JKMSCL

JAMMU AND KASHMIR MEDICAL SUPPLIES CORPORATION LTD.

(Public Sector Undertaking of the Government of Jammu and Kashmir)
Corporate Head Office: Plot No. 58, Friends Colony Satyam Road Trikuta Nagar Jammu
Corporate Office: Kashmir, Near Haj House, Bemina 190018, Srinagar
email: mdjkmscl2@gmail.com; **website**: www.jkmsclbuisness.com

CORRIGENDUM

In light of the representation(s) submitted by the prospective bidder(s) and the matter under consideration of Hon'ble High Court, the critical dates for the **"Procurement of additional equipment for 160 Bedded Specialised Orthopaedic Unit in Bone & Joint Hospital, Srinagar** under "World Bank Project" uploaded vide No. NIT/JKMSCL/M&E/2025/679 dated 05.12.2025" are extended with the approval of tender inviting authority. The critical dates are as under:

1. Last date and time for submission of online bids: 02.04.2026 upto 1600 hrs
2. Date and time for online opening of technical bids: 04.04.2026 at 1100 hrs

It is further added that the technical specifications of the equipment **"ICU Beds (Hydraulic), Shifting Trolley (Hydraulic), DVT Pump, Video Laryngoscope, Fiber Optic Bronchsocope, High End USG Machine with Doppler & Echo, Central Monitor, Ttansport Ventilator, Portable X-Ray and Full 4K/UHD High Resolution Camera System. Isokinetic (no change suggested)"** have been amended by the technical experts and are annexed as Annexure-A (09 **Pages**).

Please Note:

1. *Those firms/bidders who have already uploaded their bids are required to re-upload their bids as per amendments and corrigendum issued thereof.*
2. All the bidders are requested to keep themselves updated & submit their e-bids through e-portal as per specifications & BOQs. The amendments/modifications shall be available on e-Portal and www.jkmsclbusiness.com.

23.3.26

(M A Choudhary) JKAS
General Manager (Adm),
J&K Medical Supplies Corporation Ltd.

No.: JKMSCL/Corg/2026/ 8736-38 **Dated:** 23.03.2026.

Copy for information to the:-

1. Dy. General Manager (Tendering), J&K Medical Supplies Corporation Ltd.
2. P.A to Managing Director, J&K Medical Supplies Corporation Ltd.
3. Assistant Progammer, J&K Medical Supplies Corporation Ltd for uploading on web portal.
4. File

Specifications

1. ICU Bed (Hydraulic):-

- Electro hydraulic Beds.
- Back Rest Elevation 0^0 to 80^0
- Knee rest elevation 0^0 to 45^0.
- Height adjustment
- Trendolenberg / Reverse trendolenberg position.
- Size- 7ft x 3.5ft
- Load- 136 – 180 kg(300- 400 pounds)
- Should be made of Stainless Steel.
- Radiolucent (X-ray compatible)
- User friendly, remote controlled.
- Side railings, should Include I/V Pole Sockets
- FDA/Ce Or Bis certified

2. Shifting Trolley (Hydraulic):-

- **Construction & Material**
- The trolley frame shall be made of high-quality *Stainless Steel (SS 304)* with smooth, polished finish.
- All joints should be TIG welded for durability and hygiene.
- Edges and corners shall be rounded to prevent injury.

- **Handles**
- Ergonomically designed push handles on one or both sides.
- Handle material: Stainless Steel 304, smoothly finished without sharp edges.

- **Mobility / Castors**
- The trolley shall have four swivel caster wheels, size 100–150 mm diameter.
- At least two wheels with locking brakes.
- Castors should be non-marking, anti-static, and smooth-rolling suitable for hospital floors.

- **Dimensions**

(Standard or customizable; example standard size below)

- Overall dimensions: approx. 2100 mm (L) × 900 mm (W) × 900 mm (H).

- **Weight Capacity**
- Minimum total load capacity: 220-250 kg.

- **Finish & Design**
- Smooth, corrosion-resistant, easy-clean surface suitable for hospital infection-control protocols.
- No sharp edges or exposed screws.

Chris Bashir

Hydraulic System

- Foot-operated hydraulic pump for height adjustment
- Dual-side pedal control for convenience
- Smooth lifting with minimal jerks

➢ **Position adjustments**

- Backrest: 0-75 degrees
- Trendelburg:10-18 degrees
- Reverse Trendelburg: 10-18 degree

➢ **Compliance & Quality**

- Material test certificate for SS 304 to be provided.
- Trolley shall comply with hospital engineering safety standards.
- Manufacturer ISO 9001 / 13485 certification preferable.

➢ **Warranty**

- Minimum 2 warranty against manufacturing defects.

3. DVT Pump:-

- Single Tube Design.
- Integrated Rechargeable Battery.
- Automatic Garment detection with audio visual alarm
- Cuff pressure 30 to 40 mmhg.
- Cycle time 24 to 60 Sec.

4. Video laryngoscope:-

- Monitor Size 3 to 4.3 inch.
- Camera resolution 1 to 3 megapixels.
- Light source LED.
- Reusable blades compatible with common sterilization method.
- Rechargeable battery with working time of 240 minutes to 300 minutes.
- Should be light weight.
- With antifogging mechanism integrated.

5. Fiber Optic Bronchoscope (Adult)

- The flexible fiber optic bronchoscope is used for diagnostic and therapeutic procedures in critically ill patients for difficult intubation.
- The flexible Fiber optic Bronchoscope should be supplied complete with light source and trolley.
- Should have a clear High-resolution image for more detailed observation of bronchial surfaces.
- Should have facility for pressure regulator leakage testing through inbuilt air pump of the light source.
- Light weight, high resolution bronchoscope with light cable.
- Should be compatible with laser and Electro-cautery.

- Should have scope ID function.
- Should have a waterproof connector.
- Insertion tube outer diameter should be 6.0 mm or less
- Angulations range should be approx. Up 180 deg &Dn 130 deg.
- Field of view should be 120 degrees or more
- Depth of field should be 3 to 100 mm.
- Working length should be around 600 mm or more
- Total length 900mm or more
- Instrument Channel should be around 2.8 mm or more
- Bending mechanism knob without lock.
- Autoclavable suction valve to avoid risk of cross contamination.

Light Source:-

- Long life Multi LED light source (3 or more LED bulbs) with a minimum lamp life 6000 hours, & light intensity equivalent to Xenon 300 wat.
- Backlit front panel indicators.
- Equipped with automatic light adjustment forced air cooling, regulated air feeding pump, and fan with low noise.
- Compatible with waterproof one-touch connector.
- Compact & lightweight.
- USFDA/CE or BIS Certified.

