

REPUBLIC OF LEBANON

Ministry of Public Health

COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

**Supply and Installation of Medical Equipment, Furniture
and related Civil and Electromechanical Works
for CT Scanner, Standby Generator and ICU Unit
to Al Jabal Hospital – Kornayel**

**VOLUME II OF VI
SPECIFICATIONS**

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Al-Jabal Hospital

Medical Equipment
Lot 1

LOT 1

MEDICAL EQUIPMENT

SPECIFICATIONS

General Specifications

The Al-Jabal Hospital shall be provided with state of the art equipment. Therefore, the present specifications and layout drawings shall be interpreted as guidelines for type and quality of the equipment required. The specification texts are brief and therefore covering a wide range of equipment types and ancillaries. In some cases, specific figures and limits have been given. Such information should be considered as guidelines.

The equipment offered, however, should be of reputable make and of high quality. The Client may reject any equipment which has no installed base, no recognized references, or certified proven performance. Medical Equipment shall be of renowned manufacturers whose experience has exceeded the 'ten years' bracket especially in the fields of Radiology, Anesthesia, Ventilators, and Operating Theatre Equipment. Manufacturers shall be European, American, Canadian or Japanese. All relevant standards, i.e. IEC- standards for Medical Equipment/Medical Electrical Equipment have to be fulfilled. All medical equipment should be CE-marked and/or FDA approved.

The bidder shall provide each item in the specifications as complete, fully functional units with all ancillaries and accessories necessary for normal and safe use. The bidders are due to inform adequately on all relevant specifications and performances of the offered equipment, even though such information has not been required in detail in the present specifications. Such detailed specifications should be the original manufacturer's specifications and supported by the manufacturer's original technical data sheets. Transcription of the specifications in the tender documents will not be accepted. The bidder may be required to provide additional clarification and supporting documentation about his specifications.

The bidder shall in detail describe procedures for maintenance and the current updating of major equipment and systems.

The bidder shall specify in detail the training component included in his offer, which shall cover all necessary training and education of relevant staff for safe and competent handling of major equipment and systems.

The Medical Equipment Supplier shall adhere to the specifications and other documents within the tender which consist of 1:100 scale layouts for equipment, room by room listings, department listing and general bill of quantities.

Tender documents shall complement each other for information purposes and the contractor shall not discard any of the enclosed documents.

All dimensions contained within the specifications are approximate and shall not be taken literally except in the event of Supplier's equipment surpassing the specified dimensions; then an exercise from his part shall be carried out to ensure proper space clearances within any particular room for his proposed equipment. Power ratings as shown in documents are indicative, except voltage and frequency ratings.

Any brand name mentioned in the specifications shall be used for analogy purposes rather than selection. Similar product shall be acceptable.

Supplier has to ensure proper coordination with all other Contractors, particularly those pertaining to civil, electrical, medical gas and electromechanical works. Supplier has to verify all his equipment dimensions according to available architectural drawings and present his shop drawings with all the necessary required preinstallation civil, electric, medical gas and electromechanical works.

The Supplier should be responsible to connecting his equipment to the closest services outlets as available in the Hospital. Any works required by these connections should be included in the price of the equipment. Upon termination and acceptance of any of his works, the supplier should be responsible for restoring and properly finishing the Site (paint, plaster, tiling, etc...).

In case old or surplus equipment/furniture belonging to the Hospital are present on the Site, the supplier should be responsible, where required, for uninstalling these equipment/furniture, packing them appropriately against humidity, temperature and shock, and storing them in a storage place provided by the Hospital. This task should be coordinated with the Hospital administration.

LOT 1

MEDICAL EQUIPMENT

- 1- MONITORING, RESPIRATORS AND ANAESTHESIA EQUIPMENT
- 2- REFRIGERATION EQUIPMENT
- 4- WARD AND MEDICAL EQUIPMENT

1- MONITORING, RESPIRATORS AND ANAESTHESIA EQUIP.

Item M103**Defibrillator W/Cart**

Description

➤ Purpose:

- Emergency cart with accessories and defibrillator for emergency critical cases

➤ System Features:○ **Defibrillator**

- Biphasic defibrillator suitable for adult and pediatric resuscitation procedures, to have the following features and specifications:
 - Low energy biphasic defibrillator,
 - Energy up to 270 Joules,
 - LCD or LED Monitor with 2 channels integrated thermal recorder,
 - Display of selected stored and delivered energy
 - Works on both manual and external automatic external defibrillation (AED) modes.
 - ECG monitoring through paddles, pads and monitoring electrodes.
 - Can defibrillate via paddles or pads.
 - Compensates for body impedance in range of approximately 25 to 150 ohms.
 - Should be able to do synchronized cardio version.
 - Quick charging time of less than 6 seconds for maximum energy.
 - Should be able to do synchronized cardio version.
 - Quick charging time of less than 6 seconds for maximum energy.
 - Should have paddles contact indicator.
 - Should have alarms for high and low heart rate
 - Should have voice prompts on A.E.D. mode
 - Should have battery backup for at least 50 discharges at maximum energy.
 - Should have facility to measure SpO2.
 - Should have facility for transcutaneous on demand and fixed mode non invasive pacing.
- System charging Power: 220-240 V~AC 50-60 Hz.
- Supplied with following accessories :
 - 1 pair Adult / Pediatric paddle
 - 1 x 3 Lead ECG Cable
 - 1x Reusable SpO2 Finger Probe
 - Adult pacing pad – 1 box of 10.
 - Dedicated Battery charger if not integrated in main unit.
 - All necessary accessories, cables and connectors.

○ **Crash Cart**

- Crash Cart with Defibrillator and Accessories for intra hospital emergency procedures, should have the following features and specifications.

○ **Trolley:**

- Heavy duty Trolley for resuscitation and emergency procedure.
- Approximate dimensions: (H x W x D) 105 x 70 x 60 cm.
- Thermally set powder coated Steel construction with high impact aluminum or ABS polymer corners.
- Aluminum push handle.
- ABS Polymer bumper guard and raised edges top shelf.
- Top shelf is removable and fully washable.
- 5 drawers unit: 3 x 8 cm, 1 x 15 cm and 1 x 24 cm (approximately).
- Each drawer comes with compatible ABS 6 compartments tray.
- Mobile on 4 x 12 cm antistatic casters two of them with braking system.
- Central locking system with key lock (with 2 sets of master keys).
- Reinforced pull out shelf.
- Swivel shelf for defibrillator.
- Oxygen cylinder holder.
- Stainless steel drip stand (IV rod) with hook.
- Backboard for cardiac use (solid).
- Sharps container mounting bracket
- Accessories to be included:

○ **Portable Diagnostic set: Set to consist of:**

- A Battery operated universal rechargeable handle.
- Stainless steel body construction, light weight.
- Halogen light source.
- Otoscope, Throat illuminator, Ophthalmoscope and Nasal Illuminator with screw-on Head.
- To be offered with spare bulbs and case.
- Multi-purpose stethoscope, with case or pouch.
- Handheld aneroid type sphygmomanometer.

