



Victoreen Model 580-006-WP

Farmer-type Radiation Therapy Waterproof Ionization Chamber



Stable, reproducible absolute dosimetry measurements
In-air calibration of brachytherapy sources
Precision machined thimble for flat energy response
Hemispherical electrode design, no electrical field distortion
Rugged **replaceable** PMMA thimble, 0.5 mm thick
Non-waterproof version available, Model 580-006

INTRODUCTION

The Victoreen Model 580-006-WP Radiation Therapy Ionization Chamber is modeled after the traditional 0.6 cm ³ Farmer-type chamber used for absolute dosimetry measurements of medical linear accelerators and 60 Co machines. Each chamber includes an energy response for M-80, M-100, M-250, and 60 Co for both linear accelerator and brachytherapy applications as illustrated in the table below. Also supplied with each chamber is a PMMA 60 Co build-up cap, a convenient low noise one meter cable with triaxial BNC connector and a Victoreen custom carrying case. A non-waterproof version is available as Model 580-006.

APPLICATIONS

This chamber is equivalent to a 0.6 cc acrylic walled chamber with the following published values of k_Q for accelerator photon beams as a function of $\%dd(10)_x$ for cylindrical ion chambers commonly used for clinical reference dosimetry.

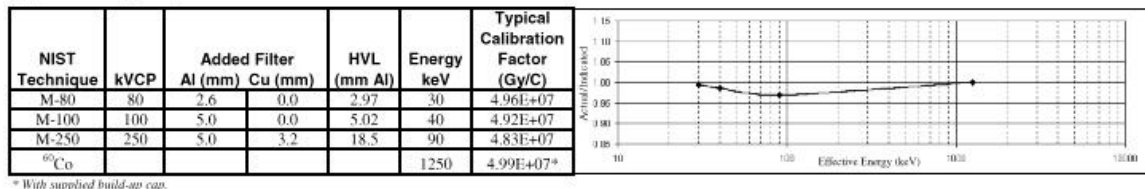
FEATURES

- Completely waterproof, does not require protective sleeve
 - Pure aluminum electrode 1 mm in diameter, 20.0 mm long
 - Fully guarded up to the collection volume
 - Vented to air
 - Compatible with existing phantoms
- Actual/ Indicated

	% dd(10) _x					
	58.0	63.0	66.0	71.0	81.0	93.0
k _Q	1.000	0.996	0.992	0.984	0.967	0.945

(See AAPM's TG-51 Protocol for Clinical Reference Dosimetry of High Energy Photon and Electron Beams, Table I, PTW N30001 0.6 cc Farmer.)

Typical Energy Dependence



SPECIFICATIONS

Volume 0.61 cm³

Sensitivity 2.0 x 10⁻⁸ CGy⁻¹

Leakage < 4 x 10⁻¹⁵ A

Optimum Polarizing Voltage +300 VDC

Maximum Polarizing Voltage 500 VDC

Minimum Exposure .04 Gy

Ion Collection Time

300 V: 0.14 ms

400 V: 0.11 ms

500 V: 0.09 ms

Wall Material

PMMA (C₅ H₈ O₂) n acrylic with graphite layer

Total Wall Density 1.57 g/cm³

Wall Thickness 0.5 mm

Wall Area Material Density 78.5 mg/cm²

Electrode Pure aluminum, 1 mm dia., 20.0 mm long

Cable 1.6 m with triaxial BNC connector

Cable Leakage < 10⁻¹² CGy⁻¹ cm⁻¹

Temperature Range + 10°C to + 40°C

Relative Humidity 20 to 75%

Build-up Cap PMMA for 137 Cs - 60 Co

Weight 4.4 oz (125 gm)

Case Victoreen custom foam lined

Vent Tubing Material

Polyethylene-lined ethyl vinyl acetate tubing

Saturation Behavior

Maximum Dose Rate at Continuous Irridation

Polarizing Voltage	99% Saturation	99.5% Saturation
300 V	6.0 Gys ⁻¹	3.0 Gys ⁻¹
400 V	10.7 Gys ⁻¹	5.3 Gys ⁻¹
500 V	16.6 Gys ⁻¹	8.3 Gys ⁻¹

Maximum Dose Rate per Irridation Pulse

Polarizing Voltage	99.0% Saturation	99.5% Saturation
300 V	0.6 mGy	0.3 mGy
400 V	0.8 mGy	0.4 mGy
500 V	1.0 mGy	0.5 mGy

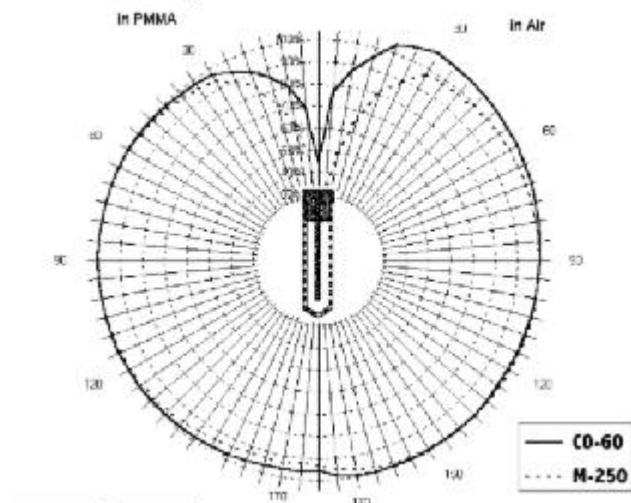
Optional Accessories

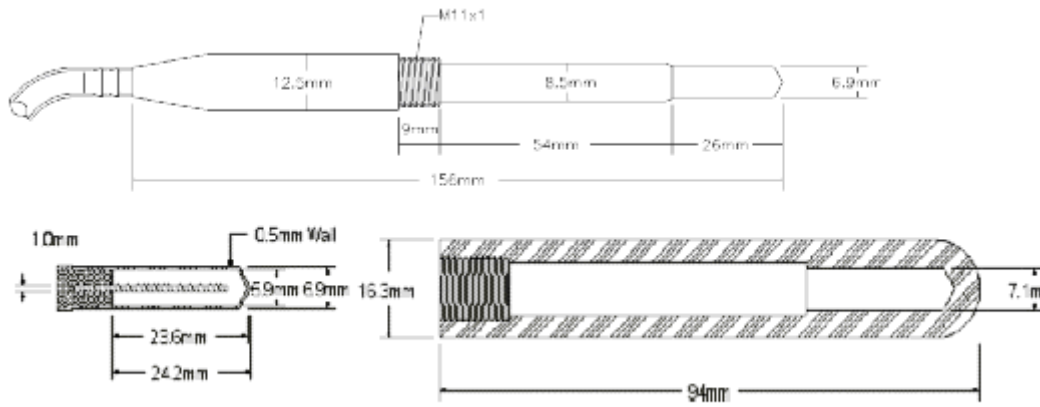
Extension cables Model 500-102, length 10 m,
(male to female triax BNC)

Acrylic build-up caps available upon request
(M11x1 Thread)

Waterproof Rubber Sleeve Model 580-006-1 for
use with Model 580-006 non-waterproof chamber

Directional Dependence





Specifications are subject to change without notice.
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