these cases that a qualified health physics organization be engaged to ensure that safety standards are being maintained.

¹ EV Products mailing address is : eV Products, a Division of II-VI, Inc.
373 Saxonburg Boulevard
Saxonburg, PA 16056

- c. Additional assistance may also be obtained from your local State Radiation Control Authority (see Enclosure 2) or the U.S. Nuclear Regulatory Commission (see Enclosure 3).
- 4. If, for any reason, the safety shutter becomes stuck in the open position, follow these procedures:
 - a. Keep personnel at least five feet away from the front of the device until the shutter is closed.
 - b. Remove electrical power and compressed air supply from the instrument. If the shutter closes, secure it in the closed position using a padlock on the shutter arm. Once the device is secured, contact eV Products for instructions on returning it.
 - c. If the shutter remains open after electric power and compressed air have been disconnected, attempt to close the shutter manually. Position your body to the side or the rear of the CPC-48, and keep your body and face away from the front of the CPC-48 when the shutter is open to avoid any unnecessary exposure to radiation. From this position, attempt to close the device using hand pressure. If this action is successful, secure the shutter in the closed position using a padlock on the shutter arm. Once the device is secured, contact eV Products for instructions on returning it.
 - d. If the shutter cannot be closed manually, maintain the isolation around the device. Contact eV PRODUCTS by telephone [Phone Number (724) 352-4455] as soon as possible. Alternatively, contact your local state radiation control agency (see Enclosure 2) or the U. S. Nuclear Regulatory Commission (see Enclosure 3) for instruction as to how to proceed.

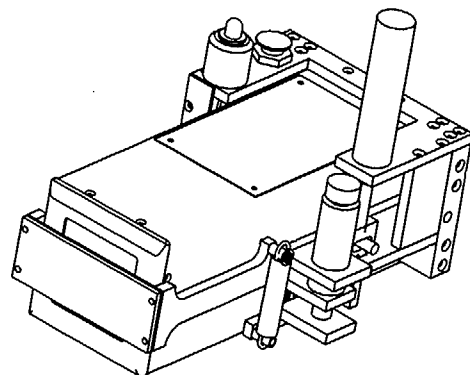
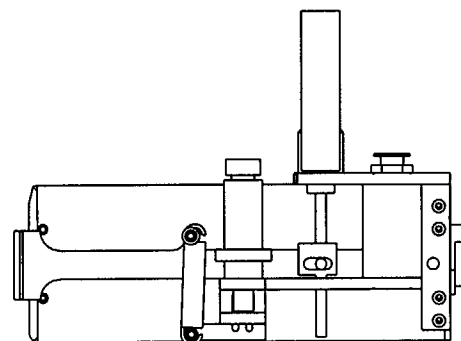
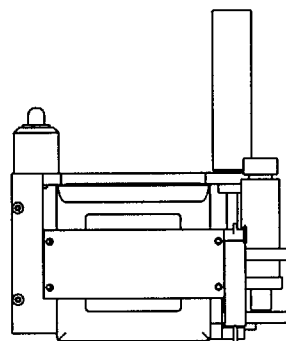
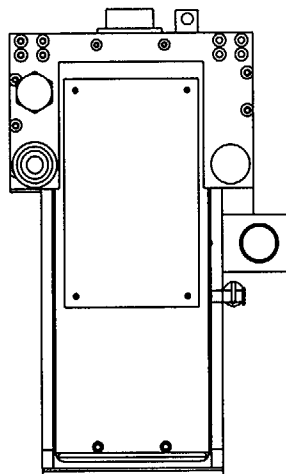
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REVISIONS			
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**DRAFT**

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						SHEET	1 OF 1

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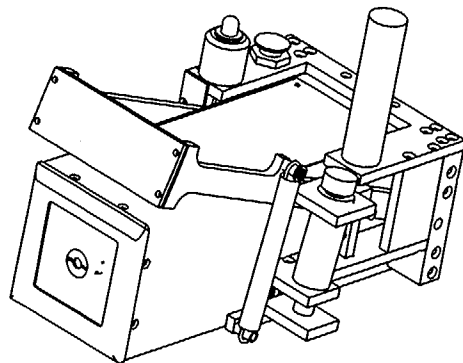
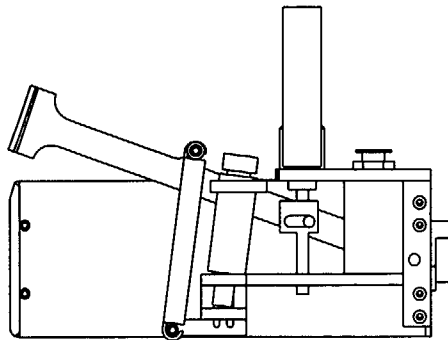
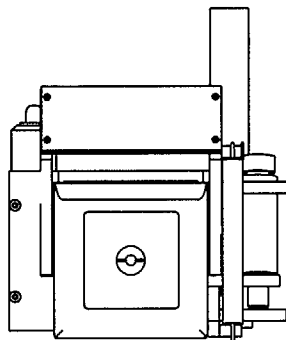
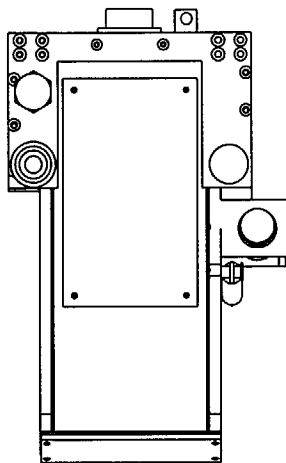
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REVISIONS			
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DRAFT

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Enclosure 1

LICENSE INFORMATION

The possession and use of this device is authorized under a general license issued by the USNRC [device registry number TBD]. A copy of this license can be obtained by sending a request to eV PRODUCTS. If you are using the device in an Agreement State, you are regulated by the radiation protection regulations of that state, which are substantially the same as those required by the USNRC.

