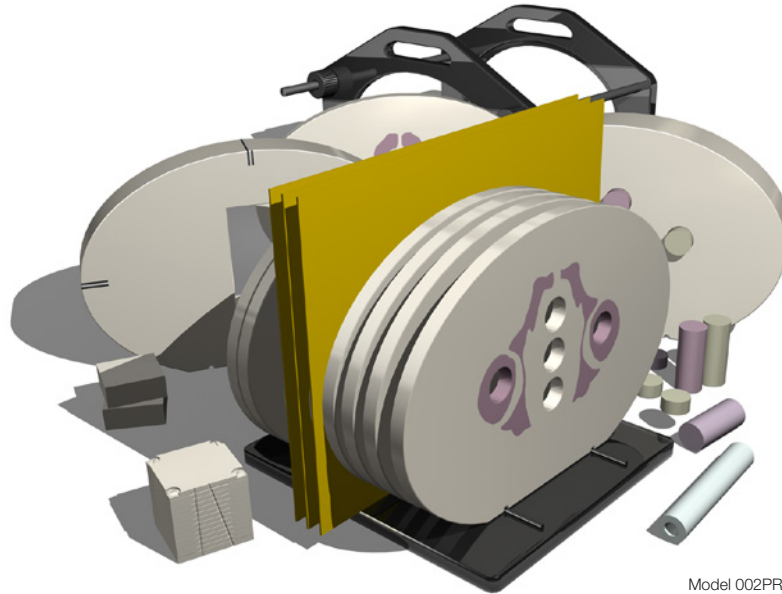




# IMRT Pelvic 3D Phantom

Model 002PRA



Model 002PRA with optional accessories

## COMPLETE QA FROM CT IMAGING TO DOSE VERIFICATION

The CIRS Model 002PRA IMRT phantom is designed to address the complex issues surrounding commissioning and comparison of treatment planning systems and verification of individual patient plans and delivery.

The CIRS 002PRA phantom properly represents human pelvic anatomy in shape, proportion and structure as well as density. This enables thorough analysis of both the imaging and dosimetry system. 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.

The phantom is elliptical in shape, approximates the size of an average patient, and has a tissue equivalent, three dimensional skeleton. Tissue equivalent interchangeable rod inserts for ionization chambers allow for point dose measurements in multiple planes in the phantom and film calibration.\* The phantom also supports film dosimetry with not only standard radiographic films but also GafChromic® media <sup>1</sup>. Additional inserts are available to support a variety of other detectors including TLD's, MOSFET, and diodes.

The Model 002PRA includes four different Electron Density reference plugs which can be interchanged in five separate locations within the phantom. The surface of the phantom is etched with grooves to ensure proper orientation of the CT slices and accurate film to plan registration.

### Features

- Verify heterogeneity corrections
- Correlate CTU to electron density
- Check dose distributions in sensitive areas
- Check depth doses and absolute dose
- 2D and 3D isodoses
- Calibrate film with ion chamber\*
- Verify individual patient treatment plans

<sup>1</sup> The 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.

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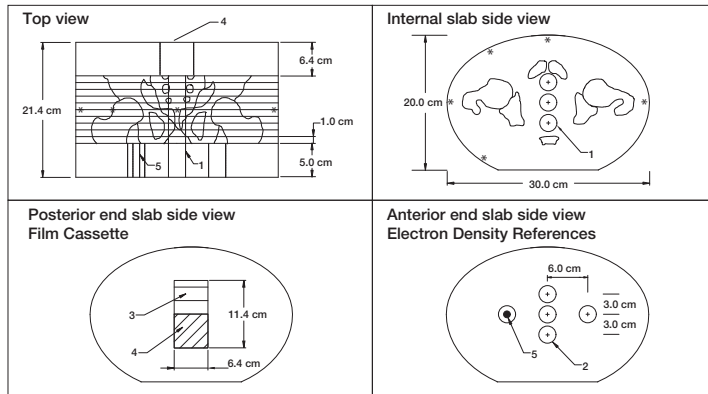
[WWW.CIRSINC.COM](http://WWW.CIRSINC.COM)

# CIRS

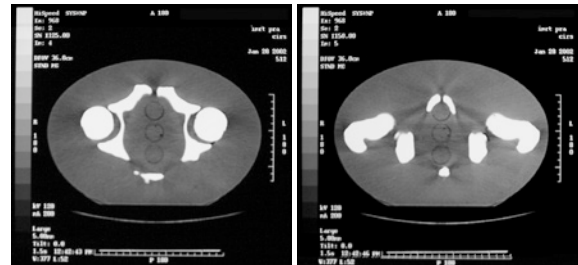
Tissue Simulation & Phantom Technology

**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.



- 1 - Holes plugged with rods (Ø 2.5 cm)
- 2 - Holes for electron density inserts
- 3 - Spacers
- 4 - Film stack (cube 2.5 inches)
- 5 - Bone core (diam. 1 cm in water background)



**SPECIFICATIONS**

<b>OVERALL DIMENSIONS:</b>	35.6 cm x 38.1 cm x 22.9 cm (14" x 15" x 9")
<b>WEIGHT:</b>	10.5 kg (28 lb)
<b>MATERIALS:</b>	Phantom Body: Tissue Equivalent Epoxy Materials Inserts: CIRS Tissue Equivalent Materials (epoxy resin based)

**MODEL 002PRA INCLUDES**

QTY	PART NO.	DESCRIPTION
1		5 cm tissue equivalent reference section for interchangeable ED inserts
10		1 cm thick contiguous 3D pelvic sections each drilled to accommodate rod inserts
1	002HCV	Homogeneous section that accommodates 002FC or 002GC cassettes
1	002FC	Film stack for 3D reconstruction
5		Water equivalent rods, 2.5 cm ø x 5 cm long
20		Bone equivalent solid disks, 2.5 cm ø x 1 cm thick
30		Water equivalent solid disks, 2.5 cm ø x 1 cm thick
1	002ED	Electron density reference plugs, set of 4 (lung, bone, muscle, adipose)
1		Set of CT to film fiducial markers
1		Alignment base
1		Holding device

**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
002RB-CVXX-XX	Bone equivalent rod insert with ion chamber cavity
002RW-CVXX-XX	Water equivalent rod insert with ion chamber cavity

**ADDITIONAL OPTIONS**

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)

**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.

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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.

