

Specifications for 32 Channel Portable EEG System

Sl. No	Specifications
1	The system must be offered with a 32 Channel EEG electrode junction box comprising 25 EEG channels, 3 respiration channels, 4 bipolar channels, 4 DC inputs, and built-in SpO2 (1) and CO2 (1).
2	The amplifier should be able to connect to a laptop through USB for low-noise EEG recording. Amplifier must also have a built-in patient event button/event marker.
3	Amplifier should have a built-in electrode impedance check facility and should be able to perform impedance checks in numeric values from both console and software.
4	The EEG amplifier shall be equipped with a minimum 16-bit or higher Analog-to-Digital Converter (ADC) with ≥ 1 KHz sampling rate, CMRR > 105 dB, input impedance of 100 Mega Ohms, low cut filter of 0.08 Hz, high cut filter up to 300 Hz, and noise level < 1.5 microvolt peak-to-peak.
5	Facility for ECG channel with online heart rate monitoring should be available. The system should have a numeric display of heart rate.
6	Option to monitor SpO2 and CO2 values with waveforms in EEG acquisition mode should be available (optional SpO2 and CO2 sensors).
7	Manual and automatic removal of ECG artifacts from EEG using ECG filter should be available in the system.
8	The system should include a programmable automatic photic stimulator with white xenon light, stimulation rate of 0.5–60 Hz, automatic/manual/single modes, duty cycle of 5 minutes continuous operation within 30 minutes, and adjustable stimulation and pause time from 1–99 seconds.
9	Up to three sequences of automatic photic stimulation should be available while performing EEG examination.
10	System should include patient administration, and advanced report generation should run on SQL server-based software without MS Office dependency.
11	The system should have the facility to create multiple user menus with dedicated protocol settings.
12	Automatic data backup should be available in case of sudden power failure or computer crash.
13	EEG data should be portable to external storage media for review on any PC with facility for reformatting and re-montaging without additional software.
14	EEG data should be exportable to EDF, Binary, or ASCII formats.
15	The system should have an 8-channel DSA trend graph for FFT trend analysis and 3D brain mapping capability.
16	The system should be capable of displaying 64 waveform traces simultaneously with a maximum of 5 minutes per screen.
17	The system should include zoom and analysis functions in review mode to magnify selected EEG wave portions and analyze amplitude, frequency, and time intervals with printable results.
18	Facility for acquisition and review in split-screen mode should be available.
19	Simultaneous review of at least four EEG screens should be possible.
20	The system should include additional features such as ECG elimination filter in acquisition and review modes, overwrite and page-by-page display modes, waveform freeze with simultaneous background recording, data review during acquisition, file append, montage map, note window in EEG, and 3D voltage mapping.
21	EEG acquisition software updates should be provided whenever new versions become available at no additional cost.

22	Review software should be provided for multiple PCs without additional charges.
23	Multiple window review facility for the same patient should be available for montage comparison.
24	The system should be upgradable to HD video at additional cost and later upgradable to a second camera without additional license cost.
25	The system should be upgradable to PSG in the future without changing the amplifier.
26	Laptop must be strictly supplied by the manufacturer; locally supplied laptops will not be considered to ensure compliance with medical equipment standards and software compatibility.
27	The following laptop specifications should be supplied with the system: Processor – Intel i7 or better; Operating System – Windows 12 or higher; RAM – 16 GB or above; SSD – 1 TB or above.
28	Suitable trolley, automatic duplex-function LaserJet printer, and 1 KVA UPS with 30 minutes backup, An EEG system trolley shall be provided.
29	Additionally two sets of EEG electrodes, EEG paste, and skin preparation gel should be supplied.
30	Warranty – 5 years, CMC – 5 years and application training should be provided by the manufacturing company and should provide calibration certificate every year as per NABH/ NQAS Standards.
31	A manufacturer-qualified service engineer should be available locally.
32	The system should have certification for FDA, CE, IPXO, and IEC 60601 standards for electrical safety,
33	The supplier / authorized service provider must have a functional service center located within a 200 km radius of the procuring institution to ensure prompt installation, preventive maintenance, and breakdown support.
34	<p>Photoc Stimulator</p> <p>-The system shall include a programmable automatic photic stimulator</p> <p>-Minimum white light intensity shall be ≥ 4 Lux.</p> <p>-Stimulation rate shall be 0.5–60 Hz</p> <p>-Modes should be Automatic (≥ 3 programmable), Manual, and Single modes.</p> <p>-Duty cycle shall be 5 minutes continuous operation within 30 minutes.</p> <p>-Stimulus and pause time shall be 1–99 seconds.</p>
35	<p>Digital Video EEG</p> <p>-The system shall support HD synchronized digital Video EEG with motorized pan, tilt, and zoom camera functionality.</p> <p>-Provision shall be available to add a second IP camera without any additional license cost.</p> <p>-Video EEG data shall be exportable and reviewable on any standard PC without requiring additional proprietary software.</p> <p>-The system shall support EEG data clipping and video data clipping prior to archiving.</p> <p>-The review workstation shall have a high-end hardware configuration suitable for Video EEG review and advanced analysis.</p>

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Specifications for 4 Channel Standalone EP / EMG / NCS Measuring System

Sl. No	Specifications
1	The system should be a standalone 4-channel EP/EMG/NCS measuring system with a sleek and lightweight amplifier and control panel.
2	System should be capable of performing MCS, SCS, repetitive stimulation, F-wave, H-reflex, EMG, and blink reflex with automatic marking.
3	Should provide a separate superimpose window for comparison of recorded data.
4	An in-built examination help guide displaying electrode placement, stimulation positions, and procedural information should be available.
5	Insertional and spontaneous EMG recording should support a minimum of 600 seconds of storage on hard disk.
6	Predefined measurement modes should allow sequential performance of routine EMG studies.
7	System should support automatic Motor Unit Potential (MUP) detection and classification with numeric sub-classification analysis.
8	Should support somatosensory evoked potentials including upper limb, lower limb, and dermatome studies.
9	Auditory evoked potentials including ABR, MLR, SVR, and EcochG should be available.
10	Intensity-amplitude graph should be available for ABR analysis.
11	Up to 26-step sequences for automatic ABR testing should be supported.
12	I-L curve (intensity-latency curve) should be available for ABR interpretation.
13	Auditory headphones supporting clicks, pips, and tones should be provided.
14	Visual evoked potentials should include pattern reversal modes (full, left, right, upper, lower quadrants), flash VEP, and goggle VEP.
15	System should include SQL-based customizable report generation.
16	Stimulus artifact filter should be available.
17	Electrical stimulator should allow stimulus delivery control with adjustable intensity.
18	Electrical stimulator should be angle-adjustable without requiring additional attachments.
19	Additional distance variable stimulator should be supplied.
20	Base unit should provide controls for sensitivity, time scale, stimulus duration, stimulus rate, and distance entry.
21	Base unit should include dedicated function keys for rapid test execution.
22	Facility to create multiple user menus with dedicated protocol settings should be available.
23	System should allow NCS testing within a single window using a single-click operation.
24	Should allow addition of MCS, SCS, F-wave, nerve, and side to an existing test window during waveform acquisition.
25	System should be upgradable to autonomic nervous system testing software such as SSR and RR interval programs.
26	System should be upgradable to Single Fiber EMG and Event Related Potentials (P-300, CNV, MRCP).
27	Facility to connect a temperature probe should be available.

28	System should provide a minimum of one trigger input and one trigger output.
29	Computer must be supplied strictly by the manufacturer to ensure compliance with medical equipment standards and software compatibility.

Accessories / Consumables

30	NCS electrode – 1 No.
31	Electrical stimulator – 1 No.
32	Disposable EMG concentric needle (38 mm) – 1 box.
33	Reusable EMG cable – 1 No.
34	Ground electrode – 1 No.
35	LED goggle – 1 No.
36	Headphone – 1 No.
37	Conductive paste (≥ 228 g) – 3 Nos.
38	Skin preparation gel (≥ 114 g) – 2 Nos.

Technical Specifications

39	Common mode input impedance ≥ 1000 M Ω .
40	Common mode rejection ratio ≥ 112 dB.
41	A/D converter should be minimum 18-bit.
42	Low cut filter adjustable from 0.01 Hz to 3 KHz.
43	High cut filter adjustable from 10 Hz to 20 KHz.
44	Noise level should be < 0.6 μ V RMS.
45	Sensitivity range should be 1 μ V/div to 10 mV/div.
46	Electrical stimulator should support single, double, and train stimulation modes.
47	Stimulator intensity should range from 0–100 mA.
48	Stimulus frequency should range from 0.1 Hz to 100 Hz.
49	Stimulus pulse duration should range from 0.01 ms to 1 ms.

Computer Specifications

50	OEM-supplied computer with Processor: Intel i5 or better.
51	Operating System: Windows 10 or higher.
52	RAM: 8 GB or above.
53	Hard Disk: 500 GB or above.

Infrastructure & Support

54	Suitable trolley, 24-inch monitor, single-function LaserJet printer, PRVEP monitor, multimedia speakers, and 1 KVA UPS should be provided.
55	Warranty, service, and application training should be provided by the principal company.
56	Manufacturer-qualified service engineer should be available locally.
57	The system should be FDA and CE approved. 5 years warranty, 5 years CMC

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Specifications for Video Nystagmography (VNG) System

Sl. No	Specifications
1	System should be a head-mounted eye and head tracking Video Nystagmography unit.
2	Goggle weight should be approximately 400 grams with compact dimensions of 180 mm × 75 mm × 100 mm.
3	System should allow direct eye video capture without requiring obtrusive infrared reflective glass.
4	Eye centering should be achieved through smart ergonomic design without knobs or software adjustment.
5	Fixation light with electronics-free visor should be available for enhanced patient safety.
6	Goggles should connect to the laptop through a single detachable USB cable.
7	System should support either TV monitor or projector for stimulus presentation.
8	Field of view should be approximately 80° horizontal and 60° vertical.
9	Cameras should have native resolution of approximately 1280 × 1024 pixels.
10	Camera frame rate should be up to 240 fps with a recording rate of at least 100 fps per camera.
11	Two IR LED illuminators per eye should be provided to minimize infrared exposure.
12	System should support saccade testing including fixed and random frequencies, amplitudes, hemifield, and full-field testing.
13	Pursuit testing should support multiple frequencies in both horizontal and vertical directions.
14	Optokinetic testing should support four velocities and four directions.
15	Gaze testing should include fixation and non-fixation modes with documentation of rebound nystagmus and skew deviation.
16	Pupillometry testing should be available.
17	Caloric testing should support both standard and ice-cold protocols with automatic correction for spontaneous nystagmus.
18	Nystagmus protocols should include spontaneous (light/dark), high-frequency head shaking, hyperventilation, Valsalva maneuvers, Tullio test, and vibration testing.
19	Advanced saccade protocols such as anti-saccade and oblique saccades should be available.
20	Advanced pursuit tests should include neck torsion test, head tracking test, elliptical and circular pursuit, sinusoidal, and fixed velocity tracking.
21	Clinical chair rotation tests should include visually enhanced VOR, vision-denied VOR, VOR suppression, and cervico-ocular response.
22	Positional testing should support all diagnostic and therapeutic protocols with real-time head position rendering and recording, including user-defined protocols.
23	Video Frenzel mode should be available for customized testing.
24	Test sequence should remain fully under clinician control without software limitations on flow or duration.
25	No preset software limit should restrict maximum test acquisition time.

26	Automatic analysis should include precision, latency, and velocity of saccades for each eye and direction separately with on-axis ratio calculations.
27	Smooth pursuit gain should be calculated for each eye and direction.
28	Optokinetic gain and on-axis ratio should be provided for each eye.
29	System should detect gaze-evoked and rebound nystagmus automatically.
30	Analysis should include slow phase velocity, direction, amplitude, SPV profile, and beat characterization.
31	Square grid position plots and separate time-series plots for horizontal and vertical nystagmus should be available.
32	Caloric analysis should include SPV, SPV profile, butterfly chart, beat count, canal paresis, fixation index, directional preponderance, asymmetry ratio, and correction for spontaneous nystagmus.
33	Pupillometry should display pupil diameter and area plotted against time.
34	Graphical representation of all recorded data should be available.
35	Raw eye-tracking and head-tracking data should be exportable in .CSV format for all tests.
36	Complete ownership of patient and test data should remain with the user.
37	All analysis should occur locally on the user's system to ensure data protection.
38	Laptop should have Intel Core i7 (12th generation or higher), 16 GB RAM, and 1 TB SSD.
39	Processor clock speed should be 3 GHz or higher with Intel Iris Xe integrated graphics.
40	Laptop should include a 15.6-inch display with at least two USB 3.0 ports and one HDMI port.
41	Operating system should be Windows 10 or Windows 11.

42. 5 years Warranty, 5 years CMC

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Specification for High End C-Arm

Procurement of High-End Digital Scan-Ray & Imaging Equipment

Equipment: Digital Mobile C-Arm with Flat Panel Detector

Quantity: 1 Units

1. GENERAL REQUIREMENTS

- 1.1 The offered system shall be brand new, unused, and the latest model in production.
- 1.2 The system shall be suitable for Neurosurgery, Orthopedics, Trauma and Interventional procedures.
- 1.3 The manufacturer must have an established service network in India.
- 1.4 The system must comply with IEC 60601-1 and IEC 60601-2 applicable standards.
- 1.5 CE / US FDA / BIS / AERB certification documents must be submitted.

2. TECHNICAL SPECIFICATIONS (Compliance Sheet)

Parameter	Required Specification	Bidder Compliance (Yes/No) & Remarks
Generator Power	High Frequency Generator \geq 25 kW	
kVp Range	40 – 120 kVp or better	
mA Range	0.1 – 7 mA (Fluoroscopy) or better	
Imaging Modes	Pulsed & Continuous Fluoroscopy + Snapshot Mode	
Detector Type	Digital Flat Panel Detector (FPD)	
Detector Size	Minimum 20 cm x 20 cm or better	
C-Arm Movement	Vertical \geq 450 mm; Orbital Rotation $\pm 180^\circ$	
Monitor	Dual Monitors \geq 19 inch High Resolution	

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Image Processing	Zoom, Pan, Measurement, Annotation	
Connectivity	DICOM 3.0 & PACS Compatible	
Safety	Beam-On Indicator, Exposure Alarm, Dose Monitoring	

3. STANDARD ACCESSORIES (TO BE SUPPLIED)


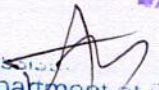
- Dual High-Resolution Monitors
- Foot Switch
- Power Cables & Online UPS Compatibility
- DICOM / PACS Interface
- User & Service Manuals (Hard & Soft Copy)
- Installation & Commissioning at Site
- Calibration Tools & Test Phantom

4. WARRANTY & AFTER-SALES SUPPORT

6. 4.1 Comprehensive onsite warranty for minimum 3 years covering parts, labour & travel.
7. 4.2 Maximum 48 hours response time for service complaints.
8. 4.3 Spare parts availability for minimum 7 years from installation.
9. 4.4 Onsite operational training for Doctors & Technicians.

5. DOCUMENTS TO BE SUBMITTED WITH BID

- Detailed Technical Datasheet with Compliance Statement
- CE / FDA / BIS / AERB Certificates
- Manufacturer Authorization Letter (If applicable)
- List of Installations in Government / Private Hospitals
- Service Support Details in India


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TECHNICAL SPECIFICATIONS


Neurosurgery Head Fixation & Retraction System Set (Sugita Type with Accessories)


1. General Description

The system should be a complete neurosurgical cranial fixation and retraction system compatible with standard neurosurgery operating tables used in government hospitals. The system must allow rigid skull fixation, head positioning, and operative field retraction for cranial and spinal neurosurgical procedures. The system shall be supplied as a complete set with all accessories required for adult and pediatric neurosurgical procedures.

2. System Components Required

Sl No	Item Description	Qty
1	Complete 6-Pin Sugita Head Frame with Silicon Gel Horseshoe (2-in-1 Combo Attachment)	1 Set
2	Adult Skull Fixation Pins	6
3	Pediatric Skull Fixation Pins	6
4	Gardner Tongs	1
5	Traction Rod	1
6	Pulley System	1
7	Fish Hooks for traction	4
8	Hand Rest	2
9	Hanger Stand with Slotted Weights (7 kg)	1 Set
10	Cotton Plate	1
11	Instrument Holder	1
12	Leyla Retractor Arms	2
13	Suction Spatulas	5


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3. Technical Specifications

Sugita Type Head Fixation System

6-pin cranial fixation system for rigid skull stabilization during neurosurgery.
2-in-1 combination attachment with Sugita head frame and silicon gel horseshoe headrest.
Quick interchange between pin fixation and horseshoe positioning.
Constructed from high-grade surgical stainless steel or anodized aluminum alloy.
Fully autoclavable and compatible with standard OT table side rails.
Multi-axis head positioning with 360° rotational adjustment and locking mechanism.

Adult Skull Fixation Pins

Quantity: 6
Medical grade stainless steel or titanium.
Sharp atraumatic tips for rigid fixation.
Reusable and autoclavable.

Pediatric Skull Fixation Pins

Quantity: 6
Specially designed shorter atraumatic pins for pediatric skull fixation.
Medical grade stainless steel or titanium.
Fully autoclavable.

Gardner Tongs

Quantity: 1
Used for cervical spine traction.
Constructed from surgical grade stainless steel.
Autoclavable.

Traction Rod


Quantity: 1
Compatible with Gardner tongs traction system.
Stainless steel construction with adjustable locking.


Pulley System

Quantity: 1
Smooth traction application.
Stainless steel pulley with smooth rotation.

Fish Hooks

Quantity: 4


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Used for skin traction during neurosurgical procedures.
Made of surgical stainless steel.
Autoclavable.

Hand Rest

Quantity: 2
Adjustable surgeon hand support.
Stainless steel construction.

Hanger Stand with Slotted Weight

Quantity: 1 set
Includes 7 kg slotted traction weights.
Stainless steel stand compatible with pulley system.

Cotton Plate

Quantity: 1
Used for placement of sterile cotton during surgery.
Stainless steel construction.

Instrument Holder

Quantity: 1
Attachable to Sugita frame.
Used to hold suction and microsurgical instruments.

Leyla Retractor Arms

Quantity: 2
Flexible self-retaining retractor arms.
Adjustable locking joints.

Suction Spatulas


Quantity: 5
Microsurgical suction spatulas.
Stainless steel with different sizes.


4. Quality Requirements

Equipment should be CE / USFDA / ISO certified.
Manufacturer should have ISO 13485 certification.
All instruments must be medical grade and autoclavable.

