North Carolina Department of Health and Human Services
Division of Health Service Regulation

Pat McCrory
Governor

Richard O. Brajer
Secretary DHHS

Drexdal Pratt
Division Director

November 19, 2015

Dee Jay Zerman
211 Friday Center Drive
Suite G015
Chapel Hill, NC 27517

Exempt from Review – Replacement Equipment

Record #:	**1792**
Facility Name:	UNC Hospitals
FID #:	923517
Business Name:	University of North Carolina Hospitals
Business #:	1940
Project Description:	Replace existing cardiac catheterization equipment
County:	Orange

Dear Ms. Zerman:

The Healthcare Planning and Certificate of Need Section, Division of Health Service Regulation (Agency), determined that based on your letter of November 10, 2015, the above referenced proposal is exempt from certificate of need review in accordance with G.S 131E-184(a)(7). Therefore, you may proceed to acquire, without a certificate of need, Philips FP Xper FD 20 fixed cardiac catheterization unit. This determination is based on your representations that the unit will be removed from North Carolina and will not be used again in the State without first obtaining a certificate of need.

Moreover, you need to contact the Agency's Construction and Acute and Home Care Licensure and Certification Section, to determine if they have any requirements for development of the proposed project.

It should be noted that the Agency's position is based solely on the facts represented by you and that any change in facts as represented would require further consideration by this office and a separate determination. If you have any questions concerning this matter, please feel free to contact this office.

Healthcare Planning and Certificate of Need Section
www.ncdhhs.gov
Telephone: 919-855-3873 • Fax: 919-715-4413
Location: Edgerton Building • 809 Ruggles Drive • Raleigh, NC 27603
Mailing Address: 2704 Mail Service Center •Raleigh, NC 27699-2704
An Equal Opportunity/ Affirmative Action Employer

Sincerely,

Bernetta Thorne-Williams
Project Analyst

Martha J. Frisone,
Assistant Chief, Certificate of Need

cc: Construction Section, DHSR
Kelli Fisk, Program Assistant, Healthcare Planning
Acute and Home Care Licensure and Certification Section, DHSR

UNC HOSPITALS

James T. Hedrick Building
211 Friday Center Drive,
Ste G015
Chapel Hill, NC 27517

November 10, 2015

Ms. Bernetta Thorne-Williams
Healthcare Planning and Certificate of Need Section
Division of Health Service Regulation, DHHS
2704 Mail Services Center
Raleigh, NC 27699-2704

RE: Request for Exemption / Replacement of Cardiac Cath Lab / UNC Hospitals / Orange County

Dear Mr. McKillip:

UNC Hospitals is planning to replace one of its Cardiac Cath labs and is requesting confirmation that the replacement of this equipment is exempt from review pursuant to 131E-184(a)(7). The cardiac cath lab to be replaced is located in UNC Hospitals at 101 Manning Drive in Chapel Hill, NC. The cardiac cath lab will be replaced for less than the $2M CON threshold for replacement equipment and will be replaced with equipment comparable to the existing equipment, in accordance with NCGS 131E-176(22a). The existing lab was placed in service in 2003, and is used on a daily basis. The existing equipment requires replacement due to its age and declining image quality. This type of situation leads to added costs, operational delays, and patient, staff and physician dissatisfaction.

We are supplying the following information that the CON Section has requested in the past as a part of its general information request for an equipment replacement.

1. A comparison of the existing and replacement equipment, using the format in the following table:

Equipment Comparisons

	Existing Equipment	*Replacement Equipment*
Type of Equipment (List each component)	Toshiba CAS10A CV lab	Philips FP Xper FD 20
Manufacturer of Equipment	Toshiba America Medical Systems	Philips Medical Systems
Tesla Rating for MRIs	N/A	N/A
Model Number	Infinix CB	FP Xper FD 20
Serial number	B4522180/221275	To be determined
Provider's Method of Identifying Equipment	By model & serial #s	By model & serial #s

Specify if Mobile or Fixed	Fixed	Fixed
Mobile Trailer Serial Number/ VIN #	Not applicable	Not applicable
Mobile Tractor Serial Number/ VIN #	Not applicable	Not applicable
Date of Acquisition of Each Component	2003	To be 2016
Does Provider Hold Title to Equipment or Have a Capital Lease?	Hospital owns	Hospital owns
Specify if Equipment Was/Is New or Used When Acquired	New	New
Total Capital Cost of Project (Including Construction, etc.) <See attached certified capital cost in Exhibit 1>	Not available	$1,858,982
Total Cost of Equipment	Not available	$712,481 cath lab & $55,300 Xper flex cardio
Fair Market Value of Equipment	Not available	$712,481 cath lab & $55,300 Xper flex cardio
Net Purchase Price of Equipment	Not available	$712,481 cath lab & $55,300 Xper flex cardio
Locations Where Operated	Cardiac Cath Lab	Cardiac Cath Lab
Number of Days In Use/To be Used in N.C. Per Year	365 days	365 days
Percent of Change in Patient Charges (by Procedure)	N/A	No change
Percent of Change in Per Procedure Operating Expenses (by Procedure)	N/A	No change
Type of Procedures Currently performed on Existing Equipment	Diagnostic/Interventional Cardiac Cath cases, Pacemaker and ICD placement	
Type of Procedures New Equipment is Capable of Performing		Diagnostic, Interventional and Structural Heart cases.

2. A description of the basic technology and functions of the existing and replacement equipment, including the diagnostic and treatment purposes for which the equipment is used or capable of being used.

Response: The existing Toshiba Infinix CB cardiac cath lab will be replaced with a Philips FP Xper FD 20 Cardiovascular System. Both systems are used to perform diagnostic and interventional heart procedures, otherwise known as cardiac catheterization, cardiac angioplasty, and coronary stent implantation. The current system allows for the provision of diagnostic and interventional procedures. The replacement lab will provide state-of-the-art imaging for diagnostic and interventional procedures. The Xper FD 20 has a ceiling mounted stand and a digital imaging x-ray system. This newer technology in the Xper FD 20 system has more advanced imaging capabilities than the existing system.

3. Brochures or letters from the vendors describing the capabilities of the existing equipment and the replacement equipment.

Response: We were not able to obtain a product brief for the existing Toshiba Infinix CB. However, we were able to obtain a product brief for a Toshiba Infinix CC cath lab which we

are told is a cath lab *similar* to the Toshiba Infinix CB, and that product brief is attached as Exhibit 2. A copy of a brochure from the vendor describing the proposed replacement Philips Xper FD 20 cardiovascular system is attached as Exhibit 3. The project also includes a moveable piece of medical equipment called an Xper flex cardio unit. This cost is also included in the certified cost estimate in Exhibit 1 and a quote is contained in Exhibit 6. The Xper flex cardio unit is the cardio physio monitoring system for the cath lab. Exhibit 6 also contains information from Phillips regarding the Xper flex cardio equipment.

4. A copy of the purchase order for the existing equipment, including all components and original purchase price.

Response: A copy of the original purchase order, quote and project cost is not available, which is reflected in the equipment comparison table above. We also were not able to obtain a product brief for the existing Toshiba Infinix CB. However, we were able to obtain a product brief for a Toshiba Infinix CC cath lab which we are told is a cath lab similar to the Toshiba Infinix CB, and that product brief is attached as Exhibit 2.

5. A copy of the title, if any, for the existing equipment or the capital lease for the existing equipment.

Response: Not applicable. The equipment does not have a title and will not be leased.

6. If the replacement equipment is to be leased, a copy of the proposed lease that transfers substantially all the benefits and risks inherent in the ownership of the equipment to the lessee of the equipment, in accordance with criteria in Generally Accepted Accounting Principles (GAAP).

Response: Not applicable. The replacement equipment will not be leased.

7. If the replacement equipment is to be purchased, a copy of the proposed purchase order or quotation, including the amount of the purchase price before discounts and trade-in allowance.

Response: A copy of the quote received from Philips for the replacement Cardiac Cath unit is attached as Exhibit 4, and the quote for the physio monitoring equipment is contained in Exhibit 6.

8. A letter from the person taking possession of the existing equipment that acknowledges the existing equipment will be permanently removed from North Carolina, will no longer be exempt from requirements of the North Carolina Certificate of Need law, and will not be used in North Carolina without first obtaining a new certificate of need.

Response: The vendor, Philips, will take possession of the unit and remove it from the site as Philips installs the replacement unit. The unit will be taken out of state by Philips and will not be used in NC without obtaining certificate of need approval. See Exhibit 5 for a confirmation letter from Philips.

9. Documentation that the existing equipment is currently in use and has not been taken out of service.

Response: UNCH's existing operational Cardiac Cath labs are clearly identified on the most Licensure Renewal Application form on file with DFS. A copy of the 2015 LRA can be provided upon request.

Also attached as Exhibit 1, is a completed 'Proposed Total Capital Cost of Project' form which projects the total capital cost of this replacement project to be $1,858,982 for the lab replacement, including removal of the existing equipment and the installation of the replacement unit. The total capital cost includes all costs required to make the lab and physio monitoring equipment operational. Also included in Exhibit 1 are copies of the line drawings for the project. Since the room already exists, most equipment and furniture will be reused. Beyond the items included in this estimate, no additional renovations, equipment or furniture will be required for this project.

Should you require any additional information regarding the replacement of this equipment, please do not hesitate to contact me at 984-974-1210.

Sincerely,

Dee Jay Zerman

Dee Jay Zerman, Director of Regulatory Planning
UNC HCS

Exhibit 1

PROPOSED TOTAL CAPITAL COST OF PROJECT

A. **Site Costs**				
(1) Full purchase price of land			$0	
Acres _____ Price per Acre $_____				
(2) Closing costs			$0	
(3) Site Inspection and Survey			$0	
(4) Legal fees and subsoil investigation			$0	
(5) Site Preparation Costs				
Soil Borings	$0			
Clearing - Earthwork	$0			
Fine Grade for Slab	$0			
Roads - Paving	$0			
Concrete Sidewalks	$0			
Water and Sewer	$0			
Footing Excavation	$0			
Footing Backfill	$0			
Termite Treatment	$0			
Other (Specify)	$0			
Sub-Total Site Preparation Costs			$0	
(6) Other (Specify)			$0	
(7) **Sub-Total Site Costs**				$0
B. **Construction Contract**				
(8) Cost of Materials	-			
General Requirements	-			
Concrete/Masonry	-			
Woods/Doors & Windows/Finishes	-			
Thermal & Moisture Protection	-			
Equipment/Specialty Items	-			
Mechanical/Electrical	-			
Other ()	-			
Sub-Total Cost of Materials		-		
(9) Cost of Labor		-		
(10) Other: Construction Contingency		-		
(11) Sub-Total Construction Contract				$878,700
C. **Miscellaneous Project Costs**				
(12) Building Purchase			$0	
(13) Fixed Equipment Purchase			$712,482	
(14) Movable Equipment Purchase			$55,300	
(15) Furniture			$0	
(16) Landscaping			$0	
(17) Consultant Fees				
Architect and Engineering Fees	$134,500			
Legal Fees	$0			
Market Analysis	$0			
Other (Specify)	$0			
Sub-Total Consultant Fees			$134,500	
(18) Financing Costs (e.g. Bond, Loan, etc.)			$0	
(19) Interest During Construction			$0	
(20) Other: Project Contingency			$78,000	
IT Costs			$0	
(21) Sub-Total Miscellaneous				$980,282
(22) Total Capital Cost of Project (Sum A-C above)				$1,858,982

I certify that, to the best of my knowledge, the above construction related costs of the proposed project named above are complete and correct.

Julee Risk

Isley Hawkins
Architecture

Isley Hawkins, Inc.
112 S. Duke Street, #5
Durham, NC 27701
919.489.7417
isleyhawkinc.com

November 6, 2015

DJ Zerman,
Regulatory Counsel, Strategic Planning
UNC Hospital

Re: **Construction cost certification**
UNC Hospital CATH Lab C Equipment Replacement
SCO# 15-12155-01A
FID# 923517
101 Manning Dr. Chapel Hill, NC 27514

Dear Ms. Zerman:

This is to certify that our office has provided the design development construction cost estimate for the project noted above. This estimate is based on design development drawings prepared by our office and our consultants. We believe this to be a reasonable construction budget based on generally accepted methods of estimating construction costs.

Total Construction cost estimate:		$ 878,700
Labor and Material Costs:		
Material	(@ 40%) =	$ 351,480
Labor	(@ 60%) =	$ 527,220
	Total =	$ 878,700

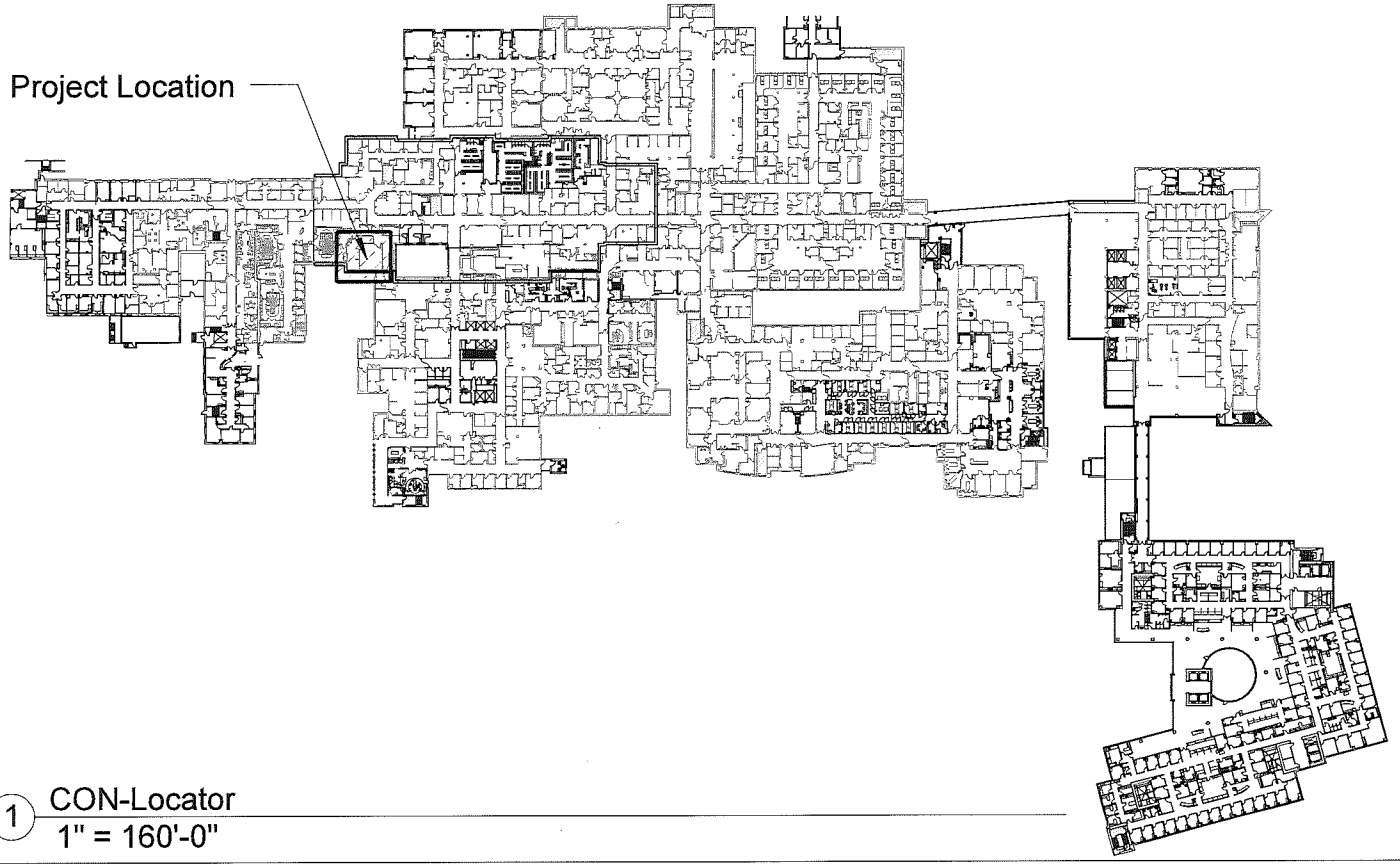
UNC Hospital Plant Engineering office has represented to me the following as the complete project budget.

Total Construction	$ 878,700
Equipment	$ 767,782
Design Fees	$ 134,500
Project Contingency	$ 78,000
UNC Project Budget	**$ 1,858,982**

Respectfully,

Julia Risk, AIA, NCARB, LEED AP BD+C, NCIDQ
CC: Cleo Robinson, Project Manager

Nathan Isley AIA, LEED AP, IIDA
J. Malcolm Hawkins AIA, EDAC



1 CON-Locator
1" = 160'-0"

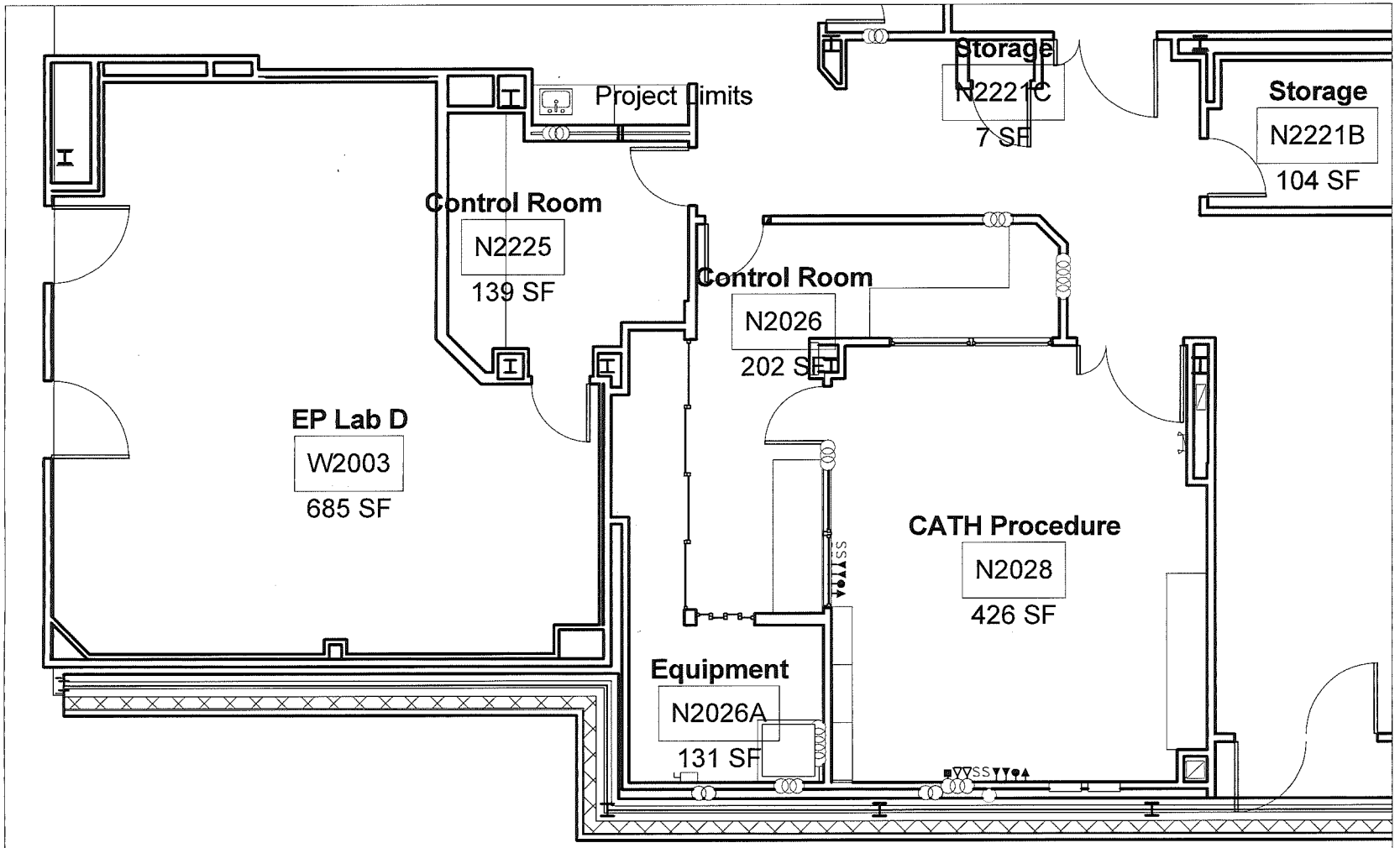
Isley | Hawkins
Architecture
112 South Duke St. #5
Durham, NC 27701
Tel: (919) 489-7417
Fax: (919) 419-0970
www.isleyhawkins.com

SCO ID #15-12155-01A

UNC Hospital CATH C Renovation

101 Manning Dr.
Chapel Hill, NC 27514

Date:	Drafted: JAR
	Designed: JAR
Scale: 1" = 160'-0"	
Reference Sheet: CON-3	



1 CON-Existing Plan
1/8" = 1'-0"

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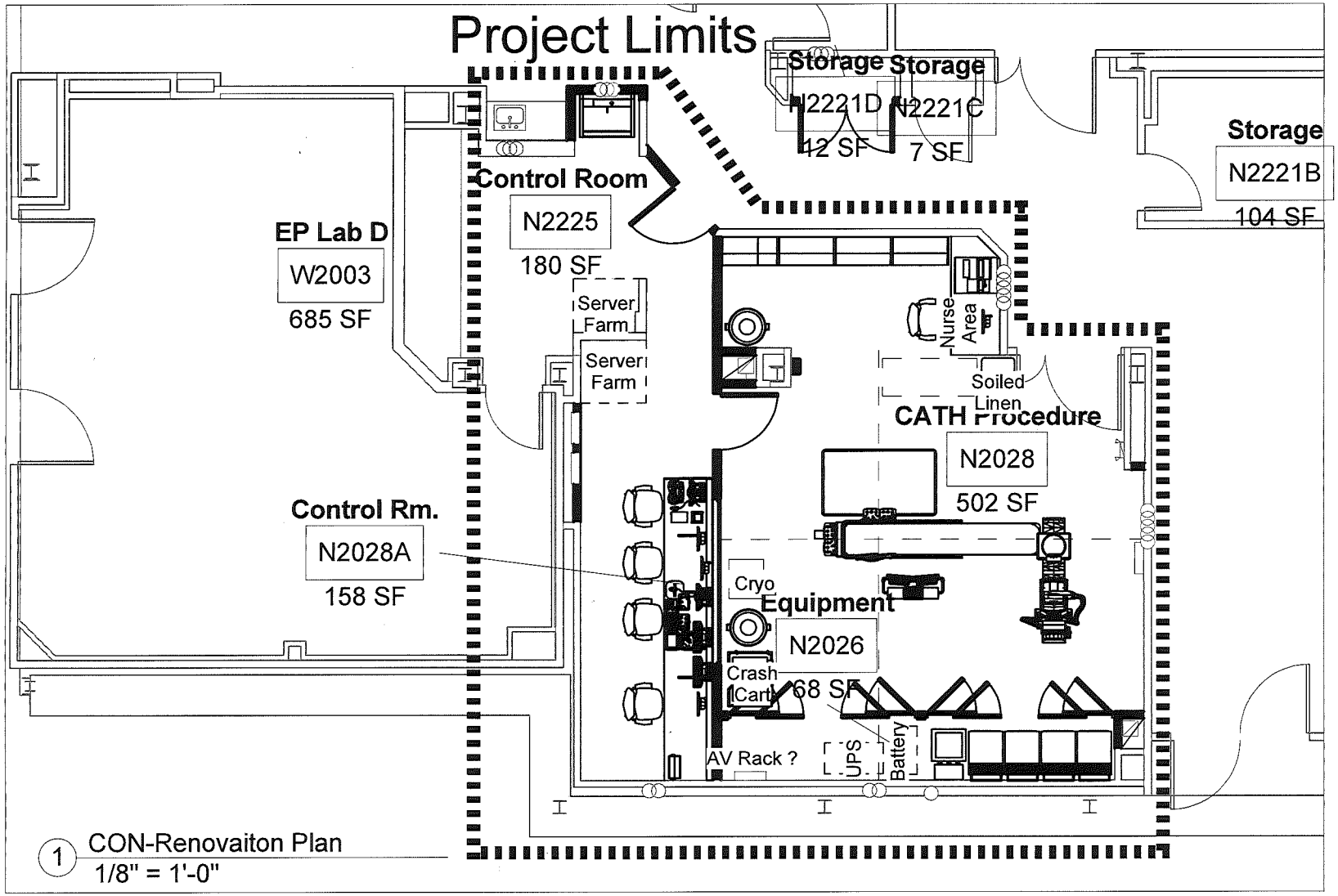
SCO ID #15-12155-01A

UNC Hospital CATH C Renovation

101 Manning Drive
Chapel Hill, NC 27514

Date:	Drafted: JAR
	Designed: JAR
Scale: 1/8" = 1'-0"	
Reference Sheet: CON-1	



1 CON-Renovaiton Plan
1/8" = 1'-0"

Isley Hawkins
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112 South Duke St. #5
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SCO ID #15-12155-01A

UNC Hospital CATH C Renovation

101 Manning Drive
Chapel Hill, NC 27514

Date:	Drafted: JAR
	Designed: JAR
Scale: 1/8" = 1'-0"	
Reference Sheet: CON-2	

TOSHIBA "Similar" to EXISTING INFINIX CB **Exhibit 2**

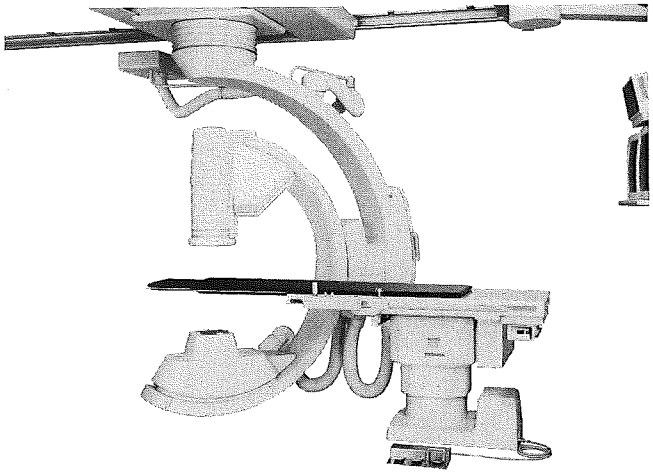
CARDIAC ANGIOGRAPHY SYSTEM

Infinix CC

Systems Data
No. MSDXR0030EAD

SYSTEM OUTLINE

The Infinix CC system includes a quick-positioning C-arm with a J-advanced I.I., a CCD digital camera, a large-capacity X-ray tube, a catheterization table with a wide range of movement, a large-output X-ray generator controlled by a microprocessor, and a digital fluorography system providing high-quality image information.
Since multidirectional digital fluoroscopy and digital subtraction angiography can be performed, this system is applicable for cardiac catheterization and interventional radiology such as PTCA.



FEATURES

- **Ceiling-suspended C-arm**
  A double-track, 3-axis ceiling-sus-pended C-arm allows access to the patient from any direction, permitting quick positioning to be performed.

- **Catheterization table**
  Tabletop framing and positioning to the imaging angle can be smoothly performed with one hand, using a handgrip-type table-side console. The long frameless section of the tabletop makes it easy to set the steep angle required for angio-cardiography.

- **High-frequency inverter X-ray generator**
  By use of a large-output, high-frequency inverter, a large output capacity of up to 100 kW can be obtained. In fluoroscopy and I.I. photofluorography, automatic control of X-ray conditions, with mAs based control, is executed.

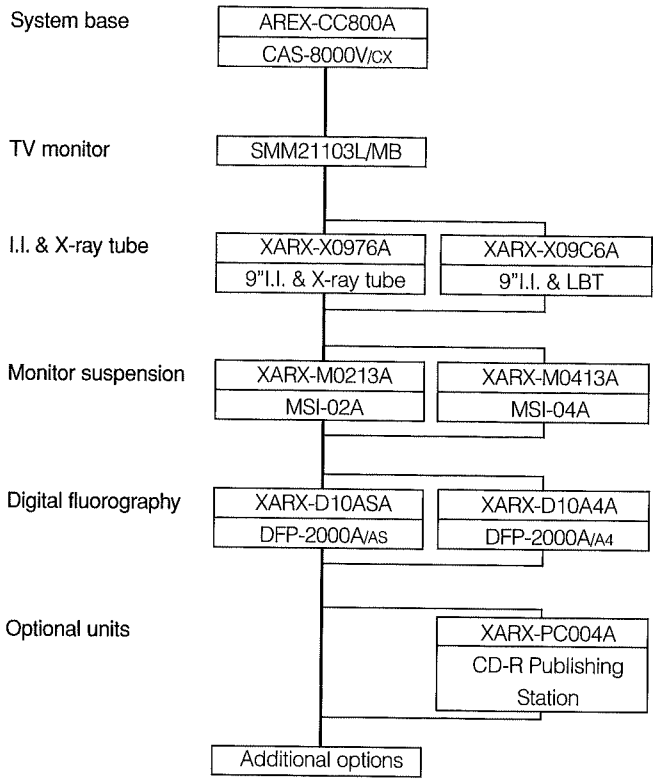
- **Digital fluorography system**
  The digital fluorography system employs digital subtraction angio-cardiography for cardiac examination and PTCA, providing support for routine, safe, and efficient X-ray diagnosis as well as cardiovascular interventional radiology.

- **One-million pixel CCD camera**
  The one-million pixel, 1024 × 1024 matrix CCD digital camera has excellent spatial resolution and has improved halation characteristics, providing high-resolution images without lag.

- **High contrast ratio I.I.**
  The Infinix CC system comes with a 9" I.I. This I.I. is designed to a very high specification that maximizes contrast so that small objects can be easily seen.

- **X-ray tube unit**
  A 1.8 MHU water-cooled triple-focus X-ray tube or a 3.0 MHU liquid-metal lubricant bearing X-ray tube can be selected. The X-ray tube incorporates a grid-control function, enabling pulsed fluoroscopy.

SYSTEM COMPOSITION



AREX-CC800A	**1**	**Infinix CC Base System**
CAS-8000V/CX	(1)	C-arm support
MTV-500A/CX	(1)	TV camera
KXO-100G	(1)	X-ray generator
XKCP-100A	(1)	Optional console (Frontal)
TVM-150MT	(2)	TV monitor
CAT-350B/CX	(1)	Catheterization table
XBBP250B	(1)	Base plate
XBFS-020A	(1)	Footswitch
XIDF-061A	(1)	Table-side control unit
SMM21103L/MB	**2**	**TV monitor**
XARX-X0976A	**1**	**I.I. & X-ray tube**
DRX-T7445GDS	(1)	X-ray tube unit
HCM-150GCS/30	(1)	High-voltage cable
HEX-125	(1)	Heat exchanger
HEX-60354A	(1)	Heat exchanger hose
RTP9211J-G11	(1)	I.I.
XGTC-008A/CW	(1)	X-ray tube cover
XARX-M0213A	**1**	**Monitor suspension**
MSI-02A	(1)	Monitor suspension with an extra monitor tray
XGMR-020A	(1)	Monitor suspension rail
XARX-D10ASA	**1**	**SDF (AS)**
DFP-2000A/AS, AU	(1)	Digital fluoroscopy system

Alternative & Optional units

XARX-X09C6A/W1		**I.I. & X-ray tube**
DSRX-T7444GDS	(1)	Liquid-metal Bearing X-ray Tube
TLA-7008	(1)	Cable for LBT
ST-7008	(1)	Starter for LBT
HCM-150LCS/30	(1)	High-voltage cable
HEX-125	(1)	Heat exchanger
HEX-60354A	(1)	Heat exchanger hose
RTP9211J-G11	(1)	I.I.
XGLM-800C	(1)	LBT kit for CAS-10A/CX
XKLM-100A	(1)	LBT kit for KXO-100G
XARX-M0413A		**Monitor suspension**
MSI-04A	(1)	Monitor suspension with an extra monitor tray
XGMR-020A	(1)	Monitor suspension rail
XARX-D10A4A		**SDF (A4)**
DFP-2000A/A4	(1)	Digital fluoroscopy system
XARX-PC004A		**CD-R publisher and Review station**
XIDF-037A	(1)	PC interface unit
XIDF-038A	(1)	CD-R publishing unit

Additional options

For C-arm support

XGCP-008C/CX	Additional control switch
XGDP-008B	Additional display panel
XGHA-001A	Ceiling height adjustment kit
XGDM-008A/CX	Diamentor mounting kit

For catheterization table

XBBP250B	Base plate
XBAR110A	Armrest
XBFS-020A	Additional footswitch
XBFG-001A	Additional free-slide grip

For X-ray generator

CAB-100A	System cabinet
CABS-100A	Cabinet side cover
CABC-100A	Cabinet corner cover

For digital fluorography system

XIDF032A	Scatter correction unit for contrast enhancement for DFP-2000A/AS, AU
SRS-1000A	CD-R review station
XIDF-056A	DICOM communication kit 2
RDSA-01A	Rotational DSA application kit
XIDF012A	IC memory unit
XIDF-61A	Table-side console with infrared remote control
XIDF-058A	DICOM RIS connection unit
XIDF-070A	DVD-RAM kit

Digital VCR

DVR-20	
XIDF-029B	DVR I/F for DFP-2000A/AS, AU
XIDF029A	DVR I/F for DFP-2000A/A4

COMPATIBLE ITEMS

- Injector
  - MARK-V PLUS
  - ANGIOMAT 6000
  - ANGIOMAT ILLUMENA
- Dose area product meter
  - DIAMENTOR M2: PTW DIAMENTOR M2
  - Ion chamber: Type 5755/U1/K (circular type)
- Personal computer
  - Toshiba T-2000 or T-2100CT
- External analog video signal generator
  With a type F connector section (insulation specification stating that all applied parts be electrically insulated from the main unit of the external analog video signal generator). This can be combined with external analog video signal generator such as diagnostic ultrasound system, which can output 525 lines, 60 Hz, interlaced video signals.
- Conventional analog VCR
  - SONY SVO-9500MD
- Video scan converter
  - Folsom 9400JR

In addition to the above equipments, the following equipments can be connected.
Please consult with Toshiba Medical Systems Company for the following connections.

- Video products
  The combined equipment should meet the following requirements.
  Input (any of the following)
  - 1050 lines, 60 Hz, non-interlaced, 1 Vp-p
  - 1049 lines, 60 Hz, interlaced, 1 Vp-p
  - 525 lines, 60 Hz, non-interlaced, 1 Vp-p
  - 525 lines, 60 Hz, interlaced (NTSC), 1 Vp-p
- Laser (dry) imager (digital signal input type)
  The combined equipment should meet the following requirements.

Data format	Digital video format
Communication protocol	3M protocol (Toshiba standard communication protocol)

- Network devices
  The combined equipment should meet the following requirements.

Data format	DICOM 3.0
Communication protocol	TCP/IP protocol
Hardware interface	Ethernet*

* Ethernet is a registered trademark of XEROX U.S.A.

