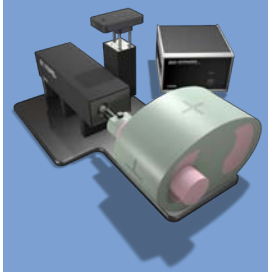
Product Catalog

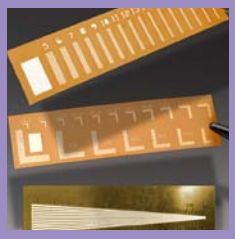
CIRS

Tissue Simulation & Phantom Technology

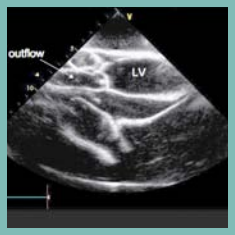
DIAGNOSTIC X-RAY & RADIATION THERAPY



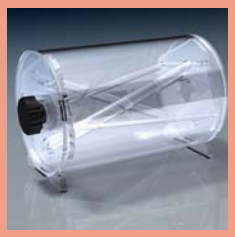
MAMMOGRAPHY



ULTRASOUND



MULTI-MODALITY



Improving the art and science
of medical imaging and radiation therapy

QUALITY ASSURANCE • TRAINING • RESEARCH

The Leader In Tissue Simulation Technology

ISO 9001:2008 CERTIFIED

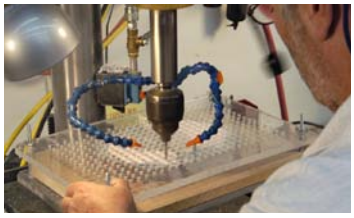
Quality Assurance

CIRS business is Quality Assurance. We were an early adopter of ISO 9000, an internationally recognized quality management system.

CIRS was first registered to the 1994 standard in 1997. CIRS upgraded to ISO 9001: 2008 registration in April 2009 (10000905 QM08).

Computerized Imaging Reference Systems, Incorporated is recognized world wide for tissue simulation technology and is the leader in the manufacture of phantoms and simulators for quantitative densitometry, calibration, quality control and research in the field of medical imaging and radiotherapy.

For over 25 years CIRS has been simulating a wide variety of tissues by blending epoxy resins, urethanes, water based polymers and other proprietary materials.



The physicists, biomedical engineers and skilled craftsmen at CIRS are available to manufacture custom phantoms for emerging or special requirements. If you have a special phantom or reference device you would like to develop, please contact customer service for assistance.

Tissue Simulation Solutions

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Welcome To Our Full Line Catalog

The CIRS full line catalog is a unique resource for medical imaging phantoms and tissue simulation products. It offers cutting edge solutions for today's evolving modalities as well as a wide selection of items relied on for quality assurance throughout the medical imaging community.

For comprehensive product specifications
visit www.cirsinc.com or call us at 1-(800) 617-1177.

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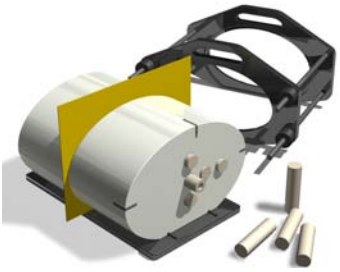
IMRT Homogeneous Phantom



Model 002H5

The Homogeneous Phantom allows quick checks of patient plans using one 10" x 12" Kodak Ready-Pack film. It has five interchangeable rod locations and one set of CT film fiducial markers. The phantom measures 30 cm wide x 30 cm long x 20 cm thick.

Model 002H5 Includes:

Qty	Description
2	Tissue equivalent sections, one drilled to accommodate solid rod inserts
1	Set of CT to film fiducial markers
5	Water equivalent solid rod inserts
1	Water equivalent rod insert with ion chamber cavity
1	Alignment base
1	Holding device

IMRT Head & Torso Freepoint Phantom

Model 002H9K

The Model 002H9K can be configured for torso, head & neck set-ups. The phantom simulates the patient through the entire IMRT process from CT data acquisition and planning to delivery and dose verification.

The Freepoint phantom, allows any point dose location to be selected within a diameter of 11.2 cm by adjusting two rotating cylinders. Lung and bone equivalent rods can be positioned at any location within the circular area for assessment of heterogeneity correction.

The Model 002H9K was designed in collaboration with David D. Loshek PhD.

Model 002H9K Includes:

1	Water equivalent homogeneous torso section torso section with cylindrical inserts (15 cm)
2	Spacer slabs, 2 cm
1	Spacer slab, 1 cm
1	Spacer slab, 10 cm
1	Water equivalent rod insert with ion chamber cavity
1	Bone equivalent rod insert with ion chamber cavity
4	Water equivalent solid rod inserts
1	Bone equivalent solid rod insert
1	Set of CT to film fiducial markers
1	Alignment base
1	Holding device

Head and Neck configuration

Features

- Ionization chambers, TLD, MOSFET and Diodes easily positioned using interchangeable rods
- Choose any point dose location by rotating the cylinders
- Use radiographic Ready-Pack film or GAFCHROMIC®
- Close placement of detectors to film improves film calibration
- CT - film markers ensure accurate film to plan registration
- Surfaces are marked with indices for precise alignment
- Configure with or without heterogeneities

IMRT Head and Neck Phantom

Model 002HN

The Head and Neck phantom approximates the average cranial diameter of 16 cm. A bone equivalent rod can simulate the c-spine and an empty hole can simulate the trachea. The phantom has film cassettes for radiographic or radiochromic film.

Model 002HN Includes:

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 film to 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, 1cm
1	End slab, 1.6cm
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

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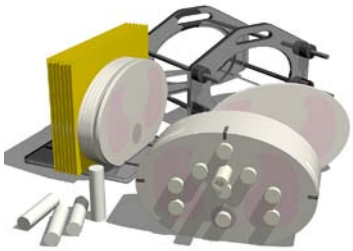
IMRT Thorax Phantom



Model 002LFC

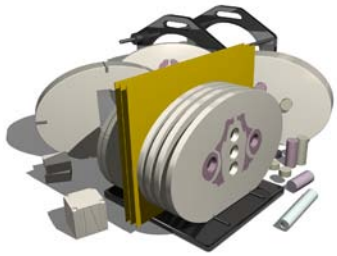
The 002LFC Thorax IMRT Phantom has the same outside dimensions as the 002H5 but includes lung and cylindrical spine. Allows measurements in mediastinum, lungs and spine.

Up to 12 Ready-Pack films can be positioned in the phantom.

Model 002LFC Includes:

Qty	Description
1	Thorax section drilled to accommodate rod inserts
12	1 cm thorax sections
1	3 cm end section
1	Alignment base
1	Holding device
1	Water equivalent insert with ion chamber cavity
1	Bone equivalent insert with ion chamber cavity
1	Lung equivalent insert with ion chamber cavity
5	Water equivalent solid rod inserts
1	Bone equivalent solid rod insert
4	Lung equivalent solid rod inserts
1	Set of CT to film fiducial markers

IMRT Pelvic 3D Phantom



Model 002PRA

The Pelvic 3D Phantom properly represents pelvic anatomy with a tissue equivalent three-dimensional skeleton. Five rod locations are available in the sensitive areas and up to 10 Ready-Pack films can be positioned within the pelvic region. Rectum balloon can also be represented by empty hole.

Model 002PRA Includes:

Qty	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	Homogeneous section that accommodates 002FC or 002GC cassettes
1	Film stack for 3D reconstruction
5	Water equivalent rods, 2.5 cm dia. x 5 cm long
20	Bone equivalent solid disks, 2.5 cm dia. x 1 cm thick
30	Water equivalent solid disks, 2.5 cm dia. x 1 cm thick
1	Bone equivalent insert with ion chamber cavity
1	Water equivalent rod insert with ion chamber cavity
1	Electron density reference plugs, set of 4 (lung, bone, muscle, adipose)
1	Alignment base
1	Holding device
1	Set of CT to film fiducial markers

All CIRS IMRT PHANTOMS :

- *Approximate the human body in size, structure and tissue properties using known and fairly simple geometries.*
- *Allow for verification of the most common treatments such as lung, head and neck, breast and prostate.*
- *Accommodate the wide variety of dosimeters necessary to perform thorough verification of the IMRT process.*
- *Enable easy upgrades and custom configurations through a modular design system.*
- *Provide a cost effective, user friendly and better designed alternative to existing phantoms.*
- *Are constructed of proprietary tissue equivalent epoxy materials. Linear attenuations of the simulated tissues are within 1% of actual attenuation for water and bone and within 3% for lung. These unique materials eliminate the need for correction factors, thus improving accuracy and saving time.*
- *Accommodate standard Ready-Pack films in a transverse orientation (other orientations available upon request).*
- *Incorporate a unique interchangeable rod design that enables chambers, diodes, MOSFET's and TLD's to be positioned in the same locations within the phantom for inter comparison of detectors. Depending on the model selected, your phantom may allow measurements to be taken inside or adjacent to semi-anthropomorphic lung and bone structures.*
- *Enable acquisition through planning process to treatment delivery.*
- *Include CT to film fiducial markers allowing easy film registration supported by RIT113®.*
- *Include an alignment base and holding device that enables quick and easy set-up of multiple phantom sections while still allowing easy access and relocation of detectors.*

Additional features:

(optional in some models)

- *Electron density reference plugs*
- *Radiochromic film stack for small volume distributions*
- *BANG® gel cassette*
- *Carry case*

Cube 20 Phantom

Model 009

The most convenient device for routine QA and IMRT applications

The Cube 20 Phantom is designed for routine QA in RT and IMRT applications where ease of use and quick set-up are important. Chamber, diode or MOSFET detectors are easily positioned at isocenter of the cube and laser alignment marks on all sides facilitate precise positioning of the phantom. Detector position can be adjusted in 1 mm increments longitudinally and 5 mm increments for lateral and elevational adjustments.

Ready-Pack film can be inserted in the Cube. By rotating the cube, the film is easily set in sagittal, coronal or transverse orientations. Stainless steel fiducials are clearly resolvable on CT images and leave small indentations on the film for precise film to plan registration. Upon request, a recess can be milled in the interface surface for darkroom loading of radiographic film 5" x 6".

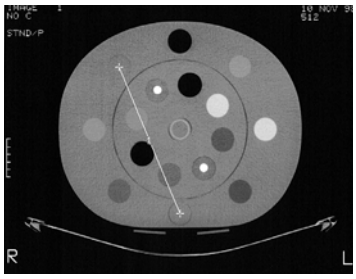
Electron Density Phantom

Model 062

For use in CT Treatment Planning

The CIRS Electron Density Phantom can help improve the accuracy of your treatment planning. The phantom enables precise correlation of CT data in Hounsfield units to electron density and includes eight different tissue references. A syringe plug which can be filled with any fluid or solid material is included. An optional titanium reference is also available.

The Model 062 can be configured to simulate head or abdomen set-ups. Tissue references can be positioned at 17 different locations within the scan field. Carry case and user guide are included.



CBCT Electron Density Phantom

Model 062A

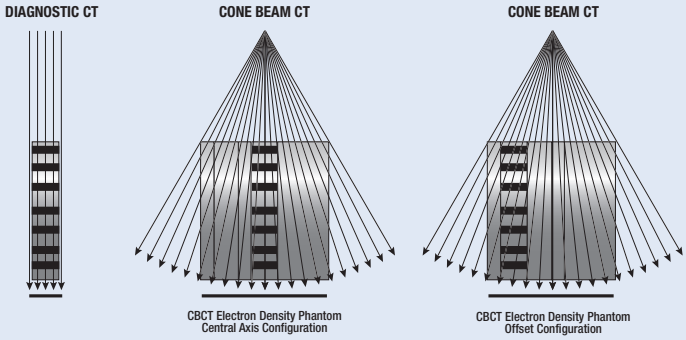
Increase HU value confidence for adaptive Radiation Therapy

Reliable CT calibration curves help enable treatment plan adaptation directly from Cone Beam CT data. Preliminary data shows that there may be differences between the HU readings for Diagnostic CT and Cone Beam CT. The geometry of the Cone Beam CT requires additional material and suggests that off central axis measurements should be taken.

The Cone Beam (CBCT) Electron Density Phantom is an extended version of the CIRS Model 062 Electron Density Phantom and specifically designed for Cone Beam CT Imaging systems. Additionally, the phantom can accommodate any ion chamber for dose measurements and validation of heterogeneity correction based on the corrected CT calibration curve. Interchangeable slabs allow for repositioning of the electron density section with an increment of 2.5 cm

FEATURES

- Can be used for multi-slice CT and Cone Beam CT
- Can be configured for central axis and off-set measurements
- Manufactured from epoxy
- Tissue equivalent inserts can be positioned at 17 different locations
- Special marker inserts enable quick assessment of distance registration
- All materials accurately simulate indicated tissue within CT and Cone beam CT energy range



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MicroMouse™ & Water-Filled Mouse Phantoms

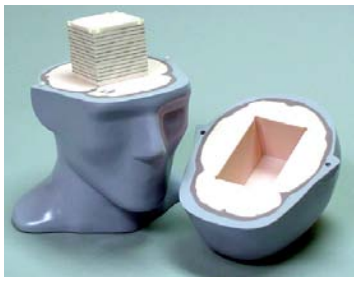
Models 090 & 091

Provides standard of reference for Micro-CT scanners

Micro-CT systems promise to deliver precise and accurate high-resolution measurements. The field of view of these systems requires appropriately scaled QA phantoms. The CIRS Model 090 MicroMouse™ and Model 091 Water-Filled Mouse Phantoms provide tools for quantifying calcium and bone density with respect to X-ray attenuation and absorption properties. Hydroxyapatite (HA), the principal constituent of teeth and bones within mammals, is the most appropriate reference for mineral density evaluations. CIRS blends HA in a soft tissue equivalent, polymer background to provide references which can range in HA loading between 0 mg/cc and 750 mg/cc. Hydroxyapatite grain size and homogeneity of the rods are optimized for use in Micro-CT.

Both the MicroMouse Phantom and the Water-Filled Mouse phantom contain 11 rods of varying mineral loading and dimension. They can be used to evaluate Micro-CT scanners as you would standard whole body scanners. The targets are suitable for determining contrast detectability and estimating low-contrast resolution.

