REGIUS PUREVIEW

MAMMOGRAPHY

KONICA MINOLTA

REGIUS PUREVIEW
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REGIUS PUREVIEW Type M

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REGIUS MODEL 190

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CONSOLE CS-3

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DRYPRO MODEL 793

The essentials of imaging

Recent changes in diet and lifestyle have seen the incidence of breast cancer among women increase year by year in the world. It is also said that if it is detected and treated in its early stages, breast cancer is a curable illness.
REGIUS PUREVIEW Mammography is a revolutionary new X-ray mammography system that incorporates cutting-edge Phase Contrast technology to produce images of unparalleled, world-class quality.
Konica Minolta is proud to offer the ultimate solution to the early detection of breast cancer.

For all users eagerly awaiting the ultimate in high-definition image quality…

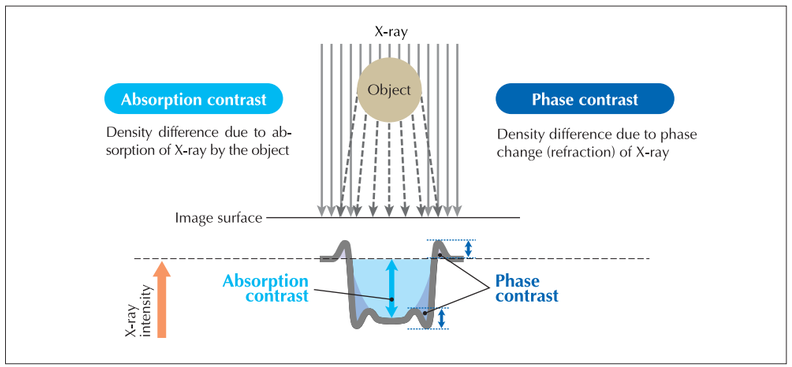
REGIUS PUREVIEW MAMMOGRAPHY

REGIUS PUREVIEW Mammography is the first X-ray mammography system in the world to utilize phase contrast technology.
The system combines an exposure using PCM 35×43cm cassettes and a scanning at 43.75μm to obtain ultra high resolution (70 million pixels) image data.
Furthermore, the combination of full-size output and film with a maximum depth of 4.0 Dmax enables the provision of high quality mammography images with vastly improved sharpness and granularity.

TECHNOLOGY

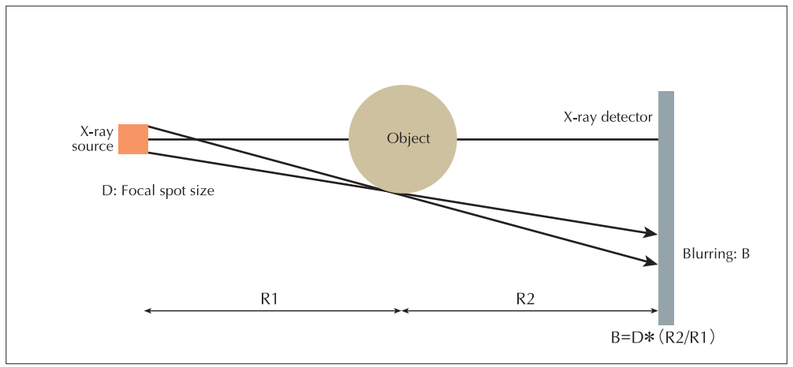
The Principle of Phase Contrast Imaging

When x-ray passes through an object, factors such as the photoelectric effect and Compton scattering lead to a decrease in the intensity of the x-ray (absorption contrast), and at the same time a phase shift occurs. This phase shift is generally observed as a refraction or interference. By converting this phase shift to an image as changes in x-ray intensity, it is possible to obtain a phase contrast.
In REGIUS PUREVIEW Mammography, the effects of this phase contrast based on the refraction of X-ray makes it possible to obtain sharp image in which edges are clearly defined (the edge effect).

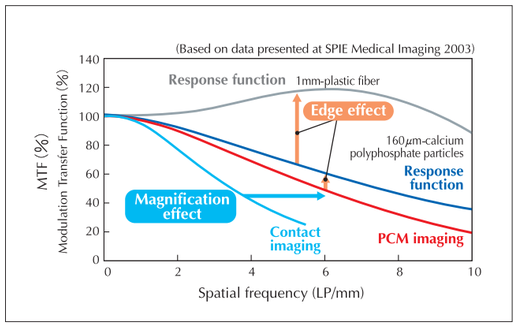


The Effect of Phase Contrast using Clinical X-ray Tube

In order to obtain a phase contrast, it is necessary to maintain a distance between the object and the x-ray detector, which results in x-ray magnification.
Generally speaking, in X-ray magnification using a molybdenum (Mo) anode X-ray tube for mammography, geometrical unsharpness gives rise to blurring, but by optimizing the distance between R1 and R2 in the figure below, the conditions under which the phase contrast effect overcomes this tendency towards blurring have been discovered.