○ **Intubation Laryngoscope set:**

- High Quality, chrome plated metal construction, universal handle.
- Battery operated.
- Halogen light source.
- Fits any blade type.
- Blades are made of high-grade stainless steel.
- Includes: 1 standard medium adult Macintosh blade, 1 standard large adult Macintosh blade, 1 pediatric Macintosh blade, 1 standard medium adult Miller blade, 1 standard large adult Miller blade, 1 pediatric Miller blade, 1 standard Infant Miller blade.
- Delivered with compatible case.

○ **Manual pulmonary resuscitators (ambu-bags):**

- Made of durable silicone.
- Pliable construction to allow for patient lung feedback.
- Universal Oxygen tubing adapter.
- Reservoir capacity: Infant, child and Adult up to 2.5 L.
- Detachable tubing, mask and reservoir.

- Over pressure relief system: > 40 cm H₂O.

To be provided with:

1 Adult size masks.

1 Child size mask.

1 Infant size mask.

Can be low temperature sterilized.

○ **Other Accessories:**

- All Accessories for Crash Cart to be suitable for adults, pediatrics and infants' procedures.
- High quality supplies to be provided.
- 2 kits of disposable Color coded Geudel type sterile Oralpharyngeal airways with Built-in bite block.
- Kit Contains: 1 Infant, 50mm, Blue (size: 0), 1 Small Child, 60mm, Black (size: 1), 1 Child, 70mm, White (size: 2), 1 Small Adult, 80mm, Green (size: 3), 1 Med. Adult, 90mm, Yellow (size: 4), 1 Large Adult, 100mm, Red (size: 5)
- Electric bar with 4 outlets and 5 M power cord.
- Venturi operated suction system and 5 M tubing.
- O₂ cylinder manifold with reducing valves.
- O₂ flowmeter (demand valve) with patient tubing & 3 sizes facemasks.
- Sphygmomanometer complete aneroid type with adult and pediatric cuffs.
- Box of disposable Tongue depressors made of wood.
- Paddle gel tube.
- Backboard for cardiac use.
- Angle poise lamp.
- Penlight
- Percussion Hammer Buck
- Percussion Hammer Babinsky
- Reusable Tourniquet Strap
- Measuring Tape, 3m
- Steel Rule, 30cm
- Tuning Fork, Set of 4
- Pinwheel Wartenberg
- Forceps, Magill, Adult
- Forceps, Magill, Child
- Forceps, Straight
- Scissors, Lister Bandage
- Scissors, Universal Bandage

○ **Overall approximate dimensions: Vendor to specify**

Item M107**Monitor, Patient**

Description

- **Purpose:**
 - A **bedside** vital sign monitor for adult and pediatric patients in acute care settings
- **System Features:**
 - At least 10-inch display
 - Color LCD touch screen display
 - High resolution, vendor to specify
 - 6 waveforms.
 - Interface to connect to central station should be included.
 - Modular configuration
 - User friendly interface
 - Buttons/Knob and/or touch screen controlled.
 - Audible and visual alarms
- **Must include the following parameters:**
 - **ECG**
 - Up to 12 simultaneous leads
 - Auto cable detection (lead off)
 - Pacemaker detection
 - Defibrillator overload protection
 - Heart Rate Range: approx. 20-300 bpm
 - ST mode
 - **Respiration**
 - Trans Thoracic method or equivalent (vendor to specify)
 - 2 leads (RA & LA, or I & II)
 - Range: approx. 3 to 200 bpm
 - Lead off detection
 - **N.I.B.P (Non Invasive Blood Pressure)**
 - Oscillometric method or equivalent (vendor to specify)
 - Manual & Automatic measurement modes
 - Automatic intervals up to 90 minutes
 - Pulse rate displayed: approx. 30 to 240 bpm
 - Mean Arterial Pressure: approx. 40-230 mmHg
 - Systolic: approx. 50 to 240 mmHg
 - Diastolic: approx. 30 to 200 mmHg
 - Cuff pressure display

- **SpO2 (Pulse Oximetry)**
 - Functional saturation and peripheral pulse rate
 - Percent saturation: 0 to 100 %
 - Pulse rate range: approx. 30 to 300 bpm
 - Disconnect & failure detection
- **Temperature**
 - Via thermistor type probe
 - Selectable scale: °C or °F
 - Range °C: 15° to 45°
 - Range °F: 59° to 113°
- **Other optional modules can be added on demand:**
 - Dual I.B.P (Invasive Blood Pressure)
 - Cardiac Output
 - Capnography
- **Calculations & analysis**
 - Drug calculations
 - ST analysis
 - Arrhythmia analysis
- **Trends**
 - Graphical and tabular type
 - Memory Storage: min 24 hours
 - Data interval: 20 seconds
 - Adjustable vertical scaling when using graphical trends
- **Other**
 - Integrated thermal paper printer
 - 5 cm paper roll
- **Connectivity**
 - LAN or WIFI
 - USB
 - HL7 Compatible for multi-vendor EMR functionality
- **Standards**
 - Compliant with IEC EN 60601-1. FDA and CE approved
- **Accessories**
 - Compatible Power supply /Batteries charger-230 V~AC 50/60 Hz.
 - One Temperature probe rectal with cover.
 - SpO2 sensors with one extension cable: (one reusable adult & pediatric).
 - NIBP cuffs: 1 infant, 1 pediatric, 1 medium and 1 large (adult)
 - ECG cable 5 leads
 - Spare rechargeable battery
 - 2 rolls of thermal paper
 - All necessary cables and attachment accessories.
 - Wall mounting kit
- **Overall approximate monitor dimensions (WxDxH): Vendor to specify**

Item M112**Oxygen flowmeter**

Description

Flowmeter graduated from 0-15 lpm in 0.5l increment.