Radiosurgery Head Phantom



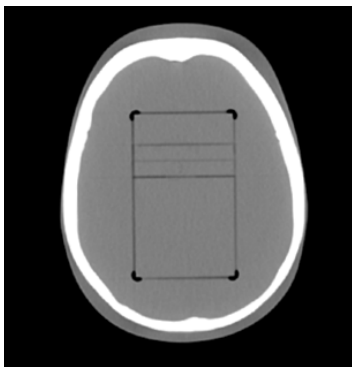
Model 605

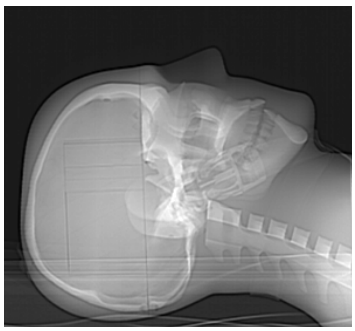
For Evaluation of Treatment Accuracy

The CIRS Radiosurgery Head Phantom was designed to improve the accuracy of treatment plan verification in radiosurgery. It allows for 3D dose verification in a large cranial volume.

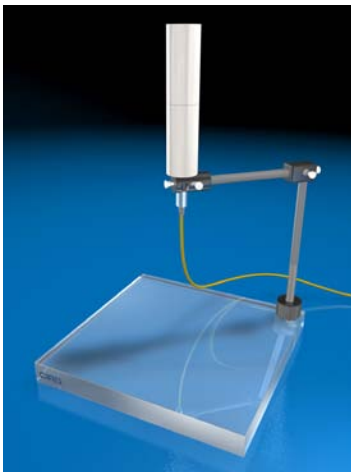
The Phantom contains average brain, bone, spinal cord, vertebral disks and soft tissues mimicked with 1% accuracy for both CT and Therapy energy ranges (50 keV - 25 MeV).

The 6.4 x 6.4 x 6.4 cm film cassette contains 13 levels of X-ray or GAFCHROMIC® film to evaluate accuracy of 3D dose distribution. It can be interchanged with an equivalent gel dosimetry cassette or TLD holder. Two brain-equivalent spacers allow the user to locate the cassette in one of four different positions.





Water Equivalent Mini Phantom



Model 670 & 670-S

The Water Equivalent Mini Phantom for Radiotherapy eliminates scatter radiation and X-ray beam electron contamination during the ion chamber measurements at a reference depth of 10 cm. Phantom material is Plastic Water® and precise machining improves the dosimetric accuracy and reliability of LINAC beam MU calibrations.

The phantom satisfies the requirements of ESTRO Booklet 3 "Monitor unit calculation for high energy photon beams" for Output, Volume-Scatter and Scatter-Primary Ratio measurements.

The Model 670 provides excellent tissue simulation and opportunity of true dose comparison with the 30 x 30 cm Plastic Water® slab phantom. By positioning the ion chamber at a reference depth of 10 cm, the Mini Phantom allows the physicist to isolate and investigate the influence of scatter radiation on a reference dose measured in a slab phantom. The Model 670-S Mini-Phantom stand allows for vertical or horizontal positioning of a 0.6cc Farmer and smaller diameter chambers. Precise three axis rotation improves measurement accuracy.

CIRS Tissue Simulation Technology (TE) has been validated through specific testing, continuous monitoring of manufacturing applications and worldwide use and acceptance of products for over 25 years.

CT Simulator For Bone Mineral Analysis

A simple and effective method for accurate and reliable bone mineral measurements.

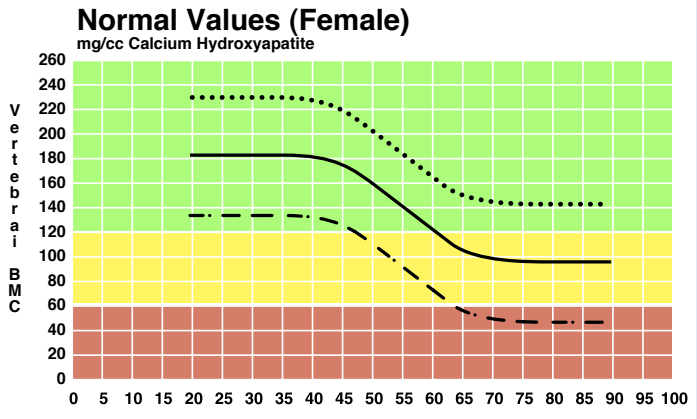
Change in trabecular bone mineral content is an early indicator of change in metabolic function. CT, with its superior contrast discrimination, is a major tool in the evaluation of trabecular bone in the central skeleton. All CT scanners require a standard of reference to properly perform quantitative tissue analysis.

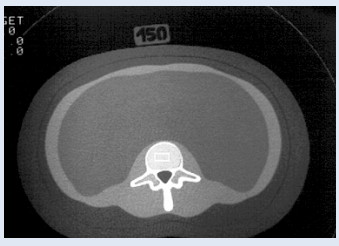
The Model 004 takes into account all known variability factors that can adversely affect the use of CT for bone densitometry. The CIRS anthropomorphic phantom design minimizes beam hardening effects and variances associated with scan field position.

The Model 004 is the only CT densitometry system to provide a solid epoxy matrix with true calcium hydroxyapatite references. The system provides extremely stable density references and does not require special extrapolations or complex calculations.

Model 004

The reporting software runs on a PC or Macintosh platform and does not require CT scanner time. The Model 004 system is designed to be used immediately on any whole body CT scanner and does not require special setups or software configurations.





Phantom image

Patient image

DEXA Phantom

Model 026

The "Bona Fide Phantom" (BFP)[1]

Bio-Imaging's "Bona Fide Phantom" (BFP), is a quality control tool for Dual-Energy X-ray Absorptiometry (DEXA) instruments, which features an acrylic-embedded calcium hydroxyapatite (CHA) step-wedge. Advanced design features make it the best choice for assessing DEXA instrument stability. You can successfully use the BFP on all mainstream DEXA instruments.

The BFP offers a range of densities (0.7 - 1.5 g/cm^2), to verify instrument function over the clinically relevant range, not just at a single, "healthy" BMD. Linearity of BMD over the clinically relevant range is critical for full instrument evaluation.

The phantom uses a CHA insert for direct assessment of bone density accuracy. The CHA insert is compliant with FDA guidelines for cross-calibration phantoms for clinical trials. Each insert is machine processed, guaranteeing manufacturing precision.

The BFP is cast in acrylic and comes with its own carry case for easy handling. The tote remains on the phantom during scanning and does not affect BMD readings, allowing rapid placement and removal for the phantom from the bed. A flight case is available as an option.

Note: Various DXA scanner manufacturers have developed and published cross-calibration formulas for use in data comparison.

[1] BFP design is the property of Bio-Imaging Technologies, Inc.

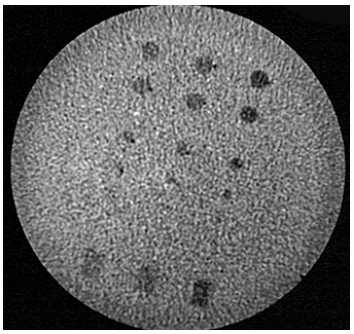
Spiral/Helical CT Phantom

Model 061

Optimize collimation and table speed to detect small lesions in the abdominal cavity

The CIRS Helical CT Phantom is designed to test scanning protocols to verify that small, low contrast lesions will be detected. The phantom permits complete testing of low contrast lesion detection when scan parameters are varied. These parameters include collimation, pitch, reconstructed field of view, reconstruction algorithms, z-axis interpolators, kVp, mA and rotation time. Testing can be applied to protocols designed for head and abdomen.

Contains clinically-relevant spherical targets that are 5, 10 and 20 HU below the liver equivalent background matrix.



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AAPM CT Performance Phantom

Model 610

The CIRS Model 610 AAPM CT Performance Phantom offers the user a single test object that measures ten distinct CT performance parameters. The phantom design is based on the guidelines presented in Report #1 of the American Association of Physicists in Medicine Task Force on CT Scanner Phantoms. The goals of report #1 were to "(1) define 'performance' of a CT scanner and (2) describe methods of performance testing through utilization of particular phantoms."

A CT number linearity insert, high contrast resolution insert and slice width insert are housed in an 8.5" diameter PMMA water tank with quick disconnect valves for ease of filling and draining between use. Also included is a 0.25" bone equivalent ring that can be fit over the inserts to evaluate the effects of beam hardening.

A contrast test object is adhered to the bottom of the tank that includes two rows of cavities from 1 to 0.125" diameter. The cavities can be filled with various solutions for contrast evaluation. An aluminum alignment insert is incorporated in the lid of the tank and can be interchanged with a polystyrene TLD insert for dose measurements.

A user's guide, holding cradle, filling tubes and other accessories are included.

Optional items:
Low contrast inserts, whole body resolution/noise ring, TLD insert, Low contrast insert - spherical targets and carry case.

ATOMMax Dental & Diagnostic Head Phantom

Model 711-HN

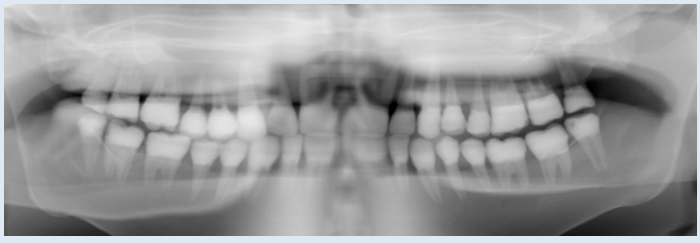
The CIRS Dental and Diagnostic Head Phantom is a standard of reference for diagnostic radiology of the head. The phantom is designed to assist technical and clinical staff in the selection, monitoring, training and verification of scanning parameters common to most radiological procedures requiring fine anatomical details.

The Model 711-HN provides a consistent tool for researchers, clinicians and technologists. It is ideal for determining optimum system settings, commissioning new equipment, monitoring system performance and training in dental X-ray, panoramic X-ray, CT and cone beam CT procedures.

The jaw of the phantom is slightly opened and front teeth are vertically aligned to replicate correct positioning with a bite guide. Please note that an actual bite guide can not be positioned in this product.

ATOMMax is made of tissue simulating resins that mimic the X-ray attenuation properties of human tissue for both CT and therapy energy ranges (50 keV-25 MeV).

The Model 711-HN approximates the average male human head in both size and structure. The phantom includes detailed 3D anthropomorphic anatomy including brain, bone, larynx, trachea, sinus, nasal cavities and teeth. The bones contain both cortical and trabecular separation. The teeth include distinct dentine, enamel and root structure including the nerve. The sinus cavities are fully open.



CIRS Tissue Equivalent (TE) materials can simulate any tissue in the human body.

Applications include quantitative measurement, training, image quality control, and dose calibration.

NEMA PET Scatter Phantom

Model 800

Designed specifically for NEMA Standard NU2-2001

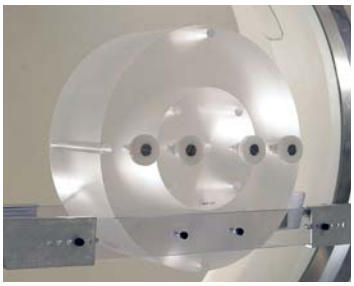
The Model 800 enables measure of scatter fraction and count rate performance as outlined in NEMA NU2-2001. Scatter fraction is a measure of the system sensitivity to scatter while count rate performance is an indication of scanner performance as a function of activity.

The PET Scatter Phantom is a solid right circular, polyethylene cylinder with a specific gravity of 0.96. A 6.4 mm hole is drilled parallel to the central axis of the cylinder, at a radial distance of 45 mm.

For ease of handling the cylinder consists of three segments that are assembled during testing.

The test phantom line source insert is a clear polyethylene plastic tube of 800 mm in length, with an inside diameter of 3.2 mm and outside diameter of 4.8 mm. The central tube can be filled with a known quantity of activity and threaded through the 6.4 mm hole in the test phantom.

CT Dose Phantom



Model 007 & 007A

Designed for FDA performance standard

The CIRS CT Dose Phantoms are manufactured to comply with the Food and Drug Administration's performance standard for diagnostic X-ray systems, which includes Computed Tomography Systems (21CFR 1020.33).

Each phantom consists of a set of nesting 15 cm thick solid PMMA cylinders measuring 16 cm (head) and 32 cm (body) in diameter. The adult head cylinder is also suitable for pediatric body measurements. The Model 007A includes a third nesting cylinder measuring 10 cm in diameter for pediatric head measurements.

Through holes measuring 1.31 cm in diameter will accommodate standard CT probes. Acrylic rods are provided to plug the holes when not in use. The acrylic rods are machined to receive TLD's

An option Environmental Support Bracket suspends the phantom above the imaging couch enabling assessment of dose in protocols requiring extended travel of the imaging couch.

Tissue Equivalent CT Dose Phantoms

Model 007-TE

Accurate dose measurements for infants to large adults

The CIRS Tissue Equivalent CT Dose Phantoms are designed to more accurately simulate the range of patient sizes from small infants to large adult patients rendering more accurate and reliable CT dose data.

The phantoms are made from proprietary epoxy formulations that faithfully mimic the X-ray absorption and scatter properties of soft tissue or water within 1% in the diagnostic energy range.

There are eight abdominal, eight thorax and four head phantoms in different sizes/ages available.

All the phantoms have five through-holes with an inside diameter of 1.30 cm to accommodate standard CT dose probes and five tissue equivalent rods to plug the holes not in use. One hole is at center hole and four are around the perimeter, 90° apart and 1 cm from center to the outside edge of the phantom.

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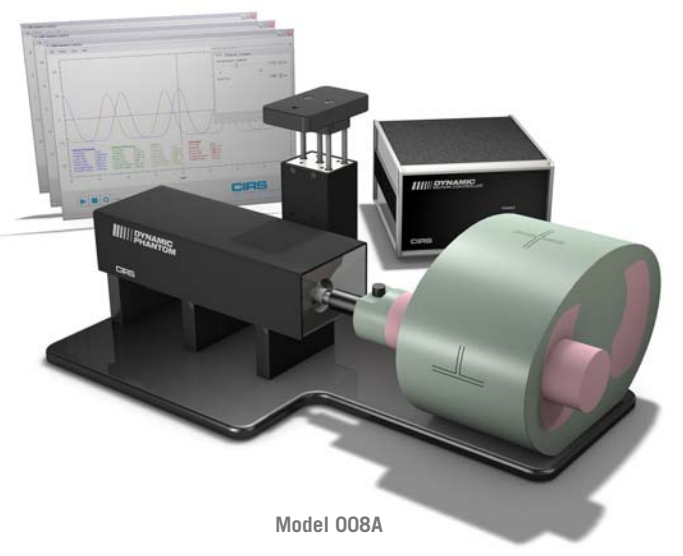
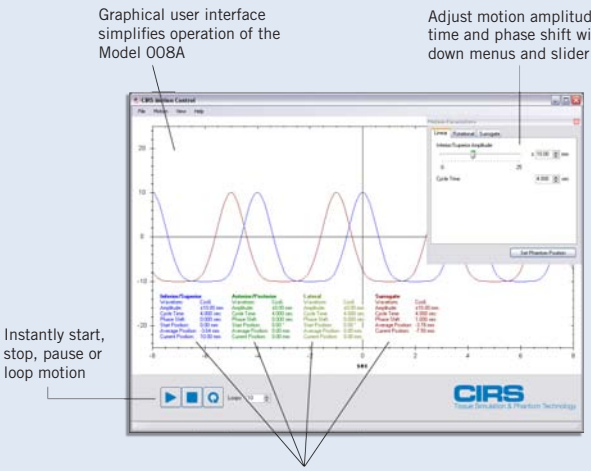
Dynamic Thorax Phantom

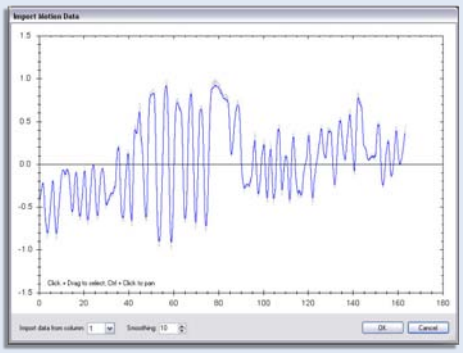


Model 008A

Image Acquisition • Treatment Planning • Dose Delivery



Real-time display of target and surrogate motion parameters.