- Patient monitoring equipment
  The combined equipment should meet the following requirements.
  - Analog signal output
  - Output signal ±5 V
  - Electrically insulated from the human body

SPECIFICATIONS

Ceiling-suspended C-arm support
CAS-8000V/CX

- C-arm inner radius: 89 cm (35.0")
- C-arm rotation: RAO 180° to LAO 120° (speed: max. 15°/s) when the C-arm is set at the head end.
- C-arm slide: RAO 90° to LAO 45° (speed: max. 15°/s (For rotational DSA, max. 30°/s)) when the C-arm is set at the patient's left side.
- Distance from X-ray tube focus to I.I. touch sensor: 82 cm to 112 cm (32.2" to 44.1")
- I.I. movement: 30 cm (11.8") (speed: max. 5 cm/s (2.0"/s))
- Isocenter height: 105 cm (41.3")
- Longitudinal ceiling movement: 210 cm (82.7") (speed: max. 20 cm/s (7.9"/s))
- Lateral ceiling movement: 90 cm (35.4") (±45 cm (±17.7")) (speed: max. 20 cm/s (7.9"/s))
- Column rotation: 270° (±135°) (speed: max. 10°/s)
- Auto-positioning function: 100 sets of projection angles, SID and height of catheterization table measurements are stored in memory for each of the C-arm positions.
- X-ray beam limiting device
  - Circular and square blades, and X-ray compensation filters are incorporated.
  - Either circular/straight blades are selected in the left/right direction of the X-ray compensation filter. These X-ray compensation filters can be pened/closed independently, and can be rotated ±135°.

TV camera
MTV-500A/CX

- Image sensor: One-million pixel CCD
- Scanning lines: 1050 lines (30 Hz) 525 lines (60 Hz)
- Aspect ratio: 3:4
- Contrast enhancement unit
- Super filter
- Over framing

TV monitors
TVM-150MT

- Aspect ratio: 3:4
- Scanning frequency
  - Vertical: 45 to 90 Hz
  - Horizontal: 57 to 69 kHz
- Input video signal: 0.7 Vp-p

SMM21103L/MB

- Aspect ratio: 3:4
- Scanning frequency
  - Vertical: 50 to 120 Hz
  - Horizontal: 30 to 92 kHz
- Input video signal: 0.75 to 1.2 Vp-p

Catheterization table
CAT-350B/CX

- Overall tabletop length: 295 cm (116.1")
- Frameless section of the tabletop: 135 cm (53.1")
- Max. tabletop width: 75 cm (29.5") (side rails included)
- On-tabletop chest-holding width: 45 cm (17.7")
- On-tabletop head-holding width: 25 cm (9.8")
- Tabletop material: Carbon fiber reinforced plastic (CFRP)
- Tabletop allowable load: 160 kg (350 lb)
- Longitudinal movement
  - Driving method: Manual
  - Range: Approx. 110 cm (43.3")
  - Fixing method: Off-locking with magnetic brakes
- Lateral movement
  - Driving method: Manual
  - Range: Approx. 30 cm (11.8") (±15 cm (±5.9"))
  - Fixing method: Off-locking with magnetic brakes
- Support column rotation
  - Driving method: Manual
  - Range: Approx. 270° (+90° to 0° to –180°)
  - Fixing method: Off-locking with magnetic brakes
- Vertical movement
  - Driving method: Motor
  - Range above floor: Approx. 79 cm to 120 cm (31.3" to 47.2")
  - Speed: Approx. 1.4 cm/s (0.5"/s)
  - Footswitch: The following operations can be performed using this switch:
- Footswitch
  - Fluoroscopic start
  - High level control (HLC mode) fluoroscopic start
  - Cine, DA, DSA start

X-ray generator
KXO-100G
Ratings

- Fluorographic ratings: 1250 mA, 80 kV (0.1 s), 1000 mA, 100 kV (0.1 s), 800 mA, 125 kV (0.1 s), 630 mA, 150 kV (0.1 s)
- Fluoroscopic ratings: Continuous fluoroscopy, 4 mA, 125 kV
- Nominal maximum power: 100 kW

Fluorographic functions

- Setting of techniques
  - DSA (digital subtraction angiography, option)
  - DA (digital angiography)
  - One-shot fluorography
  - CINE/DA (digital angiography)
- DSA function (option)
  - Tube voltage range: 50 kV to 125 kV
  - Tube current range: 100 mA to 1250 mA
  - Pulse width: 1.0 ms to 100 ms
- DA function
  - Tube voltage range: 50 kV to 125 kV
  - Tube current range: 100 mA to 1250 mA
  - Pulse width: 1.0 ms to 25 ms
  - Pulse rate: 7.5, 10, 15, 30, 60 exp./s
  - Exposure time: 1 s to 40 s, 1-s step
  - ABC function: AUTO mode/LOCK mode
  - Setting of LOCK delay time: 0 to 3 s, 0.5-s step
  - Auto iris control: The iris is automatically opened or closed.
- One-shot fluorographic function
  Combination with the DF system.
  - Tube voltage range: 50 kV to 125 kV
  - Tube current range: 100 mA to 1250 mA
  - Pulse width: 5.0 ms to 100 ms
  - AEC function: The tube voltage and tube current are automatically calculated and the exposure time is controlled.
- CINE/DA function
  Combination with the cine camera interface unit (XKCI-100A), an optional unit, is necessary.
  - Tube voltage range: 50 kV to 125 kV
  - Tube current range: 100 mA to 1250 mA
  - Pulse width: 1.0 ms to 8.0 ms
  - Frame rate: 15, 30, 60, 90
  - Total time: 1 s to 40 s, 1-s step
  - ABC function: AUTO mode/LOCK mode
  - Setting of LOCK delay time: 0 to 3 s, 0.5-s step
  - Auto iris control: Automatically opened or closed.
- Fluorographic range
  - Tube voltage setting range: 50 kV to 125 kV, 2-kV step
  - Tube current setting range: 10 mA to 1250 mA in 16 steps
  - Exposure time setting range: 1.0 ms to 1000 ms in 31 steps
  - mAs usable range
    - One-shot fluorography: 0.5 mAs to 125 mAs
    - DSA fluorography: 125 mAs max.

Fluoroscopic functions

- Fluoroscopy (continuous fluoroscopy)
  - Tube voltage range: 50 kV to 125 kV
  - Tube current range: to 4 mA (Min. setting 0.5 mA)
  - Setting of fluoroscopic time: 1 min to 5 min (1-min steps)
  - Cumulative fluoroscopic time: Up to 199 minutes
  - ABC function: Keeps the monitor brightness constant.
- Pulsed fluoroscopy functions
  - Tube voltage range: 50 kV to 110 kV
  - Pulse width: 1.0 ms to 13 ms
  - Repetitive pulse rate: 1, 2, 3.75, 7.5, 15, 30 exp./s
  - ABC function: Keeps the monitor brightness constant
  - Cumulative pulsed fluoroscopic time: Up to 199 minutes
- Fluoroscopy mode: Normal fluoroscopy mode/high dose HLC mode

Automatic exposure control function

- Applicable fluorographic technique: One-shot fluorography
- Shortest exposure time: 3 ms
- Nominal shortest exposure time: 5 ms
- Setting of film density: 9 steps including the standard density
- Display of real exposure time

Fluorographic condition programming function

- No. of programs: Up to 128 types of program can be registered.

System control function
Display of X-ray tube anode heat storage (HU)
Error detection function

X-ray tube unit

	DRX-T7445GDS	DSRX-T7444GDS Liquid-metal bearing type
Focal spot (mm)	0.3/0.5/0.8	0.5/0.8
Max. peak voltage (kV)	125	125
Target angle (°)	8	8
Anode heat storage capacity (kJ) (( ): kHU)	1300 (1800)	2200 (3000)
Max. rating (kW)	20/49/98	50/100

Image intensifier

	RTP9211J-G11
Input size (cm) (( ): inch)	23/17/12 (9/7/4.5)
Resolution (lp/cm) (min.)	46/51/62
Gx.$\left(\frac{cd/m^2}{\mu C/(kg \bullet s)}\right)$ (min)	970
Contrast (typical) (10% area contrast)	34:1
DQE (%) (typical) (IEC standard)	70

Digital fluorography system
DFP-2000A/A4, DFP-2000A/AS, DFP-2000A/AU

- Image memory
  - IC memory
    Memory capacity: 128 MB (to max. 320 MB option)
  - High-speed disk
    · Recording format for dynamic images:

Image matrix (horizontal/vertical)	Bit	Number of frames DFP-2000A/AS DFP-2000A/AU	Number of frames DFP-2000A/A4
1024 × 1024	10	17,500	34,500
1024 × 1024	8	23,500	45,000
512 × 512	10	62,000	125,000
512 × 512	8	83,000	166,500

  - Magnetic disk:
    1024 × 1024 16 bits max. 100 frames
- Image display section

Monitor output for:	Display mode	Aspect ratio	Image matrix
Fluoroscopy	1049 lines, 30 fps interlaced	4:3	1024 × 1024 and 512 × 512
Roadmapping	1050 lines, 60 fps non-interlaced	4:3	1024 × 1024 and 512 × 512
Standard analog VCR	525 lines, 30 fps interlaced	4:3	512 × 512

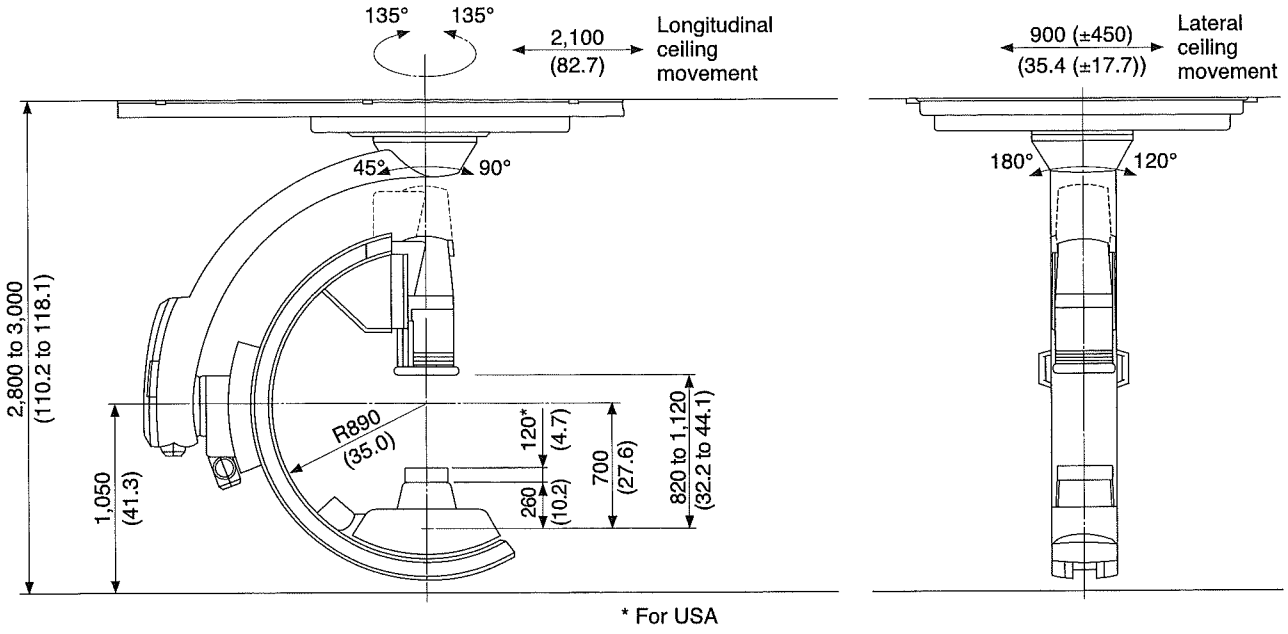
- Digital pulsed fluoroscopy
  - High-definition fluoroscopy: 1024 × 1024, 30 frames/s
  - Pulsed fluoroscopy
    · Standard: 30 pulses/s
    · Low-rate: 15 pulses/s
- Digital angiography (Fluorography)
  The TV camera images, acquired independently or simultaneously with cine angiography images, can be stored in the high-speed disk.
  - Standard imaging

Acquisition mode	Image matrix	Bit	Acquisition rate (frames/s)	Cine rate (frames/s)
High-definition	1024^2	8, 10	30*	30*
			15	30, 15
			10	30
			7.5	30, 15
High-speed	512^2	8, 10	60	60
			30	60, 30
			15	60, 30, 15
			7.5	60, 30, 15

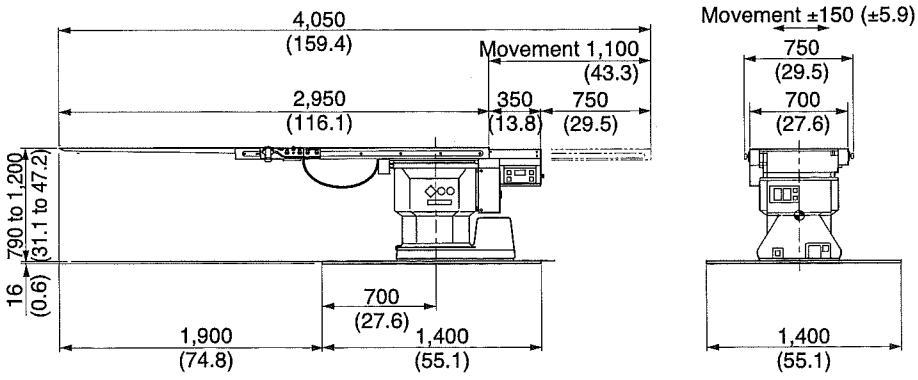
* for DFP-2000A/A4

- One-shot fluorography: Still images with 1024 × 1024, 10 bits
- Postprocessing
  - Dynamic image playback using the Jog/Shuttle
  - Dynamic image processing such as spatial filters and auto window
- Image filing
  - CD-R publishing station (option)
  - DVD-RAM (option)
  - Digital VCR (option)
- Image communication through Ethernet (DICOM) (option)
- Fluoroscopic and reference images on a single roadmap monitor
- Clinical analysis during postprocessing
- Utility such as patient information and examination information

OUTILINE DRAWINGS



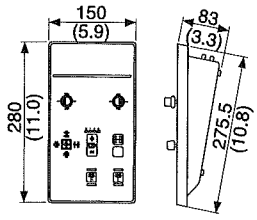
C-arm Support CAS-8000V/cx



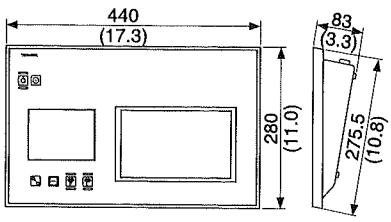
Catheterization Table CAT-350B/cx (including XBBP250B)

Unit: mm (in)

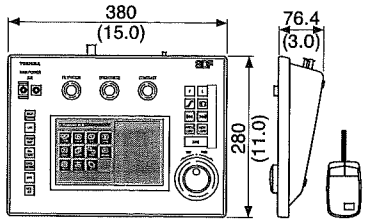
OUTILINE DRAWINGS



Optional Console for KXO-100G



Control Console for KXO-100G



SDF Main Console

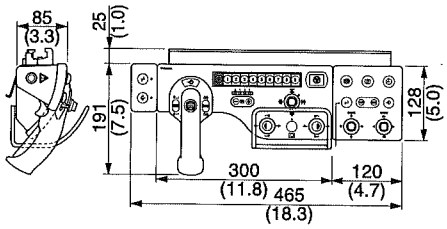
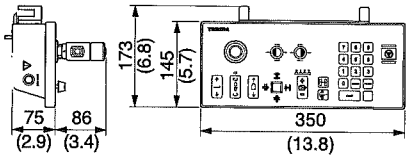
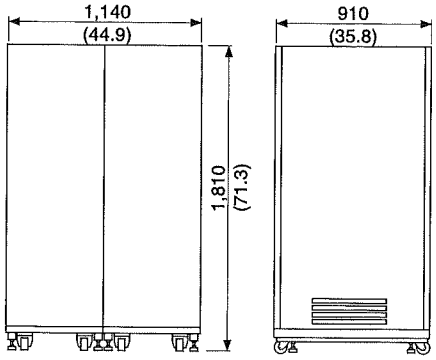


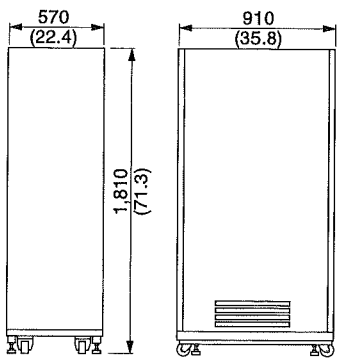
Table-side Console for C-arm (Hyper-Handle)



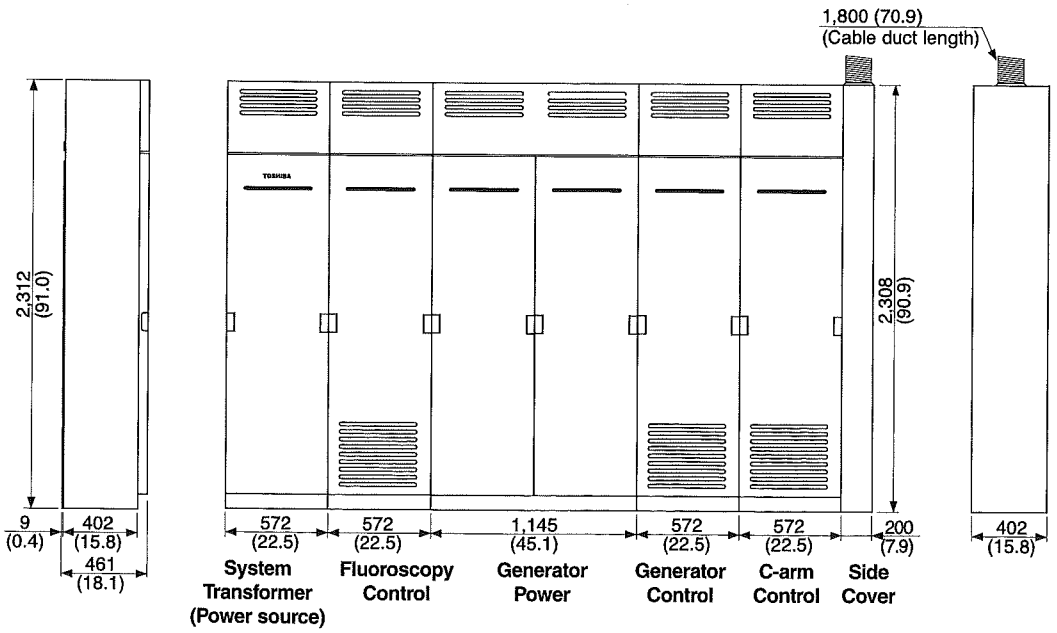
Additional Control Switch for C-arm



Processing Unit for DFP-2000A/A4



Processing Unit for DFP-2000A/AS, /AU



Cabinet

Unit: mm (in)

INSTALLATION CONDITIONS

Examination room

The size of examination room should satisfy the following requirements.

- Ceiling height: 2.8 m (110.2") to 3.0 m (118.1")
- Minimum space for installation: 5.4 m (212.6") (W) × 6.5 m (255.9") (L)

Power requirements

- Three-phase, 380/400/415/440/480 VAC, 50/60 Hz, 150 kVA or larger
  - Allowable line voltage fluctuation rate (no load): Within nominal line voltage ±10%
  - Allowable line impedance: 380 V, 0.08 Ω or less
    400 V, 0.09 Ω or less
    415 V, 0.09 Ω or less
    440 V, 0.10 Ω or less
    480 V, 0.12 Ω or less
  - Rating of distribution breaker: 380/400/415/440/480 V 100 A
- Single-phase, 200/210/220/230/240 VAC, 50/60 Hz, 7.5 kVA or larger
  - Allowable line voltage fluctuation rate (no load): Within nominal line voltage ±10%
  - Rating of distribution breaker: 200/210/220/230/240 V 100 A

Grounding

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

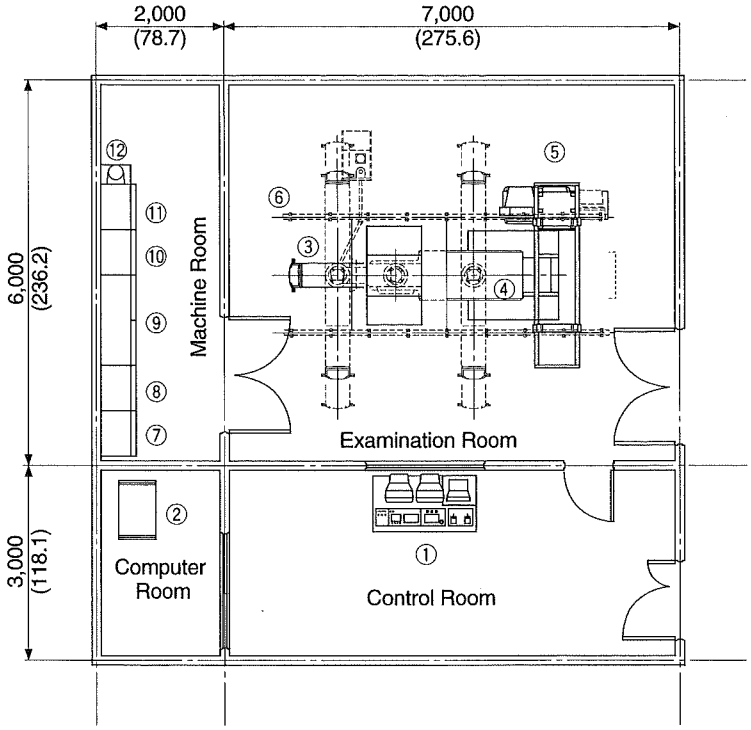
Operating requirements

- Examination room and machine room
  - Ambient temperature: 10°C to 35°C
  - Relative humidity: 35% to 70% (no condensation)
  - Atmospheric pressure: 700 hPa to 1,060 hPa
- Control room and computer room
  - Ambient temperature: 18°C to 28°C
  - Relative humidity: 35% to 70% (no condensation)
  - Atmospheric pressure: 700 hPa to 1,060 hPa

DIMENSIONS AND MASS

Unit	Net Dimensions (L × W × H) mm (in)	Net Mass (Approx.) kg (lb)
C-arm support	2,120 × 640 × 2,560 (83.5 × 25.2 × 100.8)	850 (1,873)
Ceiling rail	5,000 × 1,900 × 100 (196.9 × 74.8 × 3.9)	90 (198)
C-arm control cabinet	572 × 461 × 2,312 (22.5 × 18.1 × 91.0)	140 (308)
Table-side console for C-arm	465 × 200 × 120 (18.3 × 7.9 × 4.7)	3 (6.6)
Additional control switch for C-arm (option)	350 × 173 × 161 (13.8 × 6.8 × 6.3)	3 (6.6)
Catheterization table CAT-350B/CX	3,300 × 750 × 790 (130 × 30 × 31.1)	440 (968)
Base plate XBBP250B (option) for CAT-350B/CX	1,400 × 1,400 × 16 (55.1 × 55.1 × 0.6)	240 (528)
Control console for KXO-100G	440 × 280 × 83 (17.3 × 11.0 × 3.3)	5 (11)
Optional console for KXO-100G	150 × 280 × 83 (5.9 × 11.0 × 3.3)	1.5 (3.3)
Generator control cabinet	572 × 461 × 2,312 (22.5 × 18.1 × 91.0)	110 (242)
Generator power cabinet	1,145 × 461 × 2,312 (45.1 × 18.1 × 91.0)	450 (990)
Fluoroscopy control cabinet	572 × 461 × 2,312 (22.5 × 18.1 × 91.0)	270 (594)
System transformer (Power source) cabinet	572 × 461 × 2,312 (22.5 × 18.1 × 91.0)	350 (770)
Processing unit for DFP-2000A/A4	910 × 1,140 × 1,810 (35.8 × 44.9 × 71.3)	640 (1,408)
Processing unit for DFP-2000A/AS, AU	910 × 570 × 1,810 (35.8 × 22.4 × 71.3)	450 (990)
SDF main console	280 × 380 × 76.4 (11.0 × 15.0 × 3.0)	4.5 (9.9)

TYPICAL LAYOUT



① System console
② Processing unit
③ Ceiling-suspended C-arm CAS-8000V/cx
④ Catheterization table CAT-350B
⑤ Ceiling-suspended monitor
⑥ Ceiling rails
⑦ System transformer (power source) cabinet
⑧ Fluoroscopy control cabinet
⑨ Generator power cabinet
⑩ Generator control cabinet
⑪ C-arm control cabinet
⑫ Cabinet side cover

Unit: mm (in)

Made for Life

TOSHIBA CORPORATION
MEDICAL SYSTEMS COMPANY
http://www3.toshiba.co.jp/medical

2001-07(200205) TME/KI

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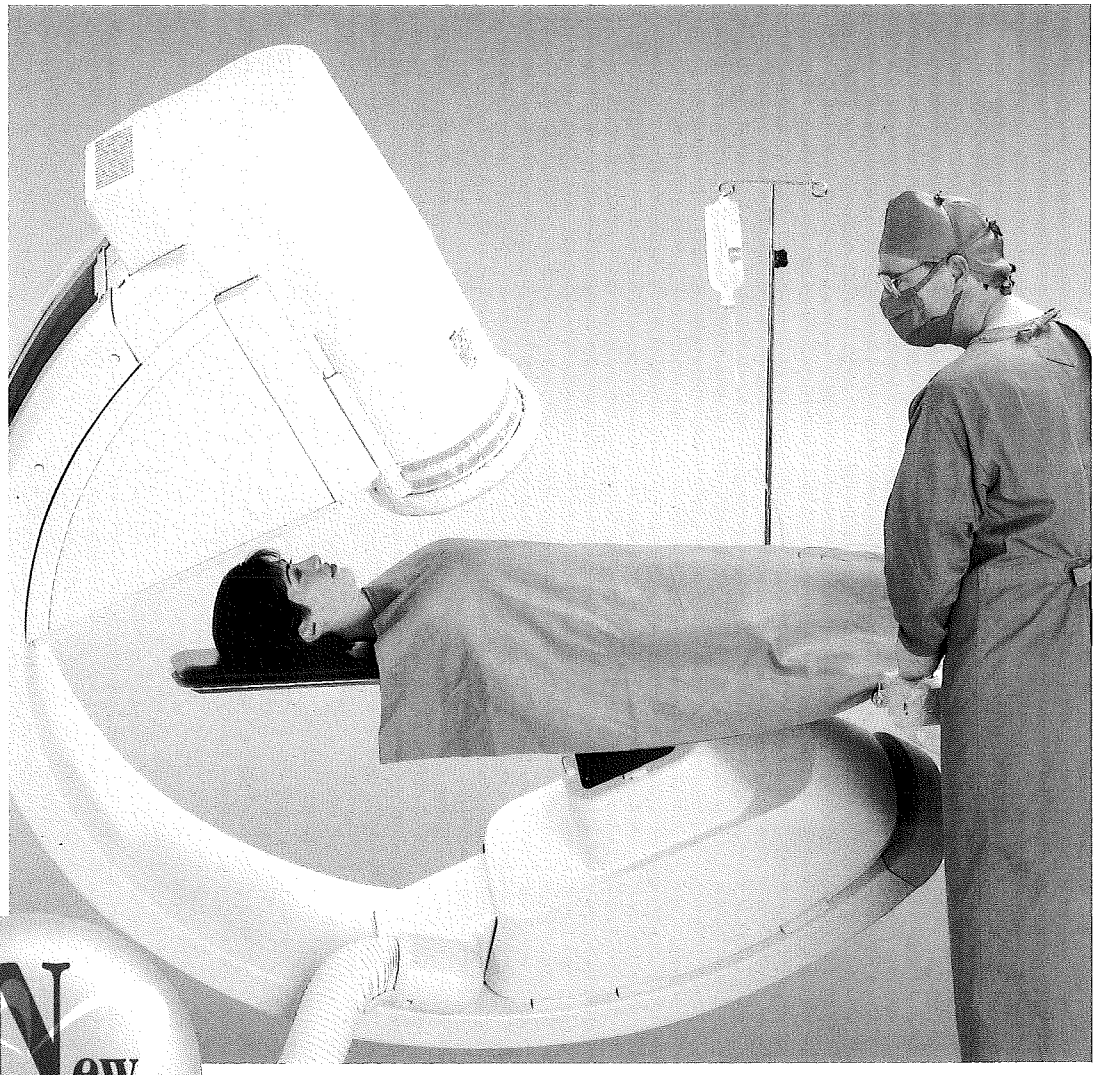
Printed in Japan

TOSHIBA

CARDIAC IMAGING SYSTEM

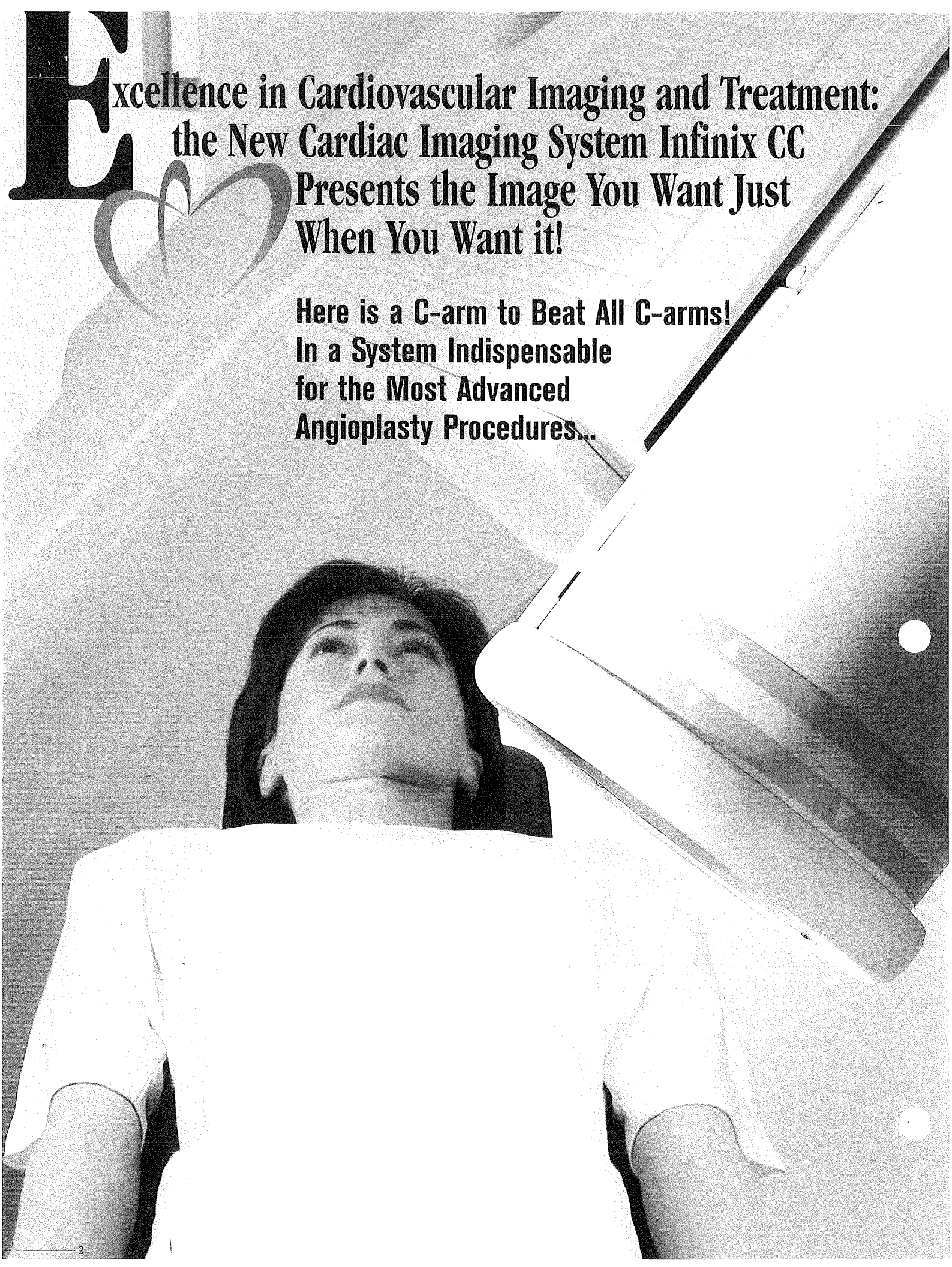
Infinix CC



New Cardiac

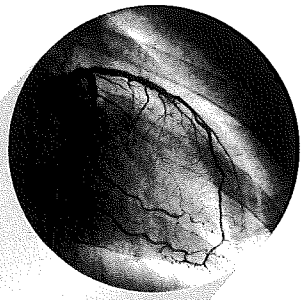
Excellence in Cardiovascular Imaging and Treatment: the New Cardiac Imaging System Infinix CC Presents the Image You Want Just When You Want it!

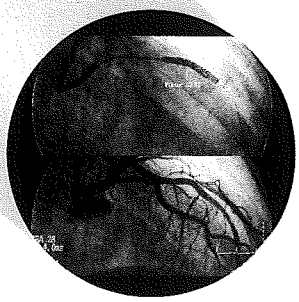
Here is a C-arm to Beat All C-arms! In a System Indispensable for the Most Advanced Angioplasty Procedures...



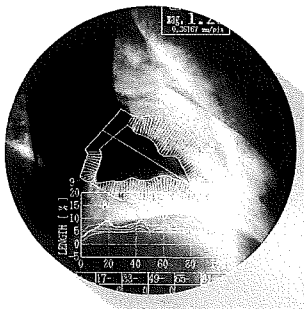
System Concept

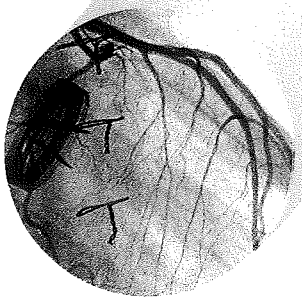
The Infinix CC* is an outstanding ceiling-suspended single-plane Cardiac Imaging System that is setting the standards for excellence in cardiovascular imaging. It makes possible the speedy and precise execution of diagnostic and angioplastic techniques anywhere from the heart itself all the way down to the lower extremities. The system offers:





- **A agile C-arm for swift, light, accurate positioning**
- **A responsive imaging system, which responds immediately, providing the desired image at the moment that it is needed**
- **Cineless viewing for direct visualization of moving images without a cine camera**
- **Attentive care and concern for the comfort and well-being of the patient**





This is a sophisticated system born of the uncompromising efforts of the Toshiba design team, who worked with these concepts as a basis. We at Toshiba can with confidence recommend this system, in particular to the cardiologist who is active at the forefront of the latest advances in angioplasty.

