



**Selenia® Dimensions®**  
A Revolution in Breast Imaging



**HOLOGIC®**  
The Women's Health Company

SELENIA®  
**Dimensions®**  
Digital Tomosynthesis System

## **The promise** of breast tomosynthesis is here

Hologic has been at the forefront of the industry's transformation from analog to digital mammography. Now we have taken another significant leap forward with the introduction of the Selenia® Dimensions® system, the first commercially available system to deliver on the extraordinary promise of breast tomosynthesis.

The Selenia Dimensions system delivers the exceptional digital mammograms you've come to expect from Hologic and takes you to the next level in breast imaging. You can now offer your patients breast tomosynthesis—a breakthrough technology poised to revolutionize how breast cancer is detected today.

Our flexible Selenia Dimensions platform may be tailored to your needs. You may start with a system that has both traditional digital mammography and breast tomosynthesis or with a digital mammography only system that can easily be configured for tomosynthesis imaging with the simple installation of a software option.





## A powerful, versatile platform

A masterpiece of technology, the Selenia Dimensions system delivers digital mammography and breast tomosynthesis capabilities in a high performance, ergonomic system designed to streamline workflow for the technologist and provide a more comfortable experience for the patient.

### **Selenia Dimensions delivers:**

- Exceptionally sharp images for visualization of the finest details.
- Ground-breaking tomosynthesis (3D) technology for diagnostic performance with optimal workflow efficiencies.
- One-touch control for seamless, instantaneous transition between imaging modes: full-field digital mammography (2D imaging), tomosynthesis (3D imaging) or “combo-mode” (2D+3D imaging), Hologic’s unique feature that quickly acquires a traditional digital mammogram and a tomosynthesis scan in the same compression.<sup>1</sup>
- Advanced user tools to simplify operation and enable higher patient throughput.
- Sophisticated, ergonomic features specifically developed to assure the well-being of the patient.

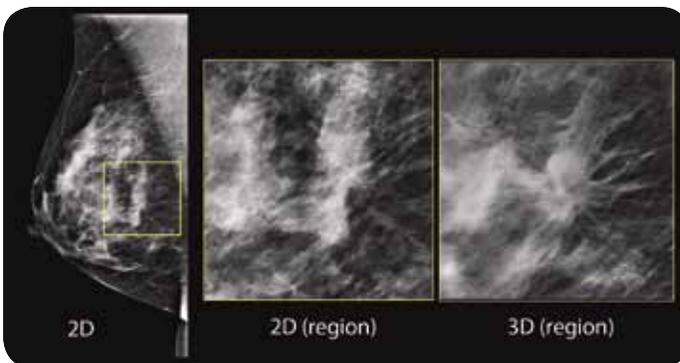
## Clinically Superior Performance<sup>2</sup>

Tomosynthesis is a revolutionary technology that gives radiologists the ability to identify and characterize individual breast structures without the confusion of overlapping tissue. During a tomosynthesis scan, multiple low-dose images of the breast are acquired at different angles. These images are then used to produce a series of one-millimeter thick slices that can be viewed as a three-dimensional reconstruction of the breast.

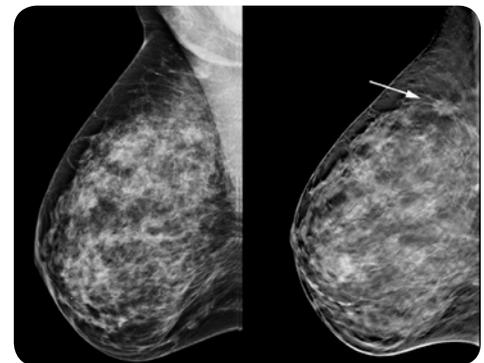
Instead of viewing tissue complexities superimposed as they are on a traditional 2D mammogram, the radiologist can now scroll through the layers of the breast in one-millimeter thick slices. Reviewing breast tissue slice by slice removes the confusion of superimposed tissue, allowing the radiologist to view breast tissue in a way never before possible.

