Product Data
DIAGNOTIC MAMMOGRAPHY SYSTEM

CE 0434

MX-600

APPLICATION

This product is an X-ray radiography unit designed specifically for mammography.

FEATURES

- The X-ray high-voltage generator that is equipped with a high frequency inverter system, provides high output and the beam quality best.

- Magnification radiography (1.5X) employs a micro focus X-ray tube, increasing diagnostic accuracy.

- The Automatic Exposure Control (AEC) system ensures mammography with stable film density.
  - ✓ The thickness and density of the compressed breast are detected, and the optimal radiography tube voltage is automatically set.
  - ✓ An AEC sensor position can be set. This allows the optimal AEC sensor position to be set according to the projection direction.
  - ✓ The AEC sensor size can be switched between large and small according to breast size. In particular, this function ensures stable AEC radiography for small breasts.
  - ✓ It is possible to automatically set the AEC sensor position according to the C-Arm rotation angle (projection direction).
- The moving grid eliminates scattered radiation from objects, providing high-quality images.
- A molybdenum filter (0.03mm Mo) and a Aluminum filter (0.5mm Al) are provided to absorb unnecessary soft X-rays.
  And a rhodium filter (0.025mm Rh) can be installed as an option (instead of Al filter)
  - ✓ Mo filter covers low level kV range (22~35kV) and Al filter covers high kV range (36~39kV) and Mo filter is useful for increasing image contrast in large breast with large amounts of glandular tissue.
- Both motorized and manual breast compression are available.
  - ✓ It is possible to display compression strength and thickness number on the operation and positioning panel behind the lead glass. The thickness shows where the compression plate locates when you press down the breast.
- The supporting C-Arm, with motorized vertical travel of 620mm, is designed for complete axial rotation (+180°/-180°), which makes MX-600 a fully versatile system.
- ASP (Auto Standard Exposure Positioning) makes operators easy to execute 4 axis exposures by software programming. This valuable software controls the 4 standard positions (RMLO, RCC, LMLO, LCC) of MX-

600 C-Arm automatically by one –touch operation for MedioLateral Oblique view and CranioCaudal view.

- ISO level function can adjust the level of MX-600 standing position when it operates from vertical exposure to oblique side and vice versa.
- Help menu can make self-diagnosis so that operators and maintenance representatives will make immediate actions or remote service to the unit. (there are 2 categories with Help codes, codes for users and other codes for technicians

Composition

(1) Radiographic table

- Stand
- X-ray Tube assembly
- Stand column assembly

(2) Generator and Lead Acryl

- H.V. Generator
- Controller
- Lead Acryl

(3) Standard accessories

- Compression paddle for 18x24cm bucky
- Bucky device (18 x 24cm)
- Spot compression plate
- 2 precise beam limiting plates
- Film marking device
- Face protection guard
- A pair of foot switches

(4) Optional accessories

- 24×30 cm Film Cassette (Kodak Min R/R II)
- Bucky device for 24×30 cm
- Compression paddle for 24×30 cm
- Magnification device
- Hand switch
- Rhodium (Rh) Filter (Factory option)

* Kodak Min-R or Kodak Min-RII film cassettes for 18 x24, 24x30 bucky are strongly recommended since the calibration is being adjusted in the factory.

TECHNICAL SPECIFICATIONS

1-1. Rating

(1) Rating at large focus

Tube voltage :	22 to 39KV
Max. tube current :	85mA
mAs :	1 to 600mAs

(2) Rating at small focus (for magnification)

Tube voltage :	22 to 35KV
Max. tube current :	15mA
mAs :	1 to 100mAs

1-2. H.V. Generator

H.V. generating circuit :	High Frequency Inverter type
High voltage ripple :	less than 1kV
Tube voltage raising time :	less than 2 ms

1-3. Controller

Method :	Microprocessor control, Digital display
Radiographic mode :	Manual and AEC mode

Automatic Exposure Control (AEC)