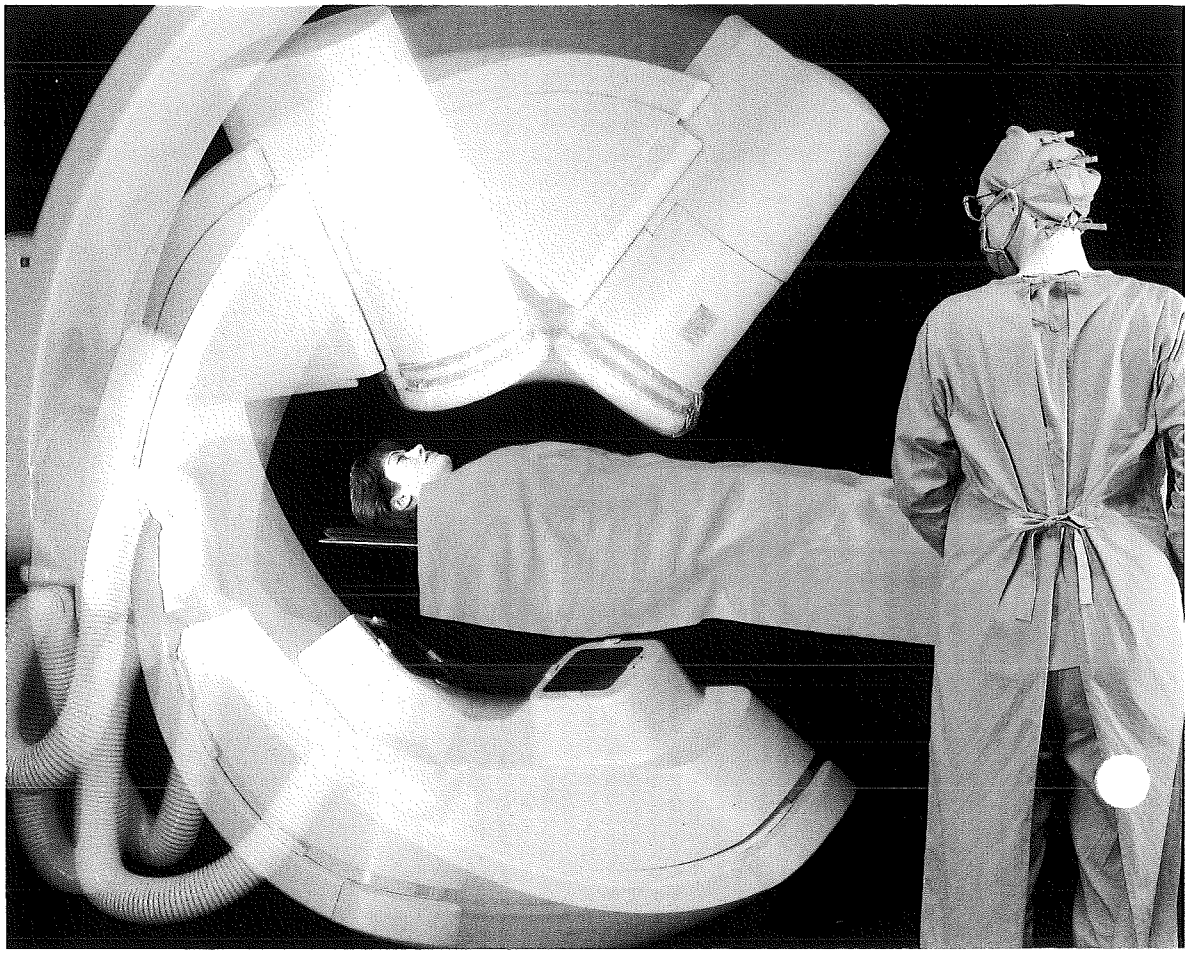
*: The name "Infinix" is a combination of "infinity" and "X-ray". It represents a novel development among Toshiba's new interventional systems, that offers new possibilities in diagnosis and intervention. CC = Ceiling suspended + Cardiac.

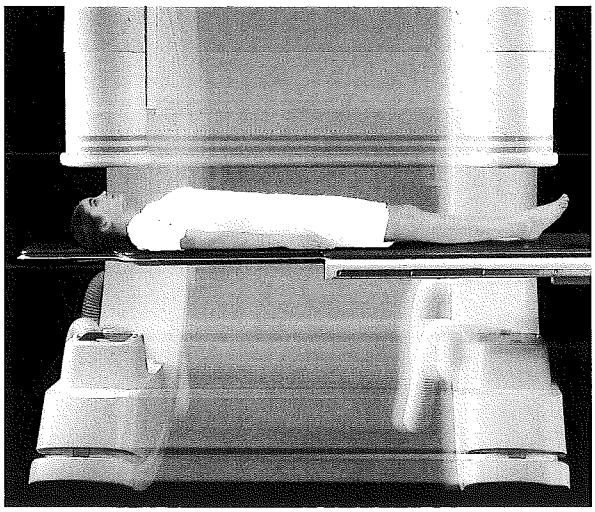
The Agile C-arm

The C-arm, with its nimbleness and extreme versatility of movement, makes it easy to capture the most appropriate views of the patient, while also offering the operator a wide range of advantages over conventional devices.

Autopositioning

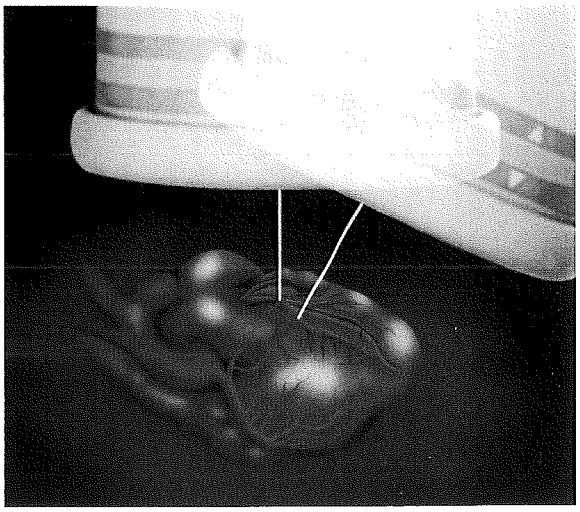
A highly efficient function invaluable for routine examinations.





Head-to-toe Movement

For rapid detection of peripheral arteries and an object such as a lost stent, the great range of C-arm movement is very helpful. Also, the left-to-right C-arm movement is useful, particularly for a transradial approach.

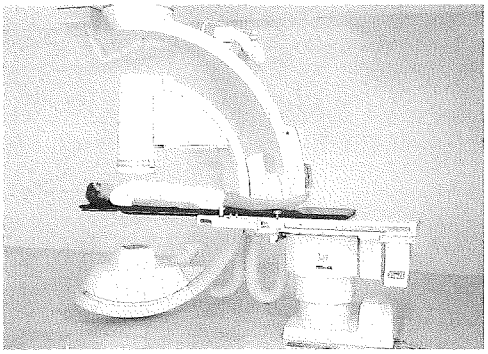


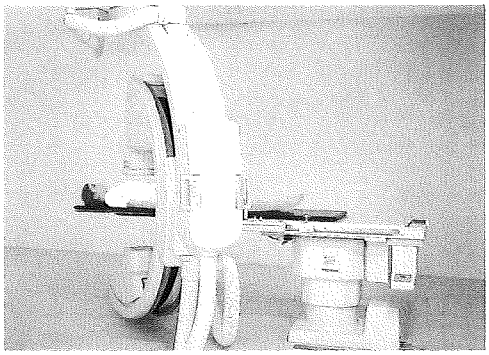
Vessel Profiling

With the 3-axis control mechanism for the C-arm, examination of the coronary vasculature from any desired angle becomes easy.

Direction-free C-arm Positioning

The freedom offered by the C-arm positioning system, with the space available for the operator to move around the patient, is ideal for pacemaker implantation.





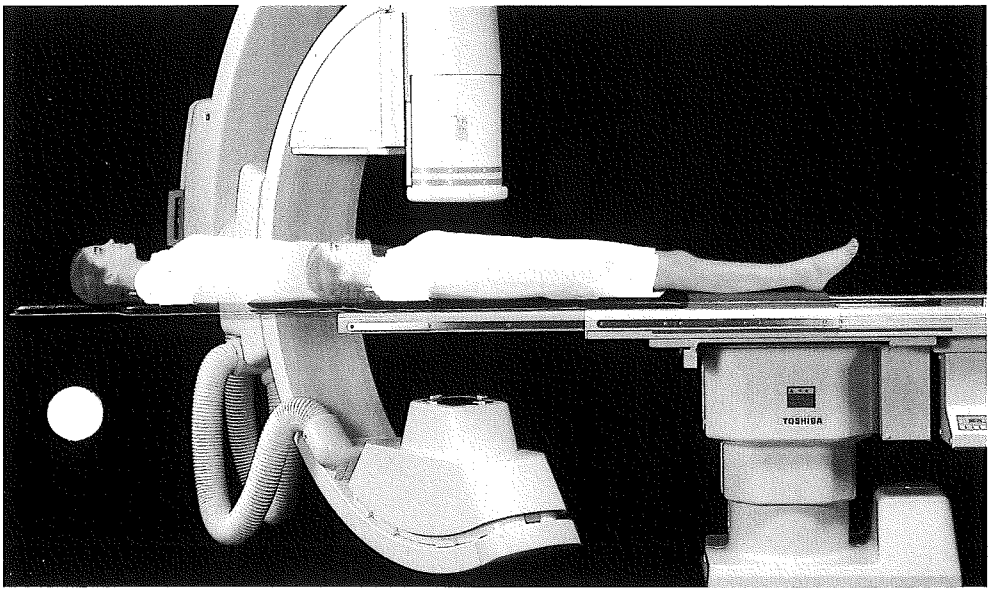
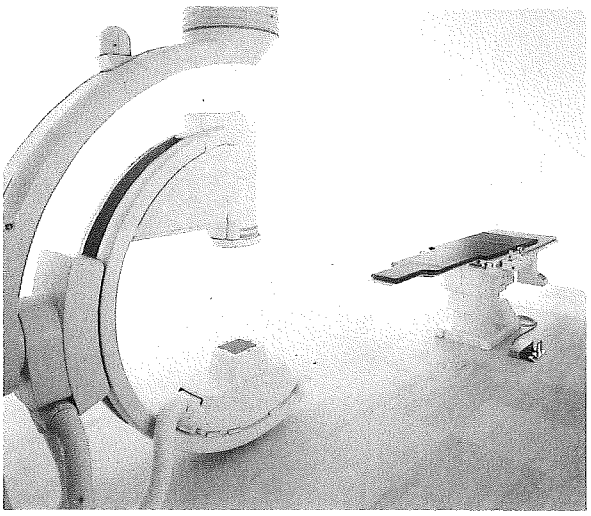
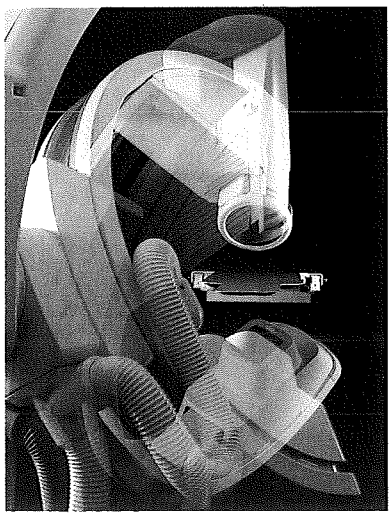
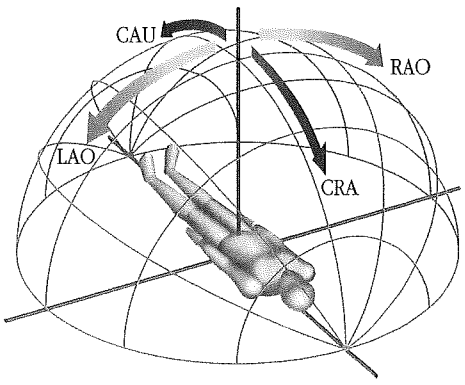


Table Sliding

The vertical stroke of the tabletop allows ample coverage of both the groin area (where a catheter may be introduced) and the region of the heart without the patient having to adjust his or her position.







C-arm Parking

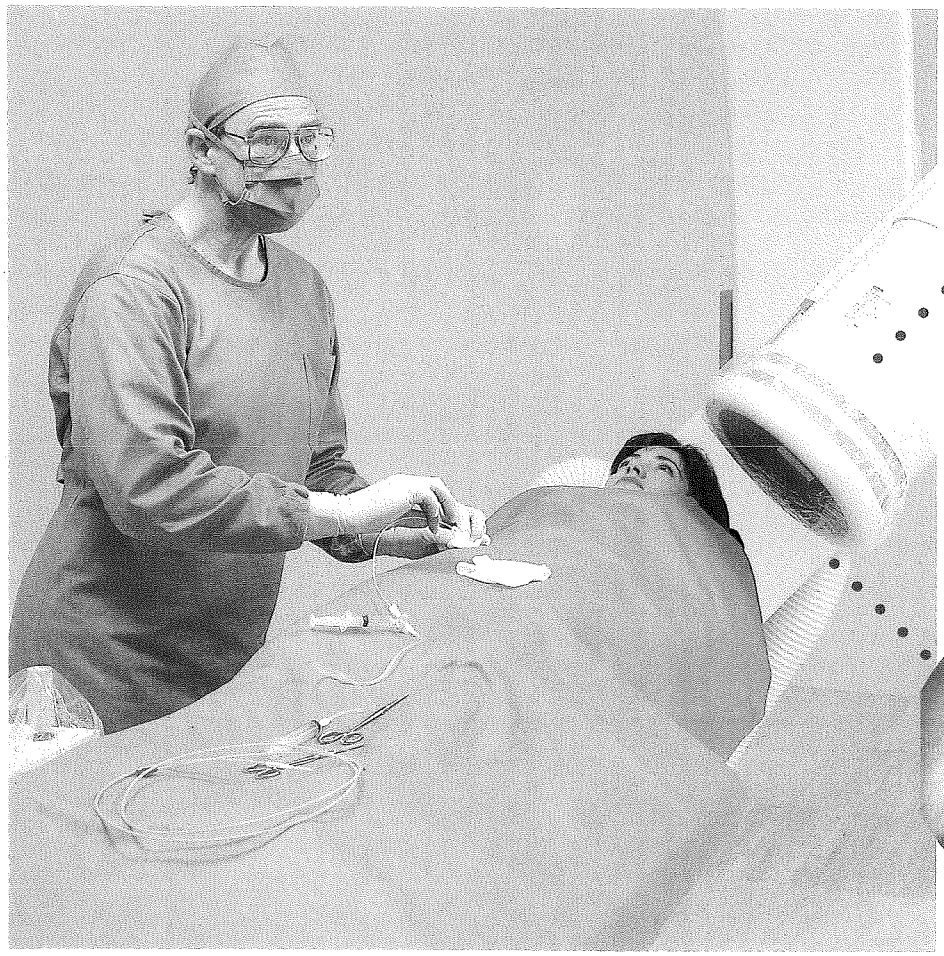
The C-arm parking feature ensures that plenty of space can be made available at the tabletop head.

Anatomical Angle Control

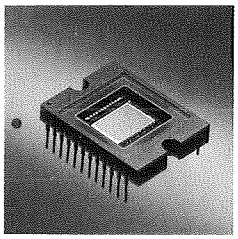
While maintaining sufficient space at the tabletop head, the operator can easily set angles such as CRA/CAU or RAO/LAO, even if the C-arm is not positioned at the head of the table.

Responsive Imaging

This ingeniously designed and highly flexible imaging system allows viewing of the desired image in the desired location at the desired time. Ultimately, this can prevent much waste of time and effort.

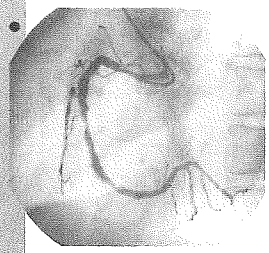


CCD (Charge-Coupled Device) Digital Camera

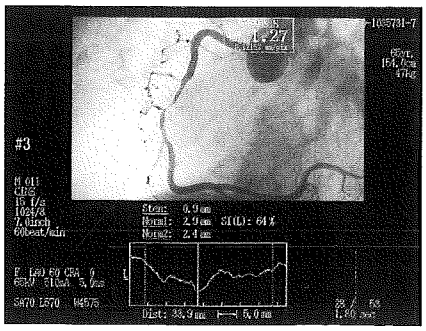


The digital TV camera and its 1-million pixel CCD enable images of the finest quality to be obtained.

Roadmapping Coordinated with C-arm Positioning



This roadmapping function automatically provides a display of a photo reference image as seen from the angle closest to that currently being visualized.

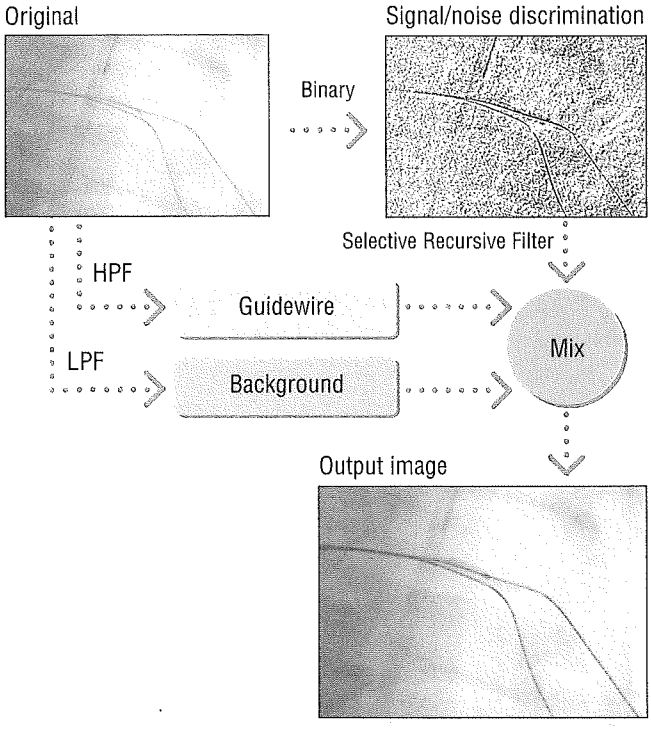


Cardiac Function Analysis with QCA (Quantitative Coronary Analysis) Available as Needed

The Infinix CC is designed to allow determination of the ejection fraction, measurement of the stenosis index in a blood vessel, as well as analysis of wall motion by the center line method.

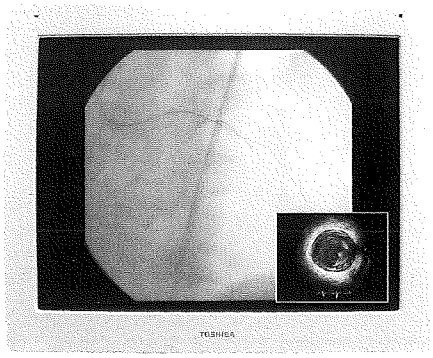
Super Filter– Advanced Unique Technology

In a quest for even better image quality, Toshiba has developed a very advanced original image processing technology, referred to as a Super Filter. Using digital processing to suppress background noise, Toshiba is able to produce in real time, extremely clear pulsed fluoroscopy images while maintaining distinct depictions of catheters or guide wires.



Picture-in-Picture Function (For Expanded Application)

Dynamic images frequently used in cardiovascular intervention procedures such as IVUS can be displayed together with fluoroscopic images in a small insert on the screen. This function broadens the application of the Infinix CS system for both diagnosis examinations and treatments.

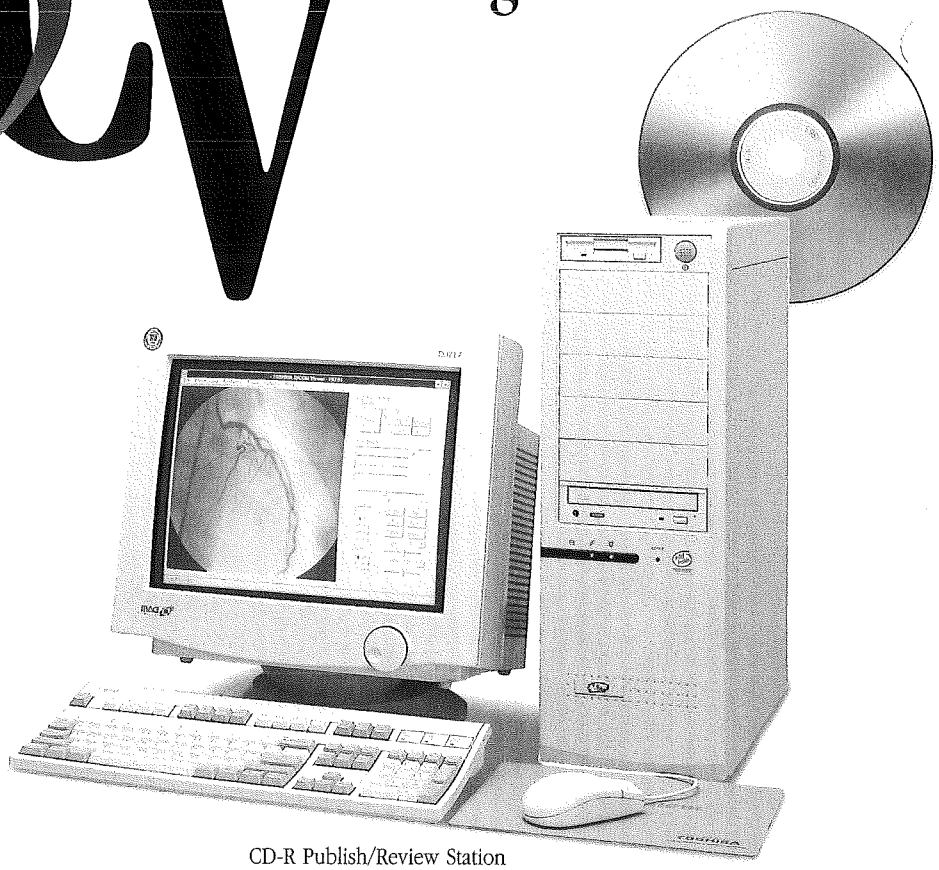


High Image Quality with a CCD on a 1024 x 1024 Matrix

Innovative Cineless Viewing

Interchanges

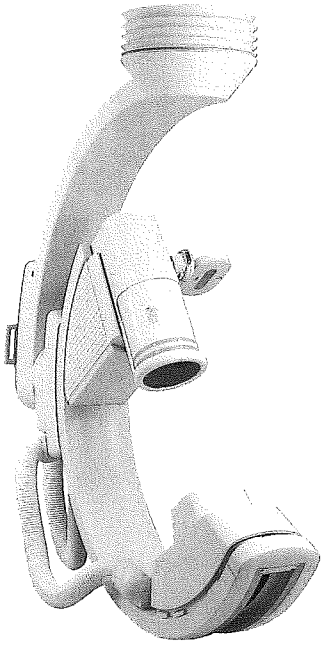
The Infinix CC employs the innovative personal computer-based CD-R (Compact Disk-Recordable) Stations, Publishing and Reviewing, a cineless system designed for Cardiac Image Transfer and Interchange. The CD-R image operates on an 8-bit basis on a 512 x 512 matrix, and 2:1 lossless JPEG data compression procedure is employed.



CD-R Publish/Review Station

Archiving

Use of the 69 GB high-capacity D-2 format VCR allows acquisition and recording of 1024 x 1024, 10-bit images. At the same time, permanent archive files can also be set up.



High Capacity Temporary Image Storage

A newly developed system for temporarily storing images, the Redundant Arrays of Inexpensive Disks, or RAID, is used in Toshiba's DFP-2000A Digital Fluorography System, which is combined with the Infinix CC.

In the RAID system, multiple disks are used in parallel. In case an error, such as a defective disk, should occur, the remainder can still be used, thanks to the real-time error correction strategy using the Fail Safe design that uses real-time error correction.

Cine Camera Combination (option)

A cine camera can be connected if desired.

Attentiveness and Care

The system concept kept constantly in mind during the development if the Infinix CC system was:

"Excellence in function and consideration for people."

Thus, the system is intended to set new standards of safety and ease of operation, while also giving careful consideration to the comfort, wishes and needs of the patient, and taking into account the desires of the operator and other staff. Considerable effort has been made to ensure that the concept is fully embodied in the Infinix CC system.

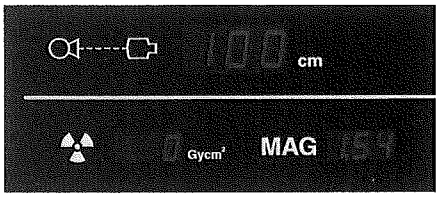
Minimizing Exposure

For the standard exposure dose, which is close to the dose for conventional continuous fluoroscopy, and for the low exposure dose, 12 modes of pulsed fluoroscopy are available with a pulse rate of 30, 15, 7.5, 3.75, 2 or 1 pulses per second. Merely by changing the pulse rate from 30 pulses/sec to 7.5 pulses/sec, a 75% reduction in dose can be easily achieved.

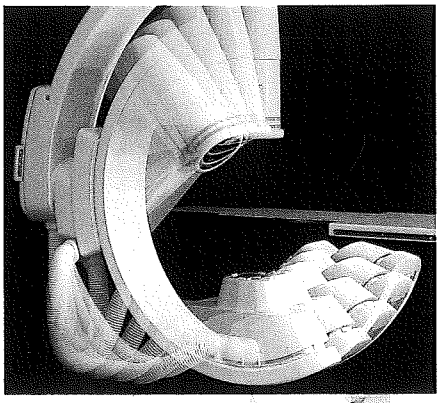
Real-time zooming of pulsed fluoroscopy, which is also provided, can help to decrease the exposure dose better than reducing the field of view of the I.I. collimator can.

A third method of reducing dose is by the use of a beam hardening filter. Tantalum is superior to copper as a material for a filter of this kind.

In addition, a display of the dose area product is made whenever appropriate on the digital display screen, so that, if data on the dose is needed, it is easily and quickly available. (option)



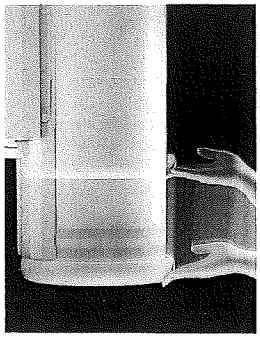
Preventing C-arm Interference

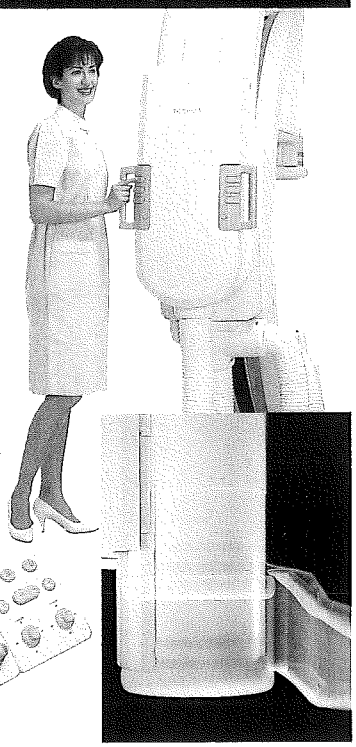


The angulation procedures required to acquire accurate data on a lesion in a patient are complex. A number of automatic procedures help to avoid C-arm interference or collisions. These include constant monitoring of areas where such accidents are likely to occur, and reduction of the speed of the C-arm as it approaches the catheterization table. Moreover, the front surface of the I.I. is covered with spongy touch sensors, and the X-ray tube cover is also provided with touch sensors.

Easy Work for the Operator

The power assist function can perform operations at the start and end of an examination, and also procedures usually performed by the doctor's assistant during the examination. It can therefore be used to reduce the operator's work. One-hand grip makes it possible for the operator, standing at the tableside, to control with one hand all motions from C-arm rotation to raising and lowering the I.I. without the need to direct ones attention from the fluoroscopy monitor.

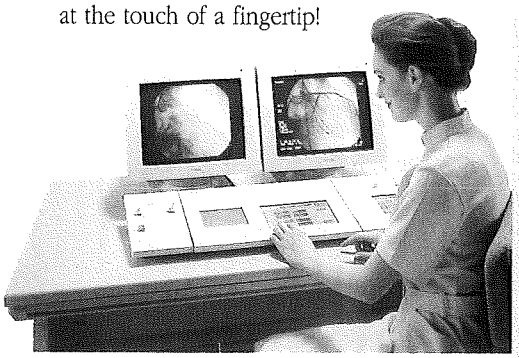




Uncompromising Toshiba Quality

DFP-2000A Digital Fluorography System

The DFP-2000A (or SDF) Digital Fluorography System is the first CCD digital camera with 1 million pixels in the world. The detail that its 1024 × 1024-pixel images can offer is superb, and it is very fast and produces no lag or blooming. Features such as roadmapping and cardiac analysis functions such as QCA offer great support for angioplasty procedures. In addition, the new System Console, a single unit consisting of the Controllers of this SDF and of the X-ray Generator (KXO-100G) combined, and supplemented with a touch panel design, can provide an operating environment of superior quality at the touch of a fingertip!



System Ove

High Frequency Inverter Generator

This high frequency inverter generator is ideal for cine fluorography, providing the constant high-power potential output required. Since the cine fluorographic conditions and the automatic exposure are strictly and precisely controlled by the microprocessor, reliability and image quality are assured.

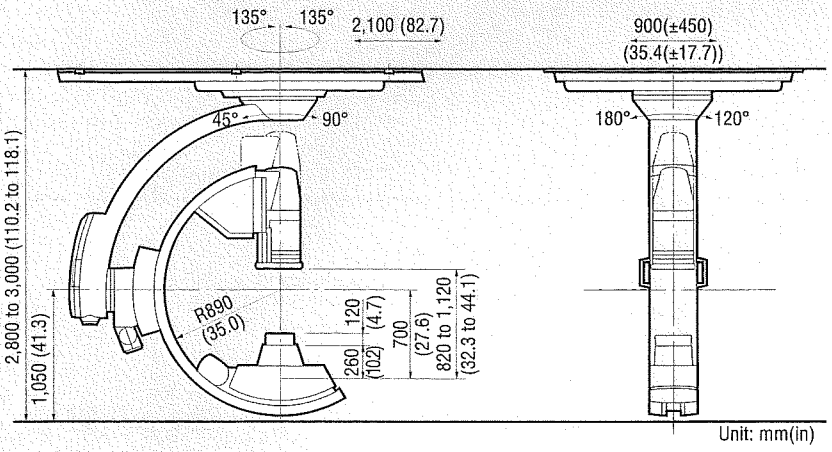
Water Cooled X-ray Tube

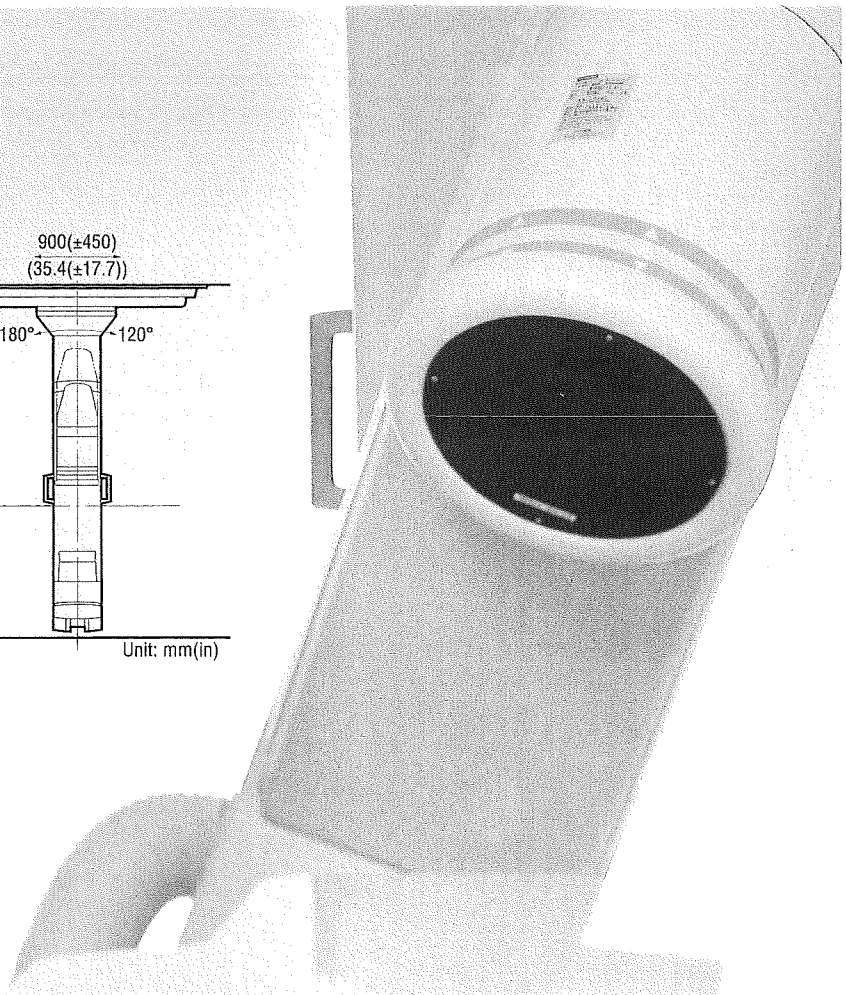
The X-ray tubes used in the Infinix CC system, designed to ensure long service and reliable performance, provide high quality and high output. The high output of these tubes makes it possible for cine fluorographic procedures to be performed at relatively low kV settings and short exposure times. Their high anode heat storage capacity and high cooling rate make these tubes suitable also for extended fluoroscopic procedures such as angioplasty.

Advanced Super Metal I.I.

Toshiba, maintaining its global lead in I.I. development, now offers an improved I.I. whose resolution, contrast and S/N ratio are all substantially higher than was hitherto possible.

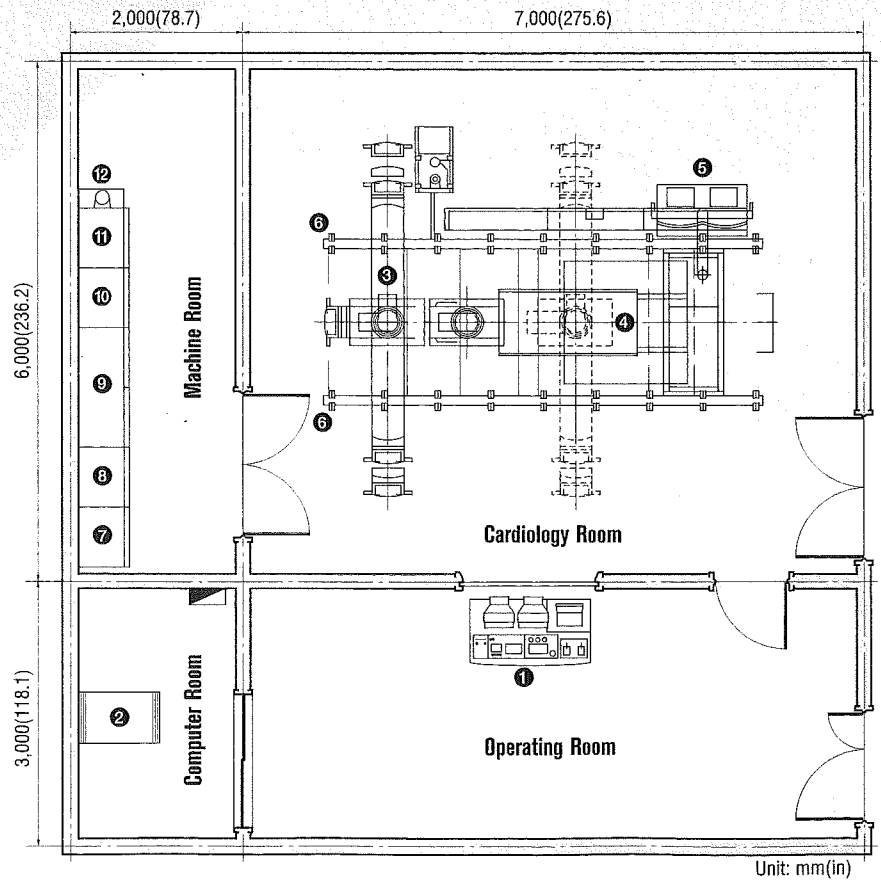
Dimensions of C-arm





view

Typical System Layout



Works Efficiently in Confined Spaces

The minimum area in which the system can be installed and used is 5.2 m × 6.2 m.

