

TECHNICAL SPECIFICATIONS

LOT1- PLANT & MEDICAL EQUIPMENTS

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176	Dental Autoclave, Large Size,	LAB801-D
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178	Mortuary Lifter	LFT900
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180	Light, CSSD, mounted on the shelf	LIG018
181	Overhead Warmer	LIG025
182	SINGLE HEAD LED OT LIGHT - MOBILE	LIG031
183	Surgical Light	LIG032
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186	Light, Infrared	LIG502
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189	Ultra-intracorporeal lithotripter System	LIT050
190	Laparoscopy system	LPRSCO

191	Laser Machine	LSRSRG
192	Urological Surgery (Lithotripter)	LTHSRG-U
193	Medical Air Compressor System	MAC001
194	Air mattress with pump	MAT001-P
195	Medical Air Emergency Manifold	MEA001
196	Medical Nitrous Emergency Manifold	MEN001
197	Medical Oxygen Emergency Manifold	MEO001
198	METER, pH., temperature	MET005
199	Medical Gas Area Service Module & Alarm Package	MGA001
200	MICROSCOPE, Binocular, Laboratory	MIC025
201	Microscopes, examination, E.N. T	MIC250
202	Surgical Microscope (ENT)	MICENT
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204	Medical Nitrous Oxide Automatic Manifold	MNM001
205	Medical Oxygen Generator	MOG001
206	Medical Oxygen Automatic Manifold	MOM001
207	MONITOR, Vital Signs, on mobile stand	MON002
208	Patient Monitor with Accessories (wall mount)	MON002-W
209	Multiparameter Monitor	MON013
210	Multiparameter Monitor with Accessories (wall mount)	MON013-W
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213	MONITOR, Physiological, Recovery	MON023
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216	MONITOR, Fetal/ Maternal, Antepartum, with twin option	MON222
217	Central Monitor	MONCTR
218	Mobile Technology Cart	MTC001
219	Medical Vacuum Plant System	MVP001
220	Nebulizer	NEBULT
221	Fetal Heart Doppler	OBSDOP
222	OPHTHALMOLOGY, Workstation, complete, including patient chair &Physician stool	OPH001

223	CASE, trial lens, with electric ophthalmoscope	OPH013
224	SLIT LAMP with applanation tonometer	OPH014
225	Ophthalmoscope, indirect	OPH015
226	RETINOSCOPE	OPH016
227	Eye chart system	OPH018
228	PHOROPTER	OPH019
229	Fundus Camera With Florescence Filter	OPH020
230	Electronystagmography	OPH021
231	Rotating Chair System	OPH022
232	Microscopes, examination, ophthalmic	OPH023
233	Ophthalmoscope, direct	OPH024
234	Ophthalmic, Tonometer	OPH025
235	Auto Kerato-refractometer	OPH026
236	Laser, Excimer, Ophthalmic	OPH027
237	Auto Chart Projector	OPH028
238	Phaco-emulsifyer	OPHPHC
239	Electric Ortho Drill System	ORTHDRL
240	OT Table with accessories	OTGEN-A
241	OT Table with accessories and orthopedic attachments	OTORTH
242	OVEN, hot air oven, heavy duty, 1600watt, capacity 26 liters	OVE013
243	Ambulance Vehicle	PAV001
244	PENDANT System	PEN136
245	Phototherapy Unit	PHTLIG
246	PRINTER, Label/ slide	PRI021
247	PRINTER cassette	PRI023
248	CENTRAL PRINTER FOR MRI, CT	PRNCEN
249	Sea Ambulance	PSA001
250	Patient Warmer	PTTWRM
251	PUMP, Enteral Feeding, Neonatal	PUMEF1-I
252	Queue Management System	QMS001
253	REFRIGERATOR, medical (drug/vaccine)	REF059
254	REFRIGERATOR, Laboratory, 700 litres, Single door	REF506

255	FREEZER, laboratory, upright -20 deg.C, single door	REF521
256	Deep Freezer (Minus 86 degree)	REF586
257	Refrigerator, Mortuary, 3 tiers, vertical	REF900
258	Freeze Dryer	REFDRY
259	FLOWMETER, Air	REG101
260	FLOWMETER, Oxygen 0-15 LPM	REG102
261	REGULATOR suction, adjustable	REG105
262	Resuscitator ambubag, Adult with mask	RESABA
263	Resuscitator ambubag, Infant/ Neonatal with mask	RESABI
264	Resuscitator ambubag, Pediatric with mask	RESABP
265	Auto resuscitator	RESATO
266	Rocker, Blood Bag	ROC012
267	Reverse Osmosis System, Portable	ROP001
268	Scale, Blood	SCA010
269	Scale, Baby	SCA011
270	Weighing Scale Digital	SCA080
271	SCALE Floor standing, with Height measurement	SCA081
272	Cystoscope	SCO050
273	Bronchoscope	SCO250
274	LARYNGOSCOPE Set, Adult	SCOLRA
275	Laryngoscope set (adult and pediatric AND INFANT)	SCOLRAIP
276	Laryngoscope set (adult and pediatric)	SCOLRA-P
277	LARYNGOSCOPE Set, Neonatal	SCOLRI
278	LARYNGOSCOPE Set, Pediatric	SCOLRP
279	Mobile Lead Xray Screen	SCRLED
280	Blood Bag Heat Sealer, Hand Held	SEA012
281	SHIELD, X-ray, leaded, apron	SHX001
282	SHIELD, X-ray, leaded, half apron	SHX002
283	DIAGNOSTIC Set, Otoscope/Ophthalmoscope, portable	SPH006
284	Diagnostic Set Wall Mounted	SPH006-W
285	SPRAYGUN, water/compressed air, with nozzle attachments and hose	SPR001
286	Spirometer	SPR050

287	LSCS sets	SRG001
288	Laparotomy Set	SRG002
289	Laparoscopy Set	SRG003
290	D&C sets	SRG004
291	Hysteroscopy sets	SRG005
292	Gynae Surgery sets	SRG006
293	Emergency Gynecology Sets	SRG006-E
294	Delivery forceps	SRG007
295	Destructive sets	SRG008
296	Micro Instruments Set	SRG009
297	Cardiovascular Surgery Set	SRG010
298	Ortho Surgery Set	SRG011
299	Emergency Ortho Set	SRG011-E
300	Urology Surgery Set	SRG012
301	ENT Surgery Sets	SRG013
302	Ophthal Surgery Sets	SRG014
303	General Surgery Set	SRG015
304	Circumcision sets	SRG015-C
305	Skin grafting sets (Knife/ Board)	SRG015-G
306	Hernia sets	SRG015-H
307	Retractor sets (different types)	SRG015-R
308	Vein Stripper set	SRG015-V
309	Cautery Unit	SRG017
310	Surgical Instruments	SRG221
311	Minor sets	SRGMIN
312	BEDHEAD UNIT, Vertical	SSU001
313	SERVICE SUPPLY UNIT WITH N2O	SSU008
314	Service Supply Unit	SSU120
315	STERILIZER, autoclave, bench mounted	STE020
316	Sterilizing Unit, Steam, Table Top	STE040
317	STERILIZER, Plasma, gas, low-temperature, double door	STE042
318	STERILIZER, Steam, DD, 450L	STE060

319	Steam microbial incubator	STE101
320	Stethoscope, Adult	STH001
321	Stethoscope, Pediatric	STH002
322	SUCTION UNIT, high pressure, portable	SUC007
323	VACUUM SUCTION FOR DELIVERY	SUC009
324	Respiration Suction Pumps	SUC050
325	MRI COMPATIBLE SUCTION	SUCMRI
326	MRI COMPATIBLE WALL SUCTION	SUCMRI-W
327	Dental Surgery Set Endo	SURDEN-1
328	Dental Surgery Set Perio	SURDEN-2
329	Dental Surgery Set Prostho	SURDEN-3
330	Syringe Pump	SYR003
331	Syringe Pump, with mobile stand	SYR003-T
332	SYRINGE pump, Anesthetic	SYR004
333	Procedure table	TAB075
334	TABLE, Operating, Translucent Top, C- section	TAB076
335	TIMER, Laboratory, 60 Minutes	TIMLAB
336	Dressing trays	TRA001
337	I&D Trays	TRA002
338	Suture Trays	TRA003
339	Excision sets	TRA004
340	Exchange transfusion set	TRA006
341	Tracheostomy	TRA050
342	Tourniquet system	TRNIQT
343	TROLLEY, Infant Radiant Warmer with Cot and Resuscitator	TRO313
344	Tube, Sealer	TUB012
345	ULTRASONIC CLEANER, bench top	ULT006
346	ULTRASONIC Cleaner	ULT007
347	Portable Ultra Sound Scanner (Gyne use)	ULT014
348	ULTRASOUND SCANNER, general, mobile	ULT015
349	Ultrasonic Bath	ULTBTH
350	Uroflowmetry full system	UROFLO

351	Uropump	UROPMP
352	Ventilator, Adult-Pediatric	VEN025
353	Ventilator, Respiration Infant	VEN033
354	Ventilator, Respiration Infant, High Frequency	VEN033A
355	Ventilator, Transport	VENTRAN
356	Auto-Disinfector, endoscope, reprocessor	WAS016
357	SHOWER EMERGENCY, Eye & Face wash	WAS052
358	WASHER-DISINFECTOR, CSSD, Double door	WAS056
359	WORK SATATION, Pathology, Grossing	WOR876
360	Dental Instrument Washer	WSHDEN
361	Laundry Washing Machine (Washing Capacity 25-30kg)	WSHMCH
362	Bed pan Washer	WSHPAN
363	Waste Container, Processed	WSTCTR-P
364	Biohazardous Waste Sterilizer with Shredder	WSTSTR

ANA004 Anesthesia Machine with Accessories

Standard accessories supplied with the equipment shall be listed clearly. They shall include all necessary accessories (reusable and consumables) required for the full functionality of the proposed system, and shall cover the whole range of patient population intended for use with the offered system (neonatal, adult and pediatric).