5. Warranty

Minimum 1 year warranty against manufacturing defects.


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Technical Specifications

Craniotome & High Speed Electric Drill System for Neurosurgery

1. General Requirements

- The system should be a **high speed electric neurosurgical drill and craniotomy system** used for cranial and spinal neurosurgical procedures.
- The unit must allow **precision drilling, skull perforation and craniotomy cutting.**
- System should be **compact, reliable and suitable for continuous operation in neurosurgical OT.**
- The system should include **drill handpiece, craniotome handpiece, console and accessories.**
- The entire system must be **CE / USFDA approved and ISO certified.**

2. System Components


Sl No	Item	Quantity
1	Electric Drill Console Unit	1
2	High Speed Drill Handpiece	1
3	Craniotome Handpiece	1
4	Foot Switch / Foot Pedal	1
5	Handpiece Cable (Sterilizable)	1
6	Craniotome Cutting Attachments with Dura Guard	2
7	Perforator Attachments	2
8	Assorted Burrs (Cutting & Diamond)	10
9	Sterilization Tray	1
10	Handpiece Stand / Holder	1

3. Technical Specifications

3.1 Electric Drill Console

- Microprocessor controlled **electric neurosurgical drill system.**
- Compatible with **drill and craniotome handpieces.**

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- Should have **variable speed control**.
- Speed range **up to 60,000 – 80,000 RPM or higher**.
- **Forward and reverse rotation** facility.
- Digital display for **speed control and status monitoring**.
- Compact portable console suitable for **operation theatre use**.
- Should operate on **220–240 V AC, 50 Hz power supply**.

3.2 High Speed Drill Handpiece

- Lightweight and **ergonomically designed handpiece**.
- Designed for **precision neurosurgical drilling**.
- Should provide **high torque with minimal vibration**.
- Must allow **quick burr change mechanism**.
- **Autoclavable or sterilizable handpiece**.
- Low noise operation.

3.3 Craniotome Handpiece

- Dedicated **craniotome attachment for performing craniotomy**.
- Should include **dura guard for safety of dura mater**.
- Smooth cutting of cranial bone.
- High torque performance.
- Compatible with **foot pedal control**.
- Must be **fully autoclavable**.

3.4 Foot Switch / Foot Pedal

- Medical grade **foot pedal for hands-free operation**.
- Variable speed control through foot pressure.
- Should allow **instant start and stop control**.
- Waterproof and durable design.

3.5 Burrs

System should include **assorted neurosurgical burrs**, such as:

- Cutting burrs
- Diamond burrs
- Round burrs
- Matchstick burrs

Features:

- Made from **high quality surgical stainless steel / tungsten carbide**.

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- Autoclavable.
- Compatible with supplied drill handpiece.

3.6 Perforators

- Special **skull perforator attachments** for burr hole creation.
- Should include **automatic clutch mechanism** to prevent sudden penetration.
- Reusable and autoclavable.

3.7 Sterilization

- Handpieces, burrs and accessories must be **compatible with steam autoclave sterilization**.
- Sterilization tray should be supplied.

4. Safety Features

- Motor overload protection.
- Thermal protection system.
- Stable torque output during drilling.
- Electrical safety compliant with medical standards.
- Protection against sudden speed surge.


5. Quality Standards

- Equipment should be **CE marked or USFDA approved**.
- Manufacturer must have **ISO 13485 certification**.
- Electrical safety certification must be provided.

6. Warranty

- Minimum **5 year comprehensive warranty** from date of installation.
- Supplier must provide **spare parts and service support for minimum 5 years**.


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Technical Specifications

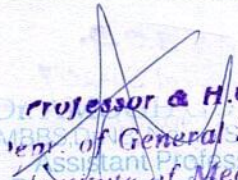
Microsurgical Neurosurgery Instrument Set


1. General Description

- The instrument set should be **designed for neurosurgical microsurgery procedures** performed under an operating microscope.
- Instruments must be **lightweight, high precision, and atraumatic** for delicate neural and vascular structures.
- All instruments must be made from **high quality surgical grade stainless steel / titanium**.
- Instruments should be **fully autoclavable** and corrosion resistant.
- Matte finish to **avoid reflection under operating microscope**.

2. Set Components

Sl No	Instrument Name	Quantity
1	Microsurgical Scissors – Straight	1
2	Microsurgical Scissors – Curved	1
3	Microsurgical Scissors – Bayonet	1
4	Microsurgical Needle Holder	1
5	Micro Forceps – Straight	2
6	Micro Forceps – Curved	2
7	Bipolar Forceps – Straight	1
8	Bipolar Forceps – Bayonet	1
9	Micro Dissector – Straight	1
10	Micro Dissector – Curved	1
11	Micro Hook	1
12	Micro Suction Tube	2
13	Arachnoid Knife	1
14	Micro Elevator	1
15	Micro Curette	1
16	Micro Nerve Hook	1
17	Micro Spatula	2
18	Sterilization Tray	1


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3. Technical Specifications

3.1 Microsurgical Scissors

- Ultra fine scissors designed for **microsurgical dissection**.
 - Straight, curved, and bayonet types.
 - Razor sharp blades for precise cutting.
 - Length: **18–22 cm approx.**
 - Non-reflective matte finish.
-

3.2 Microsurgical Forceps

- Fine atraumatic tips.
 - Available in **straight and curved configuration**.
 - Suitable for **handling delicate neural and vascular tissues**.
 - Spring action handle for precision control.
-

3.3 Microsurgical Needle Holder

- Designed for **micro suturing (8-0, 9-0, 10-0 sutures)**.
 - Tungsten carbide inserts for durability.
 - Fine tip jaws for precise needle holding.
-


3.4 Bipolar Forceps

- Compatible with **standard bipolar cautery units**.
 - Available in **straight and bayonet shape**.
 - Insulated shaft.
 - Fine tips for coagulation under microscope.
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3.5 Micro Dissector

- Used for **delicate tissue separation**.
- Straight and curved designs.
- Fine tapered tips.

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3.6 Micro Suction Tubes

- Stainless steel suction tubes.
- Fine tip diameters suitable for neurosurgery.
- Compatible with standard suction tubing.

3.7 Micro Hooks / Nerve Hooks

- Fine atraumatic hooks.
- Used for **nerve and vessel manipulation**.
- Smooth edges to avoid tissue injury.

3.8 Micro Spatulas

- Thin flat instruments used for **brain retraction and protection**.
- Lightweight and smooth edges.

4. Quality Standards

- All instruments should be made of **surgical grade stainless steel / titanium**.
- Instruments should be **CE marked / USFDA approved**.
- Manufacturer must have **ISO 13485 certification**.
- Instruments must be **fully autoclavable**.

5. Warranty

- Minimum **5** year warranty against manufacturing defects.

6. Sterilization

- All instruments must withstand **standard steam autoclave sterilization**.
- Instruments should be supplied with **perforated sterilization tray**.

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Technical Specifications

Spine Instrument Set – Anterior Cervical & Lumbar Surgery

1. General Description

- The instrument set should be designed for **Anterior Cervical Discectomy and Fusion (ACDF)** and **Anterior Lumbar Spine** procedures.
- Instruments must be suitable for **precision spinal surgery** including disc removal, **vertebral body exposure, decompression, and implant placement.**
- All instruments must be made from **high-quality surgical grade stainless steel.**
- Instruments should be **fully autoclavable and corrosion resistant.**
- Non-glare **matte finish** to reduce reflection in OT lighting.
- Instruments should be supplied in **sterilization trays.**

2. Set Components

Exposure Instruments

Sl No	Instrument	Qty
1	Anterior Cervical Retractor System (Caspar Type)	1
2	Lumbar Self Retaining Retractor (Taylor / Meyerding Type)	1
3	Hohmann Retractor (Various Sizes)	4
4	Nerve Root Retractor	2
5	Love Nerve Root Retractor	2
6	Langenbeck Retractor	2

Disc Removal Instruments

Sl No	Instrument	Qty
1	Disc Rongeur – Straight	2
2	Disc Rongeur – Upbiting	2
3	Disc Rongeur – Downbiting	2
4	Pituitary Rongeur (Small / Medium)	4
5	Disc Curettes – Various Sizes	6

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Bone Removal Instruments

Sl No	Instrument	Qty
1	Kerrison Rongeur 1mm	1
2	Kerrison Rongeur 2mm	1
3	Kerrison Rongeur 3mm	1
4	Kerrison Rongeur 4mm	1
5	Bone Punch	2
6	Bone Curette	3

Cervical Instrumentation

Sl No	Instrument	Qty
1	Caspar Distraction Screws	2
2	Caspar Distractor	1
3	Caspar Screw Driver	1
4	Vertebral Body Spreader	1
5	Cervical Disc Space Distractor	1

Implant Preparation Instruments

Sl No	Instrument	Qty
1	Disc Space Reamer Set	1 Set
2	Trial Implant Set	1 Set
3	Bone Graft Impactor	1
4	Graft Holder	1
5	Bone Tamp	1

General Spine Instruments

Sl No	Instrument	Qty
1	Periosteal Elevator	2
2	Spine Curettes (Assorted)	4
3	Bone Holding Forceps	2

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Sl No	Instrument	Qty
4	Spine Probe	1
5	Suction Tube – Spine Type 2	
6	Spine Hook	2

3. Technical Requirements

- Instruments must be made from **medical grade stainless steel (AISI 420 / equivalent)**.
 - Instruments should have **high precision machining and smooth finishing**.
 - All cutting edges must be **sharp and durable**.
 - Instruments must be **reusable and autoclavable**.
 - Surface finish should be **satin / matte to prevent glare**.
 - Instruments must be **laser marked with manufacturer identification**.
-

4. Sterilization

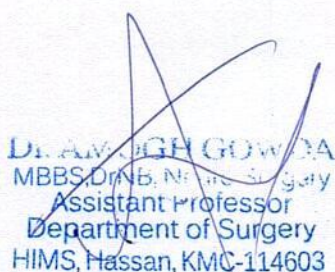
- All instruments must withstand **steam autoclave sterilization (134°C)**.
 - Set should be supplied with **stainless steel sterilization trays**.
-


5. Quality Standards

- Instruments must comply with **ISO 13485 standards**.
 - Manufacturer should have **CE certification / USFDA registration**.
 - Material quality certificates must be provided.
-

6. Warranty

- Minimum **5 year warranty** against manufacturing defects.


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Technical Specifications

Craniotomy Instrument Set (Neurosurgery)

1. General Description

- The set should consist of complete instruments required for performing craniotomy procedures in neurosurgery.
- Instruments should allow scalp incision, skull exposure, bone removal, dura opening, and intracranial procedures.
- All instruments must be made of high-quality surgical grade stainless steel.
- Instruments should be corrosion resistant, reusable, and fully autoclavable.
- Surface finish should be non-reflective matte finish suitable for neurosurgery under microscope and OT lighting.
- Instruments must be supplied in autoclavable sterilization trays.

2. Set Components

Scalp Incision Instruments

Sl No	Instrument	Quantity
1	Scalpel Handle No.3	2
2	Scalpel Handle No.4	2
3	Mayo Scissors Straight	1
4	Mayo Scissors Curved	1
5	Metzenbaum Scissors Curved	1

Tissue Handling Instruments

Sl No	Instrument	Quantity
1	Adson Tissue Forceps	2
2	Adson Tooth Forceps	2
3	Debakey Forceps	1
4	Plain Dressing Forceps	2

Hemostasis Instruments

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Sl No	Instrument	Quantity
1	Mosquito Artery Forceps Straight	4
2	Mosquito Artery Forceps Curved	4
3	Kelly Artery Forceps Straight	2
4	Kelly Artery Forceps Curved	2
5	Bipolar Forceps (Bayonet)	1

Skull Exposure Instruments

Sl No	Instrument	Quantity
1	Periosteal Elevator (Cobb)	2
2	Periosteal Elevator (Freer)	1
3	Bone Lever	1
4	Langenbeck Retractor	2

Bone Removal Instruments

Sl No	Instrument	Quantity
1	Rongeur – Double Action Bone Cutting	1
2	Bone Nibbler	1
3	Kerrison Rongeur 1mm	1
4	Kerrison Rongeur 2mm	1
5	Kerrison Rongeur 3mm	1
6	Kerrison Rongeur 4mm	1

Intracranial Instruments

Sl No	Instrument	Quantity
1	Brain Spatula – Various Sizes	3
2	Dura Hook	1
3	Dura Scissors	1
4	Dura Forceps	1
5	Suction Tube (Fine Neurosurgical)	2

Retractors

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Sl No	Instrument	Quantity
1	Self Retaining Retractor (Gelpi / Weitlaner)	1
2	Malleable Brain Retractor	2
3	Love Nerve Root Retractor	1

Bone Handling Instruments

Sl No	Instrument	Quantity
1	Bone Holding Forceps	1
2	Bone Curette	2
3	Bone Wax Applicator	1

Miscellaneous Instruments

Sl No	Instrument	Quantity
1	Needle Holder (Mayo Hegar)	2
2	Suction Tube	1
3	Instrument Sterilization Tray	1

3. Technical Requirements

- Instruments must be made from **medical grade stainless steel (AISI 420 / equivalent)**.
- Instruments must have **high precision machining and smooth finishing**.
- Cutting instruments should have **durable sharp edges**.
- Instruments should be **laser marked with manufacturer identification**.
- Surface should be **non-glare satin finish**.

4. Sterilization

- Instruments must withstand **steam autoclave sterilization (134°C)**.
- Sterilization tray should be **perforated stainless steel**.

5. Quality Standards

- Instruments must comply with **ISO 13485 standards**.
- Manufacturer should have **CE certification / USFDA registration**.
- Material quality certificates must be provided.

6. Warranty

- Minimum **5 year warranty** against manufacturing defects.

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Specification of Electro Hydraulic Operating table for neuro surgeries

1. The table top should be completely C-arm compatible without any cross bars throughout the length of the Table.
2. The table should be operated by following elements
 1. Corded hand control
 2. Cordless hand control
 3. Dual-touch electrical override panel remote from the table column
 4. Manual override
3. Both hand control and panel remote should have similar functions
4. Table top should be designed without crossbars to permit radiography during surgical interventions.
5. Table top can be stretched up to 6 feet from the center column for unrestricted C-arm access.
6. Should have safety guards at the ends of side rails to prevent clamps falling off.
7. The table should have an electrical Override panel remote on the column of the table. In case of hand control failure, all the functions can be operated electrically.
8. The electrical override panel should have a dual-touch feature to avoid accidental touch.
9. Should have individual function locking feature in remote for safe handling.
10. The Table should have Zero function, memory function and emergency stop function
11. Should have single switch operated kidney position for flex and reflex option
12. Patient orientation should be possible on both sides of the table top with Forward and Reverse mode,
13. It should have an in-built high-capacity battery that provides backup for a week's usage.
14. It should have an internal charging circuit, which should have an indication for no charge, charging and full charge with battery status indications.
15. Battery Indications should be available in both hand set and override panel.
16. Should have an Isolated manual override facility that works without any electrical power and battery power. In case of electrical component failure using this mechanism, the table should be operated manually
17. It should have a preselector for all major functions. (Height up/down, Lateral tilt left/right, Trendelenburg/Rev.Trend., Back up/down and lock/unlock). A foot pedal should be used for pumping to achieve various positions.
18. 80mm High-quality memory foam detachable cushion should be provided on the Tabletop.
19. The table should have a safety feature to prevent it from unlocking when the power chord is connected to the mains.
20. Dynamic load carrying capacity should be min 400kgs and the static load carrying capacity should be more than 500kgs. The certificate for weight-bearing capacity should be submitted.
21. The table should be mounted on four rotational casters for greater stability and should be able to rotate 360 degrees through its base.
22. The table should Hydraulic power braking system that allows it to rest directly on the floor through four posts instead of locking wheels.
23. The hydraulic power brakes should be located on 4 corners of the Table base for better stability
24. The Table should have a sealed bottom to prevent water and dust from entering inside.
25. The table top frame, main column and accessories should be made of SS304 material
26. Trendelenburg and lateral mechanism should be concealed with bellows
27. The base and base cover should be made of SS material.
28. OT Table along with the accessories should be manufactured and supplied by same OEM.

Technical Specifications

1. OT table height range should be 520-1000mm (without mattress) (+/-20mm tolerance)
2. Trendelenburg: minimum 25 degree
3. Anti-Trendelenburg: minimum 25 degree
4. Back section adjustment: -40 degrees to 85 degrees or more
5. Side tilt: minimum 18 degrees

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6. Hydraulic power brakes lock/unlock
7. Head section +60 degrees to - 90 degrees
8. Leg section +30 degrees to - 90 degrees and abduct 180 degrees
9. The length of the table top should be min 2000mm and width min 550mm without side rails


Standard Accessories

1. Arm rest with straps 2 nos
2. Side supports 2 nos
3. Anesthesia screen rod
4. Body Binder 2 Nos
5. Bolsters 2 Nos
6. Horse shoe shaped head rest (Adult and Pediatric compatible)
7. 3 pin fixator with adult & pediatric pins with carrying case
8. Cross bar for neuro sitting position
9. Carbon fiber table top extension board of length 4.5ft for 360 deg radiolucency without any metal bars. Side rails should be available in carbon fiber material.
10. Radiolucent spinal frame
11. Raised Arm board 2 nos

Quality Standards

1. Manufacturer should be TUV/SUD-ISO-9001:2015, EN-ISO-13485:2016, European CE from European notify body and USFDA approved.
2. Manufacturer should have presence in Indian market for more than 15 years.
3. The manufacturer should have CE and USFDA certification valid from last 5 years.
4. Electrical safety confirms to the standards for electrical safety IEC 60601- 1 General requirements and IEC 60601-2-46 for usability.
5. Shall meet internationally recognized IEC 60601-1-2 for Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI)
6. Manufacturer should register in CDCSO and listed in online portal for Class A of non-sterile and non-measuring products


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GOVERNMENT TENDER DOCUMENT

Procurement of Electrosurgical Unit (ESU) for Neurosurgery

Quantity: 02 Units

1. GENERAL REQUIREMENTS

1.1 The offered equipment shall be a Microprocessor-controlled Electrosurgical Unit (ESU) suitable for Neurosurgery and other multi-specialty surgical applications.