1. System console
2. Processing unit
3. Ceiling-suspended C-arm CAS-8000V/cx
4. Catheterization table
5. Ceiling-suspended monitor
6. Ceiling rails
7. System transformer cabinet
8. Fluoroscopic control cabinet
9. Generator power cabinet
10. Generator control cabinet
11. C-arm control cabinet
12. Cabinet side cover

Some of the objects shown in this catalog are not included in the Infinix CC system, or are optional items. For further details, please contact your local salesman.

TÜV Rheinland

Toshiba Medical Systems Division meets internationally recognized standards for Quality Management System ISO 9001, ISO 13485, EN 46001.
Registration No.: 09 105 5673

ISO 14001 JACO JAPAN ACCREDITATION BOARD FOR CONFORMITY ASSESSMENT

NATIONAL ACCREDITATION OF CERTIFICATION BODIES

JAB EMS Accreditation RE:009

Toshiba Nasu Works meets the Environmental Management System standard, ISO 14001.
Registration No.: EC98J2019

In Touch with Tomorrow

TOSHIBA

GLOBAL IMAGING ■ MEDICAL SYSTEMS

TOSHIBA CORPORATION MEDICAL SYSTEMS COMPANY

MCAXR0047EAB 99-12 TME/AC/NS Printed in Japan

Exhibit 3

Advanced interventions in your lab

Philips Allura Xper FD20 system specifications

PHILIPS

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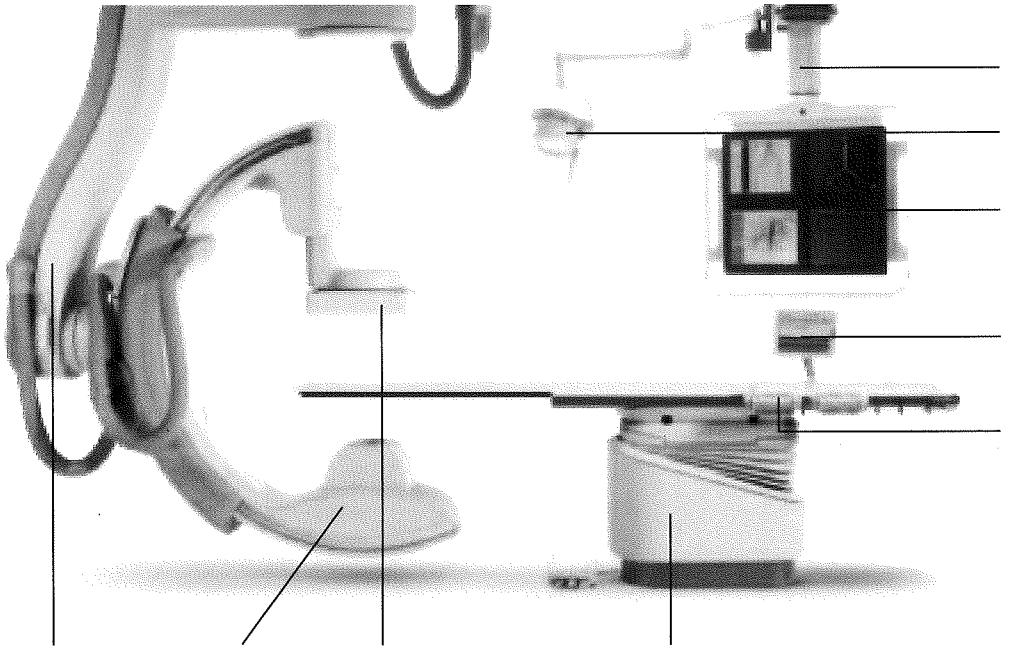
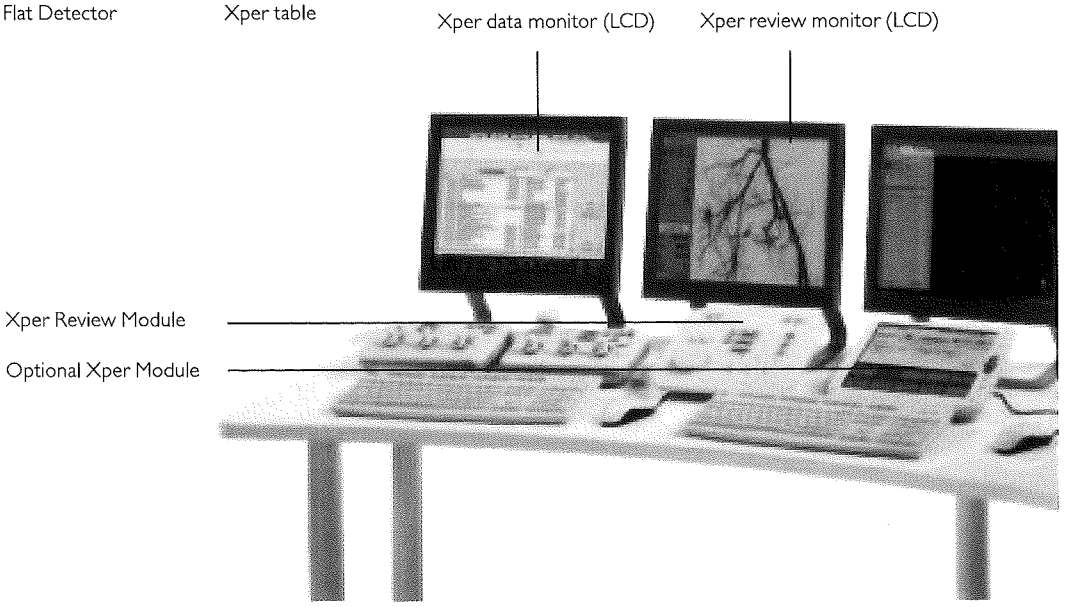
Introduction

Today, new interventional treatments and applications are constantly being pioneered. And although this expansion is exciting, it means that you must be more versatile than ever before. You must be equipped with an X-ray system that is capable of performing an increasingly wide variety of complex procedures.

The Allura Xper FD20 is perfectly suited to your changing needs... in fact, it is everything your interventional department needs today and tomorrow.





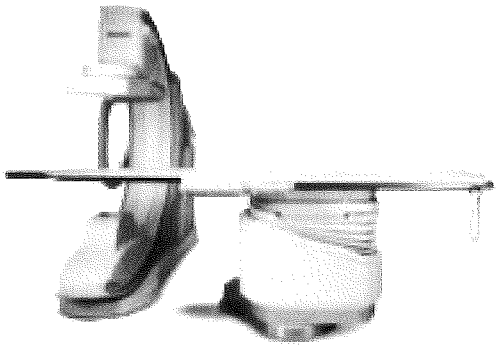
1 Geometry

1.1 Gantry

Rock stable gantry design with fast and easy table side controlled operation, with full flexibility in applications by free positioning of the gantry, monitor suspension and operating modules.

The exclusive BodyGuard patient protection mechanism is designed to protect the patient from unexpected contact between the detector and the body. It uses capacitive sensing to determine patient location to prevent collision, while allowing stand positioning at up to 25°/sec.

Allura Xper FD20 Ceiling stand with motorized L-arm and C-arm



Allura Xper FD20 Floor stand with motorized L-arm and C-arm

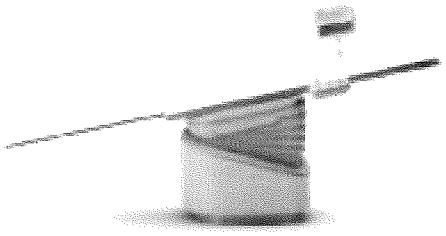
Features	Specifications
Iso-center to floor	FD20 ceiling: 106.5 cm (41.9 inch) FD20 floor: 113.5 cm (44.7 inch)
Longitudinal movement	FD20 ceiling is manual and motorized of 300 cm (118.1 inch) at 15 cm/sec. It includes auto stops at the park position, cardio position, neuro position and lower peripheral position FD20 floor has no longitudinal movement
L-arm rotation	Motorized and manual movement, over 180° with snap positions at 90°, -0°, -90° to allow patient access from three sides of the table
C-arm rotation	In head-end position: 120° LAO, 185° RAO, in side position: 90° LAO, 90° RAO
C-arm rotation speed	Up to 25°/sec. and 55°/sec. for rotational scan
C-arm angulation	In head-end position: 90° cranial, 90° caudal. In side position: 185° cranial, 120° caudal
C-arm angulation speed	Up to 25°/sec.
Focal spot to iso-center	81 cm (31.9 inch)
Source Image Distance	89.5 – 119.5 cm (35.2 – 47.1 inch)
C-arm depth	90 cm (35.4 inch)
Rotation of the flat detector	Xper Access allows re-positioning of the flat detector from portrait to landscape within 3 sec.
Programmable positions	Standard 2 positions

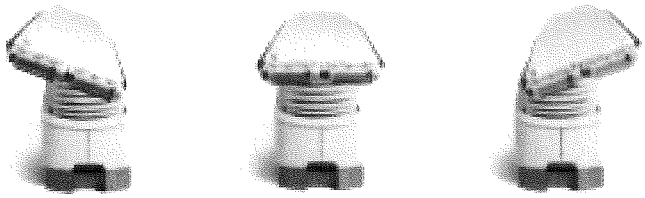
Optional

Automatic Position Controller (APC)	Functionality for the stand is accessed through the Xper Module at the patient tableside. • This option includes a programmable position extension, which allows you up to 10 different stand positions per clinical procedure • Another feature of the APC is Reference-driven positioning. This allows you to recall stand positions by referring to the images at the reference monitors, which means that the rotation, angulation, SID, and detector orientation are restored to the original settings of the reference image

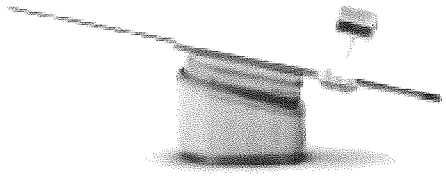
1.2 Xper table

The Xper table offers full range of applications, without restriction on position during CPR. The Xper table is a dedicated cardiovascular table with a free-floating tabletop. This table has very high patient loadability and can make large floating movements.





Xper table cradle



Xper table tilt

Features	Specifications
Tabletop material	Radio translucent carbon fiber tabletop
Tabletop length	319 cm (125.6 inch)
Tabletop width	50 cm (19.7 inch)
Motorized tabletop height adjustment	79 to 107 cm (31.1 to 42.1 inch)
Tabletop metal free overhang	125 cm (49.2 inch)
Longitudinal float	120 cm (47.2 inch)
Transversal float	36 cm (14.2 inch)
Maximum allowable patient weight	250 kg with additional force of 500 N, allowed in case of CPR. CPR can be performed while the tabletop is set in any longitudinal position
The positioning of the modules	The Xper Module, Xper Imaging, and Xper Geometry Modules can be positioned on three sides of the patient support
Cable integration	Cables are incorporated in the table to allow maximum operation flexibility
Patient mattress	The mattress is made of slow recovery foam, with a density of 58 kg/m^3 and a thickness of 7 cm that adapts to the patient body shape.

Optional

Table tilt	Yes, Xper table tilt
Tilt range	17° head-down to 17° head-up
Tilt speed	2°/sec.
Iso centric tilt movement	Yes
Cradle movement	Yes, with Xper Cradle
Cradle range	-15° to +15°
Cradle speed	3°/sec.
Iso centric cradle	Yes
Pivot range	-90° to +180° (or -180 to +90°). Table can be locked at any position and indents at 0, -13° and +13° (to support arm angiography).
Table Automatic Position Controller (TAPC)	It contains store and recall functionality of the height-,longitudinal- and lateral position of the table top. This allows returning to a previously stored position, without using X-ray dose.

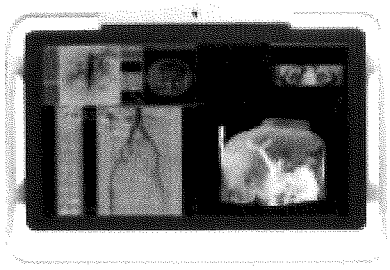
1.3 Monitor Ceiling Suspension

The Monitor Ceiling Suspension allows flexible, freely rotating positioning with a concave set-up of the monitors for optimal viewing angle.

Feature	Specifications
Number of monitors	Two, three, four, six or eight monitors
Rotation range	350°
Transversal movement	Over a distance of 300 cm (118.1 inch)
Longitudinal movement	Over a distance of 330 cm (129.9 inch)

1.4 FlexVision XL

With today's procedures becoming more and more complex, interventional tools such as catheters and stents are getting smaller and less easy to visualize under X-ray. Physicians are also challenged to oversee increasingly complex multi modality information and perform more and more complex procedures. FlexVision XL is a new viewing concept that provides outstanding viewing flexibility, using a large, high-definition LCD screen, it allows you to display multiple images in a variety of layouts - each tailored for your specific procedure.



FlexVision XL

1.5 Optional accessories

Accessories
Peripheral X-ray filter
Cath arm support (adjustable)
Ratchet compressor
Pulse cath arm support
Table mounted radiation shield
Ceiling mounted radiation shield
Dripstand
Arm support
Mattress
Neuro Mattress
Set of arm supports
Table clamp
Patient straps
Head support
Set handgrips & clamps
Cerebral filter
Neuro wedge
Cable holders (15 pieces)
Add-on OP-rail

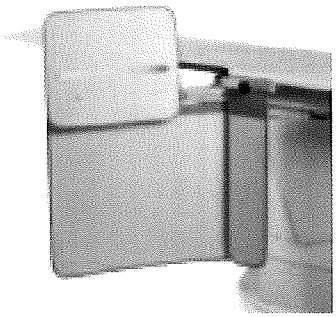
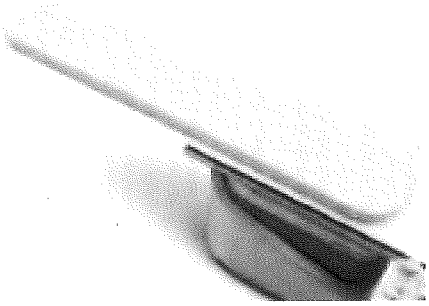
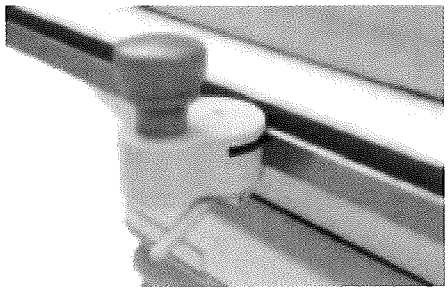


Table mounted radiation shield



Mattress (also one piece always delivered with table)



Pan handle

Head support

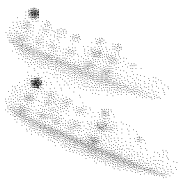
2 User Interface

Tailor made customized operating user interface per user (groups) and per desired application is available. Full integration of the complete system user interface is available at table side. Xper stands for "X-ray Personalized", and reflects the expert nature of the Allura Xper FD20 system.

2.1 Xper User Interface in the Examination Room

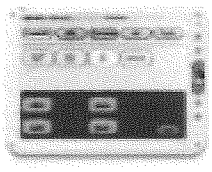
In the examination room, the Xper User Interface comprises the On-Screen Display, the Xper Module, and the Xper Imaging and Geometry Modules. Information displayed on the On-Screen display in the examination room.

The Xper Geometry and Imaging Module can be positioned on three sides of the patient table. The Modules adjust to the position to retain the intuitive button operation. Both the Xper Geometry and Imaging Module have a removable protection bar that prevents unintended activation of system.

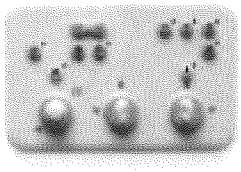


Xper Viewpad Controls

Xper Geometry Module



Xper Module



Xper Imaging Module

Xper User Interface
X-ray indicator
X-ray tube temperature condition
Radiographic parameters: kV, mA, ms
Rotation and angulation of the stand positions
Source Image Distance (SID)
Table height
Detector field size display
General system messages
Selected frame speed
Fluoroscopy mode
Integrated fluoroscopy time
Air Kerma dose (both rate and accumulated dose)
Dose Area Product (both rate and accumulated X-ray dose)
Graphical bars for body zone specific dose rate and accumulated Air Kerma levels related to the 2Gy level for cardiac procedures
Stopwatch

Xper Viewpad controls
Run and image selection
Exam and run cycle
Review speed
Run and exam overview
Active exam sub files (exposure image/runs, reference images, print file)
Flagging exam and run for storage
Digital zoom
Storing reference run or image to reference monitors
Select reference monitors for review and/or processing of previous run exposures
Subtraction and image mask selection

Xper Module
Acquisition setting
Image Processing
Automatic Position Control (APC), optional
Quantitative Analysis (QA), optional
Table Automatic Position Controller, optional
Interventional tools, optional
ViewForum and Xcelera software, optional
Hemo on Xper Module, optional
USB port for data transfer

Xper Geometry Module

Tabletop float
Table height position
Table tilt angle (if the tilt option is selected)
Table cradle angle (if the cradle option is selected)
Source Image Distance (SID) selection
Flat detector portrait/landscape position
Stand positioning
Longitudinal movement of the stand along the ceiling
Stand rotation in an axis perpendicular to the ceiling
Store and recall of two scratch stand positions including SID and detector orientation
Emergency stop button
Accept button of the Automatic Positioning Control
Geometry reset button, which resets stand and table to a default service configureable starting position

2.2 Xper User Interface in the control room

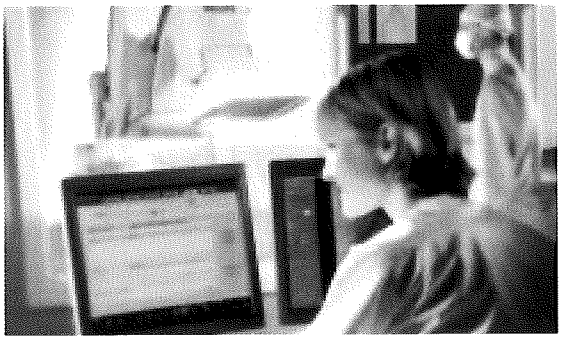
The Xper Viewing Console comprises a 19-inch LCD color data monitor for patient data and system information management, including radiographic parameters, and a 18-inch black and white review monitor and Review Module enabling efficient exam viewing and post-processing. The monitors have shared screens.

Xper Data Monitor

Scheduling
Preparation
Acquisition
Review
Report
Archive

Xper Imaging Module

Fluoroscopy mode selection as defined via Xper settings
Positioning of shutters and wedges without radiation
Manual or automatic wedge including position on the last image without radiation
Xper fluoro storage to record up to the last 20 seconds of fluoroscopy
Selection of the detector field size
Preferred beam width
Reset of the fluoroscopy buzzer
Selection of trace subtract fluoro function
Selection of SmartMask function, optional

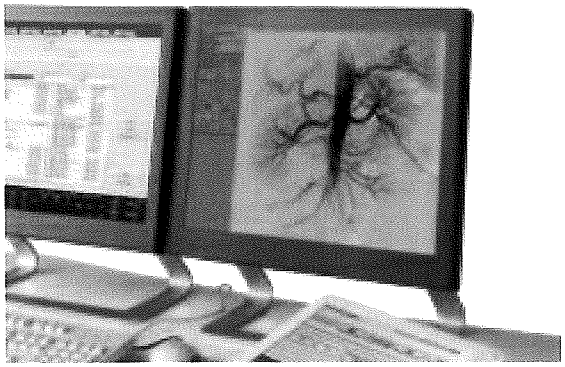


System information

Stopwatch and Time
System guidance information
Dose Area Product (DAP) and Air Kerma Dose (both rate and accumulated dose)
Frame speed settings, fluoroscopy mode and accumulated fluoroscopy time
Exposure and fluoroscopy settings, such as Voltage (kV), Current (mA) and pulse time (ms)
Stand position information, such as rotation, angulation and SID

Xper Review Monitor

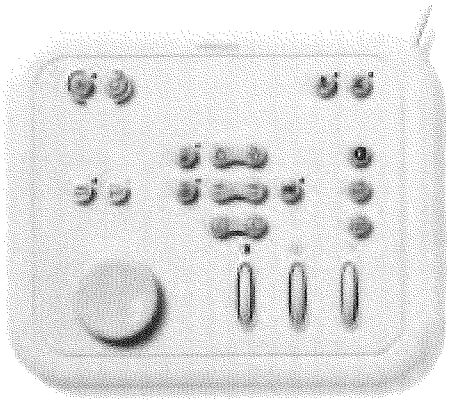
The Xper review monitor is a 18-inch black and white LCD monitor that shares a screen with the color data monitor.



Xper Review Monitor
Step through file, run or images
File and run overview
Image processing features such as contrast, brightness and edge enhancement
Flagging of runs or images for transfer
Image annotation
Automatic printing
Quantitative Analysis Packages if available
Subtraction
Move or renew mask
Landmarking (increase/decrease of degree of subtraction)
Video invert
Zoom and pan image
View trace
Pixel shift
Electronic shutters
Toggle switch physio
Store/delete images/runs
Store fluoro

Xper Review Module

The Xper Review Module is a review station for basic cardiovascular viewing needs. The most often used functions can be controlled by the touch of a button.

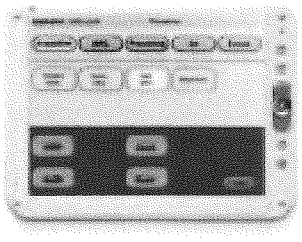


Xper Review Module
Power on/off of the system
Tagarno wheel to control the review of a patient exam
File and run cycle
Adjustment of contrast, brightness, and edge enhancement
File, run and image stepping
Run and file overview
Basic review functionality, such as image invert and digital zoom
Go to default settings
Reset fluoroscopy timer and switch X-ray on/off

2.3 User Interface Options

Second or third Xper Module

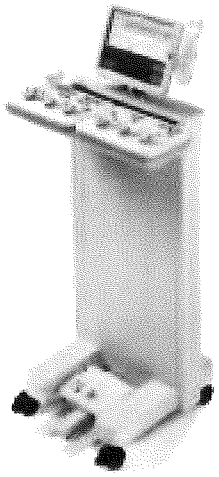
The Allura Xper FD20 can be extended with additional Xper Modules. The functionality of these Xper Modules is equivalent to the functionality on the Xper Module connected in the examination room.



Second or third Xper Module

Xper Pedestal

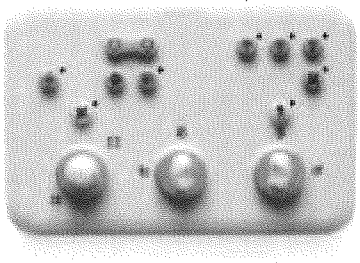
The Xper Pedestal creates an additional flexible workspot for operating the system in the examination room. The pedestal is equipped with additional Xper Geometry and Imaging modules and can also hold the X-ray footswitch. Optionally, an additional Xper module can be mounted on the pedestal. The Xper pedestal can be positioned freely around the patient table and can be stowed away when not used.



Xper Pedestal

Second Xper Imaging Module

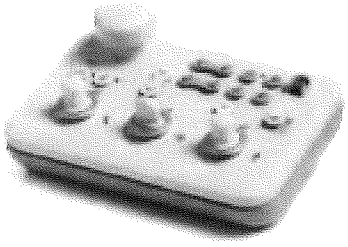
Extension of the imaging controls with a second module in the control room in a master-slave configuration.



Second Xper Imaging Module

Second Xper Geometry Module

Extension of the geometry controls with a second module in the control room in a master-slave configuration.



Second Xper Geometry Module

Contrast Injectors

The system is optimized for coupling with several contrast injectors.

3 X-ray Generation

3.1 X-ray generator

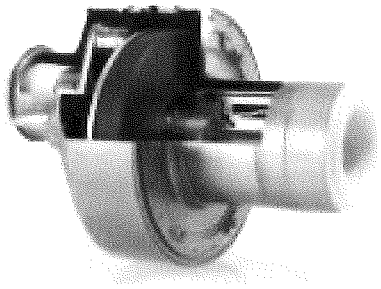
The Velara generator is optimized for the latest cardiovascular needs.

Features	Specifications
Generated power	Microprocessor-controlled, 100 kW high frequency converter generator
Minimum switching time	Quartz-controlled power-switch, with a minimum switching time of 1 ms
Voltage range:	40 to 125 kV
Maximum current:	1250 mA at 80 kV
Maximum continuous power:	2.4 kW for 0.5 hours, 2 kW for 8 hours
Nominal power (highest electrical power):	100 kW (1000 mA at 100 kV)

With Xper settings, different exposure protocols can be customized for every clinical application. They can be selected on the Xper Module during procedures.

3.2 MRC-GS 0407 X-ray tube

The Allura Xper FD20 is provided with the legendary high power MRC-GS 0407 X-ray tube which allows for very high heat dissipation, enabling SpectraBeam filtration to reduce the patient X-ray dose.

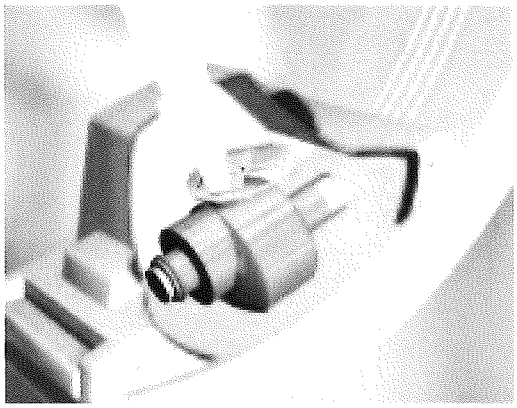


MRC-GS 0407 X-ray tube

Features	Specifications
Focal spot size and loadability	0.4/0.7 nominal focal spot values with maximal 30 respectively 65 kW loadability
Grid-switched pulsed fluoroscopy	Yes
Fluoro power for 10 minutes	4500 W
Fluoro power for 20 minutes	3500 W
Anode heat dissipation	11,000 W
Max. heat dissipation of assembly heat	3400 W
Extra pre-filtration	SpectraBeam dose management with 0.2, 0.5, and 1.0 mm Copper equivalent SpectraBeam Filters
Cooling liquid	Oil cooled X-ray tube with thermal safety switch
Anode cooling method	Direct anode oil cooling system with 200 mm anode diameter

3.3 SpectraBeam

The combination of SpectraBeam with the MRC-GS 0407 tube allows increased X-ray output with better filtration of soft radiation. This reduces patient X-ray dose for cardio and vascular applications, while maintaining the same excellent image quality.



Spectrabeam with unique beam filtration

Xper Beam Shaping

Xper Beam Shaping allows for virtual collimation of the shutters and wedges on the last X-ray image, eliminating additional X-ray dose during collimation changes.

Double wedge filters

Double wedge filters provide outstanding image quality in all projections. The wedge filters allow exceptional exposure and hence excellent image quality is maintained (with minimal patient entrance X-ray dose).

Anatomical filters

Filters designed to compensate for large absorption differences in the object. There are special filters for cerebral angiography and the optional lower peripheral angiography.

Automatic wedge positioning

Wedge filters can be positioned automatically according to gantry positions.

3.4 X-ray indication

"X-ray On" indicator light

The Allura Xper FD20 has an integrated "X-ray On" indicator light located above the LCD monitors that is clearly visible from virtually anywhere in the room.

Real-time dose information at tableside

Relevant dose information is integrated in the on-screen user interface of the LCD exam room monitors of the Allura Xper FD20 system. It provides the user with all relevant dose information, including accumulated and rate values of patient Air Kerma and X-ray dose area product. In addition, body zone specific X-ray dose rates are displayed for cardiac procedures. X-ray dose rates can be controlled by the user at tableside, by choosing a different fluoro mode.

X-ray dose information in the control room

Dose information is also available in the control room. Cumulative dose is displayed on the Xper data monitor.

X-ray dose information in the examination report

Examination report data can be provided via the RIS/CIS DICOM two-way interface, to the RIS/CIS (MPPS protocol). A dose report can optionally be printed or e-mailed (in background) at the end of each examination at the touch of a button. Body zone specific information is included.

Specifications
Copper filters: 0.2, 0.5, and 1.0 mm copper equivalent
The filters can be programmed via Xper settings
Three fluoroscopy modes per application can be selected at tableside

4 Image detection

The Allura Xper FD20 is equipped with a compact dynamic flat detector which can easily handle complex projections. Image quality and X-ray dose reduction are further enhanced by dedicated image processing.

4.1 Dynamic Flat Detector

Philips' next generation dynamic flat detector provides excellent image quality at a low patient X-ray dose.

Features	Specifications
Size of detector housing	42 x 52 cm (16.5 x 20.5 inch), including BodyGuard
Maximum field of view	30 x 38 cm (11.8 x 14.9 inch)
Image matrix	2480 x 1920 pixels at 14 bits depth
Detector zoom fields	30 x 30 cm (11.8 x 11.8 inch), 26 x 26 cm (10.2 x 10.2 inch), 22 x 22 cm (8.7 x 8.7 inch), 19 x 19 cm (7.5 x 7.5 inch), 16 x 16 cm (6.3 x 6.3 inch), 13.5 x 13.5 cm (5.3 x 5.3 inch), 11 x 11 cm (4.3 x 4.3 inch) square formats
Pixel pitch	154 µm
Detector bit depth	14 bits
Nyquist frequency	3.25 lp/mm
DQE (0)	More than 73% at 0 lp/mm
Digital output	$2k^2$ and $1k^2$ and 512^2 at 14 bit depth resolution
MTF at 1 lp/mm	> 60%
MTF at Nyquist frequency	10%

5 Imaging

5.1 Fluoroscopy

Per application, three fluoro modes are available at tableside which can be programmed via Xper settings. Each mode can be programmed with a different composition of X-ray dose rate, digital processing and filter settings.

Features	Specifications
Extra pre-filtration	SpectraBeam filters: 0.2, 0.5 and 1.0 mm Copper equivalent
Fluoroscopy image processing	Recursive filtering, localized contrast-adaptive contour enhancement, SPIRIT filters and Xres algorithm
Pulse rates	Default at 3.75, 7.5, 15 and 30 pulses per second
Frame grabbing of static fluoroscopy images	Yes
Fluoroscopy Storage	Default storage of the last 20 sec. of fluoroscopy for reference or archiving
Grid-switched pulsed fluoroscopy	Yes

Trace-subtract fluoroscopy

Trace-subtract fluoroscopy provides top quality reference images for positioning of a catheter, guidewire or other interventional devices. The peak bolus is automatically traced over the area in view when contrast is administered under fluoroscopy. The resulting image shows a vascular structure as if it were completely filled: the reference image or "roadmap". Subsequent fluoroscopy shows the progress of the intervention over this reference image. The roadmap image can be faded in/out for enhanced viewing. Run exposure can be performed without losing the roadmap image, saving contrast and X-ray dose. In addition, the subtracted fluoroscopy can be re-masked to compensate for movement.

Optional

SmartMask

SmartMask simplifies Roadmapping procedures by overlaying fluoroscopy with a selected reference image on the live monitor. The reference and fluoro images can be faded to taste on the monitors.

Dual Fluoroscopy

The Dual Fluoroscopy mode allows side-by-side display of digitally processed non-subtracted fluoroscopy and trace-subtract fluoroscopy for visualization and catheter guidance during complex procedures. The dual fluoro option offers live digital zoom capabilities. Images can be zoomed by a factor of two to enlarge the display of the region of interest. With the second reference monitor option, an additional reference image can be displayed next to the two live monitors.

Xres

Xres is a real-time image processing algorithm that is applied to each clinical image in real-time. Xres provides excellent image quality through improved contrast and sharpness. It exploits the benefits of the fully digital detector to reduce noise in clinical images and can be applied to cardiac fluoroscopy and exposure runs, as well as vascular fluoroscopy and trace subtract fluoroscopy.

5.2 Digital Acquisition

The Allura Xper FD20 system can be customized with a virtually unlimited number of acquisition programs for digital angiography and digital subtraction angiography. Image resolution is up to 2048 x 2048 pixels for vascular imaging and 1024 x 1024 pixels for cardiovascular imaging.

Acquisition frame rates

For maximum frame rates (images/second) in standard configuration(s), see table below.

Ambient Experience, a purpose-fully designed environment that makes patients and staff feel more comfortable.

	1024 x 1024 matrix	2048 x 2048 matrix
Standard configuration	0,5 to 6 images/sec.	0,5 to 6 images/sec.
Frame rate extension (optional)	15 and 30 images/sec.	0,5 to 6 images/sec.

60 images/sec. acquisistion at a 512 x 512 matrix is optionally available

Storage capacity

The table below lists the maximum number of images that can be stored in the standard or storage extension configuration.

	1024 x 1024 matrix	2048 x 2048 matrix
Standard configuration	50,000 images	12,500 images
Storage extension	100,000 images	25,000 images

5.3 Monitor Viewing

The system is delivered standard with two black and white 18-inch LCD monitors in the examination room. A 19-inch LCD color monitor and an 18-inch black and white LCD monitor are standard in the control room.