General

1. Low-flow anesthesia system suitable for all patient sizes from pre-mature infants to large adults, with electronic, high precision gas flow meters for O₂, N₂O and air (continuously adjustable up to ~ 20 LPM) as well as infinitely adjustable emergency O₂ delivery device
2. Gas supply using central gas outlets for O₂, N₂O and compressed air, with automatic switching capability to gas cylinders in case of failure in the central supply for one or more gases.
 - Auxiliary cylinders shall be incorporated within the rear compartment of the unit (preferably hidden in a compartment or enclosure).
 - In case of central supply failure, the system shall automatically switch over to the auxiliary cylinders and emit an audiovisual alarm when such condition occurs.
 - The offer shall include O₂, N₂O and compressed air gas cylinders with the necessary pressure regulating devices and corresponding pressure gauges.
3. Color coded hoses (3 m each) and connectors for central gas supplies and AGSS ejector inlet (standard to be coordinated with the Hospital's electro-mechanical consultant or contractor)
4. Mobile system configuration, with swiveling, lockable castor. It shall incorporate at least one accessory drawer, a wire and patient circuit hanger, writing surface, etc. Physiological monitor arm and module housing base shall be incorporated for integration of such items as necessary (monitor is procured separately under item MON025)
5. Vacuum driven suction system (integrated within the unit) shall be included with the offer. To incorporate on/off switch, precision control of suction rate, integrated manometer for vacuum display and bracket for secretion jars. Secretion jar and all accessories shall be part of the offered suction package.
6. Active scavenging port for connection to the central AGSS outlet

Vaporizers

7. Three vaporizers shall be delivered with the unit; namely, Isoflurane, Enflurane and Sevoflurane. Suppliers should confirm vaporizer type with the surgical department at time of equipment delivery.
8. Simple installation, removal, and filling.
9. To incorporate double plug-in system with auto closing when vaporizer is removed
10. Single hand volume control adjustment
11. Temperature compensation
12. To hold at least two vaporizers at the same time, with interlocking mechanism to prevent simultaneous use of more than one vaporizer
13. Flow range 0.5 to 10 L/min or better.

Ventilator

14. Microprocessor-controlled anesthetic ventilator with capability to switch from spontaneous breathing or manual ventilation to mechanical ventilation without the need for reconnection.
15. An integrated active heater to prevent condensation within the breathing circuit
16. Ventilation modes: Spontaneous breathing, manual ventilation, volume-constant ventilation (IPPV), pressure-controlled ventilation, Synchronized Intermittent Mandatory Ventilation (SIMV), pressure support spontaneous breathing, pressure controlled SIMV, synchronized volume mode with pressure support, synchronized pressure mode with pressure support, etc. Other, please specify.
17. Touch screen with clear display of all ventilation set and monitored parameters, as well as waveforms and visual alarm indicators. A keyboard and rotary knob or similar shall be included if applicable for quick data entry and value settings
18. The ventilator shall incorporate preset ventilation parameter settings (defaults) based on Ideal Patient Weight and other demographic information, with capability to easily modify (and confirm) according to anesthetist criteria.
19. Ventilation parameters and alarm limits shall be retained when switching between ventilation modes
20. Battery backup for at least 30 minutes with automatic battery charging while unit is plugged into AC supply (whether the unit is in operation or stand by)
21. Variable settings for all ventilation parameters:
 - Tidal volume ~ 20mL to 1400 mL (IPPV, SIMV); 1 – 1400 mL (PCV)
 - Respiration rate: up to 60 BPM
 - Minute volume: up to ~ 25 LPM
 - Flow trigger: ~ 0.3 to 15 LPM
 - Inspiratory flow: variable up to ~ 75 LPM or better, with variable I: E ratio
 - Inspiratory pause: up to ~ 50 % of inspiratory time

- Inspiratory pressure: up to ~ 60 cm H₂O
- Pressure limit: ~ 10 to 70 cm H₂O
- PEEP: ~ 0 to 15 cm H₂O

Monitoring

22. Integrated Airway and Gas Monitoring: Automatic monitoring of inspiratory and expiratory O₂, CO₂, N₂O, and airway parameters with corresponding audio visual alarms (preset and user adjustable limits for high and low levels):
- Airway pressure with alarms for high, low (apnea), sub-atmospheric, high inspiratory/expiratory pressures, high PEEP, Peak, mean and plateau pressure, etc.
 - Expiratory volume and flow with alarms for rate, apnea, reverse flow, sensor fail, compliance, etc.
23. Integrated Anesthetic Agent Monitoring shall be included with automatic agent identification.

CO₂ Absorber

24. Fully integrated within the system; ~ 1.5 L
25. Connection for bag/ventilator with easy switching mechanism
26. Soda-lime bypass mechanism for asthmatic patients

Physiological monitor

27. The monitor, described under separate items, shall be mounted on the anesthesia machine. All required mounting accessories should be included in this offer.

Safety

The system shall incorporate extensive safety features:

28. System self-test on startup (including fully automated compliance and leak tests as well as automatic calibration of all sensors), O₂ fail safety (alarm and N₂O cutoff), and hypoxic mixture fail safety (alarm and O₂ ratio controller)
29. Self-resetting O₂ flush from central supply with flow 35 LPM @ 5 bars, without pressure increase in the vaporizer during flush activation
30. External fresh gas outlet
31. Electronic O₂ / N₂O automatic mixture regulation to ensure all-time O₂ concentration 25 % and at least 250 mL of O₂ when delivering gas flow below 1 LPM
32. O₂ level shall be maintained at 21 % when compressed air is used as the carrier gas
33. Mechanical ventilation with ambient air shall be possible in the event of complete failure of gas supply system

- 34. Manual ventilation shall be possible even in the event of external and internal power supply failure
- 35. Dynamic compliance correction and auto compliance checking after replacement of patient hoses
- 36. Applied tidal volume shall be maintained irrespective of the level of fresh gas flow (fresh gas compensation)
- 37. Connection for bag/ventilator with easy switching mechanism

ANA050 Pulmonary Function Analyser

1. Fully automated, PC based Pulmonary Function Analyzer suitable for the following examinations:
 - 1.1. Spirometry
 - 1.2. Lung volumes
 - 1.3. Diffusing capacity
 - 1.4. Respiratory mechanics (if option, price separately)
 - 1.5. Cardiopulmonary exercise testing (if option, price separately)
 - 1.6. Plethysmography (price separately, complete with body chamber)
 - 1.7. Metabolic assessment (if option, price separately)
2. Performed tests shall include, but not be limited to the following in the standard configuration (detailed list with corresponding parameters where applicable shall be provided):
 - 2.1. Pre and post bronchodilation
 - 2.2. Flow / volume loops
 - 2.3. Static lung volumes
 - 2.4. Slow vital capacity
 - 2.5. Forced vital capacity
 - 2.6. Maximal voluntary ventilation
 - 2.7. Functional residual capacity, with nitrogen washout
 - 2.8. Lung volume determination
 - 2.9. Single breath exams
 - 2.10. DLCO
 - 2.11. Diffusing capacity
 - 2.12. Exercise testing, breath by breath technique
 - 2.13. Indirect calorimetry, breath by breath technique
 - 2.14. Other, list.
3. Cart mounted self-contained system. The system cart shall be mobile, easily maneuverable on swiveling, lockable, conductive castors (≥ 10 cm diameter), to include the following:
 - 3.1. Incorporated isolation transformer

- 3.2. Incorporated gas cylinder rack (rear-mounted)
 - 3.3. Monitor mount
 - 3.4. Printer shelf
4. The system shall possess advanced technical characteristics and specifications. A detailed list of parameters and corresponding specifications shall be included. These shall include parameters related to:
- 4.1. Flow and volume measurements (sensor type and characteristics, range, resolution, accuracy, resistance, etc.)
 - 4.2. Gas Measurement system (O₂, CO₂ and multigas analyzers' type, measurement range, resolution, accuracy, etc.)
 - 4.3. Pressure and temperature transducers (range and accuracy)
 - 4.4. Plethysmography body chamber specifications
 - 4.5. Etc
5. PC based system. The included PC shall possess highest (or close to highest) technical specifications available at time of equipment delivery. Specify the following:
- 5.1. Microprocessor type and speed
 - 5.2. Operating system
 - 5.3. Memory
 - 5.4. Storage capacity (hard disk)
 - 5.5. Floppy drive
 - 5.6. External storage media (preferably CD / DVD)
 - 5.7. External data transfer (modem and network card)
 - 5.8. Printer type and speed (professional color printer)
 - 5.9. High resolution (1280 x 1024), 17" (or better) LCD display
6. Exercise treadmill shall be included in the offer. The treadmill shall be fully interfaced with the PFA system for automated (and manual) functional controls. The treadmill shall have the following specifications and characteristics:
- 6.1. 3 HP motor or better, with patient capacity up to 150 Kg or better
 - 6.2. Speed and angle auto calibration
 - 6.3. Digital numeric display and control panel
 - 6.4. Variable speed and angle to be fully compliant with the requirements of the intended testing protocols. Specify ranges.

