

UNGOOFAARU REGIONAL HOSPITAL  
Raa, Ungoofaaru, Republic of Maldives



## **TECHNICAL SPECIFICATION FOR MEDICAL EQUIPMENT**

### **Equipment: C ARM UNIT**

#### **OBJECTIVE**

Objective: A C-Arm Fluoroscopy Unit is a state-of-the-art mobile medical imaging system designed to provide high-resolution, real-time X-ray imaging during diagnostic and surgical procedures. It enables clinicians to visualize anatomical structures, implants, and surgical instruments with precision, thereby enhancing procedural accuracy, patient safety, and clinical decision-making. The system is essential for supporting a wide range of specialties, including orthopaedics, trauma, general surgery, urology, vascular surgery, pain management, gastroenterology, and other image-guided interventions. The equipment is intended to improve workflow efficiency, reduce radiation exposure through advanced imaging technologies, and ensure the delivery of high-quality, safe, and effective patient care.

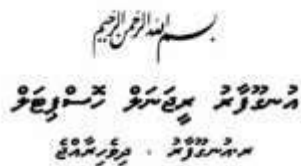
### **C-ARM X-RAY UNIT – TECHNICAL SPECIFICATIONS**

#### **1. X-Ray Generator**

| Parameter         | Specification                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------|
| Type              | High-frequency digital X-ray generator (solid-state inverter)                                    |
| Output Power      | 2 kW – 15 kW or higher                                                                           |
| Voltage (kV)      | 40 – 120 kV range                                                                                |
| Current (mA)      | Fluoroscopy continuous and pulsed modes (approx. 0.1 – 10+ mA continuous, higher in pulse modes) |
| Pulse Fluoroscopy | Supported with adjustable pulse rates for dose optimization                                      |

#### **2. X-Ray Tube**





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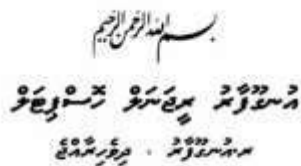


| Parameter                | Specification                                                                |
|--------------------------|------------------------------------------------------------------------------|
| Anode Type               | Rotating or stationary anode with single or dual focal spots (~0.3 – 0.6 mm) |
| Anode Heat Capacity      | Suitable for continuous clinical use (tens of kHU or more)                   |
| Filtration & Collimation | Motorized or manual collimation with beam filtration for dose optimization   |

### 3. Flat Panel Detector

| Parameter          | Specification                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------|
| Detector Type      | Digital flat panel detector with CsI scintillator and amorphous silicon (a-Si) TFT or CMOS technology |
| Active Field Size  | Approximately 20 × 20 cm to 30 × 30 cm                                                                |
| Pixel Matrix       | Minimum ~1024 × 1024                                                                                  |
| Pixel Size         | Approximately 150 – 210 µm                                                                            |
| A/D Conversion     | ≥16-bit                                                                                               |
| Spatial Resolution | Approximately 2.4 – 2.5 lp/mm or higher                                                               |
| Frame Rate         | Real-time fluoroscopy up to 15 – 30 fps                                                               |





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#### 4. Motion & Mechanical

| Parameter                | Specification                        |
|--------------------------|--------------------------------------|
| C-Arm Rotation           | $\pm 180^\circ$ or greater           |
| Vertical Travel          | Approximately 400 mm or more         |
| Horizontal Travel        | Approximately 200 mm or more         |
| Orbital / Tilt Range     | Approximately $90^\circ - 130^\circ$ |
| Source-Detector Distance | Approximately 900 – 1100 mm          |
| C-Arm Free Space / Depth | Approximately 650 – 800 mm           |

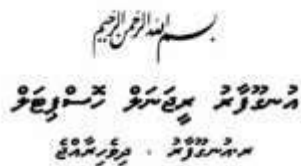
#### 5. Display & Workstation

| Parameter      | Specification                                                       |
|----------------|---------------------------------------------------------------------|
| Live Monitors  | High-resolution LCD/LED monitors (dual 19" – 32")                   |
| User Interface | Touchscreen controls for imaging and system settings                |
| Image Storage  | Integrated storage with DICOM 3.0 networking and PACS compatibility |

#### 6. Imaging Modes & Software

| Parameter   | Specification                                          |
|-------------|--------------------------------------------------------|
| Fluoroscopy | Continuous and pulsed fluoroscopy with dose modulation |
| Radiography | Still image radiography using flat panel detector      |





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|                   |                                                                      |
|-------------------|----------------------------------------------------------------------|
| Image Enhancement | Real-time noise reduction, edge enhancement, zoom, measurement tools |
| Advanced Features | Road-mapping, DSA, and dose reporting                                |

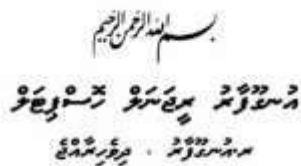
## 7. Power & Environment

| Parameter            | Specification                                         |
|----------------------|-------------------------------------------------------|
| Power Supply         | Standard mains AC (100 – 240 V, 50/60 Hz)             |
| Battery Option       | Need battery backup/FOC UPS                           |
| Operating Conditions | Suitable for operating room and clinical environments |

## 8. Safety & Compliance

| Parameter            | Specification                                           |
|----------------------|---------------------------------------------------------|
| Radiation Protection | Automatic dose control, collimation, anti-scatter grids |
| Standards Compliance | IEC / FDA / CE safety and performance standards         |





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### **Additional Tender Requirements**

| Parameter               | Specification                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------|
| Equipment Qualification | Design, installation, operation and performance qualifications required                 |
| Calibration             | Reports must be traceable to international standards                                    |
| Warranty                | Minimum 3 years warranty                                                                |
| Service Support         | CMC / AMC for next five years with spare parts availability                             |
| Product Details         | Brand, model, rating, description, specifications, price and quantity must be furnished |
| Documentation           | Catalogues and technical write-ups in English (hard and electronic copies)              |
| Performance Data        | Performance and efficiency parameters must be provided                                  |
| Training                | Demonstration and comprehensive training for user and biomedical staff                  |

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