

GEIGER MULLER SURVEY INSTRUMENTS USED FOR CONTAMINATION DETECTION

NOTE: This section details the Geiger Muller Survey Instruments that may be used for Contamination Detection at a Host Facility, or Reception Center. The operational checks for the instruments follow the tables.

Table 1
Derived Parameter Values for Contamination Detection of Individuals

Instrument Detector Combo	Scale Setting	Probe Speed (inches/s)	Distance From Individual (inches)	Monitor Time Avg. Adult (minutes)	Decontamination Decision Criteria (Count Rate)
CD V-700P GM Pancake	X10	6	1 to 3	4	*300 CPM
M26-1	CPM	6	1 to 3	4	*300 CPM
**VIC - 493	X10	4	.5	19	*300 CPM

*The Decontamination Decision Criteria (Count Rate) measurement will be 300 CPM above background.

**The VIC-493 is used as backup if the CD V-700P & M26-1 meters are not available. The beta window must be open on the Vic-493.

Table 2
Recommended Detection Parameters for Widespread Contamination on Vehicles, Equipment, and Other Possessions

Instrument Detector Type	Scale Setting	Decontamination Decision Criteria (Count Rate)	Max. Probe Height (inches)	Max. Probe Speed (inches/s)
CD V-700P GM Pancake	X10	*300 CPM	1	**12
M26-1	CPM	*300 CPM	1	**12
***VIC - 493	X10	*300 CPM	1	**6

* The Decontamination Decision Criteria (Count Rate) measurement will be 300 CPM above background.

** Care should be taken so that the probe speed will permit adequate time for the instrument of choice to audibly respond while the probe is being passed over the potentially contaminated area.

*** The VIC-493 is used as backup if the CD V-700P & M26-1 meters are not available. The beta window must be open on the VIC-493.

Table 3
Effects of Probe Covers on Measurements
Average Reduction in Count Rate (Percent)

Type of Probe Cover	Density (Mg/Cm ²)	VIC-493 Average Reduction	CD V-700P & M26-1 Average Reduction
One layer of plastic wrap	1.2	1.1	3.6
Two layers of plastic wrap	2.4	2.2	7.7

CD V-700P Operational Check:

NOTE: Prior to use the CD V-700P must be checked to ensure that the instrument is operating properly. This operational check must be performed in an area away from any source of radiation.

1. Visually check the instrument for signs of physical damage.
2. Ensure a calibration sticker is present on the instrument and the current calendar date is within the year of the calibration date.
3. Ensure the selector switch on the instrument is in the "OFF" position.
4. Make sure that the instrument probe is secured in its cradle or place probe on a secure surface first and then remove the top cover of the instrument by unlatching the cover clips located at the top and bottom of the cover.
5. Turn the cover over exposing the battery compartment. Remove the battery clamps and install the batteries making sure of polarity. Reinstall the battery clamps. Install the instrument cover back into the instrument body and secure the cover clips.
6. Turn the selector switch on the instrument to the x100 setting and allow the instrument a minimum of 30 seconds to warm up.
7. Connect the headphones to the audio jack located to the left of the instrument probe cradle.
8. Remove the plastic cover from the probe head. Mount the headphones on your ears.
9. Place the open probe as close as possible to the operational check source located on the left side of the instrument. Observe the reading on the instrument C/M scale (multiply it by 100) and compare to the Source Reading located on the instrument calibration sticker. Clicks should be heard in the headphones.
10. The reading should fall close to this Source Reading. This indicates the instrument is operating properly.
11. If the operation check fails you may:
 - Install new batteries and recheck the instrument if the source reading is too low.
 - Replace the headphones if no clicks are audible when taking the check source reading.
 - Discard the instrument and replace it with another and perform the operational check again

M26-1 Frisker Operational Check:

Prior to use the M26-1 must be checked to ensure that the instrument is operating properly. This operational check must be performed in an area away from any source of radiation.