Monochrome LCD monitor

Features	Specifications
Size of monochrome TFT-LCD display	18-inch monochrome TFT-LCD display
Format	Native format of 1280 x 1024 SXGA
Grey-scale resolution	10 bit with grey-scale correction
Wide viewing angle	Yes (approximately 160°)
High brightness	Yes (max 600 Cd/m², default 500 Cd/m²), with ambient light dependent brightness control
Protection screen	Yes, in the examination room

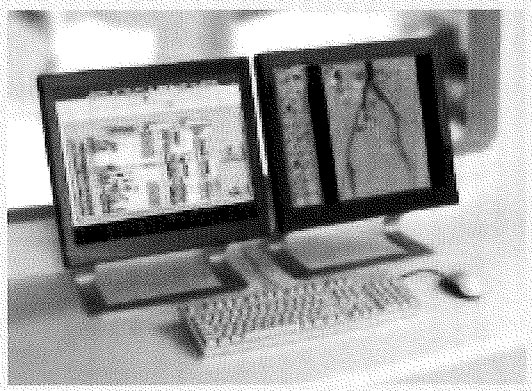
Color LCD monitor

Features	Specifications
Size of color TFT-LCD display:	19-inch Color TFT-LCD display
Format	Native format 1280 x 1024 SXGA
Wide viewing angle	Yes (approximately 160°)
High brightness	Controlled brightness (200 Cd/m²) with ambient light dependent brightness control
Protection screen	Yes, in the examination room

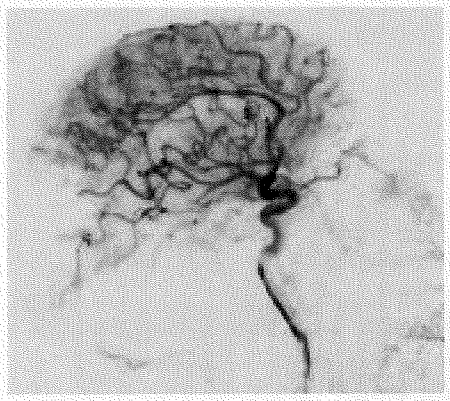
Optional

Second Reference Monitor

A Second Reference Monitor (monochrome) in the examination room can display both reference images and reference runs. The User Interface on this reference monitor is accessed via the Xper ViewPad. This monitor is also being used for the Dual Fluoroscopy option.



Optional



2k display

The 2k display is an additional high quality display for viewing clinical images in full resolution as acquired. The 2k display can be configured in the control or exam room. It displays high resolution clinical information for both acquisition and fluoroscopy images. In the control room the 2k display is configured as a slave of the review monitor. In the exam room the display is configured as a slave of the exam monitor.

Features	Specifications
Size of color TFT-LCD display	21-inch monochrome TFT-LCD display
Format	Native format 2560 x 2048 matrix
Wide viewing angle	170°
High brightness	Max. 700 cd/m^2
Contrast ratio	600:1
Protection screen	Yes

MultiVision

The MultiVision video switch is the integrated video switch for high quality, progressive display video sources on the color LCD monitor. It can switch either black and white or color signals, and supports up to four inputs to one output. MultiVision enables an extra color monitor in the ceiling suspension in the examination room to be shared between the system and other sources, such as a DICOM viewer, StentBoost, Allura 3D-RA software, etc. The switch is controlled via the Xper Module.

Physio Viewing

Physio Viewing provides acquisition, storage and display of physiological signals on the Allura Xper FD20 system. Four physiological data signals can be acquired and stored. One signal can be displayed when reviewing images.

MultiSwitch

Xper MultiSwitch enables the Xper workspot in the control room to be shared with other applications that are loaded on separate PC modalities. The MultiSwitch option lets you switch the color LCD data monitor, keyboard and mouse that are normally connected to the Allura Xper system. This saves significant space in the control room by enabling only one monitor and keyboard to be used for multiple optional software applications, like Allura 3D-RA, Stentboost, Allura 3D-CA, XperCT, ViewForum and Xcelera software.

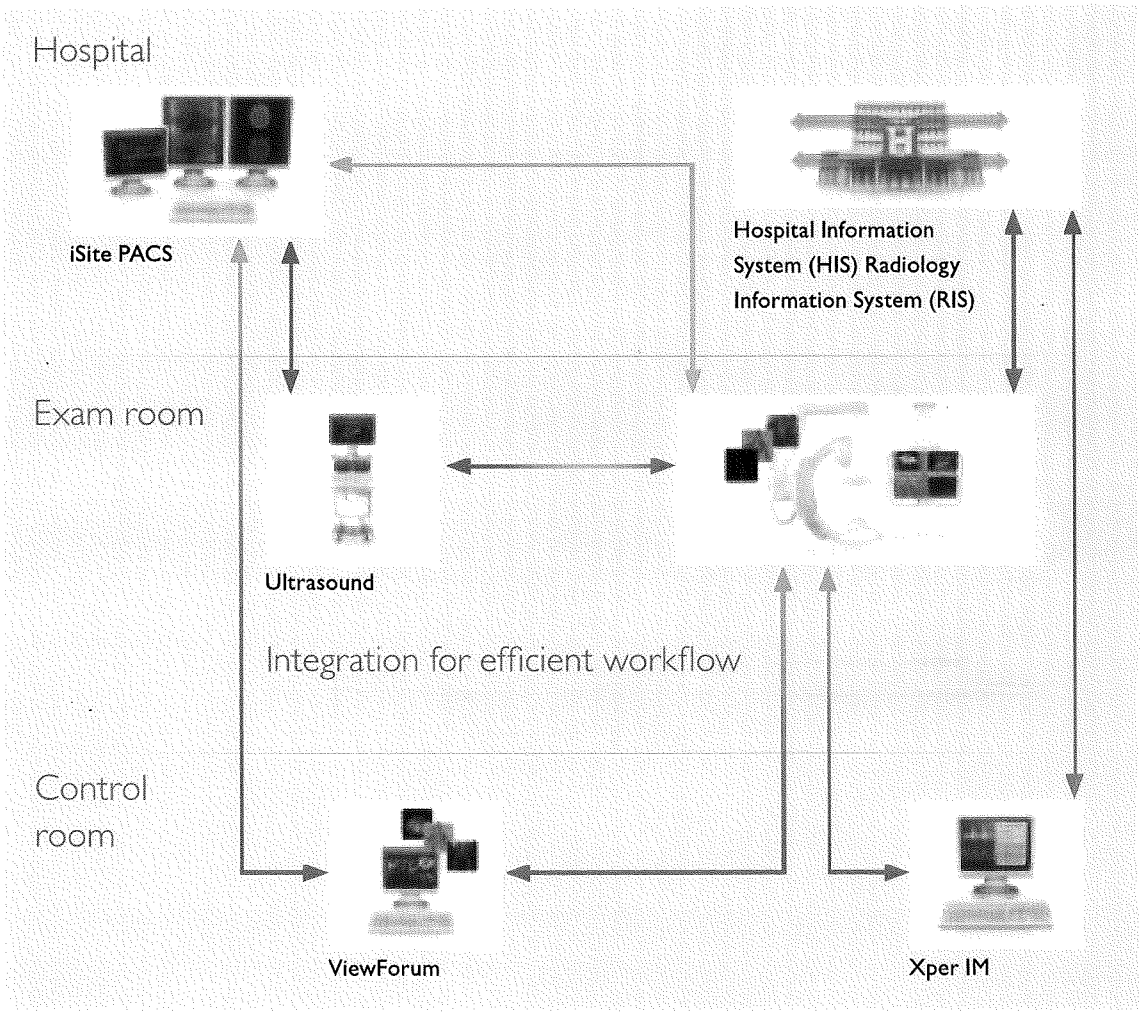
The Xper data monitor can be switched to Radiology/Cardiology Information Systems via the web-based browser (HTML) or X-window (Exceed). It makes full use of the RIS/CIS facilities and existing support for automatic handling of logistic tasks (e.g. automatic tracking, purchasing of supplies and billing) that are available.

6 Integration solutions

The Xper DICOM Image Interface enables clinical images to be exported to a destination, such as ViewForum, Xcelera or any third party PACS. The system exports clinical studies in DICOM XA Multi Frame or DICOM Secondary Capture formats.

The Xper DICOM Image Interface speeds up image transfer through its fast Ethernet link, making images available on-line within seconds. The archiving process can be configured via Xper settings:

- The image archiving is done in the background during or after the procedure
- The images can be archived automatically in the background with the Continuous Autopush option
- The export format is configurable in 512^2, 1024^2, or $2k^2$ (unprocessed) matrix
- The Xper DICOM Image Interface can distribute the examination images to multiple destinations for archiving and reviewing purposes
- The Xper DICOM Image Interface provides DICOM Store and DICOM Store Commitment Services
- The Query/Retrieve function allows older DICOM studies to be uploaded in the system



Example

Optional

Continuous autopush

This option provides an additional processor board that is dedicated to archiving. This minimizes interruptions that are caused by other functions that require the image processor, such as patient review. Using the continuous autopush option speeds up archiving and availability of clinical images for review at other PACS destinations.

DICOM Print

DICOM Print provides an interface to any DICOM Printer. It provides Print Preview, Print Compose, Print Manual Overrides, Print Job submission, and Print Job management via automated printing protocols.

Intercom

The remote Intercom is used for communication between the examination and control room.

Lab reporting

This option allows the clinical user to generate and print a report in modality stand-alone situations. The user can incorporate free text, clinical images and X-ray dose information. The report is printed or sent by e-mail. Part of the report is generated automatically from administrative data (e.g. patient/exam data, hospital name) and acquired data (e.g. run log, X-ray dose information and event log).

RIS/CIS DICOM Interface

This interface option enables two-way communication between the FD20 and a local Information System (CIS or RIS) or hemodynamic system. The interface uses the DICOM Worklist Management (DICOM WLM) and Modality Performed Procedure Step (DICOM MPPS) standards. If an information system is present, it is possible to receive patient and examination (request) information and to report examination results.

This option provides the following benefits:

- Eliminates the need to retype patient information on the system
- Can help prevent errors in typing patient name or registration number, which allows for consistency of information throughout the department to prevent problems in archive clusters
- Provides information to and from the information system about the acquired images and radiation dose. Upon request from the system, the complete worklist with all relevant patient and examination data is returned to the system.

Standard line rate video output

The standard line rate video output option is 625 (525) lines for a 50 (60) Hz video output unit. This option is required to connect a medical DVD/VCR or an additional TV monitor. This option enables you to store fluoro and acquisition data on a DVD/CD as X-ray is being generated during fluoroscopy and exposure.

Cath lab experience

The Philips cath lab experience is based on a simple yet powerful concept: The procedures you perform are increasingly complex, so using advanced technologies that assist you in diagnosing and treating your patients should not be. Our offerings for cardiovascular interventions are designed to simplify cath lab workflow, which can empower you to focus on your patients and may help you to deliver faster, accurate diagnosis and treatment.

With advanced image acquisition and visualization tools, multimodality access, hemodynamic monitoring and integrated reporting, the Philips cath lab experience creates a fluid workflow that works for you and your patients.

ViewForum

The ViewForum workstation provides a parallel working environment in the angio suite and enables integrated multimodality viewing for interventional procedures, providing guidance to enhance patient care. ViewForum supports an intergrated environment by providing access to previously acquired diagnostic data from CT, MR and US, and access and control of multi-modality information in the exam room. Parallel working allows for post-processing of a patient in the control room, while treating the same or another patient in the exam room in order to increase patient throughput and procedure efficiency.

7 Additional software options

7.1 Subtracted Bolus Chase

Routine examinations can be performed quickly and confidently with Bolus Chase. A hand-held speed controller is used to constantly match table speed to the speed of the contrast run-off, which is displayed in real-time on the monitor screen. After the contrast run, the recorded speed profile can be used to acquire mask images with the most accurate subtraction results. The result is efficient, accurate run-off studies that may eliminate the need for repeat exposures. Bolus Chase gives fast results for increased patient throughput and improved patient management. Automated exposure control and excellent speed
control assure high quality images and excellent subtracted studies.

7.2 2D Quantification packages

Quantitative Vascular Analysis (QVA)

QVA is an analytical software package for quantitative analysis. It includes the following functions:

- Calibration routines to enter the scale into the programs (based on the size of the catheter visible in the image).
- Automated Vessel Analysis. This program uses contour detection to calculate vessel dimensions and subsequently analyzes stenoses.
- Vessel diameter and stenotic index. This program measures vessel size and calculates the degree of stenosis.

Quantitative Coronary Analysis (QCA)

This software package provides quantification of stenosis measurements in the coronary arteries. It includes the following functions:

- Diameter measurement along the selected segment
- Cross sectional area
- Percentage of stenosis
- Pressure gradient values
- Stenotic flow reserve
- Calibration routines

Left Ventricular (LVA)

The Left Ventricular package quantifies the status of the left ventricle using various relevant data, like: Ejection Fraction, Wall motion (Centerline, Regional, Slager), volumes, Indices based on multiple parameters, using multiple methods (Simpson and Area Length). It includes the following functions:

- Various Left Ventricular volumes
- Ejection Fraction
- Cardiac Output
- Centerline Wall Motion
- Slager Wall Motion
- Regional Wall Motion
- Calibration routines

Right Ventricular (RVA)

This software package is used to assess ejection fraction and right ventricular volumes. It enables you to perform right ventricular analysis from angiograms. The calculations can be executed from single plane or biplane projections. The package is intended especially for pediatric cardio applications and focuses on easy and efficient wall contour detection. It includes the following functions:

- Calibration routines
- Various Right Ventricular volumes
- Ejection Fraction
- Cardiac output
- Centerline Wall Motion
- Slager Wall Motion
- Regional Wall Motion
- Biplane Ejection Fraction automatic
- Biplane Ejection Fraction manual

Full Autocal

The Full Autocal option can be used in conjunction with the quantitative analysis packages. When the object to be analyzed (e.g., Left Ventricle, Vessel Segment) is placed in the iso-center, full autocal avoids the need to:

- Acquire an additional image series containing a sphere or grid for calibration purposes, or
- Calibrate manually on a calibration object (e.g., catheter) displayed in the image or image series to be analyzed

CO_2 view trace

This software package enables tracing (stacking) of images acquired with CO_2 injections. This package can be used during post-processing, next to "View Trace" images acquired with iodine injections.

Measurement (MEAS)

Measurement is an analytical software package for different kinds of measurement (not for stenotic measurements).
It includes the following functions:

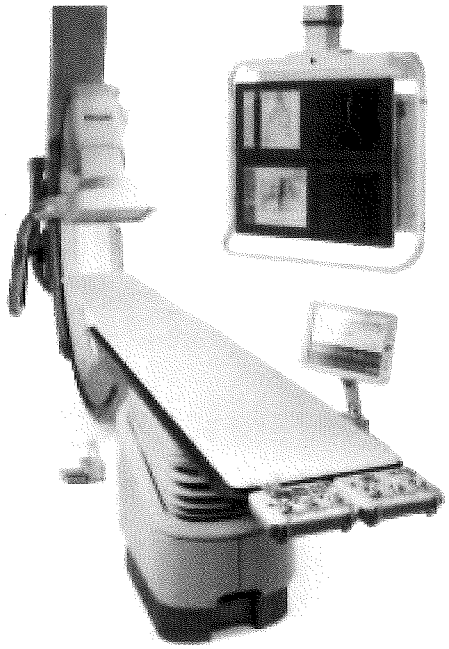
- Angle measurements
- Length measurement
- Ratio measurements
- Density measurements

7.3 Rotational Scan

Rotation image data can be used for advanced post processing's, like 3D reconstructions. Rotational Angiography acquires a range of projections to create real-time, 3D impressions of complex 'vascular' and coronary arteries. A contrast run can be followed up with a mask run to allow image/run subtraction. Rotational Angiography can save considerable time and contrast, while providing the image detail required for diagnostic and therapeutic decisions. A rotational scan can be done in both the head and side positions. The high speed acquisition decreases the amount of contrast medium, while the wide rotation range provides a complete evaluation of anatomy. The stand's excellent stability enables excellent positioning and high reproducibility, resulting in the high quality images that are required for 3D-RA.

7.4 Xper Swing

During a dual axis rotation scan, the C-arm operates on two axes simultaneously, enabling it to swing in a three-dimensional arc around the patient, providing a flexibility of movement that allows it to capture the required coronary images in fewer 'runs'. The system rotates with curved trajectories around the patient, thereby allowing imaging in all desired anatomical views in a single run. The trajectories are pre-programmed and are optimized to maximize the clinical image content, while staying within safe boundaries in order to avoid any collisions. Dedicated trajectories are available for the left and the right coronary arteries.



Features Rotational Angio		Specifications
C-arm in head position	Maximum rotation speed	55°/sec.
	Maximum rotation angle	240°
C-arm in side position	Maximum rotation speed	30°/sec.
	Maximum rotation angle	180°
Frame speeds		15, 30 and 60 fps.

Users can designate speed, as well as a start and end position, through Xper settings. The clinical images from the rotational scan can be sent automatically to a 3D-RA interventional tool for a reconstruction of static vasculature.

7.5 Allura 3D-RA

Allura 3D-RA is designed to provide three dimensional (3D) reconstructions of any radioopaque structure, like during neuro and radio interventions, biopsies, radiotherapy, vascular therapy. Allura 3D-RA assists physicians in decision making for treatment strategy in endovascular procedures, neuro or vascular surgery or even radiotherapy. Allura 3D-RA reduces the number of DSA acquisitions and fluoroscopy time needed to perform an examination. This means less X-ray dose for both patient and medical staff and a reduced quantity of contrast medium, leading to reduced procedure costs. Image acquisition is performed with the Rotational Angiography feature of the Allura Xper FD20 system with the flexibility to position the C-arm in either head or side position.

7.6 Dynamic 3D Roadmap

Dynamic 3D Roadmap adds unique functionality to the integrated 3D product by providing a dynamic 3D roadmap to support interventional procedures. The 3D Roadmap option matches the real-time 2D fluoro images with the 3D reconstruction of the vessel tree. Dynamic 3D Roadmap has significant clinical advantages for applications such as real-time catheter navigation and monitoring coil delivery. The dynamic 3D image decreases the number of DSA acquisitions and fluoroscopy time for an examination. The user can also recall roadmap positions to reduce the need to re-mask. This reduces X-ray dose and contrast medium, which can reduce procedure costs.

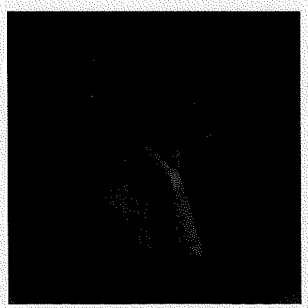
7.7 XperCT

XperCT provides CT-like imaging capabilities in the interventional environment – without transporting the patient. This opens up a new area of clinical applications that aid interventions. Applications include the evaluation of soft tissue information before, during, and immediately after the intervention, as well as the detection of bleeding areas and calcifications. In addition, XperCT provides high quality bone images that are useful for spinal procedures. The imaging process is fully automated in the Xper system. The XperCT volume is displayed automatically. No user interaction required. The XperCT volume can be viewed in the control room and in the examination room.

Slice view is performed to visualize the soft tissue and to scroll through the volume. Slice thickness and ww/wl can be varied. In addition the XperCT volume can be matched with Allura 3D-RA image. This view combines soft tissue information with high-resolution vessel information. The optimal view can be chosen with the orientation of the 3D volume: the C-arc follows automatically.

7.8 XperGuide

XperGuide supports percutaneous needle interventions with live 3D guidance. XperGuide is a navigational tool that supports the physician during these interventions. The physician can use XperGuide in a wide range of clinical procedures, ranging from biopsies and drainages to RF ablations.



Allura 3D-RA: reconstruction to assist decision making for treatment strategy

XperCT: CT-like imaging capabilities in the interventional environment

XperGuide: navigational tool to support percutaneous needle interventions

XperGuide is based on an XperCT dataset.
With XperGuide, virtual needle paths are created on an XperCT dataset. This volumetric dataset can be viewed in any slice direction. You can use a wide range of stand projections to define the needle path. XperGuide automatically calculates the optimal stand projections for viewing needle insertion and monitoring progress. The virtual needle paths can be viewed on the XperCT slices, to verify if the path is feasible.

XperGuide is fully controlled from tableside. Pressing the foot peddle to acquire fluoro images, will automatically match the Live 2D image with the XperCT volume and it is automatically displayed on the Monitor Ceiling Suspension. The gantry can be positioned in the predefined gantry positions or controlled manually. The XperCT or XperGuide images will follow the stand projections.

7.9 Allura 3D-CA

Allura 3D-CA creates a 3D model of 2D coronary artery images. It can help with diagnosis by providing:

- Optimal insight into the structure of the coronary tree that leads to improved assessment of lesions and bifurcations
- Insight into the exceptional working angles

Enhance interventional preparation to assist the user to:

- Select the right stent length
- Select view of lesion or bifurcation with "TrueView" map

Enhance interventional execution to assist you/ the physician to:

- Work with optimal viewing angles of lesions and/or bifurcations
- Place the right stent with the right length in the right place

Via the real-time link and seamless integration with the Allura Xper system.

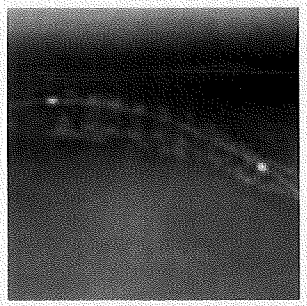
7.10 StentBoost

StentBoost is a simple, quick and cost-effective tool to enhance stent visualization in the coronary arteries. It shows the stent in relation to the lumen of the vessel by contrast overlay – as you are working. This advanced imaging can support you by helping you place the stent accurately the first time, can possibly shorten procedures and potentially eliminate additional ones. With Stentboost you don't need additional acquisitions as the StentBoost acquisition is based on the acquisition which is normally always made to check Stent deployment in the normal way.

Instant stent visualization provides extra procedural support

- Improve enhanced and assessment of stent deployment by seeing stent and vessel in the same visualization as you are working
- Save time by instantly checking and correcting the pre-deployment position of stents during the procedure
- Save money by shortening procedures and potentially eliminating additional ones

Allura 3D-CA: Create a 3D model of 2D coronary arteries to enhance assessment of lesions and bifurcations



StentBoost: enhance stent visualization in relation to the lumen of the vessel

CT TrueView: minimize fore-shortening when assessing lesions or bifurcations based on a CT data set

7.11 CT TrueView

CT TrueView connects the Cath lab to the CT room. It provides all the benefits of Allura 3D-CA based on a CT diagnostic image. It offers:

- Optimal C-arc positioning on Philips CT data sets to minimize foreshortening when assessing lesions or bifurcations
- Automatic segmentation and reconstruction by using 3D-CA and this is done on the Extended Brilliance workstation. Reconstruction can be sent to the cath lab and can be operated there from tableside as from the control room.
- Easy to use user interface, on the EBW and interventional hardware.

7.12 EP navigator

EP navigator provides a fluoroscopy overlay of a 3D image of the heart, based on either a pre-interventional CT image or an 3D atriography acquisition. EP navigator shows the catheter and the 3D anatomy in real-time in one image, allowing electrophysiologists to instantly confirm the position of any catheter or lead with respect to detailed 3D cardiac anatomy in the EP intervention lab. During the procedure, EP navigator helps the electrophysiologist get to ablation points that are difficult to reach. It provides:

- Fully automatic segmentation of the entire heart
- Single mouse click visualization of the Left Atrium
- Synchronized motion with Allura Xper
- An inside look of the three dimensional model for a better view of the posterior side of the atrial wall

3D atriography

3D atriography allows the user to create a 3D image of the left atrium on the X-ray system in the EP lab by doing a rotational angiography with contrast injection. An up-to-date view of the cardiac anatomy is vital for guiding EP interventions. Obtaining good CT scans is often difficult, time consuming and expensive, and it requires a high X-ray dose. With 3D atriography, you can create 3D images of the left atrium in your own lab and use this information to guide your catheter.

7.13 EP cockpit

EP cockpit creates a comfortable EP lab working environment, integrates EP information across the EP care cycle and enables new complex therapies.

The EP cockpit brings the following innovations to your EP lab

- Organize EP equipment on one moveable ceiling mounted rack to reduce EP clutter
- Mix and match images from Philips and 3rd party equipment on any Philips' exam or control room monitor
- Store any image on any screen as a DICOM secondary capture image
- Operate equipment (incl 3rd party systems) centrally from one workspot in control room
- Store and retrieve all information used during EP procedure in a central place
- Visualize 3D cardiac anatomy and the position of all catheters in real time in one image
- Reduce radiation exposure for staff and patients by up to 80% with special EP X-Ray dose settings

7.14 ECG triggering

ECG triggering offers the possibility to acquire one fluoroscopic image per heart cycle, each at the same phase (e.g. end-diastolic or end-systolic).
Acquiring only one image per cardiac phase has two major advantages:

- Acquiring only one frame per heartbeat drastically reduces patient and physician dose. Depending on the patient's heart rate and the chosen fluoroscopy setting, X-ray dose can be reduced by a factor of 5 to 30.
- By acquiring one image at the same cardiac phase each time, cardiac motion is eliminated from the images. This allows the physician to focus on relevant items only (e.g. moving catheters) without the movement caused by the cardiac contraction being visible. For each heartbeat the system generates a trigger pulse and only one image is acquired. The physician can choose the cardiac phase such as systolic or diastolic. Please be aware that ECG triggering needs the Physio Viewing feature.

8 Customer Services

Philips Customer Services support you with a full life cycle solution –from Planning through Start-up, Peak Usage and Renewal – by helping you simplify your operations in ways that let you spend more time focusing on what's most important: the needs of your patients. Philips Customer Services is service that works for you in every phase of system ownership.

8.1 Planning: Installation and Room Design Services

Let our experienced project managers coordinate the installation for you - in every important detail - reducing the downtime of your department to a minimum. Also, we can assist you with the room design, advising you on your personalized cathlab environment, for exceptional ergonomics, workflow and patient comfort.

8.2 Start-up: Learning opportunities

Get up to speed quickly through one of the most extensive and flexible application educational programs in the industry, for example at one of our Global Philips Education Centers, at your facility or online.

8.3 Peak Usage: Philips Maintenance Services

The FD20 is equipped with advanced remote service capabilities. Through a highly secure broadband connection, our experts provide you with continuous support to ensure maximum system uptime and to deliver innovative new services.

How do you benefit from Philips Remote Services? In several ways:

- Your equipment remains more reliable through proactive monitoring, remote diagnoses and fast repair.
- You gain workflow efficiencies with increased operational usage time and enhanced application support.
- Your patients experience uninterrupted care and service satisfaction.
- You are assured your equipment is operating at peak performance.

Philips Remote Services provide the advanced diagnostics that help minimize downtime. And with "over-the shoulder" assistance, you allow us to see what is on your screen. You can even allow our experts to perform certain tasks for you from a distance, making our remote help as efficient as possible.

Best of all, our Remote Services solution is offered free of charge to customers with a Philips Platinum, Gold or Silver service agreement and during warranty.

8.4 Renewal: The right time to trade in or upgrade

Philips sales and service professionals can guide you to a replacement of your system at the right time to capture an excellent trade-in value, and more importantly, strengthen your clinical leadership in your local market. Major clinical upgrades that can bring affordable access to new innovations, are available for some systems.

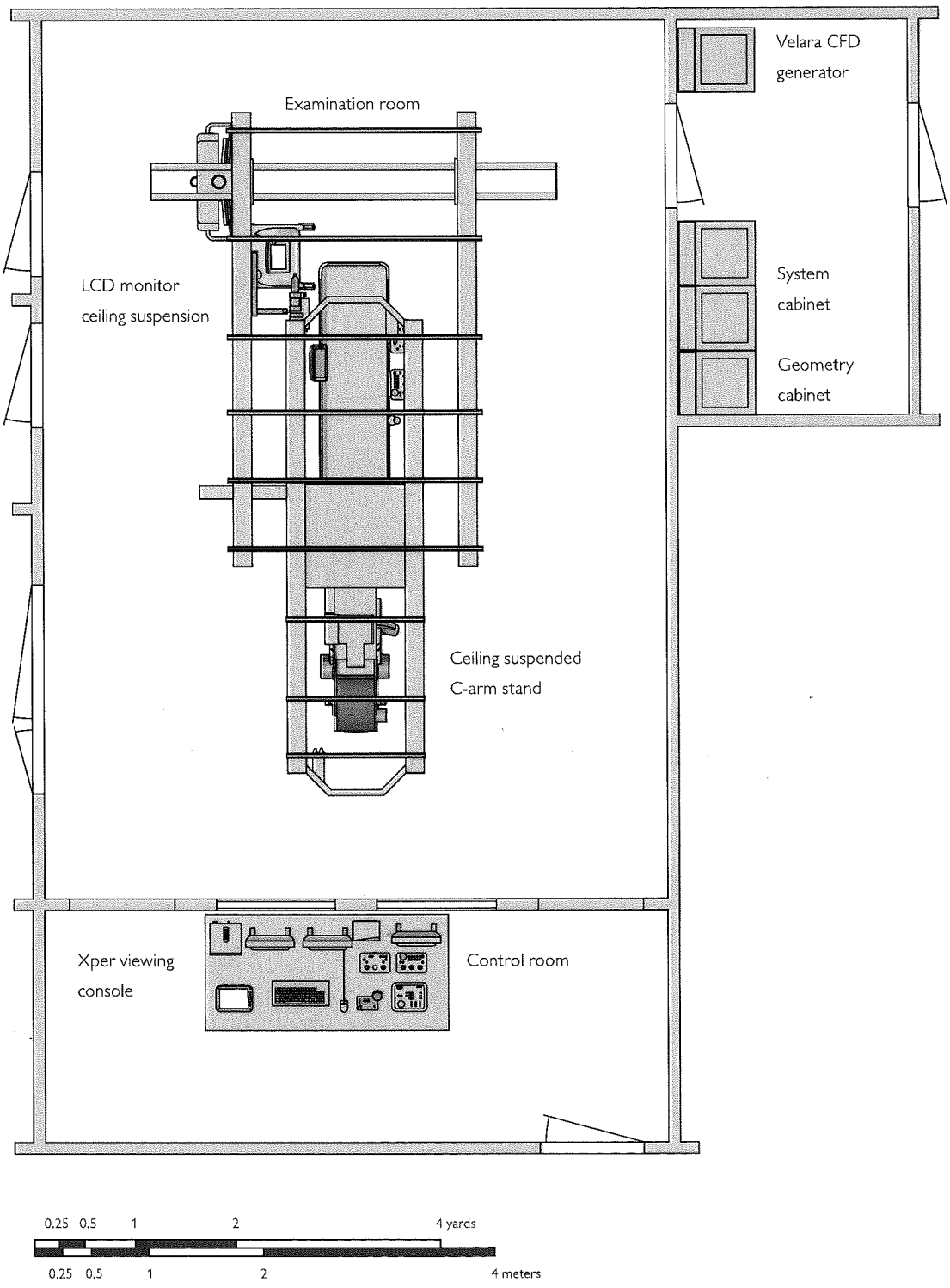
8.5 Services: A full lifecycle solution

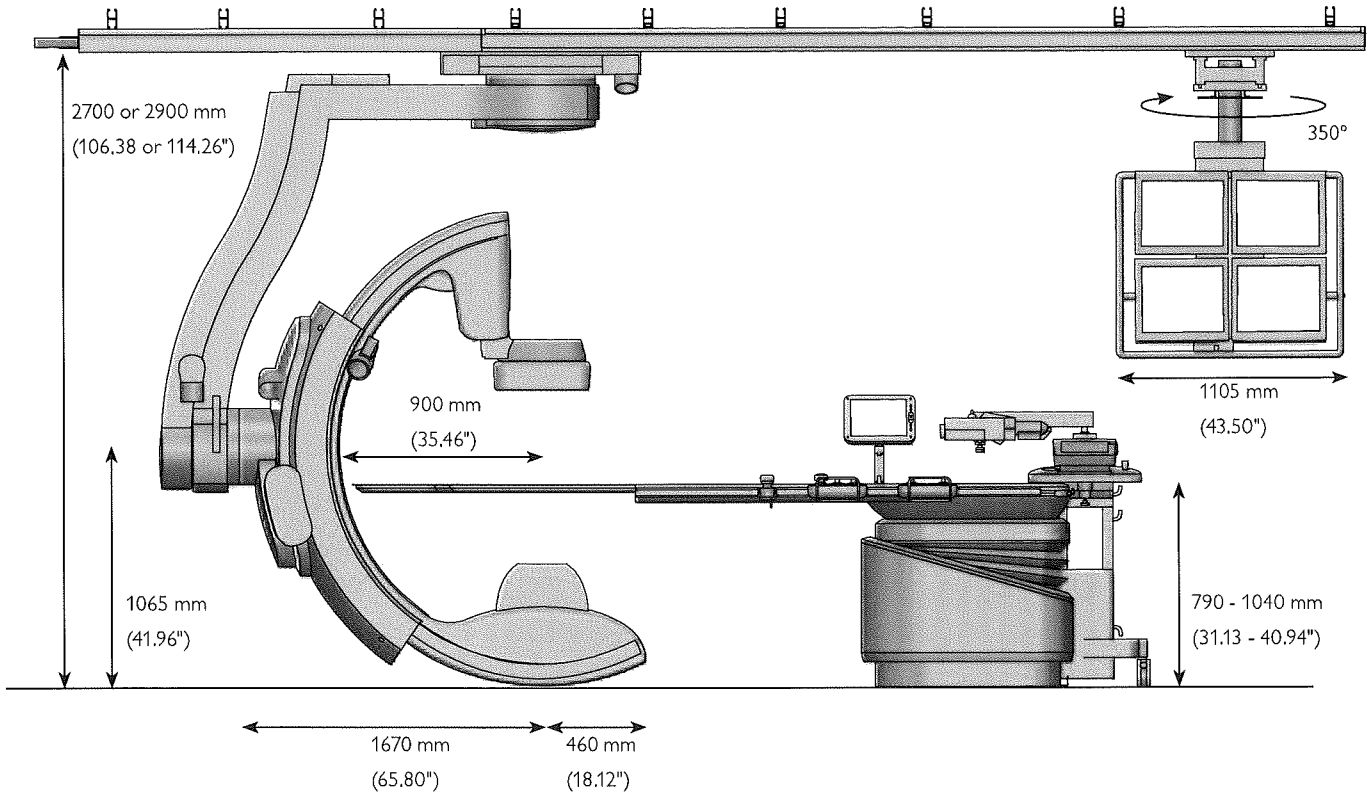
The success of your organization depends on people. Philips Services are designed with that in mind – creating healing environments, developing your staff, improving your organization's performance, and increasing patient satisfaction.

Depend on us. The resources, training, and support we offer, enable you to focus on what's most important – your patients.

Philips provides a full lifecycle solution designed around your patients, your people,
and your organization. We help you succeed in every phase of system ownership, from planning to start-up, through peak usage and renewal.