KV setting range :	22 to 35kV
Max. mAs :	100mAs at small focus 600mAs at large focus
Detector :	Diode
Density :	19 steps
mAs display :	Actual mAs value during AEC radiography is being displayed

1-4. X-ray tube

Type :	Beryllium window, Molybdenum rotating anode tube
Focal points :	0.1mm / 0.3mm
Anode Heat Storage :	300KHU
Target angle :	16 degrees
Inherent Filtration :	0.63mm Beryllium window

1-5. Additional Filter

Kinds of additional filter :	30 μm Mo filter and 0.5mm Al filter
Switching method :	Automatic switching by KV setting
Option filter :	0.025mm Rh (32kV-39kV) 30 μm Mo (22kV-31kV)

1-6. Radiographic table

Vertical movement of C-arm

Stroke :	620mm (The distance between 720mm to 1,340mm from floor to radiographic table at 0° position of C-arm)
Lock :	By electromagnetic lock (Off-lock type)

Rotation of C-arm

Rotating range:	Right 180°, Left 180°
Lock :	By electromagnetic lock (Off-lock type)
SID :	600mm

Compression mechanism

Method :	Manual / Electric
Display of Thickness :	LED Display
Pressure plates:	2 kinds
Pressure adjustment :	Max. 20 kg (1 kg step)
Radiation field limiting mechanism :	Display of radiation field. The field is illuminated by the light which is lighted by manual switch or by the activation of the down switch by decreasing the compression plate (30sec)

1-7. Standard accessories

Bucky device :	- For 18×24 cm cassette size -Grid 4:1, 91line/inch, carbon fiber grid
Compression plate :	2 ea. for 18×24 cm cassette size
Collimator mask :	2 ea.

1-8. Optional accessories

Exposure hand switch

Magnification device

Magnification device :	1.5 X
Cassette size :	18×24 cm

Bucky Device and Compression paddle (24 x 30 cm)

RH Filter

1-9. Power Supply

Voltage :	Single phase, 200-230Vac , 50/60Hz
Apparent power :	6KVA

1-10. Operating condition

Ground

Ambient temperature :	5 to 40° C
Atmospheric pressure :	70 to 106KPa

DIMENSIONS AND MASS

Unit	Net Dimensions (L x W x H) mm (in)					Mass Kg (lb)
C-arm stand main unit	1,027	x	692	x	2,066	288
	(40.4	x	27.2	x	81.3)	(636)
X-ray high voltage generator (Control unit)	380	x	600	x	1,752	67
	(15	x	23.6	x	69)	(148)

INSTALLATION CONDITIONS

Power requirements

- Single phase AC power supply

Nominal line voltage	200-230 V, 1ϕ
Line frequency	50/60 Hz
Allowable voltage fluctuation range (without load)	Within +/-10% of the nominal line voltage shown above
Allowable line impedance	0.36Ω or less for 220V
Recommended line capacity	4.5kVA or more

- Maximum line current : 25A at 220V – 10%

Grounding (3 earthling type)

Grounding must be provided in accordance with all applicable legal requirements for medically used electrical equipment.