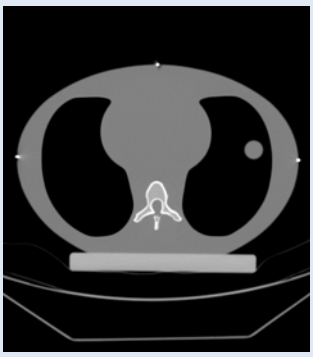


Import patient specfic waveforms from tab delimited or comma separated file formats.

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 the 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 the intuitive level. Patient specific profiles are easily imported while there is no need to make hardware adjustments or have special programming skills.



Tissue equivalent phantom body with anthropomorphic spine, external alignment marks and CT fiducials for phantom image registration

Dynamic Platform

Model 008PL

Programmable motion for any phantom

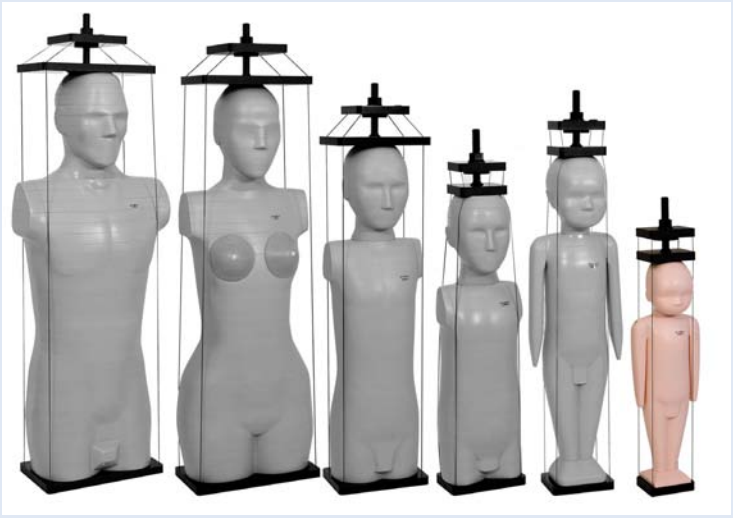
The CIRS Dynamic Platform provides an economical, user-friendly solution for the complex tasks associated with tumor motion and patient positioning in radiation therapy.

The platform is made from stiff, low-density plastics. The device enables precisely controlled inferior-superior motion up to 50 mm for any phantom up to 70 lbs. A removable pin system in the main platform allows consistent placement and fixation of almost any phantom and traditional laser alignment marks enable accurate positioning of the entire device. An independently controlled smaller platform provides Posterior-Anterior surrogate chest wall motion.

The CIRS Dynamic Platform is operated using CIRS Motion Control Software, a user-friendly graphical user interface that can be installed on any computer running Windows XP or Vista.

ATOM® Dosimetry Verification Phantoms

CIRS ATOM® phantoms are a full line of anthropomorphic, cross sectional dosimetry phantoms designed to investigate organ dose, whole body effective dose as well as verification of delivery of therapeutic radiation doses.



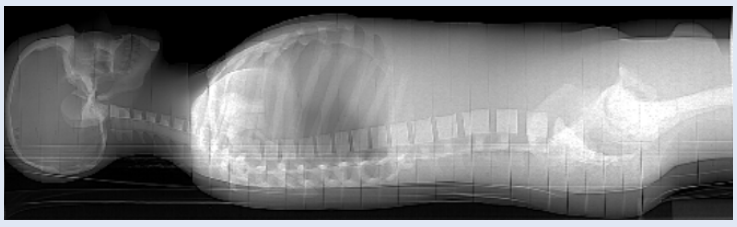
ATOM is the only line of dosimetry phantoms to range in sizes from newborn to adult. Six models are available: newborn, 1-year, 5-year and 10-year old pediatric phantoms as well as adult male and female phantoms.

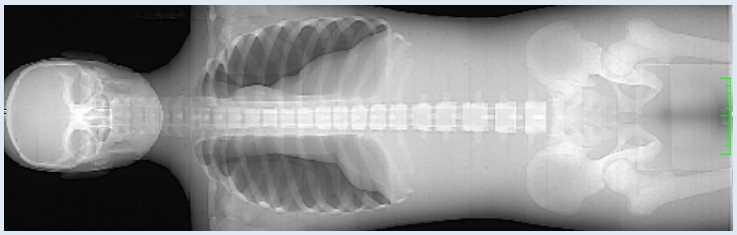
Each phantom is sectional in design with traditional 25 mm thick sections. The sectional surfaces are extremely flat and smooth and do not require any special coatings or treatment. This results in minimal interfaces between the slabs when viewed in a scout or projection X-ray. The ATOM line also differs from other dosimetry phantoms by providing optimized TLD locations specific to 21 inner organs.

Tissue-equivalent epoxy resins are used in all aspects of the phantom. CIRS technology offers superior tissue simulation by covering a wider range of energy levels from diagnostic to therapeutic. In addition, all bones are homogenous and are formulated to represent age appropriate, average bone composition. CIRS bone formulations offer distinct advantages over natural skeletons and other types of simulated bone.

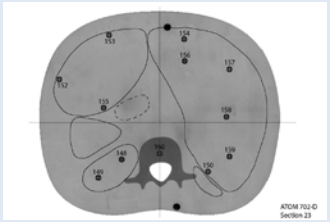
CIRS ATOM phantoms provide our best tissue simulation and the widest variety of options available on whole body cross sectional dosimetry phantoms.

LIFE-LIKE IMAGING CHARACTERISTICS





OPTIMIZED ORGAN DOSIMETRY

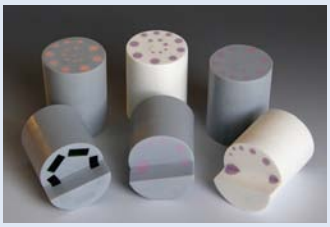


Model 702-D
Section 23 Organ Map

Model 702-D
Section 23 Organ Dosimetry Option

CIRS is the only manufacturer that offers organ hole locations specific to 21 radiosensitive internal organs that are optimized for precise calculations using the minimum number of detectors necessary.

CT IMAGING QA KIT FOR ATOM® PHANTOMS



Model 700-QA

Evaluate CT performance in anthropomorphic phantoms

The CIRS CT Imaging Kit is suitable for use in CIRS ATOM dosimetry phantoms and CIRS 007TE Tissue Equivalent CT Dose Phantoms, which are already used widely for CT dosimetry. The inserts contained in the kit are designed to investigate correlation between the image quality and CT doses. The kit provides various targets for evaluation of two important CT performance parameters: low contrast detectability and spatial resolution in soft tissues and lung regions.

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3D Sectional Torso Phantom

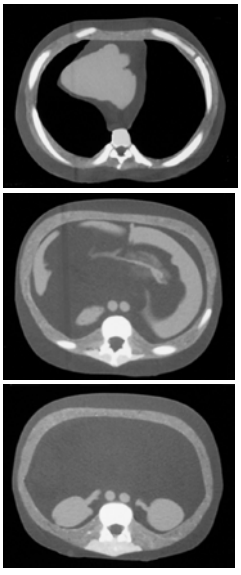
Model 600

Includes 12 internal organ tissues

The CIRS Model 600 Anthropomorphic Torso Phantom is designed to provide an accurate simulation of an average torso (22 cm posterior-anterior thickness) for medical imaging and dosimetry applications. The epoxy materials used to fabricate the phantom provide optimal tissue simulation between the Diagnostic and Therapy energy range (40 keV to 20 MeV).

Unlike other cross-sectional dosimetry phantoms, the Model 600 includes internal organ structures such as the lungs, heart, liver, kidneys, spleen and pancreas. All simulated organs match the tissue density of actual organs and can be clearly visualized.

The lower portion of the phantom contains a soft bolus material simulating a mix of 30 percent adipose and 70 percent muscle tissue. Simulated muscle material layers the rib cage and vertebral column. The exterior envelope simulates a mix of 43 percent adipose and 57 percent muscle tissue.



3 Dimensional Torso Phantom

Model 602

Complete with removable organs

The 3D Anthropomorphic Torso Phantom is designed to provide an accurate simulation of an average male torso for medical imaging applications. The removable organs enable flexibility in the placement of TLD's, contrast agents, etc. The epoxy materials used to fabricate the phantom provide optimal tissue simulation in the diagnostic and therapy energy range (40 keV to 20 MeV).

The phantom will accurately simulate the physical density and linear attenuation of actual tissue to within 2 percent in the diagnostic energy range.

Each phantom contains removable organs. Included organs are lungs, heart, liver, pancreas, kidney, and spleen. The lower portion of the phantom contains a removable soft bolus material simulating a mix of 50 percent adipose and 50 percent muscle tissue.

This insert is used to maintain the position of the organs when the phantom is placed upright. For ease of removal, the bolus is enveloped in a screen-bag. Simulated muscle material layers the rib cage and vertebral column.

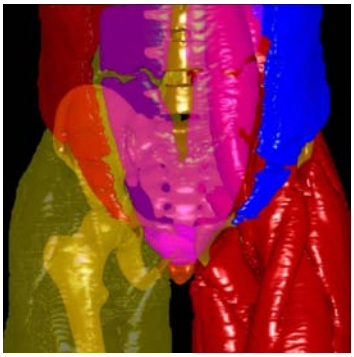
The exterior envelope simulates a mix of 30 percent adipose and 70 percent muscle tissue. The phantom is sealed at the bottom by an acrylic plate. Water or blood mimicking fluid can be used to fill all the interstitial voids.

Male Pelvis Phantom

Model 801-PF

The Next Generation in Anthropomorphic Phantoms

The Male Pelvis Phanton is the most realistic, tissue equivalent phantom available. It contains anatomically precise bone, cartilage, spinal cord, vertebral disks, muscle, intestines, bladder, prostate, rectum and interstitial fat. The phantom is made from proprietary epoxy materials that mimic the density and radiation attenuation properties of human tissue within 1% from 50 keV to 25 MeV.



Anatomical dimensions of the phantom are based on The Visible Human Project (VHP) data sets that serve as a reference for the study of human anatomy.

Quality Policy

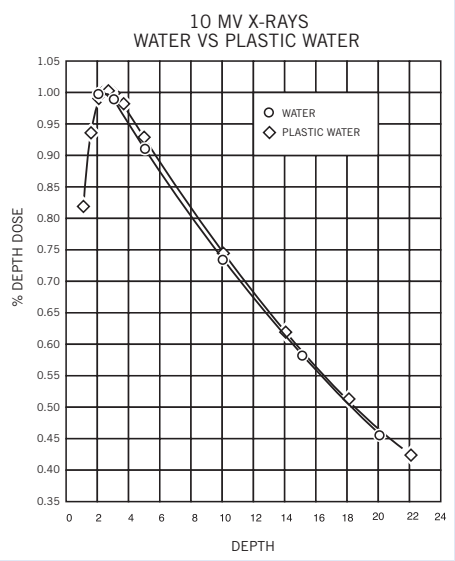
1. *Customer requirements are our first priority.*
2. *We strive to meet our customer requirements on time, every time.*
3. *We are committed to quality, continuous improvement, customer satisfaction and regulatory compliance.*

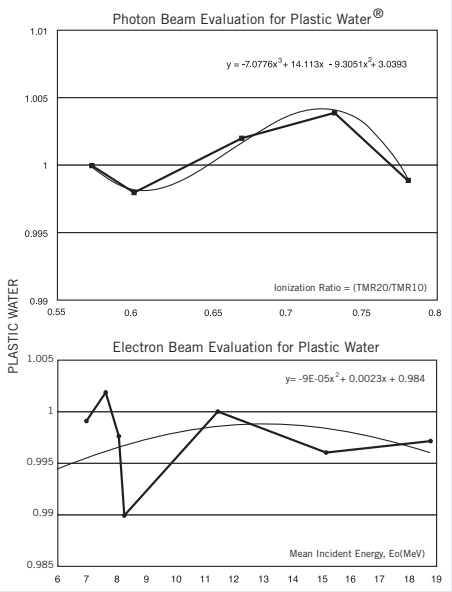
Plastic Water®

Calibrate photon and electron beams within 0.5% of true water dose

Unlike other water equivalent plastics on the market, Plastic Water® is flexible and will not break under impact. Plastic Water® is the only calibration material available in 1 mm thicknesses. Plastic Water® is the only material which agrees with true water within 0.5% above 7 MeV.

Custom cavities are available to accommodate any ion chamber on the market (simply provide detailed drawings when ordering).





CIRS can simulate any tissue found in the human body and many phantoms contain multiple tissue substitutes. Water, however, is the most important reference material in Medical Physics. To accurately simulate water over all energy from 10 keV to 100 MeV with a singular solid materials is one of the more challenging tasks in the field of Tissue Simulation. CIRS water equivalent materials are formulated to mimic within 1% or better for specific energy ranges.

Plastic Water LR is formulated for liquid water equivalency at photon energies and is useful in the evaluation of the dosimetry of low energy brachytherapy sources. It has been shown to be an excellent water subsitute at low energy.

Plastic Water DT is designed to meet the demands of IMRT verification techniques where it is desirable to match attenuation and absorption properties in both the diagnostic and therapy energy ranges.

All plastic water formulations exhibit excellent durability and mechanical properties and are easily machined.

