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### Senographe Essential Gantry Base System

Senographe Essential Diagnostic System Senographe Essential full field digital mammography system provides a comprehensive breast care solution that includes screening, diagnostic and interventional capabilities, with advanced ergonomic design for the technologist, exceptional patient comfort and seamless workflow connectivity. Senographe Essential features the innovative 24x31cm detector, designed to offer enhanced breast coverage in a single image and a fast and efficient workflow. Smaller breasts are also easily imaged in any view with paddles that can slide to both sides of the detector. Senographe Essential offers enhanced image quality for increased diagnostic confidence because of the excellent detector performance at a low dose. Ergonomic design for technologists

- Intuitive user interface
- One touch access to preset angulations for quick and easy positioning
- Two speed motorized movements for fast and precise operation
- Sliding compression paddles can move to the side of the detector for excellent compression of any breast in any view  
Enhanced patient comfort
- Patient friendly design
- Easy wheelchair access
- Ergonomic integrated bucky Outstanding Image Quality
- Enhanced Detective Quantum Efficiency (DQE)
- Molybdenum/Rhodium dual track tube
- Automatic Optimization of Parameters (AOP) transparently selects all exposure parameters based on breast radiological properties
- Three AOP modes enable more flexibility in dose management
- Enhanced views with Fine View and improved contrast with Premium View Seamless digital workflow connectivity

- Automated Quality Control
- Integrated Repeat and Reject Analysis function Senographe
- Essential Technical Specifications Image Quality Detector DQE
- DQE typical values: 70% at 0lp/mm, 61% at 2.0lp/mm, 24% at 5.0lp/mm
- Measurement conditions: Mo anode track, Mo filter, 28kV, 8.5mR detector entrance dose, 4.2cm PMMA Detector
- Detector size: 24x30.7cm
- Pixel size (pitch): 100 um
- Acquisition dynamic range: 14 bits
- Image size (XxY):
  - 3062x2394 pixels (large image size) approximately 14MB per image
  - 2294x1914 pixels (regular image size) approximately 9MB per image
- Patented needle structure CsI scintillator single piece construction
- Closed loop liquid cooling Tube Technology
- X-Ray tube type: Apollon
- Anode target materials - Dual track: Molybdenum (Mo), enriched with Vanadium and Rhodium (Rh)
- Four focal spots: 0.1 and 0.3 IEC on each target
- Target angle: 0 degrees
- Maximal high voltage: 49kV
- Tube current:
  - Molybdenum target: 100 mA from 25 to 30kV on large focal spot 40 mA from 25 to 30kV on small focal spot
  - Rhodium target: 62mA from 25 to 30kV on large focal spot 35mA from 25 to 30kV on small focal spot
- Anode size (tracks diameter): 100mm
- Anode heat storage capacity: 250kj (340kHU)
- Anode maximum dissipation: 500W (40kHU/min)
- Max casing continuous dissipation: 150W (12 kHU/min) at 104 degrees fahrenheit
- Permanent filtration: 0.69mm Beryllium
- Weight: 15.4 pounds

- X-ray tube assembly: self-encased X-ray tube oil free, lead free, air-cooled head
- Tube protection: software monitoring of tube load Grid/Breast Support
- Ergonomic breast support for patient comfort
- Motorized installation and removal of the grid and breast support for geometric magnification
- Breast support material: low attenuation carbon fiber composite
- Grid ratio: 5:1
- Grid frequency: 36 lines/cm
- Optimized grid motion ensuring no grid structure artifacts in image
- Detector to breast support edge-to-edge distance less than or equal to 5mm Automatic Exposure Automatic Optimization of Parameters (AOP) Fully automatic mode
- AOP is a fully automatic exposure system that selects all exposure parameters based on radiological density of the breast for exceptional and consistent image quality: track (Mo or Rh), filter (Mo or Rh), kV
- The system identifies the most dense part of the breast to select the appropriate exposure parameters
- Three AOP modes are available for more flexibility:
  - "Contrast": dose to patient comparable to screen/film mammography
  - "Dose": priority is given to dose reduction
  - "Standard": balances low noise and dose reduction
- Manual Mode
- Manual selection of all parameters: track, filter, kV and mAs Collimator Filters: Molybdenum: 0.030mm; Rhodium: 0.025mm
- Field of View (FOV) in detector plane, in cm
  - For standard contact views: 24x31 maximum FOV or 19x23 regular FOV (centered or off-centered left and right based on the paddle inserted)
- Field of View (FOV) selection: automatic and manual
- FOV size: selected automatically based on paddle or

geometric magnification platform used, can be modified manually by using the collimation size button on the tube head

