

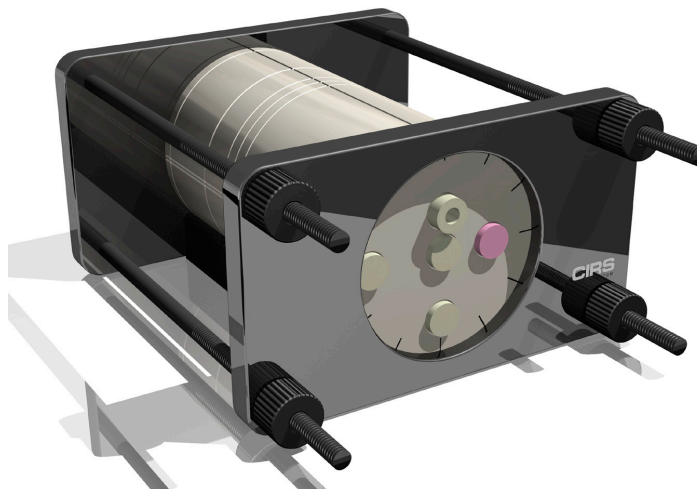
IMRT Head and Neck Phantom

Complete QA from CT imaging to dose verification

The CIRS Model 002HN 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 002HN phantom properly represents human head and neck anatomy in shape, proportion and structure as well as density. This enables thorough analysis of both the treatment planning and delivery systems. 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 25 MeV.

The phantom is circular in shape, approximates the size of an average patient. 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. Optional inserts are available



Model 002HN

to support a variety of other detectors including TLD's, MOSFET, and diodes.

The Model 002HN accommodates one Ready Pack™ 10" x 12" films in transverse orientation, two radiochromic or radiographic 10 x 10 cm films in transverse orientation and a stack of thirteen radiochromic films pre-cut to 63.5 x 63.5 mm in three different orientations.

The Model 002HN has an optional four 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.

An optional cranial bone ring is also available.

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



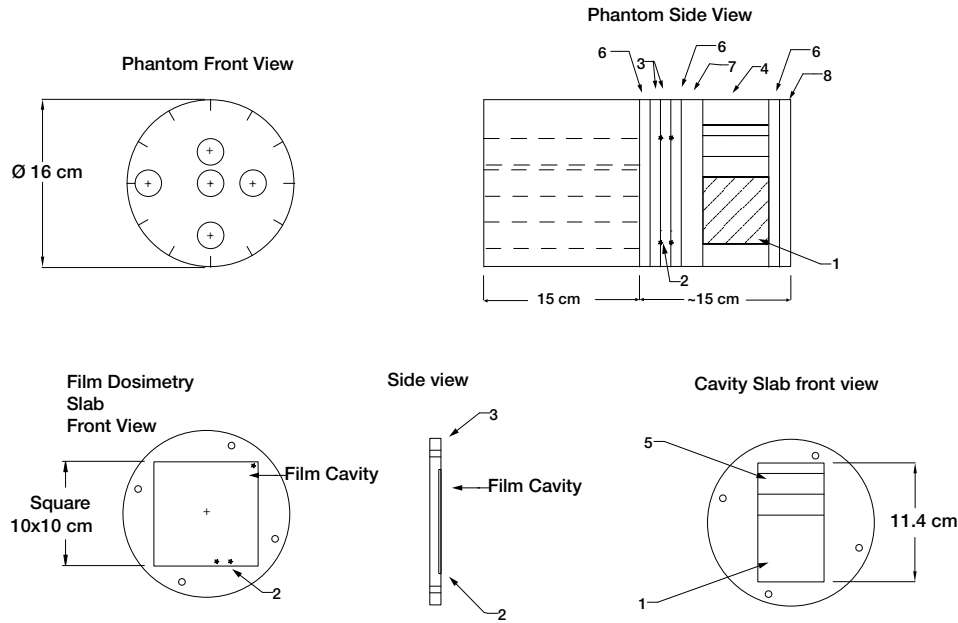
Tissue Simulation &
Phantom Technology

CIRS

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IMRT Phantom Specifications:

Model 002HN



- 1 - Film Stack 002FC or Gel Cassette 002GC
- 2 - Fiducial Markers
- 3 - 1 cm Film Dosimetry Slabs
- 4 - Cavity Slab

- 5 - 1 cm and 2 cm spacers for Film Stack positioning
- 6 - 1 cm spacer slabs
- 7 - 2 cm spacer slabs
- 8 - 1.6 cm end slabs

Model 002HN Includes

Qty	Description
1	Water equivalent homogeneous section drilled to accommodate rod inserts (15 cm)
2	Film slabs, 1 cm, film cavity 10 x 10 cm with a set of CT to film fiducial markers
1	Cavity slab, 6.4 cm, to accommodate Film stack or gel cassette
1	Film Stack for small volume 3D image reconstruction
2	Spacer slabs, 1 cm
1	Spacer slab, 2 cm
1	End slab, 1 cm
1	End slab, ~1.6 cm
1	Water equivalent rod insert with ion chamber cavity
1	Bone equivalent rod insert with ion chamber cavity
5	Water equivalent solid rod inserts
1	Bone equivalent solid rod insert
1	Alignment base
1	Holding device

Optional Accessories

Model	Description
002GC	Gel dosimetry cassette
002SPH	Water equivalent rod inserts (5 cm) for TLD's (set of 5)
002ED	Electron density reference plugs, set of 4 (lung, bone, muscle, adipose)
002CTF	Set of CT to film fiducial markers for additional interfaces

Electron Density Reference Insert			
	Density	Electron Density per cc x 10 ²³	Electron Density Relative to H ₂ O
Lung	0.21	0.69	0.207
Bone	1.60	5.03	1.506
Muscle	1.06	3.48	1.042
Adipose	0.96	3.17	0.949

*Refer to separate CIRS cavity and plug code list for available chamber cavities.