6. High End USG Machine with Doppler & Echo

- **General:**

- The system should be Premium End Multi-Disciplinary Digital Architecture suitable for Radiology Applications enabled with Adomen, Obstretic, Gynecology, Vascular, small Parts, Neonatal, Transcranial, Urology, MSK studies including linear volumetric analysis along with fusion imaging and navigation, Liver fat quantification, fibrosis analysis with Point shareware and 20 shear wave elastography, Breast shear wave elastography, Endo-transvaginal/Transrectal shear wave elastography, abdominal virtual navigation facility, Machine should intraoperative capabilities like Lap, GS intraoperative and zero degree abdominal biopsy probe capabilities.
- System should be capable of supporting broad band transducers with frequency range from 1-26 MHz(+1/-1) Mhz.
- System should be DICOM 3.0 or higher ready for connecting to HIS, RIS, PACS and DICOM enabled printing devices.
- System should be offered with inbuilt Wi-Fi and Bluetooth connectivity.
- System should have touch panel control for ease of operation.
- System should have 4 or 5 universal transducer ports
- User interface back-illuminated control panel should be available which is 180 degrees rotating and height adjustable for user comfort.
- System should have full alphanumeric keyboard.
- System should have multidirectional wheels with central locking system.
- System should gel warmer facility

- **System Operating Modes and features:**

- The system should be capable of operating in following modes:
- Operating system should be Microsoft window 10.

- B Mode
- M Mode (including colour M-Mode)
- Colour Doppler
- Power Doppler-Directional
- Pulsed Wave Doppler mode
- Duplex and Triplex modes
- Tissue Harmonic imaging
- Contrast imaging
- Special Image Enhancement Software for brilliance imaging.
- Software for Speckle Noise Reduction with multiple steps.
- Software for Compound Imaging to acquire several coplanar scans of an object from different views.
- General imaging, Thyroid, Abdominal, 4D ultrasound, urology, MSK, cardiology.
- Elastography Liver fat quantification, fibrosis analysis with 2D shear wave elastography in convex probe, Breast shear wave elastography in linear probe, Endo transvaginal/ Transrectal shear wave elastography.
- Should have multi-modality feature for incorporating X-ray or mammography study and can have real time comparison in Ultrasound with real time GPS tracking of probe position when compared with X-ray study in MSK. Probe tracking on body with body camera for clear indication to the expert for second opinion.
- Micro vessels slow flow detection with greatest sensitivity and with different colour maps to visualize blood flow in liver and kidney vessels, mioma's vascularization, metatarsophalangeal blood flow detection.
- Vascular automatic optimization that corrects the position and angle of the colour box & position and sample volume following the course of the sample
- Should have contrast tuned imaging where contrast and Doppler quantification with curve analysis of contrast perfusion (wi/wo) are plotted in a time on a graph for MSK, small parts, rheumatology.
- Panoramic
- Colour Panoramic/Extended FOV.
- Machine should have Real time Fusion Technology with CT/MRI data to significantly increase precision and accuracy of image guided diagnosis and interventional procedures. It should be capable of Virtual Biopsy with magnetic tip needle and 3D panoramic and should be quoted with at least convex, linear and TVS probe antenna and adapter. Real time needle guidance with real time ultrasound fused with panoramic and lesion characterization with AI Zero click feature in Breast, Liver and Urology.
- Should have inbuilt live preview and scanning in real time while using anatomical reference and Guidance's tool in MSK, Rheumatology, Physiotherapy and regional Anaesthesia.
- 3D/4D volume rendering with advanced tools like TMI (Tomographic mode Imaging) Volume Rendering Analysis, Tissue Slice Imaging mode, Tri Planner Imaging, Cutting tool, X- Light, Multi Slice View with multiple cut sections.
- System should have advanced detection and visualisation technology to make the needle distinguishable from the surrounding tissues.

➢ **Display Monitor:**

- 24" inch (+1or-1 inch) high resolution 1920 and 1080 or more high definition LCD monitor.
- It should be adjustable with tilt and swivel facility. Provision to adjust height will be preferred.
- It should have contrast digital adjustment.
- It should have large tablet style touch screen 15.6 inches with Gesture controls or more

➢ **Transducers:**

Single Crystal Technology transducers only should be quoted where ever possible

- Multifrequency Single Crystal Convex Probe with frequency range of 1-10 (+2/-2) MHz for Liver biopsies and shear wave elastography.
- Single crystal Multifrequency Linear Probe with frequency range of 3-15 MHz with beam steering and virtual convex facility.
- Multifrequency End cavitary, Transvaginal/TRUS probe with frequency range of 3-12(+1or-1) MHz acceptable for Obstetrics and Gynaecology purpose with shear-wave elastograpghy.
- Multi frequency convex 4D volume Probe with frequency range of 1-8MHz

➢ **Optional Probes**

- Single crystal Multi frequency High Frequency Probe with frequency range of 4-26(+1 or-1) MHz acceptable for MSK application.
- Hockey Stick probe with frequency range 6-26(+1 or -1) for MSK application.
- Multi frequency small footprint phased array probe with frequency range 5-13 MHz for TCD application.
- Bi-directional probe. 4-13Mhz linear firing and convex firing 3-9mhz with shear-wave elastography for urology application.

➢ **Measurement, Calculation and reports:**

- Trackball with multiple sets of callipers for measurements.
- Standard measurements like depth, distance, area, circumference, volume, ratio, angle, slope, time, velocity, heart rate, etc. At least six distance measurements should be possible on one image with auto repeat of measurement function.
- Comprehensive measurement and calculation packages for all the clinical applications including MSK, small parts, thyroid and summary reports.
- Automatic waveform trace in Doppler mode with display of calculated values and indices in real time and frozen images.

➢ **Control Panel Software and other features:**

- At least 16000000 digital processing channels or more
- System dynamic range of 350 dB or more.
- System should have a high frame rate of 6600 fps or more.
- User programmable presets for different types of examinations.
- Automatic optimisation function that optimizes system parameters for B- Mode and Doppler Mode. This should be in addition to the presets for various examinations.
- Multiple pre and post processing functions and colourise options.
- Onboard archival facility with easy and rapid retrieval of images in the form of integrated DVD/CD writes. Should be able to store static images and cine clips in system hard disc and in on board archival devices.
- Data archival should be possible to export data on DVD/CD, USB, DICOM and Networking.
- System should be provided with a highly advance software for review, post-process and printing of exams on a PC workstation and should be capable to import native machine's file formats. This software should have the capability to perform various measurements and add annotations on the added data.
- System should have more than 1TB hard disc in built and expandable to 8 TB.
- System depth should be up to 500 mm.