- FOV location (left, right, center): selected automatically based on the tube arm angle, can be modified manually by using the collimation position switch on the tube head
- Compression and exposure are prevented if the FOV and compression paddle sizes or locations are not consistent
- Light centering device: a light automatically switches on when a preset position is reached, at compression start or at paddle insertion; can be turned on with the collimation switch buttons located on the tube head
- Compression modes:
  - Motor driven compression up to 20 daN
  - Manual compression possible up to 30 daN
- Dual foot-pedals for column height and compression adjustments
- User defined motorized compression force limit: 4 to 20 daN
- Minimum force for AOP: 3 daN
- Compression speed: 2 speed levels
- User can select automatic decompression after exposure to minimize patient time under compression
- User-defined maximum decompression height Safety
- Gantry locked when compression force applied
- Positioner
- Isocentric arm with motorized rotation and vertical movement
- Source to image receptor distance: 660mm
- Floor to image receptor distance: from 65cm to 150cm
- Rotation angle: - 165/185 degrees
- Ergonomic handles: two on both sides of the tube arm and two additional handles at the detector level
- User Interface
- Four sets of dual speed switches for rotation and lift movements
- Four sets of preset position buttons for quick and easy positioning in CC and MLO
- Automatic stop at +/-90 degrees for lateral positions
- Collimation buttons on the tube head for field of view size and

- Parameters display
  - Tube arm support rotation angle
  - Compressed breast thickness (in mm)
  - Compression force (in daN)
  - Ergonomic control console
  - Controls exposure
  - Provides information on system status
  - Gives access to advanced parameters for system set-up
- Patented automatic view names marking based on breast laterality
- View name can be edited at any time before the examination is closed Acquisition Workstation
- Small footprint
- Time to display processed image (average): 14 seconds
- Time between exposures (typical): 12 seconds
- Dose calculated and displayed on the image after every exposure (Entrance Skin Dose and Average Glandular Dose)
- Dual core HP workstation
  - Memory: 1GB RAM + 4MB L2 cache
  - Hard disk: 1 internal 250 GB disk, 7200 RPM
  - Image storage: 15000/25000 large/regular field of view
  - Port: one Ethernet port 10/100 Mbits
  - DVI video board
- Display (standard)
  - High performance black and white LCD 1MP
  - monitor
  - 48cm (19") medical grade
  - 1280x1024 pixels (landscape)
  - 8 bits display
  - High luminance - up to 500 Cd/m<sup>2</sup>
  - Contrast ratio: 500:1
  - Viewing angle: 170 degrees
  - Weight: 6.4kg (14.9lbs)
  - Mounted on a rotating arm for easy in-room access
- Image Presentation

- Fine View processing provides sharp images with enhanced conspicuity, based on detector physics
- 2 options for primary image processing: 1. Thickness Equalization which provides a "film-like" aspect with improved visibility of the skin line 2. Premium View\* enhances local contrast
- Automatic windowing (window level and window width)
- Other features: zoom, roaming, inversion, flip, rotation of images, window width and level setting, annotations and measurement
- Un-interruptible Power Supply (UPS) allows to close the examination without loss of information in the case of a power failure
- Connectivity
- DICOM 3.0 platform:
  - Modality Worklist User
  - Storage Provider
  - Storage Commitment User
  - Query/Retrieve User
  - Basic Grayscale Print User
  - Verification Provider
  - DICOM-compliant CD-RW Data Interchange
- Connectivity features: customizable Autopush to multiple DICOM databases, Autoprint, Autodelete based on Storage Commitment
- Modality Perform Procedure Step User
- Connectivity to GE Service for remote diagnostic capability
- Quality Assurance
- Complete quality control program
- Automation of quality control tests: Flat Field, MTF, AOP, SNR, CNR
- Data can easily be exported for data tracking
- Automated Repeat and Reject Analysis
- Radiation Shield
- Stand alone or integrated to control console
- High Voltage Generator 0 Generator type: high frequency single phase power supply
- Ripple: <4% from peak to peak
- Power: 5kW max