- 6.5. Side and front rails shall be incorporated (adult and pediatric sizes)
- 6.6. Emergency OFF switch
- 7. The system shall possess advanced user interfacing capabilities such as:
 - 1. Pre-programmed (built-in) test protocols with user modification and parameter saving capability
 - 2. Patient data management system with user defined and configured data fields
 - 3. On-line report generation software, Microsoft office compatible.

ANA070 Analyzer, blood Billirubin photometer

1. Hand held point-of-care neonatal Bilirubin analyzer for quick screening of neonatal Bilirubin levels
2. Transcutaneous Billirubin (TcB) measurement for gentle, pain-free jaundice screening.
3. No blood draw shall be required.
4. Reusable Probe, with no required maintenance or special cleaning between uses or disposable tips required
5. Fully portable with rechargeable battery incorporated in the main unit
6. Base unit to incorporate battery charging and power adapter
7. Easy-to-read clear digital display showing results in mg/dL or $\mu\text{mol/L}$ (user selectable).
8. Measurement range: 0.0 mg/dL to 20 mg/dL or 0 $\mu\text{mol/L}$ to 340 $\mu\text{mol/L}$
9. Flashing alarm when measurements are greater than 20mg/dL or 340 $\mu\text{mol/L}$

ANA979 Semi Analyzer, Hemoglobin (HbA1c)**1. EASY TO USE:**

- 1.1. User-friendly features minimize training time
- 1.2. Step by step instructions on display
- 1.3. User selectable language
- 1.4. Just 4 µl blood required from finger prick or venous sample
- 1.5. Innovative blood collector allows easy and consistent sampling

2. FAST AND ACCURATE:

- 2.1. Results within 4 minutes
- 2.2. Uses boronate affinity methodology which is widely recognized as
- 2.3. Interference-free
Measuring range: 4-15% A1c DCCT
- 2.4. Imprecision: CV < 3% at 7% A1c DCCT
- 2.5. Unaffected by Hb variants, which do not result in reduced erythrocyte life span
- 2.6. Traceable to the IFCC reference method

3. EFFICIENT DATA HANDLING:

- 3.1. Barcode reader to scan calibration data, patient and operator ID
- 3.2. Stores up to 7,000 results
- 3.3. User selectable dual reporting. User can select % DCCT, IFCC mmol/mol, eAG mg/dl or eAG mmol/l
- 3.4. USB port
- 3.5. Optional label printer available

4. COMPACT AND LIGHTWEIGHT

ANA979-A Blood Gas Analyzer**Product Specifications****Instruments:**

- Should have auto-calibration capability.
- Patient barcode capability.
- Display and report only ordered tests results.
- Require small sample volume (210 µl or less for full panel in micro sampling mode.)
- Must supply some means of preventing clot introduction into measuring chamber.
 - Temperature correction for results.
- Should have ability to maximize the number of analyses when sample volume is limited.
- On board result storage capacity for at least 500 results.
- On board tutorial to assist operation and troubleshooting.
- Remote diagnostics and control capability.
- Ability to use same reagents on different models from vendor preferred.
- Low or no maintenance electrodes.
 - Lengthy on board reagent stability and shelf life.
- Electronic QC submission with real time review.
- Visible measurement chamber is preferred for convenient troubleshooting.
- Short analysis time (results available within 140 seconds for full menu of tests).

Annual Volume 5635 patient samples (including 3 levels of external controls run 0800-1600 and 2 levels run on 1600-2400, and 2400-0800 shifts)

Primary Blood Gas Analyzer

Primary Blood Gas Instrument capable of doing the following tests:

- pH
- pCO₂
- pO₂
- Glucose
- Na
- K
- Cl
- Full Cooximetry
 - Hb
 - HbO₂/HbO₂,SAT
 - HbCO
 - MetHb
 - including Bilirubin (Must have measured bilirubin)
- Full array of calculated parameters including bicarbonate and base excess

Backup Blood Gas Analyzer

Backup Blood Gas Instrument capable of doing the following tests:

- pH
- pCO₂
- pO₂
- Full Cooximetry
 - Hb
 - HbO₂/HbO₂,SAT
 - HbCO
 - MetHb

- Full array of calculated parameters including bicarbonate and base excess

Parameters:

- automatic calibration
- sample type: whole blood from syringe, test tube or capillary.
- Sample volume: 35 ul (injection or aspiration)
- UL, CSA approved.

Specifications for performance of all analyzers:

Dynamic Range

PH	6.50-8.00
pCO ₂	5-150 mm/Hg
PO ₂	0-750 mm/Hg
Glucose	0.2-40 mmol/L
Na	80-250 mmol/L
K	1-15 mmol/L
Cl	60-200 mmol/L
Bilirubin	0-1000 µmol/L (measured)
Measured	SO ₂ % 0-100
Measured Total Hb	40-240

Data Management Package:

Also requests quote for the supply of a data/instrument management package designed for data management of the above blood gas analyzers and preferably the ability to interface other point of care devices. Quotes must include all costs related to the implementation (computers, network requirements, hubs, UPS, etc).

Software should:

- Be Windows-based.
- Monitor instrument status and performance, and reagent levels,
- Have ability to control analyzer functions remotely.
- Monitor status without interrupting analysis.
- Maintain Quality Control history and generate graphical reports.
- Forward all alert messages to main terminal.
- Permit interface with other POC devices preferred (list requirements and/or limitations including cost of interfaces).
- Generate reports based on utilization by location, date and time, operator or analyzer.

- Allow multilevel access to analyzer functions.
- Have back up and archival ability.
- Provide ability to add comments to results.
- Provide cumulative patient reports.
- Have configurable output.
- Have ability to generate statistical data reports.
- Generate accession numbers.
- Be upgradeable to wireless (preferred).

All instruments must be CE or FDA approved.

All procedures must have the required regulatory approvals from CE or FDA.

ANSMRI**MRI Compatible Anesthesia****ADVANCED ANESTHESIA FOR ADVANCED APPLICATIONS**

The Anesthesia Machine should be with ventilator electronically controlled, electrically driven ventilator requires no drive gas, to make it suited for the typical MRI environment.

Should have all the major ventilation modes , from volume and pressure controlled, pressure support and SIMV/PS.

Should ventilate with ICU-like performance, providing enhanced safety, confidence and control and should be equally suited for adult, pediatric and neonatal patients. Supply with all necessary circuits (reusable) and consumables.

With advanced features such as dynamic compliance compensation, fresh gas decoupling and a pop-up APL release valve.

With leak-tight breathing system, to be able to use the Machine for low flow anesthesia.

Should be certified that it is engineered and built especially for use in powerful magnetic fields.

COMPACT BREATHING SYSTEM “COSY 2.6”

- Clic-Adapter ready (Single use absorber)
- Short, flexible COSY mounting arm for enhanced ergonomics
- Integrated cable management
- Left- and right side mounting possible for optimal adaption and support of MRI environment

HIGH RESOLUTION TFT COLOR DISPLAY

- Enhanced visibility thanks to optimized brightness and contrast
- A single screen controls all functions and monitors ventilation
- Oxygen monitoring
- Toggle between control and curve screen
- Standard Dräger user interface and operation

2 POWERFUL ADDITIONAL LEDS INTEGRATED IN THE TOP PLATE

- WARNING (yellow-flashing)
- ALARM (red-flashing)

– Visibility from different angles and from a distance

TECHNICAL DATA

BASE UNIT

Trolley Version (Cart) with COSY: Dimensions (W xHxD): approximately 39x55x35.5 in. (99x140x90 cm)
MRI Trolley (with COSY): Weight and load without supplementary cylinders and vaporizers: 365 lbs.
(165.8 kg)

POWER AND BATTERY BACKUP

Power Input : 100 to 240 VAC, 50 / 60 Hz, 70 VA, including additional power outlets
Operation time with fully charged batteries > 45 min

ANESTHESIA GAS SUPPLY MODULE

Range of fresh gas flow indicators	0.0 to 12.0 L/min
Total fresh gas flowmeter	0 to 10 L/min
O2 flush	at 87 psi (6 bar): max 75 L/min; at 41 psi (2.8 bar): min. 25
L/min Vaporizer	2 position Dräger mount (Interlock 2 - System):
Dräger	

Isoflurane Vapor 2000, Dräger Sevoflurane Vapor 2000,
Dräger Halothane Vapor 2000, Dräger Enflurane Vapor 2000

VENTILATOR OPERATING SPECIFICATIONS

Ventilator E-vent®	Electronically controlled, electrically driven
Operating modes	Volume Controlled Ventilation, Pressure Controlled Ventilation, Pressure Support, SIMV/PS, Manual Ventilation, Spontaneous Breathing