Ambient conditions

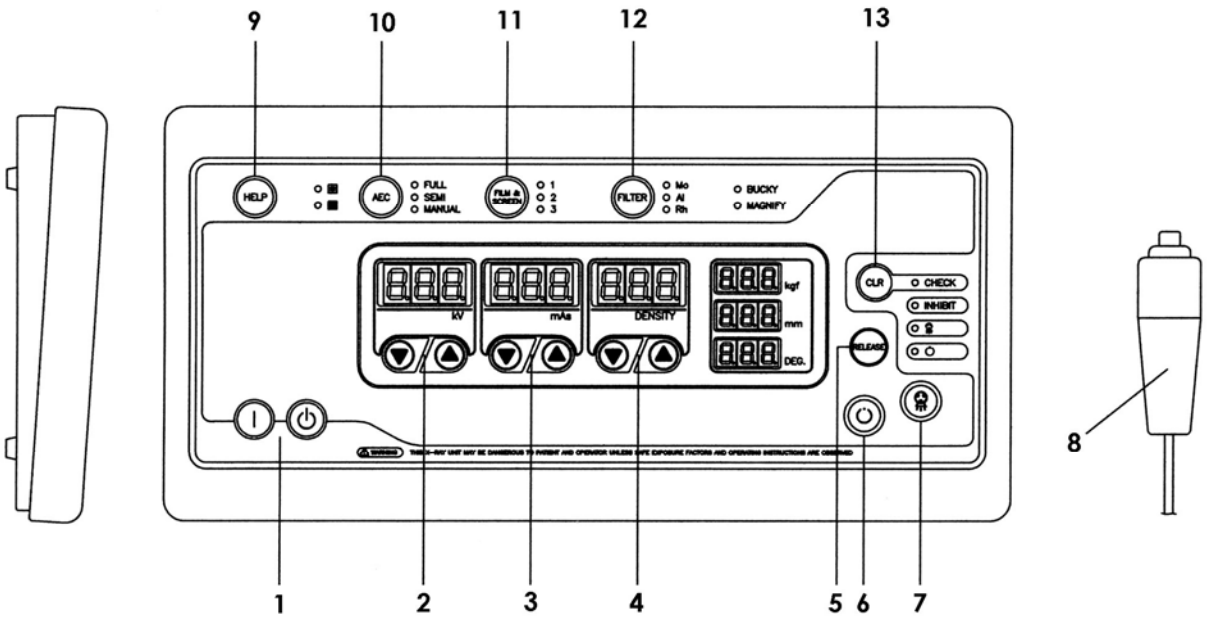
- Operating conditions
  - ✓ Temperature : 10°C to 40°C
  - ✓ Relative humidity : 30% to 50%
  - ✓ Atmospheric pressure: 700hPa to 1060hPa
- Transport and storage conditions (while packed)
  - ✓ Temperature : -10°C to 40°C
  - ✓ Relative humidity : 10% to 90% (no condensation)
  - ✓ Atmospheric pressure: 700hPa to 106 0hPa

Caution: MX-600 must not be used in an explosive gas environment.

Each assembly

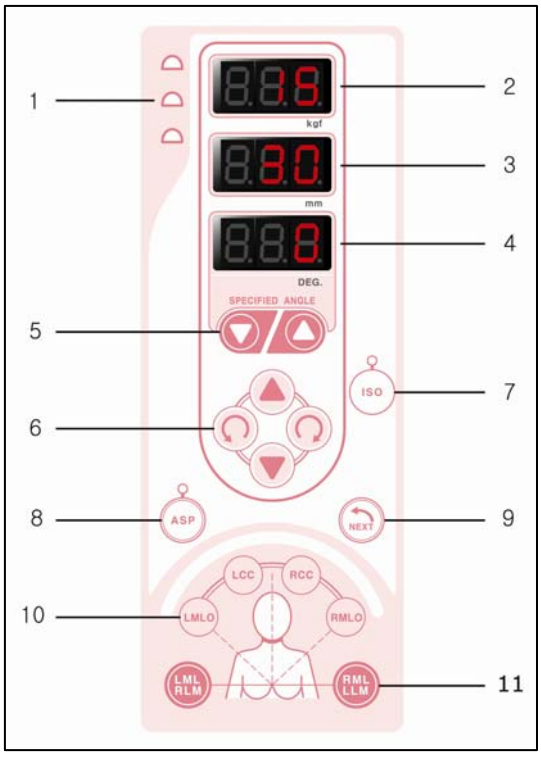
1. C-Arm
2. Stand Column assembly
3. Control panel of Stand column assembly
4. Lead Acryl
5. X-ray Control Panel assembly
6. Main Circuit Brake
7. Generator cabinet