- mAs range: 4 to 500 mAs (depending on track, filter and kV)
- kV range: 22 to 49kV, in 1kV steps
- Generator protection: software monitoring of generator and tube load Power Supply
- Input frequency: 50Hz/60Hz
- Input voltage: single-phase 200/208/220/240V
- APC Smart-UPS 750 VA Standard Configuration
- Motorized isocentric gantry
- X-ray tube with rotating Mo/Rh anode
- 24x31cm flat panel detector
- Acquisition workstation
  - CD-RW
  - LCD display
  - X-ray protective shield
  - Control console
  - UPS
- Pair of dual foot-pedals
- High-frequency generator and conditioner
- Face shield
- 24x31cm bucky with grid
- 24x31cm paddle
- 19x23cm sliding paddle
- 24x31cm ergonomic sliding paddle that conforms to the breast
- 1.5 and 1.8 magnification stands with dedicated paddles (19x23cm, round spot, square spot)
- Square spot sliding compression paddle
- Round spot sliding compression paddle
- Quality control toolkit
- User manual and technical documentation

#### USA ICAD Additional License

USA additional license for PowerLook AMP iCAD

Additional License for PowerLook AMP requested for each additional Essential connected to the server.

3	1	<p>Flexible and Ergonomic 24 x 31cm Compression Paddle</p> <p>Flexible and Ergonomic compression paddle 24 x 31cm for Senographe Essential</p> <p>The optional ergonomic 24x31 cm sliding paddle provides tilting and flexibility for better compression uniformity from chest wall to nipple.</p> <p>Positioning is made easier especially in MLO position for large pectoral muscle and in CC when chest wall and nipple side show large thickness variation.</p> <p>Patient comfort is improved by requiring less compression on pectoral muscle or chest wall to achieve proper compression on the whole breast.</p>
4	1	<p>Sliding Flexible and Ergonomic 19 x 23 cm Compression Paddle</p> <p>Sliding Flexible and Ergonomic compression paddle 19 x 23 cm for Senographe Essential</p> <p>The optional ergonomic 19x23 cm sliding paddle provides tilting and flexibility for better compression uniformity from chest wall to nipple. It is used in combination with the 19x23 field of view.</p> <p>Positioning is made easier especially in MLO position for large pectoral muscle and in CC when chest wall and nipple side show large thickness variation.</p> <p>Patient comfort is improved by requiring less compression on pectoral muscle or chest wall to achieve proper compression on the whole breast.</p>
5	1	<p>Sliding Round Spot Compression Paddle</p> <p>Sliding Round Spot Compression Paddle</p>
6	1	<p>Round Spot Magnification Paddle</p> <p>Round Spot Magnification Paddle</p>
7	1	<p>Standard Radiation Shield</p> <p>Additional Stand-alone Radiation Shield (MAVIG) This radiation screen is a stand-alone shield validated for fixed configurations only.</p>



8	1	<p>2d Biopsy Optical Localiser</p> <p>2D Biopsy Optical Localizer Includes:</p> <ul style="list-style-type: none"> <li>• 2D Cross-hair</li> <li>• 2D Large localization paddle</li> <li>• 2D Spot localization paddle</li> </ul>
9	1	<p>Set of Plexiglass Plates for Quality Control</p> <p>Set of Plexiglass Plates for Quality Control</p> <p>These plexiglass plates are used for quality assurance procedures for Senographe DS or Senographe Essential.</p>
10	1	<p>Senographe Diagnostic Option Package</p> <p>Senographe Essential Diagnostic Package Package comes complete with items required to upgrade the Senographe Essential e to a full diagnostic unit. The diagnostic kit includes:</p> <ul style="list-style-type: none"> <li>• 1.5 Magnification stand</li> <li>• 1.8 Magnification stand</li> <li>• 19x23cm Magnification paddle</li> <li>• 2 Table stands</li> <li>• Installation manual</li> </ul>
11	1	<p>System Power Supply Cable</p> <p>System Power Supply Cable</p>
12	1	<p>MONIT LCD 3MP EIZO RX340</p> <p>3MP LCD Monitor The monitor is mounted on a rotating arm to the characteristics:</p> <ul style="list-style-type: none"> <li>• High performance color TFT 3MP monitor</li> <li>• 54cm (21.2")</li> <li>• 2048 x 1536 pixels (landscape)</li> <li>• Brightness: 1000 Cd/m2</li> <li>• Contrast ratio: 1400:1</li> <li>• Viewing ratio: 170 degrees</li> </ul>
13	1	<p>E CONTRAST</p> <p>E CONTRAST</p>