CONTROL INPUT RANGES

Breathing Frequency (rate)	4 to 60 bpm
Positive End Expiratory Pressure (PEEP)	0 to 20 cmH2O (hPa)
Inspiration/expiration ratio (Ti:Te)	4:1 to 1:4
Pressure limiting (Pmax)	15 to 70 cmH2O (hPa)
Tidal Volume (Vt)	20 to 1400 mL in Volume Control, 20 to 1100 mL
in	
	SIMV/PS
Inspiration pause (Tip:Ti)	0 to 50 %
SIMV Inspiratory time	0.3 - 4.0 sec
Inspiratory pressure (Pinsp)	PEEP + 5 to 65 cmH2O (hPa)
Inspiratory Flow (InspFlow)	10 to 75 L/min in Volume and Pressure Control
modes,	
	10 to 85 L/min in Pressure Support and SIMV/PS
	modes
Pressure Support Level (PPS)	PEEP + 3 to 20 cmH2O (hPa)
Min. frequency for apnoe-ventilation (Freq. Min.)	3 to 20 bpm and "OFF"
Trigger level	2 to 15 L/min
Integrated Safety Functions	Sensitive Oxygen Ratio Controller (S-ORC) ensures a minimum O2 concentration of 23% in an O2/N2O mixture. N2O cut-off if O2 fresh gas valve is closed or if O2 flow is less than 0.2 L/min. Audible and visual (flashing red LED) indication in case O2 pressure drops below 1.38 bar (20 psi) ± 0.27 bar (4

psi). In case of electricity and battery failure, manual ventilation, gas delivery and agent delivery are possible. Positive pressure relief valve opens at 75 ± 5 cmH₂O. Negative pressure relief valve opens at -7.5 to -9 cmH₂O.

VENTILATOR MONITORING

Monitoring
breathing

Continuous monitoring of inspiratory O₂ concentration,

frequency, tidal volume (expiratory), minute volume (expiratory), peak airway pressure, PEEP, and selection of mean or plateau pressure. In addition, all fresh gas flow information is displayed as virtual flow tubes.

Expiratory Minute Volume range
Control Screen

0 to 99 L/min

6.5 in (16.5 cm) color screen

BREATHING SYSTEM AND GAS SUPPLY

Volume of entire compact breathing system

1.7 L + bag

Volume of CO₂ absorber
absorber

1.5 L (standard) [option: Prefilled Dräger Sorb CLIC

with 1.2 Liter]

Gas Supply

O₂, N₂O and Air

Cylinder Yokes

Pin Index

OTHER

Writing surfaces

Pull-out tray (standard)

Additional accessories

Secretion suction, anesthetic gas scavenging system to be supplied with system to connect to Hospital AGSS

ARTHSYS**ARTHROSCOPY SYSTEM**

1. Microprocessor controlled shaver drive system with digital display of operating parameters and controls
2. Complete, easy-to-use surgical shaver system for use in arthroscopic surgery
3. Large and user-friendly LCD Touch screen display
4. The drive shall be capable to operate two hand pieces simultaneously
5. Adjustable speed and power. The system shall be able to provide constant power output under any load or load variation
6. Possibility to use drill and saw hand-pieces.
7. Provision of different speed range settings. Operating speeds and modes may be controlled from inside or outside the sterile field.
8. Memory locations for storage of speed settings
9. Direction of motor function: Clockwise, Anti-clockwise and Oscillating.
10. Hand-piece should be able to automatically detect the blade/bur type inserted.
11. Hand-pieces should be of ergonomic design. Quick-connects to enable easy loading and unloading of shaver blades and burs. To incorporate a variable suction control knob for precise control of aspiration through the hand piece.
12. Up to maximum 12000 RPM rotation.
13. The system shall incorporate a built-in irrigation pump for use in irrigating the surgical site. If not, then a separate irrigation pump suitable for orthopedic applications shall be quoted.
14. The system shall possess versatility by design, and be suitable for use in a wide range of surgical procedures, including arthroscopy, large bone orthopedics, and small bone orthopedics. Provide detailed list.
15. Accessories:
 - 15.1. Set of standard hand-pieces consisting of:
 - 15.1.1. Standard shaver hand-piece
 - 15.1.2. High-speed shaver hand-piece
 - 15.1.3. Small-joint shaver hand-piece
 - 15.1.4. Drill hand-piece
 - 15.1.5. Saw hand-piece
 - 15.1.6. Set of all standard cutters, blades and burs
16. The system offer shall include a drip-proof foot switch designed to operate the offered Hand pieces as well as others that may be acquired in the future for use with the system. Provide detailed specifications.

AUD250 Audiometer

- 1 A two independent channels, microprocessor controlled clinical audiometer to measure and characterize hearing loss by determining an individual's hearing threshold for pure tones and speech and then compare that threshold with a standard range of normal threshold values
- 2 The audiometer shall be full-featured state of the art audiometer. It shall feature two independent channels that are configurable for either right or left hand operation
- 3 The audiometer shall be multi-frequency audiometer.
- 4 The audiometer shall have high frequency audiometry with high frequency headset
- 5 The audiometer shall have a tabular display for speech testing to allow for quick data entry of SRT, multiple word recognition test scores with a variety of transducer selections. The tests shall be quickly scored and entered them into the display. All masking information shall be provided automatically. An alternate speech audiogram display shall be available for calculation of the PBI
- 6 The audiometer shall have dedicated graphic LCD display screen with back lighting and electronic viewing angle adjustment
- 7 Printer:
- 8 Output to external Laser printer
- 9 Built-in thermal printer
- 10 The audiometer shall be provided with connections for CD
- 11 Computer communication with built-in USB two way communication port to allow the computer to monitor and control the audiometer
- 12 The audiometer shall include built-in gooseneck microphone
- 13 The audiometer to be equipped with the following:
 - Built-in speaker and both channels shall have independent volume controls
 - Monitor headset with boom microphone
 - Patient assistant monitor headset with independent volume control
 - Test microphone/monitor headset
 - Bone conductor/vibrator with headband
 - Talkback microphone
 - Patient response switch
- 14 The clinical audiometer shall have the following specifications:
- 15 Frequency range:
 - 125-8000 Hz
 - 8000-20000 Hz
- 16 6.16 Tests available:
 - Tone, pure tone
 - Speech
 - Auto threshold
 - Bekesy
 - Difference Limen intensity
 - Difference Limen frequency
 - Loudness balancing

- Difference masked
 - Weber
 - ABLB
 - TT decay
 - Masking Limen difference
 - Monaural loudness balancing
 - SISI
 - Stenger
 - Lombard
 - Dofler steward
- 17 The unit shall include all the necessary cables to connect to Audiometric booth in addition to the standard accessories.
- 18 Optional accessories shall be listed and quoted separately
- 19 Shall be CE marked and/or FDA approved
- 20 Power supply: 100-240 VAC/50-60 Hz

AUD251**Audiometric Booth**

1. A single room audiometric booth capable of maintaining a consistent and controlled acoustic environment to provide a calibrated acoustic test area for clinical audiometry
2. The audiometric booth shall have the following features/specifications:
 - To be constructed from heavy anti-vibration, fire protection materials
 - Double rubber seal doors with special lock-down sealing mechanism
 - Window to allow for visual contact and obscure the subjects view of any disturbing activities in the control room (approximate size: 750mm Wide, 600 mm high)
 - Special anti-vibration base which absorbs vibrations from the floor
 - Inside walls to be covered by perforated metal sheets which can be washed and disinfected
 - Ventilation by a circulatory air system, with fresh air intake from the floor, and an extractor fan in the roof
3. The audiometric booth shall be equipped with:
 - High frequency fluorescent light
 - Audiometric shelf
 - Loudspeaker holder
 - Electrical outlets
 - Interconnection panel
 - Mobile loading ramp for wheelchair patients
4. The booth shall comply to ASTM standard C423-77 or equivalent

AUD252**Hearing Sensor**

1. A microprocessor controlled automatic screening tympanometer with audiometer for evaluating the middle ear function
2. Tests shall include tympanometry with selectable pressure ranges and pump speeds, acoustic reflex tests with up to 12 recordings per ear, reflex decay, and a high resolution latency test with automatic latency calculation
3. It shall determine Eustachian tube function on patients with normal or perforated eardrums
4. It shall be portable
5. It shall have the following technical data:
 - Tympanometry
 - Pressure ranges: Max +200daPa to –400daPa, or better
 - Pumps speeds: 50 to 400 daPa/s
 - Positive or negative sweep directions
 - Number of Reflexes: > 10 per ear
 - Reflex Ipsilateral: 500Hz - 4KHz
 - Reflex Contralateral: 500Hz - 4KHz
 - Reflex Stimulus Intensity: Fixed/Auto/Screen/Growth/Manual
 - Reflex Decay: 500 – 1000 Hz
 - Detachable probe tips: different sizes to be compatible with neonates to adults to be included
 - Audiometry: 250 Hz - 8KHz,
 - Test sequence: 4 complete sequences set up by user
 - Probe tone: 226Hz and 1000Hz
 - LED display
 - Printer interface
 - PC connection: included
 - Automatically transfer of data into report format
 - Rechargeable battery preferable.
 - Analyzer shall be programmable with internal memory for at least 20 patients
6. It shall completely supplied with the following parts:
 - Headband with Earphone
 - Probe system
 - Assorted ear tips
 - Recording paper rolls
 - Thermal printer
 - Dust cover
7. The analyzer shall be capable of performing the following tests:
 - Tympanometry
 - Acoustic reflex
 - Contra reflex decay
 - IPSI reflex decay

