

# GM Pancake Probe with Filter Set

## Victoreen® Model 489-110FS

- **Energy compensation filter set to determine true dose rate**
- **High detection efficiency**
- **Ergonomic design**
- **Detachable probe cable**
- **Easy to decontaminate**



### Features

- The GM Pancake Probe adapted to accept compensation filter set
- Set of energy compensation filters to determine true exposure rate
- Available as complete kit 190-110KT which includes GM Pancake Probe Filter Set (Model 489-110FS), Survey Meter (Model 190), instruction manual, and carrying case

### Introduction

The Model 489-110FS used in combination with the Model 190 Survey Meter is especially useful for radiation leakage measurements encountered with x-ray emitting laboratory instruments or industrial research equipment, such as electron microscopes, and ion implanters. For service personnel and laboratory technicians, the Model 190 and 489-110FS combination is invaluable for performing “as found” and “final check out” radiation leakage surveys, which are of major importance in any Quality Assurance or personnel safety program. The Model 190 and 489-110FS probe are excellent for gross counting surveys. Once a leak has been found, energy compensating filters can be employed to determine the true exposure rate.

### Applications

The Victoreen Model 489-110FS consists of an GM Pancake Probe which is a hand held, thin window detector designed for use with the Model 190 Survey Meter, and is configured for operating convenience during table top and floor surveys, as well as surveys of personnel and equipment.

The Model 489-110FS includes the GM Pancake Probe, filter set, connecting cable, operating instructions and calibration certificate. If the Model 489-110FS is purchased as a second detector for the Model 190 Survey Meter, a Model 190060 Calibration Module is also required.

The GM Pancake Probe has been modified to accept a set of two “screw on” energy compensation filters which permit actual energy compensated exposure rates to be determined.

A screen protects the thin mica probe window to facilitate rapid frisking of surfaces with reduced risk of window damage.

The open area of the hexagonal stainless steel screen is 86%. Replacement foam grip handles are available: Model 489-130-44.

A complete kit: Model 190-110KT (shown on next page) is available which includes the Model 489-110FS Probe, one filter set, the Model 190 Survey Meter, connecting cable with module, calibration certificate, operating instructions, and carrying case.

## Specifications

**Detector** Halogen-quenched "Pancake" GM tube

**Radiation detected** Alpha above 3.5 MeV, beta above 35 keV, and gamma / x-ray above 6 keV, without filters

**Operating voltage for 190** 900 V

**Window** 15 cm<sup>2</sup> (1.75 in Ø) mica, 1.4 to 2.0 mg/cm<sup>2</sup>

**Overall accuracy** Within ± 20% for x-rays and gamma rays; 30 to 300 keV for probe and filters; within ± 10% 300 keV to <sup>60</sup>Co unfiltered

**Typical background** 30 CPM

**Sensitivity** 3500 CPM/mR/hr

**Protective screen** Stainless steel, hexagonal pattern providing 86% open area

**Construction** Probe housing is ABS plastic with foam grip handle

**Filters** Set of two metal filters, housed in threaded aluminum holders; Tin 3.5 mm and Copper 3.0 mm thick

**Cable** Shielded cord; approximately 4.5 ft long, terminated with a MHV connector

### Dimensions

#### Detector housing

2.50 (w) x 4.25 (d) x 0.88 in (h) (6.36 x 10.8 x 2.2 cm)

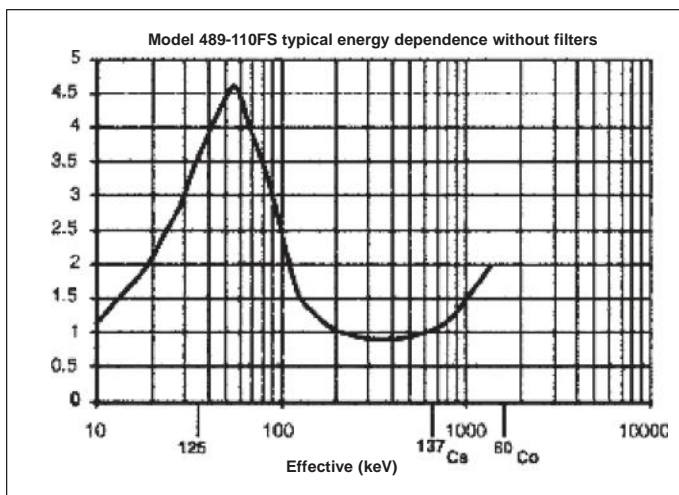
#### Handle

1 in Ø x 6.25 in (d) (2.54 x 16.5 cm) (excluding connector)

**Weight** 0.63 lb (0.28 kg) without cable or filters

**Model 190 and 489-110FS combination** Calibrated to within ± 10% accuracy full scale for <sup>137</sup>Cs energies up to 80 mR/h exposure rates. Overall accuracy of 190/489-110FS / filters within 20% in the 30 to 300 keV energy range

### Typical energy dependence



**Efficiency** The Victoreen Model 489-110FS Pancake Probe efficiency is shown below, without filters. In a recent performance check, the numbers shown represent typical results obtained:

Isotope	% Efficiency
<sup>14</sup> C	5
<sup>99</sup> Tc	12
<sup>137</sup> Cs	24
<sup>90</sup> Sr	59
<sup>36</sup> Cl	26
<sup>241</sup> Am	8
<sup>129</sup> I	2
<sup>230</sup> Th	15
<sup>239</sup> Pu	12

*Note: The efficiency formula used to calculate the % Efficiency is: Eff. % = (CPM x 100) / DPM*

### Replacement part

**Foam Grip Handle** (Model 489-130-44)

### Available model(s)

**489-110FS** GM Pancake Probe with Filter Set

**190-110KT Kit**, consists of the Model 489-110FS GM Pancake Probe with Filter Set, the Model 190 Survey Meter, connecting cable with module, calibration certificate, instruction manual, and carrying case



Model 190-110KT

For more information, receive our full product catalog, or order online, contact **Radiation Management Services** business of **Fluke Biomedical**: 440.248.9300 or [www.flukebiomedical.com/rms](http://www.flukebiomedical.com/rms).

*Specifications are subject to change without notice.*

©2005 Fluke Biomedical. All rights reserved. Victoreen is a trademark of Fluke Corporation. Printed in USA. 489-110FS-ds rev 3 15 jun 05