It should be possible to annotate and perform measurement function on recalled images. Image display modes: Dual B+B, 48, simultaneous B+B, Simultaneous B+ Colour, and display of B+M and B+ colour Doppler in various size combinations.

- Application specific programmable annotations and body marks with image plane orientations.
- Ethernet port for networking and USB port. It should be possible to transfer images to desktop PC.
- Free software upgrade of the equipment to be provided during the warranty and AMC period.

➢ **Certifications:**

- The system should be European CE/USFDA/ISO

➢ **Accessories:**

- Black and White thermal printer with 10 printer rolls.
- On-line UPS of appropriate rating from a reputed brand.
- Color Laser Printer
- Latest computer system with at-least 1 TB hard disk and 2GB RAM for image storage /Transfer and reporting. 1000 DVDs data storage.

➢ **Warranty:**

- The complete system including the machine, equipment & all accessories including computer system, AC to be under warranty for 5 years. There after a comprehensive maintenance contract (including repair/Replacement of the year) of the complete system. All accessories, computers and printers and all other items supplied /installed should be offered for 5 years.
- During warranty /AMC period all breakdowns must be attended to within 24 hours and repair completed within 72 hours of reporting.

➢ **Down Time:**

- Maximum acceptable down time of equipment during the warranty period /AMC should not exceed five percent, calculated separately for each year.
- If the down time exceeds the level, then the warranty period/AMC to be extended by twice the period of downtime exceeding 5%.

➢ **Responsibilities:**

- During the period of warranty comprehensive maintenance contract the following will be the responsibilities of the firm.
- Maintenance and replacement of the batteries of the UPS as and when necessary.
- To provide/refill/replace cartridge used for the printer supplied.
- Up-gradation of software of main equipments, workstation, servers and supplied computers.

7. Central Monitor: -

➢ Screen:- Should be Color Touch Screen larger than 15 inch.
➢ Both Touch Screen and Button Type Function.
➢ Both Color wave form and numerical display on screen.

Wired and wireless connection with central nursing station.

Monitoring:-

- ECG(Multiple leads), NIBP(Adult & Pediatric), SPO_2, Temperature(Core+Rectal),R.R.
- Optional Modules-$ETCO_2$,IBP and Cardiac Output.
- Patient Range:- should monitor 16-48 patients at a time.
- Data Review up to 5 days.
- Central Alaram control
- Data storage should be large e.g 10,000 + hours of ECG waveform data
- Integrated thermal printer.
- Power:-220-240 V AC, 50 Hz Power Supply.
- Should have advance security feature, like SSL communication encryption.

8. Transport Ventilator

- TFT Display (8 to 12 inch)
- Should be light weight and designed for transport.
- Power source(main power and battery backup up to 6-11 hours)
- Both adult and pediatric
- Tidal Volume, 50 ml to 200 ml.
- Peep 0-20 cm/H2o
- FiO2 21-100 %.
- Pressure support, 0 t0 50 cm/H2O.
- Respiratory rate 6-45 bpm.
- Modes: CMV Assisted Control, SIMV, PS-PEEP, CPAP and NIV.
- USFDA/CE or BIS Certified.

9. Portable X-ray

- **Type**
  - Mobile / Portable X-ray unit
  - Suitable for bedside radiography (ICU, wards, emergency, OT)

- **X-ray Generator**
  - High-frequency inverter type
  - Output power: 3.2 kW – 8 kW (commonly 5 kW or 8 kW)
  - Single phase, battery operated or mains powered

- **kVp Range**
  - 40 kVp to 120 kVp (or up to 125 kVp)

- **mAs Range**
  - 0.5 mAs to 200 mAs (model dependent)
  - Adjustable mA and exposure time

- **X-ray Tube**
  - Rotating anode
  - Focal spot: 0.6 / 1.2 mm
  - Anode heat capacity: 100–300 kHU

➢ **Collimator**
- Light beam collimator
- Adjustable field size
- Inbuilt filtration: ≥ 2.5 mm Al equivalent

➢ **Power Supply**
- Rechargeable lithium/lead-acid battery
- Battery capacity: minimum 100–200 exposures per charge
- Charging time: 4–6 hours
- AC supply: 220–240 V, 50 Hz

➢ **Control Panel**
- Digital control panel
- Pre-programmed APR (Anatomical Programs)
- Display for kVp, mAs, exposure parameters, battery status

➢ **Mobility**
- Lightweight and compact design
- Smooth rolling wheels with brakes
- Foldable or telescopic arm for easy positioning

➢ **Compatibility**
- Compatible with CR and DR systems
- DICOM compatible (for digital models)

➢ **Radiation Safety**
- Leakage radiation within permissible limits
- Audible and visual exposure indicators
- Complies with AERB / IEC standards

➢ **Accessories**
- Exposure hand switch
- Power charging cable
- Protective covers
- User and service manuals

➢ **Weight**
- Approximate weight: 25–60 kg (depending on model)

(9)

Postgraduate Department of Orthopaedics
Govt. Medical College Srinagar, (Bone & Joint Surgery Hospital)

Phone NO: 01942430155 **Email ID: hodorthopaedics@gmcs.ac.in**

The

Head of the Department
Orthopaedics, GMC Srinagar.

Reference: JKMSCL/PS/GM(Adm)/2026/8504-09 dated: 10-03-2026
JKMSCL/PS/GM(Adm)/2026/8589-95 dated: 14-03-2026

Subject: *Procurement of additional equipments for design and construction of 160 bedded specialised orthopaedic unit in Bone & Joint Hospital, Srinagar... regarding pre-bid queries.*

Sir,

In reference to letter no: JKMSCL/PS/GM(Adm.)/2026/8652-57 dated: 18-03-2026 endorsed by Principal/Dean GMC Srinagar vide receipt no: 10528 dated: 18-03-2026 regarding the subject cited above, the representations of Full 4K/UHD High resolution camera system submitted by different vendors have been examined by the technical experts of this department thoroughly and is of the opinion that the specifications put forth by JKMSCL which were submitted by this department vide letter no: HOD/Ortho/25/827 dated; 10-11-2025 have been framed in accordance with the clinical requirements and standards essential for ensuring best patient safety,quality of care and handing of this system. Any deviation or alteration in the existing specifications may compromise the intended clinical outcomes and handling process of the said equipment and is therefore not advisable except the below mentioned few changes.

1. *Image Management system: Video recording in SD and 4k/HD quality in the console with no external device support.*
2. *Weight of system controller/documentation tablet: 01 to 03 KG*
3. *Fluid Management system: Dimentions (40-45)cm (W) X (13-15) cm (H) X (29-32)CM (D) and weight:* 06-10 Kgs.