1. Visually check the instrument for signs of physical damage.
2. Ensure a calibration sticker is present on the instrument and the current calendar date is within the year of the calibration date.
3. Ensure the instrument is in the "OFF" condition.
4. Turn the M26-1 over exposing the molded handle. Grasping the ringed screw at the base of the handle turn one quarter turn counter clockwise lifting the ringed screw while sliding handle towards the rear exposing the battery compartment. Install the batteries making sure of polarity. Reinstall the battery cover completely into the body of the M26-1, align ringed screw and turn screw one quarter turn clockwise to secure.
5. With the M26-1 LCD screen facing you press the OK button on the front panel:
 - The M26-1 audio should sound and the LCD should display all characters and numbers momentarily followed by;
 - The red alarm LED will turn on and the LCD will display the current revision of software.
 - The M26-1 will then default to the CPM mode with the audio enabled and the LCD displaying current background reading in CPM.

6. Press the OK button once to silence the audio and then press the Unit (U) button to change to mR/h mode.
7. Remove the protective cover from the pancake opening.
8. Place the pancake opening over the check source paddle (blue side of check source on paddle). Observe the reading on the M26-1 in mR/h and compare to the Source Reading Range located on the M26-1 calibration sticker.
9. Reading should fall within the range specified on calibration sticker. This indicates the M26-1 is operating properly.
10. Momentarily turn ON the audio on the M26-1 by pressing the OK button once and observe that audio clicks are sounding.
11. If the operation check fails you may:
 - Install new batteries and recheck the instrument if the source reading is too low.
 - Discard the instrument and replace it with another and perform the operational check again.
12. Press the Unit (U) button once to return to the CPM scale. The M26-1 is now ready to take contamination measurements.

Victoreen 493 Operational Check:

NOTE: Prior to use the Vic -493 must be checked to ensure that the instrument is operating properly. This operational check must be performed in an area away from any source of radiation.

1. Visually check the instrument for signs of physical damage.
2. Ensure a calibration sticker is present on the instrument and the current calendar date is within the year of the calibration date
3. Ensure the selector switch on the instrument is in the "OFF" position.
4. Remove the top cover of the instrument by unlatching the cover clips located at the top and bottom of the cover.
5. Make sure that the instrument probe is secured in its cradle and turn the cover over exposing the battery compartment. Remove the battery clamps and install the batteries making sure of polarity. Reinstall the battery clamps. Install the instrument cover back into the instrument body and secure the cover clips.
6. Turn the selector switch on the instrument to the x10 setting and allow the instrument a minimum of 30 seconds to warm up.
7. Connect the headphones to the audio jack located to the left of the instrument probe cradle.
8. Remove the probe from the probe cradle, push the base of the probe forward (for the Victoreen 493) to fully expose and open the probe shield. Mount the headphones to your ears.
9. Place the probe's open window area as close as possible to the operational check source located on the left side of the instrument. Observe the reading on the instrument C/M scale (multiply it by 10) and compare to the Source Reading Range located on the instrument calibration sticker. Clicks should be heard in the headphones.
10. The reading should fall close to this Source Reading. This indicates that the instrument is operating properly.
11. If the operation check fails you may:
 - Install new batteries and recheck the instrument if the source reading is too low.
 - Replace the headphones if no clicks are audible when taking the check source reading.
 - Discard the instrument and replace it with another and perform the operational check again.

Background Measurement Using CD V-700P or Vic - 493:

NOTE: Background radiation is the sum of the radiation from natural and unnatural sources without any contribution from the radioactive source of interest, such as hospital, nuclear power plant or accident site.

1. Locate the instrument away from the source of interest.
2. Install the batteries into the instrument observing the polarity of the batteries.
3. Set the instrument selector switch to the x1 setting.
4. Remove the plastic cover making sure the probe window is facing up on the CD V-700P or push the base of the probe forward to open beta window on Vic - 493.
5. Place the probe in the probe cradle or hold at waist lever away from the body. Observe the meter reading on the C/M scale (bottom scale) for at least 30 seconds.
6. Background radiation is usually under 100 CPM read on the bottom C/M scale.
7. Record background measurement taken, as it must be subtracted from all contamination measurements to obtain true and accurate readings.

