



IMRT Head & Torso Freepoint Phantom

Model 002H9K



Model 002H9K showing water equivalent rod with ion cavity

COMPLETE QA FROM CT IMAGING TO DOSE VERIFICATION

CIRS offers a variety of IMRT phantoms to match the most common IMRT treatment areas such as prostate, head and neck, breast and lung.

The phantom is constructed of proprietary tissue equivalent epoxy materials. Linear attenuations of the simulated tissues are within 1% of actual attenuation for bone and water from 50 keV to 15 MeV. These unique materials eliminate the need for correction factors, thus improving accuracy and saving time. The phantoms simulate the patient through the entire process from CT data acquisition and planning to delivery and dose verification.

The Model 002H9K was designed in collaboration with David D. Loshek PhD. With the H9K, choose any point dose location within a circular area with diameter of 11.2 cm by simply adjusting the two rotating cylinders. Lung and bone equivalent rods can be positioned at any location within the circular area for assessment of heterogeneity correction. Remove the center cylinder from the phantom body to simulate head and neck set-ups.

Features

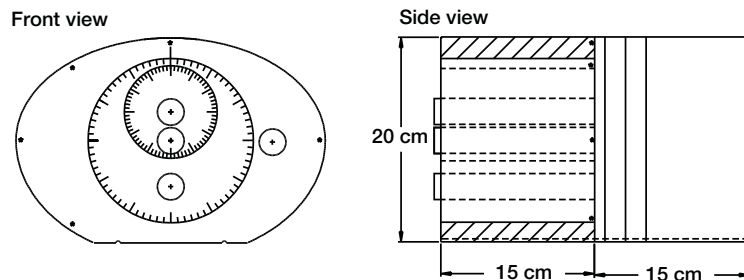
- Ionization chambers, TLD, MOSFET and Diodes easily positioned using interchangeable rods*
- Choose any point dose location by rotating the cylinders
- Use radiographic film dosimetry - Ready Pack® and/or GafChromic® film¹
- Close placement of detectors to film improves film calibration
- CT - film markers ensure accurate film to plan registration
- Surfaces are etched with indices for precise alignment
- Configure with or without heterogeneities

¹The CIRS line of IMRT phantoms is compatible with the RIT 113 software for film to plan analysis. GafChromic® is a registered trademark of International Specialty Products, Wayne, NJ.

IMRT VERIFICATION SYSTEM

CIRS IMRT phantoms are manufactured from tissue equivalent materials that mimic within 1% from 50 keV to 15 MeV for accurate simulation from CT planning to treatment delivery. The interchangeable rod design allows the phantom to accommodate a multitude of dose measurement devices such as ion chambers, TLD, diodes and MOSFET's in the same location within the phantom.* Phantom cross sections accommodate GafChromic® or standard ready-pack films.

Body with the Head part for Chamber Dosimetry



SPECIFICATIONS

OVERALL DIMENSIONS:	43.2 cm x 39.4 cm x 25.4 cm (17" x 15.5" x 10")
WEIGHT:	17.5 kg (47 lb)
MATERIALS:	Phantom Body: Tissue Equivalent Epoxy Materials Inserts: CIRS Tissue Equivalent Materials (epoxy resin based)

INSERT OPTIONS

*Customers are encouraged to complete their order with the purchase of at least one (1) of each insert option listed below. Refer to separate CIRS cavity and plug code list for available chamber cavities.

PART NO.	DESCRIPTION
002RW-CVXX-XX	Water equivalent rod insert with ion chamber cavity
002RB-CVXX-XX	Bone equivalent rod insert with ion chamber cavity

MODEL 002H9K INCLUDES

QTY	PART NO.	DESCRIPTION
1		Water equivalent homogeneous torso section with cylindrical inserts (15 cm)
2		Spacer slabs, 2 cm
1	002SS-H	Spacer slab, 1 cm
1		Spacer slab, 10 cm
4	002RW-S	Water equivalent solid rod inserts
1	002RB-S	Bone equivalent solid rod insert
1	002CTF	Set of CT to film fiducial markers
1		Alignment base
1		Holding device
1		Coordinate Translation Program

References:

Gershkevitch, Eduard, et al., Dosimetric Verification of Radiotherapy Treatment Planning Systems: Results of IAEA Pilot Study. 2008 Elsevier Ireland Ltd., Radiotherapy and Oncology 89 (2009) 338-346, pgs. 338-346, March 2009.

Zhao, Y. et al., Monte Carlo evaluation of a treatment planning system for helical tomotherapy in an anthropomorphic heterogeneous phantom and for clinical treatment plans. Med. Phys., vol. 35 (12), pgs. 5366-5374, December 2008.

Luo, W., et al., Analysis of image quality for real-time target tracking using simultaneous kV-MV imaging. Med. Phys., vol. 35 (12), pgs. 5501-5509, December 2008.

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Specifications subject to change without notice.

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ADDITIONAL OPTIONS

PART NO.	DESCRIPTION
002RL-CVXX-XX	Lung equivalent rod insert with ion chamber cavity
002BR	Single breast attachment
002FC	Film Stack for small volume 3D image reconstruction
002GC	Gel dosimetry cassette
002HCV	Homogeneous section that accommodates 002FC or 002GC cassettes
002LCV	Thorax region section that accommodates 002FC or 002GC cassettes
002SPH	Water equivalent rods for TLD's (set of 5 rods length 5cm)
002CTF	Set of CT to film fiducial markers for additional interfaces
002ED	Electron density reference plugs, set of 4 (lung, bone, muscle, adipose)
002RLS	Lung equivalent solid rod insert
9501	Case for IMRT Phantoms (002H5, 002H9K, 002LFC, 002PRA) when ordered with corresponding Cavity Slab (002HCV, 002LCV, 002PCV)
9502	Case for IMRT Phantoms (002H5, 002H9K, 002LFC, 002PRA)

Brunckhorst E., et al., Commissioning of Radiotherapy Treatment Planning Systems: Testing for Typical External Beam Treatment Techniques. IAEA, International Atomic Energy Agency, IAEA-TECDOC-1583, pgs. 1-67, January 2008.

Altman, M., et al., A Novel Phantom for use in 3-dimensional In Vitro Cell Experiments. Med. Phys., vol. 33 (6), pgs. 2058-2059, Poster # SU-FF-T-40, June 2006.



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