Dr. Iftikhar Hussain
Assistant Professor

rshad Bashir
Professor, Orthopaedics

Dr. Naseem Ul Gani
Professor, Orthopaedics

JKMSCL.

JAMMU AND KASHMIR MEDICAL SUPPLIES CORPORATION LTD.

(Public Sector Undertaking of the Government of Jammu and Kashmir)
Corporate Head Office: Corporate Head Office: Plot No. 58, Friends Colony Satyam Road Trikuta Nagar Jammu
Corporate Office: Kashmir, Near Haj House, Bemina 190018, Srinagar
email: mdjkmscl2@gmail.com; **website**: www.jkmsclbuisness.com

CORRIGENDUM

In light of the representation(s) submitted by the prospective bidder(s) and the matter under consideration of Hon'ble High Court, the critical dates for the **"Procurement of additional equipment for 160 Bedded Specialised Orthopaedic Unit in Bone & Joint Hospital, Srinagar** under "World Bank Project" uploaded vide No. NIT/JKMSCL/M&E/2025/679 dated 05.12.2025" are extended with the approval of tender inviting authority. The critical dates are as under:

1. Last date and time for submission of online bids: 30.03.2026 upto 1600 hrs
2. Date and time for online opening of technical bids: 01.04.2026 at 1100 hrs

It is further added that the technical specifications of the equipment **"Microscope, Spine Laminectomy Set, Multipara Monitor, High End ICU Ventialtor (Adult/Paeditrics/Neonatal), Defibrillator, Syringe Pump, Dialysis Machine and ECG Monitoring "** have been amended by the technical experts and are annexed as Annexure-A **(17 Pages)**.

Please Note:

1. *Those firms/bidders who have already uploaded their bids are required to re-upload their bids as per amendments and corrigendum issued thereof.*
2. All the bidders are requested to keep themselves updated & submit their e-bids through e-portal as per specifications & BOQs. The amendments/modifications shall be available on e-Portal and www.jkmsclbusiness.com.

18.03.26

(M A Choudhary) JKAS
General Manager (Adm),
J&K Medical Supplies Corporation Ltd.

No.: JKMSCL/Corg/2026/ 8650-52 **Dated:** 18.03.2026.

Copy for information to the:-

1. Dy. General Manager (Tendering), J&K Medical Supplies Corporation Ltd.
2. P.A to Managing Director, J&K Medical Supplies Corporation Ltd.
3. Assistant Progammer, J&K Medical Supplies Corporation Ltd for uploading on web portal.
4. File

Technical Specifications for ECG Machine

The ECG (Electrocardiogram) machine must be a state-of-the-art device designed to perform accurate cardiac assessments for adults and pediatric patients. It should include advanced features for precise diagnostics, ease of use, and seamless data management. Below are the required specifications:

1. General Features

- **Multi-Channel Capability:** 12-lead standard ECG recording with the option for extended leads if required.
- Compact, lightweight, and portable design for ease of use and mobility.
- **High-resolution color display** (minimum 7 inches) for waveform visualization and parameter display.
- **Touchscreen interface** for intuitive operation and navigation.
- Rechargeable battery with **minimum 6 hours of operational time** for portability.
- Integrated printer for high-quality ECG printouts (thermal or laser technology).

2. Performance Specifications

- Sampling rate: Minimum **500 samples/second** per channel.
- Frequency response: **0.05 Hz to 150 Hz** or better.
- Common-mode rejection ratio (CMRR): **≥100 dB** for noise-free recording.
- Input impedance: **≥10 MΩ** to ensure signal fidelity.
- Lead detection: Automatic detection and indication of disconnected leads.
- Signal processing: Baseline wander, noise suppression, and artifact filtering.

3. Recording and Analysis Features

- Simultaneous 12-lead acquisition with display of all leads on-screen.
- Real-time and stored ECG viewing.
- Automated measurements and interpretation (e.g., heart rate, QT interval, PR interval, axis deviation, and arrhythmia detection).
- Pediatric and neonatal mode for specialized cardiac assessments.
- Memory capacity for storing **minimum 300 ECG records** internally.

4. Connectivity and Data Management

- USB ports for data export and software updates.
- Wireless connectivity (Wi-Fi or Bluetooth) for seamless integration with hospital systems.
- **DICOM compatibility** for integration with PACS.(Optional)
- Cloud-based storage and remote access capabilities (optional).

5. Safety and Compliance

- Compliance with international safety standards such as **IEC 60601-2-25** for ECG devices.
- Electrical safety: Protection against defibrillation and electrosurgical interference.
- Patient isolation: Fully isolated circuitry to ensure patient safety.

P-2

- FDA/CE-approved device with ISO certification.

6. Accessories

- Reusable and disposable ECG electrodes.
- High-quality lead wires with Color-coded labelling for easy identification.
- Compatible paper rolls for the printer (if required).
- Rechargeable battery pack and charger.

7. Software Features

- Automatic interpretation with diagnostic suggestions (e.g., arrhythmias, ischemia, myocardial infarction).
- Customizable reports with graphical and tabular formats.
- Data encryption for secure patient information.

8. Warranty and Support

- Warranty: Minimum **3 years**, extendable up to 5 years.
- On-site installation and user training provided by the vendor.
- Comprehensive maintenance support with annual calibration services.

XXXXXX

Department of Nephrology Government Medical College
Associated Superspeciality Hospital Srinagar.

No. 011/Nephro/226/2026 Dated: 14/03/2026

Request for Procurement Specifications: Standard Bicarbonate Hemodialysis Machine for Bone & Joint Hospital

Date: 14/06/2026

To:

The Medical Procurement officer
(Nodal Officer) JKUSCL
GMC Srinagar.

Subject: Submission of Specifications for Procurement of a Standard Bicarbonate Hemodialysis Machine for the Department

Respected Sir/Madam,

I am writing to submit the recommended technical specifications for procurement of a standard Bicarbonate Hemodialysis Machine for use in the Department. The acquisition of a modern hemodialysis system is essential to ensure safe, efficient, and high-quality renal replacement therapy for patients with acute and chronic kidney failure.

The machine should meet internationally accepted safety and performance standards and should be capable of delivering bicarbonate-based hemodialysis with precise monitoring, reliable alarms, and advanced patient safety features.

Essential Technical Specifications

- Fully automatic Bicarbonate Hemodialysis Machine suitable for adult and pediatric dialysis.
- Compatible with standard acid and bicarbonate concentrates.
- Volumetric ultrafiltration control with high accuracy.
- Dialysate flow range preferably 300–800 ml/min.
- Blood flow range preferably up to 500 ml/min.
- Online clearance monitoring (optional but desirable).
- Conductivity monitoring with automatic proportioning system.

