CT Dose Phantom Kit for Pediatric/Adult Head and Body

Model 76-419-4150

DI Diagnostic Imaging

- **Specifically designed for pediatric and adult computed tomography dose index (CTDI)**
- **Can be used with new multi-detector (MDCT) units**
- **Meets requirements of FDA performance standards**
- **All new carrying case with wheels and pull handle**

Introduction

These phantoms can be used with any computed tomography (CT) system designed to image pediatric and adult head and body. They can separate dose information for each. When performing dose profile measurements, the dose phantoms allow the user to collect information for the maximum, minimum and mid-range value of the nominal tomographic section thickness.

This essential phantom kit consists of three parts: an adult body phantom, an adult head phantom that doubles as a pediatric body phantom and the new pediatric head phantom. (All are made of solid acrylic, 15 cm thick, with diameters of 32, 16 and 10 cm, respectively.) Each part contains five probe holes, one in the center and four around the perimeter, 90° apart and 1 cm from the edge. The inside diameter of the holes is 1.31 cm. Each part includes five acrylic rods for plugging all the holes in the phantom. A sturdy storage and carrying case that holds all three phantoms is available as an option and includes wheels and a pull handle.

Applications

The CT Dose Phantoms were designed in accordance with the Food and Drug Administration's performance standard for diagnostic x-ray systems, which includes regulations specifically applicable to CT systems (21 CFR 1020.33).

Specifications

Weight

Body phantom 32 lb (14.5 kg)
Head phantom 8 lb (3.6 kg)
Pediatric head phantom 2.85 lb (1.3 kg)

Optional accessories

89-419 Carrying Case with wheels and pull handle for CT Dose Phantom Kit for Pediatric/Adult Head and Body
89-414 Carrying Case for CT Dose Phantom Kit for Adult Head and Body

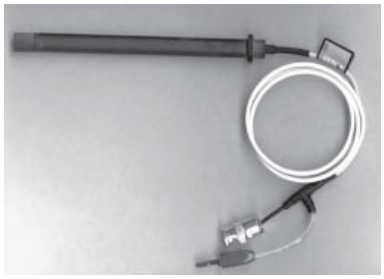
For ion chamber selection, see next page.

Available model(s)

76-419-4150 CT Dose Phantom Kit for Pediatric/Adult Head and Body including carrying case with wheels and pull handle
76-414-4150 CT Dose Phantom Kit for Adult Head and Body including carrying case
76-419 CT Pediatric Head Dose Phantom with five plugs
76-414 CT Head Dose Phantom with five plugs
76-415 CT Body Dose Phantom with five plugs

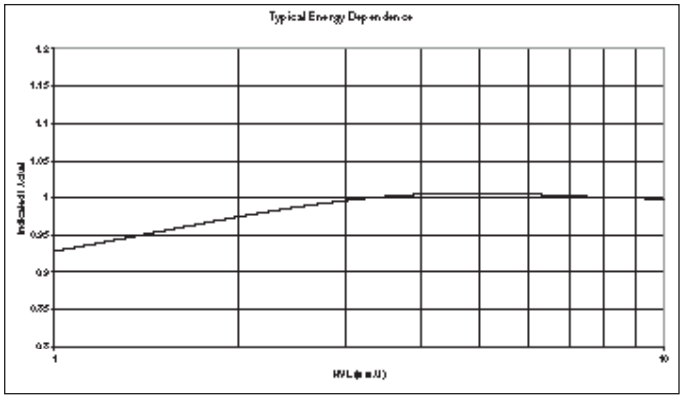
CT Ion Chambers

Specifications for 10 cc high sensitivity



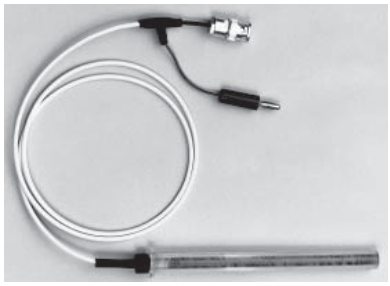
Detector type Vented air ion chamber
Volume 10.1 cc
Sensitive length 10.0 cm
Chamber material Acrylic (PMMA)
Chamber outside diameter 0.5 in ± 0.015 in (12.7 mm ± 0.4 mm)
Chamber inside diameter 0.45 in (11.44 mm)
Chamber wall thickness 77 mg/cm^2
Electrode material Aluminum, 1100
Sensitivity 3.2 R•cm/nC (nominal) or 0.3/nC
Standard calibration 100 kVCP, 5.5 mm Al HVL (NIST Tech. M100)
Response uniformity along axis ± 3% over central 90% of active length
Beam orientation Normal to chamber axis
Leakage current (300 V collection potential) Less than 10^{-14} A at 10 min polarization time