Compensated back pressure with corresponding probe to fit hospital outlets.

Disposable Bubble humidifier with porous diffuser to be delivered with each flowmeter with oxygen mask and tubing.

Item M113**Resuscitation equipment, Adult**

Description

➤ Purpose:

- Silicone Manual Resuscitator for emergency manual ventilation

➤ Features:

- Made of high-quality, medical-grade silicone.
- Latex-free, and hypoallergenic.
- Ergonomic design for easy handling and operation.
- Lightweight and portable.
- Bag inflation status indicator
- Volume capacity: 500-1500 ml for adults
- One-way valve to prevent backflow.
- Should allow for easy bag compression and minimal resistance.
- Inlet valve for combined air and oxygen injection
- Integrated >40cm H₂O safety pressure limiting valve
- Set to come with adult size, compatible face mask and tubing
- Autoclavable or easily cleanable.
- Include a carrying case for ease of transport.
- Comes with quick user instructions guide and clear labeling (warnings, expiration date...)
- Comes with 2 spare masks and essential tubings
- To be compliant with IEC 60601-1 & ISO 10651 standards. CE and FDA approved

➤ Overall approximate dimensions: Portable

Item M115**Ventilator, Adult/Pediatric**

Description

➤ Purpose:

- Intensive care ventilator suitable for adult and pediatric patients.

➤ Features:

- Microprocessor controlled
- Large LCD touch screen display
- Displays alphanumerical and graphical data
- User friendly controls and navigation menu
- Delivery options via: Mouthpiece, Mask, Tracheostomy and ventilator in-line

➤ Modes of Ventilation:

- Volume Control (VC)
- Pressure Control (PC)
- Assist/Control (A/C)
- Synchronized Intermittent Mandatory Ventilation (SIMV)
- Continuous Positive Airway Pressure (CPAP)
- Bi-Level Positive Airway Pressure (BiPAP)
- If other vendor to specify

➤ Ventilator Settings:

- Ramp time: 5 – 45min
- Breath phase
- Trigger indicator
- Minute volume
- PPV%: 0 – 100%
- Tidal Volume (VT): Adjustable range 20-2000 ml
- Respiratory Rate (RR): Adjustable range 5-60 breaths/min
- Inspiratory Pressure: Adjustable range 5-40 cmH2O

➤ Parameters Monitoring:

- Real-time monitoring
- Airway pressure
- Tidal volume
- Minute volume
- Oxygen saturation (SpO2)
- End-tidal CO2 (if applicable)
- If other vendor to specify

➤ Alarm System:

- Visual and audible alarms
- Low/High airway pressure
- Low/High tidal volume
- Apnea
- Power failure

➤ Connectivity and Data Management

- Connectivity: LAN, WIFI, USB, RS-232
- Capability to store and export patient data (Vendor to specify formats)

➤ Accessories

- Must come with all necessary accessories for full functionality
- Rechargeable battery back-up for at least 2 hours of operation.
- A box of patient Circuits
- To come with compatible mobile stand with storage and cylinder bracket
- Bacteria filter
- Large and small masks.
- Humidifier (if applicable)
- User manual and training manuals
- Power supply: 230 V~AC 50/60 Hz.

➤ Overall approximate dimensions (WxDxH): Vendor to specify

Item M122**Central station 5 monitors**

Description

➤ Purpose:

- Patient monitoring central station

➤ Features:

- Display:> 19-inch LCD Medical grade display
- User friendly Interface:
- Touch screen and/or Mouse/Keyboard control
- With the latest microprocessor technology (vendor to specify)
- Main memory RAM (vendor to specify)
- Integrated Graphics card (vendor to specify)
- Large capacity storage hard drive (vendor to specify)
- Integrated audio system (vendor to specify)
- Software: Windows based. Supplied with system: To display real-time patient data and perform analysis on demand. Data stored in database on board system
- Connectivity LAN or WIFI
- RS-232
- With at least 2 USB ports
- Comes with a Laser printer (A4 format)

➤ Characteristics:

- Annotation of date, time, bed number, alarm status, and vital signs.
- Automatic trace calibration and centering.
- The central station printer shall allow manual initiation from either the central station or any bedside monitor.
- Capacity: up to 8 patient inputs.
- Minimum 2 waveforms per patient.
- Up to 8 waveforms per independent display.
- Records and displays 96 hrs. of events with fast retrieval.
- 24-hour full disclosure.
- Bi-directional control of bedside monitor.
- Open architecture.
- HL 7 compatible

➤ The central station monitor to be capable of displaying waveforms for the monitored parameters, as obtained from each individual vital signs monitors:

- ECG
- Respiratory rate
- Blood pressure (systolic, diastolic, and mean) Invasive and noninvasive
- Body temperature
- Arterial hemoglobin oxygen saturation (SpO2)
- Cardiac output
- Arrhythmia
- Other parameters if included in the bedside monitors configurations.

➤ Alarms

- The display of alarm limits for each parameter and the alarm status for each parameter (i.e., standby or suspend mode).
- Storage of alarm events. Printed and stored alarm strips should provide a minimum of 10 seconds pre-event and 15 seconds post-event information.

➤ Accessories:

- Supplied with all cables, attachments & necessary accessories for full functionality
- Keyboard & Mouse
- Ability to add a second optional display
- Power supply: 230 V~AC 50/60 Hz.

➤ Overall approximate dimensions (WxDxH): Vendor to specify

Item M150**Video surveillance (CCTV) systems**

Description

A. Generalities

The Contractor shall supply, connect and install the monitors, software, cameras, cables, splitters and outlets, in addition to any accessory deemed necessary to the system. (As instructed by the Consultant).

B. Technical Specifications**B.1 Cameras**

The cameras should be of the network type capable of connecting directly to an Ethernet network by using a UTP cat6 cable. All data should be collected via the Ethernet network into a monitoring computer connected to any point in the network and provided with the proper password.

The cameras should have, without being limited to, the following features:

- MJPEG and MPEG4 Video Compression Selectable
- Vandal-proof
- High Resolution 1/3" CCD Sensor
- Intelligent Motion Detection
- Removable IR Cut Filter
- Vari-focal Auto Iris 3.6~9.0mm Lens
- Built-in IR LEDs for Night Vision
- Digital I/O for Sensor and Alarm
- Pre- and Post- Alarm Snapshots
- Pickup Device: CCD interline transfer, 380,000 771(H) by 492(V) pixels.
- Horizontal Resolution: 480 lines.
- Signal-to-Noise Ratio: Not less than 50 dB, with the camera AGC off.
- With AGC, manually selectable on or off.
- Select one of first two subparagraphs below. See the "Camera and Lens Considerations and Choices" Article in the Evaluations for a discussion about specifying camera sensitivity. If retaining first subparagraph, insert the light level and f-stop from manufacturer's data sheet. These values are associated with the camera and do not specify the lens. Specify lens speed in a schedule.

