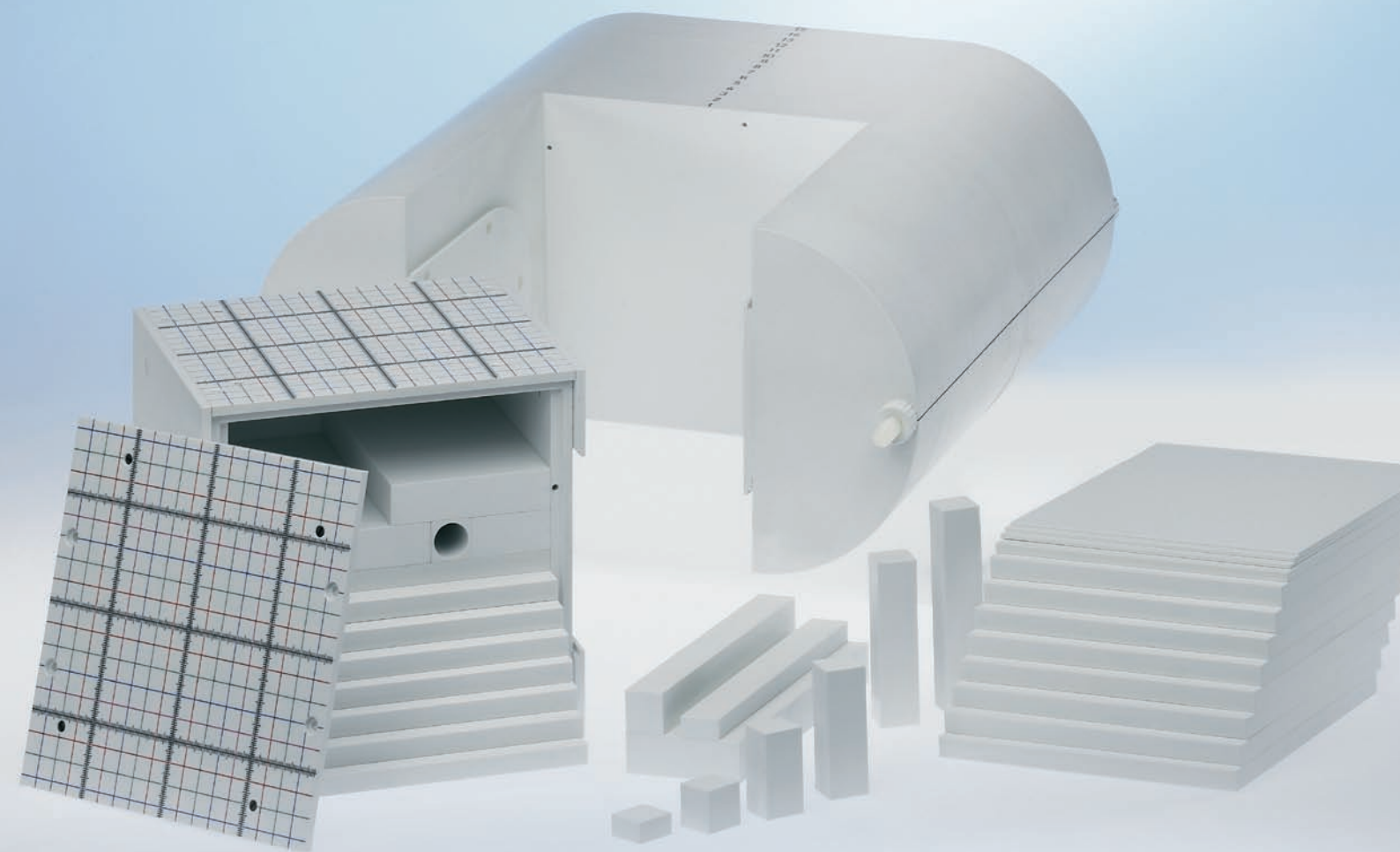




# I'mRT Phantom

A smart modular phantom for patient QA



# The phantom solution for IMRT

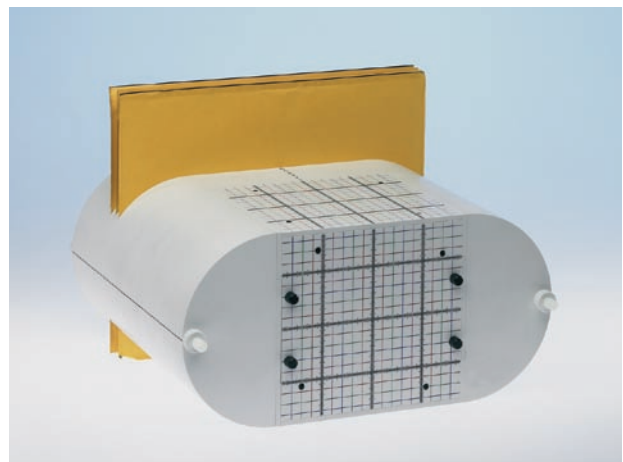
During implementation of IMRT treatments in clinical routine, film dosimetry can be used to verify the planned TPS dose versus the measured dose distribution.

The I'mRT Phantom is a water equivalent phantom for multiple film measurements and verification of the absolute dose. The unique modular design allows Universal Body as well as Head and Neck and Stereotactic applications.

- **Modular design for maximum flexibility**
- **Universal Body, Head and Neck as well as Stereotactic verification**
- **Film, Absolute Dosimetry and TLD**
  
- **Multiple film exposure**
- **Consists of nearly water equivalent RW3 material**
- **Easy and fast adjustment under Linac and in CT scanners**
  
- **Developed in scientific cooperation with the University Hospital Hamburg-Eppendorf**
- **Proven clinical results with Royal Marsden Hospital (Sutton/United Kingdom), Institut Gustave Roussy (Villejuif/France) and Ospedale S. Anna (Como/Italy)**