Plastic Water® LR
15 keV - 8 MeV

Plastic Water® DT
50 keV - 25 MeV

Plastic Water® (The Original)
150 keV - 100 MeV

PLASTIC WATER®

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CIRS Tissue Equivalent Materials

CIRS Tissue Equivalent Materials have a variety of uses in both diagnostic and therapeutic medical physics.

They allow simple, convenient and accurate simulations for therapy dose determinations. These materials have the absorption and scattering properties within 1% of living tissue. Tissue Equivalent Materials are user friendly and provide adequate simulations for electron and photon applications between 0.01 and 100 MeV.

CIRS Tissue Equivalent Materials are available with slab sizes ranging from 10 x 10 cm to 40 cm x 40 cm and thicknesses of 0.1 cm through 7 cm. Slabs can be manufactured to accept detectors in standard or custom locations.

Materials are easily machined and can be glued together to create thicker bolus of material.

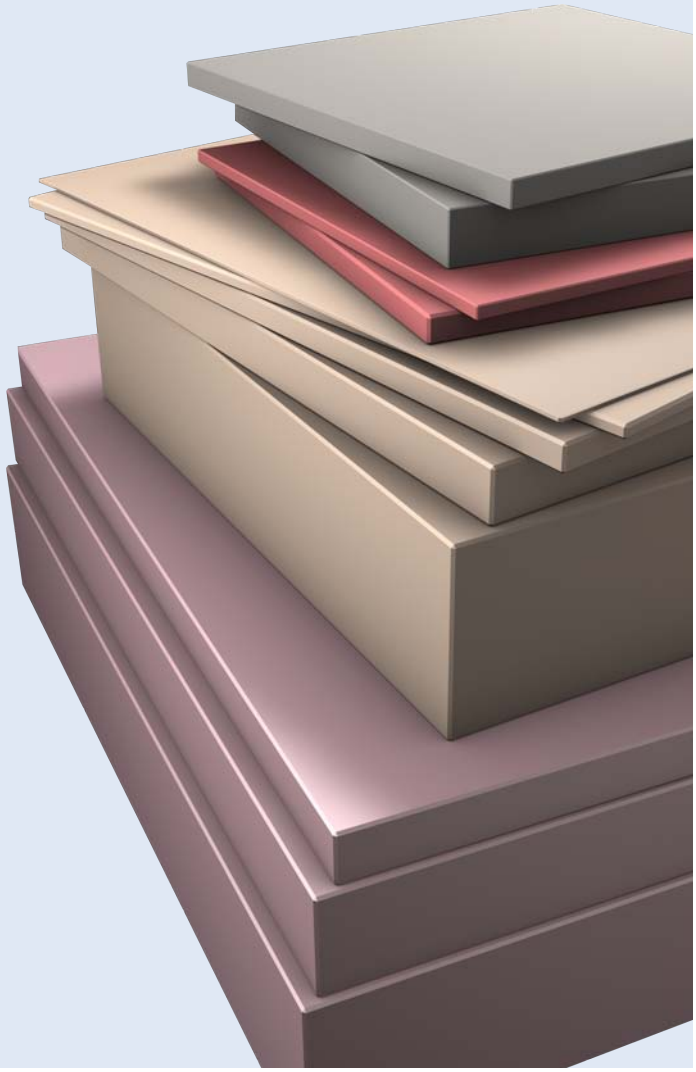
CIRS standard tissue equivalent materials:

BONE
- Cortical
- Trabecular

LUNG
- Inhale
- Exhale
- Average

SOFT TISSUE
- 100% Glandular
- 30% Gland/70% Adipose
- 50% Gland/50% Adipose
- BR12
- 70% Gland/30% Adipose
- 100% Adipose

Other formulations are available upon request. Not all tissue equivalent materials are available in all thicknesses.



Chamber Cavities for Plastic Water® and other CIRS Dosimetric Phantoms

CIRS dose phantoms accommodate the most common ionization chambers. Also available are solid plugs to fill cavities not in use.

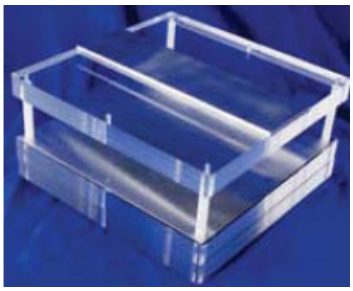
When ordering, please specify the chamber you are using.

Manfacturers Model #	CIRS CV #
Applied Engineering	
C110	501/510
C134	503
Attix	
449	516
Capintec	
PR-05	535
PR-06C	507
PR-06G (0.65ml with b-up cap)	506
PR-06G w/o cap	526
PRO5P	535
PS-033	508
Exradin	
01	515A
01SL	531
02	539
10	549
10 w/ water proof cap	529
11	512
11-S/N> XB013151 XD013151 XE013151	512A
11-S/N> XAJ032301 XAK032301 XAL032301 XAM032301 XAN032301 XAO032301	512B
12	513
12S	533/553
14	544
14P	546
14SL	528
16	540
18	511E
19	501
Farmer	
0.2cc	517
Fluke	
30-344	511C
Multidata	
233642	511C
233643	511C
Innovision	
107325	501
580-006WP	501
Landauer	
Microstar InLight Dot	556

Manfacturers Model #	CIRS CV #
Nuclear Enterprise	
0.2 cc	517
2505-3A	501
2533	511A
2571	501
2571A	501
2577	517
2581	501
2611A	522
Phantom Lab	
MOSFET RAN447	541
Phillips	
60003	537
Diamond Detector	537
PTW	
0.35cc Roos	504
0.125 cc	511C
23323	511D
23331 w/o cap	520
23332	548
23333	501
23342	519/549
23343	503
233633	501
233641	511B
30000	501
30001	501
30001 w/cap	502
30002	501
30002 w/cap	502
30004 w/cap	502
30006	501
30009	557
30010	501
30011	501
30012	501
30013	501
31002	511C
31003	511B
31005	511C
31006 w/o cap	518
31009	550
31010	511C
31011	511C
31013	511B
31014	518
31015	550

Manfacturers Model #	CIRS CV #
PTW (Continued)	
31016	551
31018	560
34001	504
34013	555
34045	503
Advanced Markus	549
N23343	549
N34045	549
60008 Diode	554
60012 Diode	554
NACP	599
RADCAL	
10x5-0.6	552
10x5-3CT	552
Scanditronix	
RK8304	509
999702 DEB012-XXX Diode	547
NACP	599
Standard Imaging	
19	501
TN MOSFET	
MOSFET Cavity	538
Victoreen	
550-6A	524
580-006	501
X-10	523
Welhofer	
CC01	533
CC04	536
CC08	532
CC13	532
DS31 Roos	530
FC23	542
FC65	527
IC04	536
IC10	532
IC15	525
IC28	542
IC3	521
IC70 w/cap	527
PS-31	530
999702 DEB012-XXX	547
FC65-G	501
FC65-P	501
IC69	502
IC70 w/o cap	501
PPC-04	549
PPC-05	549

Acrylic Modular X-ray Phantom



Model L760

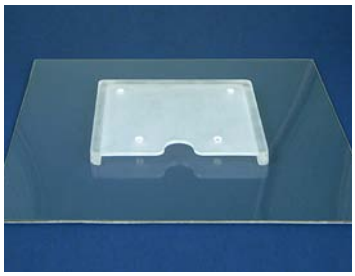
The Acrylic Modular X-ray Phantom is ideal for adjusting automatic exposure controls and automatic brightness controls on diagnostic and fluoroscopic systems.

The phantom is also used for making exposure technique charts for commonly used projections. The latter has been a long standing requirement of the JCAHO (Joint Commission on Accreditation of Health Care Organizations).

The L 760 X-ray phantom contains a series of acrylic and aluminum plates that provide attenuation characteristics of various body part thicknesses. The variation in the number of acrylic plates and/or spacers simulate either a standard chest, abdomen, skull or extremity.

The phantoms conforms to AAPM recommendations noted in report # 31 (Standardized Methods for Measuring Diagnostic X-ray Exposure); and also those noted in Report #60 (Instrumentation Requirements for Diagnostic Radiological Physicists).

HVL Filter Holder



Model L435

Protect filters from damage.

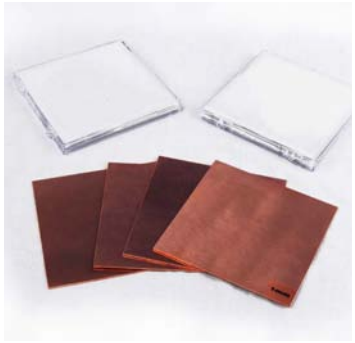
The HVL Filter Holder is designed to simplify the routine HVL measurement process and eliminates the need to tape HVL filters to the collimator housing. Filters are protected from damage associated with the application and removal of heavy medical/surgical tape.

The filter holder consists of a polycarbonate base plate, 9.5" x 9.5". The material can easily be modified to accommodate the two most common collimator track sizes. The base may also be attached with the provided velcro-type strips for odd sized collimators.

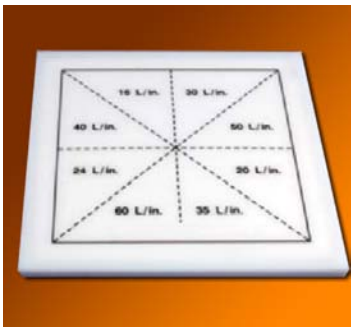
An acrylic pocket is permanently bonded to the center of the base plate. It is open on one side and holds a standard or high purity Al Filter set.

Options include:

- Model L-430 Standard Aluminum HVL Filter Set
- Model L-434 Ultra High Purity Aluminum HLV Filter Set (Mammography)
- Model L-431 Copper HVL Filter Set



Fluoroscopic Resolution Test Tools

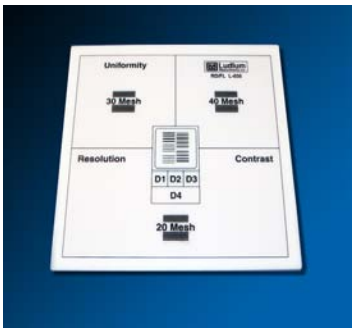


Model L601

The Fluoroscopic Resolution Test Tool is a plastic plate containing eight groups of copper and mesh screening. Three models are offered, each with different resolutions for standard, medium and high resolution ranges covering 16 up to 150 line per inch (LPI). The screens are arranged in an irregular and nonsequential rotation to permit better visualization of the different resolution patterns. These test tools provide a quick check on image intensifiers or video system resolution.

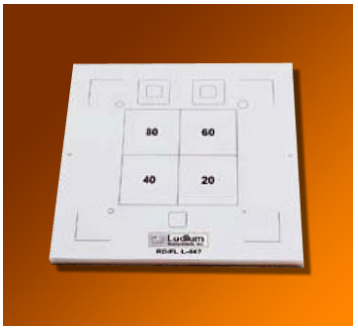
Model	Resolution	Part No.
601	16 LPI	99-9407
618	30 LPI	99-9408
619	60 LPI	99-9409

RD/FL Contrast/Resolution Test Tools



Model L656

The RD/FL Phantoms are tools used to easily assess the general radiographic and fluoroscopic image quality and performance of a standard imaging system. Contrast and resolution are measured in one exposure allowing the QC Technologist, service engineer, or medical physicist to quickly determine if the system is working correctly. When used daily, the RD/FL test tools will also help identify trends that may be an indication of image degradation, typically caused by slight changes in kVp or mAs.



Model L647

The Model L-647 phantom has three various shaped mesh patterns ranging from 20 to 100 lines per inch. Surrounding the mesh pattern are four low contrast targets of varying diameters (2 mm, 4 mm, 6 mm and 8 mm).

The Model L-656 RD/FL Digital Test Tool has a centered contrast scale and a line pair resolution insert that allows simultaneous evaluation of resolution, contrast and density uniformity.

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CR/DR Test Tool

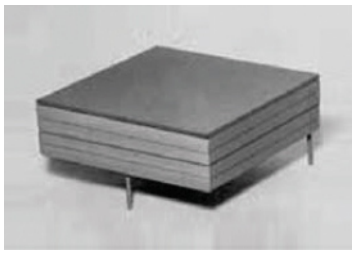
Model L777

The CR/DR Test Tool is designed for the evaluation of filmless digital CR (Computed Radiography) and DR(Digital Radiography) imaging systems. The CR/DR tool is a valuable asset to the QA Technologist and the Medical Physicist for determining the source of an image quality problem or complaint.

This QA device incorporates a variety of testing parameters. When used daily, the model 777 tracks geometry (region of interest) symmetry, line pair resolution as well as low and high contrast performance. Measurements of the various targets allow for evaluation of both the monitor and printed film image.

The large 14" x 17" size make it ideal for quick checks on automated-chest systems.

Patient Penetrometer



Model L706

The Model L706 provides the necessary patient phantom attenuation material to test the (exposure rate) output of any standard or digital fluoroscopic system.

The Patient Penetrometer is designed to work with most any X-ray exposure or multimeter measurement device.

The blocks simulate the attenuation of 26cm of water or a very large adult abdomen at 90Kvp. Two of the plates simulates a child abdomen or adult chest. The 7" x 7" 'stop plate' allows the user to evaluate the automatic brightness control at maximum output. A 7" x 7" x 0.0312" contrast gradient plate with four holes, each twice the area of the previous smaller hole, is placed between the 3/8" aluminum plates.

NEMA SCA&I Cardiovascular Fluoroscopic Benchmark Phantom

Model 901

For voluntary compliance with NEMA XR 21

The NEMA-SCA&I phantom is designed to evaluate and standardize catheterization image quality. It is the result of collaborative efforts between the Society for Cardiac Angiography and Interventions and the National Electric Manufacturers Association. The phantom specifically enables voluntary compliance with the recently published performance standard NEMA XR 21.

The Model 901 is manufactured from PMMA with X-ray absorption properties similar to soft tissue at diagnostic energies. It contains a variety of static and dynamic test targets for objective assessment of resolution, motion unsharpness and radiation exposure. The sectional design allows for configuration in a wide range of thicknesses from 5 cm to 30 cm simulating PA thicknesses from infants to large adult patients.

The phantom is ideal for routine assessment of the entire imaging system.

Radiography Fluoroscopy QA Phantom

Model 903

Also suitable for CR/DR systems

The CIRS Model 903 Radiography / Fluoroscopy QA Phantom is designed to provide physicians with an opportunity for a comprehensive review of their Radiography / Fluoroscopy facility, image quality programs.

The Radiography / Fluoroscopy QA Phantom can be used for initial QA assessment and routine monthly QA testing to help ensure patients are receiving the best possible X-ray examinations.