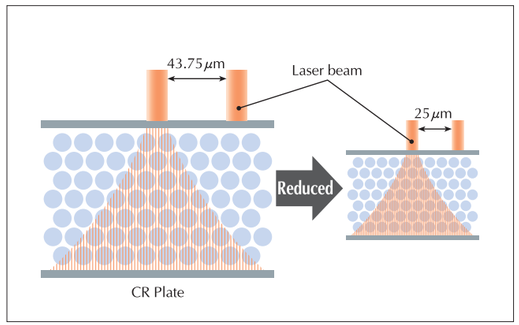


New Digital Mammography With Phase Contrast Technology.



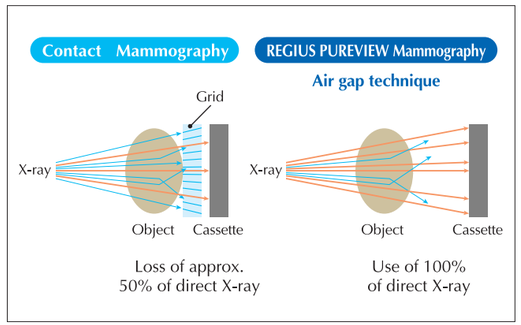
Improvement in sharpness

Magnification and the edge effect greatly improve image sharpness.
In REGIUS PUREVIEW Mammography, combination of the magnification effect and the edge effect of phase contrast imaging produce a significant improvement in image sharpness.



Improvement in spatial resolution

In REGIUS PUREVIEW Mammography, images produced using magnification are reduced in size when outputted to film. This magnification-reduction process increases the spatial resolution and reduces diffusion of laser light, which results in higher sharpness. This effect is possible only with digital mammography.



Improved efficiency of X-ray use

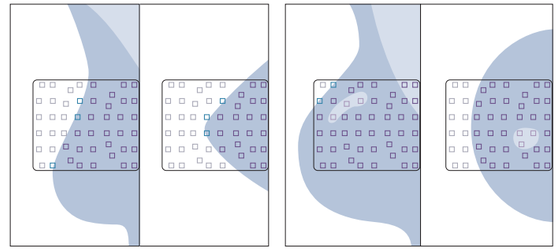
The air gap technique eliminates the scattering of X-ray. Compared to Contact Mammography using grids, REGIUS PUREVIEW Mammography makes it possible to use X-ray more effectively, without any loss.

POSITIONING

The most significant feature of REGIUS PUREVIEW Mammography is that the breast table and the x-ray detector are located at a distance apart.
To prevent patients from being exposed to radiation, one of the standard accessories that come with the REGIUS PUREVIEW Type M is a special body shield that attaches to the front of the mammography unit, a feature that also reduces the burden associated with positioning the patient.

Flex-AEC

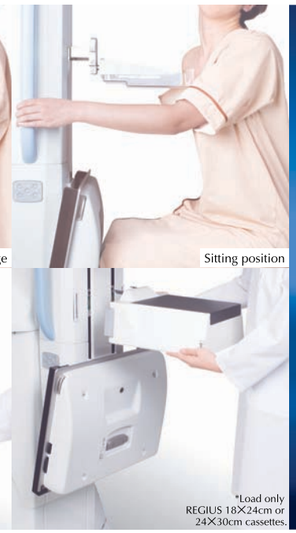
Flex-AEC employs 48 independent detectors.
All detectors are active, only detectors under breast participate to the AEC operation.
This function allow the user not to select detector and to concentrate on patient positioning.




MLO (Mediolateral oblique) image


CC (Craniocaudal) image


Magnified spot image


Sitting position

*Load only REGIUS 18×24cm or 24×30cm cassettes.

Switching from PCM to Contact imaging

❶ Cassette loading/ unloading
PCM 35×43cm cassettes are loaded and unloaded through an opening in the body shield.

❷ Removing the body shield
Remove the body shield by pulling it forward

❸ Storing the cassette holder
Lift up the cassette holder to stow it in the device

❹ Replacing the imaging unit
Loosen the lock lever behind the C arm, pull out the imaging unit support table, and attach the Contact imaging bucky table.

❺ Attaching the irradiation field limiting plate
Replace with the irradiation field limiting plate for life-size imaging.