Control Panel



1. Power switch
2. kV setting switch
3. mAs setting switch
4. DENSITY setting switch
5. Compression release switch
6. READY exposure switch
7. X-Ray exposure switch
8. X-ray hand switch (Option)
9. HELP switch
10. AEC setting switch
11. Film sensitivity select switch
12. Filter select switch
13. CLR switch

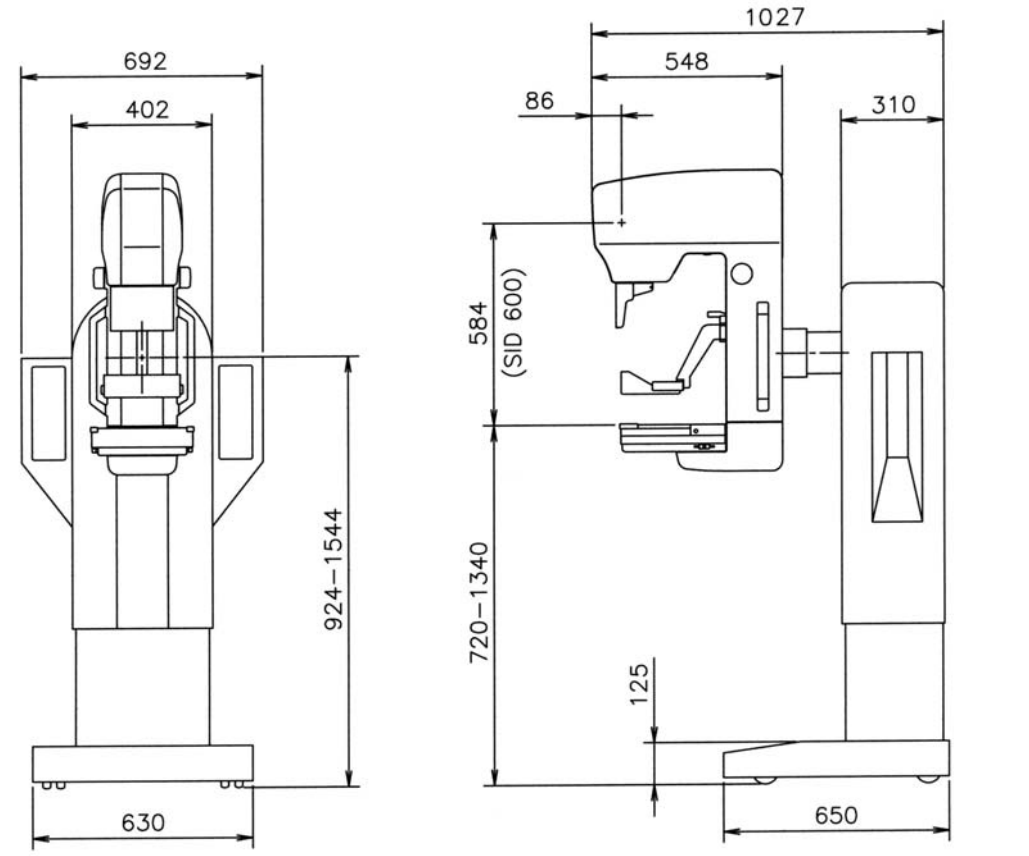
Positioning Operation Panel

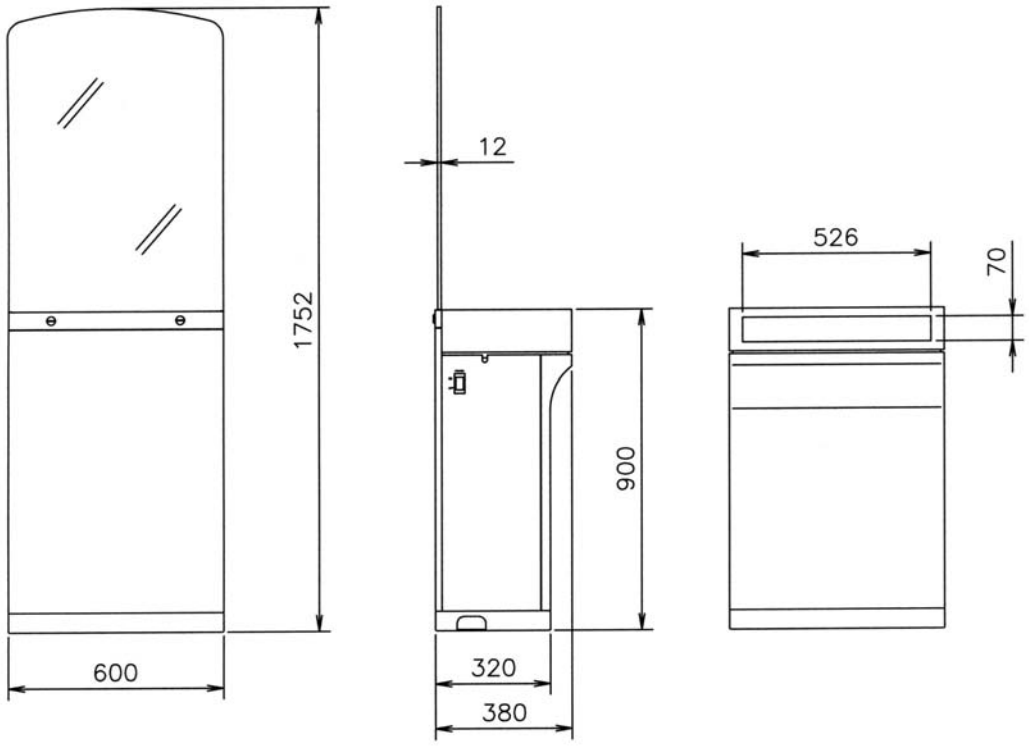


1. Position of Photo timer : AEC sensor position
2. Compression strength displaying area
3. Thickness displaying area (when compressed)