The CIRS Model 903 is manufactured from PMMA equivalent epoxy that offers the same X-ray attenuation properties as acrylic with significantly greater durability.

The overall phantom measures 25 cm wide x 25 cm long x 20.7 cm high and consists of three attenuation plates, one test object plate and a detachable stand for easy, reproducible set-up. Test objects include high-resolution copper mesh targets from 12 – 80 lines per inch and two separate contrast-detail test objects.

Multi-Purpose Multi-Tissue Ultrasound Phantom

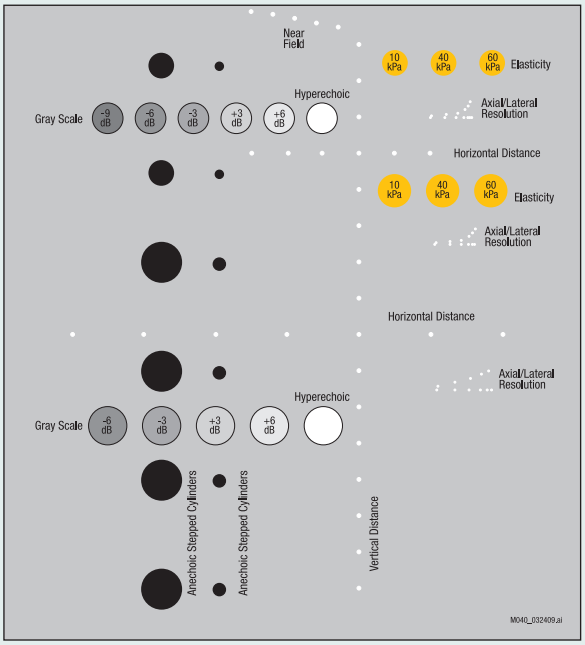
Model 040GSE

Now with elasticity and gray scale targets

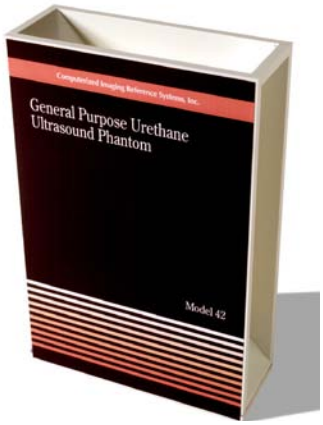
The CIRS Model 040GSE Multi-Purpose Multi-Tissue Ultrasound Phantom not only contains all the features of the original CIRS Model 040, but also includes gray scale targets, anechoic stepped cylinders and elasticity targets. The phantom is designed to meet the ultrasound QA challenges of today and tomorrow.

The unique dual attenuation of the background gel allows for evaluation of transducers that range from 2 MHz - 15 MHz. A removable water well and endocavity cover extends the use of the phantom by allowing evaluation of all transducer configurations: linear, curvilinear and intercavity.

CIRS ultrasound QA phantoms all come standard with a robust housing, rugged carry case, 4-year warranty, user guide and data sheet.



Urethane Ultrasound Phantom

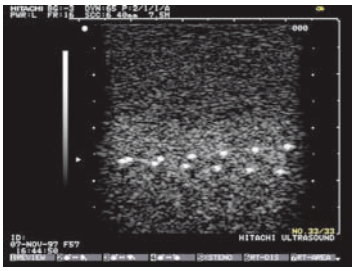


Model 042

Three scan-surfaces

The CIRS series of ultrasound phantoms, unlike human subjects or random scannable materials, offer a reliable medium which contains specific, known test objects. The CIRS line of ultrasound phantoms enables repeatable, qualitative assessment of ultrasound scanner performance over time.

The Model 042 is constructed from a proprietary urethane matrix, housed within a rigid PVC container with three separate scanning windows. It allows for depth of penetration, uniformity, distance calibration, resolution and lesion detectability assessment. The Model 042 is sold with a four year warranty, user manual and carry case.



Doppler String Phantom

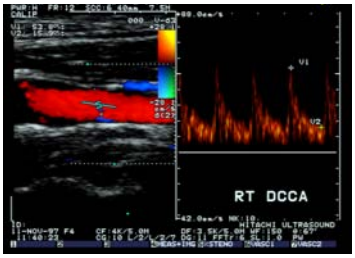
Model 043

Accurately simulates 16 physiological and test waveforms

The CIRS Model 043 Doppler String Phantom is an essential tool for people who work with Doppler Ultrasound. The crystal controlled motor accurately generates sixteen pre-programmed waveforms using advanced string target technology. Since the speed is adjusted 1000 times every second, you know it's precise and repeatable.

The Model 043 can be set for use with water or velocity-corrected fluid. If you're using water, it adjusts the string speed accordingly so the different speed of sound in water won't affect your tests. And unlike fluid-flow phantoms, the target never changes; you know what your test results should be every time.

All CIRS Ultrasound phantoms, including the Model 043, are sold, with a user manual and a rugged carry case. Additional options include custom programming of special waveforms.



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Ultrasound Resolution Phantom

Model 044

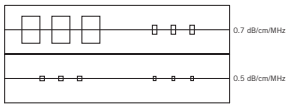
Designed for evaluating system resolution

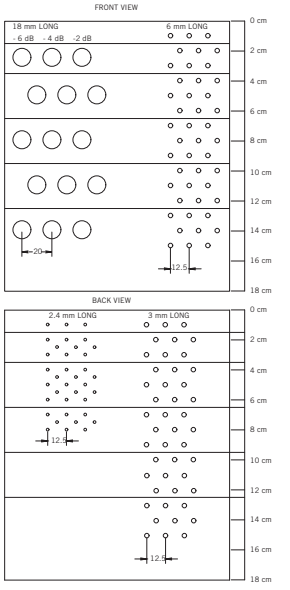
The Resolution Phantom is ideal for simultaneous assessment of axial, lateral and elevational resolution.

The Model 044 consists of two planes of short cylinders. One plane has an attenuation coefficient of 0.5 dB/cm-MHz while the other is 0.7 dB/cm-MHz. Each plane has two groups of targets.

The 12 mm diameter test objects have three contrasts with respect to the background enabling low contrast resolution assessment at many depths. All other targets have a -15 dB contrast.

To facilitate proper probe alignment, the Model 044 contains a series of nylon targets.





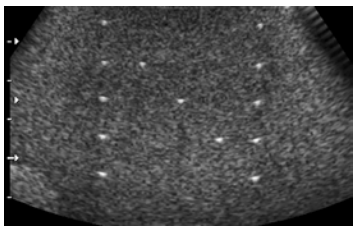
Brachytherapy QA Phantom

Model 045

Perform QA on sidefire transrectal probes

The Model 045 is designed for transrectal ultrasound QA and calibration of brachytherapy systems. It contains targets to assess volume measurements, internal grid accuracy and probe retraction accuracy. When scanning towards the bottom of the phantom, a partial grid of wires appears. These wires should line up with the grid that appears on your screen thus ensuring correct vertical and horizontal distance measurements.

Five cross wires are embedded within the phantom to determine if the probe is being retracted the specified distance. Turn the probe 60° to the right or left to visualize and measure the volume of three different calibrated objects, one of which is non-spherical.



Gray Scale Ultrasound Phantom

Model 047

Evaluate resolving power as a function of depth, size and contrast.

The Gray Scale Ultrasound Phantom is a single simple tool to assess resolution of masses varying in size, depth and contrast. This is a new design using proven, patented materials to permit rapid visualization of gray scale resolution power at continuous depths from 1 to 12 cm.

The Model 047 is usable on all diagnostic ultrasound machines allowing user evaluation of gray scale sensitivity with a wide range of transducer frequencies. This phantom is an ideal training tool for learning optimum system setup and evaluating system performance.

Masses may be viewed with either a circular or elliptical cross-section.

You will see a difference

CIRS ultrasound phantoms are made from Zerdine®[1], a patented tissue equivalent polymer. Zerdine produces an ultra-fine speckle pattern with minimal backscatter and its elastic properties allows pressure to be applied to scanning surfaces without damage to the phantom.

CIRS phantoms meet or exceed AIUM standards

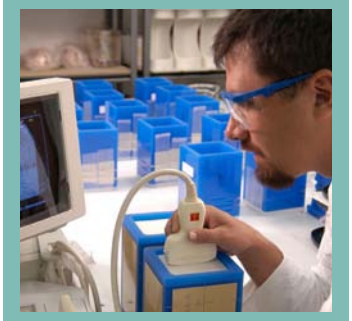
Phantoms are in impact resistant ABS plastic and a proprietary Saran™ film based laminate is used for the scanning surface. Standard QA phantoms come with two detachable scan wells to accommodate the largest sector probe or the smallest endocavity probe.

All Ultrasound QA phantoms come with a 4 year waranty and a certificate of conformance.

[1]US PATENT# 5196343

We stand behind our products

Every CIRS ultrasound phantom comes with a detailed user's manual and in air tight carry case. Ultrasound phantoms have an unconditional 90 day money back guarantee and a four year warranty.
Engineers and technical experts are always available to answer questions.



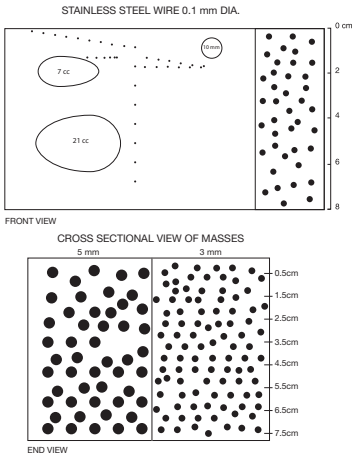
Near Field Ultrasound Phantom

Model 050

QA standard for high frequency probes

The Near Field Ultrasound Phantom provides a means of assessment for uniformity, dead zone, depth of penetration, beam profile/focal zone/ lateral response width, vertical distance measurement accuracy, axial resolution, lateral resolution, anechoic masses, high contrast masses, volumetric measurement accuracy, and focal lesion detectability.

The Model 050 has a series of wire targets that appear as bright dots or lines on the ultrasound image. The targets are made from stainless steel with a diameter of 0.1 mm. There are also two known volumes, a 10 mm anechoic/+15 dB mass and anechoic focal lesions embedded within the phantom. The "masses" are made from Zerdine® with a different contrast and attenuation relative to the background material.



General Purpose Ultrasound Phantom

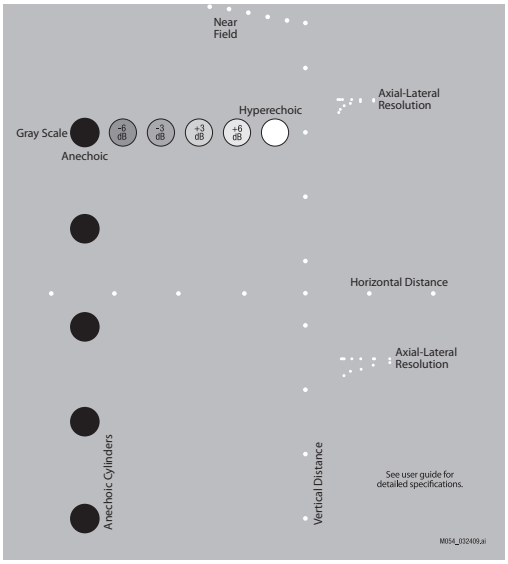
Model 054GS

Now with gray scale and improved sensitivity targets!

The CIRS Model 054GS General Purpose Ultrasound Phantom offers all the features of the original Model 054 but now contains gray scale targets and improved sensitivity targets that exceed the phantom requirements outlined in the ACR accreditation program.

Performance Measurements

- Dead Zone
- Horizontal Distance Accuracy
- Vertical Distance Accuracy
- Depth of Penetration
- Image Uniformity
- Axial Resolution
- Lateral Resolution
- Anechoic Mass Resolution
- Gray Scale Contrast Resolution



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Ultrasound Phantoms for 2D & 3D Evaluation

Model 555 SET

The 2D & 3D Evaluation Set evaluates measurements taken on ultrasound systems using newer spatial encoding algorithms. This is especially important for current 3-D and 4-D ultrasound systems.

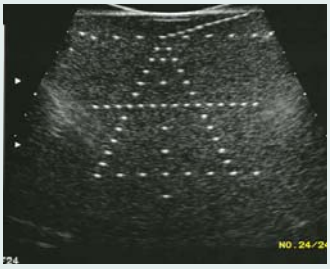
The set consists of two phantoms, the 3D Ultrasound Calibration Phantom Model 055, and The 3D Wire Test Object Phantom model 055A. Both phantoms contain Zerdine® and are in ABS containers that minimize desiccation.

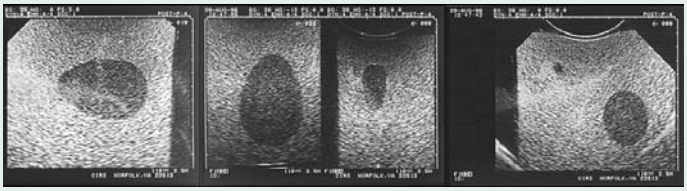
The test procedures using both phantoms are described in the AIUM publication "Standard Methods for Calibration of 2-Dimensional and 3-Dimensional Spatial Measurement Capabilities of Pulse Echo Ultrasound Imaging Systems".

The Model 055 3D Ultrasound Calibration Phantom is a volumetric target phantom and contains a small egg and a large egg. There are two scanning surfaces and the targets are off centered within the background material. Depending on the side scanned, the test objects are located at distances ranging from 2 to 6 cm from the scanning surface.

The Model 055A 3D Wire Test Object is a wire-target phantom used to measure linear and curved dimensions as well as perimeters, volumes and surface areas. It may also be used to determine image uniformity and depth of penetration.

Models 055 and 055A can be purchased separately.





Quantitative Ultrasound Phantom

Model 063

Tissue Equivalent Calibration Standard

The Model 063 QUS Phantom provides a linear response of Broadband Ultrasonic Attenuation (BUA) in the diagnostic frequency range for assessment of bone quality.

- Linear response in the diagnostic frequency range
- Can be molded into any shape (custom manufacturing)
- Mimics calcaneus bone
- Proven construction
- Known material properties permit phantom to be used as a calibration tool with various QUS systems

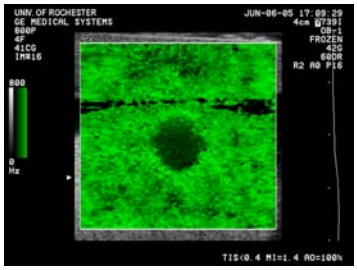
Elasticity QA Phantom

Model 049 & 049A

Developed to provide users with acoustic targets of varying, known stiffness

The Model 049 and 049A Elasticity QA Phantoms are tools developed for sonoelastography systems. These are the only phantoms commercially available for sonoelastography quality assurance. The phantom contains targets of known stiffness relative to the background material and range in stiffness, diameter and depth.