Hologic's clinical studies reviewed by the FDA, based on ROC analysis, showed radiologists reading Selenia<sup>®</sup> Dimensions<sup>®</sup> digital mammography (2D) plus breast tomosynthesis (3D) as compared to 2D mammography alone demonstrated superior clinical performance in specificity, the confidence to rule out breast cancer without recalling the patient for further study, and improved sensitivity, the proportion of mammograms with cancer which were correctly diagnosed.<sup>2</sup>

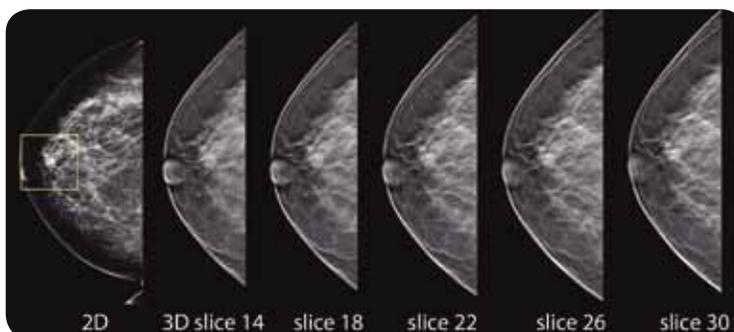
### Selenia Dimensions Clinical Images



In the screening 2D mammogram (left image), there is a possible lesion in the central breast, but its margins are difficult to assess. With tomosynthesis this can be clearly seen to be a spiculated mass, and almost certainly a malignancy.



Mammographically occult cancer in the 2D image (left image) is visible with tomosynthesis (right image).



In the 2D image on the left, there is a potential lesion in the subareolar region of the breast. In the tomosynthesis images on the right, it is easy to see that there is no lesion present. The radiologist can pick out individual structures on the separate slices, which summate to form the potential lesion seen on the two-dimensional projection image.

# Unparalleled flexibility

for use with any patient

The Selenia® Dimensions® system was designed as a single platform to provide an efficient solution for any breast imaging need. One-touch lets the operator effortlessly select one of three imaging modes: conventional digital mammography (2D) only, tomosynthesis imaging (3D) only or Hologic's unique combo-mode (2D+3D imaging).<sup>1</sup> These flexible imaging modes give radiologists all of the options needed to tailor the exam to a specific patient.



When a screening exam is performed in combo-mode, the breast is compressed in the normal way. The x-ray tube first sweeps in a 15-degree arc over the breast, acquiring a series of 15 low-dose projection images at multiple angles. These projection images form three-dimensional reconstruction.

Immediately following the tomosynthesis scan, the High Transmission Cellular (HTC®) grid automatically comes into the imaging field and a conventional digital mammogram is acquired.

This complex operation is completed in just seconds, giving the radiologist both a 2D mammogram and a tomosynthesis scan, under the same compression, for perfectly co-registered images.

## Exceptional image quality, minimal dose

Image quality is key to early detection. We never stop looking for ways to push our breast imaging technology forward, and the Selenia® Dimensions® system is no exception.

- The Selenia Dimensions system uses Hologic's direct conversion detector, which eliminates the need to convert x-rays to light. The result is exceptionally sharp digital images and high Detective Quantum Efficiency (DQE), enabling low-dose tomosynthesis imaging.
- Our HTC® grid technology delivers higher contrast images by significantly reducing radiation scatter without increasing patient dose.
- A tungsten x-ray tube with rhodium and silver filters for 2D imaging reduces radiation dose to the patient by as much as 30 percent, while maintaining superb image quality and contrast. Silver filtration provides better penetration of larger breasts without increasing exposure time, while the proven rhodium filter is the ideal selection for all other breast sizes. In tomosynthesis imaging, the tungsten tube combined with aluminum filtration provides high quality images at the lowest possible dose.
- When Selenia Dimensions is used in combo-mode (2D+3D imaging) the patient dose is similar to that of a digital mammogram, but still less than that of an analog mammogram. The Selenia Dimensions system has been demonstrated to be safe and effective, with the benefits to patients outweighing the risks.
- System settings are optimized for high quality tomosynthesis imaging:
  - Rapid scans take just seconds.
  - 15-degree scan provides high in-plane resolution.
  - Acquisition of 15 projection images (1 image /degree of arc) enables rapid reconstruction of high quality images.



# Streamlining workflow

in a way never before possible



The Selenia Dimensions system incorporates the latest technologies to simplify workflow and facilitate high patient throughput:

## **Touch-screen controls**

Touch-screen controls with intuitive icons and function screens allow the operator to move through exams quickly and efficiently.

