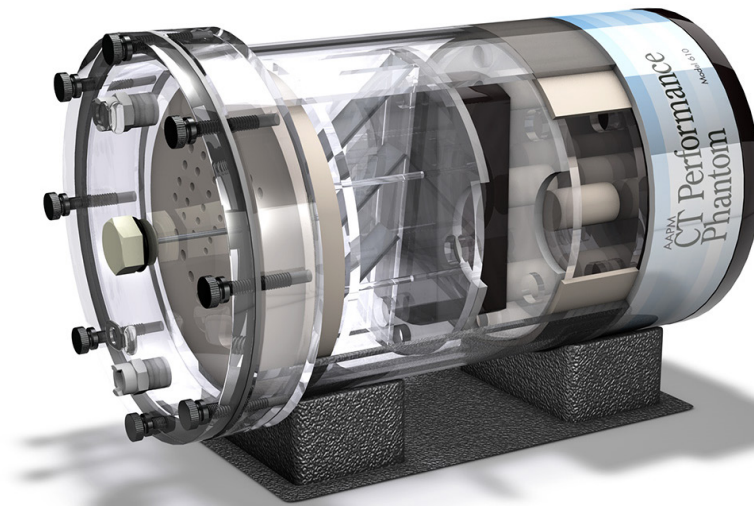


AAPM CT Performance Phantom

Model 610



Shown with optional low contrast insert (Model 610-06)

MEETS GUIDELINES IN AAPM REPORT #1 "PERFORMANCE EVALUATION AND QUALITY ASSURANCE OF CT SCANNERS"

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 manual, holding cradle, filling tubes and other accessories are included.

Measurement Capability

- Noise
- Sensitivity / Detectability
- Mechanical Alignment
- Beam Hardening
- Slice Thickness
- Size Independence
- Radiation Dose
- Spatial Uniformity
- HU Linearity
- Spatial Resolution an line spread function

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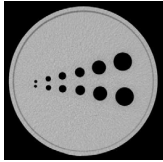
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SPECIFICATIONS

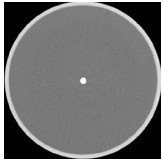
OVERALL DIMENSIONS:	21.6 cm x 39.4 cm (8.5" OD x 15.5" L)
EMPTY WEIGHT:	7.8 kg (17.25 lbs.)
MATERIALS:	PMMA cast tubing 21.6 cm OD, 20.3 cm ID x 32.4 cm L (8.5" OD, 8" ID x 12.75" L) with removable lid

MODEL 610 INCLUDES



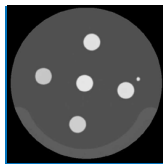
**CONTRAST TEST OBJECT
PART NO. 610-01-02**

(This option is only available with the purchase of a phantom body) 8.5" OD x 2.5" L solid acrylic equivalent disk block with 12 fillable cavities 1.6" deep. Two of each cavity with diameters: 1, 0.75, 0.50, 0.375, 0.25, and 0.125 inches, spaced twice their diameter apart from a center line. Cavities can be easily filled from the outside with dextrose or sodium chloride solutions of various concentration.



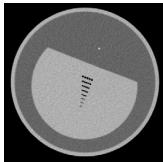
**ALIGNMENT PIN
PART NO. 610-01-05**

0.25" Ø x 3" L aluminum pin with threaded attachment to housing cover plate.



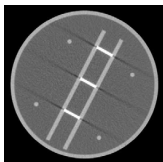
**CT NUMBER LINEARITY INSERT
PART NO. 610-02**

7.5" OD x 2.5" L includes 1" Ø. Rods of polyethylene, PMMA (acrylic), polycarbonate, polystyrene and nylon. Density values (g/cc): polyethylene - 0.95, polystyrene - 1.05, nylon - 1.1, acrylic, - 1.19, polycarbonate, - 1.20.



**RESOLUTION INSERT
PART NO. 610-03**

7.5" OD x 2.5" L with acrylic equivalent test object with eight sets of air thru holes (five holes per set): Diameter of holes is 1.75, 1.5, 1.25, 1.00, 0.75, 0.61, 0.50, and 0.40 mm. Distance between each hole equal to hole diameter. Each row is 5mm apart. Insert also contains a 0.009" stainless steel wire positioned longitudinally for calculation of line-spread function.



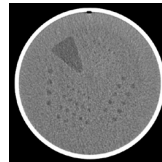
**SLICE THICKNESS INSERT
PART NO. 610-04**

7.5" OD x 3.5" L Contains three 0.02" x 1.00" aluminum strips angled at 45°, positioned on center and aligned vertically.

**BONE RING
PART NO. 610-05**

7.65" ID x 0.2" wall thickness x 2.8" long cortical bone ring. Fits over linearity, resolution and slice thickness insert to harden the beam.

MODEL 610 OPTIONAL ACCESSORIES



**LOW CONTRAST INSERT
PART NO. 610-06**

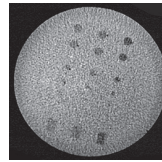
8" OD x 1.18" L proprietary epoxy with CT density 6-10 HU above water. The test object contains a series of water-filled holes from 2.5 to 7.5 mm in Ø, in 0.5 mm steps. For each target size, the center-to-center distance between holes is twice the hole diameter.

**WHOLE BODY RESOLUTION
AND NOISE RING
PART NO. 610-07**

12" OD x 8.5" ID x 2" L Fits over phantom housing and contains the same test object as the Resolution Insert, at two locations 90° apart.

**TLD INSERT
PART NO. 610-08**

0.5" Ø x 3.5" L PMMA rod drilled 3 inch deep to accept TLD's. Can be swapped with Alignment pin in housing cover without removing the cover.



**LOW CONTRAST INSERT
SPHERICAL TARGETS
PART NO. 610-10**

8" OD x 1.18" Plastic Water® LR equivalent background. The test object contains spheres 5, 10 & 20 CTU above background and 3 reference plugs for each material used as spheres.

**CUSTOM CARRY CASE FOR AAPM CT
PERFORMANCE PHANTOM
PART NO. 9504**

Custom carry case for easy storage and handling of complete Model 610.

