



## MAMMOGRAPHIC ACCREDITATION PHANTOM – 156

This phantom helps radiology professionals to ensure that their mammographic system is producing images of the highest quality. These high quality images can lead to the early detection of breast cancer and long-term survival of the patients.

Beginning October 1, 1994, all mammography facilities in the US were required to be certified by the food and Drug Administration (FDA) in accordance with the requirements of the Mammography Quality Standards Act. According to QMS, published by FDA, all mammography facilities must perform routine quality control tests of mammographic systems. The Mammographic Accreditation Phantom – 156, an integral part of the ACR (American College of Radiology) Mammographic Quality Control Program, was designed to perform weekly QC checks of your mammographic system.

The phantom provides a baseline by which image quality can be compared and minor variations identified before they lead to a reduction in clinical image quality. Without the phantom check to serve as their baseline test, even the most experienced professional can miss the subtle degradation of image quality that occurs gradually over time in sensitive mammographic equipment.

The Mammographic Accreditation phantom – 156 is designed to simulate X-ray attenuation of 4.2 cm compressed human breast composed of 50% adipose and 50% glandular tissue. Test objects of different sizes, shapes and densities are embedded in a wax insert, which is enclosed in an acrylic base. These test objects represent malignancies or small breast structures, simulated micro-calcifications, fibrils and tumor-like masses.

When the phantom is used to create an image, the mammographic system should detect a minimum of 4 fibrils, 3 groups of simulated micro-calcifications and 3 masses. This has been determined to be the standard of image quality that State Departments of Radiologic Health and the ACR use as their criteria. The phantom can also be used to identify other artefacts in the system due to processing, grid and filters. These types of artefacts are difficult to identify on complex mammographic images.

If your phantom image is good and your system maintains its standard of image quality on a weekly basis, no further testing beyond daily processor QC may be required. But, if you cannot see all of the test objects identified when the system was functioning at optimum performance, further testing may be necessary. Variables to check include film reproducibility, phototimer accuracy, and kVp accuracy and radiation beam quality.

## Mammographic Accreditation Phantom, Specifications:

### Phantom Body

Material:	Acrylic
Phantom Dimensions:	4.5 x 10.2 x 10.8 cm (HWD) (1.75 x 4 x 4.25 in)
Acrylic Base:	3.3 cm (1.3 in) thick
Cover:	0.3 cm (0.12 in) thick
Acrylic Disk:	4 mm thick x 1 cm diameter*

\*Acrylic disk should be placed on top of the phantom in a consistent location in the image area, so it does not obscure details in the phantom and where it cannot cast a shadow on any portion of the AEC detector. According to the ACR Mammography QC Manual, a suitable location is between and slightly below the first and second largest fibers.

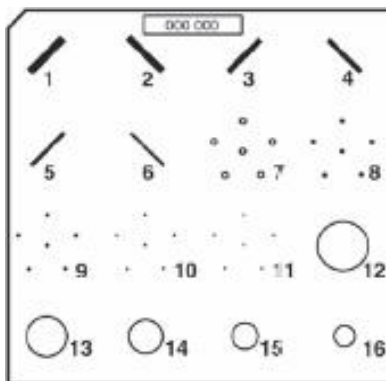
Included is a film, which is a contact image of the wax insert of your Mammographic Accreditation Phantom – 156. It is to be used for location and orientation of the test objects within the phantom only.

### Test objects

Nylon fibrils  
 Simulated micro-calcifications  
 Tumor-like masses

### Region materials

- |                        |                             |
|------------------------|-----------------------------|
| 1. 1.56 mm nylon fiber | 9. 0.32 mm specks           |
| 2. 1.12 mm nylon fiber | 10. 0.24 mm specks          |
| 3. 0.89 mm nylon fiber | 11. 0.16 mm specks          |
| 4. 0.75 mm nylon fiber | 12. 2.00 mm tumor-like mass |
| 5. 0.54 mm nylon fiber | 13. 1.00 mm tumor-like mass |
| 6. 0.40 mm nylon fiber | 14. 0.75 mm tumor-like mass |
| 7. 0.54 mm specks      | 15. 0.50 mm tumor-like mass |
| 8. 0.40 mm specks      | 16. 0.25 mm tumor-like mass |



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