GOVT. MEDICAL COLLEGE, SGR.
Receipt 10446
Date 14 - 03 - 26
Enclosure (1 leaves)

- Real-time monitoring of arterial pressure, venous pressure, and transmembrane pressure.
- Air bubble detector with automatic venous line clamp.
- Blood leak detector with alarm system.
- Automatic dialyzer priming and rinse-back facility.
- Integrated heparin pump with adjustable infusion rate.
- Comprehensive alarm system for pressure limits, conductivity, temperature, and blood leak.
- User-friendly touchscreen display with treatment data recording.
- Compatible with standard single-use dialyzers and blood tubing sets.
- Dialysate temperature control system.
- Battery backup or safe power failure protection system.
- Compliance with international safety standards (CE / FDA or equivalent certification).

Additional Requirements

- On-site installation and commissioning.
- Comprehensive training of dialysis staff.
- Minimum warranty of 2–3 years.
- Availability of annual maintenance contract (AMC).
- Reliable local technical service support.

In view of the increasing number of patients requiring dialysis support, procurement of a standard Bicarbonate Hemodialysis Machine will significantly strengthen the capacity of the department to provide safe and effective renal replacement therapy.

I request the procurement committee to kindly consider these specifications while initiating the purchase process.

Thank you.

Yours sincerely,

_Tajamul H Mir_____
Designation: ____HOD_____
Department: ___Nephrology_____
Institution: ____GMC SRINAGAR_____

Copy to:-
Principal/Dean, GMC, SGR for favour of inf.

OFFICE OF THE HOD
ANESTHESIOLOGY AND CRITICAL CARE MEDICINE
GOVERNMENT MEDICAL COLLEGE SRINAGAR

NO: HOD/Anes/MC/ 713

Dated: 12/ 03/2026

The Principal/Dean,
Govt. Medical College,
Srinagar.

Subject: Procurement of additional equipments for design & construction of 160 bedded specialized Orthopedics unit in B&J Hospital Srinagar.

Respected Madam

In response to letter No. JKMSCL/PS/GM(Adm)/2026/8504-09 dated 10/03/2026 it is hereby informed that the technical expert's suggestions from the Department of Anesthesiology and Critical Care Medicine, GMC Srinagar, are enclosed herewith for your kind perusal.

Sd/-
Head of the Department
Anesthesiology & Critical Care Medicine,
GMC, Srinagar

Copy to:-

- Medical Superintendent Govt. B&J Hospital Srinagar.
- Office file.

Prof. Dr. Javid Iqbal Naqashbandi
Professor Department of Anesthesia

Scanned with OKEN Scanner

Technical Specification of Multi Parameter Monitor:-

1. High-end latest design Modular Multi-parameter patient monitoring system.
2. Should have a bright, highly visible colour TFT medical grade integrated touch display with wide viewing angle, should be a minimum of 15 inch. Automatic Zoom in facility in the monitor display.
3. It should have the capability to be operated through touch screen & trim knob/Mouse.
4. Should be able to display 12 waveforms along with related numerical parameters. Should have colour coding different waveforms.
5. Should have configurable screen configurations for various monitoring settings like emergency, general, cardiac, neuro pediatric and 12 lead screens.
6. Should be able to monitor ECG, SPO2 with PI, NIBP, 2x IBP and 2x Temp as a standard. Dual IBP should be a standard feature.
7. Measurement range of heart rate should be 10 to 300 bpm, NIBP & IBP should be 0 to 300 and respiratory rate should be 0 to 150.
8. Optimized user modes like Standard Adult, Paed & Neonate mode with OxyCRG and configurable for different care areas.
9. Should be upgradable to ETCO2, Cardiac output, AGM, Entropy/BIS and NMT just by adding modules and simultaneous monitoring should be possible. NMT monitoring should be possible via KMG and EMG technology.
10. Should be capable to connect an independent display.
11. SPo2 Monitoring should have technology which is accurate in motion and low perfusion. It should demonstrate perfusion index/pleth variability index/oxygen reserve index with shortest possible lag time. It should be able to pick dyshemoglobinemia like carboxy and meth Hb.
12. Should have Full disclosure of ECG waveform and other parameters for at least 72 hrs.
13. Monitor should have different screen layout to view big font size in numeric and waveforms.
14. Should have simultaneously systolic Pressure Variation (SPV) and Pulse Pressure Variation (PPV) monitoring capability which helps clinician in guiding fluid management.
15. Shall be able to perform (automatic and manual) & display 3/5 and 12 lead ECG at the bedside with ST segment analysis and advance arrhythmia detection (25 or more) including AFIB detection.
16. Monitor should have facility to capture the Critical events as a snapshot and store in the trends or Monitor should have facility to print waveforms automatically during critical events with the help of thermal recorder.
17. Should have Snapshots facility upto 200. Manual or alarm triggered or recorder facility to print automatically during critical events.
18. Should be able to set alarm limits for all the measured Parameters using single function.
19. Should have adjustable Audio and visual alarms with alarm light on display.
20. Anesthesia gas monitoring should display O2, CO2, Anesthetic agent, N2O gases, MAC value in both inspired and expired value breath to breath.
21. Should have Entropy/BIS capability to monitor the depth of anaesthesia.
22. ETCO2 Monitoring should be Side stream/Mainstream/Micro stream measuring method.

23. The manufacturers/suppliers quoting for a monitor being manufactured in a country sharing common boundary with India will not be considered.
24. The data transfer of the trend data should be possible to an external storage device.
25. Monitor should have facility for National Early Warning score which helps the clinicians to know the patient's condition better.
26. NIBP technology utilizing "smart cuff" pressure control to improve measurement time, patient comfort, and oscillometry technology should be clinical motion grade tolerant.
27. The monitor should be HL7 Compliant which connects to EMR direct.
28. Monitor should have smart lead fall detection to monitor uninterrupted ECG.
29. Bed to bed view feature should be available in the monitor via networking.
30. Connectivity to Central stations should be standard through LAN / Wifi.
31. Battery backup should be minimum 4 hours.
32. Monitor should be USFDA and EUCE approved unless BIS certification is mandatory as per Government rules.
33. Monitor should have standard 3 years warranty and 5 years CMC.

Scope of supply

- ECG cable 3/5 Lead set - 1no.
- SPO2-Adult finger probe - 1 no.
- NIBP Hose and Adult cuff, small adult, and large adult cuff set-1 no.
- Skin and Rectal/Oral temp probe-1 no each.
- IBP reusable transducer cable and (5 disposable transducer kit)-2 no.
- EtCO2 monitoring module-1 no.
- Should be upgradable to Entropy/BIS & NMT.