The Elasticity QA Phantoms are suitable for determining the dynamic range of the system, checking system performance over time, demonstrating system features and training personnel and customers on this rapidly growing field. The phantoms can also be used by researchers developing and verifying new techniques.



Breast Elastography Phantom

Model 059

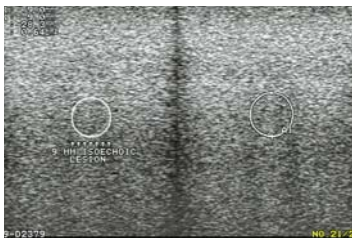
The perfect demonstration tool for sonoelastography

The Model 059 accurately mimics the ultrasonic characteristics of tissues found in an average human breast. The size and shape of the phantom simulates that of an average patient in the supine position.

A special holding tray facilitates proper hand position during the training procedures.

Protected by a membrane, the phantoms flesh-like consistency, (Zerdine®)[1] simulates needle resistance.

The phantom contains several solid masses that appear isoechoic to the simulated breast tissue under normal ultrasound, but the lesions are 3 times stiffer than the background so they can be detected on elastograms. Lesions range in size from 2 mm to 10 mm diameter and are randomly positioned throughout the background.



[1] US Patent # 5196343

Prostate Elastography Phantom

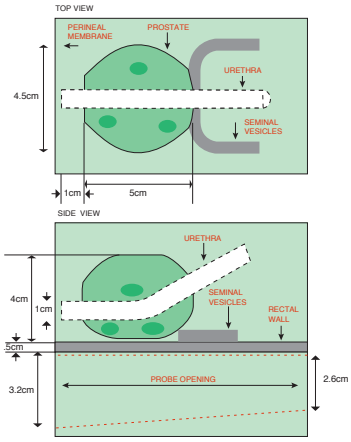
Model 066

The ideal demonstration tool for sonoelastography

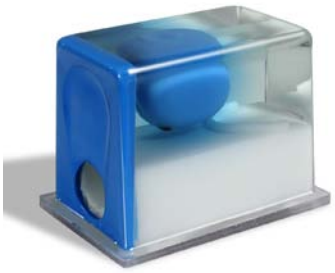
The CIRS Model 066 Prostate Elastography Phantom is a disposable phantom developed for demonstrating procedures which involve the exciting new modality of sonoelastography.

The prostate, along with structures simulating the rectal wall, seminal vesicles and urethra, is contained within an 11.5 cm X 7.0 cm X 9.5 cm clear acrylic container. A 3 mm simulated perineal membrane enables various probes and surgical tools to be inserted into the prostate.

Based on the popular CIRS Tissue Equivalent Ultrasound Prostate phantom. The Model 066 contains 3 isoechoic lesions that are three times harder than the simulated prostate tissue. Under normal ultrasound they cannot be detected but are readily visible on elastograms.



Tissue Equivalent Prostate Phantom



Model 053 (option A shown)

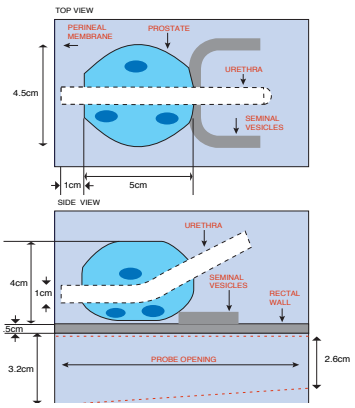
The ideal training device for ultrasound guided procedures

The CIRS Model 053 Ultrasound Prostate Training Phantom is a disposable phantom developed for practicing procedures which involve scanning the prostate with a rectal probe.

The prostate along with structures simulating the rectal wall, seminal vesicles and urethra is contained within an 11.5 cm X 7.0 cm X 9.5 cm clear acrylic container.

A 3 mm simulated perineal membrane enables various probes and surgical tools to be inserted into the prostate.

Versions of this phantom are ideal training devices for ultrasound guided cryosurgery, radioactive seed implantation, or needle biopsy.



Prostate Training Phantom

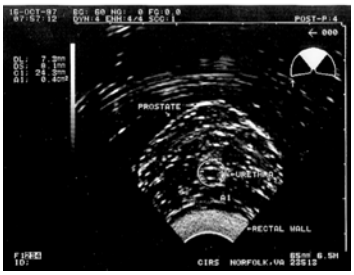
Model 053-I

The ideal training device for permanent seed implantation procedures

The CIRS Model 053-I Ultrasound Prostate Training Phantom is a disposable phantom developed for practicing permanent seed implantation procedures. It contains several unique features to assist the teaching and learning process.

The simulated perineal membrane permits needle insertion with realistic resistance. In addition, the area below the rectal wall is a clear gel to permit visualization of probe orientation. The prostate is transparent to allow visual verification of seed placement. The phantom also includes a removable pubic arch simulation.

Modification to the CIRS Model 053 phantom was developed with Dr. Peter Grimm and his associates at the Seattle Prostate Institute.



Note: This phantom not intended to ultrasonically mimic the human prostate.

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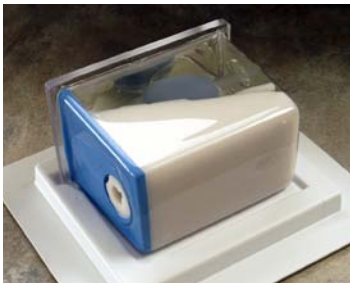
Prostate Biopsy Phantom

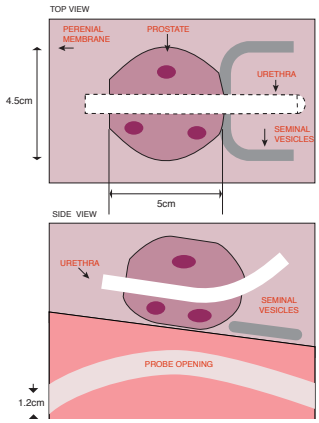


Model 053A-EF

The ideal training device for end-fire transducers

The CIRS Model 053A-EF Prostate Biopsy Phantom is a disposable phantom developed for practicing biopsy procedures which involve scanning the prostate with an end-fire rectal transducer.

The prostate along with structures simulating the rectal wall, seminal vesicles and urethra is contained within an 11.5 cm X 7.0 cm X 9.5 cm clear plastic container. The redesigned housing more accurately simulates patient position during routine biopsy procedures. The prostate contains three hypoechoic 0.5-1.0 cm lesions for practicing biopsy technique.



Prostate Demonstration Phantom

Model 058

Non-disposable urethane phantom for prostate imaging

The Model 058 is a derivative of the Model 053 Ultrasound Prostate Training Phantom. The Model 058 is durable and appropriate for repetitive demonstration scanning.

The prostate along with structures simulating the rectal wall, seminal vesicles and urethra is contained within an 11.5 cm X 7.0 cm X 9.5 cm clear container.

A needle is embedded within the prostate to demonstrate needle localization. The phantom also contains a simulated lesion and calcification cluster.

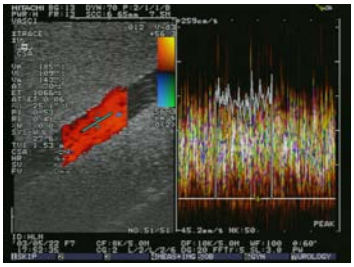
This phantom is an ideal demonstration device for rectal scanning.

Blood Mimicking Fluid

Model 046

Blood Mimicking Fluid is intended for use in any flow phantom and with any type of pumping mechanism. It was formulated to simulate the acoustic and physical characteristics of blood, thus providing a stabile and reliable fluid for Doppler studies and system evaluations.

The fluid is non-hazardous and is formulated to meet the requirements for recommended blood-mimicking fluid as described in the IEC 1685 draft specifications. In addition the scatters are neutrally buoyant thus minimizing clumping and settling of the particles. Each batch of fluid is tested for speed of sound, attenuation, density and viscosity traceable to NIST.



Breast Needle Biopsy Phantom

Model 052A

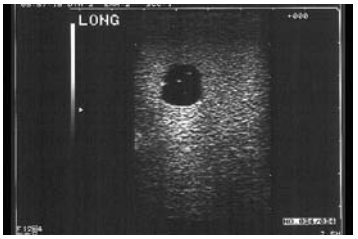
A training device for ultrasound guided needle biopsy procedures

The Model 052A accurately mimics the ultrasonic characteristics of tissues found in an average human breast. The size and shape of the phantom simulates that of an average patient in the supine position.

A special holding tray facilitates proper hand position during the training procedures.

Protected by a membrane, the phantoms flesh-like consistency, simulates needle resistance. Each cystic mass may be aspirated once while each solid mass may be biopsied multiple times. Cyst material is stained green and solid masses are black for easy identification.

The Model 052A Ultrasound Needle Biopsy Phantom was developed by those skilled in the art of ultrasound guided needle biopsy procedures and is the ideal training device.



Kidney Training Phantom

Model 056

The CIRS Kidney Training Phantom was designed for interventional training and 3D surface rendering. It is scannable on all sides.

The Kidney Training Phantom is constructed of transparent, anechoic, nonflowing, water-based gel, approximately 10 x 16 x 20 mm, with an embedded kidney. The kidney (~200cc) is homogeneous with no internal structures. Protected by a membrane, the phantom's flesh-like consistency simulates needle resistance. The phantom total weight is 9.5lbs.

Image demonstrating needle insertion

Ultrasound Heart Phantom

Model 067

For Cardiac Image Training

The Heart Phantom has completely anthropomorphic external and internal anatomy.

FEATURES INCLUDE:

- Left/ right ventricles
- Left/right atriums
- Aortic valve
- Tricuspid valve
- Mitral valve
- Septums
- Aortic arch
- Papillary muscles

APPLICATIONS:

- Training Sonographers
- Equipment demonstrations
- Validate 3D Reconstruction
- MRI protocol management

Short axis at leval of aorta

Apical four chamber view

Fetal Ultrasound Training Phantom

Model 065-20 & 065-36

Demonstrate 2D and 3D ultrasound

CIRS fetal phantoms can be used for ultrasound scanning demonstrations, 3D reconstructions, surface rendering and a variety of other applications. Materials are tissue equivalent, and the phantom is available in 20 weeks or 36 weeks gestational age.

3D Image from 36 week model.

3D Image from 20 week model.

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Fetal Ultrasound Biometrics Phantom

Model 068

Instruct and develop ultrasound examination techniques

The CIRS Model 068 Fetal Ultrasound Biometrics Phantom facilitates teaching and demonstration of fetal ultrasound examination techniques in a non-stressful situation. A tissue equivalent full fetal model is suspended in a non-echoic, amniotic fluid like environment.

THE MODEL INCLUDES:

- Complete external fetal anatomy and surround ing non-echoic medium
- Asymmetric head with upper portion of the skull
- Right and left brain lobes
- Lateral and third ventricles
- Right and left femoral shafts with distal epiphysis

Transabdominal measurements of biparietal diameter (BPD), anterior/posterior diameter (APD), femur length, abdominal circumference and crown to rump length can be taken. Because the phantom is housed in a rotatable cylinder, a variety of fetal / transducer orientations can be achieved for more challenging examinations. All anatomies are based on published biometric data at normal fetal growth rates for a gestational age of 21 weeks. This enables assessment of composite measurement techniques and biometric analysis programs common to most ultrasound scanners. The phantom can also be used for 3D reconstructions, surface rendering and a variety of other applications.

Reference markers ensure repeatable measurements of AC and BPD.

Longitudinal measurements of femor length

Cross section measuring BPD.

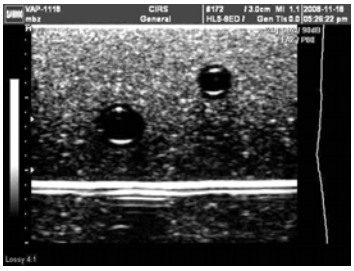
Vascular Access Training Phantom Kit

Model 072

Demonstrate • Train • Experiment

The Model 072 Vascular Access Training Phantom Kit is designed to provides realistic training medium for needle insertion. The phantom is made from a durable elastomeric compound mimicking the tactile feel and puncture resistance of soft tissue. This material has realistic acoustic properties allowing imaging of the simulated vessels under ultrasound. The phantom includes one bifurcated vessel and 2 straight v essels at a variety of depths and diameters to simulate a range of challenges often encounted in the clinical environment.

The phantom can be easily replenished using a syringe and will not dry out. The phantom is supplied wioth a start up accessory kit.



Cross section of the vessels

Thyroid Ultrasound Training Phantom

Model 074

Teach•Train•Practice

Thyroid nodules occur in 50% of the world's population with incidence increasing with age. Ultrasound guided biopsies of the thyroid yield more accurate results than free-hand techniques.

The CIRS Thyroid Training Phantom is a disposable training tool and practice medium for ultrasound guided thyroid biopsy procedures. The phantom also serves as an excellent teaching tool for identification of various types of thyroid nodules and training on proper thyroid scanning techniques.

The phantom can be punctured numerous times, will not leak and requires no special storage.
The Thyroid Training Phantom creates a relaxed learning environment in which to develop skills.

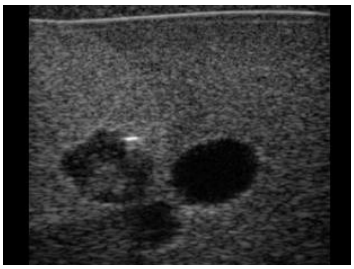


Image of thyroid containing complex nodule with calcifications

Lumbar Training Phantom

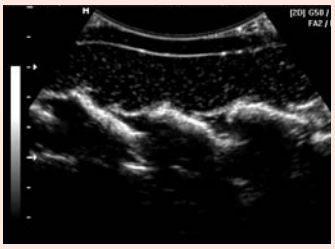
Model 034

Practice interventional pain management procedures

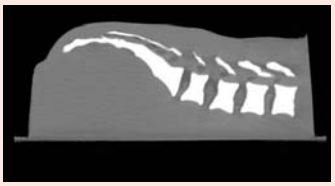
The CIRS Model 034 Lumbar Training Phantom provides a realistic puncture practice phantom for use with fluoroscopic image guidance.

Phantom contains realistic anatomy to facilitate eye/hand coordination in a training environment.

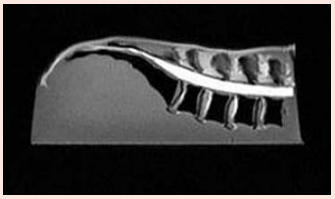
Phantom can also be imaged under CT, MR, and ultrasound.