## Universal Body verification

The I'mRT Phantom consists of a universal body shaped section in which up to 15 films can be exposed simultaneously to larger IMRT fields. Subsequent comparison of the film dose distribution with the planned TPS data in the myQA software provides an accurate verification of the IMRT delivery process.



### Head and Neck/Stereotactic verification

The modular I'mRT Phantom design also includes a removable cubic phantom that has been developed in cooperation with the University Hospital Hamburg-Eppendorf and with Euromechanics GmbH (Schwarzenbruck/Germany). It is specifically designed for Head and Neck and Stereotactic applications. Markers in different colors are engraved on the surface of the cube for easy adjustment of the phantom under the Linac and in a CT scanner.

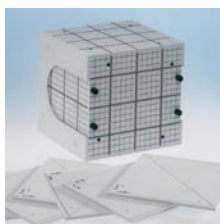
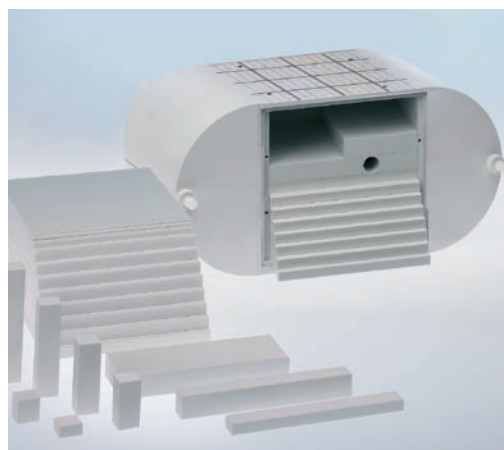
With film distance plates of 1 cm thickness up to 15 films with a maximum size of 16 cm x 16 cm can be positioned in a transversal, coronal or sagittal orientation. The films are cut in the darkroom, alternatively radiochromic films can be used. The cubic phantom docks into the torso, thus restoring the original anthropomorphic shape.