- Reflex threshold
 - Eustachian tube function for intact and perforated tympanic membrane
 - Audiometry
8. Standard accessories shall be included
 9. All necessary accessories or software shall be provided to ensure full operation
 10. Shall be CE marked and/or FDA approved

AUD253**Middle Ear Analyser**

1. The proposed middle-ear Analyzer shall be the state-of-the art and high-end
2. It shall be automatic and used for diagnostic and screening evaluations.
3. It shall have automatic and manual reflex-sequences
4. It shall have manual and automatic audiometry
5. It shall have Ipsi-contra acoustic-reflexes
6. It shall have Intact ETF-test
7. It shall have Eustachian tube-function
8. It shall have high frequency probe tones and manual tymp-test
9. Acoustic Reflex-tests
10. Automatic-Reflex: two independent and user selectable protocols
11. Automated intensity search functions
12. Manual control of all stimuli
13. Reflex-decay and to be manual controlled
14. Frequencies and intensity-ranges:
 - Ipsilateral: intensity to be up to 110dBHL
 - Frequency: 250, 500, 1000, 2000, 3000, 4000, WB, HP, LP noise
 - Contralateral: intensity up to 120dBHL. Frequency: 125 to 8000 Hz, WB, LP, HP noise
 - Audiometry: intensity to be from -10 to 120dBHL. Frequency: 125 to 8000Hz
15. Technical Data:
 - Probe-tone: 226Hz, 678Hz, 800Hz, 1000Hz
 - Memory: internal memory for two ears
 - Air pressure: automatic control
 - PC-communication: input/output for computer-communication via USB
 - Display
 - Printer: built-in, thermal, approx. of 110mm paper width
 - Power supply: (100-240) VAC, 50/60 Hz
16. It shall be completely supplied with all standard accessories/parts that put the offered model in full working condition.
17. Optional accessories/parts to be listed and quoted separately
18. It shall have FDA approval and/or CE-mark and international safety-standard

BAL012 BALANCER, ELECTRONIC

1. Electronic, bench-top balance, GMP compliant
2. Digital numeric display of weight and unit
3. Selectable units (g, mg, kg, oz, lb, etc. List)
4. Auto tare function. Specify maximum weight
5. Stainless steel circular or square platform ~ 35 cm diameter or side
6. Weight capacity up to 32Kg with 1 g resolution, with over-load protection
7. Stability within 3 seconds
8. Adjustable leveling with horizontal level indicator for easy and quick adjustment
9. Automatic self-test and verification at startup
10. Automatic calibration function. Calibration weight set to be included
11. Dust cover shall be included

BIO051 Prostate Gun for Prostate Biopsy

Instrument

- Powerful dual spring system for consistent, excellent core samples, rapid fire action
- Small size, light weight for single person operation
- One hand activation to provide easy access to the tissue sample
- Dual penetration depths for flexibility and convenience (22mm or 15mm)
- Reusable

Instrument Needles

- Extremely sharp needle trocar to collect consistently superior core samples with minimal crush
- Choice of penetration depths to access testicular and seminal vesicle biopsies
- Etched needle tip for better visualization of needle placement under ultrasound guidance
- Color coded hubs for easy identification

BLDONA**Blender (Oxy + Air)**

The Air-Oxygen Blender is a medical device used to mix Medical Air and USP Oxygen into a gas source ranging from 21% - 100% oxygen. The inlet gas connections should be standard DISS or NIST for each gas. The inlets are clearly marked and labeled on the bottom of the Blender. The outlets are standard DISS male oxygen connections with the following features:

- It should allow the clinician to turn the bleed control to ON or OFF providing quieter operation. This feature is especially useful in the NICU and PICU.
- It should have a tough ABS housing that makes the unit durable and the selection control knob should be recessed to prevent accidental damage.
- The Blender should be easily mounted on a universal mounting bracket and detached from the mounting bracket without removing hoses.
- The unit should have replaceable modular components and which is easily maintained by all biomed departments.
- There must be a large selection control knob which makes oxygen percentage adjustments easy. The infection control must be smooth and easy to clean.
- The highly accurate unit has to maintain FiO₂% even at low flows.

Technical Specification

Accuracy: +/- 3% of Full Scale Supply

Pressure: 30 – 75psi

FiO₂: 21 – 100%

Weights and dimensions:

Size: 8.9cm x 8.6cm x 9.2cm

Weight: 1.25kg

BLDWRM

Blood Warmer

- This system should work on dry heat warming system
- The unit should have efficient warming from 0 to 600 ml/min
- The unit should be automatic and without adjustment
- The unit should have fixed temperature instruction: 41°C
- The unit should have exit temperature display
- It should have in built LCD display screen
- There should also be exit temperature level alarm
- Well positioning bag detector should also be available
- Monitoring of regulation probes
- Monitoring of heating plate temperature

BLNONO BLENDER, Oxygen / Nitrous Oxide

Low Flow Nitrous Oxide Blender shall have the following features:

1. Approx. Dimension: H x W x D : 90x90x90 (mm)
2. Accuracy: 4 % or better
3. Supply pressures: 7 to 30 psig
4. Alarm activation and bypass: When supply pressures differ by 20 PSI (audible alarm, no bypass)
5. Overall flow range: 30 -30LPM
6. No gas bleed flow
7. It can be used in combination with a flow meter, demand valve, tubing and mask for administration of analgesia in applications such as oral surgery or obstetrics
8. List of accessories, shall be included:
 - 8.1. Hose, Oxygen, High Press., 15' or 3', Male/Female
 - 8.2. °90 Elbow Adapter
 - 8.3. Hose, Air, High Pressure
 - 8.4. DISS Air/Oxygen Adapter
 - 8.5. Rail Mount
 - 8.6. Air Inlet Filter/Water Trap
 - 8.7. Flow meter, Oxygen (0 - 15 LPM)
 - 8.8. Bracket, Dovetail, Rail mount

BSTPMP

Breast Pump

- A breast pump is a mechanical device that extracts milk from the breasts of a lactating woman.
- Breast pumps may be manual devices powered by hand or foot movements or electrical devices powered by batteries or electricity from the grid.

CAB035 Laminar Flow Chamber

1. The horizontal laminar air flow unit shall be designed to generate a particulate free environment and shall be suitable for medical preparations, syringe filling, and parental drug formulation.
2. Class 100 [ISO level 5] clean air work area 99.99% HEPA filter
3. Positive Pressure re-circulating airflow
4. True Laminar Air Flow Minimizes air turbulence/cross contamination.
5. Removable stainless steel work trays.
6. Large transfer chamber with sliding door.
7. Hinged access window for complete access to the working zone & for easy cleaning.
8. Hinged 10 degree Slanted Window.
9. Mobile and adjustable castor base stand.
10. Height Adjustable stand to be provided with cabinet.
11. Fluorescent glare-free lighting; External cool white lighting with minimized glare and interior heat build-up
12. UV lamp
13. Front Filter Removal
14. Mini-helices Pressure Gauge
15. Duplex Outlet
16. State Motor Voltage Regulator
17. Interior to be constructed from stainless steel for optimal cleanliness and chemical resistance
18. A built-in, low vibration, and variable speed motor/blower of approximately (1/2) Hp to direct HEPA filtered air across the work area
19. Pro-filters: disposable fiber glass
20. Large Supply HEPA Filter
21. Access HEPA Filters
22. Fresh air enters cabinet through HEPA-filtered access port
23. HEPA filters to be rated at 99.99% efficient at removing particles 0.3 μ or larger
24. Noise level: less than 60dB

CAB041-T Cabinet, Tissue storage, ventilated

1. Ventilated tissue storage cabinet for use in the anatomical pathology lab
2. Overall dimensions: 850 W mm x 750 D mm x 2200 H mm
3. Shall be constructed of double walled type 304 stainless steel
4. The cabinet shall be equipped with a self-adjusting stainless steel floor section for convenient spill cleanup and a heavy duty door for easy viewing of contents. Door may be hinged on the left or right.
5. Topside ventilation duct.
6. Four leveling feet and an adjustable stainless steel floor section shall allow convenient and easy installation.
7. A portable shelving rack shall be integrated with the system and conveniently stored within the cabinet for proper ventilation of its contents, and wheeled to tissue site for collection or to waste disposal for waste management and handling.
8. The mobile shelving rack shall measure approximately: 650 mm x 600 mm x 1700 mm. It shall have the below features:
 - 8.1. 5x Adjustable shelves
 - 8.2. 5x Tissue container containment trays (450 W mm x 600 D mm x 100 mm)
 - 8.3. Each tray has a formalin-neutralizing pad.
 - 8.4. 4x locking casters