14	1	<p>Mammography Accessories Cabinet</p> <p>GE Mammography Accessories Cabinet</p> <p>FEATURES/BENEFITS</p> <ul style="list-style-type: none"> <li>• Holds 9 Paddles, Mag Stand, QC Phantoms and more</li> <li>• Can be wall mounted or floor standing</li> </ul> <p>SPECIFICATIONS</p> <ul style="list-style-type: none"> <li>• Dimensions (L x W x H): 30.5" x 15.5" x 40.5"</li> <li>• Weight: 48 lbs.</li> </ul>
15	1	<p>ACR Breast Phantom - RMI 156</p> <p>Mammography Breast Phantom - ACR Gammex 156</p> <p>The Mammographic Accreditation Phantom is designed to test the performance of a mammographic system by a quantitative evaluation of the system's ability to image small structures similar to those found clinically.</p> <p>Objects within the phantom simulate calcifications, fibrous calcifications in ducts, and tumor masses.</p> <p>The phantom is also designed to determine if a mammographic system can detect small structures that are important in the early detection of breast cancer.</p> <p>Test objects within the phantom range in size from those that should be visible on any system, to objects that will be difficult to see even on the best mammographic system.</p> <p>Breast phantom is compatible with analog and digital equipments.</p> <p>Approved by ACR for Mammography.</p> <p>SPECIFICATIONS</p> <ul style="list-style-type: none"> <li>• Height: 1.75 in. (4.5 cm)</li> <li>• Width: 4 in. (10.2 cm)</li> <li>• Depth: 4.25 in. (10.8 cm)</li> </ul>
16	1	<p>2 Days MM TiP Onsite Training</p> <p>2 Days MM TiP Onsite Training</p> <p>Two Day MM Onsite Training provided from 8AM to 5PM, Monday</p>

through Friday. Includes T&L expenses. Days provided consecutively.

This training program must be scheduled and completed within 12 months after the date of product delivery.

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3 Days MM TiP Onsite Training

3 Days MM TiP Onsite Training

Three Days MM Onsite Training provided from 8AM to 5PM, Monday through Friday. Includes T&L expenses. Days provided consecutively.

This training program must be scheduled and completed within 12 months after the date of product delivery.

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SENOGRAPHE ESSENTIAL DIFF

Senographe Essential Differences Course

Objectives are to teach the student the differences between the Senographe DS and the Senographe Essential. This cd is designed for those who have already attended the Senographe DS course and just need the differences for the Seno Essential. If the student enrolls in the Senographe DS class going forward, Essential is covered in that course, and they will not need this cd/web course. This course must be taken within 2 years from the purchase date.

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Senoraphe System Mammo Exam

Senographe Systems Mammo Challenge Exam

This challenge exam is for engineers with considerable service experience on Mammography diagnostic imaging equipment and wish to attend any of the following courses: Senographe 2000D or Senographe DS Plus Essential. In place of attending GE Mammography Systems training engineers may opt to take this challenge exam. This exam will cover basic mammography principles and theory as well as DMR/800T system knowledge, which are required to service all GE Senographe systems. Should the engineer not pass the challenge exam, the customer will be required to attend the GE Mammography Systems course. NOTE: Cost of the challenge exam will apply as a credit towards the GE Mammography Systems course This exam must be taken within 2 years of the purchase date.