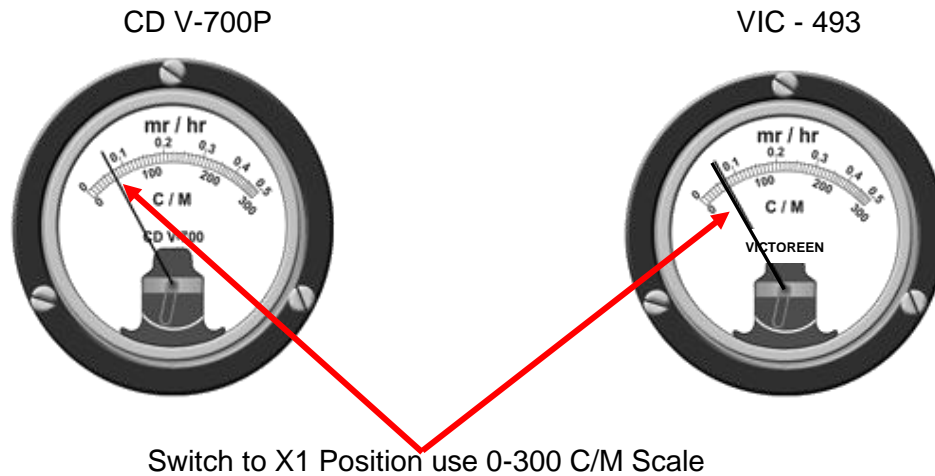


Table 4
CD V-700P/VIC 493 Switch Position & Scale Description

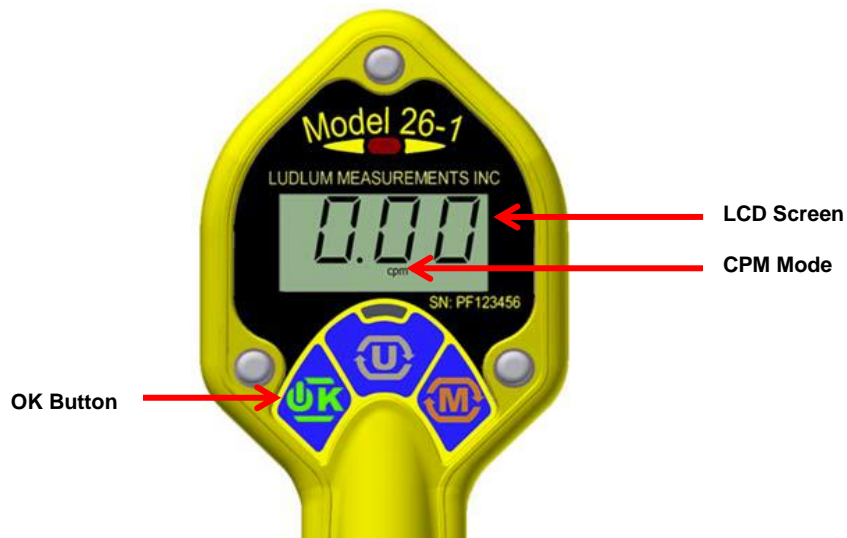
Switch Positon	Contamination on Bottom Scale (C/M)	
	Each Deflection Mark/CPM	CPM Activity Range
x1	6 CPM	0-300 CPM
x10	60 CPM	0-3,000 CPM
x100	600 CPM	30,000 CPM

NOTE: Vic – 493 survey meter used only when CD V-700P is not available.

Background Measurement Using M26-1 Frisker:

NOTE: Background radiation is the sum of the radiation from natural and unnatural sources without any contribution from the radioactive source of interest, such as hospital, nuclear power plant or accident site.

1. Locate the instrument away from the source of interest.
2. Install the batteries into the M26-1 observing the polarity of the batteries.
3. Remove M26-1 pancake protective cover.
4. Turn M26-1 "ON" (pressing OK button once). Once CPM mode is showing on LCD press OK button once to silent audio clicks.
5. Place M26-1 into provided cradle with LCD screen visible.
6. Background radiation is usually under 100 CPM read on the CPM scale.
7. Record background measurement taken, as it must be subtracted from all contamination measurements to obtain true and accurate readings.



NOTE: CD V-700P survey meter used only when M26-1 is not available.