

GE Healthcare

# OEC\* 9800 Plus

Technical Data Specifications



# X-ray System

## Generator

- 60kHz high frequency
- 15kW power
- Up to 120kVp
- Up to 75mA for radiographic film exposure
- Continuous high level fluoro (HLF) up to 20mA
- Digital spot up to 75mA
- Digital cine pulse
  - 15 pulses per second, 60 Hz
  - 12 pulses per second, 50 Hz
  - Up to 150mA
  - 10ms pulse width
- Full power from standard wall outlet
- Patented battery buffered design

## X-ray Tube

- Rotating anode X-ray tube
- 0.3 and 0.6 nominal focal spots
- Anode heat capacity: 300,000 HU
- Anode cooling rate: 85,000 HU/min.
- Housing heat capacity: 1,600,000 HU
- 9" (23cm) Standard C-arm housing cooling rate 15,000 HU/min.
- 9" (23 cm) Super C-arm and 12" (31 cm) standard C-arm housing cooling rate 22,500 HU/min.

## Digital Image Rotation

- Digitally adjusts image display
- Image update
  - Image rotation
  - Image reversal (side-to-side)
  - Image invert (top-to-bottom)
- Image positioning without additional exposure

## PreView™ Collimator

- On-screen collimator position indication
- PreView™ iris collimator
- PreView™ Tungsten rotatable double leaf collimator
- Adjusts collimators without X-ray exposure

## Fluoro Mode

- kVp range: 40 -120
- mA range: 0.2 - 10 normal mode  
0.2 - 20 HLF (high level fluoro)
- Auto and manual fluoro modes
- AutoTrak™ ABS varies mA, kVp, camera gain

## Pulsed Fluoro Mode

- kVp range: 40 - 120
- mA range: 0.2 - 10
- Pulse rate: 1, 2, 4, 8
- Pulse Width: 25 or 50ms
- AutoTrak™ ABS, mA, kVp, camera gain
- Reduces X-ray dose to patient and operator

## High Level Pulsed Fluoro

- kVp range: 40 - 120
- mA range: 0.2 - 40
- Pulse rate: 1, 2, 4, 8
- Pulse width: 25 or 50ms
- AutoTrak™ ABS, mA, kVp, and camera gain

## Digital Cine Pulse Mode

- kVp range: 40 - 120
- mA range: up to 150
- Pulse rate: 15 pps (60 Hz), 12 pps, (50 Hz)
- Pulse width: 10ms
- AutoTrak™ ABS, mA, kVp, camera gain

## Digital Spot Mode

- kVp range: 40 - 120
- mA range: Up to 75
- Automatic exposure termination and automatic image save

## Radiographic Mode

- mA range: up to 75
- mAs range: up to 300
- Computer controlled exposure time
- Optional Film Cassette Holder
  - 10" x 12" (24cm x 30cm) for 9" I.I.
  - 14" x 14" (35cm x 35cm) for 12" I.I.

# Video Imaging System

## 9" Image Intensifier

- Tri-mode 9"/6"/4.5" (23cm/15cm/11cm) image intensifier
- Minimum central resolution (at monitor):
  - 9" (23cm): 2.1 lp/mm
  - 6" (15cm): 2.9 lp/mm
  - 4.5" (11cm): 3.4 lp/mm
- DQE: 65% (typical)

## 12" Image Intensifier

- Tri-mode 12"/9"/6" (31cm/23cm/15cm) image intensifier
- Minimum central resolution (at monitor):
  - 12" (31cm): 1.5 lp/mm
  - 9" (23cm): 2.1 lp/mm
  - 6" (15cm): 2.6 lp/mm
- DQE: 65% (typical)

## AutoTrak™

### Automatic Brightness Stabilization (ABS)

- Automatically seeks the subject anatomy anywhere within the imaging field and selects the optimum imaging technique
- Automatically adjusts to anatomical size and location
- Provides uniform image quality throughout entire image
- Simplifies operation

### Image I.Q.

- Smart Window
  - Dynamically senses the collimator position and automatically adjusts brightness and contrast to produce high image quality.
- Smart Metal
  - Allows user to adjust automatic brightness and contrast sensitivity levels to metal
  - Provides optimum image quality even when metal is introduced to the field
- Tungsten Collimator
  - Denser collimator limits X-ray exposure area
  - Reduces scatter radiation
  - Improves image detail

## Video Camera

- High resolution 1k x 1k CCD camera
- Full frame capture
- Motorized rotation
- On-screen orientation indicator (real-time feedback without fluoro)
- Left-right image reversal
- Top-bottom image invert