1.2 The system must provide Monopolar and Bipolar modes with advanced coagulation features.

1.3 The equipment shall be new, unused, and of the latest model in production.

2. STANDARDS & COMPLIANCE

2.1 CE / US FDA / BIS approved product (submit valid certificates).

2.2 Compliance with IEC 60601-1 and IEC 60601-2-2 standards.

2.3 Patient Safety Classification: CF Type.

3. TECHNICAL SPECIFICATIONS

- Operating Frequency: 400 kHz – 1.5 MHz.
- Monopolar Output Power: 0 – 400 Watts or better.
- Bipolar Output Power: 0 – 200 Watts or better.
- Cut Modes: Pure Cut, Blend/EndoCut or equivalent.
- Coagulation Modes: Soft, Forced, Spray.
- Bipolar Mode with precise coagulation control.
- Automatic tissue response system for minimal thermal damage.
- Digital/Touch Screen Display with programmable presets.
- Return Electrode Monitoring (REM) with alarm system.
- Automatic fault detection and safety shut-off system.
- Footswitch (Dual pedal preferred) – minimum 1 no.

4. STANDARD ACCESSORIES (TO BE SUPPLIED)

- Monopolar Handpieces – 03 sets (autoclavable).
- Monopolar Active Electrodes – complete set.
- Bipolar Forceps with cable – 01 set (autoclavable).
- Return Electrode Cable – 01 no.
- Disposable Patient Return Electrodes – 30 nos.
- Footswitch – 01 no.
- Suitable Trolley/Cart with cable management.
- User Manual and Service Manual (Hard & Soft copy).

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5. WARRANTY & SERVICE SUPPORT

5.1 Comprehensive onsite warranty for minimum 3 years.

5.2 OEM authorized service support in India.

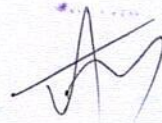
5.3 Breakdown response time within 48 hours.

5.4 Onsite training for surgeons and OT staff.

6. DOCUMENTS TO BE SUBMITTED WITH BID

- Product Brochure with technical compliance statement.
- Valid CE / FDA / BIS certificates.
- IEC compliance certificates.
- Authorization letter from OEM (if bidder is not manufacturer).
- Service network details in India.

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NMBA / NMT / TOF Monitor, Mapper cum Stimulator

Quantitative NMT Monitor - To reduce the risk of Residual Neuromuscular Block

- Should be able to Stimulate in various modes,
- Should be able to Measure in real time,
- Should have Quantitatively display of Muscle functions in patients receiving NMBAs.
- Should have the following Stimulating Modes
 - Train of Four (TOF)
 - Double Burst (DB)
 - Post-Tetanic-Count (PTC)
 - Supra Maximal Current (SMC)
 - Tetanus (TET)
 - Twitch (1Hz, 2Hz, 5Hz)
 - Auto (ATP)
 - One touch operation in Auto NMT mode
- Should have a 3D Accelerometer
- Should have a Trend display
- Should have a Colour display
- Should have Monophasic, constant current, square waveform for stimulation
- Should have stimulation voltage of 400V and current range of 0.5mA to 80mA in steps of 5mA
- Should have stimulating current pulse width of 0.2msec.
- Should have the pulse frequency depending on the opted mode.

Nerve Locator & Mapper Mode for Regional Analgesia

- Should display the set & delivered Stimulus Amplitude in mA
- Should display the set & delivered Stimulus duration in msec
- Should display the set & delivered Stimulus Frequency in Hz
- Should have real time changing of Parameter values during procedure
- Should have Audio Visual Indication of Pulse Delivery
- Should have stimulation voltage of 100V and current range of 0.5mA to 20mA in steps of 0.5mA in Mapper mode
- Should have stimulation voltage of 100V and current range of 0.2mA to 5mA in steps of 0.1mA in Locator mode
- Should have various stimulating Pulse width (0.05, 0.1, 0.3, 0.5 & 1.0 msec) in both Mapper & Locator modes.
- Should have various stimulating Pulse frequencies (1, 2 & 3 Hz) in both Mapper & Locator modes.
- Should be made in India.

Warranty - 5 years
CMC - 5 years

E & OE




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Specification for Convective Patient Warming Unit with Blanket


1. It should deliver warm air uniformly to the patient through disposable blankets.
2. It should have four distinct temperature settings - (including 43°C, 38°C, 32°C), should have the single button to set temperatures – low, medium and high temperature.
3. It should have three temperature sensors and out of which two should be hose end temperature control system. (Patient side)
4. It should be silent, and the noise levels should not exceed 53dba(High speed). The unit should have the provision to mount on the pole.
5. It should have safety alarms/feature such as over temperature, under temperature, temperature In range
6. The machine should be able to shut down the blower and give over temperature alarm at degree of the selected temperature.
7. It should be able to filter air with 0.2-micron filters or better and filter must adhere to MERV14 standard.
8. It should be able to generate an airflow of at least 44 CFM and above.
9. It should have adjustable fan settings (2 speeds or more).
10. It should meet IEC 60601-1 standard for electrical safety.
11. It should display filter changing indicator and filter should change after every 500 hrs of machine running.
12. OEM should have these types of blankets and they should provide 10 free blankets each size.
a) Multi Position upper body blanket, b) Full Body blanket, c) Lower body blanket, d) Lithotomy Underbody blanket, e) Surgical Access Blanket, f) Small Pediatric Underbody blanket, g) Large Ped Underbody blanket.
13. The blankets should be latex free with superior top layer having insulated and unique air channels for even heat distribution.
14. The blankets should be non-conductive, non-irritable, lint free and must confirm to flammability standards.
15. The blankets should be provided with two resealable hose ports for positioning flexibility.
16. The blanket should bend and conform so as to be compatible with supine, lateral, prone, lithotomy, robotics and beach chair positions.
17. The blanket must have a clear head drape and two neck vents to keep warm air around the intubated patient's head and allow observation.
18. Blankets and equipment should be from the same OEM.
19. Equipment should have manufacture warranty of ⁵year. & 5 years



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20. It should be CE and USFDA approved .
21. The control unit should be light weight and small in size easily mountable with a fixing claw, also they should provide free Trolley(to mount and carry) for each machine .
22. Minimum Length of hose : 1 meter.
23. Machine should have digital hour meter to evaluate the duration of warming therapy in surgery.
24. The pores in the blanket should be clean cut and must be uniform throughout the area of the blanket.
25. The intra-op range of blankets must have a way to adhere to patient and not move during surgery .


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Neuro Surgery Instruments

Craniotomy Set

Sl.No	Particulars / Items	Size	Qty
1	S.S tray Big	*	1
2	K. Dish 500 ml	*	2
3	S.S Bowl 1000 ml	*	2
4	S.S. Bowl 500 ml	*	2
5	S. S. Bowl 100 ml	*	2
6	B.P Handle No.7	*	2
7	Adson Forceps Tooth	5"	1
8	Adson Forceps Non- Tooth	5"	1
9	Dissecting Forceps Tooth	6"	1
10	Dissecting Forceps Non- Tooth	6"	1
11	Bio - Net Forceps Tooth	8"	3
12	Bio - Net Forceps Non- Tooth	8"	3
13	Bio - Net Tumor Holding Forceps	8"	2
14	Metz. Scissors - CD	6"	2
15	Metz. Scissors - CD	7"	2
16	Mayo Scissors - CD	7"	2
17	Mayo Scissors - ST	7"	2
18	Mac Donald	*	2
19	Periosteum Elevator -CD	1/2"	2
20	periosteum Elevator -ST	1/2"	2
21	Scalp Hook with Bulldog	*	1
22	Cat's Paw Retractor Sharp	*	2
23	LB Retractor 1/2 " x 2 cm	*	2
24	LB Retractor 1" x 2 cm	*	2
25	Mastriod Retractor 3 x 4 Prongs	5"	1
26	Mastriod Retractor 3 x 4 Prongs	6"	1
27	Bone Nibblur -ST Fine	6"	1
28	Bone Nibblur Angled Fine	6"	1
29	Bone Nibblur Angled Heavy	6"	1
30	Kerrison Punch -1mm-5 MM 135D UPCUT	*	10
31	Kerrison Punch - 3MM DOWN	*	2
32	Brain Cannula Size : 18	*	1
33	Brain Cannula Size : 20	*	1
34	Brain Cannula Size : 23	*	1
35	Suture Hook	7"	1
36	Cushing Side Curved Clamp	6"	24
37	Needle Holder -Fine T C	6"	2

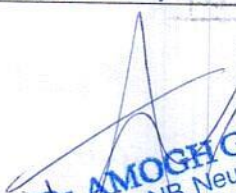
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38	Needle Holder -Heavy T C	6"	1
39	Needle Holder -Fine T C	7"	2
40	Clip Applicator Raney	*	1

Laminectomy Set

Sl.No	Particulars / Items	Size	Qty
1	S.S tray Big	*	1
2	K. Dish 500 ml	*	2
3	S.S. Bowl 500 ml	*	2
4	S. S. Bowl 100 ml	*	2
5	B.P Handle No.7	*	2
6	Adson Forceps Tooth	5"	1
7	Adson Forceps Non- Tooth	5"	1
8	Dissecting Forceps Tooth	6"	1
9	Dissecting Forceps Non- Tooth	6"	1
10	Bayo Net Forceps Tooth	8"	1
11	BayoNet Forceps Non- Tooth	8"	1
12	Metz. Scissors - CD	6"	1
13	Metz. Scissors - CD	7"	1
14	Nerve Root Retractor Long	*	1
15	Nerve Hook Blunt TIP	*	1
16	Suture Hook Sharp TIP	*	1
17	Cobb's Elevator Long	*	1
18	LB Retractor 1/2 " x 2"	*	2
19	LB Retractor 1" x 2 .5"	*	2
20	LB Retractor 1" x 3"	*	2
21	Mastriod Retractor 3 x 4 Prongs	6"	2
22	Mastriod Retractor 3 x 4 Prongs	8"	2
23	Mastriod Retractor 3 x 4 Prongs -Adjustable	8"	2
24	Bone Nibblur Monster -ST -Heavy	*	1
25	Bone Nibblur Dolphin Nose -Heavy	*	1
26	Bone Nibblur Dolphin Nose -Fine	*	1
27	Bone Nibblur -ST	*	1
28	Disc Rongeur 3 - 5 MM Plain TIP	*	1
29	Disc Rongeur 3 - 5 MM CasperTIP	*	1
30	Curette Set of 5	*	1
31	Mosquito Artery -CD	5"	4
32	Mosquito Artery -ST	5"	2


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33	Artery Forceps -CD	6"	6
34	Artery Forceps -ST	6"	2
35	Allies Forceps	6"	4
36	Kocher Artery - ST	8"	2
37	Kocher Artery - CD	8"	2
38	Needle Holder -Fine TIP TC	6"	2
39	Needle Holder -Heavy	7"	1
40	Needle Holder -Fine -TC TIP	7"	1
41	Clowards Retractor with 10 Blades	*	1
42	Cloward Lamina Spreader	*	1
43	Ramany's Retractor with 8 Blades	*	1


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Basic Neurosurgical Instruments

SL.NO	Description	Qty
1	3C Neuro Head frame	1
2	Manman neurosurgery drill	1
3	Bipolar bayonet shaped forceps- blunt tip	4
4	Bipolar bayonet shaped forceps- sharp tip	4
5	Bipolar bayonet shaped stick forceps- sharp tip	4
6	Bipolar bayonet shaped stick forceps- blunt tip	4
7	Craniotomy disposable draps	25
8	Spinal disposable drapes	25
9	VP shunt disposable drapes	15
10	Oxidises cellulose (eg., surgical)	5
11	Tailed Cottonoid-different sizes	
12	Skull tong Gardner wells with one spring loaded pin for cervical traction	2
13	Skull Drill- Trephine Hudson Brace, snap lock chuck	4
14	Skull Drill- Trephine Hudson perforator 4''long 10mm wide	2
15	Skull Drill- Trephine Hudson perforator 4''long 12mm wide	2
16	Skull Drill- Trephine Hudson perforator 4''long 15mm wide	2
17	Skull Drill- Trephine Hudson burr spherical 4''long 11mm diameter	2
18	Skull Drill- Trephine Hudson burr spherical 4''long 13mm diameter	2
19	Skull Drill- Trephine Hudson burr spherical 4''long 16mm diameter	2
20	Skull Drill- Trephine Hudson burr conical 4''long 9mm diameter	2
21	Skull Drill- Trephine Hudson burr conical 4''long 11mm diameter	2
22	Skull Drill- Trephine Hudson burr conical 4''long 13mm diameter	2
23	Instrument – Gigli Demartel guide broad 5mm wide	4
24	Instrument – Gigli Demartel guide broad 7mm wide	4
25	Instrument Scalp Dandy Curved Sideways 14cm long serrated	30
26	Forceps-scalp mosquito dandy curved sideways 12cm long serrated	10
27	Spatula- Brain Frciburg malleable 8''long 7mm & 8mm wide	2
28	Spatula- Brain Frciburg malleable 8''long 10mm & 11mm	2


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	wide	
29	Spatula- Brain Frciburg malleable 8''long 13mm & 14mm wide	2
30	Spatula- Brain Frciburg malleable 8''long 16mm & 17mm wide	2
31	Spatula- Brain malleable uniform width 8'' long 6mm wide	2
32	Spatula- Brain malleable uniform width 8'' long 8mm wide	2
33	Spatula- Brain malleable uniform width 8'' long 10mm wide	2
34	Spatula- Brain malleable uniform width 8'' long 12mm wide	2
35	Spatula- Brain malleable uniform width 8'' long 14mm wide	2
36	Forceps-tumor Yasargil flat serrated jaw, 5mm dia bayonet shaped, 8 3/4'' long	1
37	Forceps-tumor Yasargil spoon shaped serrated jaw, 5mm dia, bayonet shaped, 8 3/4'' long	1
38	Scissors-micro bayonet dissecting straight top, blunt 8'' long	1
39	Scissors-micro bayonet dissecting curved top, blunt 8'' long	1
40	Forceps-micro bayonet yasargil plain 0.6mm tip, 8'' long	2
41	Forceps-micro bayonet yasargil plain 0.9mm tip, 8'' long	4
42	Forceps-micro bayonet yasargil plain 0.6mm tip, 8 3/4'' long	2
43	Forceps-micro bayonet yasargil plain 0.69mm tip, 8 3/4'' long	2
44	Instrument shunt tunneling forceps serrated tip, straight 12'' long	1
45	Instrument shunt tunneling forceps serrated tip, straight 18'' long	1
46	Instrument shunt tunneling forceps serrated tip, straight 24'' long	1
47	Hand drill pistol type with Jacob chuck	2
48	Hand drill tip unmounted 1.5mm dia, 3'' long	4
49	Hand drill tip unmounted 2.5mm dia, 3'' long	4
50	Hand drill tip unmounted 3.5mm dia, 3'' long	4
51	Hand drill tip unmounted 4.5mm dia, 3'' long	4
52	Cannula-suction frazier, plain tip, 6FR dia, 10cm working length	2
53	Cannula-suction frazier, plain tip, 7FR dia, 10cm working length	2
54	Cannula-suction frazier, plain tip, 10FR dia, 10cm working	2

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	length	
55	Cannula-suction frazier, plain tip, 11R dia, 10cm working length	2
56	Cannula-suction lemperts, 2mm, dia, 14cm working length	2
57	Cannula-suction lemperts, 4mm, dia, 14cm working length	2
58	Cannula-suction lemperts, 5mm, dia, 14cm working length	2
59	Cannula-suction tapering, blunt tip, slightly angled, 05mm tip ID, key hole control	2
60	Cannula-suction tapering, blunt tip, slightly angled, 1mm tip ID, key hole control	2
61	Cannula-suction tapering, blunt tip, slightly angled, 1.5mm tip ID, key hole control	2
62	Cannula-suction tapering, blunt tip, slightly angled, 2mm tip ID, key hole control	2
63	Cannula-suction tapering, blunt tip, slightly angled, 2.5mm tip ID, key hole control	2
64	Elevator-dissector myles rugine end double ended	3
65	Elevator-dissector penfield No:2, double ended 7 ½" long	2
66	Elevator-dissector penfield No:3, double ended 7 ½" long	2
67	Elevator-dissector penfield No:4, double ended 8" long	2
68	Elevator-dissector penfield No:5, double ended 11 ½" long	2
69	Elevator-dissector Watson chcyne, probe end double ended 13 cm long	2
70	Elevator-dissector Watson chcyne, probe end double ended 18 cm long	2
71	Elevator-Periosteal sharp chisel edge curved 13mm wide	2
72	Elevator-Periosteal cushioning round edge 16mm wide 7 ½" long	2
73	Elevator-Periosteal cushioning square edge 16mm wide 7 ½" long	2
74	Elevator-Periosteal adson, curved, 5mm wide, 6 1/2" long	2
75	Elevator-Periosteal adson, curved, 7mm wide, 6 1/2" long	2
76	Elevator-Periosteal lambotte sharp, 15mm wide, 8 1/2" long	1
77	Elevator-Periosteal lambotte sharp, 25mm wide, 8 1/2" long	1
78	Elevator-Periosteal, cobs, spinal, ¾" wide 11" long	1
79	Chisel stille, straight, 8mm wide, 8" long	1
80	Chisel stille, straight, 10mm wide, 8" long	1
81	Chisel stille, straight, 12mm wide, 8" long	1
82	Chisel stille, straight, 15mm wide, 8" long	1
83	Chisel stille, straight, 20mm wide, 8" long	1
84	Ostcotome lexer, long blade straight, 10mm wide, 10 ½" long	1
85	Ostcotome lexer, long blade straight, 14mm wide, 10 ½" long	1

