# Brachytherapy QA Phantom Model 045B



# Solution to AAPM TG128

A robust prostate brachytherapy QA program is ensures accurate image-guidance and dosimetry calculations. The CIRS Model 045B offers a complete solution for implementing a QA program specific to transrectal ultrasound guidance of prostate brachytherapy, as recommended by AAPM Task Group 128.<sup>1</sup>

The phantom enables users to check key imaging parameters such as depth of penetration, axial and lateral resolution, distance, area, volume, and geometric consistency with the treatment planning system.

The phantom is supplied with a water tank for vertically coupling the transducer to the phantom scanning membrane. Brachytherapy needle grid QA can be accomplished using the space available inside the water tank as specified by Goldstein et al.<sup>2</sup>

The tank has two angled slots to allow the phantom to be positioned at a 30° angle which simplifies use with floor-

mounted TRUS systems. When testing table-mounted TRUS systems, the phantom membrane can be oriented vertically. (See back page for images.)

## **Benefits:**

- Geometric consistency with the treatment planning
- Water tank allows for phantom coupling and needle guidance measurements.

#### References

 Pfeiffer, Douglas, et al., AAPM Task Group 128: Quality assurance tests for prostate brachytherapy ultrasound systems. Med. Phys., vol. 35 (12), pgs. 5471-5489, December 2008.

2. Goldstein, A., Yudelev, M., Sharma, R.K. and Arterbery, E. (2002), Design of Quality Assurance for Sonographic Prostate Brachytherapy Needle Guides. Journal of Ultrasound in Medicine, 21: 947-954. doi:10.7863/jum.2002.21.9.947

US Patent #5196343.



# **BRACHYTHERAPY QA PHANTOM**





Phantom rests inside the tank during imaging tests - ensures consistent acoustic coupling with no gel to clean up.

## **SPECIFICATIONS**

DIMENSIONS	14 x 11 x 7.5 cm
PHANTOM WEIGHT	4 lbs. (1.5 kg)
HOUSING MATERIAL	PVC Plastic
TANK MATERIAL	ABS
MEMBRANE	Saran-based laminate
TISSUE-MIMICKING MATERIAL	Zerdine <sup>®</sup> solid elastic hydrogel

## **MODEL 045B INCLUDES**

QTY	DESCRIPTION
1	Brachytherapy QA Phantom
1	Water Tank
-	User Guide
-	48-Month Warranty
-	Certificate of Compliance

0.5 cm and 1 cm

#### ZERDINE<sup>®</sup> PROPERTIES

Freezing point: Melting point: Speed of Sound: Other: 0° C Above 100° C 1540 m/s Compatible with harmonic imaging

# INTERNAL "N" GRID

Number of targets: Wire: 13 500-micron, nylon monofilament

#### PROBE RETRACTION GRID

Number of targets: Wire: Spacing:

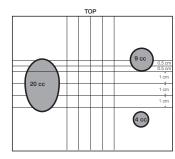
5

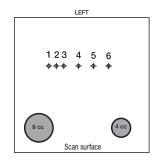
~20 cc

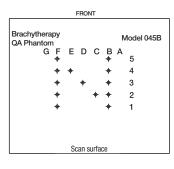
### **VOLUME TARGETS**

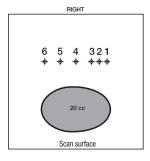
Material: Size of target 1: Size of target 2: Size of target 3: Zerdine® gel-hyperechoic with respect to background ~4 cc ~9 cc

100-micron, nylon monofilament











Computerized Imaging Reference Systems, Inc. has been certified by UL DQS Inc. to **(ISO) 13485:2016**. Certificate Registration No.10000905-MP2016.

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