High End ICU Ventilator Adult/Paediatric/Neonatal
1. Must be microprocessor / Computer-controlled ventilator or latest technology.
2. Should be usable for Adult, Paediatric, Neonates and preterm
3. Should work on electrical sources: External Ac and in-built battery backup for minimum of 60 -90 minutes.
4. The ventilator should run on centralized air supply line and should have standalone compressor with auto change over facility in case of piped air supply falls and vice versa as air supply line resume compressor should be same make as of ventilator.
5. The Ventilator must run on both the air compressor unit (if available) and / or on central pipeline air supply (60psig.).
6. Must have TFT touch screen of 12 inches or more, showing all the set ventilator and patient parameters, scalars, loops, mechanics etc. on clear displays. The colour touch screen should have the facility for tilt & rotate for better viewing.
7. Should have external interface with RS232 serial port
8. OXYGEN SUPPLY: Must have in-built O2 blender with sensor with display for set and delivered O2 concentration.
9. Should provide O2 enrichment @40 to 60 psi O2 supply source with alarms for low or high pressure supply.
10. Should have provision to work on both pipeline O2 or air supply and high pressure O2 cylinder -based supply.
MODES OF VENTILATION:
11. Should have Assist. Control and SIMV modes, in both pressure and volume modes.
12. Should have provision of Non-invasive ventilation with leak compensation at all user set pressure values and NIV in pressure modes.
13. Should have additional modes such as pressure Regulated Volume Control (PRVC), APRV, Volume Support, Bi – level with PS & any other advance modes specific to manufacturer. Beside basic / common modes, should have advanced mode of ventilator (BIPAP / Bi-vent with pressure support, APRV, PRVC and Biphasic ventilation) .Hybrid modes such as Automode/ASV/MMV.
14. Must have provision for all the following:
a) Automatic Tube/Circuit Compensation
b) CPAP (0-50 cm H2O).
c) Back-up Apnea ventilation.
d) 100% oxygen for a period of two minutes before disconnection for suctioning or other procedures.
SETTING OF VENTILATOR:
e) Should have the at least the following range of settings
a) Should be able to be programmable for Adult, Paediatric & Neonatal separately on switching on the equipment.
b) Setting of modes should be user friendly and have volume based and pressure-based modes separately, along with provision for non invasive ventilation in pressure modes.
c) Settings should be user friendly-com wheel or touch screen based.
d) Tidal volume from 2-2000 ml (in volume control mode)
e) Respiratory rate- up to 120 bpm.
f) PEEP – 0 to 50 cmH2O
g) FiO2 – 21 to 100%
h) Pressure support – 0 to 100 cm H2O. Rise time 0-2 secs in fraction of 0.1 sec or in %.
i) Inspiration time 0.1 to 10 secs.

Apnea time interval setting from backup ventilation when in spontaneous mode.
Flow 2 to 150 L/min or more.
I:E ratio – 4:1 – 1:9.
DISPLAYS:
15. Must monitor / displays the following set and delivered parameters of ventilator settings:
i. Tidal volume – Inspiratory and expiratory.
ii. Minute volume – Inspiratory and expiratory.
ii. Peak, mean and plateau pressure.
iv. PEEP.
v. I:E ratio
vi. Inspiratory time
vii. Rate total and spontaneous
viii. Compliance, static & dynamic
ix. Resistance
x. FiO2 set and delivered
xi. Must display electrical power source (internal / external) and battery level.
xii. At least 3-4 user selected scalar graphic (flow, pressure and volume over time) should be displayed simultaneously on the screen with set and delivered parameter mentioned above. Should at least display 2 loops and facility of superimposing and saving of reference loop available. Should display 3-4 waveforms and 3 loops simultaneously on screen
xiii. Must have features of expiratory and inspiratory hold, occlusion pressure & Vital capacity measurement / WOB. ETCO2 monitoring should be optional.
xiv. Should be able to measure and displays PEEPi.
16. Must provide at least 72 hours trending and browsing of monitored parameters. It should have facility to store 40 screenshots and 40 recordings each of 30 s and export via USB
ALARMS:
17. Must provide for user adjustable alarms for the following with built in default setting
i. Respiratory (high and low)
ii. Minute volume (high and low)
iii. Pressure (high and low)
iv. FiO2 (high and low)
v. Apnea
vi. Gas supply failure
18. Must also have warning alarms of both auditory and visual for the following.
i. Low O2 pressure.
ii. Patient disconnects.
iii. Check sensor on malfunction for flow and O2 sensor.
iv. Low battery.
v. AC disconnects.
19. Should have provision for record of alarm for at least 72 hours or logbook of 2000 events.

20. Must have audible alarms of different tones graded for high priority, immediate priority tones with display of the nature of warning being highlighted on the display. It should display the troubleshooting of current alarm on-screen.
21. Alarms of importance like disconnection circuit leak or mechanical failure should be activated within 20 secs & should be loud and well audible.
22. Should have facility to silence alarms for a period of 2 minutes.
23. MISCELLANEOUS:
24. Should have facility to measure inflection point during alveolar recruitment through pressure- volume loop/ Open lung Tool
25. Should not involve frequent change of expiratory valve / cassette, O2 sensor. The same should be covered under warranty.
i. Should provide autoclavable expiratory cassette/ expiratory valves – 2 nos/ ventilator
Flow sensor – If required, disposable flow sensors (based on hot wire anemometry, differential pressure or any other technology) 100 nos/ventilator
Or reusable flow sensors (based on hot wire anemometry, differential pressure or any other technology) – 20 nos/ ventilator and covered under warranty.
ii. O2 sensor to be covered under warranty and CAMC or paramagnetic under CAMC.
26. Should be provided with all accessories.
i. 02 Nos. each sets of disposable masks for non-invasive ventilation (S,M,L)
ii. 20 Nos. HME filters with disposable circuits.
iii. 02 Nos. each autoclavable circuits of adults and paediatrics compatible with humidifiers.
iv. Test lung with each unit.
v. Air (2 nos) and O2 (2 no.) high pressure hoses
27. Should be compatible with standard disposable ventilator tubing's with separate inspiratory and expiratory limbs connected with Y-connectors, with or without water, traps and non-invasive ventilation masks available in market. Should be supported with performance and live demonstration is mandatory.
28. Ventilator should be able to accept and work on all commonly used reputed brands of disposable ventilator tubing's humidifier assembles disposable or reusable parts. Rates of Ventilator Circuits should be fixed for a minimum of 2 (Two) Years.
29. The ventilator should have integrated/in-built nebulizer vibrating mess technology which is independent of flow. Should be Autoclavable and produce 3-micron size drug particle size.
30. The ventilator should be supplied with USFDA and European CE (with four digital modified body) approved or USFDA and CDSCO or USFDA and BIS Certified servo-controlled humidifier MR 950 along with its accessories.
31. Reusable chambers: 02 Nos.