- Manually selectable modes for backlight compensation or normal lighting.
- White Balance: Auto-tracing white balance, with manually settable fixed balance option.
- Motion Detector: Built-in digital.

B.2 Lens

Optical-quality coated optics, designed specifically for video surveillance applications, and matched to specified camera. Provide color-corrected lenses with color cameras.

B.3 Monitors

One 21" LCD screen will be installed in the control room no monitor the cameras. The LCD will have as a minimum, the following characteristics:

- Horizontal Resolution: 300 lines.
- Minimum Front Panel Devices and Controls: Power switch, power-on indicator, and brightness, contrast, color, and tint controls.
- Degaussing: Automatic.
- Mounting: Single, 356-mm, vertical, EIA 483-mm electronic equipment rack or cabinet complying with EIA 310.
- Electrical: 240-V ac, 50 Hz.

B.4 Two cameras to be installed in each of the double beds rooms.

2- REFRIGERATION EQUIPMENT

Item M206**Refrigerator, Undercounter****Description**

To provide a standard manufactured, institutional quality self-contained unit with single compartment, one door refrigerated storage.

Storage volume shall be approx. 145 l (5 ft3). Overall exterior dimensions shall be approximately 600mm W x 600mm D x 780mm H. Unit shall be designed and fabricated for undercounter installation.

1. Construction Characteristics and Performance:

a) Refrigerator shall be equipped with blower coil and automatic off cycle defrost. Hermetically sealed condensing unit shall be readily accessible through removable aluminum grill located below refrigerator compartment. Refrigerator shall be equipped with front opening stainless steel door with anti-sweat device to prevent condensation. Unit shall be supplied with two adjustable chrome plated wire shelves as standard.

b) Required Features and Components:

1. Exterior: Front (including door) - 20 gage (0.9mm) polished stainless steel. Bottom is galvanized steel.
2. Interior: 0.9mm (20 gage) stainless steel (including door).
3. Insulation: Foamed in place polyurethane minimum thickness of 75mm.
4. Gasket: Extruded vinyl with welded corners and air tight neoprene thermo-break around door opening.
5. Hardware: Edge mount type, chrome-plated, with adjustable strike and hinges.
6. Shelves: Two chrome plated wire, adjustable on approximately 10mm centers.
7. Cooling Unit: Blower coil with automatic off cycle defrost, with condensate evaporator in condensing unit compartment.
8. Condensing Unit: Hermetically sealed unit designed to operate at an ambient temperature of 45°C.

9. Performance shall require units that will maintain a refrigerated compartment temperature of 4°C.
10. The refrigerator shall have a minimum warranty period covering parts and labor of one (1 year and the compressor for five (5) years.

Power supply: 220V/ 50 Hz. Line cord and plug suitable for conditions of use.

The unit has to be delivered with all accessories necessary for normal use.

Unit shall meet international safety- and electrical standards.

4- WARD AND MEDICAL EQUIPMENT

Item M403**Bed ICU electric**

Description

➤ **Purpose:**

- Advanced adult critical care electric bed

➤ **Features:**

- All bed movements to be electrically controlled.
- Weight capacity: At least 220 kg
- Built in scale
- Integrated patient control system inside rails to control lights, entertainment system and nurse call.
- Radiolucent deck and mattress.
- Air pressure relief mattress with surface for pressure sore prevention (anti-decubitus Compatible hospital grade radiolucent Air mattress, made from flame retardant material with anti-microbial agents. Mattress cover can be easily removed and replaced. Carrying handles, min. 2 on each side. Air mattress to come with compatible pump system.
- Mattress cover is fully sealed (fluids proof) and treated with Anti-Microbial Coating
- Integrated patient position monitor.
- Height adjustable (top of mattress to floor): Approximately 45 to 95 cm
- Height adjustment via foot pedals or siderail patient bed controls.
- Powered Transport mechanism.
- Hands Free Foot Control.
- Possibility to lock individual bed movements.
- With safety side rails, half-length type for both head and foot section, completely storable under bed frame, for zero transfer gap.
- Adjustable angles (approximate):
- Head section-0° to 65°
- Knee raise (gatch)-0° to 20°
- Foot Section-0° to 30°
- Chair position at any height position. (Cardiac chair position)
- Head and trendelenberg angle indicators.
- Trendelenberg/reverse trendelenberg: Approximately $\pm 12^\circ$
- Instant CPR emergency release.
- Configured for wireless safety system.
- IV rod with storage position on both sides, minimum 2. (1 IV rod to be supplied per bed).
- 4 Roller bumpers.
- Hooks for drainage bags on both sides of bed.
- Foot board length adjustment (prevents patient sliding down in bed).
- Head and foot boards to be made of heavy-duty molded material, scratches and stains resistant.

- Headboard and push handles.
- Head and foot boards are easily removable for easy intervention on patient.
- Heavy duty construction: Welded steel frame members/epoxy-based finish.
- Four 12 cm antistatic swivel casters with brakes.
- Back-up battery power.
- Audible and visual alarms for errors and malfunctions
- Integrated mattress Inflation pump with hoses
- To be compliant with IEC 60601-1. CE and FDA approved
- Power supply: 230 V~AC 50/60 Hz.

➤ **Overall approximate dimensions (WxDxH):**

- Sleeping surface: At least 90 x 210 cm
- Overall, all bed dimensions: Vendor to specify

Item M404**Bedpan, Adult**

Description

Bedpan, stainless steel construction.

Units lid cover.

Dimensions approx. 110mm H x 350mm W x 280mm D.

Al-Jabal Hospital

Medical Equipment
Lot 1**Item M406****Bottle, Urine**

Description

Steriliseble urine bottle.
500ml capacity.
Graduated in 2ml divisions.