9 Dimensions

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1105 mm
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1065 mm
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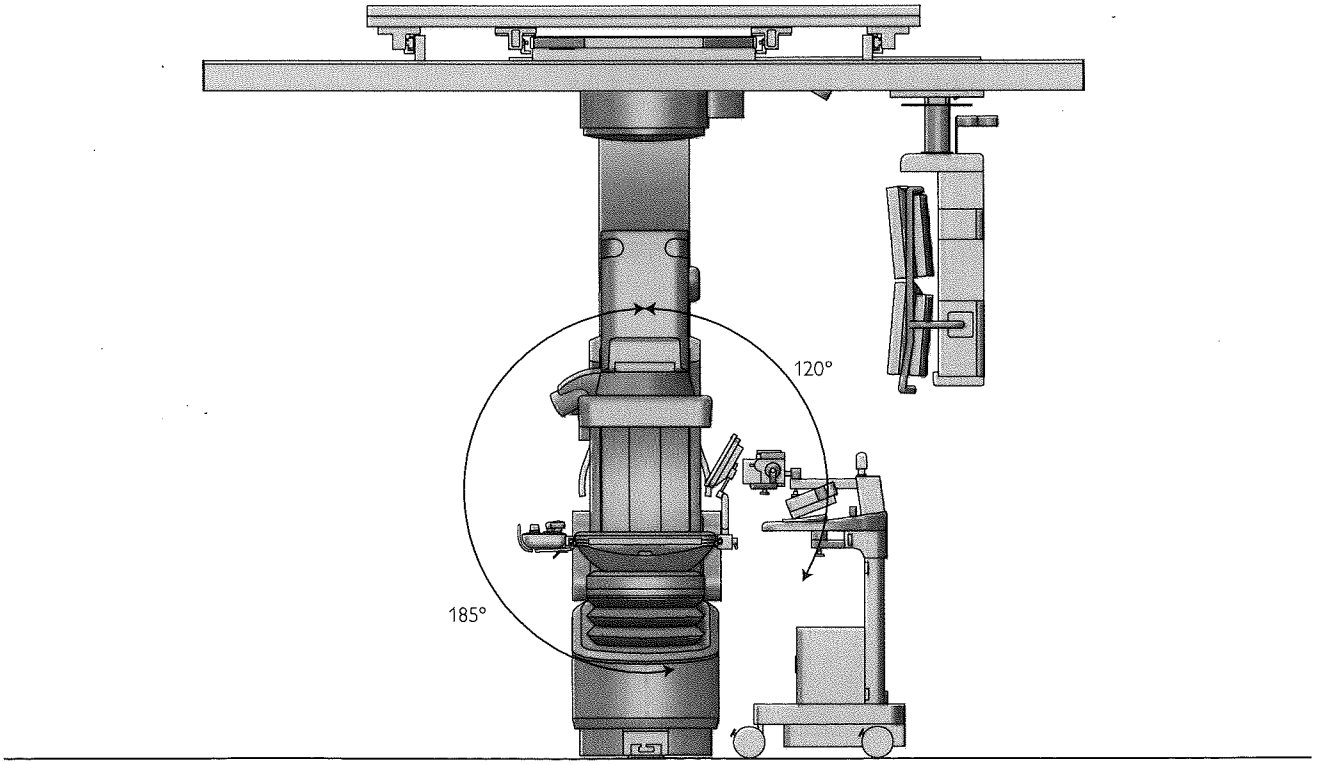
790 - 1040 mm
(31.13 - 40.94")
1670 mm
(65.80")
460 mm
(18.12")


120°
185°

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PHILIPS

Quotation #: 1-19DUV43	**Rev:** 8	**Effective From:** 22-Sep-15	**To:** 30-Dec-15

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Quote Solution Summary

Line #	Product	Qty	Price
	101824 FP Xper FD20	1	$712,481.70
		Equipment Total:	$712,481.70

Solution Summary Detail

Product	Qty	Each	Monthly	Price
101824 FP Xper FD20	1	$712,481.70		$712,481.70

Buying Group: **MEDASSETS SUPPLY CHAIN SYSTEMS INC.** **Contract #:** **MS03221**

Addt'l Terms: **Product Terms and Conditions of Sale (T&C) not printed with this solution. Refer to Contract # noted above for applicable T&C details. If Service Agreement is quoted its T&C of Sale are printed**

Each Quotation solution will reference a specific Buying Group/Contract Number representing an agreement containing discounts, fees and any specific terms and conditions which will apply to that single quoted solution. If no Buying Group/Contract Number is shown, Philips' Terms and Conditions of Sale will apply to the quoted solution.

Each equipment system listed on purchase order/orders represents a separate and distinct financial transaction. We understand and agree that each transaction is to be individually billed and paid.

Payment Terms: 0% Down, 80% Upon Delivery, 20% Due When the Product is Available for First Patient Use, Net due 30 days from date of invoice

Quote Summary

101824 FP Xper FD20

Qty	Product
1	NNAJ581 DS FlexVision XL 8 Input Package
1	NNAM016 FlashPoint FD20 Ceiling
1	NDSA666 Non swivel, mounted ON floor
1	NDSA628 FlexVision XL,XperHD,Snapshot
1	NDSA661 21" monitor size
1	NDSA634 United States of America
1	NDSA306 RIS / CIS DICOM interface
1	NDSA574 Cardiac
1	NDSA575 Vascular
1	**NDSA462 Stentboost sw Rel 3.0**
1	NDSA382 Ceiling Height < 290cm, >270cm
1	NDSA654 Aut Pos Contr Xper sys & table
1	NDSA329 FD Rotational Angio
1	**NDSA451 Xper Swing**
1	NDSA330 Subtracted Bolus Chase
1	**NDSA341 FD Smartmask**
1	**NDSA201 Full AutoCall (Xper)**
1	NDSA395 Coronary Quant.Sw pkg(Xper)
1	NDSA396 Vascular Quant.Sw pkg(Xper)
1	NDSA174 Catheterisation arm support
1	NDSA175 Pulse catheterisation arm support
1	NDSA177 Peripheral X-ray filter
1	NDSA403 Pivot for table base.
1	**FDS0289 Long mattress cardio**
2	FDS0034 Mon. cable carrier cliprail
1	NDSA652 Interventional Tools Hardware
1	NDSA238 Real Time digital image link
1	**NDSA240 StentBoost on Xper module for Allura Xper**
1	NDSA441 Local solution for rackm. inj.
1	NDSA213 First Xper module is located in Examination Room
1	NDSA218 Second Xper module is located in Control room
1	980306640009 Black Anti-Fatigue Floor Mat w/ Blue Logo
1	980406041009 Rad Shield w/ Arm (Contoured) 61X76

Quote Summary

101824 FP Xper FD20

Qty	Product
1	980406190009 PIVOTING TABLE-MOUNTED RADIATION SHIELD
1	989801220012 Cable Spooler
1	989801220037 M LED 3MC Light
1	989801220158 Mark 7 Arterion, Table Mount
2	**989801220216 iFR® Modality**
2	989801220273 Ceiling Track w/Column & Handle Ext
1	989801220355 25 kVA Fluoro only UPS - UPC DS
1	SP005 Contract Labor
1	SP019 Trade in Allowance

Options

Qty	Product
1	**NDSA103 Standard line rate video input/output**
1	NDSA391 DICOM Print compose
1	NDSA687 Wireless footswitch Monoplane
5	**FCV0563 Personal Dose Meter (1 piece)**
2	**FCV0566 Personal Dose Meter rack**
1	**FCV0567 Base Station Package**
1	989801220070 Carrot C-Com Intercom
1	989801241111 Horizon GS Paper Only

101824 FP Xper FD20

System Type: Remarketing
Freight Terms: FOB Destination
Warranty Terms: Part numbers beginning with two (2) asterisks (**) are covered by a system 12 Months Warranty unless otherwise indicated. All other parts are third (3rd) party items.
Special Notations: Contingencies must be removed 120 days before scheduled shipment to assure delivery on specified date. Any rigging costs are the responsibility of the Purchaser.
Additional Terms: Product Terms and Conditions of Sale (T&C) not printed with this solution. Refer to Contract # noted above for applicable T&C details. If Service Agreement is quoted its T&C of Sale are printed

Line #	Part #	Description	Qty	Each	Price
1	**NNAJ581	**DS FlexVision XL 8 Input Package**	1	$8,927.10	$8,927.10

The FlexVision XL8 input package provides eight isolated wall connection boxes and eight legacy converters.

Isolated Wall Connection Box
This Isolated Wall connection Box facilitates connection of the video source via standard DVI cable/connector and lossless
transfer of the video signal over the approximate 30 m cable distance. It can be mounted in the exam room or in the control room, depending on the location of the video source.

The quantity of the VWCB's has to be calculated as follows:

For each video signal to FlexVision XL on Vascular System: 8 VWCB
Note:
No VWCB is required in case a video signal is connected directly to a dedicated LCD from the following sources:
1) Xper Live/ref Slaving
2) Interventional HW (XtraVision), ViewForum, Xcelera (only if workstations are powered by Allura Xper)
3)Xper IM

Legacy Video Convertor
The Legacy Video Convertor enables conversion from VGA towards DVI for supported input resolutions as listed in the table below.

Signal type	Native resolution	Image Aspect Ratio
VGA	640x480	4:3
SVGA	800x600	4:3
XGA	1024x768	4:3
SXGA	1280x1024	5:4
SXGA+	1400x1050	4:3
UXGA	1600x1200	4:3
WXGA	1280x800	16:10 (8:5)
WSXGA	1440x900	16:10 (8:5)
WSXGA+	1680x1050	16:10 (8:5)
WUXGA	1920x1200	16:10 (8:5)
2K	2048x1080	19:10
TV1080I/P	1920x1080	16:9
TV 480I	720x480	4:3
TV 480P	704x480	4:3

2	**NNAM016	**FlashPoint FD20 Ceiling**	1	$463,569.60	$463,569.60

LIMITED AVAILABILITY BASED UPON RECEIPT OF CONTINGENT FREE ORDER AT THE FACTORY. CURRENT AVAILABILITY OF THIS OFFERING IS 120 DAYS ARO, SUBJECT TO AVAILABILITY AND PRIOR SALE.

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FlashPoint FD20 Ceiling Release 8.1

Allura Xper FlashPoint systems are assembled from the ground up by Philips Engineers. The system geometry – composed of the stand, ceiling rails, and monitor ceiling suspension – is fully refurbished to look and perform like new. All major components – x-ray tubes, tables, detectors, monitors, user interfaces, and control cabinets – are brand new.

Allura Xper FD20 monoplane system is a state of art X-ray imaging system that can be customized to support a wide range of applications including peripheral, abdominal, cerebral, thoracic, cardiac and non-vascular interventional and diagnostic procedures.

The Allura Xper FD20 system uses an integrated single-host concept. The system is comprised of five functional building blocks: Geometry, X-ray Generation, User Interface, Image Detection, and Viewing. Each functional building block is explained in further detail.

GEOMETRY

The Allura Xper FD20 Stand

The Allura stand consists of a ceiling-mounted C-arm. The stand has the following capability:

- The L-arm can be rotated and can be moved in longitudinal direction allowing a three-sided patient approach and total body coverage.
- L-arm rotation around the patient table: +90, 0, -90 degrees.
- L-arm longitudinal movement: 300 cm
- This movement features auto-stops at the parking position, cardio/neuro position and lower peripheral position.

The Allura stand allows a very wide range of projections, including PA and AP imaging.

- In the head position (0 degrees position, L-arm parallel to patient table):
  - C-arm rotation range (degrees): 120 LAO to 185 RAO
  - C-arm angulation range (degrees): 90 CA to 90 CR
  - (Full angulation capability determined by patient position)
- In the side position (+90 / -90 degrees position, L-arm perpendicular to patient table):
  - C-arm rotation range (degrees): 90 LAO to 90 RAO
  - C-arm angulation range (degrees): 185 CA to 120 CR or 120 CA to 185 CR
  - (Full angulation capability determined by patient position)
- The stand provides fully motorized fast movements with variable and configurable maximum speed.
  - Variable C-arm rotation speed, up to 25 degrees per second
  - Variable C-arm angulation speed, up to 18 degrees per second
- L-arm rotation and longitudinal movement: motorized and manual
- C-arm depth is 90 cm
- The FD20 Dynamic Flat Detector features Xper Access which allows the flat detector to be positioned in either portrait or landscape imaging modes in 3 seconds.

- The variable source image distance between focus and Dynamic Flat Detector input screen is motorized from 86.5 to 123 cm.
- The stand features BodyGuard a capacitive sensing collision avoidance system for patient protection.

Patient support

The Xper Table
Patient support with flat carbon fiber tabletop

- Table top length of 319 cm, width 50 cm
- Metal-free overhang 125 cm
- Floating table-top movement of 120 cm longitudinal and 35 cm transversal range.
- Motorized height adjustment from 79 to 107 cm
- Maximum cantilever of 223 cm , for full patient coverage
- Maximum patient weight 250 kg with 25 kg of accessories plus 500 N for CPR in any longitudinal position of the table top
- Xper Geometry and Imaging Modules for exam room controls.
  - The operating modules can be attached to either side of the table.

Patient Support Accessories set

- One cerebral filter
- Three rail accessory clamps
- One IV stand
- One slow recovery foam mattress
- One Set of Arm Supports (FCV0248)
- One Set of Patient Straps (FCV0250)
- One Head Support (FCV0251)
- One Arm Support (FCV0258)
- One Table-mounted Radiation Shield
- One anti-fatigue mat with Philips logo

X-ray Generation

The Allura Xper FD20 comprises an integrated dedicated X-ray system, micro-processor controlled Velara CFD generator based on high frequency converter technique. The user interface control of this X-ray Generator is incorporated in the Xper module, Xper Desktop Viewing Console, and the Xper on-screen displays. The Velara CFD generator comprises:

- X-ray generator 100 kW
- Voltage range is 40 - 125 kV
- Maximum current 1250 mA at 80 kV
- Program selection
  - Pulsed X-ray for pulsed fluoroscopy; 3.75, 7,5, 15 and 30 frames/s
  - Pulsed X-ray for (subtracted) acquisition up to 6 frames/s for vascular applications
  - Minimum exposure time of 1 ms
  - Automatic kV and mA control for optimal image quality prior to run to save dose

- An X-ray depth collimator with two semi-transparent wedged filters with manual and automatic positioning
- SpectraBeam filtering of low energy radiation to optimize image quality and dose efficiency with MRC-GS 0407 X-ray tube.
- Grid switching at dynamic pulsed fluoroscopy
- Xper Beam Shaping, positioning of both shutters and wedges on the Last image Hold without the need for X-ray radiation

Fluoroscopy

- Three programmable fluoroscopy modes
  - Each mode can be set to different composition of dose rate, pulse speed, filter setting, and image processing (noise reduction, adaptive contour enhancement, and adaptive harmonization).
- Roadmap Pro
  - Roadmap Pro can be selected from the Xper imaging module and/or Xper module.
  - A vessel map is created and superimposed with (un)subtracted live fluoroscopy. Acquisition runs can be done during Roadmap without losing the vessel map. Roadmap Pro features Smart Settings in special clinical modes that are optimized to visualize special materials such as coils and glue. Live processing of the vessel map, the device map and the landmark map can be done on the Xper Module. Xres for vascular procedures is standard part of Roadmap Pro.
    - **Disclaimer:** AMC only corrects movement artifacts in two dimensions. Three dimensional movements such as swallowing or rotation of the head cannot be corrected.
  - In Roadmap Pro R2 "Automatic Motion Compensation" (AMC) is added to the roadmap functionality. During roadmap, small movements of the patient can lead to subtraction artifacts. These artifacts might conceal important clinical information. "Automatic Motion Compensation" compensates for rigid, uniform (skeletal/table) translations and is therefore very effective in interventional (neurology) applications where subtraction imaging is applied.

§ Disclaimer: AMC only corrects movement artifacts in 2 dimensions. 3 dimensional movements like swallowing or rotation of the head cannot be corrected.

- Xper Fluoro Storage, a grab function allows storage and archiving of both a fluoro image and the last 20 seconds of Fluoroscopy, called Xper Fluoro Storage. These fluoro images or fluoro runs can be archived as a regular exposure run.

X-ray tube

The Allura Xper FD20 has the Maximus ROTALIX Ceramic grid switch tube assembly MRC 200 GS 0407 integrated in the C-arc. This MRC tube has an anode heat storage capacity of 2.4 MHU and 0.4/0.7 mm. nominal focal spot values. The tube has a maximal loading of 30 and 67 kW.

Dynamic pulsed fluoroscopy uses grid switching technology to eliminate soft radiation and improve image quality. SpectraBeam allows for filtration of the x-ray beam with (a combination of) 0.2, 0.5 or 1 mm CU-equivalent filters.

Tube housing ROT-GS 1004 is for oil-cooling and has a build-in thermal safety switch. A rotor control unit is build-in for continuous rotation of the anode disk. The heat exchanger CU 3101 is for direct and continuous forced cooling with oil.

IMAGE DETECTION

The Allura Xper FD20 comprises the following image detection chain:

- A 30 cm by 40 cm FD20 Dynamic Flat Detector with eight imaging modes.
  - 30 x 38, 30 x 30, 26 x 26, 22 x 22, 19 x 19, 16 x 16, 13.5 x 13.5, and 11 x 11 cm
- The digital output of the FD20 flat detector is 2k*2.5k image matrix at 14 bits depth for the largest mode
- The flat detector subsystem features Xper Access, the detector can be rotated over 90 degrees, it moves from portrait to landscape back & forth
- DQE (Detective Quantum Efficiency) >73 %
- The pixel pitch: 154 x 154 microns

Viewing

The Allura Xper FD20 comprises the following components in order to display the clinical images in the control and examination room:

Displays

Examination Room

Two 18-inch monochrome LCD monitors designed for medical applications. The first display is used for viewing live images. The second display is the reference monitor.

- 18-inch monochrome TFT-LCD display with a 160 degree viewing angle.
- Native format 1280x1024 SXGA
- 10-bit gray-scale resolution with gray-scale correction

These monitors are not delivered when FlexVision XL, EP Cockpit or EP Cockpit XL is selected.

The monitor ceiling suspension in the exam room can be configured to accommodate 3, 4, 6 or 8 LCD monitors and includes motorized height adjustment. The height-adjust feature is dependent on the room ceiling height. When FlexVision XL, EP Cockpit or EP Cockpit XL is selected the monitor ceiling suspension is configured for one of those options.

- Of the two medical monochrome LCD monitors included in the MCS, one is used for viewing of live images and the other serves as the first reference display. Reference images or runs are controlled by infra-red remote-control Xper ViewPad.
- The On-Screen Display provides status information on stand rotation, angulation, display of system messages, X-ray tube load status, selected fluoroscopy mode, selected detector Field of View, and both the rate and accumulation of the dose area product and skin dose. For cardiac applications, the system also monitors and displays body zone specific Air Kerma data (10 zones).

Control Room

One 19-inch color LCD monitor used as a data monitor.

- 19-inch color TFT-LCD display
- Native format 1280x1024 SXGA

One 18-inch monochrome LCD monitor (Xper review monitor) designed for medical applications.

- 18-inch monochrome TFT-LCD display
- Native format 1280x1024 SXGA
- 10-bit gray-scale resolution with gray-scale correction

These control room monitors are not delivered when EP Cockpit or EP Cockpit XL is selected.

The Graphical User Interface on the monochrome monitor has the following features and functions:

- Step through file, run, or images
- File, and run overview
- Contrast, brightness, and edge enhancement settings
- Flagging of runs or images for transfer
- Applying text annotation in images
- Optional DICOM printing
- Executing Quantitative Analysis Packages if available
- Subtraction functionality
- Zoom/pan functionality
- Electronic shutters
- Video invert
- View trace, stacking of images
- Landmarking

Acquisition

The acquisition segment coordinates the parameters for automatic exposure control. The program is selected via the Xper module or Xper Desktop Console.

Exposure techniques:

- Serial imaging for DA and DSA with automatic exposure setting
- Single shot mode
- Acquisition frame rates: 0.5 to 6 images/s at 2048 x 2048, 12-bit matrix

The Allura Xper FD20 offers a storage capacity of:

- 50,000 images at matrix size of 1024 x 1024
- 12,500 images at matrix size of 2048 x 2048
- Maximum number of examinations is 999, with no limit to the maximum number of images per examination

USER INTERFACE

Xper is comprised of three elements: 1) Xper Settings, which customizes the system to each user preferred settings. 2) Xper User Interface 3) Xper Integration, which makes advanced integration functionality available such as DICOM Query / Retrieve, background archiving, and Xper Fluoro Storage.

The Xper User Interface uses User Interface modules in the Examination Room with On-Screen Display.

The On-Screen Display is positioned on the left side of the reference monitor. The following system information is displayed

- X-ray indicator and X-ray tube temperature condition
- Gantry position in rotation, angulation, and Source Image Distance
- Detector field size display
- General System messages
- Selected Frame speed
- Fluoroscopy mode
- Integrated fluoroscopy time
- Skin Dose and Dose Area Product
- Stopwatch

The Xper ViewPad contains the preprogrammed function settings. The system is provides with two Xper Viewpads. The following functions are provided:

- Run and image selection
- File and run cycle
- File overview
- Store to Reference image file
- Copy image to photo file
- Digital (fixed) zoom and panning
- Recall reference images
- Laser pointer, intended to point at regions of interest on the imaging monitors
  - LED indication of laser pointer on/off and battery low
- Subtraction on/off
- Remasking
- Landmarking

Remote Intercom

The separate intercom which is connected independently from the system that allows separate placement of the intercom at the preferred working position in the control room and examination room.

Table Side Modules

Two Xper Modules are provided for use. The first Xper Module is mounted tableside. The Second Xper Module (NCVA778) is located in the control room. These modules use a touch screen, which can be operated when draped with sterile covers. The Xper Module contains the following functionality:

- Acquisition settings
- Selection of Xper Setting allows the user to set frame rates and X-ray generation settings applicable for the type of the preferred intervention
- Image Processing

The Xper Geometry module can be positioned on all sides of the patient table, while keeping the button operation intuitive. The Xper Geometry module provides the following functionality:

- Tabletop float and table height position
- Source Image Distance selection

- Longitudinal movement of the Gantry along the ceiling
- Gantry rotation in an axis perpendicular to the ceiling
- Store and recall of two scratch gantry positions including SID
- Emergency stop button

The Xper Imaging module can also be positioned on three sides of the patient table, while keeping the button operation intuitive. The Xper Imaging module provides the following functionality:

- Fluoroscopy Flavor selection defined per Xper Setting
- Shuttersand Wedge positioning
- Xper Fluoro Storage and Grab
- Selection of the Detector field size
- Shutter positioning
- Reset of the fluoroscopy buzzer

Pan Handle

- The Pan Handle is an extension of the control facility for floating movements of the tabletop.

Control Room

The control room comprises a Xper Review Module, Xper Desktop Module, a keyboard, and a mouse. The Xper Review Module offers the basic functions for review. The Xper Review Module contains the following functionality:

- Power on/off
- Tagarno wheel to control the review of a patient file
- File and run cycle
- Contrast, Brightness, and Edge enhancement settings
- File, Run, Image stepping and run and file overview
- Delete run
- Image invert and digital zoom
- Reset fluoroscopy timer and enable/disable X-ray

System information is displayed on the bottom of the data monitor:

- Stopwatch and Time
- System guidance information
- Dose Area Product (DAP) and Skin Dose, and accumulative dose
- Frame speed settings, fluoroscopy mode, and accumulated fluoroscopy time
- Exposure and fluoroscopy settings as Voltage (kV), Current (mA) and pulse time (ms)
- Geometry information as rotation, angulation, and SID

Scheduling

The patients can be listed and selected per date, physician, and intervention type. Previous DICOM patient studies can be uploaded with the DICOM Query Retrieve function in the Allura system.

Patient management protocols are flexible and allow for multiple studies to be selected under one patient identification number. This means that new studies can be appended to an earlier patient

file. Furthermore, each study can contain multiple examinations to allow for split administrative purposes. Each examination contains multiple files, like acquisition file, reference file, and QA results file.

Preparation

The preparation page provides the information of the room and patient preparation of each individual physician. The preparation page is customizable per Xper Setting and allows each physician to provide his own room protocols. This preparation page makes hard copies of the protocol instructions redundant.

Acquisition

The acquisition page contains information on the current selected patient.

Review

The review page allows for reviewing of patients:

- Previous examination cases
- Review of other DICOM XA or DICOM SC studies

Radiation Dose Structured Report

Collection of dose relevant parameters and settings and export to a DICOM database (e.g. PACS, RIS), according IEC60601-2-43, 2nd Edition.

The reported data can be used for, for example:

- Quality improvement: evaluating trends in X-ray dose performance per facility, system and operator.
- RDSR enables analysis of average dose levels & variance for routinely performed exams and procedures.
- Typical system usage can be extracted from the data.

Archive

Continuous Autopush

Continuous Autopush is an archive accelerator, which ensures that background archiving continues with minimal disruptions.

Clinical studies can be archived to a CD or a PACS. The archive process can be completely automated and customized with Xper Settings. Parameters like multiple destinations, archive formats can be selected to the individual needs and wishes for programming under the Xper Settings,

The Xper DICOM Image Interface enables the export of clinical images to PACS. The export formats are based on DICOM 3.0 protocols. The system exports clinical studies in Cardiac DICOM XA Multi-Frame or DICOM Secondary Capture formats.

- The export format is configurable in 512x512, 1024x1024 2048 x 2048 (unprocessed) matrix.

Line #	Part #	Description	Qty	Each	Price

- The examination can be sent to multiple destinations for archiving and reviewing purposes.
- The Xper DICOM Image Interface provides DICOM Storage and DICOM Storage Commitment Services.
- The DICOM Query/Retrieve function allows older DICOM XA MF and DICOM SC studies to be uploaded in the system. Furthermore, additional information can be appended to a study, while keeping the patient identification the same.

Remote Service

Access to the system from a Remote location is possible via network or modem connection. Remote access to a system can shorten the time needed for e.g. changing system settings or problem diagnosis.

Clinical Education Program for Allura Systems

Essentials OffSite Education: Philips will provide up to two (2) Cardiovascular Technologists, Registered Technologists Registered Nurses, or other system operator as selected by customer, with in-depth didactic, tutorial, and hands-on training covering basic functionality and work-flow of the cardiovascular imaging system. In order to provide trainees with the ability to apply all fundamental functioning on their system, and to achieve maximum effectiveness, this class should be attended no earlier than two weeks prior to system installation.

In the event that an EP Navigator workstation has also been ordered, the offsite training course will be tailored to focus on the electrophysiology functionality of the FD system and the EPN workstation.

In the event that your main FD system will be dedicated to Cardiac applications your offsite training course will be tailored to focus on the Cardiac functionality.

This twenty-eight (28) hour class is located in Cleveland, Ohio, and is scheduled based on your equipment configuration and availability. Due to program updates, the number of class hours is subject to change without notice. Customer will be notified of current, total class hours at the time of registration. This class is a prerequisite to your equipment handover OnSite Education. CEU credits may be available for each participant that meets the guidelines provided by Philips. Please refer to guidelines for more information. **Travel and lodging are not included, but may be purchased through Philips. It is highly recommended that 989801292102 (CV Full Travel Pkg OffSite) is purchased with all OffSite courses.**

Handover OnSite Education: Philips Education Specialists will provide twenty-eight (28) hours of education for up to four (4) students, selected by customer, including technologists from night/weekend shifts if necessary. Students should attend all 28 hours, and must include the two OffSite education attendees. CEU credits may be available for each participant that meets the guidelines provided by Philips. Please refer to guidelines for more information. Note: Site must be patient-ready. Philips personnel are not responsible for actual patient contact or operation of equipment during education sessions except to demonstrate proper equipment operation. **It is highly recommended for systems that are fully loaded or for customers with a large number of staff members to also purchase 989801292099 (CV Add OnSite Clin Educ 24h).**

Education expires one (1) year from equipment installation date (or purchase date if sold separately). Ref #106107-110915

3	**NDSA666	Non swivel, mounted ON floor	1		
4	**NDSA628	FlexVision XL,XperHD,Snapshot	1	$80,090.40	$80,090.40

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Line #	Part #	Description	Qty	Each	Price

FlexVision XL with XperHD

FlexVision XL for Allura Xper Release 7 systems with large 56-inch high resolution color LCD in the Exam Room.

FlexVision XL is an integrated viewing solution designed to give you full control over your viewing environment.

The FlexVision XL provides the ability to:

- Display 2 to 8 screens simultaneously from up to 16 sources (incl. third party systems) on the Philips 56-inch color LCD in the Exam Room.
- Resize and/or enlarge information at any stage during the case.
- Select and customize viewing lay-outs of the Philips 56-inch color LCD via the Allura Xper table-side module

XperHD on FlexVision XL brings High Definition viewing for clinical images. Native resolution of FD20 can be displayed. Excellent sharp and crisp clinical images can be displayed at full size without digital zoom.

Xper HD brings:

- High Definition imaging
  – Sharp images at full size without zoom
- High Definition display at native resolution
  – Up to 2k*2k image display fully integrated
- High Definition for the ultimate detail
  – Enhanced small vessel visualization
- Overview connected equipment (incl. third party systems) from a single location.

The FlexVision XL consists of:

- MediaWall Controller for the large screen display
- OmniSwitch
  - OmniSwitch allows the user to direct and switch the video output of all connected medical equipment to specific sub windows of the Philips 56-inch color LCD in the Exam Room.
  - OmniSwitch is a 16 channel video-switch operated from the Allura Xper tableside module. 16 channels are available for a mix of up to 7 internal and up to 9 external inputs.
  - OmniSwitch supports a wide variety of display formats (up to 1600x1200).
  - External inputs are connected to OmniSwitch via Wall Connection boxe(s).
- Medical grade, high resolution color LCD in the Exam Room
  - This display supports the image quality requirements for monochrome X-ray images as well as color images and replaces all displays normally delivered with an Allura Xper system for the Exam Room.
  - Main characteristics are:
    - 56 inch, 8 Megapixel color LCD
    - Native resolution: 3840x2160
    - Brightness: Max: 450 Cd/m2 (typical) stabilized: 350 Cd/m2
    - Contrast ratio: 1200:1 (typical)

Line #	Part #	Description	Qty	Each	Price

- Wide viewing angle (approx. 176 degrees)
- Constant brightness stabilization control
- Lookup tables for gray-scale, color and DICOM transfer function
- Full protective screen
- Ingress Protection: IP-21

- Large color LCD control (Xper Module)
  - Resize and/or enlarge information at any stage during the case via the Allura Xper tableside module in the Exam or Control Room
  - Select viewing lay-outs via the Allura Xper table-side module in the Exam Room
  - Create new layouts by matching inputs to desired locations on preset templates.
- Monitor Ceiling Suspension
  - Monitor ceiling suspension for use in the Exam Room carries the 56 inch color LCD, providing highly flexible viewing capabilities. The monitor ceiling suspension is height-adjustable and moveable along ceiling rails. It can be positioned on either side of the table.
- Isolated Wall Connection Boxes
  - Up to 8 Isolated Wall Connection Boxes can be connected to FlexVision XL.
  - Through Isolated Wall Connection Boxes, 3rd party equipment can be connected to the FlexVision Omniswitch.
- Snapshot
  - The snapshot function allows the user to store/save a screen-capture of any image on any EP cockpit display as a DICOM Secondary Capture image to a connected PACS. The snapshot-all function allows the user to store/save a screen-capture for each displayed image in the Exam Room / Control Room as seperate DICOM Secondary Capture images .

5	**NDSA661	**21" monitor size**	1		

Ultra high-brightness, medical grade, color LCD displays for control room

These displays support the image quality requirements for monochrome X-ray images, color EP signals as well as other images.

Main characteristics are:

- 21.3 inch, 2 Megapixel color LCD display
- Display resolution (up to) : 1600x1200
- Input resolution (up to) : 1920x1200
- Brightness: 550 Cd/m2
- Contrast ratio : 800:1
- Wide viewing angle (approx. 170 degrees)
- Constant brightness stabilization control
- Independently selectable brightness settings for monochrome and color images

Please note that for radiology departments Black/White monitors are recommended

6	**NDSA634	**United States of America**	1		
7	**NDSA306	**RIS / CIS DICOM interface**	1	$3,139.50	$3,139.50

This package allows communication of the Allura Xper system with a local information system (CIS or RIS). The interfaceusesthe DICOM Worklist Management (DICOM WLM) and Modality Performed Procedure Step (DICOM MPPS) standards.

If a hospital has an Allura Xper system and an information system it can receive patient and examination request information from the information system and report examination results in order to:

- Eliminate the need for retyping patient information on the Allura Xper
- Prevent errors in typing patient names and registration numbers (ensuring consistency with IS information to prevent problems in archive clusters ortosearch fora name in case of later retrieval)
- Inform the IS about the acquired images and radiation dose
- Upon request from the Allura Xper system the complete worklist with all relevant patient and examination data is returned from the IS to the Allura Xper system. For each patient the following information will be shown on the Allura Xper after it has been retrieved from the IS:

Patient Identification:

- Patient name
- Patient ID
- Birth date
- Sex

Examination/Request Information:

- Accession number
- Scheduled procedure step start time
- Scheduled performing physician's name

It is possible at all times to enter patient demographics information manually within the Allura Xper system in case of an emergency or in case the local Information System connection is down.

On request of the clinical user the Integris will report the following information about the selected patient to the IS:
Patient Identification:

- Patient name
- Patient ID
- Birth date
- Sex

Examination/Request Information:

- Accession number
- Performed procedure step status start/end date and time
- Performing physician's name
- Referenced image sequence

Radiation dose:

- Total time of fluoroscopy
- Accumulated fluoroscopy dose

Line #	Part #	Description	Qty	Each	Price

- Accumulated exposure dose
- Total dose
- Total number of exposures
- Total number of frames

Further detailed information can be found in the Allura Xper DICOM Conformance Statement.

The interface requires an EasyLink (hardware and software) if the IS is not compliant withDICOM Work List Management and Modality Performed Procedure Step.

8 ****NDSA574** **Cardiac** **1**

Diagnostic and interventional vascular angiography procedures (e.g. abdominal, thoracic and peripheral interventions)

9 ****NDSA575** **Vascular** **1**

Diagnostic and interventional vascular angiography procedures (e.g. abdominal, thoracic and peripheral interventions)

10 ****NDSA462** **Stentboost sw Rel 3.0** **1** **$14,636.70** **$14,636.70**

StentBoost is a unique interventional tool to improve visualization of stents in the coronary arteries during interventions. This, Philips exclusive, innovative interventional tool produces a highly augmented image of a deployed stent in coronary arteries in relation with the vessel lumen.
StentBoost enables interventional cardiologists to take any corrective action required immediately, while the patient is still in the exam room.

The way it works
StentBoost automatically detects the stent delivery markers image after image. In each image StentBoost aligns the markers with the markers of the previous image. By doing this all radiopaque material in the close proximity of the markers will be enhanced and items further away from the markers will be greyed out.
Images can be acquired with or without contrast. A run with some contrast-filled vessel images wil result in a dynamic representation of the enhanced stent in relation with the vessel lumen.

StentBoost Workflow
1. Image acquisition
StentBoost R3 has an optimised protocol of 100 frames out of a cine run, of which 60 frames should be with contrast.
2. Image transfer
The run will automatically be transferred to the interventional workstation and show up in the StentBoost software.
The Real time link is a unique option within the Allura Xper allows faster access to the StentBoost image.

3. Automatic Stent Enhancement
The StentBoost software detects automatically the location of the markers and displays the enhanced image of the stent within seconds. If the cine run was acquired with contrast, then the dynamic representation of the stent in relation with the lumen will appear automatically

A real time operation user interface is available with StentBoost, to provide:
- Review of StentBoost runs, before and after processing
- Viewing tools like Brightness/Contrast, Pan and Zoom to optimize the image displayed
- Automatic stent delivery system marker identification
- Reliability feedback regarding the enhanced run
- Manual quality improvement; Manual correction possibility for marker identification

Line #	Part #	Description	Qty	Each	Price

- View patient info
- store the still or dynamic (movie) image of the stent

The step 5, 6 and 7 are not mandatory.