32. Both Ventilator and Compressor should be USFDA and European CE (with four digital modified body) approved or USFDA and CDSCO or EC with four digital modified body and CDSCO and BIS certified.
33. Transpulmonary pressure measurement is desirable.
34. It should have advanced adaptive closed loop ventilation with continuous automated protocol implementing ability for improved patient ventilator interaction to improve weaning. It should be supported by Clinical reference and performance. Should have either of the following automated protocol for automatic weaning of patient along with consumables for atleast 5 nos of patients and prices should be quoted separately valid for min 2 years.
OR
Should adjust the pressure support to the lowest possible limited based on the breath-to-breath analysis of the respiratory rate, tidal volume and ETCO2 or compliance in a particular patient.
OR
Should optimize oxygenation automatically to adjust FIO2 and PEEP to achieve a target SPO2 and the ventilation setting should adjust MV, VT and RR automatically to achieve a target ETCO2.
OR
Should be able to assist ventilation on breath-to-breath basis according to electrically activity generated by the diaphragm.
Mandatory: Physical Demonstration before the Technical Experts

(12)

Technical Specification of Defibrillator

1. Defibrillator should have minimum 7 inch TFT LCD display with minimum 3 Waveforms
2. It should have integrated paddle for both adult and pediatric patients.
3. Defib should have four modes Manual defibrillation mode, Monitor Mode, Pacing Mode, AED Mode of operation
4. Charging time to 200J should not be more than 7 seconds with fully charged battery
5. Defib should have 3/5 Lead ECG Monitoring with leads of detection
6. Pace pulses should be delivered through multifunction pads that are applied to the patient's bare chest. Machine should deliver pace pulses in either demand mode or fixed mode
7. The Li-ion battery should support
   - 5 Hours operating time
   - A minimum of 200 shocks at 200 J.
8. It should not be more than 5.5 kg weight
9. System should be European CE certified
10. System should have audio visual Alarm configurable depending for Low, Medium and High Priorities
11. Shock analysis time should be less than 10s in AED mode
12. Defib should be able to detect VF at an amp 0.2mV in AED mode
13. System should be upgradable to SPo2 anytime in future

Technical Specifications Syringe Pump

1. Syringe Infusion Pump should have a drive accuracy of ±1.0 % or better
2. Should be able to use and automatically sense 2ml, 5ml, 10ml, 20ml, 30ml & 50ml Syringes.
3. Should be Pre Calibrated with majorly available brands listed as B Braun, BD, Flipro, Romsons and Dispovan and provision to calibrate other additional brands as well.
4. Should have at least 4 inches large touchscreen for ease of operation
5. Pump should have a patient line tubing holder to protect it from disconnection from the syringe side.
6. It should comply and work with normal 3 pin power cord without having the need of any additional dedicated charging adopter.
7. Pump should haveprovision of Drug Libraryfor at least 2000 drugs.
8. Should have multiple infusion modes – Rate, volume and time mode, body weight mode sequence mode, loading dose mode, TIVA mode and Intermittent Mode.
9. Should have a provision to change the flow rate during infusion without stopping the pump.
10. Should havethe option to set Bed No. in the pump.
11. Should have real-time dynamic pressure display to monitor inline pressure with 9 adjustable Occlusion Pressure Levelsup to 1000mmhg pressure.
12. Should have capability to program volume to be infused from 0.1ml to 9999ml
13. Pump should have a provision to adjust brightness and alarm volume.
14. Programming infusion ratesshould within the range of 0.01ml/hr to 2100 ml/hr and the infusion rate can be adjusted in increments of 0.01 ml/hr.
15. Pump should have provision for Wi-Fi compatibility.
16. Pump should have a history log for at least 2000 records
17. Pump should have a rating ofIP24 or better.
18. Should have a provision to programme automatic bolus.
19. Pump Should not weight more than 2.3kg.
20. Pump should have a Rechargeable Lithium-Ion battery with a battery backup of at least 8 hours at 5ml/hr.
21. KVO Rate should be adjustable from 0.1ml/hr to 5ml/hr.
22. Manufacturer should have company owned or authorized service center in India.
23. Pump should be CE Certified, CDSCO approved and Made in India.
24. Manufacturer must comply with ISO standards.

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Postgraduate Department of Orthopaedics
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Medical Superintendent
Govt. Bone & Joint Hospital
Srinagar.

No: HOD/Ortho/26/550-51 Dated: 14-03-2026
Reference: JKMSCL/PS/GM(Adm)/2026/8504-09 dated: 10-03-2026
GM(Adm)/JKMSCL/8287-92 dated: 03-03-2026

Subject: E. bid for procurement of additional equipment for 120 bedded specialised orthopaedic unit in Bone & Joint Hospital, Srinagar under "world Bank Project"...regarding examination of pre-bid representation and submission of technical recommendations thereof.

Sir,

In reference to your office letter no: BJH/MS/5163-5167 dated: 06-03-2026 regarding the subject cited above, the representation of Microscope has been examined by the technical experts of this department thoroughly and this department is of the opinion that the specifications put forth by JKMSCL which were submitted by this department are technically sound, reliable and in the best interest of patient safety and care. It is recommended that the existing technical specifications as notified in NIT may be retained without any modification and the advantages/reasons have already been forwarded vide letter no: HOD/Ortho/26/229-31 dated: 31-01-2026.

Regarding Another representation of Spine laminectomy set regarding the non availability of BOQ on the portal, it is submitted that details of laminectomy set along with the generalized specifications are already forwarded vide letter no: HOD/Ortho/25/827 dated: 10-11-2025 and is hereby attached again for ready reference.

Dr. Iftikhar Hussain
Assistant Professor

Dr. Arshad Bashir
Professor, Orthopaedics

Dr. Naseem Ul Gani
Professor, Orthopaedics

C/S: Head of the Department
Orthopaedics, GMC Srinagar

Copy to:

1. Nodal Officer, JKMSCL, GMC Srinagar for information and n/a.

Spine Laminectomy Set

(S.M.I. Pilho)

Technical Specification

- The instruments should be light weight, finally balanced of non- magnetic surgical grade stainless steel with carbon contents specified of ISO 9001 / CE / PIS or equivalent rating.
- The dimensions of instruments may vary 5-10% from specification mentioned.
- It should have warranty for 5 years and facility for repair locally.
- It should be European CE/USFDA approved.
- All instruments should be manufactured by same manufacturer except item(s) not in the production list. Selected instruments may be asker for demonstration before final approval.