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	long	
86	Ostcotome lexer, long blade straight, 18mm wide, 10 ½" long	1
87	Ostcotome lexer, long blade straight, 22mm wide, 10 ½" long	1
88	Impactor-graft round tip, 6mm dia, 6" long	1
89	Impactor-graft round tip, 10mm dia, 6" long	1
90	Punch-kerrison micro 45 deg up bite 1 mm 7" shaft length	1
91	Punch-kerrison micro 45 deg up bite 2 mm 7" shaft length	1
92	Punch-kerrison micro 45 deg up bite 3 mm 7" shaft length	2
93	Punch-kerrison micro 45 deg up bite 4 mm 7" shaft length	2
94	Punch-kerrison micro 45 deg up bite 5 mm 7" shaft length	2
95	Rongeur – disc intervertebral, straight, 2 mm plain jaw, 180 mm working length	2
96	Rongeur – disc intervertebral, straight, 3 mm plain jaw, 180 mm working length	2
97	Rongeur – disc intervertebral, straight, 4 mm plain jaw, 180 mm working length	2
98	Rongeur – disc intervertebral, straight, 5 mm plain jaw, 180 mm working length	2
99	Rongeur – disc intervertebral, straight, 2 mm serrated jaw, 180 mm working length	2
100	Rongeur – disc intervertebral, straight, 3 mm serrated jaw, 180 mm working length	2
101	Rongeur – disc intervertebral, straight, 4 mm serrated jaw, 180 mm working length	2
102	Rongeur – disc intervertebral, straight, 5 mm serrated jaw, 180 mm working length	2
103	Rongeur – disc intervertebral, 45 deg up, 2 mm plain jaw, 180 mm working length	2
104	Rongeur – disc intervertebral, 45 deg up, 2 mm serrated jaw, 180 mm working length	2
105	Rongeur-nibbler single action stookey angle to side, fine tip, 8" long	1
106	Rongeur- nibbler double action Ruskin, curved, 3 mm bite, 7" long	1
107	Rongeur- nibbler double action Ruskin heavy, straight, 6 mm bite, 8" long	1
108	Retractor- hand held Lagenbeck, blade 6mm wide x 25 mm deep 8 ½ " long	1
109	Retractor- hand held Lagenbeck, blade 8mm wide x 35 mm deep 8 ½ " long	1
110	Retractor- hand held Lagenbeck, blade 11mm wide x 25 mm deep 8 ½ " long	1
111	Retractor- hand held Lagenbeck, blade 15mm wide x 25	1

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	mm deep 8 ½ ''long	
112	Retractor- hand held kocker (Volkmann) sharp 3 prongs, 8 ½ ''long	2
113	Retractor- hand held kocker (Volkmann) sharp 4 prongs, 8 ½ ''long	2
114	Retractor- self retaining weitlander, 3 x 4 prongs blunt, 16cm long	2
115	Retractor- self retaining weitlander, 3 x 4 prongs blunt, 24cm long	2
116	Cloward cervical retractor blade, blunt 50 mm deep	4
117	Cloward cervical retractor blade, blunt 55 mm deep	4
118	Cloward cervical type vertebral spreader, ¾ ''opening	2
119	Caspar cervical distraction screw, 12 mm deep, 70 mm long, pair	2
120	Caspar cervical distraction screwdriver, 8''long	1
121	Scissor – Dura Schmieden Taylor, Blunt tip, 6 ¾ ''long	2
122	Scissor – Dura Schmieden Taylor, Blunt tip, 7 ''long	1
123	Scissor – Dura Schmieden Taylor, Blunt tip, 8 ''long	1
124	Needle holder Bozeman, bayonet, 6 needle holder mayo – Hegggar, 7 ''long	4
125	Forceps Dural Adson serrated bayonet shaped, 8''long	4
126	Forceps Dural Adson bayonet shaoed, 1x2 teeth, 8''long	4
127	Forceps Dural Gerald serrated, Delicate, bayonet shaped, 7 ½ ''long	6
128	Forceps- dissecting Debakey straight, 1.5mm wide, atraumatic jaw, 6''long	2
129	Forceps- dissecting Debakey straight, 1.5mm wide, atraumatic jaw, 8''long	2
130	Forceps-Dissecting Standard, 1 x2 teeth, 5''long	5
131	Forceps-Dissecting Standard, 1 x2 teeth, 6''long	5
132	Forceps-Dissecting Standard, 1 x2 teeth, 7''long	5
133	Forceps-Dissecting Standard, 1 x2 teeth, 8''long	5
134	Forceps-Dissecting T C Tipped Adson, 1x2 teeth, fine tip, 4 ¾ ''long	3
135	Forceps-Dissecting T C Tipped Adson, 1x2 teeth, fine tip, 6''long	3
136	Forceps-Hemostatic Spencer wells straight, 6''long	30
137	Forceps-Hemostatic Spencer wells curved, 6''long	30
138	Retractor- Caspar, for laminectomy, hemilaminectomy, thoracic, lumbar and cervical spine with key, hinged arms, max spread 145mm, stainless steel 2	2
139	4 prongs, 52 mm width x 43 mm deep	2
140	3 prongs, 37 mm width x 62 mm deep	2
141	2 prongs, 22 mm width x 47 mm deep	2
142	3 prongs, 37 mm width x 37 mm deep	2

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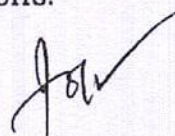
143	4 prongs, 52 mm width x 67 mm deep	2
144	4 prongs, 52 mm width x 57 mm deep	2
145	3 prongs, 37 mm width x 62 mm deep	2
146	2 prongs, 22 mm width x 37 mm deep	2

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TECHNICAL SPECIFICATIONS FOR HEART LUNG MACHINE WITH TCM

1. Heart Lung Machine is an apparatus. Through which blood is temporarily diverted, during heart surgery, to oxygenate it and pump it throughout the body, thus maintaining circulation until the heart and lungs are able to return to normal functioning.
2. Central Control monitors: All roller pumps, safety control (pressure, levels, timers and temperature) and monitoring should be controlled through one touch screen colour monitor. More than one monitor will not be considered.
3. Central Control Monitor should provide 12 different customize perfusion screens.
Central Control Monitor without this option will not be considered.
4. System should have the following features: 4 single large roller pumps (6" raceway) (Flow range 0-10 LMP). Dual twin pump will not be considered. 4 single pumps need to be quoted.
5. Roller pumps should be controlled through central control monitor and manually (Single operation will not be accepted)
6. Pump raceway should be rotatable and lock at every 15 degree
7. System should have master follower feature
8. Should be provided with 2 pressure monitoring
9. Should be provided with the level detector with holder
10. Should have 1 bubble detector(3/8)
11. Roller Pump should be able to deliver pulsatile flow.
12. Should have mechanical blender.
13. Self adjusting tubing inserts should be provided with all the pumps (Should not need to change tubing inserts for different size of tubings)
14. Cardioplegia pump should have display of total volume of each infusion along with delivery time. It should have the master and follower control with different CPG delivery concentration (1:1,1:2,1:4,1:8,1:16)
15. The unit should be supplied with a Battery backup for all pump for a minimum of 60 minutes. Switch over from main power to battery backup should be automatic and immediate. The battery unit should be built in to the pump base and it should be recharged automatically when the system is operating with main power supply.
16. Individual roller pump heads should have horse shoe Roller pumps with universal tubing inserts in which all types of tubing can be fitted.
17. Individual pump heads should have display in digital-The total infusion volume in litres and delivery time, the flow rates in LPM and in RPM
18. Each pump should have easy mechanism for occlusion setting for different thickness of tubes available in the market.Occlusion should be done with the running roller pump. Occlusion setting should be 0.010mm/click
19. Should have Unidirectional hand crank facility as a critical safety feature hand crank loading should be from top for faster access. Multidirectional hand cranks will not be considered.
20. Roller pump should have a self diagnostic circuit with provision to detect and display critical alarm conditions.



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TECHNICAL SPECIFICATIONS FOR HARMONIC SCALPEL SYSTEM WITH PROBES

- System should have a universal connector to connect Ultrasonic energy and Advanced RF energy instruments.
- System should have automatic instrument recognition.
- System should be CE approved.
- System should have a touch screen display for fast and setup, operation and on-screen diagnostics.
- System should have a high-resolution display with wide viewing angles.
- System should have the ability for software updates via USB memory stick.
- System should be a single generator that provides Ultrasonic energy and Advanced RF energy technology for soft tissue dissection and vessel sealing.
- System should have a potential equalization terminal for compatibility with other medical systems requiring such connections.
- System should conform to the following international standards EN (IEC) 60601-1, EN (IEC) 60601-1-2, EN (IEC) 60601-2-2, EN (IEC) 60601-1-8
- System should provide Class 1 protection against electric shock.
- System should have a single footswitch for operating ultrasonic energy or advanced RF energy instruments.
- System should have the ability to select handswitch or footswitch activation or both for Ultrasonic and advanced RF energy instruments and the ability to change selection during use.
- System should have 6 international language options with English language as default.
- System should not have minimal lateral thermal spread more than 1 mm.
- System should not have an auto switch off mechanism.
- System should have standby mode to ensure safety.
- System should come equipped with system diagnostics and troubleshooting guide to pinpoint any problems in the systems.
- System should have onscreen warning display system for generator overheating, generator software upgrade, handpiece errors and instrument errors.
- System should be able to power ultrasonic energy instruments with 55.5 KHz frequency and have the ability to power ultrasonic energy instruments in the frequency range of 30-80 KHz in future.
- The hand piece for the system should come with an inbuilt transducer.
- System should be compatible for open surgery and for laparoscopic surgery.
- System should have at least 5 power settings levels with power level display for ultrasonic energy instruments.
- System should be able to power energy instruments with microprocessor controlled bipolar electrosurgical radiofrequency technology with a quasi-sinusoidal forced impedance output.
- System should be equipped with smart advanced RF energy technology to measure the tissue impedance and control the power delivery.
- System should be equipped with advanced RF energy technology that can simultaneously seal and transect vessels up to and including 7mm, large tissue pedicles and vascular bundles.

- System should be equipped with advanced RF energy technology that provides temperature controlled energy delivery which should maintain tissue temperature approximately at 100 degree Celsius.
- System should have Advanced RF Energy hand instruments with a unique electrode configuration to minimize the lateral thermal spread.
- System should have Advanced RF Energy hand instruments with technology to deliver high compression uniformly across seal area.
- System should have Advanced RF Energy hand instruments that provide tissue / vessel seal strength to withstand bursting pressure of 7 times the systolic pressure.
- All hand probes for open and lap procedures should be able to simultaneously cut and coagulate tissues.
- Systems should be able to power ultrasonic energy hand instruments of diameter for both open & laparoscopic

Open Surgery Ultrasonic Instruments:

1. Hand activated dissecting hook for open surgeries, blunt outer radius for captive coagulation, 60-degree sharp inner radius for cutting. Should have adjustable shaft length from 4cm to 9cm.
2. Hand activated blade with flat tip for spot coagulation sharp edges for cutting, blunt convex surface for broadest area of coagulation and concave surface for sealing vessels. Should have adjustable shaft length from 4cm to 9cm.

System should comprise of the following:

Hardware:

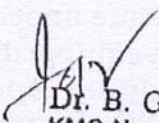
- 1 Generator-01 No
- 2 Footswitch & Cable-01 No

Accessories:

- 1 Probe (Hook Blade)-10 Nos
- 2 Probe (Curve Blade)-10 Nos
- 3 Handpiece (Blue)-04 Nos
- 4 Generator Car-01 No
- 5 Adaptors for ultrasonic and advanced RF energy instruments-01 No

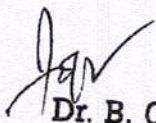
Further consumables may be required for the machine (Optional items)

- a) Hand piece (Blue)
- b) Probe (Hook blade)
- c) Probe (Curve blade)


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TECHNICAL SPECIFICATIONS FOR FLASH STERILIZER

1. Micro-Processor based fully automatic Table Top Flash Steam Sterilizer with Water Reservoir
2. Require Round Type Chamber Capacity of 11 to 15 L with the possibility to accommodate Instrument trays in the system
3. The system must Support Sterilization & Drying of Surgical Instruments, should support solid and unwrapped instruments
4. Water Consumption Capacity of 2.0 L Minimum
5. Should take min load of 5.5 kg and above
6. Should support at least 4 nos. of Cycles to attain 121 Deg and 134 Deg C temperature.
7. Should have Digital Control Panel with Numeric LCD Display which should display pressure , temperature during the cycle , cycle count etc.
8. The sterilizer should have all safety features like pressure safety valve, pressure door lock, door interlock switch, overheat protection with warning light and error warning display.
9. Chamber should be made up of stainless steel with all safety features built in.
10. Weight of the Machine: should not be more than 28Kg (Preferable).
11. The machine should have facility of Printing the cycle
12. It should run on 230V, 50 to 60 Hz
13. Conform to the Quality Standard as per CE guidelines


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TECHNICAL SPECIFICATIONS FOR OT TABLE FOR CARDIAC SURGERY

A.	Mobile, electro hydraulically operated surgical table to support virtually all general surgical procedures including cardiac and vascular procedure with accessories.
1	Constructed of stainless steel / Nickel Chromium alloys and other high quality materials
2	Should be capable of most patients positioning (excluding slide) for a weight load up to 500 kg in normal and reverse orientation, 454kgs all patient positioning without slides and min 270kg in full articulation with slides.
3	Should have stable St. Steel base and column with four large swivel antistatic castors
4	Should have four self-compensating (for un-even floors) hydraulic operated floor locking and un-locking facility through hand control
B	TABLE TOP
5	Fully radiolucent table top with motorized longitudinal sliding (min. 18" /450mm) patient position 9" each side.
6	Provision for sliding (min. 450mm longitudinal slide) for 100% Body Coverage to maximize C arm compatibility
7	Four sections/segments with / without uro cut
8	Adjustable and Detachable, Head Section & Leg Section
9	Kidney and thoracic radiolucent elevator should be motorized to achieve fast elevation of up to 100mm through a single switch on hand control
10	Side rails on both sides for attaching accessories/clamps
11	Mattress pad 2" thick (latex free) for correct and comfortable positioning of patients at the joint areas between different segments, with cut-out on seat position of the table top
	Tabletop Pads should have Mushroom Cap Technology - mushroom cap table pad connection system to improve the infection prevention standards in the Operating Room
12	Xray Cassettes can be loaded from the head , foot or either side for a full range of exposure
13	Mattress to be fully radiolucent, antistatic, detachable, impermeable to fluids, easily cleanable.
C	Technical data :
14	Motorized Longitudinal displacement : Minimum 450 mmor above both sised slide each side atleast 225 mm
	Single button for self leveling (neutral/zero position at touch of single button)
	Table Length :81" (2057 mm)
	Table Width : 20" (508 mm)
	Table Height Range :26 to 45" (660-1143 mm)

	Tabletop Slide Range: 9" (227 mm) to head, 9" to foot
	Tabletop Slide Range: 1,100 lb. (500 kg) patient support, including raise/lower (centered on the column) 1,000 lb. (454 kg) full table articulation (centered on the column) 600 lb. (272 kg) full table articulation, including slide
	Table Shipping Weight : 560 lb. (254 kg)
	Trendelenburg/Reverse : 30° / 30°
	Lateral Tilt (left/right): 20° / 20°
	Head Section : +90° / -90°
	Back Section : +80° / -40°
	Leg Section: 0° / -105° (removable)
	Flex/Reflex :140° / 100°
	Manual Override
	Perineal Cut-out
	Kidney Elevator : 4" powered radiolucent
D	OPERATION SYSTEM :
25	Electrically driven on 220 to 240 V, 50 Hz AC mains
26	In built rechargeable battery back up upto 3 weeks (100-150 procedures) with a capacity to operate the table in case of mains AC power failure.
27	Hand control can be corded/remote and should have LCD/LED display indicating different positions and conflict positions with movements on the Display.
27	Manual override operation for critical table movements in case of power/ hand control failure or on hand control loss
	Standards
28	The table should be having US-FDA/CE (European directive) certification
29	The equipment should be designed to comply with existing international standards in terms of safety and performance i.e. ISO9001/ISO 13485, IEC60601 and UL Standard. Should be Electromagnetically Compatible as per IEC 60601-1-6:2001.
30	Table should be IPX4 Compatible
31	All technical specifications accepted in the compliance statement must be supported by printed literature from the firm.
32	Dual Articulating Headrest to correct anatomical positioning of patient for anesthesiologist to ensure proper intubation, and Allow for proper lateral positioning without a need for additional pillows.

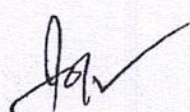
33	Hand Control with LCD Screen with Replaceable cord : <ul style="list-style-type: none"> • to Support anesthesiologist with easier visual recognition of commonly used hand control functions • to eliminate damage due to drops or unintentional crushing • to Allows for replacement of a damaged cord without having to replace the entire hand control
34	Two Inch Shorter Base to Provides better surgeon access during urology and gynecology procedures when the leg section is removed or lowered.
35	Seamless Side rails to Support infection control efforts by eliminating the cracks and crevices on the side rail where bioburden can reside.
36	Should provide Optional patient warming system if needed that allow valuable conductive warming at times before, during or after procedures in the OR.