5. Calibration
To create a StentBoost image no calibration is needed. For the measurement support tool four calibration methods are included:
- No calibration
- Auto calibration based on calibration data generated by the Allura Xper system when the autocall function is installed,
- Marker distance of the stent delivery markers,
- Catheter calibration

6. "Measurement"
"Measurement" an option within the StentBoost package supports the clinician in his/her decision-making in determining the percentage of remaining stenosis in the stent.

7. Archiving
Transfer to:
Optional Hard Copy unit (DICOM Print)
Optional third party station (snapshots images in DICOM Secondary Capture format)
Any computer via a web server functionality with images in a standard file format (JPEG, AVI movies)
One or multiple DVD's, CD-ROM(s) for easy archiving
Store a subset of exportable objects (snapshots and AVI Movies) to a USB removable memory device.

8. StentBoost release 3.0 comprises:
StentBoost release 3.0 Software Package
Software release bulletin
DICOM Conformance Statement
StentBoost IQ verification Phantom

11	**NDSA382	**Ceiling Height < 290cm, >270cm**	1		

Ceiling height is <290cm and >270cm

12	**NDSA654	**Aut Pos Contr Xper sys & table**	1	$6,606.60	$6,606.60

This Automatic Position Controller (APC) combines APC for Allura Xper FD10 and FD20 systems with table APC.
System APC provides two modes of operation:
Preset Position Sequence: the sequence of projections is determined through personnalized Xper Settings. Each set contains a maximum of 10 positions. Positions can be recalled in sequence or directly. The projection sequence comprises rotation angulation and SID settings related to the selected reference image.
Reference driven positioning: The projections on the reference monitors can be recalled with the push of a button. The reference driven positioning recollects the C-arm rotation angulation Flat detector image format and SID.
Table APC
The Automatic Position Controller (APC) for the table provides

Line #	Part #	Description	Qty	Each	Price

two modes of operation:
Auto positioning. The tabletop position and table height will be adjusted automatically to the pre-defined default point of interest. This to save time and x-ray dose at the start of an exam or for setting up the system for rotation scans.
Store/recall of a position of the table top. This includes the height-, longitudinal- and lateral position of the table top.

13	**NDSA329	FD Rotational Angio	1	$15,775.50	$15,775.50

Rotational Angiography provides real-time 3D impressions of complex vasculature and coronary artery tree. It acquires multiple projections with just one contrast injection via a fast rotational scan of the region of interest.

Rotational Angiograpy can be used during screening procedures to quickly determine the optimal projection for the study as the angle (rotation/angulation) of the projection is indicated on each image.

Compared with traditional angiography, Rotational Angiography can save considerable time, dose and contrast, while providing image detail required for diagnostic and therapeutic decisions.

A rotational scan is possible both with the Allura Xper systems in the side position (ceiling mounted systems) and in the head position, providing the flexibility to perform procedures virtually from head to toe.

C-arm in side position:
Max. rotation Speed: 30 degrees/s
Max. rotation Angle: 180 degrees

C-arm in head position:
Max. rotation Speed: 55 degrees/s
Max. rotation Angle: 305 degrees

Max. Frame speeds are given by the framespeed specifications of the system configuration.

The speed and range of rotation are the highest available (see table). The very high speed allows using less contrast, whereas the very wide rotation range provides a complete evaluation of the anatomy.

A contrast run can be followed up with a mask run, to allow image/run subtraction.

The stand is designed for a very high mechanical stability. It offers precise positioning and high reproducibility, assuring you of high quality images and excellent subtraction studies.

Operation of Rotational Angiograpy is extremely easy. The procedure is selected, set up and executed virtually in a matter of seconds, supporting the highest patient throughput.
A set of dedicated acquisition programs is available on the Xper Module and can be selected at the touch of a button. The rotation end- and start-positions are easily selected. The procedure is controlled from the exposure hand- or footswitch.

14	**NDSA451	Xper Swing	1	$9,909.90	$9,909.90

Line #	Part #	Description	Qty	Each	Price

The XperSwing option is an extention of Rotational Scan, providing real-time 3D impressions of the coronary artery tree. It acquires multiple projections with just one contrast injection via a fast dual axis rotational scan of the region of interest. So, rotation and angulation movements are combined in one complete scan trajectory, using the maximum rotation and angulation speed of the system. (up to 55 resp 30 degr/sec)

Swing can be used during screening procedures to quickly determine the optimal projection for the study as the angle (rotation/angulation) of the projection is indicated on each image.

Compared with traditional angiography, XperSwing can save considerable time, patient dose and contrast medium, while providing image detail required for diagnostic and therapeutic decisions. In total seven pre-programmed trajectories are available: two for Right Coronary imaging, three for Left coronary imaging and two generic trajectories. The choice depends on size and weight of the patient. These trajectories are designed to fully cover most if not all conventional projections for a diagnostic coronary angiography, much more complete then the single axis Rotational Scan.

The Swing scan is possible both with the Allura Xper systems in the side position (ceiling mounted systems) and in the head position, providing the flexibility to perform procedures virtually from head to toe.

Max. Frame speeds are given by the framespeed specifications of the system configuration.

The speed and range of rotation are the highest available (see table). The very high speed allows using less contrast, whereas the very wide rotation range provides a complete evaluation of the anatomy.

The stand is designed for a very high mechanical stability. It offers precise positioning and high reproducibility, assuring you of high quality images and excellent subtraction studies.

Operation of the XperSwing is easy. The procedure is selected, set up and executed virtually in a matter of seconds, supporting the highest patient throughput.

The set of dedicated acquisition programs with the trajectories is available on the Xper Module and can be selected at the touch of a button. The rotation end- and start-positions are easily selected. The acquisition procedure is controlled from the exposure hand- or footswitch.

15	**NDSA330	Subtracted Bolus Chase	1	$16,508.70	$16,508.70

For visualisation of vessel structures when the blood flow is difficult to estimate, in particular in the lower peripherals.

Bolus Chase solves the problem of cumbersome step movements, the mismatch between blood flow and selected program, and lack of real-time image information.

During digital acquisition in non-subtracted mode with uninterupted real-time image display, the contrast bolus is followed (chased) interactively by a motorized table scan movement using a hand-hold speedcontroller to adapt the speed of the table scan to the contrast flow.

The framespeed can be adapted as well.

The bolusrun is followed with a maskrun while using the same speedcurve and framespeed as generated during the bolusrun. Viewing is possible in the subtracted and non-subtracted mode. If subtracted viewing is not required, the maskrun can be skipped.

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Line #	Part #	Description	Qty	Each	Price

Subtracted Bolus Chase gives fast, accurate results for increased patient throughput and improved patient management. Automated exposure control and precise speed control assure a high quality images and excellent subtraction studies.

Comprising:

- tabletop motordrive and hand-held speed controller
- automatic exposure control

16	**NDSA341	**FD Smartmask**	1	$8,802.30	$8,802.30

SmartMask simplifies the roadmapping procedures by overlaying on the live monitor fluoroscopy with a selected reference image.
The reference image can be faded in/out with variable intensity, controlled from tableside.
SmartMask uses the reference image displayed on the reference monitor.
Any previously acquired image can be used as reference.

SmartMask facilitates pre- and post- intervention comparisons to assess treatment results.

17	**NDSA201	**Full AutoCall (Xper)**	1	$2,964.00	$2,964.00

The Auto call option is a software package to be used in conjunction with quantitative analysis software packages. It provides an auto calibration procedure for an object to be analyzed that is placed in the iso-center. When the object to be analyzed (e.g. Left Ventricle Vessel Segment) is placed in the iso-center Autocal avoids the need to:

- acquire an additional image series containing a sphere or grid for calibration purposes or
- calibrate manually on a calibration object (e.g. catheter) displayed in the image or image series to be analyzed.

18	**NDSA395	**Coronary Quant.Sw pkg(Xper)**	1	$5,768.10	$5,768.10

Functions:

- diameter measurement along the selected segment
- cross sectional area
- %-stenosis
- pressure gradient values
- stenotic flow reserve
- calibration routines

In addition the package allows manual measurements of line lengths (absolute and ratio's) and angulations. Multiple measurements in one image are possible.

Comprising:

- software license

Line #	Part #	Description	Qty	Each	Price

Compatible with:

- Allura Xper FD10 Rel 3 and FD10/10 Rel 2 onwards
- Allura Xper FD20 Rel 2 and FD20/10 Rel 2 onwards
- Allura CV20 R1 onwards

19	**NDSA396	**Vascular Quant.Sw pkg(Xper)**	1	$5,768.10	$5,768.10

Functions:

- vessel diameter / stenotic index
- automated vessel analysis
- calibration routines

In addition the package allows manual measurements of line lengths (absolute and ratio's) and angulations. Multiple measurements in one image are possible.
Compatible with:

- Allura Xper FD10 Rel 3 and FD10/10 Rel 2 onwards
- Allura Xper FD20 Rel 2 and FD20/10 Rel 2 onwards
- Allura CV20 R1 onwards

20	**NDSA174	**Catheterisation arm support**	1	$725.40	$725.40

For brachial catheterization and digital imaging technique the support is made of X-ray transparent material with exception of the fixingclamp and pivots.

21	**NDSA175	**Pulse catheterisation arm support**	1	$721.50	$721.50

Facilitates catheterization trough the pulse and provides room for placing catheterization instruments. It is a flat radio translucent board and is placed under the patient while a part projects at either the left or right side of the tabletop to support the arm.

Size: 100 x 85 cm
Material: carbon-fibre reinforced material

22	**NDSA177	**Peripheral X-ray filter**	1	$1,033.50	$1,033.50

Set of flexible x-ray filters provides a uniform density in angiographic examinations of the lower peripheral area.

Includes:

- 1 Central filter at the top edge provided with sizing markersevery 5 cm --length : 1m;
- Two side filters --length: 1 m.

23	**NDSA403	**Pivot for table base.**	1	$3,666.00	$3,666.00

For angiographic- and interventional procedures of the upper peripherals.
Provides improved table access for patient transfer.
Allows pivoting of the table base around its vertical axes.
Pivot range from -90 degrees to + 180 degrees (or -180 to +90 degrees) with locked positions on 0, -13/+13 (facilitating arm-angiography) and -90/+90 and 180 degrees.

Comprising:

Line #	Part #	Description	Qty	Each	Price

- pivot device with graduated scale.

To be mounted on the universal floor plate of the table.

Compatible with Xper Table

24	**FDS0289	**Long mattress cardio**	1	$440.70	$440.70

Patient mattress, thickness 70 mm, length 3165 mm, width 500 mm

25	**FDS0034	**Mon. cable carrier cliprail**	2	$210.60	$421.20

Additional monitor cable carrier for Cliprails.
This is an extra monitor cable hose relief between the MCC and the ceiling inlet.
For instance if the ceiling inlet cannot be placed in the middle of the cliprails (due room restrictions).

This item is not suitable for Monitor Ceiling Carriage (MCC) mounting or for Stand hose.

26	**NDSA652	**Interventional Tools Hardware**	1	$7,357.30	$7,357.30

The Interventional hardware is the hardware for the 3D interventional tools and enables import and viewing of DICOM compatible data from other imaging modalities.

The Interventional Hardware comprises at least:
• Computer Workstation
• CR 19" display
• 16 GB memory
• 2 TB disk for the operating system, application software and application data
• Internal CD-Rom / DVD writer
• Mouse tablet to interact with all the interventional tools at the table side.

Conditionally:
FD Calibration Tool Kit for 3D-RA

27	**NDSA238	**Real Time digital image link**	1	$10,190.70	$10,190.70

Real Time digital image link to an off-line Allura Interventional Hardware station.
This applies on the applications 3D-RA, StentBoost and 3D-CA on the Interventional Hardware.
This dedicated digital link sends raw or processed image data (depending on the application) real time during monoplane exposures to the connected Interventional Hardware station, to allow instant results of
the applicable reconstruction after the exposure run.
In biplane systems, this digital link is available for the frontal channel only.

28	**NDSA240	**StentBoost on Xper module for Allura Xper**	1	$3,268.00	$3,268.00

Table Side Module function of Allura Xper used with StentBoost Release 1.0

For further improvement of interventional procedures efficiency the physician has all StentBoostfunctions needed at tableside available on the Xper module.

29	**NDSA441	**Local solution for rackm. inj.**	1		

30	**NDSA213	**First Xper module is located in Examination Room**	1		

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Line #	Part #	Description	Qty	Each	Price
		First Xper module is located in Examination Room			
31	**NDSA218	**Second Xper module is located in Control room**	1		
		Second Xper module is located in Control room			
32	**980306640009	**Black Anti-Fatigue Floor Mat w/ Blue Logo**	1	$156.00	$156.00
		Blue Anti-Fatigue Floor Mat w/ Logo			
33	**980406041009	**Rad Shield w/ Arm (Contoured) 61X76**	1	$2,293.20	$2,293.20
		Contoured Rad Shield with Arm rest. 61X76			
34	**980406190009	**PIVOTING TABLE-MOUNTED RADIATION SHIELD**	1	$2,187.90	$2,187.90

Table-mounted radiation shield for additional protection of physician and staff against scatter radiation. The shield consists of two protective parts: a lower shield and an upper shield. The shield is specially designed for use with the AD5 patient table.

The table mounted radiation shield provides the following features:

- Mounting to either the right orleft tableaccessory rails;
- Pivoting into the required working position;
- Pivoting into the parking underneath the tabletop facilitating patient preparation;
- The upper shield can be positioned upright providing optimal protection or can be folded down for free access to the patient.

The table mounted radiation shield includes:

- Lower shield measuring 70 cm high 80 cm wide 0.5 mm Pbequivalence;
- Upper shield measuring 40 cm high 50 cm wide 0.5 mm Pbequivalence;
- Mounting clamp;

Docking device for wall mounting.

35	**989801220012	**Cable Spooler**	1	$315.90	$315.90
36	**989801220037	**M LED 3MC Light**	1	$9,348.30	$9,348.30
		MAVIG M3 MC LED - Multi Color / power Supply Included Includes Portegra2 Ext Spring Arm 75/90cm			
37	**989801220158	**Mark 7 Arterion, Table Mount**	1	$24,510.00	$24,510.00

The Mark 7 Arterion Injection System is the latest in MEDRAD's "Mark" series of angiographic injectors. Compared to earlier systems, the Mark 7 Arterion injector head is lighter and easier to use so you can focus more on the patient.
The clear and intuitive user interface guides you through proper set-up, and highlights the information you need to perform safe procedures.
Unique to the market, the front load system simplifies set-up and makes for a cleaner tear down.
The clear syringe provides a higher level of confidence that you are ready to inject.

Made from a clear material, the Mark 7 Arterion syringe (Catalog ART 700 SYR) allows you to

Line #	Part #	Description	Qty	Each	Price

easily view the inside of the syringe for smoother purging of air. And MEDRAD's famous fluid dots are still there to help-round for fluid, oval for air.
The table mount injector solution ensures the contrast injector is conveniently placed and always available when it is needed. It provides a clean workspace without occupying valuable floor space.
System includes:

- Table Mount
- display control panel
- 6 ft. coiled hand switch
- operation manual (CD)
- 10 ft. head cable
- syringe heat maintainer
- imaging system interface cable for the Allura / Allura Xper
- consumables starters kit

For the MEDRAD Mark7 Injector system Philips is only the distributor. MEDRAD provides the service as well as the application support of both versions unless stated differently in the Philips Service Agreement

System Specifications:

- Flow Rate 0.1-45.0 ml/s in 0.1 ml increments
- 0.1-59.9 ml/m in 0.1 ml increments
- Volume 1-150 ml in 1 ml increments
- Pressure Limit 100-1200 psi in 1 psi increments
- (150ml syringe) 689-8273 kPa in 1 kPa increments
- Rise Time 0.0-9.9 seconds in 0.1 increments
- Delay Time 0.0-99.9 seconds in 0.1 increments
- Fill Speed 1-20 ml/s
- Fill Volume 1-150 ml
- Syringe Size 150 ml
- Syringe Heat Maintainer 35 °C (95 °F) ± 5 °C (9 °F)
- Protocol Memory 40 Protocols
- Injection Memory History

38	****989801220216**	**iFR® Modality**	**2**	**$9,375.00**	**$18,750.00**

iFR Hyperemia-Free Lesion Assessment Modality CORE Interface, Operator's Manual. Customer agrees that use of the iFR Application Software License Application with interface to CORE is subject to the terms of the End User License Agreement. A copy of the End User License Agreement is also available from your VOLCANO representative or online at www.volcanocorp.com

39	****989801220273**	**Ceiling Track w/Column & Handle Ext**	**2**	**$3,439.80**	**$6,879.60**

Mavig 2.5m Ceiling Track with Ceiling trolley, 360 degree column, and brake handle extension.

40	****989801220355**	**25 kVA Fluoro only UPS - UPC DS**	**1**	**$37,250.00**	**$37,250.00**

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Line #	Part #	Description	Qty	Each	Price

25 kVA Fluoroscopy Only Solution with 12.5 Minute Battery System.
This system includes the following components:

- Toshiba 4400 25 kVA UPS with no label
  - 480v AC 3 phase input; 480v AC 3 phase output
  - Internal Maintenance Bypass Switch
  - Fully rated Static Bypass Switch
  - Input Isolation Transformer; Output Auto-Transformer
  - Dimensions: 36.25"D x 20"W x 59.85H"
  - Weight: 998 lbs.
- Universal Power Controller (UPC)
  - Combines the Battery Cabinet and Universal Transfer Switch Functions.
  - Provides 12.5 Minutes of runtime at full load on battery
  - Provides all interconnections to fully integrate into CV Lab.
  - All previous 480V system functionality retained from previous separate component design.
  - All connections are via external terminal blocks, rear access.
  - All breakers are externally accessible from front.
  - Isolated compartments for Battery and Switch sections.
  - Fully ETL tested and certified.
  - 31.5"D x 17.2"W x 59.8"H
  - Weight: 1020lbs (approximate)

Notes:
The Fluoro Only System includes the following features and benefits:

- Two Part Solution, UPS and UPC.
- The UPC combines the traditional Battery Cabinet with the exclusive Universal Transfer Switch system.
- Integrates with Philips CV Systems to "ride through" emergency generator tests, power outages and other power-related anomalies, without rebooting.
- Provides continued uninterrupted Fluoroscopy to the doctor, even during a total power loss.
- Battery run time is at least 12 ½ minutes, 30 minutes is typical.
- Provides Line Conditioned Power to Sysco, Geometry, Imaging, VISUB and Generator logic.
- Full support and documentation
- Tested and Certified. By ETL

41	**SP005**	**Contract Labor**	**1**	**$5,500.00**	**$5,500.00**

Charge to remove Toshiba system.

42	**SP019**	**Trade in Allowance**	**1**	**$0.00**	**$0.00**

Customer represents and warrants that (i) Customer has, and shall have when title passes, good and marketable title to the equipment being traded in and (ii) has the authority to effect such trade in.
Product: Toshiba CATH 10
Serial Number: B2622024
Manufacturer: TOSHIBA AMERICA MEDICAL SYSTEMS

Trade-In authorization number: 37259

Trade-In Value: $0.00

De-install Date: 12/15/2015

Customer will be trading-in equipment that is described on the attached System Disclosure Form (the "Trade-In"), which Trade-In the parties agree (i) will be removed on the De-install Date and (ii) is currently in the condition as represented on the System Disclosure Form. In addition, the parties agree as follows:

1. Customer represents and warrants that Customer has good and marketable title to the Trade-In as of the date of this Quotation and will have good and marketable title when Philips removes the Trade-In from Customer's site (the "Removal Date");
2. Title to the Trade-In shall pass from Customer to Philips on the Removal Date, unless otherwise agreed by Philips and the Customer;
3. Notwithstanding anything to the contrary in any Business Associate Addendum, Customer represents and warrants that as of the Removal Date all Protected Health Information will have been de-identified or removed from the Trade-In;
4. Philips may test and inspect the Trade-In prior to de-installation. If the condition of the Trade-In is not substantially the same on the Removal Date (ordinary wear and tear excepted) as it is identified on the System Disclosure Form, then Philips may reduce the price quoted for the Trade-In;
5. If the removal date is delayed until after the De-Install Date, unless Philips causes the delay, then Philips may reduce the price quoted for the Trade-In by six percent (6%) per month.
6. Philips is responsible for normal de-installation costs of the Trade-In.
7. The trade-in value will not include costs associated for any facility modifications and/or rigging required for de-installation and must be accounted for separately.
8. Customer is responsible for all plumbing necessary to properly drain coolant from chiller system and cap the lines.
9. Prior to the Removal Date, Customer shall remove from the room all equipment that is not being de-installed.

********PROMOTIONS********

Promotion Name	Description
Mono Closer 2015-Q3	Philips is pleased to offer this special promotional discount of $50,000 with the purchase of a monoplane Allura system. To be eligible for this promotion, orders must be received by September 30, 2015.
StentBoost Promotion 2015-Q3	This special promotion provides StentBoost at a reduced price. All orders for this promotion must be received on or before September 30, 2015..

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LIST PRICE	$1,944,970.00
DISCOUNT	$1,232,488.30
NET PRICE	$712,481.70

Buying Group: MEDASSETS SUPPLY CHAIN SYSTEMS INC. Contract #: MS03221

Addt'l Terms: Product Terms and Conditions of Sale (T&C) not printed with this solution. Refer to Contract # noted above for applicable T&C details. If Service Agreement is quoted its T&C of Sale are printed

Each Quotation solution will reference a specific Buying Group/Contract Number representing an agreement containing discounts, fees and any specific terms and conditions which will apply to that single quoted solution. If no Buying Group/Contract Number is shown, Philips' Terms and Conditions of Sale will apply to the quoted solution.

Each equipment system listed on purchase order/orders represents a separate and distinct financial transaction. We understand and agree that each transaction is to be individually billed and paid.

Price above does not include any applicable sales taxes.

The preliminary delivery request date for this equipment is:_____.

If you do not issue formal purchase orders indicate by initialing here_____.

Tax Status:

Taxable_____ Tax Exempt_____

If Exempt, please indicate the Exemption Certification Number:_____, and attach a copy of the certificate.

Delivery/Installation Address:

_____

_____

_____

Invoice Address:

_____

_____

_____

Contact Phone #:

_____

Contact Phone #:

_____

Purchaser approval as quoted:

_____

Date:

_____

Title:

_____

This quotation is signed and accepted by an authorized representative in acknowledgement of the system configuration, terms and conditions stated herein.

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OPTIONS

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Line #	Part #	Description	Qty	Each	Price	Initial
1	**NDSA103	**Standard line rate video input/output**	1	$4,556.50	$4,556.50	_____

Standard line rate video input/output. Standard 625 (525) lines 50 (60) Hz. video input/output board.Required for connection of standard line rate video peripherals like a VCR providing the required video signal for recording and allowing replay of VCR images on the life monitor of the system. The option also comprises control forautomatic start and stop recording of a VCR synchronous to the generation of X-ray (fluoroscopy and Exposures). In case of fluoro boost in excess of 10 R/min and in case of exposures the INTEGRIS system provides the start/stop recording signal for a VCR.

2	**NDSA391	**DICOM Print compose**	1	$2,093.00	$2,093.00	_____

Dicom Print provides the possibility to interface to any DICOM Printer. This protocolized printing is an automated printing protocol. The option provides Print Manual Overrides, Print Job submission, and Print Job management.

3	**NDSA687	**Wireless footswitch Monoplane**	1	$9,188.40	$9,188.40	_____

The wireless footswitch is an option for our Allura systems. It provides the possibility to have one wireless footswitch in the exam room.
A wireless footswitch provides workflow optimization, flexibility at table-side, removes cable clutter on the floor and provides easier cleaning of the footswitch.

The mono-plane wireless footswitch is a 3 pedal version; one pedal for fluoroscopy, one for exposure and one to control the roomlight/single shot. The pedals can be configured according customers preferred lay-out.

The wireless footswitch is working via RF technology and is fully tested and released for medical use. It has an active range up to 10 meters, depending on structures within this range.

The wireless footswitch has a lithium battery which only needs to be recharged once per week. During recharging the footswitch still can be used and is fully functional. In parallel, a wired footswitch can also be used.

The status of the battery is indicated by an LED-indication on the footswitch itself, so that the user can decide when the footswitch needs to be recharged.
The wireless footswitch can easily be cleaned in water. It has the highest water ingress protection standard (IPX8).

The wireless footswitch has an on/off switch. It can be switched off when not in use. When the footswitch is active, but not in use, it will go into a sleep-mode. It will be re-activated when touched or when one of the pedals is pressed.

4	**FCV0563	**Personal Dose Meter (1 piece)**	5	$1,595.30	$7,976.50	_____

Personal Dose Meter.
The Personal Dose Meter (PDM) is a small and easy to wear active Xray dose meter intended to measure
and store received Xray dose of staff, present in an Xray room during radiation. The PDM has build-in
wireless communication to connect to the DoseAware Base Station for real time dose-rate indication and
has a long battery life for maintenance-free usage. In addition it can be personalized to increase interest
and awareness. The PDM not only records warning level profiles every second for a total of 3600 sec

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Line #	Part #	Description	Qty	Each	Price	Initial

(cyclic overwritten), but also stores accumulated dose data every hour for maximum 5 years.
A clip and a lanyard holder are included to facilitate easy wearing.

The PDM can be configured via the cradle and DoseView (and the optional Dose Manager) software for
the following attributes:

- Full name (max 40 bytes)
- Display user name (max 16 bytes)
- User group from list
- PDM ID (max 16 characters)
- Position on body
- Date & time = Real Time Clock, synchronized with local time, and being the clock master for the DoseAware system. With each
- connection PDM => Base Station => Dose Manager the timing is synchronized automatically.
- Date of PDM assignment to a person
- Dose history reset
- Sleep mode On/Off
- Annual dose limit

The PDM has following specifications:

- Operational unit: HP10
- Dose range: 1µSv – 10 Sv
- Dose resolution: 1 µSv
- Dose uncertainty: 5% or 1 µSv
- Dose rate range: 10 µSv/hr - 50 mSv/hr
- (3 nSv/s - 15 µSv/s)
- Response time: < 4 s, 40 µSv/hr – 100 µSv/hr; < 1 s above 100 µSv/hr
- Energy dependency X-, Gamma-rays: N40-N160 (33keV – 118 keV)
- Average battery life: 3 – 5 years, depending on daily use
- Weight: 30 gr
- Dimensions: 45 x 45 x 10 mm (w x h x d)
- Personalization: 8 inlays with colour
- Communication radio: Center frequency 868.3 Mhz for Europe version
  915 Mhz for USA version

5	****FCV0566**	**Personal Dose Meter rack**	**2**	**$94.60**	**$189.20**	_____

This stainless steel rack facilitates storage of up to 5 ea Personal Dose Meters.
Intended to be mounted on a wall.
Dimensions: 40 x 19 x 6 cm (W x H x D)
Weight: 0,4 kg

6	****FCV0567**	**Base Station Package**	**1**	**$11,807.80**	**$11,807.80**	_____

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Line #	Part #	Description	Qty	Each	Price	Initial

The Base Station is the heart of the DoseAware system that helps staff, wearing a PDM in the Xray
room, by seeing the level of received Xray dose, to increase awareness and to stimulate taking measures
to reduce received dose.
It offers Online View, which displays real time dose rate and immediate dose data for any Personal Dose
Meter (PDM) in range. The Walk-Up View enables easy access to personal dose history and PDM settings.
The Base Station has a touch screen interface and wireless communication with the PDM. The PDM
dose information is stored within the Base Station and can be retrieved by the optional DoseAware Dose
Manager software via a standard network interface to complete the DoseAware system with archiving
and reporting functions.
The Online screen shows up to eight PDM's in range simultaneously. For each PDM the name is shown
next to a bar graph that displays real time the actual measured dose rate level separated in three colored
zones: green, orange, red.
These colours symbols:
Green: the user is in the comfort zone, aware of radiation, adequate precautions have been taken
Red: the user is out of the comfort zone, precautions (like distance, shuttering, lead protection, Xray filters, fluoro flavor, position in the room, applied projection) can be taken to reduce received radiation.
The max dose rate of each zone is marked in µSv/h on top of the scale. In addition the dose rate peek
level of the actual Xray exposure is displayed as a single block, that is kept visible for max 10 sec after exposure end.
The touch screen also allows access to data stored in the PDM in range. The Walk-up view can show all
configured attributes of the PDM, the actual battery status, and personal dose overviews (accumulated
dose per hour, per day, per week and over the year as percentage of the annual dose limit)

The Base Station package includes also:

- a cradle and the DoseView software package that can be installed on a local PC (not included), which has Windows XP or Vista as operating system.
- Mounting material for the Base Station, facilitating mounting on a wall or on a Philips Monitor Ceiling Suspension or a Philips mobile C-arm system.

The compact cradle connects a PDM to a PC via a USB 2.0 port. In combination with the DoseView package it offers PDM-user setting management (password protected administrative function) and dose data read-out/analysis. It shows similar dose history views as the Base Station, but "off-line" via the PC and with more details, as long as the PDM is in the cradle. As the cradle takes over battery power supply, it's also an easy way to verify battery status if the PDM seems to have empty battery. (like no connection with Base Station)
Specifications of the Base Station:

OPTIONS

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Line #	Part #	Description	Qty	Each	Price	Initial

- Dimensions: 30 x 25 x 6 cm (W x H x D)
- Weight: 1.45 kg
- Display: 10.4 " touch screen, 640 x 480 pixels
- Memory: 512 Mb
- Storage: all dose-rate/sec and accumulated dose/hr that are received from PDM's in range. The memory size accommodates f.i250 PDM's with 50 hours dose rate history each.
- Power Supply: via adapter, 90-264 VAC, 24 W
- Communication: wireless radio communication with PDM's (see PDM spec)
  Ethernet 10/100 Mbits/s port for the Dose Manager connection

7 ****989801220070** **Carrot C-Com Intercom** **1** **$17,500.00** **$17,500.00** _____

C-Com is a state-of-the-art digital wireless communication system specifically suited for medical environments. Compared to conventional systems that include central microphones and overhead speakers, C-Com dramatically reduces noise and distraction, enhances patient comfort and synchronizes clinical activities.

- The C-Com System includes (5) wireless headsets.
- The C-Com System is part of the Carrot Advanced Tool Set and not intended for diagnostic use.
- Whisper-sensitive military spec directional microphones
- Extremely comfortable headsets ensure flawless audio fidelity and precise communication.
- Physician instructions and collaborative communication are distributed to all team members

1 year warranty

8 ****989801241111** **Horizon GS Paper Only** **1** **$10,621.00** **$10,621.00** _____

Dicom Printer
An intelligent desktop-sized grayscale output device that produces diagnostic quality medical hardcopy on 14" x 17" and 8.5"x 11 medical-grade paper (white film). The imager accepts many industry standard file formats including DICOM and incorporates networking high speed image processing and spooling capabilities.
Codonics proprietary direct thermal print technology delivers 4 96 gray levels providing "no compromise" diagnostic film output. The grayscale paper output is an exclusive media developed by Codonics for referral copy and patient review and is a fraction of the cost of film. Can be used for all modalities.

Consisting of:

- Grayscale Desktop Medical-Paper Diagnostic Imager
- DICOM (2 Associations)
- Cables straight and cross-over
- 1 Case of DV Paper Blue 14 400 Sheets
- 1 Case of DV Paper Blue 8.5 400 Sheets
- 1 year depot swap warranty

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OPTIONS

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Line #	Part #	Description	Qty	Each	Price	Initial

Compatible with any system that supports DICOM printing.

Available Options:

- Post-Script Level III printing
- Upgradeable to Horizon GS

PHILIPS PRODUCT WARRANTY

CARDIOVASCULAR (CV) SYSTEMS

This product warranty document is an addition to the terms and conditions set forth in the quotation to which this warranty document is attached. The terms and conditions of the quotation are incorporated into this warranty document. The capitalized terms herein have the same meaning as set forth in the quotation.

TWELVE-MONTH SYSTEM WARRANTY
Philips warrants to Customer that the Philips Vascular and Cardiac Systems (the "System") as delivered to Customer will perform in substantial compliance with its performance specifications for a period of twelve (12) months upon first patient use. Any glassware or flat detectors provided with the System is subject to special warranty terms set forth below.

PLANNED MAINTENANCE
During the warranty period, Philips personnel will schedule planned maintenance visits, in advance, at a mutually agreeable time on weekdays, between 8:00 A.M. and 5:00 P.M. local time, excluding Philips observed holidays.

SYSTEM UPGRADES
Any commercially available upgrade to the System which is hereafter installed by Philips during the original term of the System warranty shall be subject to the warranty terms contained in the first paragraph of this warranty, except that such warranty shall expire on the later of: a) upon termination of the initial twelve (12) month warranty period for the System on which the upgrade is installed or b) after ninety (90) days for parts only from the date of installation.

MRC X-RAY TUBES
Philips warrants to Customer, for the warranty periods further specified in this section, that the Philips X-Ray tube will be substantially free from defects in material and manufacturing workmanship, which impair performance under normal use as specified in Philips product descriptions and specifications.

The warranty period for MRC tubes provided with Customer's purchase of a new or refurbished X-ray system shall be the shorter of thirty-six (36) months after installation or thirty-eight (38) months after date of shipment from Philips. The warranty period for purchases of replacement tubes shall be the shorter of twelve (12) months after installation or fourteen (14) months after date of shipment from Philips.

MRC TUBE WARRANTY EXCLUSION
The above warranty shall not apply to X-ray tubes outside the United States and Canada. Philips' obligations under the product warranty do not apply to any product defects resulting from: improper or inadequate maintenance or calibration by Customer or its agents; Customer or third party supplied software, interfaces, or supplies; use or operation of the product other than in accordance with loss, or damage in transit; improper site preparation; unauthorized maintenance or Philips' applicable product specifications and written instructions; abuse, negligence, accident, modifications to the product; or, to viruses or similar software interference resulting from the connection of the product to a network.

MRC TUBE WARRANTY REMEDIES
If a tube is found to fail during the warranty period, and if, in the best judgment of Philips, the failure is not due to neglect, accident, improper installation, use contrary to instructions, or the exclusions stated above, Philips' tube warranty liability hereunder is limited to, at Philips option, the repair or replacement of the tube. Any replacement tube would have a warranty period equal to the balance of the warranty period left on the tube replaced.

IMAGE INTENSIFIER TUBES
Philips warrants the image intensifier tubes provided with the System, if any, will be free from defects in material and manufacturing workmanship for twenty-four (24) months. Claims must be made within twenty-four (24) months after installation or twenty-seven (27) months after date of shipment from Philips, whichever occurs first. If an image intensifier tube fails to meet this warranty, as Customer's sole and exclusive remedy, upon return of the tube, Philips will provide a prorated credit towards the purchase of a replacement tube from Philips as follows:

USAGE				CREDIT
0	to within	12	months	100%
12	to within	13	months	50%
13	to within	14	months	46%
14	to within	15	months	42%
15	to within	16	months	37%
16	to within	17	months	33%
17	to within	18	months	29%
18	to within	19	months	25%
19	to within	20	months	21%
20	to within	21	months	17%
21	to within	22	months	12%
22	to within	23	months	8%
23	to within	24	months	4%

Tubes received by Philips under this warranty that are found to meet all test specifications will be returned to the Customer and the warranty will continue as of the original date of installation. Examination of the returned tube may necessitate its destruction, but Philips' liability shall, in any case be limited to repair or replacement as aforesaid, only if in its sole opinion the tube has been properly used, installed and applied and has not been subjected to neglect, accident, or improper installation, or use. Transportation charges and risk of loss, both ways, of returned or replaced tubes shall be at the expense of the Customer.