Ultrasound



CT



MRI

Features:

- Anthropomorphic L-spine anatomy
- Self sealing puncture membrane
- Ligaments, spinal cord, discs, skin, and soft tissue have differing softness to permit trainee to "feel" the way to the injection site.

Practice:

- Lumbar epidural
- Caudal epidural
- Facet and nerve blocks
- Sacroiliac joint injection
- Lumbar diskography

Multi-Modality Pelvic Phantom

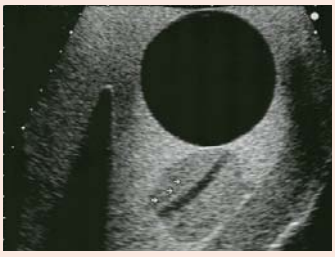
Model 048

The Multi-Modality Pelvic Phantom is designed for realistic abdominal ultrasound scanning of the male bladder and prostate. The phantom includes pelvic bones, 177cc anechoic bladder, prostate, urethra, seminal vesicles and rectum enclosed in a rugged ABS housing.

The Model 048 is made from materials that can be imaged under ultrasound, MRI and CT making the phantom useful for applications that require multiple modalities such as radiation treatment planning.

The phantom is provided with certified prostate and bladder volumes to enable assessment of volumetric measurement accuracy. Modifications are available such as permanently embedded brachytherapy "dummy" seeds or gold fiducial markers for demonstration of target visualization.

The pelvic phantom includes documented certification traceable to NIST. Custom labeling and a foam lined carry case are also available.



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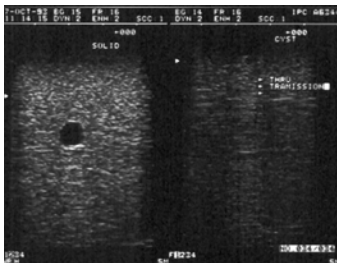
Triple Modality Biopsy Training Phantom

Model 051

Suspect lesions discovered in X-ray mammography must often be evaluated under ultrasound to aid diagnosis and in some cases, use of MRI may be indicated. This phantom is an ideal training device because it can be imaged under three modalities and was designed specifically for needle biopsy.

Each cystic mass may be aspirated once while each solid mass may be biopsied multiple times.



Ultrasound

Features

- Compressible
- Accurately simulate an average 50% glandular breast (BR-12 equivalent) under X-ray, ultrasound, and MRI
- Phantom's flesh-like consistency simulates needle resistance found in human tissue
- Anthropomorphic shape is suitable for compression mammography or ultrasound examinations

Multi-Modality Prostate Training Phantom

Model 053-MM

The ideal training device for ultrasound, CT and MRI guided procedures

The CIRS Model 053-MM Multi-Modality Prostate Training Phantom is a disposable phantom developed for practicing procedures which involve scanning the prostate under ultrasound, CT or MRI.

The prostate along with structures simulating the rectal wall, seminal vesicles and urethra is contained within an 11.5 x 7.0 x 9.5 cm clear acrylic container. A 3 mm simulated perineal membrane enables various probes and surgical tools to be inserted into the prostate. For practicing biopsy techniques, three lesions are randomly placed in the prostate.

This phantom is an ideal training device for any interventional prostate procedure guided by ultrasound, CT or MRI.

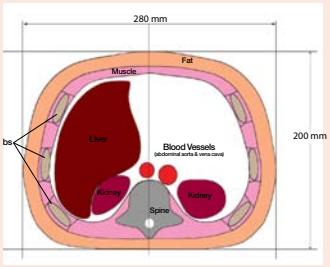
3D Abdominal Phantom

Model 057

Multi-modality (CT, MRI, US)

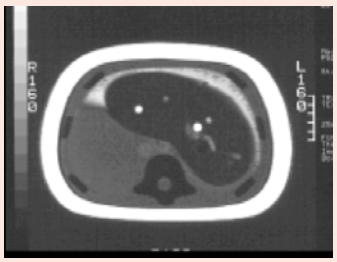
The 3D Abdominal phantom is made from proprietary materials which accurately mimic human tissues under MRI, ultrasound and CT.

Model 057 contains simulated lungs, liver, hepatic vessels, ribs, vertebra, kidneys, abdominal aorta, inferior vena cava, muscle, fat and interstitial tissues. Embedded within the liver are simulated lesions available in a range of sizes and relative contrasts.

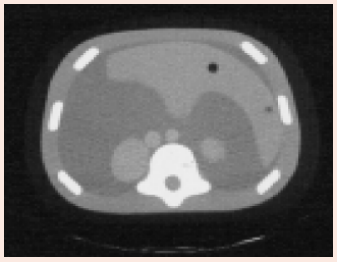


Benefits

- Improve performance of freehand abdominal biopsies
- Test new equipment
- Validate automated biopsy systems
- Demonstrate CT, ultrasound and MRI scan techniques
- Optimize imaging protocols



MRI



CT

Ultrasound

Image-Guided Abdominal Biopsy Phantom

Model 071

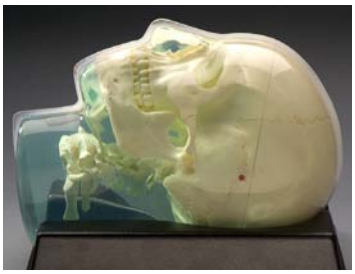
Transparent for demonstrations and for visual identification of needle placement

The Model 071 Image-Guided Abdominal Biopsy Phantom is based on the need for simplified abdominal training phantoms. Although it does not contain organs, the randomly positioned lesions are visible under ultrasound and CT.

Eleven randomly positioned lesions range in size from 8 to 12mm. The phantom also includes one 25mm lesion (near the vertebrae), ribs and a simulated spine. The solid polymer gel will not leak when punctured. This phantom is well suited for training and demonstrating image-guided navigation technologies or any other procedure where visually locating the needle is important.

Ultrasound

Anthropomorphic 3D Skull Phantom

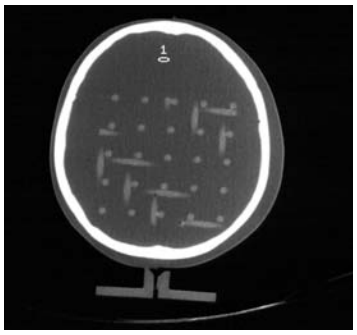


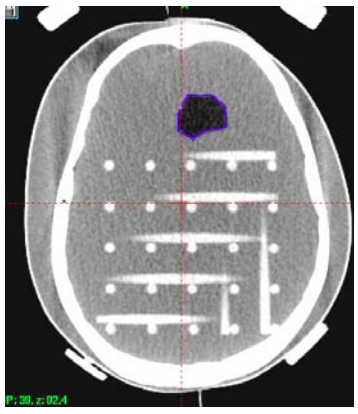
Model 603

For Rapid Assessment of Image Displacement in Gamma Knife and Other Treatment Planning Systems

FEATURES:

- Images well on T1, T2 and 3DTOF MRI acquisitions
- Images well on CT scans
- Stereotactic frame can be applied to special reinforced pads (included)
- Images can be imported into stereotactic localization program
- CT scans can be used to assess MRI accuracy





Three dimensional orthogonal acrylic rod matrix through cranial volume enables assessment of image distortions

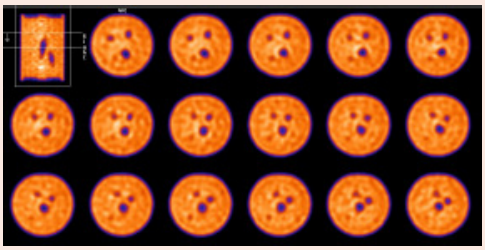
Gillian QA Phantom

Model 802

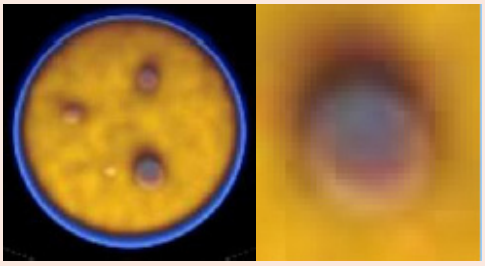
Evaluate image distortion and alignment

Hybrid scanning systems such as SPECT/CT, PET/CT and CT/MRI are increasingly being used to improve tumor identification, treatment delivery and monitor treatment effectiveness. By combining images from two different imaging modalities, hybrid scanning systems take advantage of the strengths of individual imaging modalities while minimizing their respective weaknesses. Proper alignment of the fused images is an ongoing concern.

The Model 802 Gillian QA phantom provides a simple and cost effective solution to verify image alignment and distortion. The phantom consists of a water tight acrylic cylinder that can be filled with a variety of fluids. Four non-parallel rods of varying diameter run the entire length of the cylinder. Images produced with the phantom can quickly and clearly show if there is any mismatch in the fused images.



Transverse SPECT of Phantom



Misalignment detail

Manufactured under license from:
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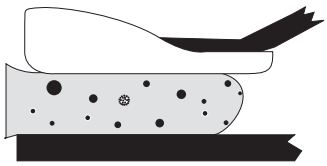
Stereotactic Needle Biopsy Training Phantom

Model 013

A tissue equivalent, compressible biopsy training phantom, that won't leak!

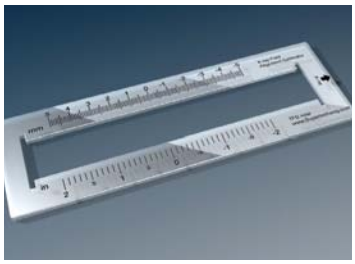
The CIRS Stereotactic Needle Biopsy Training Phantom is a disposable training tool and practice medium for mammographic needle biopsy procedures. The phantom also serves as an excellent quality assurance device for stereotactic systems and should be used whenever a new system is installed or repaired to insure accurate needle placement. The phantom can be used to perform the localization accuracy test in the American College of Radiology's stereotactic breast biopsy accreditation program.

The stereotactic training phantom offers an easy, low cost option to create a relaxed learning environment. The phantom can be reused multiple times with no special storage requirements.



Model 013 positioned on buckey

TGF Ruler



Model 033

Create permanent alignment record

Confirmation of alignment between laser lights and the X-ray energy field is a routine QA check. Although there is equipment available, they do not provide a permanent record of the results. The Model 033 TGF Ruler is a low cost, simple to use tool that can provide this permanent record.

The acrylic ruler has radiopaque indices at 1 mm increments making it suitable for mammography applications. The cut-out enables the TGF ruler to be compatible with the Unfors DXR+ or alone.

To use, position the zero index at the edge of the light field, expose the film and then visually inspect the visible measurement index on the film and record your results.

TE Phantom for Mammography

Model 010 and 011A

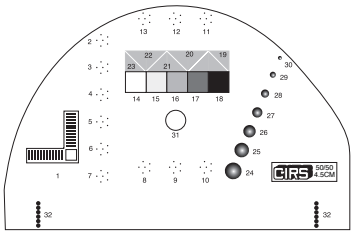
A Refined Quality Assurance Tool for Today's Advanced Imaging Systems

The Tissue Equivalent Phantom for Mammography tests performance of mammographic systems. Objects within the phantom simulate calcifications, fibrous calcifications in ducts and tumor masses. Test objects within the phantom range in size from those that should be visible on any system to objects that will be difficult to resolve on the best mammographic systems.

CIRS resin material mimics the photon attenuation coefficients of a range of breast tissues. Average elemental composition of the human breast being mimicked is based on the individual elemental composition of adipose and glandular tissue reported by Hammerstein.

The Model 011A Breast Phantom contains targets that are engineered to test the threshold of the new generation of mammography machines. The Model 011A is 4.5 cm thick and simulates an average glandular tissue composition.

The Model 010 phantoms contain the same detail plates as the 011A but are manufactured in 4 cm, 5 cm and 6 cm thicknesses with various glandular equivalencies.



The methodology and design of these phantoms was developed by Dr. Panos Fatouros and his associates at the Medical College of Virginia.

Mammography Research Set

Model 012A

Designed to encompass the full range of size, glandularity and thickness encountered in clinical mammography

The CIRS mammography research set includes tissue equivalent phantoms 4, 5 and 6 cm thick. Each phantom contains identical embedded details (see map 011A). The glandular content of each phantom is 50%, 30% and 20% respectively. Also included are phototimer compensation plates enabling a range of thickness from 0.5 cm to 7 cm with a glandular content of 30%, 50% and 70%.

One compensation plate contains embedded details for evaluation of image quality. A hand held microscope and heavy duty foam lined carry case are included.

CIRS resin material mimics the photon attenuation coefficients of a range of breast tissues. Average elemental composition of the human breast being mimicked is based in the individual elemental composition of adipose and glandular tissue reported by Hammerstein.

Attenuation coefficients are calculated by using the "mixture rule" and the Photon Mass Attenuation and Energy Absorption Coefficient Table of J.H. Hubbell.

Mammography Phototimer Consistency Testing Slabs

Model 014A

Better than PMMA for AEC calibration

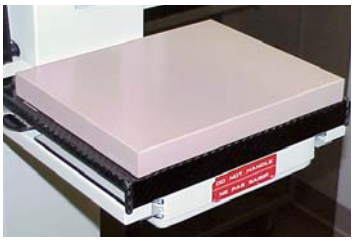
CIRS Phototimer Consistency Testing Slabs are designed for precise assessment of AEC system performance in accordance with American College of Radiology and MQSA recommendations. BR-12 (47% water/ 53% adipose) is most commonly used but other glandular equivalencies are available. Unlike acrylic, these testing slabs are manufactured with very tight thickness tolerances and more accurately simulate real breast tissue over the range of energies used in mammography.

The Model 014A consists of a set of: (6) 10 cm X 12.5 cm slabs: (3) 2 cm thick, (2) 1 cm thick and (1) 0.5 cm thick. Other sets are available with different grandularities and total thickness. Some sets include a slab with an embedded detail plate.