### Absolute Dose verification

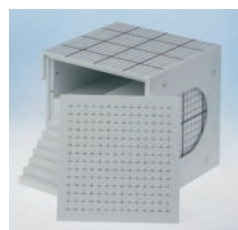
For absolute dose verification together with DOSE 1 different types of ionization chambers can be inserted at all points in the cubic phantom module within a 1 cm grid. Several auxiliary inserts with different depths and for different chamber types are available. In combination with the film distance plates the ionization chambers can be placed at any position in the phantom.

### Options

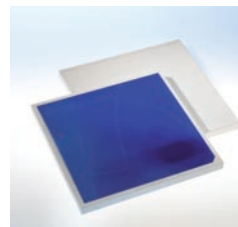
Optionally, a set of 6 localizer plates is available for the use of the cubic phantom in a CT scanner. As another option one or more TLD plates can be inserted in the cubic phantom, either as stand-alone application or in conjunction with film. Each TLD plate can be loaded with up to 196 TLD detector rods on each side with an individual spacing of 1 cm. Furthermore TLD cubes and other TLD inserts are available on request. For use of the Easy Cube, customized gafchromic® films with a size of 15 cm x 15 cm, the film adapter and adapter plates are available. The adapter plate is designed for correct orientation of the film, ensuring accurate irradiation due to immobility of the film and making markers superfluous.



CT localizer plates



TLD plate



Adapter plates

# Technical specifications

## I'mRT Phantom

<b>Size of complete phantom:</b>	33 cm (L) x 36 cm (W) x 18 cm (H)
<b>Carriage and levelling plate:</b>	33 cm (L) x 44 cm (W) x 1 cm (H)
<b>Material:</b>	RW3 (composition: 98% Polystyrol + 2% TiO <sub>2</sub> )
<b>Density:</b>	1.045 g/cm <sup>3</sup>
<b>Weight:</b>	22 kg

## Universal Body section

<b>Number of slabs:</b>	15; 3 integrated stainless steel markers in each slab
<b>Thickness:</b>	1 cm
<b>Film type:</b>	ready-packed films/radiochromic films
<b>Number of films:</b>	up to 15
<b>Film spacing:</b>	min. 1 cm
<b>Geometry:</b>	transversal
<b>Marking of films:</b>	three integrated markers for convenient film TPS alignment and registration

## Head & Neck / Stereotactic Cubic section

<b>Dimensions (outer):</b>	18 cm (L) x 18 cm (W) x 18 cm (H)
<b>Film size:</b>	16 cm (L) x 16 cm (W)
<b>Film spacing:</b>	min. 1 cm
<b>Number of films:</b>	up to 15
<b>Geometry:</b>	transversal, coronal or sagittal orientation
<b>Compensation of film thickness:</b>	distance plates included: 16 plates with 10 mm thickness, 1 plate with 1 mm thickness, 2 plates with 2 mm thickness and 1 plate with 5 mm thickness
<b>Film preparation:</b>	radiographic film cut in darkroom or radiochromic film
<b>Film marking:</b>	manually
<b>Ionization chamber inserts:</b>	also farmer type (FC65G/P) can be inserted
<b>Chamber positioning:</b>	at all points in the cube within a 1 cm grid
<b>Lateral scattering bodies:</b>	two lateral scattering bodies that can be mounted on all sides of the cube
<b>Width with scattering bodies:</b>	36 cm

## Options

<b>Ionization chamber inserts:</b>	Compact type and inserts for detectors of other manufacturers available on request
<b>CT localizer plates:</b>	set of 6 localizer plates for the use of the cubic phantom in a CT scanner
<b>TLD plate inserts:</b>	up to 196 TLD detector rods (Ø 1 x 6 mm), 1 cm spacing/TLD cubes/other TLD inserts on request

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Technical data is subject to change without prior notice.