## Video Display

- Dual 19" (48cm) display anti-glare LCD flat panel monitors
  - 7° up/10° down
  - Horizontal and vertical viewing angle 170°
- 800 CD/m<sup>2</sup> maximum brightness
- Touch screen system control
- 1280 x 1024 high resolution monitors

## Configurations

### ESP Platform

- 1k x 1k x 16 bit image processing
- Noise filter with on-screen indicator
- Real-time variable edge enhancement
- Automatic digital brightness and contrast control
- Manual digital brightness and contrast control
- Negate mode
- Save and auto-save feature
- Swap and auto-swap feature
- Patient information
  - Examination list
  - Customized patient information
- Customize functions
  - Workstation set-up
  - Mainframe set-up
  - Patient information set-up
  - Date/time set-up
  - DICOM 3.0 interface set-up
- Last image hold
- 400 image storage
- Integrated DICOM interface (store, print, worklist)
- HIPAA SecureView®
  - Password protection
  - Blank screen function
  - Delete all
- Zoom and roam function
- Image annotation
- Measurement software

### PMCare Platform

- Includes all the ESP features and:
- Real-time Digital subtraction (DSA)
  - Peak opacification
  - 8fps Dynamic digital disk
    - Recording /playback rate: 1, 2, 4, 8fps
    - Recording time: 5 minutes @ 8fps

## Vascular Platform

Includes all the ESP features and:

- Real-time subtraction
- Roadmapping
- Peak opacification
- Re-registration
- Variable landmarking
- Mask save/recall
- Auto cine loop playback
- Digital cine pulse mode
  - 15 pulses/sec
  - Up to 150mA
  - 10ms pulse width
- 15fps Dynamic digital disk
  - Recording/playback rate: 1, 2, 4, 8, 15fps
  - Recording time: 10 minutes @ 15fps (time depends on record frame rate)

## Additional Features

### Other Image Storage Options

- CD/DVD Writer digital interface (external)
- Integrated DICOM 3.0 interface

### Hardcopy Options

- Integrated film/paper printer
  - No film developing required
  - 8" x 10" (20.3 cm x 25.5 cm) laser quality film/paper
  - Multi-format, 1, 2, 4 on 1
  - Multi-copy capability
- Thermal printers

### User Interface

- Entire system is computer controlled and software upgradeable
- Touchscreen control simplifies operation
- Automated system operation requires minimum operator interface
- Multi-functional controls
  - Footswitch
  - IR remote (optional)
  - Hand-held control
- Simplified keyboard
- Multi-purpose image directory
  - Retrieve and review images
  - Compose hardcopy films
  - Copy images
- X-ray dose summary

## Electrical

- Input power (60Hz or 50Hz) 9800 Plus
  - 100V @ 20 A (Japan)
  - 120V @ 12 A
  - 200V, 220V, 230V, 240V @ 10A

## Regulatory Compliance

- U.S. 21 CFR Subchapter J
- NFPA 99
- UL 60601-1 (CSA/NRTL)
- IEC60601-1 (plus relevant Collateral and Particular Standards)

## System configuration options

Description	ESP	PM Care	Vascular
Standard C-arm Assembly with 9"/6"/4.5" (23/15/11cm) I.I.	●	●	
Standard C-arm Assembly with 12"/9"/6" (31/23/15cm) I.I.	■	■	●
Super C-arm Assembly with 9"/6"/4.5" (23/15/11cm) I.I.	■	■	
Rotating Anode X-ray Tube	●	●	●
Tungsten Dual-Leaf Collimator	●	●	●
Iris Collimator	●	●	●
Pulsed Fluoro (up to 8pps)	●	●	●
Digital Subtraction Angiography(DSA)		●	●
Roadmapping			●
Peak Opacification		●	●
Re-Registration (Pixel Shift)			●
Variable Landmark			●
Digital Cine Pulse (15 PPS, Up to 150 mA)			●
Digital Spot	●	●	●
High Level Pulsed Fluoro (up to 40 mA)	●	●	●
Radiographic Film Mode	●	●	●
1k x 1k x 16 Bit Image Processing	●	●	●
Image I.Q. (Smart Window/Smart Metal)	●	●	●
Measurement Software	●	●	●
Digital Image Rotation	●	●	●
Noise Filtering (Averaging)	●	●	●
Digital Zoom and Room	●	●	●
Real-time Edge Enhancement	●	●	●
Image Annotation Function	●	●	●
Multi-Purpose Image Directory	●	●	●
X-ray Summary	●	●	●
Static Image Storage	400	400	400
Floppy Disk Drive	●	●	●
8fps Dynamic Disk		●	
15fps Dynamic Disk			●
9" I.I. (23cm) Laser Aimer/Image Localizer	■	■	
12" I.I. (31cm) Laser Aimer/Image Localizer	■	■	■
IR Remote Control	■	■	■
CD/DVD Writer (external)	■	■	■
Two Pedal Footswitch	●	●	●
MedRad/Nemoto Injector Interface Capability*		■	■
Room-In-Use Indicator Interface	●	●	●
HIPAA SecureView®	●	●	●
Sony Thermal Hardcopy Printers*	■	■	■

\*Contact your sales representative for specific model options.