4. C-Arm rotation angle display
5. Rotation angle program button
6. C-Arm up/down & rotating button
7. ISO-Level button (auto-height adjustment)
8. ASP button (RCC ▶ LCC ▶ RMLO ▶ LMLO)
9. Next key for ASP
10. Standard Exposure positioning button
11. Lateral angle adjustment button

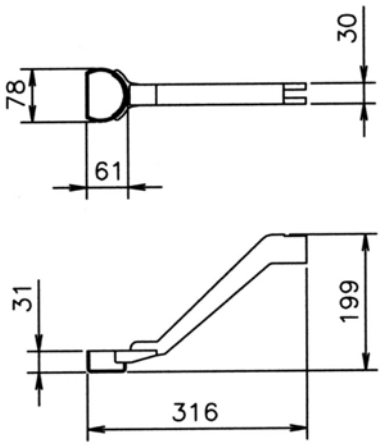
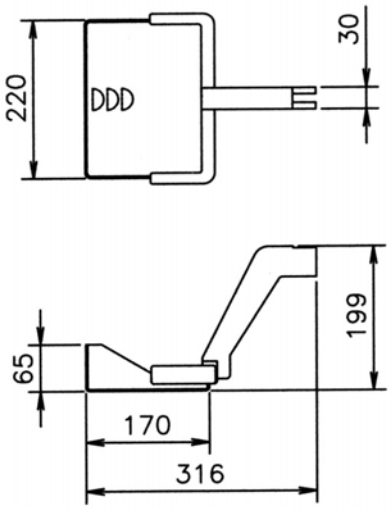
** ASP means Auto Standard Exposure Positioning which leads to easy positioning for 4 axis standard exposure for a patient. It improves accuracy of positioning and saves total exposure time per patient.*