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List of Coronary Instruments required FOR 1 OT

Sl	ITEM	Description	Required for 1 set
1	GERALD FORCEPS SERRATED - 7"	12MM TIP	4
2	SPRING CASTRO VEIGO NEEDLE HOLDER WITH RACHET 6/0 8"	9-11MM NEEDLE	2
3	SPRING CASTRO VEIGO NEEDLE HOLDER WITH RACHET 7/0 8"	8-9MM NEEDLE	2
4	SPRING CASTRO VEIGO NEEDLE HOLDER WITH RACHET 8/0 6"	8-9MM NEEDLE	2
5	FLAT CASTRO VEIGO NEEDLE HOLDER WITH RACHET 8/0 8"	11MM NEEDLE	1
6	FLAT CASTRO VEIGO NEEDLE HOLDER WITH RACHET 7/0 8"	11MM NEEDLE	1
7	SPRING CORONARY SCISSORS	45° 7"	2
8	SPRING CORONARY SCISSORS	60° 7"	2
9	SPRING CORONARY SCISSORS	125° 7"	2
10	SPRING CASTRO Viejo NEEDLE HOLDER WITH RACHET 4/0 5/0 8"	Heavy	2
11	MICRO RING TIP FORCEPS 8" ROUND HANDLE		1
12	DEBAKAY FORCEPS 7¼"	19.5CMS - 20CMS	3
13	DEBAKAY BULLDOG CLAMP STRIGHT BIG 3"	BIG 3"	2
14	DEBAKAY BULLDOG CLAMP STRIGHT SMALL Spring	SMALL	2
15	MICRO INSTRUMENTS TRAY WITH SILICON MAT		1
16	CORONARY PROBE Long	1MM	1
17	CORONARY PROBE	1.5MM	1
18	CORONARY PROBE	2MM	1
19	IMA EPI CARDIAL RETRACTOR SMALL	30MM	1
20	IMA EPI CARDIAL RETRACTOR MEDIUM	30MM	1
21	SATIN SKY VASCULAR CLAMPS	9.5" OR 9.7"	1
22	SATIN SKY VASCULAR CLAMPS	9 "	1
23	SATIN SKY VASCULAR CLAMPS	8 ½ "	1
24	JAMESON SCISSOR		1
25	METZENBUM SCISSOR CURVED GOLDEN HANDLE	8"	2
26	METZENBUM SCISSOR STRIGHT GOLDEN HANDLE	8"	2
27	VASCULAR FINE NEEDLE HOLDER AORTIC	8"	2
28	VASCULAR FINE NEEDLE HOLDER MITRAL	9"	2
29	VSD FORCEPS DEBAKAY 1MM TIP	7 ½ "	2
30	VSD FORCEPS DEBAKAY 2MM TIP	7 ½ "	2
31	SCISSOR WITH FINE TIP CURVED	8"	2
32	SCISSOR HEAVY CURVED	8"	2



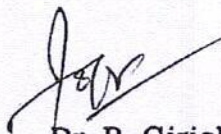
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List of General Instruments ADULT O.H AND VEIN HARVESTING
FOR OT

SI	ITEM	Description	QTY REQ FOR 1 SET
1	Sternal Spreader	Adult – Double Blade Size : 11"/8 ½ / 2	1
2	Sternal Spreader	Medium – Double Blade Size As per OT Sample	1
3	Sternal Spreader	Small – double Blade (Paed) as per OT Sample	1
4	Longen Back Retractors	Customized – Adult – Size 6 ½ " / 1"/1 ½ " Z Shaped	6
5	Longen Back Retractors	Size: 4 ½ " / 1 ½ " – L Shaped	6
6	Wire Cutter	7" Length	2
7	Wire Needle Holder (Twister) – TC Tip	8 ½ " (Heavy Model)	2
8	Aortic Cross clamp – as per ot sample	Atraumatic Length 9" and Angle 150°	2
9	Aortic Cross Clamp as per ot sample	Length 8" and angle 120°	2
10	Aortic Cross clamp as per OT sample	Length 7" and angle 120°	2
11	Vascular Needle Holder	Debeckey Needle Holder (Golden Handle) Length – 7"	
12	Vascular Needle Holder	Debeckey Needle Holder (Golden Handle) Length – 8" or 9"	4
13	Russian Mayo forceps	Length – 9 ½ "	1
14	Vascular Forceps	Length – 9 ½ "	2
15	Vascular Forceps	Length – 8 ½ "	6
16	Angular Vascular Forceps	Length – 9 ½ ", Angle – 120°	1
17	Nerve Hook	Length – 8" Pointed Tip	1
18	Mayo Scissor	Curved / Golden Handle Length – 7 ½ " / 8 inches	2
19	Metzenbaum Scissors	Straight / Golden Handle / Long – Size 8"	4
20	Metzenbaum Scissors	Straight / Golden Handle / Long – Size 7 ½ "	4
21	Metzenbaum Scissors	Curved / Golden Handle / Long – Size : 8"	4
22	Metzenbaum Scissors	curved / Golden Handle / Long – Size 9"	4
23	Side biting clamps	As per ot sample Length 7 ½ "	1
24	Suction Nozzel External	Adult	3
25	Needle Holder	Length : 8 ½ " Ordinary	4

	ordinary		
26	Towel clips	Adult	30
27	Allies forceps	Size : 6"	30
28	Allies Forceps	Size : 8"	20
29	Long Artery Forceps	Curved, size 9"	10
30	Medium Artery Forceps	Curved, size 7"	20
31	Tubing clamp	Size : 8"	6
32	Mosquitoes Forceps	Curved - size: 6"	30
33	Mosquitoes Forceps	Straight - Size : 6"	30
34	Mosquitoes Forceps	Straight - Size : 4"	10
35	Kockers Forceps	Curved, Medium as per ot sample	20
36	Kockers Forceps	Straight, Medium	20
37	Sponge Holding forceps	Size : 10"	5
38	C Clamp	Size : 10" - Adult	3
39	Mixer Forceps	Size : Rt angled Long 8"	4
40	Mixer Forceps	Size : Rt angled Long 10"	4
41	Tooth dissectiong forceps	Adult	6
42	Non-Tooth dissectiong forceps	Adult	6
43	B.P Handle	No.3, size : 6 ½ "	5
44	B.P Handle	No.4, size : 6"	4
45	B.P Handle	No.7, size : 7"	3
46	Bowls	Steel - sizes set of 5	5
47	Gallicups	Medium	4
48	Kidney Tray	Steel Medium	6
49	Heavy Scissors for Tube cutting	Straight Size : 8"	3
50	Heavy Scissors for Tube cutting	Curved size : 8"	3
51	Scissior SS	Medium	3
52	Snugger	Adult	1
53	Internal suction Nozzle	Bullet Tip	2
54	Internal suction nozzle	Sump	2
55	Perforated Steel Tray	Size : 20" x 13" x 4" adult	1
56	Perforated steel tray	Size : 13 x 11" x Medium	1
57	Chest Tube Passer	Adult	1
58	Mastoid Retractors	Adult	2
59	Mastoid Retractors	Medium	2
60	Cats Paw Retractor	Adult	2

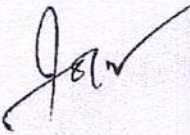
61	Sponge Holding forceps	CVP + CATHEATER + SYRING TRAY	4
62	Long Artery Straight		4
63	Ordinary Needle holder		4
64	Small Galli cups		4
65	STEEL PERFORATED TRAY SMALL (STEEL PERFORATED TRAY SMALL)		4
66	Rib Spreader	Single Blade – Adult 8 ½ “ / 7 ½ Inches	1
67	Rib Spreader	Single Blade – Medium as per ot Sample	1
68	Sternal Retractor for IMA harvestion	Adult – double Blade Size 11” / 8 ½ “ / 2	1
69	Lung Retractor	Adult (Lung Spatula) Size : 13 Inches	1
70	Wounded Retractor (ASD, VSD Retractor)	Adult : 12mm Blades, 8” Length	1
71	Wounded Retractor (ASD, VSD Retractor)	Adult : 10mm Blades, 8” Length	1
72	Wound Retractor (ASD, VSD Retractor)	Adult : 5mm Blades, 8” length	1
73	Lung Holding forceps		1
74	Steel try	Small size	1



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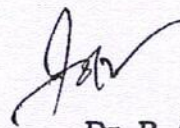
List of ICR Instruments

SL	ITEM	Description	Req for 1 set
1	VSD Forceps Debakey	2mm Tip 7 ¾ " / 19.5cms	2
2	VSD Forceps Debakey	1mm Tip 7 ¾ " 19.5cms	2
3	Micro Vascular Forceps	Light weight Round Handle diamond dust Tip 7.5" (18.1cms)	2
4	Titanium Needle Holder – Micro Vascular	8"	2
5	Titanium Needle Holder – Micro Vascular	7.5"	2
6	Curved Scissor, Metzbaum	7"	2
7	Straight Scissor, Metzbaum	7"	2
8	S.S Hegars Dilator 1 TO 30 Sizes (All size)	All sizes (3 Sets)	1 set
9	Bullet suction Tip		1
10	Paediatric suction Nozzle –	As per OT Sample	2
11	Castroveijo Needle Holder with Rachet	6-0	2
12	Castroveijo Needle Holder with Rachet	7-0	2
13	Castroveijo Needle Holder with Rachet (Heavy) 8 ½"	For 4-0, 5-0 Sutures	2
14	Gerald Forceps	Serrated	4
15	Pott's forward Scissors	45°	2
16	Pott's Backward Scissor	125°	2
17	Fine Tip Mixture (Paediatric)		2
1	Debakey Partial Occlusion Clamp (AS PER OT SAMPLE)	15cms Jaw Length 170mm	1
2	Debakey Partial Occlusion Clamp (AS PER OT SAMPLE)	18cms Jaw Length 170mm	1
3	Multipurpose Clamp (AS PER OT SAMPLE)	St. shaft 10cms	1
4	Multipurpose Clamp (AS PER OT SAMPLE)	St. shaft 13cms	1
5	Multipurpose Clamp (AS PER OT SAMPLE)	St. shaft 15cms	1
6	Multipurpose Clamp (AS PER OT SAMPLE)	Angular Shaft 10cms	1
7	Multipurpose Clamp (AS PER OT SAMPLE)	Angular Shaft 13cms	1
8	Multipurpose Clamp (AS PER OT SAMPLE)	Angular Shaft 15cms	1
9	Coarctation Clamp (AS PER OT SAMPLE)	13cms, Jaws width – 1.5mm	1


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LIST OF VALVE INSTRUMENTS REQUIRED FOR 1 OT

Sl	ITEM	Description	Required for 1 set
1	Russian Mayo forceps	9 Inches	1
2	Cooley's Retractor (Steel Handle Mitral)	Small Size : 9 ½ " / 13mm	1
3	Cooley's Retractor (Steel Handle Mitral)	Medium size: 9 ½ " / 40mm	1
4	Cooley's Retractor (Steel Handle Aortic)		1
4	Ross Retractor	(double End) Z Shaped 9" One side 20mm, other side 40mm)	2
5	Vascular Needle Holder	8" (Aortic) Debeckey Fine Needle Holder	2
6	Vascular Needle Holder	9" (Mitral) Debeckey Fine Needle Holder	2
7	Metzenbaum Fine Scissors	Curved 8" (Aortic)	2
8	Metzenbaum Fine Scissors	Curved 8" (Mitral)	2
9	Allies Forceps	Straight 8" (Aortic)	4
10	Nerve Hook, as per OT Sample (Blunt Tip)	9 ½ 90° Angle	2
11	Nerve Hook, (Blunt Tip)	9 ½ 125° Angle	1
12	Long BP Handle No. 3	8"	2
13	Mosquito's Forceps Curved	5.5"	10
14	Rongers	Backward	1
15	Rongers	Forward	1
16	Rongers	Straight	1
17	Castoveigio Heavy 8 ½" for Aortic		2



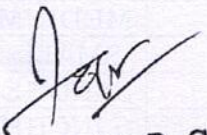
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LIST OF INSTRUMENT PAEDIATRIC & NEONATAL SET FOR 1

OT

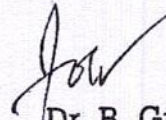
SI	ITEM	Description	QTY REQ FOR 1 SET
1	STEEL PERFORATED TRAY	STEEL PERFORATED TRAY	1
2	PAEDIATRIC DOUBLE BLADE SPREADER	PAEDIATRIC DOUBLE BLADE SPREADER (MEDIUM)	1
3	PAEDIATRIC DOUBLE BLADE SPREADER	PAEDIATRIC DOUBLE BLADE SPREADER (SMALL)	1
4	PAEDIATRIC DOUBLE BLADE SPREADER	INFANT (2 types)	1
4	PAEDIATRIC RIB SPREADER	MEDIUM	1
5	PAEDIATRIC RIB SPREADER	SMALL	1
6	TOWEL CLIPS 5"	5 INCHES SMALL	25
7	ALLIES 5"	6 INCHES	25
8	MOSQUITOES CURVED	5 INCHES	25
9	MOSQUITOES STRAIGHT	5 INCHES	25
10	MOSQUITES SMALL CURVED	4 INCHES	10
11	MOSQUITES SMALL STRAIGHT	4 INCHES	10
12	KOCKERS	5 OR 6" CURVED	15
13	KOCKERS	5 OR 6" STRAIGHT	15
14	ARTERY FORCEPS	MEDIUM	15
15	ARTERY FORCEPS	LONG	5
16	TUBING CLAMPS (Small 6" or 7")	6 OR 7 INCHES	10
17	SPONGE HOLDING FORCEPS 8"	8 INCHES PAEDIATRIC	2
18	MIXTUR (Paediatric)	6 INCHES PAEDIATRIC (As per OT Sample)	10
19	'C' CLAMP PEADIATRIC	PAEDIATRIC (As per OT Sample)	10
20	NEEDLE HOLDER ORDINARY	7 INCHES	10
21	WIRE NEEDLE HOLDER	PAEDIATRIC	2
22	WIRE CUTTER	PAEDIATRIC	2
23	TOOTH FORCEPS	PAEDIATRIC	3
24	NON TOOTH FORCEPS	PAEDIATRIC	3
25	VASCULAR FORCEPS	PAEDIATRIC (6 & 7INCHES) (As per OT Sample)	5
26	B P HANDLE NO 4		2
27	B P HANDLE NO 3		4
28	B P HANDLE NO 7		2
29	HEAVY SCISSOR	CURVED	2
30	MAYO CURVED SCISSOR	CURVED 7 INCHES	2
31	SUTURE HOOK		1
32	INTERNAL SUCTION NOZZLE	BULLET TIP	2
33	SUMP SUCTION NOZZLE		2
34	CAT'S PAW WITH LONGEN BACK		2
35	LONGEN BACK RETRACTOR		3

36	KIDNEY TRAY		4
37	GALLIES CUP	MEDIUM	2
38	BOWLS (Different Sizes)	SET OF 5	5
39	EYE LID RETRACTOR	Different sizes	3
40	PAEDIATRIC CROSS CLAMP	Different sizes	3
41	PAEDIATRIC SNUGGER	PAEDIATRIC (AS PER OT SAMPLE)	1
42	Mastoid Retractors	PAEDIATRIC	2


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TCM-TEMPERATURE CONTROL MONITOR

1. Delivery of water to Arterial, Cardioplegia heat exchangers and to thermal blanket.
2. To work with power supply $220V \pm 15$ VAC
3. Fastest heating and cooling to achieve the desired set temperature.
4. Fully touch controller display for all parameter can be controlled by finger touch.
5. Diagnostic mode for trouble shooting.
6. Auto cleaning mode for descaling and disinfecting the unit.
7. Independent heating and cooling for both cardioplegia and patient circuit.
8. The equipment having manual mode for emergency.



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Equipment Specification for Advanced Anesthesia Workstation with Integrated AGM , and Anesthesia Monitor

1 Description of Function

1.1 Anesthesia Workstation is used for delivering anesthesia agents to the patients during surgery. The complete unit also monitors the vital signs and ventilates the patients.

2 Operational Requirements

2.1) Anaesthesia machine complete and integrated ventilator with Anaesthesia gas delivery system; Low volume Breathing System with Autoclavable flow sensor; TEC Vaporiser for Isoflurane and Sevoflurane;

Anaesthesia Gas monitoring with automatic Agent identification, Fractional Inspired and expired Agent, FiCO₂ and EtCO₂, Patient circuit Oxygenation status FiO₂ and EtO₂ (using Paramagnetic cell for no recurring cost)

2.2) Essential accessories to make the system complete and compatible with the existing system of gas outlets.

2.3) Demonstration of the equipment as per specifications is a must.

3 Technical Specifications

3.1 Flow management


1. Should be Compact, ergonomic & easy to use 3 gas anesthesia system with digital control of Gas Flows.
2. Machine should provide Mechanical mixing. User should be able to set Fresh Gas on the screen with virtual flow meters.
3. Multi-color 15 inch Touch Screen TFT display mounted on movable arm with display of flow of O₂, N₂O or Air. The screen should be movable, and angle should be tiltable for better viewing
4. Dual flow sensing capability at inhalation and exhalation ports with Autoclavable flow sensor.
5. Gas regulators shall be of modular design/ graphic display
6. One no. yoke each for Oxygen & Nitrous Oxide. Separate Pipeline inlet for Oxygen, Nitrous Oxide and Air with electronic pressure gauges to indicate inlet pressures.
7. Hypoxic Guard to ensure minimum 25% O₂ across all O₂-N₂O mixtures and Oxygen Failure Warning.
8. Auxiliary flowmeter for Oxygen
9. Should have Auxiliary Common Gas outlet for open circuit connection.
10. Should have unlockable Oxygen flush to deliver oxygen flow of approximately 40 l/min.


3.2 Breathing system

1. All parts of the breathing system that are in contact with patient gas should be latex free and autoclavable.
2. Flow sensing capability at inhalation and exhalation ports, sensor connections shall be internal to help prevent disconnect.
3. Should not require tools when dismantled for cleaning and sterilization.
4. Flow Sensor should Autoclavable and reusable.
5. Should have one step operation from Circle system Manual ventilation to mechanical ventilation and integrated onto the absorber and should automatically turn on the ventilator when positioned to ventilator position.
6. Adjustable pressure limiting valve shall be provided
7. Breathing system components should be autoclavable, excluding Oxygen cell (galvanic cell).

3.3 Standard Circle Absorber System

- Should have adjustable pressure limiting valve.
- Should have a bag/ventilator selecting valve integrated onto the absorber.
- Should be suitable to use low flow techniques
- Should have CO₂ absorbent chamber canister of at least 1.2 ltr capacity
- Should have CO₂ Absorber bypass without any air entrainment or loss of pressure / disconnect


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3.4 Vaporizers


1. Vaporizer must be isolated from the gas flow in the off position and prevent the simultaneous activation of more than one vaporizer.
2. Vaporizer shall require no tools to mount.
3. Vaporizer shall mount to a Selectatec® manifold which allows easy exchange between agents.
4. Supplier must offer total vaporizer manufacturing capability-Desflurane, Sevoflurane, and Isoflurane.
5. Back bar to accept two Selectatec vaporizers

3.5 Ventilator (Integrated)

1. The workstation should have integrated Anesthesia Ventilator system for adult and pediatric and neonates.
2. Ventilator should be pneumatically driven /electrically driven without room air entrainment when no gas supply or no Fresh Gas Flow, electronically controlled and should be ascending bellows /bag in bottle type or equivalent .
3. Ventilator should have Volume Control and Pressure Controlled, PCVVG/PRVC, SIMV-VC, SIMV-PC, SIMV-VG , CPAP Plus PSV, Pressure support with Apnea Back up and electronic PEEP
4. Ventilator should be capable of ventilating diverse range of patient groups from neonates to patients with restrictive airways with tidal volume range between 20 ml to 1500 ml without changing bellows/bag in Mechanical ventilation mode, With the option of monitoring 5ml in PCV, neonatal mode.
5. Assisted modes of breathing should be flow triggered with Flow Trigger starting from as low as 200 ml/min.
6. Ventilator shall compensate for fresh gas flow and compliance of the entire circuit dynamically. Ventilator should have a tidal volume compensation capability to adjust for losses due to compression.
7. The workstation should be capable of delivery of low flow and minimal flow anaesthesia.
8. Ventilator should be capable of at least above 100L/min peak flow to facilitate rapid movement through physiologic "dead space" in the Pressure Control mode.
9. Ventilator should also display waveforms for flow and airway pressure.
10. Ventilator should display spirometry loops including Flow-Volume and Pressure-Volume curves.
11. Should have qualitative indicator for fresh gas flow setting for low flow anesthesia.
12. Should have tool to help practice low flow anesthesia in informed way, help to determine precise settings of fresh gas flow during low, minimum and metabolic flow anesthesia and help provide titrating oxygen flow in the Fresh Gas Flow to enable practice low flow without increasing the total Fresh Gas .
13. Should provide key pause the gas delivery and ventilation
14. Intra Operative automated Lung recruitment Maneuvers with compliance measurement should be available.
14. Should have Autoclavable flow sensors

3.6 . Display of Ventilator:

- 1) Display should be 15 inches with touch screen for easy access to settings.
- 2) Display pressure vs time, flow vs time, EtCo2 waveform and Loops
- 3) should display flow volume, pressure volume loops. Trend data
- 4) should display respiratory gas monitoring, and anesthetic agent monitoring . Values should display Automatic Agent identification, concentration, inspired and expired of gases of O2, N2O, Anesthetic agent, Age corrected MAC value, Capnograph.
- 5)
 - a) Tidal volume (VT))
 - b) Inspiratory/expiratory ratio (I:E)
 - c) Inspiratory pressure
 - d) Pressure limit (Plimit)
 - e) Positive End Expiratory Pressure (PEEP)



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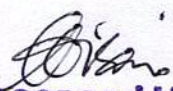
6. Display to show an indication , while ACGO is on .