Item M407**Cabinet, Safety, drug**

Description

- **Purpose:**
 - Wall mounted small drugs cabinet to provide safe storage for Controlled medicines.
- **System Features:**
 - Constructed of seamlessly welded powder coated steel,
 - Tamper proof key lock system, (supplied with three keys)
 - Heavy duty hinges,
 - Capacity Approx. 40L,
 - Complete with wall fixing components,
 - With 2 Adjustable shelves
- **Overall approximate dimensions: (W x D X H cm) 40 x 25 x 40 cm .**

Item M414**Clock**

Description

Wall mounted

Day time: hours, minutes and seconds

Diameter 23 cm min.

Battery operated

Item M422**Laryngoscope, set**

Description

Curved clip-on blades in three sizes:

130mm x 18mm ; 100mm x 17mm; 92mm x 14mm.

Fiber optics blades with halogen light.

Handle to fit 2 x U11 batteries.

Complete with spare bulbs and case.

Item M423**Light, exam, wall mounted**

Description

- **Purpose:**
 - Wall mounted LED examination light for routine clinical examinations
- **Features:**
 - Wall mounted,
 - Sturdy and well-balanced exam light,
 - Easy positioning of light head via sterilizable handle or ergonomic light head,
 - Light intensity (at a distance of 1m) up to approximately 30 Klux,
 - Light field diameter 17 cm,
 - Working distance 70 – 130 cm,
 - Depth of working area with homogenous light field 60 cm,
 - LED lighting elements (vendor to specify quantity),
 - Integrated on/off switch,
 - 360° rotation,
 - Easy to clean,
 - Color temperature: 3500 to 4300K,
 - Color rendering index: 93,
 - Power: 230 V~AC 50/60 Hz.
 - Delivered with wall mounting kit.
 - Mounting Height for light base from finished floor level 120 cm.
- **Overall approximate dimensions: Vendor to specify**

Item M430**Pump, Infusion**

Description

- **Purpose:**
 - I.V. infusion system.
- **Features:**
 - Compact size.
 - User friendly.
 - Case made of high-quality material resistant to impact.
 - Dedicated patient set to ensure high accuracy in drug administration.
 - LCD display for infusion parameters.
 - Integrated bracket for mounting on poles
 - Flow Rate: 1-999 ml/hr. in 1ml increments.
 - Volume infused: 0-9999ml
 - KVO: 0 to 20 ml/hr.
 - Selectable occlusion pressure
 - Air in line detection
 - Free flow protection
 - Rate / volume and volume/time programming
 - Bolus capability: 0 to 500ml/hr.
- **Alarms for:**
 - Low battery
 - open door
 - Malfunction
 - Upstream/downstream occlusion
 - Air in line
 - Set miss-loading or bad set
 - Power supply: 230 V~AC 50/60 Hz.
 - To be delivered with all necessary accessories for full functionality
 - To be compliant with IEC 60601-1. CE and FDA approved
- **Overall approximate system dimensions: Vendor to specify**

Item M431**Rack, bedpan**

Description

For storage of cleaned and disinfected bedpans.

Bedpan draining rack:

Stainless steel construction, wall mounted, to hold 15 standard adult or child bedpans.

Complete with drip tray.

Item M432**Rack, urine bottles**

Description

For storage of cleaned and disinfected bottles.

Urine bottles rack:

Stainless steel construction, wall mounted, to hold 10 standard urine bottles.

Complete with drip tray.

Item M439**Stand, IV mobile**

Description

IV pole stand:

Mobile unit.

Adjustable height 1200mm- 2200mm.

Wide stance base with 5 castors.

Double hook rod including positive stop to avoid disengagement from base rod.

Locking device.

Stainless steel construction

Item M440**Stethoscope**

Description

Professional Deluxe Stethoscope – Black. Stainless steel Dual head chest piece, high quality acoustic.

Thick PVC “Y” type tubing.

Non-chill ring for patient comfort.

Complete with two spare pairs of soft ear tips.

Size adult 47mm.

Item M442**Syringe Pump**

Description

➤ **Purpose:**

- Syringe pump infusion system.

➤ **Features:**

- Compact size.
- User friendly.
- Case made of high quality material resistant to impact.
- Dedicated patient set to ensure high accuracy in drug administration.
- LCD display for infusion parameters.
- Integrated bracket for mounting on poles
- Accepts syringe sizes up to 60ml; +/- 2% instrument accuracy.
- Front loading of Syringes
- Automatically detects the syringe size.
- Delivery mode combinations including ml/hr., body weight, mass, volume over time, custom dilution and intermittent, loading dose, bolus dose, standby, volume limit and KVO rate
- Flow rates from 0.01 to 999 mL/hr.
- Bolus capability :75 - 500 mL/h (limited by syringe size)
- Pressure settings from 25mmHg to 1,000mmHg
- Rapid occlusion detection, post-occlusion bolus detection and bolus false occlusion detection.
- Programmable Safety Limits.
- Programmable Unlock Code.
- Alarms for :
 - Low battery
 - open door
 - Malfunction
 - Upstream/downstream occlusion
 - Air in line
 - Set miss-loading or bad set
- Power supply: 230 V~AC 50/60 Hz.
- To be delivered with all necessary accessories for full functionality
- To be compliant with IEC 60601-1. CE and FDA approved

➤ **Overall approximate system dimensions: Vendor to specify**

Item M445**Trolley, Dressing**

Description

To be constructed of stainless steel.

2 removable sunken stainless-steel shelves with guard rails. Both shelves are reversible for use as an instrument trolley.

Trolley to be mounted on 3" antistatic castors.

Dimensions: W750xD450xH900mm.

Item M448**Trolley, Instrument**

Description

Stainless steel trolley with two shelves on castors with brakes.

Trolley top dimensions:

75 x 50 cm.

Al-Jabal Hospital

Furniture
Lot 1

LOT 1

FURNITURE

SPECIFICATIONS

General Specifications

The Al-Jabal Hospital shall be provided with state of the art equipment. Therefore, the present specifications and layout drawings shall be interpreted as guidelines for type and quality of the equipment required. The specification texts are brief and therefore covering a wide range of equipment types and ancillaries. In some cases, specific figures and limits have been given. Such information should be considered as guidelines.

The equipment offered, however, should be of reputable make and of high quality. The Client may reject any equipment which has no installed base, no recognized references, or certified proven performance. Medical Equipment, to the exception of Furniture items such as (chairs, tables, desks, cabinets etc.), shall be of renowned manufacturers whose experience has exceeded the 'ten years' bracket especially in the fields of Radiology, Anesthesia, Ventilators, and Operating Theatre Equipment. Manufacturers shall be European, American, Canadian or Japanese. All relevant standards, i.e. IEC- standards for Medical Equipment/Medical Electrical Equipment have to be fulfilled. All medical equipment should be CE-marked and/or FDA approved.