CAB052 Cabinet, Slide Storage, stackable

1. A 14-drawer filing cabinet system for storage of microscopic slides
2. Optimal dustproof storage of slides
3. Capacity: up to 6,000 standard slides 75 x 25 mm, including trays and drawers
4. Clear storage and easy handling
5. Removable plastic trays for preliminary sorting at the working place and for storage of the slides in the drawers
6. Telescopic rail 100% extensible
7. Drawer safety system
8. Can be mounted and stacked to complete wall-to-wall cabinet assemblies
9. All accessories, drawers, dividers, etc. for the full

CAB052B Cabinet, Block Storage, stackable

1. Filing cabinets system for storage of paraffin blocks
2. Optimal dustproof storage of paraffin blocks
3. Capacity to be 6000 blocks or close similar.
4. Clear storage and easy handling
5. Removable plastic trays for preliminary sorting at the working place and for storage of the paraffin blocks in the drawers
6. Telescopic rail 100% extensible
7. Drawer safety system
8. Can be mounted and stacked to complete wall-to-wall cabinet assemblies
9. All accessories, drawers, dividers, etc. for the full capacity shall be included

CAB074 CABINET, biological safety, Class II, type B2, floor standing, Exhaust required

1. Class II, type B2 Biological Safety Cabinet with laminar air flow and HEPA filters for inlet and exhaust incorporating the followings features:
 - 1.1. Exhaust of 100% of the air in the cabinet to the environment outside of the building
 - 1.2. HEPA filters rated at 99.99% efficiency for particles having a size of 0.3 micron or larger
 - 1.3. Dual independent fan blowers for inlet and exhaust air. Specify flow characteristics
 - 1.4. The system shall incorporate a safety feature that will prevent the supply blower from operating whenever the exhaust flow is insufficient
 - 1.5. Airflow alarms in case of building or cabinet exhaust failure or any deviation from preset flow characteristics. Provide details.
 - 1.6. Automatic blower speed adjustment to compensate for filter decay and inlet / exhaust flow variations within tolerated range
 - 1.7. Control panel to be user friendly and self-explanatory, providing digital display of inlet and exhaust air flow speed and audio visual alarm indicators (preferably with specific alarm messages)
 - 1.8. Hour-meter shall be incorporated for quick checks of filter life
2. The cabinet shall possess the following specifications:
 - 2.1. Bench-top configuration. Special support base shall be included
 - 2.2. Stainless steel interior and work surface (removable for cleaning and decontamination)
 - 2.3. Cabinet interior shall possess continuous, rounded corners
 - 2.4. Powder coated steel finish to withstand cleaning agents normally used in a laboratory.
 - 2.5. Adjustable sash opening
 - 2.6. Glass front and side panels with sliding front panel for cabinet access.
 - 2.7. Audio alarm shall be activated on glass opening
 - 2.8. UV light and fluorescent light shall be incorporated within the cabinet with separate on / off switches
 - 2.9. The cabinet shall have a mains circuit breaker as well as individual power switches for all components (light, AC outlets, etc.)
 - 2.10. The following shall be offered, but quoted separately as option:
 - Gas inlet valves (2)
 - Drain opening with valve
 - Electrical outlets (2)
 - Charcoal filter (exhaust)

2.11. Low noise level. Specify

3. Specify international safety standard(s) conformance
4. Approximate cabinet (external) dimensions: 120 x 80 cm (W x D). Specify height and exact internal and external dimensions
5. If a remote blower is necessary for the proper and safe operation of the unit as intended, then one must be included in the offer. The power and flow characteristics of the remote blower and internal extraction fan will depend on mechanical design issues such as length of ducting from equipment site to building roof, number of elbows, diameter and quality of ducting used, etc. Suppliers are requested to coordinate their proposed equipment with electromechanical / Engineer following detailed review of mechanical site drawings
6. The required electromechanical services shall be specified
7. Class II, Type B2 laminar airflow unit to exhaust all inflow and down flow air through ducting system to atmosphere.
8. Floor mounted type on a base stand with free leg space for operator. Base stand to be supplied
9. Inflow air velocity of 100 FPM
10. No air re-circulation
11. Safe negative pressure design
12. Down flow air velocity of 50 FPM
13. Variable speed built-in blower of approximately 1/3 HP
14. Air flow adjustment damper
15. Approximately 2HP dedicated remote exhaust blower to deliver up to 1000 CFM.
16. Safe negative pressure design
17. 16 gauge stainless steel substructure
18. 403 stainless steel interior
19. Epoxy-coated exterior
20. Removable seamless, dished work surface
21. Sliding safety glass sash with anti-racking mechanism
22. The laminar air flow to be supplied with the following:
 - 22.1. 2 HP totally enclosed fan cooled remote exhaust blower
 - 22.2. Built-in standard service fixtures
 - 22.3. Duct connection kit
 - 22.4. Two HEPA (99.99% efficient) filters
 - 22.5. Built-in Glare-free fluorescent lighting
 - 22.6. Built-in 254 nm UV lamp
23. Overall size, approximately (WxDxH) 1200x850x2000mm
24. Ducting works from unit to outside/roofline to be carried out by the Electromechanical Contractor.

CEN003 Centrifuge, bench mounted

1. Microprocessor controlled, medium size, bench top centrifuge for general clinical laboratory use
2. To incorporate digital display for speed (actual and set), RCF and time, as well as other operating indicators such as lid locked, door closed/open, status, etc. (list details)
3. Manually adjustable parameters as well as user programming capability. State number of user defined programs and programmable parameters (speed, time, acceleration, rotor type, brake, etc.)
4. Variable centrifugation speed up to ~ 6000 rpm
5. Variable acceleration with acceleration and brake ramping. Specify range.
6. Variable Relative Centrifugation Force. Specify range.
7. Variable timer up to 60 min or better as well as continuous operation
8. Acceleration/deceleration specs should be provided.
9. Swing out rotor with four buckets (and corresponding inserts) that can be used as open or closed. Sealing lid shall be included for each bucket.
10. Rotator adaptors included:
 - 10.1. 4 x (15 x 7 ml) tubes
 - 10.2. 4 x (8 x 15 ml) tubes
 - 10.3. 4 x (13 x 10 ml) tubes
 - 10.4. Micro-tubes for microbiology
11. To incorporate air circulation system to prevent excessive temperature increase within the centrifugation chamber
12. The unit shall possess advanced features and characteristics, especially those relating to sample and user safety. These features shall include but not be limited to:
 - 12.1. Brushless induction drive
 - 12.2. SS bowl and lid interior
 - 12.3. Easily removable rotor for cleaning the bowl
 - 12.4. Internal safety chamber (steel or similar) between the bowl and outer case
 - 12.5. Insulated interior for noiseless and vibration-free operation. Specify noise level.
 - 12.6. Smooth, low noise motor (state motor suspension method)
 - 12.7. Rubber positioning feet to prevent the unit from slipping
 - 12.8. Lid opening prevention mechanism when the rotor is turning
 - 12.9. Emergency stop capability
 - 12.10. Rotor imbalance detection system
 - 12.11. Audiovisual alarm with identification of problem or error code for easy troubleshooting. List all alarms.

12.12. Electromagnetic lid locking system with power fails manual override

12.13. Each of the following additional features will be considered as an asset during evaluation of the offered unit. State availability as well as characteristics where applicable:

12.13.1. Pulse button

12.13.2. Automatic rotor identification and verification with a u t o program

12.13.3. Over speed detection system

CEN023 CENTRIFUGE, Cytology, bench top

1. Microprocessor controlled bench top centrifuge for cytology laboratory use. It shall be capable of separating and depositing a monolayer of cells onto microscopic slides using any fluid matrix without jeopardizing cellular integrity
2. To incorporate digital display for speed (actual and set) and time, as well as other operating indicators such as lid locked, door closed/open, status, etc. (List details)
3. Manually adjustable parameters as well as user programming capability. State number of user defined programs and programmable parameters (speed, time, acceleration, rotor type, brake, etc.)
4. Variable centrifugation speed up to ~ 2,000 rpm
5. Variable timer up to 60 min or better as well as continuous operation
6. Acceleration/deceleration specs should be provided.
7. The rotor shall accommodate per run a minimum of 8 sample chambers simultaneously
 - 7.1. Specify sample volume
 - 7.2. Specify maximum number of samples / run. Minimum 4
8. Easy to use and cytology-specifically designed sample handling system, including slide clip / filter / slide as well as integration onto the sample chamber and installation within the centrifuge rotor
9. Sealed lid rotor design
10. The unit shall possess high-end technical features and characteristics, especially those relating to sample and user safety. These features shall include but not be limited to:
 - 10.1. Brushless induction drive
 - 10.2. Easily removable rotor for cleaning the bowl
 - 10.3. Insulated interior for noiseless and vibration-free operation. Specify noise level.
 - 10.4. Smooth, low noise motor (state motor suspension method)
 - 10.5. Rubber positioning feet to prevent the unit from slipping
 - 10.6. Lid opening prevention mechanism when the rotor is turning
 - 10.7. Emergency stop capability
 - 10.8. Audiovisual alarm with identification of problem or error code for easy troubleshooting. List all alarms.
 - 10.9. Electromagnetic lid locking system with power fail manual override
 - 10.10. Rotor imbalance detection system

10.11. Over speed detection system

10.12. Other, specify

11. All standard accessories shall be included in the offer and listed clearly

CEN050 CENTRIFUGE, Haematocrit with reader

Haematocrit centrifuges are primarily used to determine the percentage by volume of erythrocytes in blood. In this procedure blood is centrifuged in haematocrit capillaries until the maximum cell packing density is reached. Once centrifugation is complete the haematocrit value is read off using the special evaluation disc.