3.6 .Patient Monitoring for during **Anesthesia in the Operating room:**

Technical Specifications-

1. High-end latest design Modular Multi-parameter patient monitoring system
2. Monitor should be capable for monitoring ECG, SPO2, RESP, 2XTEMP, 2XIBP , EtCO2, simultaneously as a standard
3. Monitor should be ready to upgrade AGM, Entropy/BIS, NMT and Cardiac output in future by just adding the Module. The simultaneous monitoring of ECG, SPO2, RESP, 2XTEMP, 2XIBP, EtCO2, AGM, Entropy/BIS, NMT and Cardiac output should be possible
4. Screen Size 15 inches or more color Capacitive Touchscreen display and highly visible alarm light
5. Monitor should display up to 12 waveforms at a time individually
6. Monitor should have 7 optimized user modes, Standard Adult, Paed & Neonate mode with OxyCRG and configurable for different care areas
7. Monitor should have different screen layout to view big font size in numeric and waveforms
8. Monitor should have trending facility for up to 168 hours of both Graphical & Numerical
9. Should have Snapshots facility up to 200 - Manual or alarm triggered
10. Monitor should have facility for National Early Warning score which helps the clinicians to know the patient's condition better
11. Should be capable to connect to a slave display
12. Minimum Battery back – up to 4 hours
13. Connectivity to Central stations should be standard thru Wifi or thru LAN
14. Monitor should be capable to monitoring 12 lead ECG by connecting 10 lead wire
15. Monitor should have Simultaneous four-lead analysis which helps optimize the detection and analysis of arrhythmias, helping ensure no cardiac event goes unnoticed. The algorithm helps distinguish noise and artifacts from true beats, reduces false alarms, and enables uninterrupted ECG monitoring even in the event of a single electrode failure.
16. Monitor should have smart lead fail detection to monitor ECG uninterrupted
17. Should have ST segment Analysis with ST Trend for Adult, Paed and Neonates patient
18. Monitor should have Full Arrhythmia detection for Adult, Paed and Neonates including Atrial Fibrillation detection
19. NIBP technology utilizing "smart cuff" pressure control to improve measurement time, patient comfort, and artifact rejection
20. SpO2 should have ability to reject motion artifacts and detection even at low perfusion, Display plethysmography and perfusion index number and SPO2 value.
21. Monitor should be able to measure PPV and SPV parameters simultaneously to guiding fluid therapy for patient on Mechanical ventilation
22. Monitor should be capable for Bed-to- Bed View connectivity thru LAN and should be able to connect 1023 beds
23. Bed-to-Bed View window data should display - 6 waveforms and numeric with remote alarms
24. Monitor should be able export trend data thru USB with password protected
25. Demo Mode should be available as standard
26. Monitor should have option to upgrade modular 3-Channel recorder which can be interchanged between the monitors for print
27. Basic Patient side module for Measuring Parameters like ECG, NIBP, SPO2, RESP, 2XTEMP, 2XIBP
28. Optional Filed Upgradable to AGM, EtCO2, Entropy/BIS, NMT and Cardiac Output by just adding a module
29. Monitor should have full disclosure feature for up to 72 hours for all parameters waveforms.
30. Monitor Should be HL7 Compliant which connects to EMR direct
31. Monitor should have capability to monitor NMT by inserting the module inside the monitor
32. NMT monitoring should have TOF, DBS, ST and PTC mode of stimulation and Supermax Current and recovery note block alarms (Extra Module future upgradeable). NMT monitoring should be possible via KMG and EMG technology
33. Monitor should be capable to monitor Entropy/BIS by inserting the modules


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34. Monitor should be capable to Monitor the Anesthesia gas monitoring by inserting the modules
35. AGM should be display both inspired and expired value following gases- CO₂, O₂, N₂O and anesthetic gas agent and balance gas
36. Standard Certifications –FDA and CE Approved
37. Monitor should be able to withstand an accidental drop and document needs to be submitted accordingly
38. Should also be upgradable to display pictorial analysis by plotting the effects of the analgesic and anesthetic drugs
39. Monitor should have facility to connect with laser printer/ network printer to take the printout from monitor.
40. The manufacturers / suppliers quoting for a monitor being manufactured in a country sharing common boundary with India will not be considered

4 System Configuration Accessories, spares and consumables – Scope of supply

- 4.1 Anaesthesia Gas Delivery system with Integrated Ventilator and circle system -01
- 4.2 Patient Monitor with ECG, NIBP, SPO₂, 2 temp, 2 IBP with adult accessories -01
- 4.3 Depth of Anesthesia (Entropy) Monitoring module with accessories -1 set
- 4.4 Level of Neuromuscular Blockade (NMT) monitoring module with adult and ped accessories-1 set
- 4.5 TEC Vaporizer Sevoflurane -01
- 4.6 TEC Vaporizer Isoflurane -01
- 4.7 Adult and Pediatric autoclavable silicone breathing circuit -1 each
- 4.8 Accessories Anesthetic gases measurement-01 set
- 4.9 All Standard accessories to make all parameters working- 01 set

5 Environmental factors


- 5.1 The unit shall be capable of operating continuously in ambient temperature of 100C - 400C and relative humidity of 15-90%
- 5.2 The unit shall be capable of being stored continuously in ambient
- 5.3 Shall meet IEC-60601-1-2: 2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility.
- 5.4 Safe disposal system/port of waste anesthetic gases (AGSS Anesthetic Gas Scavenging System/Port) for Passive or Active scavenging port should be provided

6 Power Supply

- 6.1 Power input to be 220-240VAC, 50Hz, as appropriate fitted with Indian plug
- 6.2 Resettable over current breaker shall be fitted for protection
- 6.3 Suitable Servo controlled Stabilizer/CVT
- 6.4 The Anaesthesia Delivery system and Monitoring system will have a one hour battery back up.

7 Standards, Safety and Training

- 7.1 Anesthesia Workstations and Patient monitors should be USFDA and European CE approved product.
- 7.2 Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450
- 7.3 Manufacturer should be ISO certified for quality standards.
- 7.4 Certified to be compliant with IEC 60601-2-13-Medical Electrical Equipment
- 7.5 Should have local service facility. The service provider should have the necessary equipment recommended by the manufacturer to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.
- 7.6 All components like anesthesia machine, vaporizers, ventilator and monitor should be only from one manufacturer/principal.
- 7.7 Warranty of 36 months should be offered.
- 7.8 Supplier will assure supply of spares for a minimum period 7 years after the warranty period or 10 years from the date of supply.


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8 Documentation

- 8.1 User Manual in English
- 8.2 Service manual in English
- 8.3 List of important spare parts and accessories with their part number and costing
- 8.4 Certificate of Calibration and inspection from the factory
- 8.5 Logbook with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
- 8.6 List of Equipment available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.
- 8.7 Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

Warranty - 5 years

EMC - 5 years



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Specification for Multipara patient Monitor with transport monitor cum module

1. Should be advanced modular system with transport function and capable of monitoring adult, pediatric & Neonatal patients.
2. Patient monitor should have 19" TFT/LCD display with full touch screen user interface.
3. Should be capable to display 15 or more waveforms simultaneously.
4. The transport monitor cum module should measure following parameters as standard: ECG, SPO₂, NIBP, RESP, dual temp, dual IBP, 12 lead ECG as standard.
5. Should be upgradeable to CO, TOF/NMT, BIS/ENTROPY – 4 channel or more. (Price to be quoted separately).
6. Transport monitor cum module should have at least 5.5 inch or more TFT display, it should measure parameters during transport, i.e. ECG, SpO₂, NIBP, Resp., dual Temp and dual IBP, and ETCO₂.
7. The transport monitor should be lightweight (weight should not exceed 2 kg), and have handle to carry.
8. The transport monitor should have at least 4 hours battery back-up for distant transit and should be vibration resistant as per International standards so it becomes suitable for transport through ambulances.
9. ECG should have capability for 3, 5 and / or 10 lead monitoring and should have built in advance arrhythmia monitoring on all leads.
10. Inbuilt ST segment analysis and arrhythmia detection for all the leads should be possible.
11. Hemodynamic and drug dose calculations should be available.
12. Arrhythmia should be grouped based on classifications and should show no of arrhythmias occurred with ECG waveform.
13. Should have SpO₂ Nellcore technology that works well in low perfusion. SpO₂ probe must be durable and washable.
14. Should display perfusion index (PI %) from SpO₂ as an indication of pulse strength at the sensor site.
15. Monitor should have facility to take blood pressure measurement automatically in case of sudden blood pressure change in between periodic measurements of blood pressure.
16. Monitor should have facility to measure dynamic preload parameter such as Pulse pressure variation (PPV) or Systolic pressure variation (SPV).
17. Machine must have facility for alarm escalation feature to higher priority in case nursing staff miss the alarm.
18. Must have minimum 24 hours review data including graphical & tabular trends
19. Must be able to store & display the 24 hours beat by beat waveforms for 4 or more selected parameter by the user.
20. Monitor shall provide the capability to receive and display real-time waveforms, alarm status from other bedside on the patient monitoring network without the need of central monitor.
21. Alarm limit status (ON/OFF) must be indicated on-screen for each parameter and actual parameter alarm settings must be displayed on-screen when alarms are on.
22. Monitor shall permit the optional ability to receive and display information from other patient devices such as anesthesia Machine, ventilators & other standalone devices.
23. All modules should be compatible with all monitors quoted.
24. Main monitor must have inbuilt rechargeable battery with minimum backup of 60 minutes or more.
25. Transport monitor should be resistant from accidental drop and water split. It should be drop test certified for 1 m fall and IPX 2 level protection against vertical falling water.
26. The equipment should be CE/US FDA Approved



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27. Should be supplied with following accessories.

- I. ECG / respiration: 5/6 lead ECG cable set -02
- II. NIBP: Adult & Pediatric, Neonatal- 05 each
- III. SpO2 Sensor: Adult, Neonatal and paediatric sensor - 02 each
- IV. IBP connection cable -02 each
- V. IBP disposable transducer – 05
- VI. Temperature: Skin and rectal probes - 01 each
- VII. ETCO2 sensor with Adapters -10 set .

28. Warranty - 5 years
CMC - 5 years



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Technical Specifications for Defibrillator:

- The machine should have facility for ECG Monitoring, Defibrillation external & internal, transcutaneous pacing, AED, & in-built recorder.
- Machine should be a low energy biphasic defibrillator with recorder, having facility to monitor vital parameters such as ECG, Heart rate, SpO₂, ETCO₂
- Should work on manual and automated external defibrillation (AED) in Bi-phasic mode. The maximum energy delivered by the device should be at least 200J or more.
- Should have manual disarm and automatic disarm facility.
- Should monitor ECG through external paddles and monitoring electrodes and defibrillate through external paddles.
- Should have high power backlit 6.5 inch or more LCD display that provide clear visibility for even under strong daylight.
- System should have instant boot up time, less than 5 seconds.
- Should have easy operation of all functions through single rotary knob.
- Should have external paddles with paddles contact indicator- for good paddle contact. Single adult and pediatric paddles should be available.
- Should have compensation for chest impedance for a range of 25 to 150 ohms.
- The unit should be capable of doing synchronized and asynchronized Cardio version.
- Disposable pads should have the noiseless function to reduce the noise during CPR
- Should have facility to analyze Continuous patient electrocardiogram in the back ground on AED mode after attaching the pads to the patient.
- Should have fast charging time, charging 200J or more in 5 seconds or less on both mains & battery.
- Should have a battery capable of giving 100 discharges of maximum energy or 150 min continuous monitoring.
- The machine should have charge and discharge button on front panel & paddles.
- The machine should be compact, portable with built in rechargeable battery, weight of the total machine should not be more than 7 Kg.
- Should have indicator to display status of daily and monthly self-test results.
- The machine should have in built recorder for printing ECG trace & stored information.
- The machine must have capability for providing internal defibrillation shocks. The internal paddles of different sizes for adult and paediatric patient should be available .
- The machine should have user selectable alarm settings.
- Should display alarm message and have alarm indicator on top of the machine to view from distance the alarm type and patient condition
- After defibrillation, the ECG waveform must recover within 5 seconds for immediately checking the result of defibrillation.
- The machine must have AED with voice prompt facility.
- The machine should work on mains as well as on rechargeable battery.
- The battery charging time should be less than 4 hours to full charge.
- It should have facility to store patient data and review data on SD Card/USB.
- Machine must be vibration resistant, it should meet MIL-STD-810F 514.5 Category 4 for Restrained Cargo ambulance transfer & MIL-STD-810F 514.5 Category 9 for transfer of patient by Helicopter ambulances



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Warranty - 5 years, CMC - 5 years

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- Machine must be able to operate in extreme environment conditions; it should operate from -5°C to 45°C. And should be highly resistant to water and dust.
- Should meet IP44 Level for water resistance and Protection against harmful ingress of dust.
- Should conform to latest electrical safety standards, such as IEC-60601-2-4, IEC-60601-1-2, ISO/ISO 14971: 2007, EN 1789: 2007
- Must be European CE approved product.
- The machine should be supplied with all standard accessories.
- Warranty 5 years and CMC 5 years (Include all parts in warranty as well as cmc including Battery)



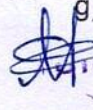
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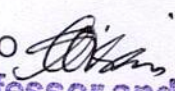


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Specification for High end ICU Ventilator

1. The ventilator should be High end-fully functional, Turbine based technology.
2. The ventilator should be capable of ventilating on adult, Paediatric and Neonatal.
3. The Ventilator should perform complete self-test and calibration including the compliance of the system.
4. The ventilator should work on single gas on emergency in case of O₂ or air failure
5. The ventilator Should have minimum 12.1" or more colour touch screen with knob.
6. The Ventilator should have active exhalation control valve (Expiratory Valve/ Expiratory Cassette) and should be autoclavable
7. The ventilator Should have Invasive, Non-Invasive and High flow oxygen therapies as standard feature
8. The ventilator Should provide following modes in
 1. invasive ventilation:
 - a) CMV- Pressure control, Volume control, Pressure regulated volume control (or equivalent)
 - b) SIMV- Pressure control with pressure support, volume control with pressure support, Pressure regulated volume control (Or equivalent)
 - c) SPONT- Pressure Support (PS) with Apnea back of VCM
 - D) volume support (VS), Airway pressure release ventilation (APRV),
 - E) C-PAP (Or equivalent) with Apnea back of VCM
 2. Non-Invasive:
Pressure control (PC), Synchronised pressure control with pressure support, CPAP, Pressure support, Airway pressure Release ventilation (APRV).
9. The ventilator should have apnoea backup ventilation in all modes.
10. The ventilator should have apnoea backup ventilation VC
11. The ventilator should have option to set Flow in volume control mode
12. HFOT / HFNC should be a standard feature. Flow 1 to 50 LPM or more
13. The ventilator should have low flow PV loop manoeuvre with customizable flow setting and cursor to identify lower and upper inflection points.
14. The ventilator should have the Lung Recruitment Tools to recruit the ARDS lungs:
 - a) The ventilator Should have Recruitability assessment Application to determine automatically whether the patient lungs are recruitable or not.
 - b) The ventilator Should have recruitment maneuver to perform the recruitment automatically using stepwise increment in PEEP technique
 - c) The ventilator should have the PEEP titration tool to identify the correct PEEP in ARDS patient.
15. Should have Open Airway Suctioning and in-line Airway Suctioning feature separately
16. Low flow oxygen port for intra-hospital transport.
17. Nebulizer pneumatic / ultrasonic.
18. The ventilator should have the following Settings:
 - a) Tidal Volume: 05ml to 2000 ml or more
 - b) Respiratory Rate: 1 to 150 BPM
 - c) PEEP should be 0 to 50 cmH₂O
 - e) I: E Ratio: 4:1 to 1: 9
 - f) Pressure Control (PINSP or Δ PC) and Pressure support should be 2 to 80 cmH₂O
 - g) Peak Flow: up to 180 LPM or more

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- h) Pressure trigger: 0.1 to 10 cmH₂O
- i) Flow trigger: 0.1 to 20 LPM
- j) FiO₂: 21 % to 100 %
- k) Insp Pause: 0.1 to 2 sec
- l) Exp Trigger: 5 % to 80 %
- m) Flow type: Square, Descending
- n) Slope: 5% to 100%


19. The ventilator should have NIV in all Pressure modes with a min of 60 LPM leak compensation, and APRV in NIV
20. The ventilator Should have ATC (Automatic tube compensation) for ET & Tracheostomy tube
21. Should have Elevated O₂, Sigh, manual breath, Insp Pause, exp pause.
22. The ventilator should have Realtime Pressure-time, Volume-time and flow-time graphs Waveforms & Pressure-Volume, flow-volume loops together and loop overlap & freeze facility
23. The ventilator should have the following Monitored parameters:
 - a) Pressure: Peak, Pmean, Pplatue, Pplat-est, PEEP, Intrinsic PEEP, Occlusion Pressure, Driving Pressure etc.
 - b) Lung mechanics: Inspiratory & Expiratory Resistance, Static & Dynamic Compliance, RSBI, WOB etc..
 - c) Flow/Volume: VT, Vt, VT/Kg, MI, Mv, Spont MV, RR, Leak at PEEP, Leak Volume etc..
 - d) Timings: RR total, RR spont, I: E Ratio, Ti-spont, APRV Th and TI Ratio TCe etc..
 - e) Gases: Fio₂, EtCo₂ etc...
24. The flow sensor technology should be latest, reusable-ultrasonic/hotwire for higher accuracy and should be suitable for infant to adult.
25. The ventilator should support pneumatic nebulizer

The ventilator should have audio-visual alarms with text message, system should have the alarms for; Power failure and low battery, High and low pressure, High and low minute volume, High and low VT, Apnoea, High RR, Leak, High Fio₂ etc.