The bidder shall provide each item in the specifications as complete, fully functional units with all ancillaries and accessories necessary for normal and safe use. The bidders are due to inform adequately on all relevant specifications and performances of the offered equipment, even though such information has not been required in detail in the present specifications. Such detailed specifications should be the original manufacturer's specifications and supported by the manufacturer's original technical data sheets. Transcription of the specifications in the tender documents will not be accepted. The bidder may be required to provide additional clarification and supporting documentation about his specifications.

The bidder shall in detail describe procedures for maintenance and the current updating of major equipment and systems.

The bidder shall specify in detail the training component included in his offer, which shall cover all necessary training and education of relevant staff for safe and competent handling of major equipment and systems.

The Medical Equipment/Furniture Supplier shall adhere to the specifications and other documents within the tender which consist of 1:100 scale layouts for equipment, room by room listings, department listing and general bill of quantities.

Tender documents shall complement each other for information purposes and the contractor shall not discard any of the enclosed documents.

All dimensions contained within the specifications are approximate and shall not be taken literally except in the event of Supplier's equipment surpassing the specified dimensions; then an exercise from his part shall be carried out to ensure proper space clearances within any particular room for his proposed equipment. Power ratings as shown in documents are indicative, except voltage and frequency ratings.

Al-Jabal Hospital

Furniture
Lot 1

Any brand name mentioned in the specifications shall be used for analogy purposes rather than selection. Similar product shall be acceptable.

Supplier has to ensure proper coordination with all other Contractors, particularly those pertaining to civil, electrical, medical gas and electromechanical works. Supplier has to verify all his equipment dimensions according to available architectural drawings and present his shop drawings with all the necessary required preinstallation civil, electric, medical gas and electromechanical works.

The Supplier should be responsible to connecting his equipment/furniture to the closest services outlets as available in the Hospital. Any works required by these connections should be included in the price of the equipment/furniture. Upon termination and acceptance of any of his works, the supplier should be responsible for restoring and properly finishing the Site (paint, plaster, tiling, etc...).

In case old or surplus equipment/furniture belonging to the Hospital are present on the Site, the supplier should be responsible, where required, for uninstalling these equipment/furniture, packing them appropriately against humidity, temperature and shock, and storing them in a storage place provided by the Hospital. This task should be coordinated with the Hospital administration.

The successful bidder should submit shop drawings for Furniture items such as cabinets module, Utilities, kitchenettes, workstations, laboratory furniture, with samples of material for Consultant approval.

LOT 1

FURNITURE

- 1- Hospital Furniture**
- 2- Office furniture**
- 3- Housekeeping**
- 4- Curtains**

Al-Jabal Hospital

Furniture
Lot 1**1. HOSPITAL FURNITURE**

Item F103**Bed, single**

Description

Constructed of solid oak coated with moisture resistant varnish, rounded corners.

Under bed storage drawer and polypropylene glides.

Complete with mattress and cushion covered by antibacterial cover

All fasteners concealed.

Dimensions: 1950 x 850 x 350 mm

Item F109

Cabinet, Bedside

Description

Residential Bedside cabinet to have 2 drawers and open shelf. Color and material to match residential bed

Dimensions: 650 x 450 x 450 mm

Item F133**Hook, robe/coat, 4-prong**

Description

Robe/coat 4-prong hook:

Unit shall be approx. 130mm H and have four hooks approx. 25mm W x 50mm D each.

Overall length shall be 500mm.

Furnish with appropriate mounting devices.

Al-Jabal Hospital

Furniture
Lot 1**Item F148****Table, low**

Description

Low table:

Dimensions: 600mm W x 600mm D x 450mm H.

Metal frame, epoxy finish.

Washable laminated top and edges.

Item F153**Telephone, set, wall mounted**

Description

Combine, traditional wall mounted telephone set dual LED indicator and fixed feature bottoms, (e.g. conference transfer, hall,...).

Item F154**Telephone set, desk type**

Description

Combine, traditional desk type telephone set dual LED indicator and fixed feature bottoms, (e.g. conference transfer, hall,...).

Al-Jabal Hospital

Furniture
Lot 1**Item F159****Lamp, bed side**

Description

- Compact highly adjustable head desk type lamp
- 220 V
- Black color

Item F160**Cupboard, (Wooden)**

Description

- Wooden, cabinet size 200x120 cm
- Bedroom type
- Plywood, lamica cover
- Color to be agreed upon with the Consultant

2. OFFICE FURNITURE

Al-Jabal Hospital

Furniture
Lot 1**Item F207****Chair, stuckable**

Description

Plastic Stukables chair with back and arms.

White color.

Standard.

Item F208**Chair, swivel with arms, telescopic**

Description

Chair swivel:

Dimensions: 450mm W x 450mm D x 580mm H.

Tubular metal frame, epoxy finish with rubber.

Adjustable height by mechanism from 430mm to 580mm.

Vinyl upholstered seat and back rest.

Item F209**Cabinet, instrument**

Description

Instrument cabinet:

Dimensions: 915mm W x 560mm D x 2130mm H.

Two glazed/ 2 solid doors, 5 shelves.

Cabinet shall be constructed of carbon steel to form a complete rigid case with completely enclosed uprights, except for perforations for shelf support clips.

Die pierced slots and perforations shall be required for mounting case channels. Hinges or shelf clips shall not be visible from the exterior of the case.

Metal bottoms shall be provided for all cabinets.

Shelves shall be adjustable and removable.

Top of cabinet shall be designated to receive a sloping top.

Latter to be fabricated of same material.

Underside of cabinet shall be finished flush.

Cabinet doors shall be 15mm thick, hollow metal, sound-deadened and rigidly constructed with internal concealed stiffeners.

Item F214

Chair, visitor, arm

Description

Visitor chair:

Dimensions: 450mm W x 450mm D x 470mm H.

Tubular metal frame, epoxy finish.

High impact polypropylene shell with arms.

Upholstered seat and back rest.

Item F216**Cart, patient records**

Description

Mobile medical cart patient records.

Touch panel PCs.

Versatile, fit

Truly, ergonomic design accommodates the largest range of nurses and other caregivers.

220V

Built-in battery to last 4 hours or more.

Item F222

Desk, single pedestal

Description

Single pedestal desk:

Dimensions: 1100mm W x 750mm D x 720mm H.