EXCERPT FROM THE TITLE 10, CODE OF FEDERAL REGULATIONS

The following section was extracted from 10 CFR 31 ("General Domestic Licenses for Byproduct Material"):

31.5 Certain measuring, gauging or controlling devices.²

- (a) A general license is hereby issued to commercial and industrial firms and research, educational and medical institutions, individuals in the conduct of their business, and Federal, State or local government agencies to acquire, receive, possess, use or transfer, in accordance with the provisions of paragraphs (b), (c) and (d) of this section, byproduct material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.
- (b) The general license in paragraph (a) of this section applies only to byproduct material contained in devices which have been manufactured or initially transferred and labeled in accordance with the specifications contained in a specific license issued pursuant to §32.51 of this chapter or in accordance with the specifications contained in a specific license issued by an Agreement State which authorizes distribution of the devices to persons generally licensed by the Agreement State.
- (c) Any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license in paragraph (a) of this section:
 - (1) Shall assure that all labels affixed to the device at the time of receipt and bearing a statement that removal of the label is prohibited are maintained thereon and shall comply with all instructions and precautions provided by such labels;

² Persons possessing byproduct material in devices under the general license in §31.5 before Jan. 15, 1975, may continue to possess, use or transfer that material in accordance with the requirements of §31.5 in effect on Jan. 14, 1975.

- (2) Shall assure that the device is tested for leakage of Radioactive material and proper operation of the on-off mechanism and indicator, if any, at no longer than six-month intervals or at such other intervals as are specified in the label; however:
 - (i) Devices containing only krypton need not be tested for leakage of radioactive material, and
 - (ii) Devices containing only tritium or not more than 100 microcuries of other beta and/or gamma emitting material or 10 microcuries of alpha emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose;
- (3) Shall assure that the tests required by paragraph (c)(2) of this section and other testing, installation, servicing, and removal from installation involving the radioactive materials, its shielding or containment, are performed:
 - (i) In accordance with the instructions provided by the labels; or
 - (ii) By a person holding a specific license pursuant to parts 30 and 32 of this chapter or from an Agreement State to perform such activities;
- (4) Shall maintain records showing compliance with the requirements of paragraphs (c)(2) and (c)(3) of this section. The records must show the results of tests. The records also must show the dates of performance of, and the names of persons performing, testing, installing, servicing, and removing from the installation radioactive material and its shielding or containment. The licensee shall retain these records as follows:
 - (i) Each record of a test for leakage or radioactive material required by paragraph (c)(2) of this section must be retained for three years after the next required leak test is performed or until the sealed source is transferred or disposed of.
 - (ii) Each record of a test of the on-off mechanism and indicator required by paragraph (c)(2) of this section must be retained for three years after the next required test of the on-off mechanism and indicator is performed or until the sealed source is transferred or disposed of.
 - (iii) Each record that is required by paragraph (c)(3) of this section must be retained for three years from the date of the recorded event or until the device is transferred or disposed of.
- (5) Upon the occurrence of a failure of or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on-off mechanism or indicator, or upon the detection of 0.005 microcurie or more removable radioactive material, shall

immediately suspend operation of the device until it has been repaired by the manufacturer or other person holding a specific license pursuant to parts 30 and 32 of this chapter or from an Agreement State to repair such devices, or disposed of by transfer to a person authorized by a specific license to receive the byproduct material contained in the device and, within 30 days, furnish to the Administrator of the appropriate Nuclear Regulatory Commission, Regional Office listed in appendix D of part 20 of this chapter, a report containing a brief description of the event and the remedial action taken;

- (6) Shall not abandon the device containing byproduct material;
- (7) Shall not export the device containing byproduct material except in accordance with part 110 of this chapter;
- (8) Except as provided in paragraph (c)(9) of this section, shall transfer or dispose of the device containing byproduct material only by transfer to persons holding a specific license pursuant to parts 30 and 32 of this chapter or from an Agreement State to receive the device and within 30 days after transfer of a device to a specific licensee shall furnish to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 a report containing identification of the device by manufacturer's name and model number and the name and address of the person receiving the device. No report is required if the device is transferred to the specific licensee in order to obtain a replacement device;
- (9) Shall transfer the device to another general licensee only:
 - (i) Where the device remains in use at a particular location. In such case the transferor shall give the transferee a copy of this section and any safety documents identified in the label of the device and within 30 days of the transfer, report to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, the manufacturer's name and model number of device transferred, the name and address of the transferee, and the name and/or position of an individual who may constitute a point of contact between the Commission and the transferee; or
 - (ii) Where the device is held in storage in the original shipping container at its intended location of use prior to initial use by a general licensee.
- (10) Shall comply with the provisions of §§20.2201, and 20.2202 of this chapter for reporting radiation incidents, theft or loss of licensed material, but shall be exempt from the other requirements of parts 19, 20, and 21, of this chapter.
- (11) Shall respond to written requests from the Nuclear Regulatory Commission to provide information relating to the general license within 30 calendar days of the date of the request, or other time specified in the request. If the general licensee cannot provide the requested information

within the allotted time, it shall, within that same time period, request a longer period to supply the information by submitting a letter to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 and provide written justification as to why it cannot comply.

- (d) The general license in paragraph (a) of this section does not authorize the manufacture or import of devices containing byproduct material.

Enclosure 2

STATE RADIATION PROTECTION AGENCIES

Alabama

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Radiation Control Program
Kansas Department of Health & Environment
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