	Description
1.	Rampley sponge holding forceps 230 mm
2.	B.P. handle no. 3
3.	B.P. handle no. 4
4.	Towel clips 3/12"
5.	Towel clips 5"
6.	Allis Classic Tissue Forceps 5"
7.	Scalp Clip System: Applying/Removal forceps (Reusable) 2 boxes of Raney clips (plastic scalp clips, sterile, single use) (1 box with 20 packages each containing 10 clips)
8.	Halstead- Mosquito Forceps, Straight, 125 mm
9.	WEITLANER self retaining retractor, Sharp 5 x 6 teeth 250 mm, 10"
10.	ADSON self retaining retractor, semi sharp, blunt 330 mm, 13 1/8"
11.	Cone Hemi-Laminectomy Retractor, hinged arms, 254 mm. (10 in.) for unilateral intervertebral disc operation: - i. For left side ii. For right side
12.	Williams Microlumbar Discectomy Suction Retractor, Tube Diameter: 16 Fr. Length: 6" (152mm)
13.	Williams Microlumbar Disectomy Suction Retractor, Tube Diameter: 17 Fr Length: 6" (152mm)
14.	Williams Microlumbar Disectomy Suction Retractor, Tube Diameter: 18 Fr. Length: 6" (152mm)
15.	ULTRAFINE Artery Forceps, 190mm (7 1/2 in.) with teeth, Straight with 1/2 teeth.
16.	ULTRAFINE Artery Forceps, 190mm (7 1/2 in.) with teeth, Curved with 1/2 teeth.
17.	ULTRAFINE Artery Forceps, (Heiss type), Box Joint, 205 mm. (8 in.). Straight.
18.	ULTRAFINE Artery Forceps, (Heiss type), Box Joint, 205 mm. (8 in.). Curved.

19.	Metzenbaum Scissors straight with rounded blades, conical points, 241mm (9 1/2 in.).
20.	Metzenbaum Scissors curved with rounded blades, conical points, 241mm (9 1/2 in.).
21.	Neurosurgery Needle Holder, Box Joint, (8"). For 0 to 2-0 sutures, Tungsten carbide jaws gold plated bows
22.	Neurosurgery Needle Holder, 6" (152mm). For 3-0 to 5-0 sutures, Tungsten carbide jaws gold plated bows
23.	Dural forceps with tooth small, long, long bayonet
24.	Dural forceps without tooth small, long, and long bayonet
25.	CLOWARD Type Intervertebral Disc Rongeurs, Shaft Length: 7" (178mm), cup sizes: i. 4x8 mm ii. 6x10 mm iii. 6x12 mm
26.	CUSHING INTERVERTEBRAL DISC BIOPSY FORCEPS, 180 mm, Cup widths: iv. 3 mm straight tip v. 4 mm straight tip vi. 4 mm up tip vii. 4 mm down tip viii. 5 mm straight tip
27.	INTERVERTEBRAL DISC BIOPSY FORCEPS, SPURLING type, 4mm x 10 mm (non- glare) i. Straight ii. Up iii. down
28.	KERRISON Punch (Tungsten Carbide), 180mm 130 Degree. Upward 1mm, 2mm, 3mm, 4mm, 5mm
29.	KERRISON Punch (Tungsten Carbide), 180mm 90°downwards cutting 2mm, 3mm
30.	CLOWARD Depth Gauge, Length 8 3/8" (213 mm)
31.	Wagner rongeur, 210 mm, 8 1/4", 5.5 mm
32.	LUER-STILLE, 225 mm, 9", bone Rongeur straight
33.	LUFR-STILLE, 220 mm, 8 ¾", bone Rongeur curved
34.	LUER-STILLE, 270 mm, 10 ¾", bone Rongeur
35.	Echlin (3 x 10mm), 9", bone Rongeur.
36.	FRYKHOLM, 230 mm, 9", bone Rongeur.
37.	STILLE, 230 mm, 9", bone Rongeur.
38.	LEKSELL-STILLE, 240 mm, 9 ½", bone Rongeur.
39.	LUER-STILLE, 225 mm, 9", bone Rongeur straight
40.	STILLE-RUSKIN, 230 mm, 9" Laminectomy Rongeur 3mm bite curved.

41.	STILLE-RUSKIN, 230 mm, 9" Laminectomy Rongeur 3mm bite straight.
42.	LANGENBECK, 205 mm, 8", bone holding forceps, 11 mm
43.	Caspar Scoops, Straight 250mm length. 3,4,5,6 mm sizes
44.	Oconnell nerve root retractor, Double Ended, 3,4,5,6 mm sizes
45.	Love Nerve Root Retractor angled shaft, 90 ° at handle, blade 5 x 5 mm
46.	Love Nerve Root Retractor angled shaft, 45° at handle, blade 5 x 5 mm.
47.	CHISEL, straight, Length: 11" (279mm) i. Tip Width: 1/2" (13mm) ii. Tip Width: 3/4" (19mm) iii. Tip Width: 1" (25mm) iv. Tip Width: 1 1/4" (32mm)
48.	CHISEL, curved, Length: 11" (279mm) i. Tip Width: 1/2" (13mm) ii. Tip Width: 3/4" (19mm) iii. Tip Width: 1" (25mm) iv. Tip Width: 1 1/4" (32mm)
49.	Cobb elevators Total length 32mm handle diameter 3cm Straight- 10mm, 15mm, 20mm and 25mm.
50.	Bone Graft tampers Caspar, Length 200 mm, 5 mm
51.	Angled, Oval shaped tip Bone Tampers, 290mm length 5x15mm tip dimension
52.	CLOWARD Dural Hook, 165mm (6 1/2")
53.	Gardner wells, skull traction clamp, for adult and pediatric patients. Designed for quick and easy application. Working on spring mechanism.
54.	Crutchfields Traction for adult and pediatric sizes.
55.	Cervical Vertebra Spreader 5 ½ " (14cm)
56.	"Love" Nerve Root Retractor straight, 45°, 90°
57.	Micro Lumbar Discectomy Retractor Set
58.	Caspar Curette, Square Shaped i. 4 mm straight and angled ii. 5 mm straight and angled
59.	Foraminotomy Curved Kerrison Punch
60.	Karlin Microdiscectomy curette set (set of 24 curettes)
61.	File for bone graft preparation (FK507R), BONE FILE, 1 side file cut, 1 side rasp cut, 220 mm, 8 3/4"
62.	Self-Retaining Spine Retractor Set (Double hinged) for Lumbar Laminectomy with transverse and vertical retraction blade application options. All available sizes of blades along with Hook/Pin retractor for hemi- laminectomy.