Available Configurations

Model	Description
014A	BR12 Slabs - Set of (6) 10 cm X 12.5 cm slabs: (3) 2 cm thick, (2) 1 cm thick, (1) 0.5 cm thick
014AD	BR50/50 Slabs - Set of (6) 10 cm X 12.5 cm slabs: (1) 2 cm thick with embedded detail plate, (2) 2 cm thick, (2) 1 cm thick, (1) 0.5 cm thick
014B	BR12 Slabs Set of (4) 10 cm X 12.5 cm slabs: (4) 2 cm thick
014F	BR50/50 Slab Set of (1) 10 cm X 12.4 cm X 2 cm thick with embedded detail plate

Mammography Artifact Evaluation Phantom



Model 014E

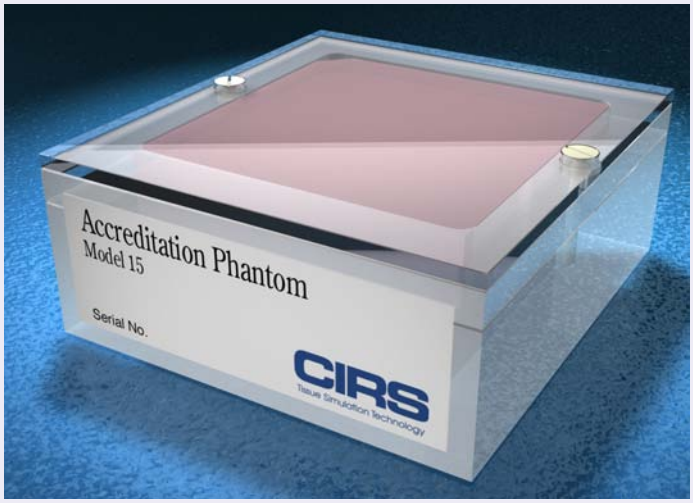
The American College of Radiology and MQSA recommend a uniform 4 cm thick "high grade" cassette sized phantom for evaluation of mammography artifacts as it is often difficult to identify artifacts based on clinical or standard phantom images.

CIRS has designed two phantoms sets to meet these recommendations.

Each set contains 2 slabs. The Model 014C slabs each measures 18 X 24 X 2 cm thick. The Model 014E slabs each measures 24 X 30 X 2 cm thick.

The small phantom measures 18 x 24 x 4 cm thick and the large phantom measures 24 x 30 x 4 cm thick.

Mammographic Accreditation Phantom



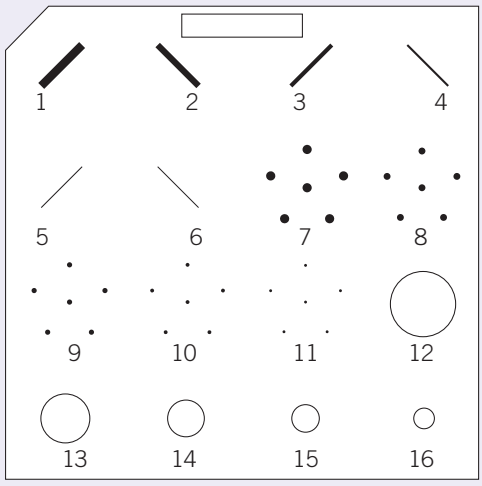
Model 015

Required for MQSA program

The Mammographic Accreditation Phantom tests the performance of a mammographic system by a quantitative evaluation of the system's ability to image small structures similar to those found clinically. Objects within the phantom simulate calcifications, fibrous calcifications in ducts, and tumor masses. The Phantom determines if mammographic systems can detect small structures that are important in the early detection of breast cancer.

The 4.4 cm thick phantom is made of a 7 mm wax block insert containing 16 sets of test objects, a 3.4 cm (approx. 1-3/8") thick acrylic base, and a 3 mm (1/8") thick cover. All of this together approximates a 4.2 cm compressed breast of average glandular /adipose composition. Included in the wax insert are aluminum oxide (Al_2O_3) specks to simulate micro-calcifications. Six different size nylon fibers simulate fibrous structures and five different size lens shaped masses simulate tumors.

Phantom includes a 4 mm acrylic step wedge, operating instructions, faxitron X-ray image and magnifying lens.



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Single Exposure High Contrast Resolution Phantom

Model 016A

Perform QC inspections of mammography system resolution with just one exposure!

The CIRS Model 016A incorporates two 17.5 micron thick gold-nickel alloy bar patterns. These bar patterns are positioned at 90 degrees to allow assessment of resolution perpendicular and parallel to anode-cathode axis in just one exposure! The targets have 17 segments from 5 lp/mm to 20 lp/mm and are equivalent to 25 microns of lead or 2.6 mm of aluminum at 20 keV.

The patterns are permanently embedded in a thin acrylic wafer to protect them from wear or damage.

The phantom body is available in BR12 or BR50/50. It enables consistent, reproducible positioning at 4.5 cm above the breast support plate and 1 cm from the chest wall, centered laterally (as recommended by the American College of Radiology).

The Model 016A includes a hand held microscope and handling instructions.

Special High Contrast Resolution Phantom

Model 016B

Up to 28 line pair/mm

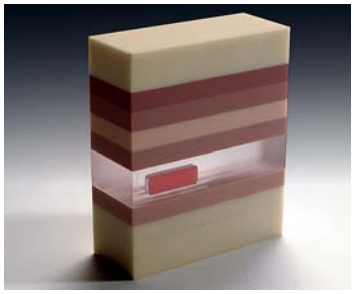
The CIRS Model 016B incorporates a 17.5 micron thick gold-nickel alloy bar pattern. Each bar pattern is positioned at 90 degrees to allow assessment of resolution perpendicular and parallel to anode-cathode axis in just one exposure. The 016B high resolution target has 18 segments from 5 lp/mm to 28 lp/mm. The target is equivalent to 25 microns of lead or 2.6 mm of aluminum at 20 keV.

The bar pattern is permanently embedded in a thin acrylic wafer to protect it from wear or damage.

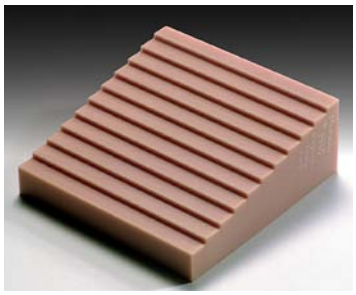
The phantom body is available in BR12 or BR50/50. It enables consistent, reproducible positioning of the bar pattern at 4.5 cm above the breast support plate and 1 cm from the chest wall, centered laterally (as recommended by the American College of Radiology).

The Model 016B includes a hand held microscope and handling instructions.

Mammographic Step Wedges



Model 017



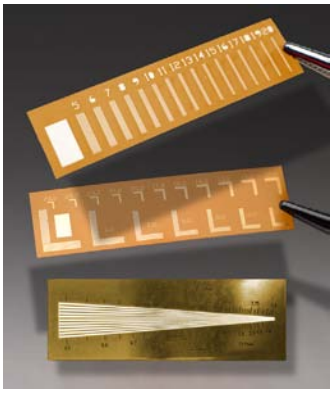
Model 018

Ideal for evaluating system performance under varying exposure parameters

CIRS step-wedges can be used with standard densitometers to monitor system performance under changing exposure parameters.

Wedges are manufactured from tissue simulating materials which have been specially formulated to maximize simulation properties in the Mammographic Energy Range.

Mammography Test Targets



Models 019-500, 019-400 & 019-523

The **019-400** is a 17.5 micron thick gold-nickel alloy bar pattern with 18 segments from 5 lp/mm to 28 lp/mm. The target is equivalent to 25 microns of lead or 2.6 mm of aluminum at 20 keV. This target is used in the CIRS Model 016B

The **019-500** is a 17.5 micron thick gold-nickel alloy bar pattern with 17 segments from 5 lp/mm to 20 lp/mm. The target is equivalent to 25 microns of lead or 2.6 mm of aluminum at 20 keV. This target is used in the CIRS Model 016A

The **019-501** is a 0.1 mm thick lead bar pattern with 16 segments from 1.0 lp/mm to 4.8 lp/mm.

The **019-523** is a 0.1 mm thick lead bar pattern with1 target group from 0.5 lp/mm to 5.0 lp/mm

Mammography BR3D Phantom

Model 020

For Tomosynthesis and Breast CT

The CIRS Model 020 BR3D Mammography Phantom is designed to assess detectability of various size lesions within a tissue equivalent, complex, heterogeneous background. This phantom provides more realistic challenges for standard screen and FFDM mammography systems as well as tomosynthesis and breast computed tomography.

The phantom consists of a set of 6 slabs made of heterogeneous breast equivalent material that exhibits characteristics of real breast tissue and demonstrates how underlying targets can be obscured by varying glandularity. Each slab contains two tissue equivalent materials mimicking 100% adipose and 100% gland tissues "swirled" together in an approximate 50/50 ratio by weight. One of the slabs contains an assortment of micro-calcifications, fibrils and masses.

Each semicircular shaped slab measures 100 x 180 x 10 mm. Each slab, with its unique swirl pattern, provides varying backgrounds when arranged in multiple combinations and thicknesses.

Mammoview Markers

Model 021-022

Simple to use and compatible with any mammography X-ray system

CIRS radio-opaque markers are designed to provide a clear indication of position, which can be read directly from X-ray film. They are manufactured in accordance with abbreviations recommended by the ACR.

Each marker is manufactured to be clearly visible on X-ray film only in the mammographic energy range.

Each set of markers comes with an acrylic holding device designed to be mounted near the X-ray unit for easy access.

The CIRS Mammoview Markers are quick and easy to use. Simply mount the acrylic holder near the mammography unit in close proximity to the buckey. Firm pressure applied to the suction cup will hold the marker in place on any smooth surface. Mammoview Markers are usable on any mammography system.

Mammography Screen Film Contact Test Tool

Model 028

The CIRS Model 028 Mammography Screen Film Contact Test Tool is designed for easy evaluation of mammography cassette screen to film contact. Testing process may be used on new cassettes and cassettes already in service.

Screen film contact is directly related to mammographic image quality and image sharpness. Visualization of optimum quality images and resolution is critical while viewing microcalcifications and small masses or nodules.

Minimal setup is required. Place the test tool on top of the cassette to be evaluated. Position the compression device as close to the X-ray tube as possible, select manual technique, or auto setting which will provide a film density between 0.70 and 0.80. Expose the film at 25 to 28 kVp. Process film as usual, and view on light box at a distance of at least 3 feet. Darker areas in the image demonstrate unacceptable screen-film contact.

Mammography QC Package

Model 029-15

Insure your images are at their very best

The CIRS Model 029-15 Mammography Quality Control Package has the tools a technologist needs to implement a comprehensive quality control program and insure their department is producing the best possible images and diagnostic information.

Standard tests include evaluation of processor performance, fixer retention, image quality, film screen contact and paddle compression. The package includes items necessary for implementing a Mammography QC program in compliance with FDA / MQSA regulations, ACR recommendations and state requirements.

Set Includes:

- Lint free wipes
- Digital thermometer
- Analog Scale
- Hypo test kit
- Film contact test tool
- Phantom Model 015
- Sensitometer
- Densitometer
- High impact carry case
- Program manual for accreditation program sponsored by the American College of Radiology

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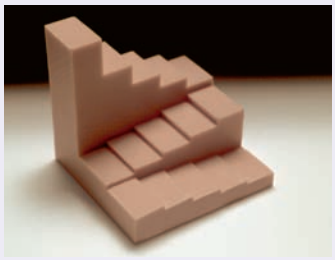
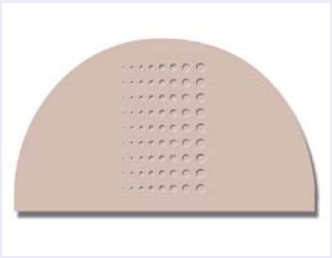
Digital Mammography Phantoms



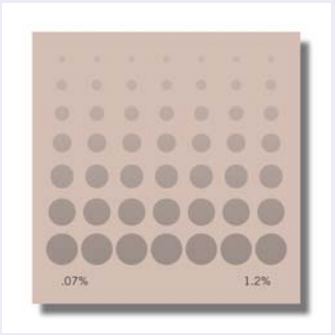
Digital Step Wedge Model 081

- Test linearity of digital image
- Test dynamic range



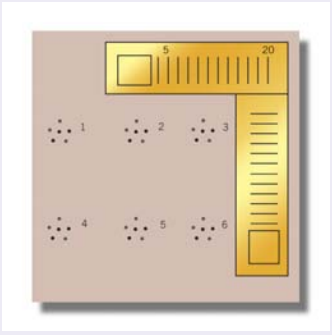
Full Field Low Contrast Phantom Model 082

- Variable thickness
- Variable composition
- Contrast = air/background
- For FFD and film screen



Small Field Low Contrast Phantom Model 083

Standard contrast object is 10% glandularity above background (other contrasts available)



High Contrast Test Target Phantom Model 084

L-shaped line pair test target for evaluating line pair resolution

Full Field Digital Phantom

Model 085

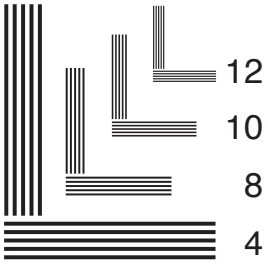
Specifically designed for assessment of digital system resolution and verification of CCD stitching

Full Field Digital Mammography systems which utilize CCD technology require test tools to monitor the continuity of "stitching" software.

The CIRS Model 085 phantom provides a series of L-shaped line pair targets from 4 to 12 line pair per mm. These targets are contiguously positioned to cover an 18 cm x 24 cm area at midplane in a 1 cm thick tissue equivalent slab.

Visual inspection of the resulting image permits quick and definitive assessment of stitching continuity and system resolution.

Additional slabs of tissue equivalent material are available for varying thickness and attenuation values.



Target

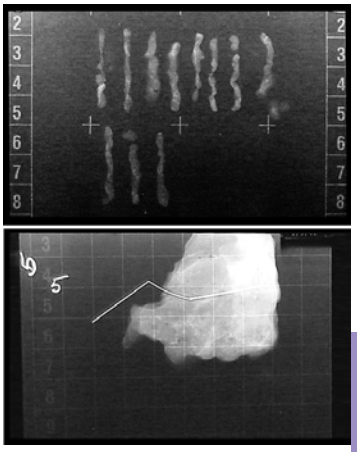
- Tin/Lead construction on Kapton substrate
- Bar length is five times width of the line grouping
- Target pattern embedded mid-plane of phantom

Specimen Imaging and Transport Container

Model 240

An efficient system for imaging, transporting and identifying breast biopsies and multiple core specimens

GRID-VIEW® address inadequacies which exist in post operative handling of surgical breast biopsy specimens and multiple core biopsy specimens. The clamshell design and radio-opaque grid provide an efficient system for imaging, transporting and identifying breast biopsies. Disposable GRID-VIEW containers accommodate the largest surgical specimens without compromising performance or convenience. A variety of grid patterns are available.



GRID VIEW®

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For a additional references, please visit our website

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This warranty does not apply if the product, as determined by the manufacturer, is defective because of normal wear, accident, misuse, or modification.

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Training Phantoms and Disposable Products	6 Months
Electrical Products and Dynamic Phantoms	12 Months
All other Standard Products	48 Months
Plastic Water	60 Months

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