26. The ventilator should have alarm history and trends of last 72 hr with graph.
27. The ventilator should have inbuilt battery backup for of minimum 5Hr and should display backup time
28. Should be supplied with following accessories:
 - a. Reusable Expiratory flow sensor-2 qty
 - b. Hose for compressed air and oxygen
 - c. Infant silicon reusable circuit 1
 - d. Paediatric silicon reusable circuit 1
 - e. Adult silicon reusable circuit 1
 - f. NIV Masks (Small, medium, large) each -1
 - g. Trolley with casters and support arm to be supplied
 - h. Test lung – 1 each
 - i. User Manual – 1 no
 - j. Flow sensor – (5 nos each if disposable) or 1no each if reusable
29. The price of following items to be quoted separately which will not be taken for evaluation
 - a. Mainstream Etco₂ sensor suitable for neonatal to adult with adapter
 - b. SpO₂ sensor
 - c. Servo controlled -Heated humidifier with one chamber.
30. The ventilator Should be valid US FDA and European CE certified product with the standards for electrical safety IEC-60601-1 general requirement.

31. Demonstration of Equipment is a must
32. 5 years warranty and 5 years cmc
33. Service provider should have service facility located within a radius of 200 KM from the hospital to ensure timely equipment service
34. The quoted equipment should be installed at 5 places in Karnataka and hospital certification to be attached.


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SPECIFICATIONS

Installation and Supply of Liquid Medical Oxygen

I. Liquid Oxygen Plant:

Sl. No	Name of the Hospital	Capacity of liquid tank Required.
1	HIMS	13,000 liters

RESPONSIBILITY OF BIDDER:

Bidders shall be responsible to supply, testing, installation and commissioning of Liquid medical oxygen system on foundation, civil works for foundation , fencing, gate, approach road, sign board etc(width as required for LMO vehicle transport) to the LMO site. Bidders are strongly advised to have site visit to physically inspect the LMO site for civil work


Tank Foundation: PCC 1:4:8 of 3000mm Diameter, Concrete slab, the foundation legs to be constructed. All dimensions are in millimetres. Concrete Grade shall be of M20 grade and Reinforcement will be of Fe415. Cement Grade 53 shall be used. Clear cover to reinforcement will be 50mm. 3 nos of Foundation bolts required of size M30x650.

Barricade: Barricade to be fabricated; this barricade will be painted with alternate yellow and black strips of colour. All welding to be done as per IS standards.

Earthling Pit: The earthling Pit is to be constructed. The GI pipe used for earthling is to be drilled type, of size 40mm in diameter and 3 meters in length. Charcoal to be filled for 150 mm and salt to be filled for 150 mm. The 550 Sq. chequered plate to be provided to cover the earthling plate. GI flat of size 50mm width and 6mm thick of length 20 meters to be connected from earthling pit to equipment.

Emergency Gate: The emergency gate to be fabricated. Suitable sizes of MS flats and MS rods to be selected. Galvanized diamond mesh 11 of gauge 50x50 to be used. Provide mechanical stoppers to the gate such that gate cannot be opened inward.

Hardstand: Hardstand to be constructed. The hardstand size to be of 8mX4m. The hardstand comprised of 150 mm soling, 150 mm PCC 1:4:8., 150 mm thick concrete.


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Fencing: Fencing to be fabricated. Fencing comprises of 2" diameter pipe of length 2 meters. The bottom 500 mm pipe portions to be placed in pcc. These have to be paced 2000mm typical position. The mesh to be used is to be of 50X50 GI, 9mm gauge. All pole pipes to be painted with black paint. Mesh to be painted with white paint.

Main Gate: Gate to be fabricated. Gate will be of 2 meters height and 6 meters in width. Provide mechanical stoppers to the gate such that gate cannot be opened inward.

PCC around Tank: This has to be constructed as per the PESO Guidelines.

Fire extinguisher: Two no's fire extinguishers of DCP type, of capacity 10kg each are required.

Fire and water buckets with stand: Two nos of fire buckets and two nos of water buckets fixed on metallic stand which. These buckets to be painted in red and stand to be painted in black.

Water tap: water tap along with 10 meters plastic tube is required.

Bidder shall be responsible for all Civil, electrical, plumbing, lighting, pipeline work and other works required for complete installation and trouble free functioning as a part of the work. Civil layout design, supply, installation, testing, commissioning, and construction as applicable.


Bidders should be responsible for transportation, shifting, testing, installation and commissioning of Liquid medical oxygen system and should provide fire safety and exhaust system, crane facility for installation


Should provide pipeline from LMO system to Super speciality hospital manifold room.(42mm diameter 3mm thickness)(Remarks - Length of the Pipeline should be calculated at the time of site visit)

1.1.2 SCOPE:

Supply and installation of Vacuum Insulated Evaporator:

One vessel of 13 KL Liquid oxygen VIE vessel system will be the primary (main) supply source. Each system should have separate tank, VIE, AV coil, controllers etc. Required pipeline including necessary


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accessories like isolation valves, non-return valves, line regulators etc has to be supplied in the given battery limit of the SMPV area.

The bidder should supply all the above items. **Scope and responsibility of the vendor:**

- Erection and commissioning of the VIE, AV coil, Spool for the given SMPV area is the vendors responsibility.
- The interconnection of LMO plant to the manifolds of the hospital shall be under Vendor's scope.
- Necessary maintenance of the VIE, AV coil, Spool, controllers, safety valves, safety regulators etc. is the responsibility of the supplier as per PESO guidelines till 10 years.
- The bidder should liaise with the Chief Controller of Explosives to get the essential safety clearance certificate (PESO Certificate) for 5 years. Service charge required for this work should be paid by the vendor.

1.1 OXYGEN SUPPLY SYSTEM:

LIQUID MEDICAL OXYGEN TANK (VACCUM INSULATED EVAPORATOR) AND ALLIED EQUIPMENTS


APPLICATION: Storage of Liquid Oxygen and Supply of High purity Oxygen gas for medical use after conversion of liquid to gas through ambient atmospheric vaporizer. *The system to be supplied as per relevant applicable standard and certification.*


LIQUID MEDICAL OXYGEN STORAGE TANK:

The double walled Vacuum Insulated Evaporator shall be constructed of stainless-steel inner vessel contained within a carbon steel outer vessel. The annular space between the vessels shall be filled with non-inflammable perlite insulation material to insulate under vacuum. The VIE should be self-pressurizing type by partial evaporation of liquid oxygen through a pressure building coil by a non-ferrous imported pressure regulator. The vessel shall be supplied as a functional whole with all materials of construction & the cleaning regime suitable for medical grade liquid oxygen.

Design should be state-of-the-art.

The unit should consist of a double walled vertical vessel (inner pressure vessel made of stainless steel and outer vessel of carbon steel). It should be fitted with standard accessories and should be "passed" the standard inspection requirement at factory for VIE. The copy of the certificate should be


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forwarded to HIMS, Hassan prior to shipping and original documents should be enclosed along with the shipping document. Bidder should follow international Standards.

- Quantity: 13 KL X 1 No.
- Installation: Outdoor
- Type: Double walled, vertical
- Capacity: Minimum 13,000 liters water capacity or more- One number
- Configuration- Vertical
- Tank pressure – 17 bars
- Operating working pressure 10 to 15 kg/cm² (approx.).
- Should have compact unit including vessel, vaporizer, & incorporated with audio visual alarm for low content and pressure.
- Purity- more than 99.95 %
- Medical grade I.P. 2018.
- Certified safe for human use.
- Should not cause any damage to gas pipeline, anesthesia machine and ventilators.
- Should have content indicator and preferably low liquid level alarm with safety system in case of emergency/un-natural calamities.

• **1.2 ACCESSORIES:**

All required accessories should be supplied.


1.3 SAFETY FITTING:


Two safety valves for inner vessel fitted on pipeline with flow divert valve. - Rupture disc for inner vessel. - Safety valve for inlet pipeline. - Safety valve for pipeline of pressurizing evaporator. - One rupture disc/ safety device on outer vessel.

1.4 SUBMITTALS:

The Liquid Medical oxygen tank shall accompany the Original Quality Test Certificate covering following Documents:

- Approval letter from CCOE along with approved drawing from CCOE.
- Approval letter from CCOE for use of cryogenic vessel(s) at site.
- Certificate from the authorized inspection agency.
- Heat chart for pressure parts.
- Dimension checks report.
- Dished End reports.
- Mechanical properties test report for production test coupon.


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- Visual inspection report.
- Radiography examination report.
- Liquid penetrate examination.
- Cleaning inspection report.
- Hydro-pressure test report.

1.5 Product and Service Specification:

Capacity of Liquid Oxygen Storage Tank: 13 KL

Gas outlet pressure to be maintained at 4.2 kg/cm².

Space taken for installation should be as per regulations of Indian explosive controller and having easy access for LMO tank.

The site should be demarcated with proper signage.

Indication of liquid oxygen level and outlet gas pressure should be provided.


Vendor shall carry out complete purging and refilling of the tank prior to handover. The tank must be filled to its full capacity and ensured to be in proper operational condition.


The vendor shall provide a valid Oxygen Quality test Certificate (Tank Oxygen test report) confirming that the oxygen purity and other relevant parameter meet the required standards at the time of handover.

Storage Tank and Vaporizer Specifications:

The storage tank and the vaporizer coils should be designed as per the standards

The cryogenic vessel will be of cylindrical shape with Vaporizer and the pressure control system. It should be provided with the essential components to fill the liquid, to build up pressure, to relieve pressure, to withdraw product and to evacuate the vessel. All protective, safety and alarm provisions mandatory to Liquid Medical Oxygen plants should be supplied.


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Storage Tank & Vaporiser Capacity:

Vacuum insulated evaporator vessel should have a capacity of 1X13 kilo liters. The AV coil should have adequate capacity of 1000 nm³/hr to handle the gas flow requirements of the hospital along with the 1.5 inch spool with two-pressure regulator system.

1.6 **Safety** The vendor should ensure that all international safety norms and standards applicable as implemented and certified by the CCE. Following are the mandatory provisions for vessel:

- Vessel low liquid level alarm
- Vessel low pressure alarm
- Pipeline low pressure alarm.
- Twin regulator
- Twin safety valve
- Non return valve and 3 way diverter (bypass) valve

Statutory Requirements:

All statutory requirements of the Chief Controller of Explosives of India and SMPV rules need to be followed; besides all regulations and guidelines put forward by the Govt. Of India from time to time should be followed.


Maintenance


All routine preventive maintenance and break-down maintenance of the liquid oxygen plant should be done by the vendor within 24 hours. Experienced personnel should be readily available. Log of all works undertaken in the plant should be meticulously maintained by the vendor.

Training – Satisfactory Training to be provided at site to the designated authorities for minimum 2weeks.

1.7 GENERAL TECHNICAL SPECIFICATIONS FOR INSTALLATION & SUPPLY OF LIQUID MEDICAL OXYGEN:

1. Bidder must have minimum 5 or more higher capacity vessel installations in Government Hospitals/ Central Govt. Hospitals/ Reputed Private Hospital [Higher capacity indicates ≥ 5 KL and above]. (Submit PO Copies)
2. End user certificate must be provided or else the bidder will be disqualified.
3. Bidder must have ISO and FDA certification.



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4. Bidder must produce appreciation/satisfactory letter about their service from minimum 5 or more higher capacity vessel installations in Government Hospitals/ Central Govt. Hospitals/Reputed Private Hospital.
5. The entire project will be completed within 90 days from the date of civil work readiness.
6. Warranty: Five years from the date of installation & CMC for Five years after the warranty period.
7. Supplier must provide complete liquid medical oxygen plant maps, layout, designs, installation reports, safety certificates for use, licenses certificates, plant registration certificates etc.,


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Technical Specifications for Double Detector, Floor Mounted Digital Radiography System (800 mA DR System)

S.No Technical Specification

General

The offered Model should be the latest, Static Digital Radiography system suitable for Radiography of all body parts.

The unit should be a Digital system with Two wired, integrated Flat Panel Detector.

It should be CE certified and USFDA Approved.

It should have AERB Type Approval.

All Technical information in the tender document must be supported by original product data sheets

Compliance sheets must be strictly under the headings given in the tender document and should be supported by data.

Minimum two major components (X-Ray Tube/ X ray generator/Detector) must be manufactured by manufacturer of Digital Radiography system to ensure optimal functional synchrony and maintenance of the machine. Reference of product brochure and datasheet will be considered as a proof of claim.

System should have following specifications as standard:

Generator

Micro-Processor controlled High Frequency X-RAY Generator

Inverter frequency: 30kHz or more

Output Power of generator : 68KW or more

600mA at 100kV or better

Radiographic KV Range: 40 to 150KV or more with an increment of 1KV per step

mA Output: 800mA or more

Exposure time: 1ms to 10sec

Digital display of mAs and kV should be available

Should have anatomical programming radiography.

Should have over loading protection feature.

X-Ray Tube, Collimator and Tube Support

• X-RAY Tube

- It must have a Rotating Anode thermally protected X-Ray tube
- Dual Focal spot with Small focus 0.6mm x0.6mm and Large focus 1.2mm x 1.2mm
- Anode heat capacity should be 300KHU or more
- Collimator should have line laser
- Luminosity :Over 160LUX at 100cm SID
- Floor Mount Column Stand
- The X-ray Tube assembly should be Floor mounted without ceiling rail
- Tube rotation angle : 130 degree or more
- Tube stroke Longitudinal: 200 cm or more
- Tube stroke Lateral: 20 cm or more
- Tube stroke Vertical: 125 cm or more
- It should have electromagnetic brakes with fully counter balanced mechanism.

Medical Superintendent
HIMS Teaching Hospital

Hassan

Horizontal Bucky Table

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AGHU S.R., MD
Sr. & HOD

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- -Patient List with capability to Query/Search on a variety of patient demographics should be available.
- -DICOM Viewing, Windowing, Zoom, Pan, Magnify, Annotate, Mark, Measure, mirroring, gray-scale inversion.
- -It should have a Reporting software with preset and modifiable reporting templates
- -Connectivity to DICOM printers with multi-format options for printing and to external storage devices and DICOM network
- System should have stitching of images of body parts like whole spine, entire lower limb (preferably).
- The System should be fully Network-ready with capability for functioning with an existing or future PACS/RIS/HIS
- DICOM Modality Work List(DMWL) and Modality Pre-procedure Setup should be enabled on the main Workstation

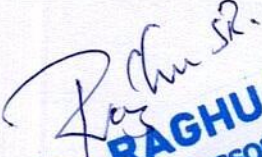
Essential Certification and training.

- Radiation safety certificate – offered model must have a valid AERB type approved at the time of submission of tender.
- Quality certificate – CE (European) and US FDA 510k clearance for the system should be available.
- AERB type approval.
- All site approval, layout approval and registration of equipment from AERB shall be the responsibility of the supplier. Following commissioning permission to operate should also be the responsibility of the supplier. Institute will provide all necessary documentary support.
- Onsite training for Doctor's and x-ray technicians for a period of minimum one month in a period of one year.

Important instructions to supplier /Participating Vendor

- All the information in the tender document must be supported by product data sheets (original copy). All information asked must be provided under heading given above. Incomplete and haphazard information will not be accepted.
- Please provide names and addresses of other installations in India & abroad, to prove past experience of the supplies.
- The supplier must ensure the availability of expert service and maintenance. Uninterrupted availability of spare parts and repair of next ten years must be assured. Please provide major parts price list of the system.
- A free comprehensive software upgrade (compatible with the existing platform) guarantee for 10years after installation.
- The brands for workstation and computers supplied will be of should be either Dell/ HP or equivalent.
- Tenderer should quote for 80KVA Servo stabilizer along with 800 mA x Ray machine.
- All the AERB required formalities including minor civil work like closure of all radiation leakage till 7 Feet height, separate console room with Lead glass window, lead lined doors, Split AC etc are to be done by the bidder.


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Horizontal Bucky Table- 4 way Table with motorized height adjustment

Compact Bucky Table with floating table top

It should have transverse movement of 10cm or more and longitudinal movement of 40cm or more

Table top position with electromagnetic brake

Bucky grid:10:1 ,60 lines/cm

Weight carrying capacity of the Table should be 300kg or more

Vertical Bucky (Wall stand)

- Floor mounted Vertical Bucky stand
- It should have manual vertical movement with electromagnetic brakes
- It should have provision to do Chest radiography with and without grid.