## **Biometric login**

With a finger placed on the biometric login window, the operator is ready to start an exam with his or her pre-configured workflow preferences in place.

## **High resolution display**

Preview images are viewed on a 3MP DICOM-calibrated display, providing exceptionally fine image detail. Prior breast imaging studies can be recalled at a moment's notice, making it possible to view new and prior images side-by-side.



## **Retractable face shield**

The technologist has the option of retracting the face shield while positioning patients. The face shield may be easily pulled back from its retracted position to protect the patient during the exam.

## **Automated HTC grid**

The automated movement of the HTC® grid greatly streamlines patient throughput. Automatic engagement for 2D imaging and retraction for magnification views and tomosynthesis imaging takes place in approximately two seconds, so the exam time is close to that of a digital mammogram.



## **Smart paddle technology**

The system collimates to the appropriate field of view based on the compression device installed and the position of the paddle, ensuring accurate positioning of any size breast on a single detector. The paddle automatically shifts to the next view in the technologist's preconfigured workflow; an easy override function accommodates changes in the exam.

## An ergonomic design for comfort and ease of operation

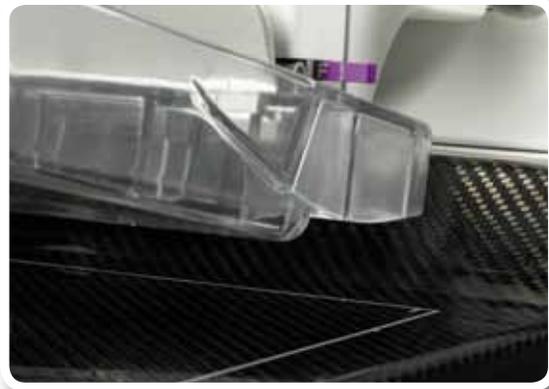


### **Ergonomically designed exposure switches**

The technologist simply depresses a pair of levers on either side of the acquisition system to initiate exposure. A light pressure is all that is needed for exposure activation, eliminating repetitive motion discomfort. The Selenia® Dimensions® can be configured for one or two lever activation.

### **Advanced paddle technology**

Newly designed compression paddles are light and easy to handle. Each paddle mounts directly onto the compression carriage, eliminating the need to handle bulky components.



Hologic's acclaimed FAST Paddle™ conforms to the natural contour of the breast, providing for greater comfort to the patient and more even compression across the entire breast. For greater flexibility, the FAST Paddle can be converted to a standard screening paddle with the push of a button.

### **Natural positioning**

Indented spaces on the side of the gantry give patients a natural spot to place their hands during the exam, making positioning easier for the technologist and more comfortable for the patient.



### **Streamlined tube head**

The streamlined tube head and SID of 70 cm makes positioning easier and provides more working space for interventional procedures.

# A comprehensive and efficient solution for breast tomosynthesis review

Hologic's SecurView® DX diagnostic workstation has been optimized to support the Selenia® Dimensions® breast tomosynthesis system, with novel workflow tools to ensure accurate and efficient review of both 2D and 3D exams.

- **Hologic's proprietary image compression technology:**

This allows the operator to move between image sets without delay.

- **Dynamic ciné method:** The SecurView DX workstation's

new keypad allows images to be displayed in a dynamic cine loop, with the speed adjustable. It also provides the flexibility to manually scroll through each slice in the reconstructed image.

- **Slabbing mode:** The thickness of the displayed slices can

be controlled with the touch of a button for more effective review of calcification clusters.

- **Digital mammogram tomosynthesis overlay:** Screening

images acquired in combo-mode show the 2D and 3D images in complete co-registration, allowing the reviewer to easily toggle between them. CAD marks generated from the 2D images can be overlaid on the breast 3D image sets in their correct x,y locations.



## Meeting the digital connectivity challenge

The advent of breast tomosynthesis introduces a new level of connectivity requirements for facilities. Hologic helps meet this challenge through its extensive staff of highly trained connectivity specialists and a suite of products developed to address any connectivity need:

- SecurXchange™ archive provides a cost-effective, scalable image storage and retrieval solution for any facility, large or small.
- SecurXchange router helps accelerate image transmission and automate workflow in the exchange of DICOM objects, for greatly simplified workflow.
- Applications synchronization provides an interface with many major third-party applications to streamline reviewing and reporting functions.