1. Maximum Speed: 12,000rpm
2. Maximum RCF: 15,000xg
3. Maximum Capacity:
 - 3.1. 8x2mL micro-tubes
 - 3.2. 4x15mL Glass tubes
 - 3.3. 30x capillary tube
4. Control systemj: Micro-processor control (Brushless motor), Speed, Time
5. Alarm display: Lid open, Imbalance, over speed.
6. Function for detecting an occurrence of electrical abnormality in motor, inverter, lid interlock and speed sensor.
7. Speed limit control: automatic changeover of the maximum speed between the haematocrit tube and the 15mL glass tube use.
8. Speed setting: From 300 to 12,000rpm, 100rpm increments
9. Speed indication: Digital display, from 0 to 12,000rpm, 100rpm increments
10. Timer setting and indication: Digital display, with Hold
 - 10.1. from 1 sec to 99 sec, in 1 sec increment setting and indication
 - 10.2. from 1 min to 99 min, in 1 min increment setting and indication

CEN051 Refrigerated Centrifuge

- Spin control L
- Illuminated keys for start, stop, lid open
- For sedimentation up to 4 x 100 ml in swing-out-rotors or up to 20.000 x g in angle rotors
- Brushless drive practically maintenance-free
- Speed pre-selection up to 15.300 rpm Low speed operation from 100 rpm possible
- A magnetic rotor identification prevents rotors from over speeding, active rotor identification
- Stainless steel bowl
- Imbalance switch
- No need to open the casing for emergency lid lock release
- Easy lid opening due to pneumatic spring support
- Window in the centrifuge lid for external speed control
- Produced according to national and international safety regulations (e.g. EN 61010-2-020)
- Possibility of pre-cooling the rotors during standstill refrigerant CFC-free (R 134 a)
- Guaranteed +4 °C at max. speed with all rotors

CON250**Oxygen Concentrator****Main Features**

- Up to 3 lpm constant flow
- Up to 6 lpm pulsed flow (equivalent delivery)
- Long battery life
- Oxygen Sensing Device and audible and visual alarms
- Robust design
- Wheeled carry case available
- 12 V car adapter

Specifications

- Dimensions (H x W x D) 38,1 x 27,9 x 20,3 cm
- Weight with/without battery 8.6 kg / 7.0 kg
- Maximum Altitude 0 - 4000 metres
- Nominal Sound Level 40 dB(A) at 3.0 lpm in PulseDose delivery mode
- Oxygen Purity 91% ± 3%
- Maximum Constant Flow 3 lpm
- Maximum PulseDose Flow 6 lpm (equivalent delivery)
- Calculated Bolus Size 14 cc per l/min
- Alarm Functions
 - Low oxygen, No flow, No breath w/failsafe, Low battery, No power, Unit malfunction and High temperature

CPAP01 CPAP Machine, with mask

The offer must include all devices and device components as well as all accessories needed for the unit to function fully and properly.

1. Microprocessor controlled, compact, lightweight and portable unit for in-hospital use (non-invasive ventilation and respiratory therapy), designed for use on all patient sizes from infants to large adults. Specify patient group and weight range
2. Modes of operation shall include CPAP, CPAP with assisted breathing, apnea ventilation, SIMV and PCV
3. Ventilation parameters continuously adjustable within suitable ranges for the specified patient groups.
4. Adjustment shall be possible while the unit is operational, following operator confirmation (to prevent accidental tampering).
5. Adjustable parameters shall include:
 - 5.1. Frequency
 - 5.2. Inspired time
 - 5.3. Trigger inspiration and expiration
 - 5.4. CPAP pressure
 - 5.5. Etc
 - 5.6. Detailed specs and ranges shall be specified for each parameter
6. Ease of use and set-up / adjustment of parameters are a must.
7. The unit should have an alphanumeric display of selected parameters and a user friendly control panel
8. Battery backup for at least 30 min, with automatic battery charging while unit is plugged into AC supply (whether the unit is in operation or stand by)
9. The system should be delivered complete with all accessories, consumables, tubings (1x adult, 1x pediatric and 1 x neonatal), etc.

CPN004 Capnograph Machine with Accessories**The Capnograph Machine has the following functions:**

- Smart Capnography™ and Pulse Oximetry Technology
It includes Smart Breath Detection™, Smart Alarm for Respiratory Analysis™ (SARA) and Nellcor™ SatSeconds to support alarm management. Additionally, Smart Capnography offers algorithms that provide workflow solutions, including the Integrated Pulmonary Index™ (IPI) and the new Apnea Sat-Alert algorithm.
- Patient Information + Analysis + Efficiency = Smart
 - Apnea-Sat Alert (ASA)*
 - Integrated Pulmonary Index™ (IPI)
 - Smart Breath Detection™ (SBD)
 - Smart Alarm for Respiratory Analysis™ (SARA)
 - Nellcor™ SatSeconds
 - LoSat Expanded Accuracy
- Remote Alarm Management Connectivity Capabilities
 - Nurse Call System Alarm Annunciation
 - Vital Sync™ Virtual Patient Monitoring Platform 2.4 (VPMP)
 - Nuvon VEGA™*, iSirona™* and Philips VueLink Systems

Main Features:

- Apnea-Sat Alert
- Alarm limit default settings
- Alarm limit electronic export and printout
- Instant demo mode
- “Parameter Standby” mode
- “FilterLine® Disconnected” and “SpO2 Sensor Disconnected” alarms
- “Trend Printout” updated to include full memory and resolution as displayed on “Tab Trend” screen
- Permanent alarm silence on/off toggle

CRD012 Holter Monitor with Analyzer**Holter Monitoring System with DigiTrak Recorders**

- Designed for workflow simplification, connectivity, and decision making confidence for cardiology and electrophysiology.
- Provide noise-free hook up every time quickly and easily
- Increase your productivity and manage your Holter services cost effectively with the power of the Zymed algorithm.

Scanning software that is so easy to use and so powerful;

1. Download ECG files.
2. Scan in minutes using any of four distinct styles, all powered by the exclusive Zymed algorithm.
3. Create customized reports, electronically sign, and store them in your preferred EMR, HIS, or Philips ECG Management System.

It should offers connectivity options that make it simple for scanning services, hospitals, and physicians' offices to work efficiently and share information:

- Export Holter reports to an EMR, HIS, or Philips ECG Management System.
- Export Holter reports in HL7 format or as a vector PDF with encryption for secure email transfer.
- Analyze Holter ECG files centrally with the open, secure, and scalable Network. The Link Network, with virtually unlimited remote sites, provides secure, reliable, automatic data transfer.
- Discharge patients quickly and reduce costs by taking advantage of the exclusive interface between the IntelliVue Information Center and Holter System. This allows you to export ECG data from telemetry and patient monitors to the Holter System for generation of detailed reports.
- Input ADT/order data to recorders and scanners via IntelliBridge Enterprises.
- Electronically sign a report.
- Input patient information via bar code scanner.
- Receive email notifications for reports with critical events.

Standard features

- Event notification
- Electronic signature
- Bar code scanning
- EASI derived 12-lead ECG
- Retrospective scanning
- Custom tool bars
- Zymed Smart Tools
- Advanced editing tools
- Automatic strip documentation
- HRV time domain
- 3-channel ST and QT analysis

- Pacer display
- Superimposition of templates
- Full disclosure
- Audit logging
- vPDF report export.

CRD013 Cardiac Colour Doppler (Echo) WITH ADULT & PEDIATRIC PROBES***Capturing the Adult heart;***

- Flexible and intuitive workflow based around the user
- Clear views of the cardiac anatomy, enabling accurate EF calculations
- Live 3D volumes with excellent image quality and high frame rates - no more stitch artifacts with single beat
- Fast and easy measurements of Live 3D and MPR views
- More clinical information in one view with Live 3D and tools such as Dual Volume Display
- A new approach to cardiac mechanics quantification using the next generation of SmartExam for echo studies
- A simplified vascular exam with Auto Doppler, to assist with image and sample volume placement

Incorporate 3D into any exam at any time, moving seamlessly between imaging modes with one transducer

- Increase accuracy in measuring LV volumes, as well as calculate the area and grade the severity of aortic stenosis
- Display more clinical information, such as simultaneous views of the mitral valve from both the LA and LV aspect
- Use calibrated measurements on the Live 3D volume or MPR views without using a quantification program
- Image the entire heart, in 3D and in real time in one cardiac cycle
- Use iCrop to easily focus on structures within a volume
- Provide strong clinical decision support to your colleagues in other cardiac sub-specialties, such as surgeons and inter-ventionalists

- Save time and increase consistency
- Complete an entire stress echo protocol from the standard windows following peak exertion without manually rotating the transducer
- Re-label any view after acquisition for total flexibility
- Quantify 2D stress echo studies and communicate global and regional LV function during each stage
- Add live 3D Stress with single-beat acquisition to your 2D protocols with the touch of a button
- “Slice” the volume to find the best views and content for making diagnoses

- Show more clinical information of structures in real time with dual volume display
- Obtain calibrated measurements of 3D and 2D slices directly on the system
- Reveal information once only available through surgery
- Evaluate blood flow with live 3D color before closing an incision, and make any repairs necessary
- Use clear, accurate images and quantitative data to support care planning

- Use 3D modeling to help determine if a valve should be repaired or replaced

Capturing the pediatric heart;

- Obtain real-time 3D views of cardiac structure in a single beat, with high frame rates and excellent image quality
- Use analysis packages designed specifically for the challenges of congenital heart disease
- Perform transesophageal echo on patients weighing below 3.5 kg
- Quickly access views without manual manipulation of the transducer using iRotate
- Perform TDI strain analysis on small hearts
- Assess flow defects with confidence using Live 3D zoom and 3D color
- See more information about the structures and anatomy with dual volume display
- Use live xPlane to acquire two simultaneous orthogonal views without manually rotating the transducer

To be supplied with FULL range of probes to be used with all range and ages of patients.