SYSTEM FLOW

The ability of the world's smallest sampling pitch of 25μm creates new possibilities.

X-ray Magnification
X-ray phase contrast technology

High resolution digitalization
43.75μm reading (*Optional)

Image processing
Optimized processing parameters

Automatic alignment of left and right breast images

Contact imaging level printing
Realization of 25μm printing and DMax. 4.0

CR image reader REGIUS MODEL 190

Insert an exposed cassette and the REGIUS will scan it at a minimum sampling pitch of 43.75μm. This is the equivalent of a resolution of around 70 million pixels.

X-ray mammography unit REGIUS PUREVIEW Type M

Exposure field is 18×24 cm and 24×30 cm. Images are magnified at 1.75 times (for 18×24 cm) or 1.46 times (for 24×30) on 35×43 cm cassette.

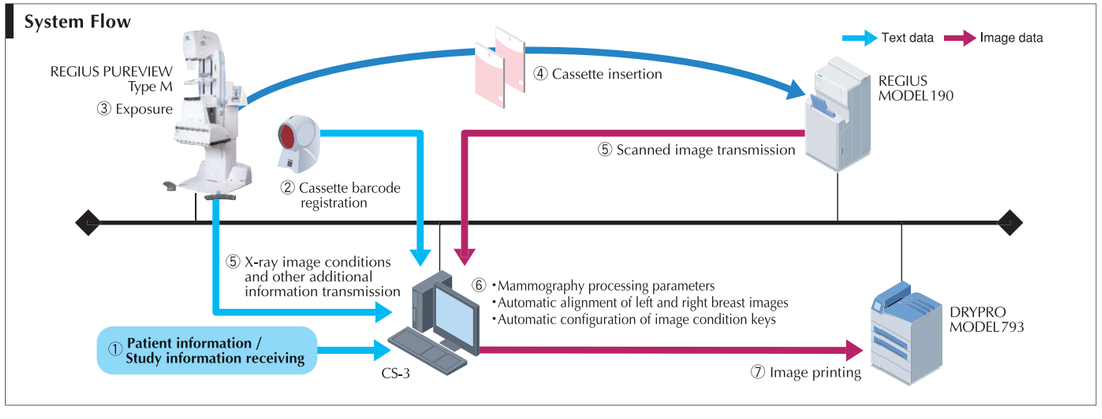
REGIUS console CS-3

The REGIUS console performs optimal image processing for scanned images, aiding diagnosis by providing enough contrast for important areas of the breast, including calcifications and adipose tissue.
The console also incorporates features such as automatic alignment of left and right breast images.

Laser Imager DRYPRO MODEL 793

The DRYPRO prints images with a pitch size of 25μm, the smallest in the world, and outputs actual images with a magnification factor of 1/1.75 or 1/1.46. The output film has 4.0 maximum densities with SD-PM film.

System Flow



SPECIFICATIONS

X-ray mammography unit REGIUS PUREVIEW Type M Key specifications

■ **Tube voltage settings**
20-35 kV ±2 kV

■ **mAs settings**
Small focal spot : 10-400 mAs,
Large focal spot : 10-500 mAs (Optical 600 mAs in GB)
±4mAs or ±10% (Whichever is larger)

■ **Focal spot dimensions**
Small focal spot : 0.1 mm,
Large focal spot : 0.3 mm

■ **Target angle**
10° (small focal spot) / 16° (large focal spot)

■ **Anode material**
Molybdenum (Mo) tube

■ **SID**
65cm (Contact imaging) / 114cm (PCM imaging)

■ **Filter (thickness)**
30μm (Mo) / 25μm (Rh)

■ **Maximum anode heat capacity**
300 kHu (210 kJ)

■ **Rotation of swivel arm**
Contact imaging : +180° to -135°
PCM imaging : +180° to -135°

■ **Imaging modes**
AEC equipped (handles both Contact and PCM imaging)

■ **AEC detector**
Sensor : 48 automatically selected sensors
Density adjustmen : 15 density steps (5% change in dose conversion per step)

■ **Autorotation function**
(recreation of identical angles for left and right MLO)
Automatic angle setting available

■ **Automatic ejection of compression plate function**
Equipped

■ **Irradiation results obtained**
Focal spot size, tube voltage, tube current, irradiation time, mAs values, breast thickness, compression force, C arm angle, etc.