● = Standard feature    Blank = Feature not available  
 ■ = Optional feature

## Physical Specifications

	9" I.I. (23cm)	12" I.I. (31cm)	Super C 9" I.I. (23cm)
<b>Mainframe*</b>			
System length	77.8 in (197.6 cm)	81.0 in (205.7 cm)	80.1 in (203.5 cm)
System height	69.7 in (177.0 cm)	73.8 in (187.5 cm)	71.7 in (182.1 cm)
System width	33.5 in (851 mm)	33.5 in (851 mm)	33.5 in (851 mm)
Weight	610 lbs (277 kg)	660 lbs (299 kg)	630 lbs (286 kg)
<b>C-arm</b>			
SID	39.4 in (100.1 cm)	39.4 in (100.1 cm)	39.0 in (991 mm)
Free space in arc	31.5 in (800 mm)	31.5 in (800 mm)	31.0 in (787 mm)
Depth in arc	26.0 in (660 mm)	28.0 in (711 mm)	33.0 in (838 mm)
Orbital rotation	115° (90°/25°)	115° (90°/25°)	145° (90°/55°)
Lateral rotation	360° (180°/180°)	360° (180°/180°)	360° (270°/90°)
Flip/flop	180°/90°	180°/90°	N/A
Wig/wag	20°	20°	20°
Horizontal travel	8.0 in (203 mm)	8.0 in (203 mm)	8.0 in (203 mm)
Vertical travel	18.0 in (457 mm)	18.0 in (457 mm)	18.0 in (457 mm)
<b>Workstation*</b>			
Height	69.5 in (1765 mm)	69.5 in (1765 mm)	69.5 in (1765 mm)
Width	34.5 in (876 mm)	34.5 in (876 mm)	34.5 in (876 mm)
Depth	27.25 in (692 mm)	27.25 in (692 mm)	27.25 in (692 mm)
Weight	450 lbs (204 kg)	450 lbs (204 kg)	450 lbs (204 kg)
<b>Operating Range</b>			
Temperature	10° to 35°C	10° to 35°C	10° to 35°C
Humidity	20% - 80%	20% - 80%	20% - 80%
<b>Electrical Service</b>			
100V	20 A	20 A	20 A
120V	12 A	12 A	12 A
200, 220V, 230V, 240V	10 A	10 A	10 A

\* System in transport position.



Standard C 9" (23cm) I.I.



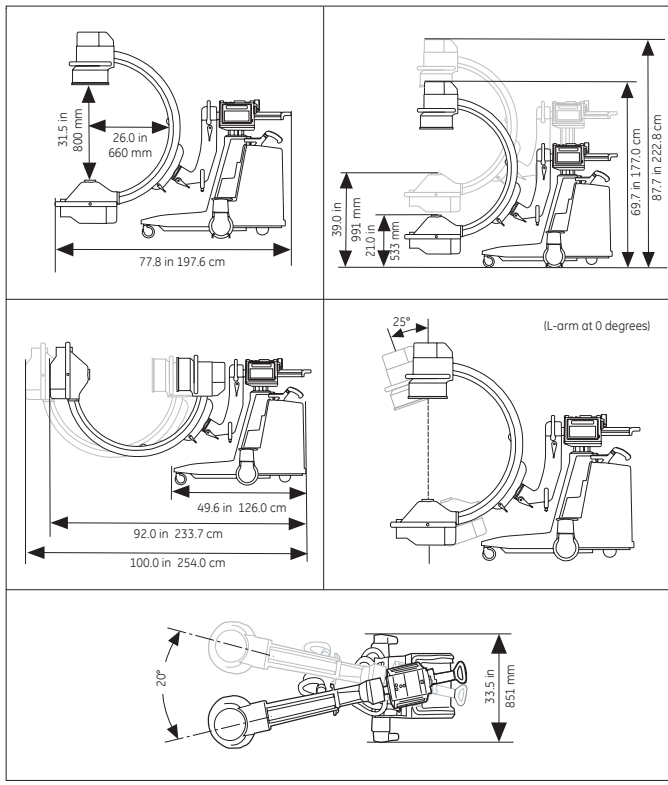
Standard C 12" (31cm) I.I.