Typical energy dependence for 10 cc high sensitivity ion chamber



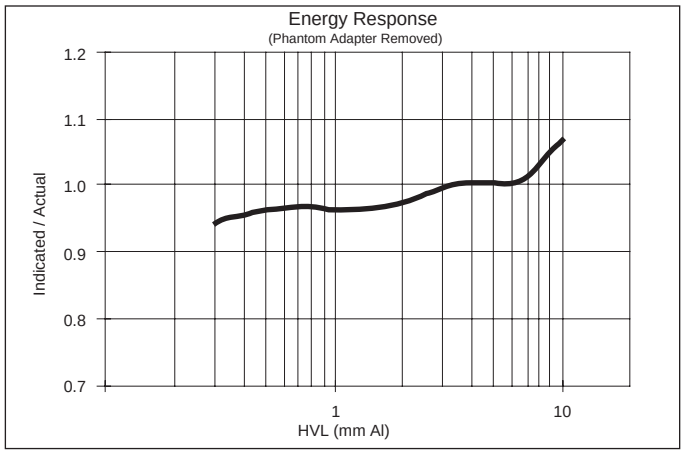
Intensity limits Continuous beam: 31.6 R/sec, (1% recombination loss)
Pulsed beam 15.8 mR/pulse (1% recombination loss)
Collection time 0.478 mSec
Cable length 3 ft (0.9 m)
Operating voltage - 300 V

Specifications for 3.2 cc



Detector type Vented air ion chamber
Volume 3.2 cc
Sensitive length 10.0 cm
Chamber material Polystyrene
Chamber inside diameter 6.4 mm
Chamber wall thickness 54 mg/cm^2
Electrode material Aluminum
Sensitivity 10 R•cm/nC (nominal)
Standard calibration 100 kVCP, 5.5 mm Al HVL (NIST Tech. M100)
Response uniformity along axis ± 3% over central 90% of active length
Beam orientation Normal to chamber axis
Phantom adapter OD 1.27 ± 0.04 cm (0.50 ± 0.015 in)
Leakage current (300 V collection potential) Less than 1013 A at 10 min polarization time, less than 1014 A at 2 hr polarization time
Intensity limits Continuous beam: 4.86 kR/min (1% recombination loss)
Pulsed beam 51.5 mR/pulse (1% recombination loss)

Typical energy dependence for 3.2 cc ion chamber (phantom adapter removed)



Maximum pulse repetition rate 3.3 kHz
Cable length 3 ft (0.9 m)
Operating voltage - 300 V

Available model(s)

660-6 CT Ion Chamber, 3.2 cm^3, with UHF termination: used with Victoreen® Model 660 Electrometer

500-100 CT Ion Chamber, 3.2 cm^3, with triax BNC: used with Model 35040 (ATD), TRIAD™ and TRIAD™ TnT

500-200 CT Ion Chamber High Sensitivity, 10 cm^3 for multislice CT, with triax BNC: used with Model 35040 ATD and other electrometer/ dosimeters, including TRIAD and TRIAD TnT

6000-100 CT Ion Chamber, 3.2 cm^3, with coax BNC for signal & banana plug for bias: used with Victoreen Models 4000, 6000, 8000 and RAD-CHECK® PLUS

6000-200 CT Ion Chamber High Sensitivity, 10 cm^3, for multislice CT, with coax BNC for signal & banana plug for bias: used with Victoreen Models 4000, 6000, 8000 and RAD-CHECK PLUS

For more information or to receive our full product catalog, contact Fluke Biomedical at 440.248.9300 or www.flukebiomedical.com/rms.

Specifications are subject to change without notice.

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