■ **Unit dimensions**
Main unit : W755mm×D910
×H (maximum value) 2325mm

■ **Unit weight**
Main unit : 200 kg

■ **Power capacity**
208-240V～, 50 or 60Hz ±10%—Single phase

CR image reader REGIUS MODEL 190 (DD-941) /Key specifications

■ **Image sizes**
35×43cm, 35×35cm, 18×24cm,
11×14in, 10×12in, 8×10in and others.

■ **Pitch size**
Standard : 87.5 / 175μm
Optional : 43.75μm (optional for mammography)

■ **External dimensions/weight**
W580×D580×H1230 mm / Approx. 170 kg

■ **Power :**
AC 100 / 115 / 120 / 200 / 220 / 230 / 240V
Approx. 1.1 kW

Laser Imager DRYPRO MODEL 793 / Key Specifications

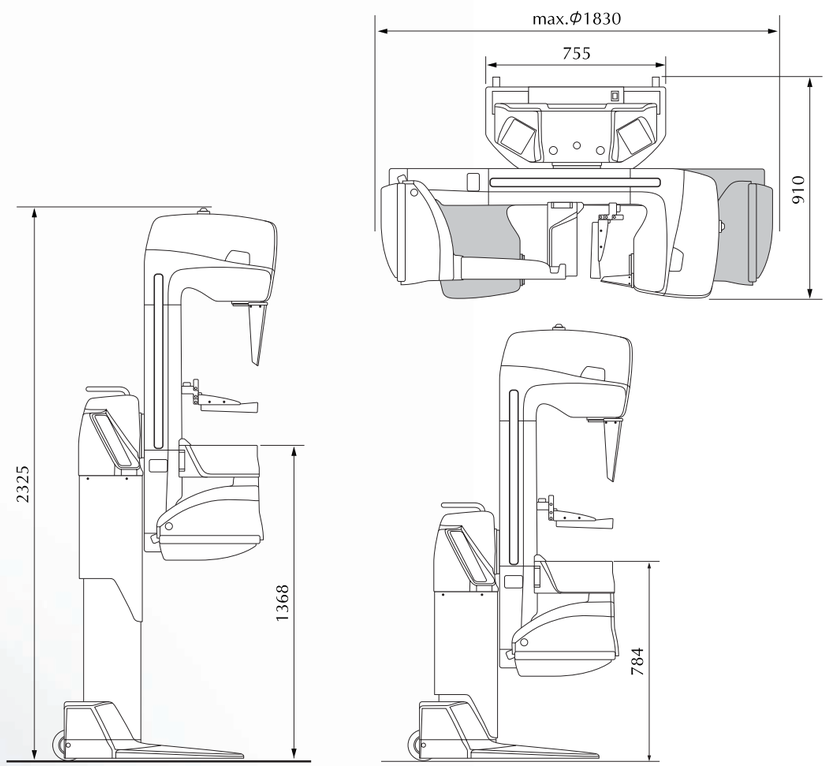
■ **Film size**
Choose from five (5) sizes:
35×43cm, 35×35cm, 11×14in, 10×12in, 8×10in

■ **Supply**
One (1) channel standard,
maximum 3 channels (optional)

■ **External dimensions/weight**
W675×D640×H1420 mm / Approx. 255 kg

■ **Power :**
AC100-120V / 220-240V
9.0-7.5A / 4.5-4.0A

REGIUS PUREVIEW Type M diagram with dimensions



Units : mm

◆ Standard accessories
Dedicated tilted x-ray tube
Flex-AEC for PCM
PCM 18×24cm feature
・18×24cm carbon fiber breast support platform
・Lower body guard for 18×24cm and Spot magnification
・Upper body guard for 18×24cm
・18×24cm compression paddle
・Chin guard for 18×24cm
Upper body guard for magnification
Spot compression paddle
Remote exposure switch and cable
Interface connection for REGIUS model 190
Rhodium filtration

◆ Separately Sold Items
PCM 24×30cm feature
・24×30cm carbon fiber breast support platform
・24×30cm compression paddle
・Chin guard for 24×30cm
PCM Contact Mammography feature (To be announced)
・18×24cm or 24×30cm contact mammo Bucky unit (Choose one of either)
・18×24cm or 24×30cm contact mammo compression paddle (Choose one of either)
・Lower shelf with Flex-AEC for contact mammo (18×24cm / 24×30cm)
PCM imaging cassette/plate RP-6M110PCM (Size:35×43 cm)
CS-3 extended memory
CS-3 43.75μm license
PCM multiple barcode reader
DRYPRO793 extended memory
Enhanced C-arm driving circuit (To be announced)

★The specifications above are subject to change without prior notice.

REGIUS PUREVIEW
MAMMOGRAPHY

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