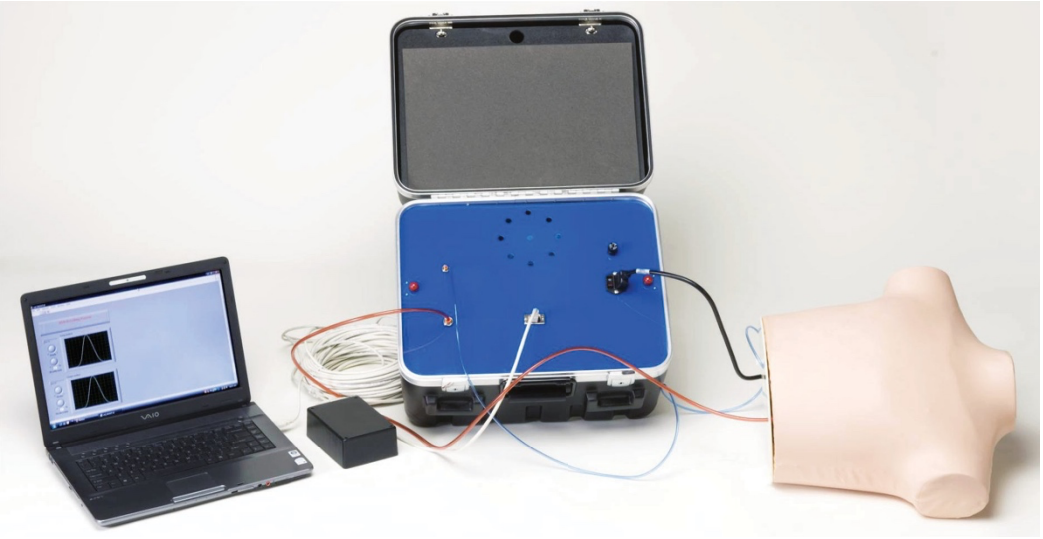
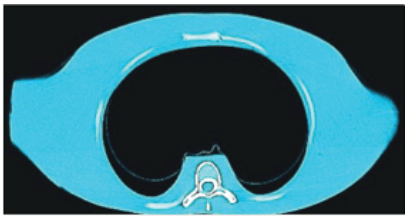
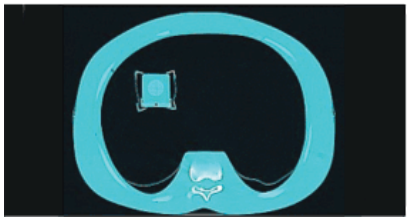
DYNAMIC BREATHING PHANTOM

Model Number: RS-1500





CT slice through mid-thorax



CT showing tissue-equivalent moving target with film and dosimeter holder

DYNAMIC BREATHING PHANTOM

The Dynamic Breathing Phantom is a state-of-the-art industry standard for planning lung cancer radiation therapy. It is designed to simulate an average adult humanoid torso including lungs, ribcage/chest-wall bone, skin and sub-dermis. The material properties of soft tissue, organs, bones, and joints provide a faithful simulation of the physical form of a human thorax and its radiological image properties.

This unique phantom has a spherical target within the lung equivalent lobe to simulate tumor motion inside the lung. The electro-pneumatic motion controller and easy to use phantom control software allows users to program different breathing patterns and breathing rates so that they can precisely plan the dose delivery to any patient.

RSD's Dynamic Breathing Phantom includes:

- Phantom Control Software for Microsoft Windows
- USB Control Hardware with 100 foot vault cabling (150 foot optional)
- Electro-pneumatic motion controller
- The Breathing Phantom thoracic mannequin
- Target fixtures for imaging and radiation dosimetry
- Individual thorax and target motions & rates (sin2, sin4, sin6, 1-sin4, 1-sin6, 5-20 breath/min)

Applications:

- Stereotactic body radiation therapy (SBRT) planning
- Intensity-modulated radiation therapy (IMRT)
- External Beam Therapy (EBT)
- Optimization of free breathing protocols
- Image quality assessments for X-Ray, CT, IGRT

Repeatable. Durable. Necessary.

Radiology Support Devices, Inc., represents over 30 years of product innovation, development, and testing to deliver the finest human equivalent radiological subjects. As the original standard, our phantoms have proven to be consistent and reliable devices that endure the most rigorous use.

MADE IN USA

rsdphantoms.com | 310.518.0527

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DYNAMIC BREATHING PHANTOM

Model Number: RS-1500

SIZE*	
HEIGHT	175 cm | 5 ft 9 in
WEIGHT	18.14 kg | 40 lbs

*Sectional size equivalent

MATERIAL	DENSITY (g/cc)
RSD SOFT TISSUE	1.08
RSD CORTICAL BONE	1.18

RSD SOFT TISSUE

Energy (MeV)	mean HU	Calculated μ	μ (ICRU 44)	% difference	Ratio
00.08	60.30	0.1948	0.1932	0.0080	0.9921
00.10	52.88	0.1797	0.1795	0.0015	0.9985
00.12	57.10	0.1717	0.1709	0.0044	0.9956
00.14	52.95	0.1623	0.1624	0.0007	1.0007
00.20	--	0.1477	0.1439	0.0261	0.9746
00.30	--	0.1245	0.1246	0.0004	1.0004
00.60	--	0.0950	0.0941	0.0101	0.9900
00.80	--	0.0825	0.0826	0.0013	1.0013
01.00	--	0.0744	0.0743	0.0018	0.9982
02.00	--	0.0520	0.0519	0.0018	0.9982
03.00	--	0.0351	0.0357	0.0171	1.0174
06.00	--	0.0288	0.0291	0.0088	1.0088
08.00	--	0.0252	0.0255	0.0098	1.0099
10.00	--	0.0229	0.0232	0.0149	1.0151
15.00	--	0.0203	0.0203	0.0015	0.9985
20.00	--	0.0189	0.0189	0.0017	1.0017

RSD CORTICAL BONE

Energy (MeV)	mean HU	Calculated μ	μ (ICRU 44)	% difference	Ratio
00.08	1365	0.4345	0.4280	0.0151	0.9851
00.10	1048	0.3496	0.3562	0.0184	1.0188
00.12	0977	0.3211	0.3274	0.0191	1.0195
00.14	0902	0.2932	0.2986	0.0180	1.0184
00.20	--	0.2511	0.2513	0.0009	1.0009
00.30	--	0.2155	0.2137	0.0084	0.9916
00.60	--	0.1596	0.1598	0.0011	1.0011
00.80	--	0.1403	0.1402	0.0010	0.9990
01.00	--	0.1274	0.1261	0.0106	0.9895
02.00	--	0.0883	0.0885	0.0017	1.0017
03.00	--	0.0611	0.0625	0.0229	1.0235
06.00	--	0.0512	0.0525	0.0246	1.0253
08.00	--	0.0468	0.0474	0.0120	1.0121
10.00	--	0.0446	0.0444	0.0039	0.9962
15.00	--	0.0410	0.0409	0.0016	0.9984
20.00	--	0.0393	0.0397	0.0102	1.0103

Linear Attenuation Data:

Monte Carlo simulation was used to calculate linear attenuation coefficients as a function of beam.
Monte Carlo results were validated with linear attenuation coefficients derived from Hounsfield Unit measurements at discreet energy levels.
RSD Phantom material linear attenuation data was compared to NIST data using ICRU Report 44 compositions of human tissues.
NIST data was interpolated when necessary.

MODEL NUMBER:

RS-1500	Dynamic Breathing Phantom

PLEASE CONTACT RSD FOR CUSTOM ORDERS AND REFURBISHMENT

MADE IN USA

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