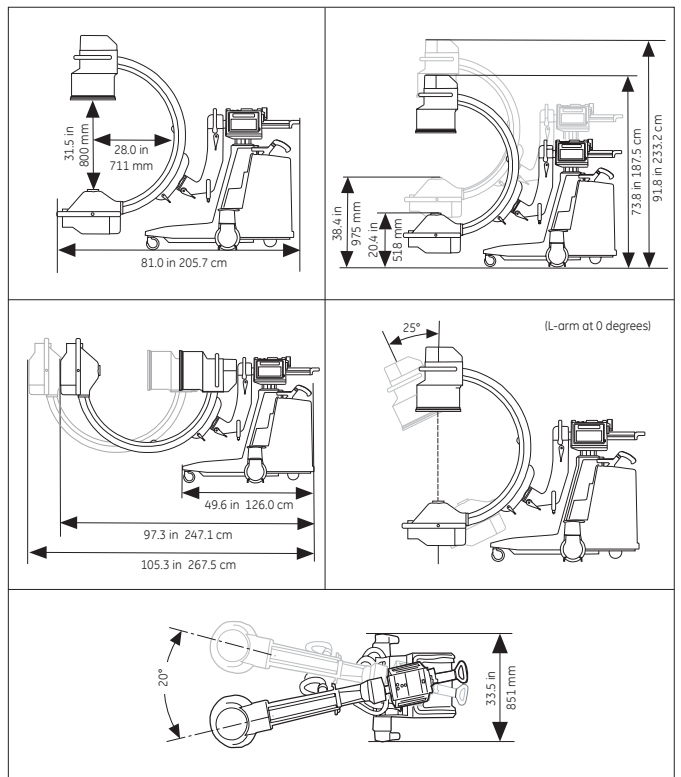
Super C 9" (23cm) I.I.



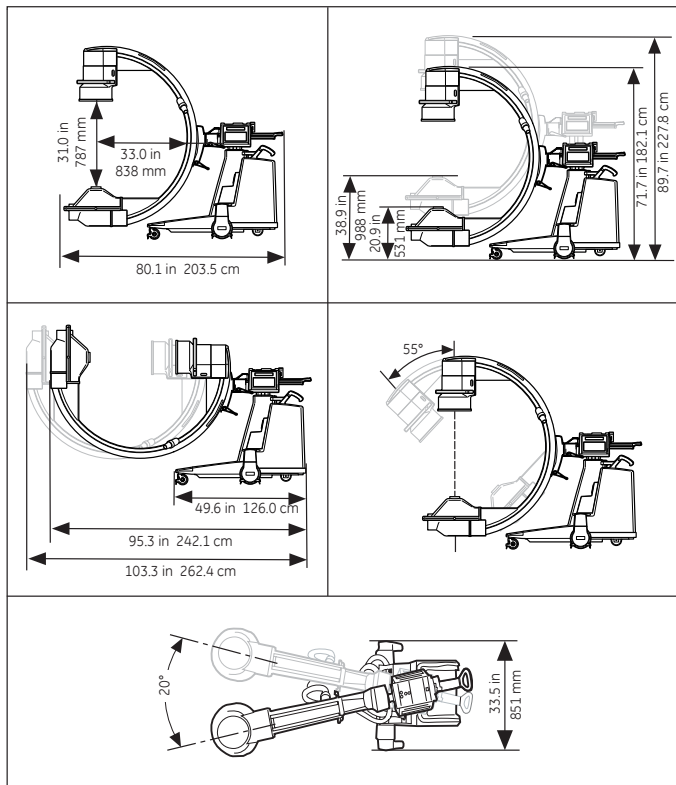
## Mobile C-arm (9", 23cm I.I.)



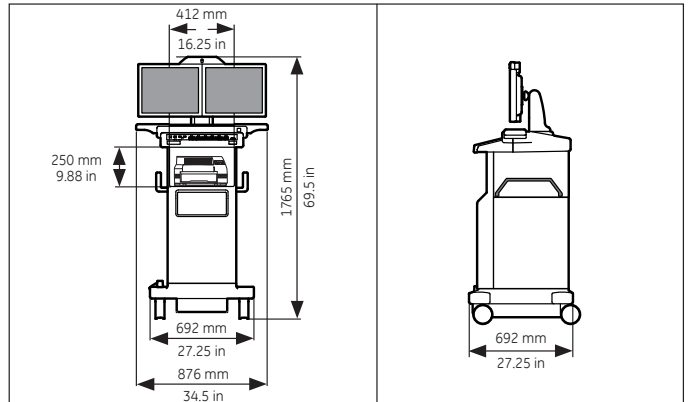
## Mobile C-arm (12", 31cm I.I.)



## Super C-arm



## Workstation



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