One drawer with lock, including foolscap hanging file and pull-out pen tray.

Wood veneer finish.

Item F230**Television, set, wall mounted**

Description

Color TV set, 21 inch., PAL/MESECAM/NTSC
Complete with Infra-red remote control and video input.
Color finish: Black matt

Remote control operated video cassette recorder, PAL/MESECAM/NTSC
Player / recorder, V.H.S. cassette, 6 Head system
Touch bottom control with auto search rewinding / forwarding.
Programmable with timer and digital clock.

TV and VCR set to be provided with suitable mobile cabinet on 4 castors having one shelf for VCR and 2 bottom doors.

Item F233**Counter, Corean L=485, W=80cm with drawers**

Description

Size: W= 80cm - L= 485cm, Corean resin and side chests.
Shop drawings to be approved by the Consultant.

Item F234**SS Shelving**

Description

Wall hung shelving with 4 tiers:

Sizes: L=140, L=200, L=275

Stainless steel construction.

1.5mm shaped steel frame.

Bracket mounting. Bracket shall contain at its center one tapped hole and be located away from the corner itself to provide clearance.

Capacity of shelf shall be intended for load weight of 80 Kg when well distributed.

Item F298**Laptop**

Description

CPU:	C2D CENTRINO 2 2.1 GHZ
RAM:	4GB DDR2
HDD:	320GB
VGA Type:	DEDICATED
VGA:	GEFORCE GT M210 512MB
ODD:	DVDRW LS
DISPLAY:	13.3
BT:	YES
CAM:	YES
WIFI:	YES
FP:	NO
EXTRAS:	
WARRANTY:	3
WEIGHT:	2.15
OS:	WINDOWS 7 HP 64BIT

Al-Jabal Hospital

Furniture
Lot 1

3. HOUSEKEEPING

Item F301**Cart, janitorial supplies**

Description

Janitorial supplies cart:

Unit shall have 12 liters plastic buckets, one stainless steal wringer, two 8 liters buckets

Unit shall be of open-wire construction with electroplated frame and stainless-steel bottom tray.

Unit shall have 100mm double raceway casters with non-marking rubber wheels and rubber bumper.

Unit shall be equipped with plastic shelf tray liners and treated four-bushel capacity hook-on vinyl bag for holding wet or dry refuse. 2 broom rack and 1 glass fiber handle broom.

Unit shall be designed with handle and open bottom tray for carrying cleaning tools head down.

Item F305**Hamper, linen**

Description

Linen hamper with lid:

Unit to be approx. 600mm diameter and 915mm height.

Unit shall be tilt-top hamper with stainless steel lid.

Lid to be chrome plated steel, satin finish and spring loaded.

Top ring to be 25mm o.d., steel tubing.

The unit base shall be approx. 22mm o.d., steel tubing, 450mm W x 450mm L with a chrome finish.

Unit shall have four corner base and be for use with 460mm bags.

Unit to have four 50mm conductive ball-bearing swivel castors of rubber, treated to resist bacteria.

Item F306

Receptacle, waste

Description

Waste receptacle:
Unit shall be approx. 300mm in diameter x 350mm height.
All plastic construction.

Item F307**Receptacle, waste, step-On**

Description

Step-on waste receptacle:

Unit shall be approx. 330mm in diameter x 430mm high.

Unit shall be enameled, CRS waste receptacle.

Lid operated by foot pedal.

Rust resistant removable galvanized inner container.

Item F308

Toilet brush holder

Description

High impact plastic material complete with brush and holding cup.

Item F309**Vacuum cleaner, wet/dry**

Description

Wet/dry, commercial vacuum cleaner:

Unit shall be portable with a 1.2 kW, 220 V, 6.5 AMP motor with wet/dry adaptability.

Unit shall be made of lightweight stainless steel.

It shall have a 25 l tank with a tank recovery capacity of 10 l.

To be delivered with all accessories necessary for normal and safe operation.

Power supply: 220V/ 50Hz. Heavy duty, non marking cable and plug suitable for conditions of use.

Shall meet international safety- and electrical standards.

Al-Jabal Hospital

Furniture
Lot 1**Item F310****Dispenser, Paper Towel**

Description

Paper towel dispenser, wall mounted, operated by pulling the paper, battery operated.

Al-Jabal Hospital

Furniture
Lot 1**Item F311****Dispenser, Soap**

Description

Wall mounted, soap dispenser, operated by pushing the lever.

Item F313**Chair, Executive, Swivel**

Description

The outer shell to be made of polypropylene, inner shell to be made of high impact plastic anchored to the base.

The arms are to be reinforced with steel, bolting directly to inner shell.

With upholstered backrest and seat in vinyl leather.

Overall width: 70 cm Backrest height: 60 cm,

Backrest width: 60 cm

Seat variable height: 45-50 cm,

Seat width: 60 cm,

Seat depth: 50cm.

With arms and castors

Al-Jabal Hospital

Furniture
Lot 1

4. CURTAINS

Item F401**Curtain, patient, with rail = 185x165**

Description

Curtains to be of fireproof material and tested in accordance with BS5436 part I.

Colour woven curtains to be as indicated on loaded drawings with rail.

The amount of fullness can vary from 5% to 25% depending on hospital policy.

Parking space of curtains should take up 15% of track length; parking space of curtains will vary depending on the fullness of the material.

Item F402**Curtain, patient, with rail = 130x165**

Description

Curtains to be of fireproof material and tested in accordance with BS5436 part I.

Colour woven curtains to be as indicated on loaded drawings with rail.

The amount of fullness can vary from 5% to 25% depending on hospital policy.

Parking space of curtains should take up 15% of track length; parking space of curtains will vary depending on the fullness of the material.

Item F415

Curtain, shower, with rail

Description

Vinyl, shower curtain with rail, fire retardant anti-fungus growth, size to fit the existing shower basin.

LOT 2

16 SLICES CT-SCANNER

SPECIFICATIONS

LOT 2

32 SLICE CT-SCANNER

SPECIFICATIONS

General Specifications

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The bidder shall provide each item in the specifications as complete, fully functional units with all ancillaries and accessories necessary for normal and safe use. The bidders are due to inform adequately on all relevant specifications and performances of the offered equipment, even though such information has not been required in detail in the present specifications. Such detailed specifications should be the original manufacturer's specifications and supported by the manufacturer's original technical data sheets. Transcription of the specifications in the tender documents will not be accepted. The bidder may be required to provide additional clarification and supporting documentation about his specifications.