Detector System

- Two Solid-state wired flat panel detector of size 43cm x 43cm or more for table and wall stand to be provided
- The detector should be of Amorphous Silicon type with CSI scintillator
- The detector pixel matrix size should be 3K x 3K or more with DQE of 65% or above
- Pixel size should be 140 microns or lesser
- **Detector should be fixed/integrated/wired. Wireless detectors are not accepted.**

Operating (acquisition) Station

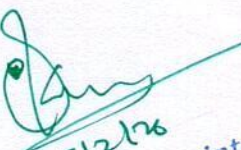
- Integrated Work Station cum console with both x ray and image parameter adjustments in same monitor
- It should have high resolution TFT/LCD monitor of minimum 23" size or more (fully flat) with additional workstation for printing purpose.
- Following features should be available on the control panel
 - - Machine on/off switch
 - - Digital Display of KV, mA & mAs
 - - KV, mA & mAs increase and decrease switches
 - - Anatomical Programming should be provided in which KV and mAs are automatically selected depending upon the part of the body to be X-Rayed.
- Operating console should have facility for entering patient demographics, viewing and processing image and documentation.
- Preview image should be available in 5sec or less.
- It should have a DVD writer and a USB port for recording image on CD/DVD or USB drives.
- It should enable viewing of exposed radiograph and allow the following post-processing functions:


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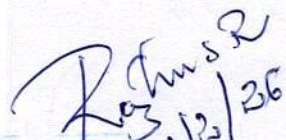
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Item No. 12 CR System

Computed Radiography Unit with Dry Imager			
Sl. No	Technical Specification		
	Computed Radiography must be a state of the art system manufactured by a reputed brand manufacturer adhering to following specifications. CR system should broadly comprise of following modules/ components:		
	Imaging recording system (cassettes & reading plates)		
	Imaging reading system (reader/digitizer)		
	Identification & CR processing workstation.		
	Dry imager.		
1	Imaging recording system (cassettes & imaging plates).		
	The following sizes of radiography cassettes along with image plates should be supported by the unit.		
	a. 35cm X 43 cm or 14" X 17": 2 nos.		
	b. 24cm X 30cm or 10" X 12": 2 nos.		
	c. 18cm X 24 cm or 8" X 10": 2 nos.		
	d. Mammography cassette 18X24cm: 1 nos. (Optional)		
	e. Mammography cassette 24X30cm: 1 nos. (Optional)		
2	Imaging reader (CR reader/ digitizer)		
	a. The CR reader/digitizer should be able to process 60 image plates/hour or more of the largest size cassette		
	b. CR reader/digitizer must be able to handle phosphor image plates. CR reader capable of handling latest Dual side/needle/structured/columnar image plates will be preferred.		
	c. It should have a resolution of 5 pixels/mm (minimum) for standard resolution cassettes & 10 pixel/mm (minimum) for high resolution cassette reading.		
	d. Digitizer must have a resolution of 20 pixel/mm (minimum) for screening mammography.		
	e. It should have input-output buffer/stacker that can load at least 4 cassettes at least.		
	f. Grayscale resolution: CR reader/digitizer should have a minimum resolution of 12 bits/ pixel for images sent to CR processing station.		
3	Identification Station & processing server		
	a. The main console must have 4GB or more RAM, and 1TB Hard Drive and 19 inch clinical grade monitor. The work stations should have RAID configuration Hard Disk and 19" monitor.		
	b. Processing server capable of identification of patient demographic to the acquired images will be preferred, else a separate identification station must be provided.		
	c. The server and/or ID station must be DMWL (DICOM modality worklist)		


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	compliant to access patient and study data from HIS or RIS.		
	d. It should provide display of acquired images with greater details of demographics viz. patient/ study listing for easy access		
	e. The server must provide full amount of post processing features viz. geometric corrections, window level algorithms, annotation like markers, predefined text, drawing lines and geometrical shapes, multi-scale image processing, measuring distance and angles, shuttering, histograms, zoom, grey scale reversal, edge enhancement, noise reduction, indication of gray scale saturation level, latitude reduction etc.		
	f. It should facilitate full-fledged DICOM printing and should be able to print multiple formats of patient study.		
	g. Should be able to send DICOM images to DICOM workstation or PACS without loss of information		
	h. Should be equipped with DICOM CD writer for transferring image		
	i. Should be able to store image on external device viz. CD or pendrive etc.		
	j. The system should have a facility to indicate over/under exposure in the preview screen. Kindly specify the image preview time.		
	k. The software must have dedicated paediatric and mammography image processing.		
4	Dry imager		
	a. The system must have a dry imager without need of any wet chemistry		
	b. It must be DICOM 3.0 compatible allowing multiple modalities to be connected at a time		
	c. The system must be able to print at least 60 films/hr of the largest size		
	d. The system must deliver its first film within 80 seconds from the request sent		
	e. The imager must have spatial resolution of 500 dpi minimum		
	f. The system must have contrast resolution of 14 bits/pixel or more. The system must have at least three online film sizes and should be capable of printing any of the 8" X 10", 10" X 12", 14" X 17" films.		
	g. The imager should support daylight loading of films.		
	h. 500 Nos. Of film of each size should be supplied		
5	Suitable UPS with 15 minutes backup for the whole system		
6	Should meet IEC 60601-1 & IEC 60601-1-2 standards and valid test report to be submitted from any NABL accredited lab or from the lab in their country of origin (in case of foreign manufacturers) for the quoted model.		
	BOQ	Qty	UOM
1	CR UNIT, as specified	1	No
2	35cm X 43cm or 14" X 17"	2	No
3	24cm X 30cm or 10" X 12"	2	No
4	18cm X 24cm or 8" X 10"	2	No
5a	Mammography cassette 18X24cm: 1 nos. (Optional)	1	No
5b	Mammography cassette 24X30cm: 1 nos. (Optional)	1	No
6	Dry imager	1	No
7	Film 14" X 17"	500	No
8	Film 10" X 12"	500	No
9	Film 8" X 10"	500	No
10	UPS with batteries	1	LS

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Item no 9. Colour Doppler 4D

Color Doppler System-(4D)

Sl. No	Technical Specification		
	High End State-of-art Colour Doppler Equipment		
	The equipment must be capable of operating in B, M, Doppler, Color flow and Power Doppler modes, Contrast microbubble ultrasound & 4D Volume Scanning capabilities.		
	It should support transducers with linear, sector, convex and volume formats. Further, it must include a full array of measurement and calculation packages. The specific minimum requirements for this equipment are as follow.		
1	User Interface & Ergonomics		
1.1	The keyboard should have Height adjustment. The adjustments should also include Keyboard rotation		
1.2	The system shall support backlight keys or provide an integrated light for ease of use in darkened work areas. The backlighting shall simplify ease of use and indicate function selected.		
1.3	The system shall include at least a 21" LCD/LED monitor for both excellent image viewing as well as providing for workflow and productivity features.		
1.4	The LCD monitor shall be mounted on an articulating arm that moves side-to-side, forward and backward.		
1.5	The unit shall have a gel warmer as an attachment for the comfort of the patient.		
1.6	The system shall have minimum Four active probe Ports in a convenient, easy to access location to maximize the availability of needed probes.		
2	Productivity		
2.1	The system shall offer an extended field-of-view imaging that operates by sweeping a transducer over the anatomy of interest. This mode shall build the extended field-of-view in a real-time manner, showing the image as it builds.		
2.2	System shall have image management features that store images by patient and include the ability to review images from different exam dates.		
2.3	System shall allow for live image and archive images side-by-side or quad display on a single monitor. This display shall allow any type of image - B-Mode, Colour, or power Doppler on either side.		
3	Real-time 3D/4D Imaging Capabilities.		
4	Shearwave Elastography should be available in Linear & convex probes stress/strain elastography should be available in Linear, convex and trans vaginal Probes.		
5	Contrast Enhanced Ultrasound Capability (CEUS)		
6	Tissue Harmonic imaging and spatial compounding techniques should be available.		
7	Data Processing.		
7.1	The system shall allow following Post-Storage image manipulation		
a	Overall B-Mode gain and grayscale maps.		
b	Overall Doppler gain, sweep speed and inverted spectral waveform.		
c	Anatomical M-Mode		
7.2	The system shall provide a display zoom function on frozen images.		
8	Scanning Parameters		
8.1	The system should have minimum 65,000 digital system processing channels.		
8.2	The system shall possess the ability to control speckle through the use of a speckle reduction algorithm that enhances borders, reduces speckle artifact and improves detail and contrast resolution in gray scale with compatibility in Colour mode, 3D and side-by-side display.		
8.3	The system shall provide the ability to scan in the compound imaging mode with 7 lines or more on all linear and convex probes.		
8.4	The system shall provide a scan depth of 2 -30 cm or more		
9	B-Mode/M-mode Imaging		

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	The systems shall provide the capability for coded tissue harmonic imaging on all offered transducers.		
	The systems shall have an — anatomical M-Mode — allowing the M-Mode cursor to be adjustable in any plane and allow for accurate measurements.		
10	Colour flow/Power Doppler		
11	Spectral Doppler (PW)		
12	Measurements and Calculations		
12.1	Measurements should be possible on frozen images as well as on images recalled from the image archive.		
12.2	The systems shall provide a comprehensive set of obstetrical and gynaecologic calculations and vascular calculations with summary reports.		
13	Image Archive and Networking		
13.1	The devices should store images onto an integrated DVD-R Multi-drive and a USB port storage device.		
13.2	The systems shall include at least 500 GB hard drive with minimum 20000 image storage capacity.		
13.3	The devices should store images in DICOM, JPG, WMV and AVI formats for maximum flexibility.		
14	DICOM Connectivity: DICOM Connectivity should be a standard feature with the hospital network and a stand-alone PC (Windows based) with suitable DICOM viewer to be supplied & suitable Laser Colour Printer Stand alone PC (Windows based) with suitable DICOM viewer, suitable colour inkjet printer with refillable ink tank to be supplied.		
15	Transducers (freq tolerance: ± 1 MHz)		
	a. Convex, with biopsy attachment. Operating Frequency: 2-5 MHz with elastography & CEUS		
	b. Linear, with biopsy attachment. Operating Frequency: 5-13 MHz with elastography & CEUS		
	c. Trans-vaginal Probe with Biopsy attachment, Operating Frequency: 4-9 MHz with elastography & CEUS		
	d. 3D/4D Volume Convex Probe of frequency of probe: 1 to 5 MHz with post processing softwares such as MPR, SSD		
	e. Pediatric microconvex probe for Neurosonogram 5-8 MHz		
16	Suitable UPS for a 30 minute backup for whole system.		
17	Should meet IEC 60601-1, IEC 60601-1-2 & IEC 60601-2-37 standards and valid test report to be submitted from any NABL accredited lab or from the labs in their country of origin (in case of foreign manufacturers) for the quoted model		
Sl No	BOQ	Qty	UOM
1	COLOUR DOPPLER SYSTEM, as specified	1	No
2	Convex, with biopsy attachment. Operating Frequency: 2-5 MHz with elastography & CEUS	1	No
3	Linear, with biopsy attachment. Operating Frequency: 5-13 MHz with elastography & CEUS	1	No
4	Trans-vaginal Probe with Biopsy attachment, Operating Frequency: 4-9 MHz with elastography & CEUS	1	No
5	3D/4D Volume Convex Probe of frequency 1 to 5 MHz with post processing softwares such as MPR, SSD.	1	No
6	Pediatric microconvex probe for Neurosonogram (5-8 MHz) - 1 no	1	No
7	TCD sector probe (Pediatric): 2-5 Mhz (Optional)	1	No
8	Suitable UPS for a 30 minute backup for whole system.	1	No
9	Stand alone PC (Windows based) with suitable DICOM viewer,	1	No
10	Colour inkjet printer with refillable ink tank	1	No
11	Suitable Laser Colour Printer	1	No
12	Hockey stick probe 8-18 MHz \pm 3 MHz (optional)	1	No

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Item No 8. Mobile X-Ray (High Frequency)

Mobile X-ray Machine

Sl. No	Technical Specification		
	High Frequency mobile X-ray machine without output 100mA or more. The mobile x ray equipment is required to perform x ray studies in emergency and trauma centre and bedside in wards and ICU. The unit should be compact, lightweight and easily transportable. It should have following specifications. The system should have been quality certified.		
	The unit should be operative on mains voltage from single phase 180-240VAC with automatic main compensation.		
1	Generator:		
i	Power: 4 kW or more		
ii	kVp. Range: 40-100 kVp or more		
iii	Deleted		
iv	mA range: 10mA to 100mA or more		
v	Exposure Time: 10ms to 2sec.		
2	The digital display:		
	kV and mA parameters, System ON, System OFF, status and fault messages on the kV and mA area		
3	XRAY Tube:		
	Stationary/Rotating Anode tube with focal spot 1.8X1.8mm or better.		
4	Tube stand:		
	The tube head should be fully counterbalanced/Spring Balanced with rotation in all directions		
5	Collimator:		
	Collimator rotation should be +45 to -45 degrees with auto shut off lamp facility.		
6	Cassette storage box:		
	The equipment should have cassette storage box for minimum of 4 cassettes.		
7	Ergonomics:		
	The unit should have small footprint. The height of the column stand should not be more than 150 cm for easy transportation in the lift etc. and areas with small height doors. The equipment should be light weight, not more than 130 kg.		
8	Certification:		
i	System be AERB type approved.		
ii	The Bidders should assist the institution for e-LORA registration formalities.		
iii	Regular QA according to AERB norms will be responsibility of bidder during warranty and CMC period.		
IV	Light weight lead apron - 2 nos (equivalent to 0.35mm or more lead)		
V	Should have import/manufacturing license from Central licensing Authority or State licensing authority of CDSCO for Medical Devices and copy of valid licenses should be submitted for the quoted model. In case the vendor has not yet obtained import/manufacturing license from CDSCO for the quoted model, proof of application for CDSCO medical device license to be submitted in the bid document and valid CDSCO license to be produced at the time of supply/ NOA for the quoted model		
BOQ			
Sl.No	Item Description	Qty	UOM
i	Mobile X-Ray Unit	1	No
ii	Light Weight Lead Apron	2	No

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**TECHNICAL SPECIFICATIONS FOR SUPPLY, INSTALLATION, TESTING
AND COMMISSIONING OF FLAT PANEL CATH LAB. WITH STENT BOOST
AND ALL REQUIRED ACCESSORIES - HIGH END**

1. Gantry:

- a) Either Ceiling suspended or Floor mounted gantry free better manoeuvrability. Facility for motorized positioning/rotation of stand from the floor base/ceiling pivot by ± 90 degrees for improved workflow and for ease of operation from both left and right side of the patient in addition to zero-degree normal head end position. Patient access should be possible from either left or right side.
- b) Gantry should move upto 20 deg/sec or higher rotation speed with non-contact sensing mechanism. Gantry rotation/ angulation ± 105 deg and ± 45 deg respectively
- c) Storage and recall of 2 gantry positions for PTCA should be possible. Gantry depth should be 92cm or more for better groin access.

2. Table: Motorized up/down, free floating 4-way tabletop, least radiation attenuation, at least 200kgs + at least 50kgs of additional weight for resuscitation in the metal free overhang area.

3. Detector:

- a. Flat Detector of latest generation of minimum 10-inch size or more diagonally, 1024 X 1024 at 14 bits acquisition or higher version is preferred.
- b. 3 formats of zoom
- c. DQE of the entire detector: Not less than 75 %, higher preferred: pls specify spec
- d. Min Pixel pitch 150 μ m to 200 μ m or lower preferred for better resolution. Lowest pixel pitch is preferred.

4. Image Processing & Storage:

- a. Minimum 100,000 images online in 1024 X 1024 matrix with 8-bit or higher storage, immediate replay to be available in the main system hard disk (not reckoning the storage space in the CD station).
- b. Images can be acquired at 0.5 to 30 images per second speed both in fluoro& cine acquisitions.
- c. Pulsed fluoroscopy should be available at above frame rates.
- d. Clinically validated QCA online in the exam room. It should be possible to do QCA from tableside.
- e. It should be also possible to do QCA in the console room.
- f. System should be capable of virtual collimation of the shutters and wedges in the last image to reduce the x-ray dose.
- g. System should be capable of measuring and displaying patient dose.
- h. System should be capable of storage and display of dynamic fluoro sequences.

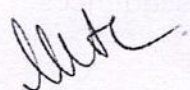
- i. System should be capable for printing /sending DICOM images on to a DICOM printer/laser camera.
- j. Lower frame speeds of 2,4,6,8,10 images/sec for carotid/renal/abdominal aortic applications:
- k. True On-line DSA at above selectable frame speeds.
- l. System should have road-mapping facility wherein subtracted roadmap is super imposed on live fluoroscopy.

5. X-ray Tube:

- a. A noise-free, oil cooled, rotating anode x-ray tube with spiral groove bearing and liquid metal lubricant for faster cooling or equivalent should be provided.
- b. Anode Heat Capacity: Anode Heat Storage should be at least 3.3 MHU to 5 MHU or more. However, 5 MHU is preferred since it a high load centre.
- c. Cooling rate or heat dissipation in kW should be at least 6,500W: Highest preferred
- d. Additional beam filtration of at least 0.9 mm Cu equivalent. Different filter sizes protocols to be Automatic or Freely selectable by cardiologist at the tableside. The filters should not reduce in thickness with increase in patient thickness or in deep angulation.
- e. X-ray tube should have secondary grid switching to reduce harmful soft X-rays to patients and Drs.
- f. System should be capable of delivering minimum 3200W continuous fluoro power.

6. Monitors:

- a. 18" LCD-TFT Monitors in exam room for live and roadmap images in exam room with monitor suspension movement across either side of the patient table as well as head/foot end.
- b. The monitor carriage should have motorized up/down movement for fixing the monitor at eye level.
- c. TFT Monitor for live image review in control room.
- d. An additional monitor for patient database is must for user-friendly patient entry without inhibiting live fluoroscopy viewing on slave monitor.
- e. System should have facility to do rotational Angiography where in the gantry can automatically rotate 90 degrees or more while doing parallel acquisition. The rotational scan speed should be minimum 20deg to 55deg/sec.
- f. It should be possible to do automatic dual axis rotation or equivalent wherein both rotation and angulation movements are combined in one single scan trajectory to reduce the X-ray dose and contrast required for doing an angio procedure.
- g. Better Stent Viewing HW and SW to significantly improve localized stent visibility in addition to any inbuilt software for stent visibility improvement.



- h. Stent viewing SW should have capability of showing fade-in fadeout of lumen for better stent visibility in relation to coronary artery wall.
 - i. Table side menu-driven with all software including Stent-boost facility.
 - j. System should have ability to record DSA runs on the CD and the embedded viewer should support review of these DSA runs at referring physicians PC.
 - k. Doctors, Nurses and operators training at site by specialist from supplier.
 - l. Remote service control with on-line facility nodal point in India.
7. **Integrated Hemodynamic Recorder** – Minimum 2 invasive pressures and 3 channel ECG with SPO2, NIBP, respiration and Cardiac output measurements with accessories 2 sets along with A4 Size printing facility. It should have a display on the monitor carriage. Recording facility to be standard.
8. Ceiling and Table mounted Shields, Arm Support.
9. Two-way microphones with speaker system.
- Examination lamp-230V, Ceiling mounted, Working distance 70cm to 140cm.
Luminance: 50,000, Light Body diameter: 22cm.
10. Continuous auto-push of images.
11. **Mandatory 3rd Party items**
- a) UPS for complete system with 30 mts back up – 1no.
 - b) Pressure Injector with 200 nos. Syringes (50 ml) and Tubing -1 no
 - c) Lead Aprons Non-Wrap around (Zero Lead)-6 nos.
 - d) Lead Aprons Wrap around- 6 nos.
 - e) Lead Eye glass – 6 nos.
 - f) Lead Glass 2mx1m- 1 no
 - g) Thyroid Shield- 6 nos.
 - h) Cardiac Workstation with following features:
 - Directly receives images from Cathlab
 - Frame Extraction
 - DICOM Store, Send, QR support
 - Import / Export image
 - Zooming facility
 - Linear and angular measurements
 - Text annotations
 - Image post-processing tools
 - CD / DVD writing with autorun CD Viewer
 - Paper Printing Support for Windows Printer
 - Film printing in user defined formats
 - Film composer with all processing features
- Hardware Specifications:**
- Processor: Intel Core i5 Quad core, 11 series or above.
 - RAM: Minimum 16 GB RAM
 - Operating System: Windows 10 professional or above.

- i) Color Laser printer

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Includes:

1. Civil work
2. electrical work
3. Vinyl flooring
4. HVAC

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