DYNAMIC FLAT DETECTORS
Philips warrants the flat detectors provided with the System, if any, will be free from defects in material and manufacturing workmanship for twelve (12) months. Claims must be made within twelve (12) months after installation or fifteen (15) months after date of shipment from Philips, whichever occurs first. If a detector fails to meet this warranty, as Customer's sole and exclusive remedy, upon return of the detector, Philips will provide Customer a replacement detector at no additional charge.

SYSTEM SOFTWARE AND SOFTWARE UPDATES
The software provided with the System will be the latest version of the standard software available for that System as of the 90th day prior to the date the System is delivered to Customer. Updates to standard software for the System that do not require additional hardware or equipment modifications will be performed as a part of normal warranty service during the term of the warranty.

All software is and shall remain the sole property of Philips or its software suppliers. Use of the software is subject to the terms of a separate software license agreement. Customer must sign all such license agreements prior to or upon the delivery of the product. No license or other right is granted to Customer or to any other party to use the software except as set forth in the license agreements.

Any Philips maintenance or service software and documentation provided with the product and/or located at Customer's premises is intended solely to assist Philips and its authorized agents to install and to test the System, to assist Philips and its authorized agents to maintain and to service the System under a separate support agreement with Customer, or to permit Customer to maintain and service the System. Customer agrees to restrict the access to such software and documentation to Philips' employees and those of its authorized agents, and to authorized employees of Customer only.

WARRANTY LIMITATIONS
Philips' obligations under the System warranty are limited, at Philips' option, to the repair or the replacement of the System or a portion thereof, or to a credit or refund of a portion of the purchase price paid by Customer. Any refund or credit will be paid to Customer when the System is returned to Philips. Certain of the parts used in the manufacture or installation of, or in the replacement parts for, this System may contain refurbished components. If such components are used, they will be subject to the same quality control and inspection procedures as all other components in the System. Any System warranty is made on condition that Philips receives written notice of a System defect during the warranty period, and within thirty (30) days following the discovery of the defect by Customer. Philips' obligations under the System warranty do not apply to any System defects resulting from: improper or inadequate maintenance or calibration by Customer or its agents; Customer or third party supplied software, interfaces, or supplies; use or operation of the product other than in accordance with loss, or damage in transit; improper site preparation; unauthorized maintenance or Philips' applicable product specifications and written instructions; abuse, negligence, accident, modifications to the System; or to viruses or similar software interference resulting from the connection of the product to a network. Philips does not provide a warranty for any such third party products furnished to Customer by Philips; however, Philips shall use reasonable efforts to extend to Customer the third party warranty for the product. The obligations of Philips described above are Philips' only obligations and Customer's sole and exclusive remedy for a breach of a System warranty. Repairs or replacement parts do not extend the term of this warranty.

THE WARRANTIES SET FORTH IN THIS WARRANTY DOCUMENT WITH RESPECT TO THE SYSTEM (INCLUDING THE SOFTWARE PROVIDED WITH THE SYSTEM), GLASSWARE, AND DETECTORS ARE THE ONLY WARRANTIES MADE BY PHILIPS IN CONNECTION WITH THE SYSTEM, SOFTWARE, GLASSWARE, DETECTORS, AND THE TRANSACTIONS CONTEMPLATED BY THE QUOTATION, AND ARE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

ACCESS TO SYSTEM
Philips shall have full, free and safe access to the System and Customer's operation, performance and maintenance records for the System, on each scheduled or requested warranty service visit. Philips shall also have access to and use of any machine, service, attachment, features or other equipment required to perform the necessary service contemplated herein at no charge to Philips. Customer waives warranty service if it does not provide such access to the System and Customer's records. Should Philips be denied access to the System and Customer's records at the agreed upon time, a charge equal to the appropriate hourly rate will be accepted by Customer for "waiting time."

WARRANTY SERVICE
In the event it is not possible to accomplish warranty service within normal working hours (8:00 A.M. to 5:00 P.M., Monday through Friday, excluding Philips observed holidays), or in the event Customer specifically requests that warranty service be performed outside of Philips normal working hours, Customer agrees to pay for such services at Philips standard service rates in effect. Maintenance Agreements are available for extended coverage.

TRANSFER OF SYSTEM
In the event Customer transfers or relocates the System, all obligations under this warranty will terminate unless Customer receives the prior written consent of Philips for the transfer or relocation. Upon any transfer or relocation, the System must be inspected and certified by Philips as being free from all defects in material, software and workmanship and as being in compliance with all technical and performance specifications. Customer will compensate Philips for these services at the prevailing service rates in effect as of the date the inspection is performed. Any System which is transported intact to pre-approved locations and is maintained as originally installed in mobile configurations will remain covered by this warranty.

CONDITIONS
This warranty is subject to the following conditions: the System (a) is to be installed by authorized Philips representatives (or is to be installed in accordance with all Philips installation instructions by personnel trained by Philips), (b) is to be operated exclusively by duly qualified personnel in a safe and reasonable manner in accordance with Philips written instructions and for the purpose for which the products were intended, (c) is to be maintained and in strict compliance with all recommended and scheduled maintenance instructions provided with the System, and (d) Customer is to notify Philips immediately in the event the System at any time fails to meet its printed performance specifications.

LIMITATIONS OF LIABILITY AND DISCLAIMERS
The liability, if any, of Philips AND ITS AFFILIATES for damages whether arising from breach of the terms in the quotation, breach of warranty, negligence, indemnity, strict liability or other tort, or otherwise with respect to the products and services is limited to an amount not to exceed the price of the product or service giving rise to the liability.

IN NO EVENT SHALL PHILIPS OR ITS AFFILIATES BE LIABLE FOR ANY INDIRECT, PUNITIVE, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR PROFITS, OR THE COST OF SUBSTITUTE PRODUCTS OR SERVICES WHETHER ARISING FROM BREACH OF THE TERMS IN THIS QUOTATION, BREACH OF WARRANTY, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHER TORT. PHILIPS SHALL HAVE NO LIABILITY FOR ANY GRATUITOUS ADVICE PROVIDED TO THE CUSTOMER.

FORCE MAJEURE
Philips and Customer shall each be excused from performing its obligations arising from any delay or default caused by events beyond its reasonable control including, but not limited to: acts of God, acts of third parties, acts of the other party, acts of any civil or military authority, fire, floods, war, embargoes, labor disputes, acts of sabotage, riots, accidents, delays of carriers, subcontractors or suppliers, voluntary or mandatory compliance with any government act, regulation or request, shortage of labor, materials or manufacturing facilities.

Philips system specifications are subject to change without notice Document Number 4535 983 03234 999

Non Disclosure Agreement for Philips Confidential Pricing Information

The parties specified below agree to the following terms:

A. Philips

Name	Philips Healthcare, a division of Philips Electronics North America Corporation
Address	22100 Bothell-Everett Highway, Bothell, WA 98021 United States of America

B. Company

Name	UNC HEALTHCARE SYSTEM
Address	101 MANNING DR CHAPEL HILL, NC 27514-4220

C. Confidential Information

Authorized Purpose	To evaluate Philips' confidential information relating to pricing for imaging equipment ("Pricing") in connection with the potential purchase of such imaging equipment.
Period	Begins on the date Pricing is first disclosed and continues for 5 years from date Pricing is last disclosed.

D. Philips Contact

Name	Bethann Griffith-Subik
Title	
Telephone	(919) 677-9046
Fax	(919) 677-9047
e-mail	
Signature	

Company Contact

Name	
Title	
Telephone	
Fax	
e-mail	
Signature	

1. The following terms and conditions (the "Agreement") apply to Pricing disclosed by Philips and its Affiliates ("Philips") to Company and its Affiliates ("Company"), in connection with the Authorized Purpose.

   (a) Subject to Philips' prior written consent, Company may disclose, or request that Philips disclose, Pricing to Company's Affiliates that need to know the Pricing for carrying out the Authorized Purpose, provided they are advised of and agree to be bound by this Agreement. Company is responsible for any breach of this Agreement by its Affiliates.

   (b) An Affiliate is any corporation, company, or other entity, that: (i) is under the Control of a party hereto; or (ii) has Control of a party hereto; or (iii) is under common Control with a party hereto. For this purpose "Control" means that more than fifty percent (50%) of the controlled entity's shares or ownership interest representing the right to make decisions for such are owned or controlled, directly or indirectly, by the controlling entity.

2. Philips may disclose Pricing to Company with respect to the Authorized Purpose in writing, orally, or otherwise. All information is assumed to be Pricing, and confidential, if the confidential or proprietary nature is reasonable under the circumstances.

3. All Pricing disclosed by Philips shall remain Philips' the property. Company does not, by implication, estoppel, or otherwise, acquire any intellectual property right, title, or ownership, nor a license to any such intellectual property right, with respect to any Pricing disclosed by Philips hereunder.
   ALL PRICING IS PROVIDED ON AN "AS IS" BASIS, WITHOUT ANY WARRANTY WHATSOEVER. PHILIPS SHALL HAVE NO LIABILITY WHATSOEVER RESULTING FROM THE USE OF THE INFORMATION PROVIDED.

4. Company shall:
   (a) not use the Pricing for any purpose other than the Authorized Purpose;
   (b) not disclose the Pricing to any third party;
   (c) protect the Pricing against disclosure in the same manner and with the same degree of care with which Company protects its own confidential information but not less than a reasonable degree of care; and
   (d) limit circulation of the Pricing to Company's employees as have a need to know in connection with the Authorized Purpose.

   These obligations shall survive the termination of this Agreement. Philips may terminate this Agreement at any time by means of a written notice to Company. Company shall return to Philips, or certify destruction of, all Pricing, immediately upon termination or expiration of this Agreement.

5. Information disclosed by Philips to Company pursuant to this Agreement shall not be confidential to the extent that the information:
   (a) is or becomes part of the public domain without violation of this Agreement or any other obligation of confidentiality;
   (b) is known by Company prior to disclosure by Philips;
   (c) is lawfully obtained by Company from a third party without any breach of confidentiality or violation of law; or
   (d) is developed by Company completely independently of any such disclosure by Philips.

6. If Company is required, pursuant to administrative or judicial action or subpoena, to disclose the Pricing, Company shall use its best efforts to maintain the confidentiality of the Pricing, e.g. by asserting in such action any applicable privileges. Immediately after gaining knowledge or receiving notice of such action or subpoena, Company shall notify Philips and give Philips the opportunity to seek any other legal remedies so as to maintain such Pricing in confidence, including a reasonable protective order.

7. Company may not transfer or assign any or all of its rights and/or obligations or delegate the performance of any or all of its obligations under this Agreement, directly or indirectly, through acquisition, merger or otherwise, without the prior written consent of Philips. Any transfer, assignment or delegation in contravention of the foregoing shall be void.

8. Company shall not disclose, export or release the Pricing in contravention of any applicable laws or regulations.

9. This Agreement shall be governed and construed in accordance with the laws of the State of New York, without giving effect to its conflict of laws provisions.

10. This Agreement contains the entire understanding of the parties and supersedes any previous understandings or agreements with respect to the subject matter hereof. This Agreement may be amended only in writing signed by authorized representatives of each party.

Exhibit 5

PHILIPS

Philips Healthcare
595 Miner Road
Cleveland, OH 44143

October 29, 2015

UNC Health and Hospitals 37259
101 Manning Drive
Chapel Hill, NC 27514

To Whom It May Concern:

This letter is to confirm that the 2003 Toshiba CV Lab, located at UNC Health and Hospitals located in Chapel Hill, North Carolina will be traded-in to Philips Healthcare. Philips will re-sell this system to Mylin Medical Systems. Mylin Medical Systems will de-install and remove the equipment out of the State of North Carolina. The cost of removing the equipment is included in the purchase price of the new equipment.

If you have any questions, please feel free to contact me.

Thanks

Mike

Michael Vitagliano
Director, Trade-in and Asset Management
Refurbished Systems
Philips Healthcare
595 Miner Road
Cleveland, Ohio 44143

Phone (440) 483-5931
Fax (440) 483-4302

michael.vitagliano@philips.com

Exhibit 6

PHILIPS HEALTHCARE
A division of Philips Electronics North America Corporation
22100 Bothell Everett Highway
P.O. Box 3003
Bothell, Washington 98041-3003

PHILIPS

Quotation #: 1-19JUDA1	**Rev:** 3	**Effective From:** 04-Nov-15	**To:** 30-Dec-15

Presented To:

UNIV N CAROLINA HEALTH CARE SYSTEM
101 MANNING DR
CHAPEL HILL, NC 27514-4220

Tel:

Alternate Address:

Presented By:

Chris Mason
Account Manager
Tel: (615) 517-6955
Fax:

John Baumann
Regional Manager
Tel:
Fax:

Date Printed: 04-Nov-15

Submit Orders To:
22100 BOTHELL EVERETT HWY
BOTHELL WA 98041
Tel:
Fax:(425) 458-0390

IMPORTANT NOTICE: Health care providers are reminded that if the transactions herein include or involve a loan or discount (including a rebate or other price reduction), they must fully and accurately report such loan or discount on cost reports or other applicable reports or claims for payment submitted under any federal or state health care program, including but not limited to Medicare and Medicaid, such as may be required by state or federal law, including but not limited to 42 CFR 1001.952(h).

Quote Solution Summary

Line #	Product	Qty	Price
	100751 Xper Flex Cardio	1	$55,300.00
		Equipment Total:	$55,300.00

Solution Summary Detail

Product	Qty	Each	Monthly	Price
100751 Xper Flex Cardio	1	$55,300.00		$55,300.00

Buying Group: **MEDASSETS SUPPLY CHAIN SYSTEMS INC.** **Contract #:** **MS03282**

Addt'l Terms:

Each Quotation solution will reference a specific Buying Group/Contract Number representing an agreement containing discounts, fees and any specific terms and conditions which will apply to that single quoted solution. If no Buying Group/Contract Number is shown, Philips' Terms and Conditions of Sale will apply to the quoted solution.

Each equipment system listed on purchase order/orders represents a separate and distinct financial transaction. We understand and agree that each transaction is to be individually billed and paid.

Payment Terms: 0% Down, 80% Upon Delivery, 20% Due When the Product is Available for First Patient Use, Net due upon receipt

Quote Summary

100751 Xper Flex Cardio

Qty	Product
1	P_860335_PL1 Xper Flex Cardio Control Room
1	P_860335_SF8 FFR Package
1	P_860337_AC8 UPS - Medical Grade
1	P_860337_DS8 Customer provided Boom and/or Client Displays
1	AS3 Customer prov. Data Center and/or Broker Server HW
1	P_860337_DM6 Xper Flex Cardio Table Mount
1	RK4 Customer to provide rack enclosure
1	P_860337_CK1 Installation Cable Kit Control Room
20	989801200724 Contracts - Onsite PS Hours
8	989801200725 Contracts - Onsite Training PS hours
80	989801200726 Contracts - Remote PS hours
1	FNA0857 Total number of Facilities

100751 Xper Flex Cardio

System Type: New
Freight Terms: FOB Destination
Warranty Terms: Part numbers beginning with two (2) asterisks (**) are covered by a System 12 Months Warranty. All other part numbers are third (3rd) party items.
Special Notations: Contingencies must be removed 120 days before scheduled shipment to assure delivery on specified date. Any rigging costs are the responsibility of the Purchaser.
Additional Terms:

Line #	Part #	Description	Qty	Each	Price
1	**P_860335_PL1	**Xper Flex Cardio Control Room**	1	$32,585.00	$32,585.00

Xper Flex Cardio Control Room configuration is a physiomonitoring/hemodynamic system that is optimized for the cath lab environment. The system allows for monitoring the patient's vital signs as well as allows for hemodynamic measurements required during interventional procedures. This Control Room configuration consists of a signal acquisition unit that is installed within the procedure room and a computer workstation in the x-ray control room. This configuration is typically used within the cath lab, hybrid OR and multi-purpose labs where cardiac monitoring is required. User logins allow for networking to a central database server for archival of case procedure information. The system outputs the monitored signals to a boom display within the procedure room, while dual LCDs displays connected to the control room workstation can be used for all of the hemodynamic and information management functionality.

Software Features:
-Physiomonitoring, manual or automated entry of patient information in case details, sampling of waveforms, charting, hemodynamics
-Non-clinical functionality available via Xper Information Management modules loaded on the control room workstation

Xper Information Management modules included:
-Hemodynamic control software
-Charting for case procedure documentation
-Hemodynamic calculations
-Vitals capture
-Scheduler

Optional Features:
-FFR Measurement for Volcano or St. Jude
-End Tidal CO2 (Side Stream and/or Main Stream)
-16 Lead ECG
-ECG Analysis using Philips DXL Algorithm

Optional Modules:
-Xper IM Documentation Workflow Modules
-Xper IM Registries
-Xper IM Patient Status Viewer

Minimum Hardware included:
-Flex Cardio device (Model FC2010)
-Workstation
-Dual LCD Displays
-Keyboard
-Mouse
-Patient cable kit

100751 Xper Flex Cardio

Line #	Part #	Description	Qty	Each	Price
		Minimum Software included: -Microsoft Windows 7 or greater -Current version of Xper IM software for workstation -PC Anywhere v12.5 or greater -McAfee Antivirus Monitoring functionality included: -NIBP -Respiration -Temperature -12-lead ECG -SpO2 -Cardiac output (Thermodilution) -Invasive pressures (4 channels) Requires purchase of: -Xper IM Data Center SW -Table Mount -4:3 LCD HQ Display NOTE: - Pressure transducers, or adapter cables, are not included. - Contact: Fogg System Company USA: 1-800-525-0292 http://www.foggsystem.com/			
2	**P_860335_SF8	**FFR Package** The FFR Measurement for Volcano option enables a Volcano SmartMap (TM) device to be connected to Xper Flex Cardio physiomonitoring system for integrated Fractional Flow Measurements. Features -Compatibility with Volcano SmartMap (TM) device allowing use of Volcano guide wires for monitoring pressure waveforms -Ability to record a sample of the pressure waveform -Real time, dynamic FFR measurement and capture -Retrospective review of FFR pressure waveform Requires -Model 6500 SmartMap Pressure Instrument (not included) The FFR Measurement for St. Jude option enables a St. Jude (RADI) Aeris (TM) device to be connected to Xper Flex Cardio physiomonitoring system for integrated Fractional Flow Measurements. Features -Compatibility with St. Jude Aeris (TM) device allowing use of St. Jude (RADI) guide wires for monitoring pressure waveforms -Ability to record a sample of the pressure waveform -Real time, dynamic FFR measurement and capture -Retrospective review of FFR pressure waveform Requires -St. Jude Pressure Wire Receiver 12722	1	$10,435.00	$10,435.00
3	**P_860337_AC8	**UPS - Medical Grade**	1	$115.00	$115.00

100751 Xper Flex Cardio

Line #	Part #	Description	Qty	Each	Price

Medical grade UPS for use with Xper Information Management Flex Cardio servers

4 ****P_860337_DS8** **Customer provided Boom and/or Client Displays** **1**

Customer to provide Displays.

Boom displays must be medical grade monitor, which is a monitor that passes the requirements of IEC60601-1 for earth leakage, grounding and galvanic isolation etc. These monitors are specifically designed for use within the patient environment and have a UL or known agency mark (CSA, TUV) that states that it meets the 60601-1 standard

For Workstation displays outside of the patient environment, any PC compatible display may be provided.

5 ****AS3** **Customer prov. Data Center and/or Broker Server HW** **1**

Customer to provide Data Center Server hardware that meets or exceeds the following minimum specifications:
-File Server
- Main Board
- Dual Core 1.6 GHz or greater processor
- 4 GB RAM
- Hard Disk (500 GB capacity, RAID possible)
- DVD-ROM drive
- Video – 1280 x 1024 res, 16 bit color Min
- 10/100/1000 Network Adapter (may have multiple)
-Microsoft Windows Server Operating System
-Microsoft SQL Server Software
-Symantec pcAnywhere
-Rack in which to place Server, monitor, keyboard, mouse and UPS

Alternatively, customer to provide higher capacity Data Center server hardware, recommended for use when there is a need for either higher database storage capacity, or to allow multiple facilities to share a single data center, to meet or exceed the following specifications:
- File Server
- Main Board
- Dual Quad Core 3.16 GHz or greater processor
- 32 GB RAM
- RAID 5 or greater
- DVD-ROM Drive
- 4 TB Storage Space
- Video – 1280 x 1024 res, 24/32 bit color Min
- 10/100/1000 Network Adapter (2)
-Microsoft Windows Server Operating System
-Microsoft SQL Server Software
-Symantec pcAnywhere
-Rack in which to place Server, monitor, keyboard, mouse and UPS
NOTE:
If this hardware is to support more than one facility, each facility must have a 1000mb uplink between the facility and the Server.

Customer to provide the Interface Server hardware, to meet or exceed the following minimum specifications:
-File Server
-Main Board

100751 Xper Flex Cardio

Line #	Part #	Description	Qty	Each	Price
		-Dual Core 1.6 GHz or greater processor -4 GB RAM -RAID 5 array (500 GB capacity) -CD-ROM drive -Video – 1280 x 1024 res, 24/32 bit color Min -10/100/1000 Network Adapter (2) -Microsoft Windows Server Operating System -Microsoft SQL Server Software -Symantec pcAnywhere -Rack in which to place Server, monitor, keyboard, mouse and UPS			
6	**P_860337_DM 6	**Xper Flex Cardio Table Mount** This Xper Flex Cardio Table Mount is a customized mounting system and is required to mount FC2010 to x-ray table. The mount includes cable management to minimize clutter of cables connected to the FC2010 device. *This wall mount is optimized for the Philips Allura X-ray table, but could be used for x-ray tables from other manufacturers.	1	$265.00	$265.00
7	**RK4	**Customer to provide rack enclosure**	1		
8	**P_860337_CK1	**Installation Cable Kit Control Room** Provides all installation cables required for normal installation, Flex Cardio Control Room.	1	$660.00	$660.00
9	**989801200724	**Contracts - Onsite PS Hours** Philips Healthcare applies disciplined project management methodology to delivery of each engagement. Our methodology closely parallels the Project Management Institute's (PMI) worldwide -recognized framework of Initiating, Planning, Executing, Controlling and Closing. The Philips team, led by an experienced project manager, will work with you throughout the duration of the project to deliver the products and services described in this quotation. Team members typically include the following: • Implementation Specialists - responsible for technical work such as installation and configuration of the system hardware and software • Application Consultants – responsible working within the clinical environment providing expertise in workflow, application configuration and training • Integration Engineer – responsible for development and testing of HIS and clinical interfaces The work effort to implement your solution is based upon the specific configuration that has been defined in the quotation. The Statement of Work (SOW) or Project Scope Document (PSD) describes how the solution will be implemented within your environment. For Government accounts, signed meeting minutes of the work effort involved can also be used as a substitute for the signed SOW.	20	$130.00	$2,600.00
10	**989801200725	**Contracts - Onsite Training PS hours**	8	$130.00	$1,040.00

100751 Xper Flex Cardio

Line #	Part #	Description	Qty	Each	Price

Provides onsite training to be delivered by a Philips Healthcare Application Consultant. Training is valid for one year from the date of purchase. Any unused training will expire after this time. Refer to the Statement of Work (SOW) or Project Scope Document (PSD) for additional detail.

For Government accounts, signed meeting minutes of the work effort involved can also be used as a substitute for the signed SOW.

11	**989801200726	**Contracts - Remote PS hours**	80	$95.00	$7,600.00

Philips Healthcare applies disciplined project management methodology to delivery of each engagement. Our methodology closely parallels the Project Management Institute's (PMI) worldwide -recognized framework of Initiating, Planning, Executing, Controlling and Closing. The Philips team, led by an experienced project manager, will work with you throughout the duration of the project to deliver the products and services described in this quotation. Team members typically include the following:

- Implementation Specialists - responsible for technical work such as installation and configuration of the system hardware and software
- Application Consultants – responsible working within the clinical environment providing expertise in workflow, application configuration and training
- Integration Engineer – responsible for development and testing of HIS and clinical interfaces

The work effort to implement your solution is based upon the specific configuration that has been defined in the quotation. The Statement of Work (SOW) or Project Scope Document (PSD) describes how the solution will be implemented within your environment.

For Government accounts, signed meeting minutes of the work effort involved can also be used as a substitute for the signed SOW.

12	**FNA0857	**Total number of Facilities**	1		

100751 Xper Flex Cardio

LIST PRICE	$110,600.00
DISCOUNT	$55,300.00
NET PRICE	$55,300.00

Buying Group: MEDASSETS SUPPLY CHAIN SYSTEMS INC. Contract #: MS03282

Addt'l Terms:

Each Quotation solution will reference a specific Buying Group/Contract Number representing an agreement containing discounts, fees and any specific terms and conditions which will apply to that single quoted solution. If no Buying Group/Contract Number is shown, Philips' Terms and Conditions of Sale will apply to the quoted solution.

Each equipment system listed on purchase order/orders represents a separate and distinct financial transaction. We understand and agree that each transaction is to be individually billed and paid.

Price above does not include any applicable sales taxes.

The preliminary delivery request date for this equipment is:_____.

If you do not issue formal purchase orders indicate by initialing here_____.

Tax Status:

Taxable_____ Tax Exempt_____

If Exempt, please indicate the Exemption Certification Number:_____, and attach a copy of the certificate.

Delivery/Installation Address:

_____

_____

_____

Invoice Address:

_____

_____

_____

Contact Phone #:

_____

Contact Phone #:

_____

Purchaser approval as quoted:

_____

Date:

_____

Title:

_____

This quotation is signed and accepted by an authorized representative in acknowledgement of the system configuration, terms and conditions stated herein.

Non Disclosure Agreement for Philips Confidential Pricing Information

The parties specified below agree to the following terms:

A. Philips

Name	Philips Healthcare, a division of Philips Electronics North America Corporation
Address	22100 Bothell-Everett Highway, Bothell, WA 98021 United States of America

B. Company

Name	UNIV N CAROLINA HEALTH CARE SYSTEM
Address	101 MANNING DR CHAPEL HILL, NC 27514-4220

C. Confidential Information

Authorized Purpose	To evaluate Philips' confidential information relating to pricing for imaging equipment ("Pricing") in connection with the potential purchase of such imaging equipment.
Period	Begins on the date Pricing is first disclosed and continues for 5 years from date Pricing is last disclosed.

D. Philips Contact

Name	Chris Mason
Title	
Telephone	(615) 517-6955
Fax	
e-mail	
Signature	

Company Contact

Name	
Title	
Telephone	
Fax	
e-mail	
Signature	

1. The following terms and conditions (the "Agreement") apply to Pricing disclosed by Philips and its Affiliates ("Philips") to Company and its Affiliates ("Company"), in connection with the Authorized Purpose.

   (a) Subject to Philips' prior written consent, Company may disclose, or request that Philips disclose, Pricing to Company's Affiliates that need to know the Pricing for carrying out the Authorized Purpose, provided they are advised of and agree to be bound by this Agreement. Company is responsible for any breach of this Agreement by its Affiliates.

   (b) An Affiliate is any corporation, company, or other entity, that: (i) is under the Control of a party hereto; or (ii) has Control of a party hereto; or (iii) is under common Control with a party hereto. For this purpose "Control" means that more than fifty percent (50%) of the controlled entity's shares or ownership interest representing the right to make decisions for such are owned or controlled, directly or indirectly, by the controlling entity.

2. Philips may disclose Pricing to Company with respect to the Authorized Purpose in writing, orally, or otherwise. All information is assumed to be Pricing, and confidential, if the confidential or proprietary nature is reasonable under the circumstances.

3. All Pricing disclosed by Philips shall remain Philips' the property. Company does not, by implication, estoppel, or otherwise, acquire any intellectual property right, title, or ownership, nor a license to any such intellectual property right, with respect to any Pricing disclosed by Philips hereunder.
   ALL PRICING IS PROVIDED ON AN "AS IS" BASIS, WITHOUT ANY WARRANTY WHATSOEVER. PHILIPS SHALL HAVE NO LIABILITY WHATSOEVER RESULTING FROM THE USE OF THE INFORMATION PROVIDED.

4. Company shall:
   (a) not use the Pricing for any purpose other than the Authorized Purpose;
   (b) not disclose the Pricing to any third party;
   (c) protect the Pricing against disclosure in the same manner and with the same degree of care with which Company protects its own confidential information but not less than a reasonable degree of care; and
   (d) limit circulation of the Pricing to Company's employees as have a need to know in connection with the Authorized Purpose.

   These obligations shall survive the termination of this Agreement. Philips may terminate this Agreement at any time by means of a written notice to Company. Company shall return to Philips, or certify destruction of, all Pricing, immediately upon termination or expiration of this Agreement.

5. Information disclosed by Philips to Company pursuant to this Agreement shall not be confidential to the extent that the information:
   (a) is or becomes part of the public domain without violation of this Agreement or any other obligation of confidentiality;
   (b) is known by Company prior to disclosure by Philips;
   (c) is lawfully obtained by Company from a third party without any breach of confidentiality or violation of law; or
   (d) is developed by Company completely independently of any such disclosure by Philips.

6. If Company is required, pursuant to administrative or judicial action or subpoena, to disclose the Pricing, Company shall use its best efforts to maintain the confidentiality of the Pricing, e.g. by asserting in such action any applicable privileges. Immediately after gaining knowledge or receiving notice of such action or subpoena, Company shall notify Philips and give Philips the opportunity to seek any other legal remedies so as to maintain such Pricing in confidence, including a reasonable protective order.

7. Company may not transfer or assign any or all of its rights and/or obligations or delegate the performance of any or all of its obligations under this Agreement, directly or indirectly, through acquisition, merger or otherwise, without the prior written consent of Philips. Any transfer, assignment or delegation in contravention of the foregoing shall be void.

8. Company shall not disclose, export or release the Pricing in contravention of any applicable laws or regulations.

9. This Agreement shall be governed and construed in accordance with the laws of the State of New York, without giving effect to its conflict of laws provisions.

10. This Agreement contains the entire understanding of the parties and supersedes any previous understandings or agreements with respect to the subject matter hereof. This Agreement may be amended only in writing signed by authorized representatives of each party.

PHILIPS

Xper Flex Cardio Physiomonitoring System

Flexibility and clinical decision support

Xper Flex Cardio Physiomonitoring system combines flexibility suitable for a host of interventional environments with clinical decision support tools that aid efficient diagnosis.

Space-Saving design
With a small form factor of only 7.5"x 6"x 10" (19,05 cm x 15,24 cm x 25,4 cm), Xper Flex Cardio is designed to fit into nearly any space.It features a VESA mounting capability that enables mounting in varied locations.

Decision support before, during and after interventional procedures
Packed within its small form factor are advanced clinical decision support features that deliver valuable patient information in the patient preparation room, during the interventional procedure, and in the recovery room. Then, with just one click, you can capture the relevant data in an ECG report.

Integrated FFR obtains FFR measurements efficiently
Xper Flex Cardio displays Fractional Flow Reserve (FFR) measurements in real time, and then stores them as part of the hemodynamic and cath lab record, so that reports can be automatically populated with FFR data.

DXL ECG Algorithm delivers precision and consistency
The DXL ECG Algorithm produces precise and consistent ECG measurements that are used to generate interpretive statements. By applying age- and gender-specific criteria, the algorithm provides ECG interpretation that helps clinicians accurately assess the cardiac state of patients.

Culprit Artery Detection helps pinpoint occlusions
Culprit Artery Detection provides suggestions on the probable site of an occlusion prior to a cath procedure, saving valuable time and assisting with procedure planning.

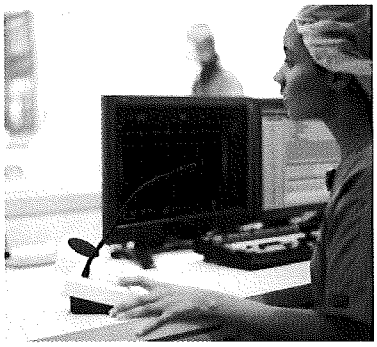
ST Maps indicate ST elevation or depression
Our patented ST Maps provide a graphical indication of ST elevation or depression from either 12- or 16-lead ECGs in both frontal and transverse planes, helping physicians assess a patient's condition before and during the procedure, as well as evaluate the results of the intervention.

16-lead ECGs provide more information
Xper Flex Cardio offers the choice of 12- or 16-lead ECGs. With four additional leads that can be used for improved detection of the right ventricular and posterior infarct, 16-lead ECG fills in the "blind spots" of a 12-lead ECG.

Critical Values highlight important findings
Critical Values are highly visible independent statements that appear on the ECG reports. These Critical Value statements highlight conditions requiring immediate clinical attention, and can be used to support discovery-to-treatment and quality initiatives.

PHILIPS

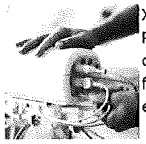
Xper Flex Cardio



Xperience cardiovascular technology that revolves around your workflow

Xper Information Management is our personalized cardiovascular workflow solution. This innovative product suite presents the latest evolution of our renowned physiomonitoring technology, as well as a variety of new innovations for reporting, scheduling, inventory and intelligent data management. With tools that enhance efficiency on multiple levels, this new solution improves and simplifies workflow for all cardiovascular professionals.

Xper Flex Cardio

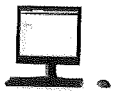


Xper Flex Cardio Physiomonitoring system combines flexibility suitable for a host of interventional environments.

Xper Bedside Solution & Central Station

Xper Flex Cardio Bedside Solution and Central Station extend the continuum of care to the pre- and post-cath holding areas.

Xper Workspace



Xper Information Management Workspace is the flexible workspace where you can utilize our reporting, scheduling, inventory and lab management software solutions.

Xper Transcription

Xper Information Management Transcription is a robust tool that equips physicians and clinicians with user-defined, custom procedural reports for cardiovascular patients.

Xper Data Analysis

Xper Information Management Data Analysis delivers an intuitive solution designed to transform cath lab department and clinical data into accurate, accessible and valuable information.

Xper Scheduler

Xper Information Management Scheduler dynamically links the study and staff schedules.

Xper Inventory

With Xper Information Management Inventory, you can enjoy a multitude of advantages because our inventory solution is empowering, intuitive and efficient.

Xper Server

Xper Information Management Server is the central portal designed to give users with administrative rights access to systems functions.

Xper Connect

Our optional bidirectional hospital information system (HIS) interface (HL7), Xper Information Management Connect, is one key differentiator of our cardiovascular workflow solution.

http://www.healthcare.philips.com/main/products/healthcare_informatics/xper_info_mgt/index.wpd