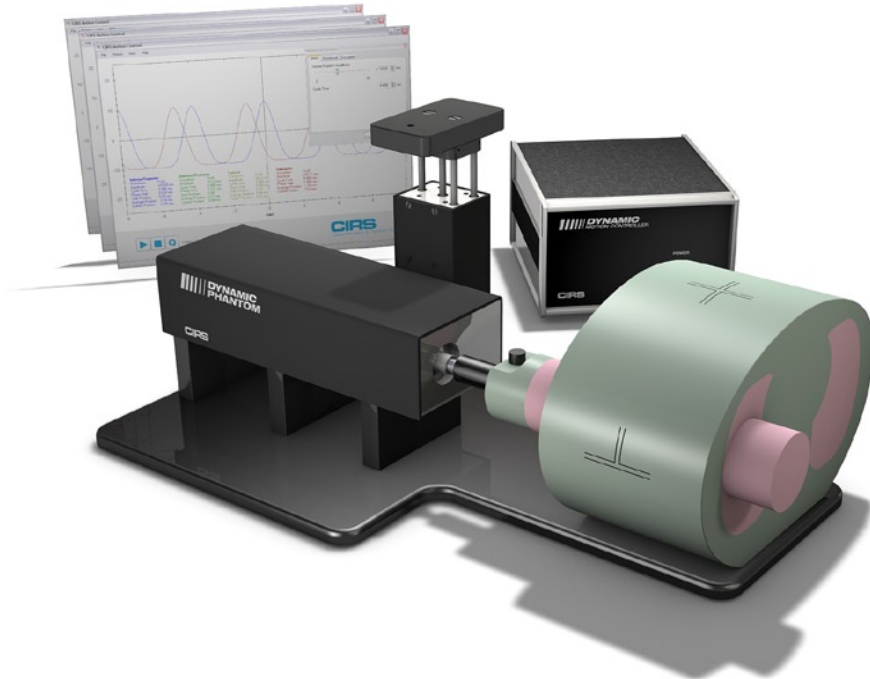


# Dynamic Thorax Phantom

Model 008A



## **IMAGE ACQUISITION • TREATMENT PLANNING • DOSE DELIVERY**

The CIRS Dynamic Thorax Phantom is a precision instrument for investigating and minimizing the impact of tumor motion inside the lung. It provides known, accurate and repeatable three-dimensional target motion inside a tissue equivalent phantom. It is designed for comprehensive analysis of image acquisition, planning and dose delivery in image-guided radiation therapy.

The phantom body represents an average human thorax in shape, proportion and composition. A lung equivalent rod containing a spherical target and or various detectors is inserted into the lung equivalent lobe of the phantom. The body is connected to a motion actuator box that induces three-dimensional target motion through linear translation and rotation of the lung equivalent rod. Motion of the rod itself is radiographically invisible due to its matching density with the surrounding material. The target and its motion, given its density difference, can be resolved.

Target and surrogate motion are independently controlled with CIRS Motion Control Software. The graphical user interface provides an unlimited variety of motions while simplifying

the operation of the Dynamic Thorax Phantom to an intuitive level. Patient specific profiles are easily imported and there is no need to make hardware adjustments or have special programming skills.

### **Features**

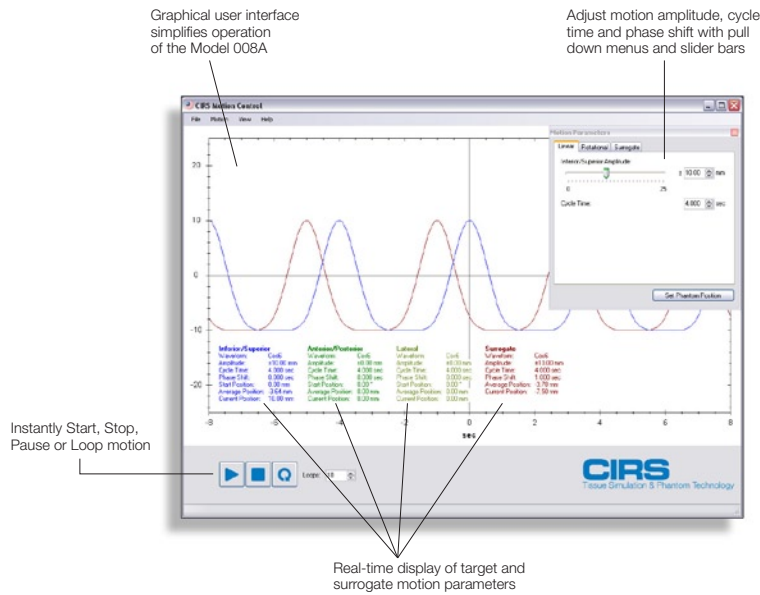
- Complex 3D tumor motion within the lung
- Sub-millimeter accuracy and reproducibility
- Motion software enables different cycles, amplitudes and wave forms
- Tissue equivalent from 50 keV to 25 MeV
- Compatible with TLD, MOSFET, Dose Gel, micro-chamber, PET/CT targets and film
- Surrogate breathing platform accommodates numerous gating devices

2428 Alameda Avenue Suite 316 • Norfolk, Virginia 23513 • USA  
Tel: 800.617.1177 • 757.855.2765 • Fax: 757.857.0523

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

**CIRS**

Tissue Simulation & Phantom Technology



SPECIFICATIONS

<b>Overall Dimensions:</b>	<b>67 cm x 32 cm x 28 cm</b>
<b>Overall Weight:</b>	<b>17.2 kg</b>
<b>Amplitude, IS:</b>	<b>± 25 mm</b>
<b>Amplitude, AP/LR:</b>	<b>± 10 mm</b>
<b>Amplitude, Surrogate:</b>	<b>± 25 mm</b>
<b>Motion Accuracy:</b>	<b>± 0.1 mm</b>
<b>Cycle Time:</b>	<b>1 - ∞ (adjusted based on amplitude)</b>
<b>Waveforms:</b>	<b>sin (t), 1-2cos4(t), 1-2cos6(t), sawtooth, sharkfin</b>

References:

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Chuang, C., et al., The use of a new dynamic motion phantom for patient specific QA in tracking therapy. 2006 AAPM Abstract ID No. 4639.

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Tanyi, James, A., et al., Dosimetric Evaluation of Target Dose in Stereotactic Body Radiation Therapy (SBRT) of Lung Lesions Using a Dynamic Motion Anthropomorphic Phantom. 2004 AAPM PO-T-143 Poster.

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Varchena, V., et al., A novel Dynamic Thorax phantom for 3D-CRT and IMRT of lung lesions. Radiotherapy & Oncology at Meeting, Vol. 76, Supplement 2, September 2005.