Overall Dimensions

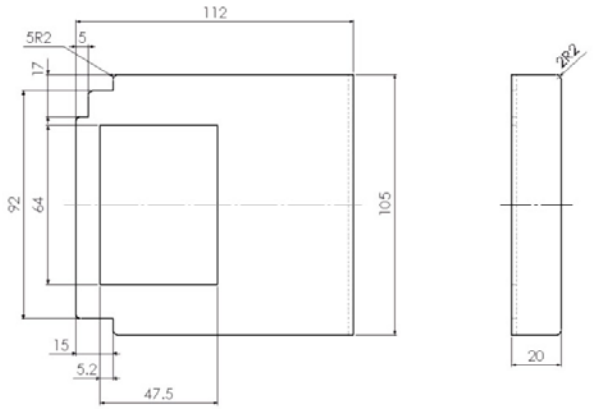
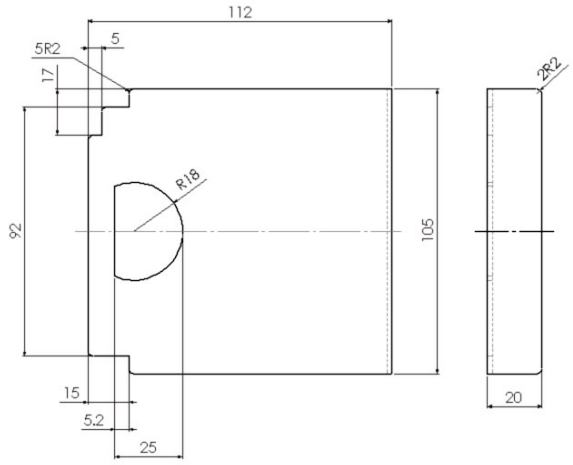




Compression plate (mm)

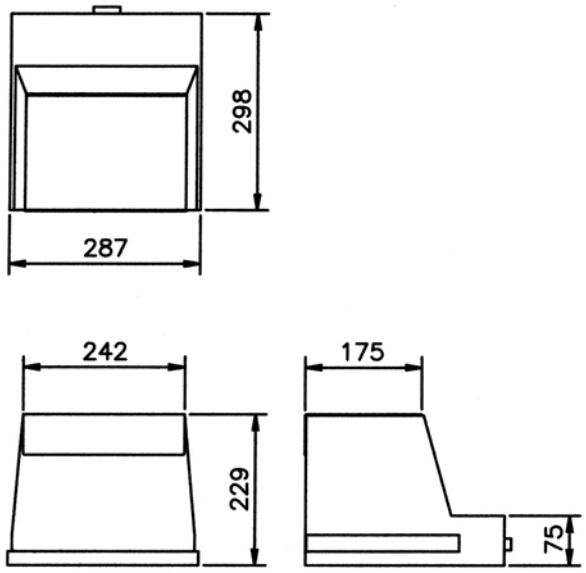
- 18 X 24cm standard size (for contact spot exposure)	- 18 X 24cm film size plate (for contact exposure)
	

Beam limiting plate (mm)

- Plate for 18 x 24 cm	- Plate for 11 x 12cm (for contact Spot exposure)
	

Magnification device (mm)

- 1.5X

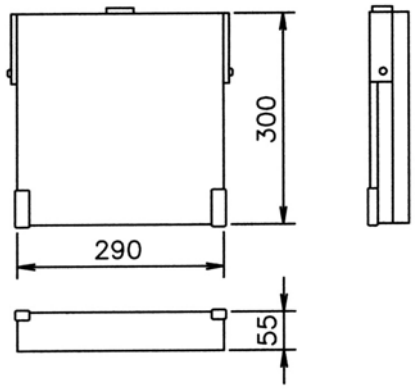


*Main body weight (355kg)

Part	Weight (Kg)
X-ray tube	10
HV Tank	40
X-ray controller	2
X-ray supporter	278
Protection lead glass	25

Bucky Device (mm)

- 18 X 24 cm Bucky Device



- 24 X 30 cm Bucky Device