## **Innovation** in upright breast biopsy

The Affirm™ breast biopsy guidance system represents the next generation in upright breast biopsy. This innovative solution is designed to work with the Selenia® Dimensions® digital mammography system and the Eviva® stereotactic breast biopsy system to streamline efficiency and optimize workflow.



The Affirm system offers a cost-effective opportunity for practices to expand their range of services. With a quick and easy transition from digital mammography to upright biopsy, Affirm and Eviva bring compassionate minimally invasive biopsy capabilities into the breast imaging suite.

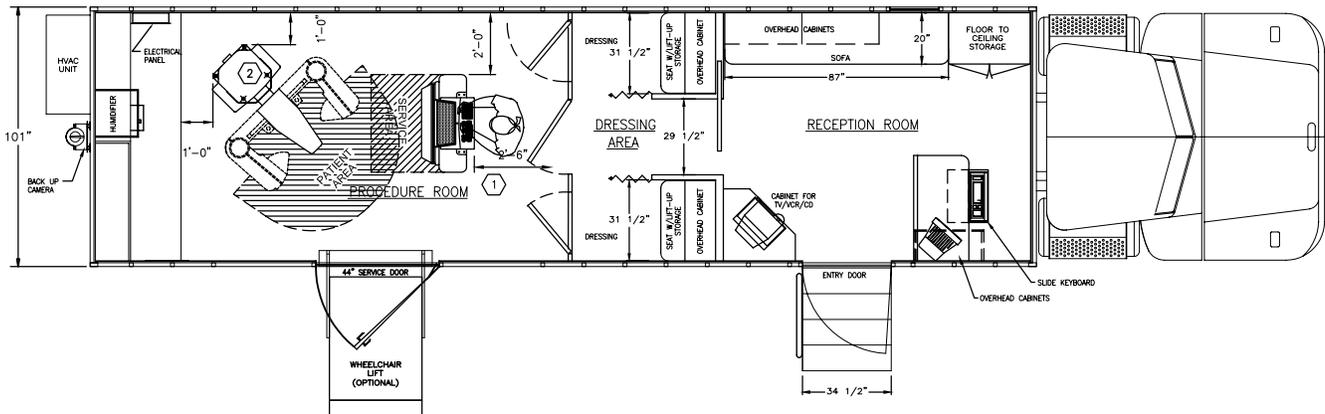
# Go mobile with the leader in women's health

Around the world, there is an overwhelmingly large percentage of women who do not have access to breast cancer screening services. Instead of accepting this obstacle to care, many women's imaging sites are looking to mobile technologies as a means to expand the reach of their care. Mobile coaches make it possible to bring care to the most remote areas, as well as to offices and medical centers that do not offer women's health screening services.

Bringing screening services to women in a mobile environment not only establishes convenient access to care, it's also an opportunity to improve compliance and control the quality of care patients receive. The same state-of-the-art technology, like a Selenia Dimensions system, that is adopted in a hospital today can now be offered in a mobile environment.

Hologic is working with imaging sites all over the world to bring mobile screening programs to women. We have the technology, the experience and the resources to help find the right mobile solution for any imaging center.

**This is just another way Hologic works with our customers to bring the highest level of care to more than 3.3 billion women around the world.**



**Hologic is defining the standard of care in women's health. Our technologies help doctors see better, know sooner, reach further and touch more lives. At Hologic, we turn passion into action, and action into change.**

BREAST IMAGING SOLUTIONS | INTERVENTIONAL BREAST SOLUTIONS | BONE HEALTH  
PRENATAL HEALTH | GYNECOLOGICAL HEALTH | MOLECULAR DIAGNOSTICS



**There are millions of women worldwide who can't access or afford the most basic care.**

**We need to change that.**

**Learn more at [promiseto.com](http://promiseto.com).**

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1 A screening exam consists of a digital mammogram and breast tomosynthesis image set.

2 The Hologic Selenia Dimensions clinical studies presented to the FDA as part of Hologic's PMA submission that compared Hologic's Selenia Dimensions combo-mode to Hologic's 2D FFDM.