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Supplier has to ensure proper coordination with all other Contractors, particularly those pertaining to civil, electrical, medical gas and electromechanical works. Supplier has to verify all his equipment dimensions according to available architectural drawings and present his shop drawings with all the necessary required preinstallation civil, electric, medical gas and electromechanical works.

The Supplier should be responsible to connecting his equipment to the closest services outlets as available in the Hospital. Any works required by these connections should be included in the price of the equipment. Upon termination and acceptance of any of his works, the supplier should be responsible for restoring and properly finishing the Site (paint, plaster, tiling, etc...).

In case old or surplus equipment/Furniture belonging to the Hospital are present on the Site, the supplier should be responsible, where required, for uninstalling these equipment, packing them appropriately against humidity, temperature and shock, and storing them in a storage place provided by the Hospital. This task should be coordinated with the Hospital administration.

The successful bidder should submit shop drawings for materials, Utilities, workstations, with samples of material for Consultant approval.

LOT 2

32 SLICE CT-SCANNER

Item M551**32 Slice CT-SCANNER**

Description

Generic specifications for a 32-slice CT scanner.**1. General Specifications**

- Type: Multi-slice Computed Tomography (CT) Scanner
- Slices: 32 slices per rotation
- Detector rows: 2 x16 or 1x32 (vendor to explain features of their offered system)
- Rotational Speed: ≤ 0.5 seconds per rotation
- Detector Type: Solid-state detectors (vendor to list type offered)
- X-ray Tube Voltage: 80-140 kVp -adjustable
- X-ray Tube Current: 10-600 mA -adjustable
- X-ray Tube Heat Storage Capacity: 3.5 MHU or better (vendor to explain features of their offered tube)
- X-ray Tube with efficient cooling system (vendor to list type offered)
- Gantry with a tilting range of ± 30 degrees or better (via remote control and from gantry console)
- Wide bore gantry at least 70 cm.

2. Image Quality

- Spatial Resolution: 15 lpm or better
- Contrast Resolution: ≤ 5 HU (Hounsfield Units)
- Reconstruction Algorithms: Standard and advanced algorithms, including iterative reconstruction.
- Field of View (FOV): Adjustable to 50 cm or better

3. Performance

- Scan Time: ≤ 1 second for full rotation
- Pitch-Adjustable between 0.3 - 1.5 or better
- Patient Table Weight Limit: 200 kg or better
- Table Travel: 100 cm or more per scan

- Slice Thickness: Adjustable from 0.5 mm to 10 mm

4. Clinical Applications:

- General Imaging
- Trauma
- Musculoskeletal Imaging
- Abdominal imaging (requires contrast agent perfusion)
- Vascular (requires contrast agent perfusion)
- Urology (requires contrast agent perfusion)
- Pulmonology (requires contrast agent perfusion)
- Oncology: Tumor Detection (requires contrast agent perfusion)
- Neurology (requires contrast agent perfusion)
- Basic Cardiac (requires contrast agent perfusion)

5. Control console

- Latest generation computer, hardware and operating system,
- High quality compact design desk (height adjustable preferred),
- Display: High-resolution, with touchscreen interface min 21inch,
- Reconstruction matrix : 512 x 512, 768x768 and 1024x1024
- Display matrix: 1024 x 1024 or better,
- User-Friendly use and navigation,
- Multi-Language Support (English & French required),
- Control Functions: Scan Parameters Adjustment, Pre-Configured Protocols and user defined protocols.
- Sufficient storage for images and patient data with back-up solution (vendor to specify)

Standard Software Pack:

Vendor to list standard and optional post processing Applications.

- Image acquisition software
- Post-processing software (2D and 3D reconstructions)
- Automatic dose management software
- Standard noise reduction algorithms

Optional Software Pack:

Are available to be installed or activated on future demand (vendor to confirm)

- Advanced visualization tools (volume rendering, MPR)
- Virtual colonoscopy software
- Cardiac imaging software
- Advanced noise reduction algorithms
- AI-assisted diagnostic tools

6. Safety Features

- Automatic Dose Modulation
- Emergency Stop Button: Easily accessible

7. Connectivity

- Fully DICOM Compatible for seamless integration with PACS,
- Networking: Ethernet and wireless connectivity options (vendor to confirm),
- Remote access for remote monitoring and updates.

8. Site preparation and operating support

- Relevant system's manuals in (English and French)
- Essential training for operators (onsite).
- Remote assistance (vendor to specify).
- The vendor will confirm that the provided space is adequate for machine implementation, and will identify clear access pathways for installation.
- The vendor shall provide all necessary renovation, installation, and site preparation requirements, including structural elements, floor plates, electrical work, and HVAC systems. Additionally, the vendor will supply shop drawings that detail the load requirements and specifications for structural, electrical, HVAC, and IT systems.
- The vendor must also provide all radiation safety measures including:
 - Room and doors shielding with 2mm lead sheets,
 - Warning signs,
 - X-ray in use over door light,
 - Provide and install a 2mm lead vision panel (90 x 120 cm or better).

9. Related items

- Vendor to provide detailed datasheet of offered system, and not a sales brochure.
- Vendor to also provide the offered tube make and model with its datasheet.
- Refer to Contrast agent injector specifications for contrast agent perfusion.
Item- 552

Item M552**CT CONTRAST MEDIA INJECTOR (DUAL HEAD)**

Description

- Mobile injection system for use in CT imaging procedures requiring contrast agent administration
- Dual-head, powered injector.
- Microprocessor controlled operations.
- User friendly interface.
- On device and remote-control panel. Touch type preferred.
- Ability to program and monitor consistent flow rates independently for each head.
- Preset and user configured injection protocols 25 protocols or better.
- Adjustable flow rates from 0.1 to 10 mL/sec for each head.
- Integrated delay timer and hold time (vendor to specify).
- Compatible with standard syringes: volume approximately 200 ml (sterile & disposable).
- Built-in syringe heater.
- User friendly mechanism for easy syringe loading and unloading.
- Audible and visual alarms for low contrast volume, high pressure, and system malfunctions for each head.
- Manual bypass and emergency stop for urgent situations.
- Connectivity features (Vendor to specify)
- Comes with compatible mobile stand.
- To be delivered with all necessary accessories for full functionality at first run.
- Power supply: 230 V~AC 50/60 Hz.