CRD014 CARDIAC, Stress Test Treadmill with ECG

- Facilitates clinical workflow by wirelessly performing stress procedures in an intuitive, customizable format
 - Provides advanced clinical decision support tools to assist with clinical evaluation
 - HIS connectivity to quickly acquire patient demographics and orders to speed workflow
 - Native bi-directional DICOM connectivity to improve interoperability with hospital information system
 - Interfaces with IntelliSpace ECG Management System to enhance workflow of cardiographs, stress, and Holter
 - Electric confirmation with a signature of stress reports
 - Export final reports to the hospital electronic medical record (EMR/EHR) upon completion of report
-
- Wireless, compact patient module reduces the hazard of tripping over wires, and enhances patient comfort and movement while still transmitting a clear, high-quality signal
 - Reduces motion interference with the elimination of unwieldy cables
 - Facilitates patient transition from exercise to bed for stress-echo procedure

Import options

- Download patient data from your HIS or manually enter patient data
- Download patient data from DICOM RIS

Export options

- Easily export final patient reports in a PDF format
- Interface with Philips ECG Management systems and IntelliBridge Enterprise
- Easily export PDF reports to DICOM PACS
- DICOM MPPS (Modality Performed Procedure Step)/DICOM Storage Commitment transaction to DICOM PACS/RIS

Minimum requirements workstation hardware

- Desktop PC HP all-in-one computer model 8300 (or equivalent)
- RAM: 4 GB
- Hard drive: 160 GB
- CD-RW/DVD combo drive
- LAN for in-hospital networking capabilities
- Two RS232 ports¹
- Four USB ports
- Keyboard: standard PC – wireless or wired
- Mouse: two-button with scroll wheel – wireless or wired

Operating system

- Windows 7 Professional/Enterprise/Ultimate
- 32-bit and 64-bit
- Windows 7 Enterprise/Ultimate compatible bwith BitLocker encryption

- Windows 8.1 Professional 32-bit and 64-bit

Display

- All-in-one computer or customer-provided PC display Accepts 19" to 24" screen
- Full HD resolution: 1920 x 1080
- Customer-supplied display – preferably 24" capable of 1920 x 1080 resolution2

Interfaces

- Trackmaster TMX425/428 series treadmill
- Cardiac Science TM55 treadmill
- Ergoline Ergoselect ergometers
- Lode Corival ergometers
- Lode and Ergoline integrated NIBP
- SunTech Tango+ and Tango M2 NIBP/SpO2 device
- USB laser printer

Advanced Interface Module (AIM)

- Stores software options
- ECG wireless receiver
- USB connection to PC
- Two analog and one TTL output for stress echo and NIBP sync

Wireless Patient Interface Module (PIM)

1. 2.4 GHz (802.15.4 ISM band)
2. Signal acquisition rate of 8,000 samples per second
3. Single AA alkaline battery lasts up to 900 minutes (30 min/test x 6 tests/day x 5 days)
4. Configurable power-save feature after 3 to 15 minutes inactivity
5. On-device display of:
 - Lead map with lead connection status LEDs
 - Battery level indicator/power status
 - Signal strength indicator (only during an exam)

Leads

- 10-lead wire, single connector lead set
- AAMI and IEC color coding
- Snap or grabber connectors
- Normal and extended lengths (1050 mm/1450 mm)

Printer

- Thermal printer (**optional**)
- Customer-supplied USB laser printer

Trolley

- Overall dimension: 76 cm x 66 cm x 183 cm
- Overall weight: 90 kg/198 lbs
- Overall load capacity for trolley top: 10 kg/22 lbs

Features:

- Mounting for all-in-one PC or customer-supplied wall-mountable display using a VESA adapter

- Isolation transformer
- Wire storage tray (1)
- Wire accessory basket (1)
- Cable hook (1)
- Paper tray (supplied with thermal printer)
- Large writing surface
- Cabling included
- Front-locking casters
- Optional LED surface light
- Optional mounting arm for NIBP device
- Optional shelf for Laser jet or customer-supplied PC
- Additional cable hooks
- Additional wire accessory baskets

Power supply

- Isolation transformer input voltage per local requirements,
- included with trolley
- 120 V or 230 V
- Output power ratings of 600 VA
- Maximum four output receptacles

Connectivity options

- HL7 Admit, Discharge, and Transfer (ADT) demographics input3
- HL7 orders input3
- DICOM modality worklist (DWML) input3
- Native DICOM MWL
- Native DICOM report output
- HL7 ePDF output3
- IntelliBridge Enterprise
- IntelliSpace ECG and TraceMaster Vue (**standard**)
- Remote review station

Filters

- AC mains: 50 or 60 Hz
- High pass: 0.02, 0.05, 0.15 Hz
- Low pass: 40, 100, 150, 300 Hz
- Baseline wander and artifact filters
- ECG data stored unfiltered: 0.02 Hz and 300 Hz

Application

Factory defaults and user-configurable components:

- Default standard exercise protocols with ability to create new protocols, up to 100 total protocols can be stored and edited
- Three types of user profiles with access to different functions: administrator, clinician, technician.
- Ability to create up to 100 user profiles with specific user names and passwords. Windows and/or domain user name and password can be used.
- Arrhythmia notifications

- Default event labels with ability to add new event labels
- Ability to input orders and ADT information
- Ability to monitor patient during recovery
- Ability to replay exam
- Ability to store and review up to one hour of full disclosure waveform data
- Export final report (PDF) to a variety of locations

Treadmill

- 115 V: 0.5 to 10 mph
- 220 V: 0.5 to 12 mph
- Length: 199 cm/78.5 in
- Width: 84 cm/33 in
- Maximum weight capacity: 227 kg/500 lbs

CRD016 ELECTROCARDIOGRAPHY Machine

This shall be an easy-to-use Resting Electrocardiograph Unit that will provide a high standard of performance and can be used for both day-to-day routines. It shall have the following minimum features:

1. 12-channel ECG recorder with data storage capability and built-in rechargeable battery
2. Minimum 10", active-matrix LCD Color display
3. High-resolution, built-in digital thermal writer
4. Operation with function keys and operation panel and /or keyboard
5. Analysis program: simultaneous 12 channel analysis and interpretation for adult and pediatric patients.
6. Digital recording module with inter-lead patient cables, remote start/stop and rhythm writing through integrated function keys including adapter for 12 leads.
7. Storage: not less than 200 ECGs.
8. Paper-feed speed options: 5, 12.5, 25 and 50 mm/s.
9. Displayed screen data: Heart rate, patient name and ID number, time, display of up to 12 channels (graphs and leads), speed, amplitude and filter settings, alerts.
10. Vector cardiograph: Vector loops of P, QRS, ST-T displayed individually or combined.
11. Late Potential Analysis Hi-Res.
12. Visual indication of:
 - Battery status
 - Loose electrode contact.
 - System status
 - Artifacts
13. Capability of simultaneous printing of all 12 ECG channels
14. Prints out reports including: heart rate, P duration, QRS duration and PR interval.
15. Comprehensive ECG interpretation software package with arrhythmia identification shall be included.
16. Patient data entry including: Name, ID number, age, sex and weight.
17. Line frequency filtration through digital filters
18. The 12-channel ECG recorder shall have the following minimum features /specifications:
19. Modes: automatic and manual.
20. Output: serial RS232.
21. Power: AC operation and battery operation.
22. Paper: A4 thermal sensitive.
23. Gain: 5, 10 and 20 mm/mV.
24. Defibrillator protection: up to 400 J.
25. Original mobile cart with at least one drawer, cable hanger and all standard accessories (patient cable, reusable electrodes kit for adults and pediatrics, adult and pediatric disposable electrodes, gel and printer paper) shall be included

CRD017**Photo Calorimeter**

Highly functional in nature, instruments should be technically incorporated by utilizing fine grade components. These equipments are based upon the advanced software configurations which assist the users in accurately studying the influence of UV stabilizers across cosmetics, food and pharmaceutical industries.

Features:

- Perfectly configured
- Technically advanced
- Compact and reliable

Technical Specification:

Photo Calorimeter Digital 1 ml. sample.

* Wavelength Range	400 to 700 nm
* Resolution	0.01
* Absorbance	0-1.99
* Photo Detector	photo cell
* Display	2-1/2 digit LED
* Light Source	Tungsten lamp.
* Filters	8 filter (400,420,480,500,520,540,620,680 nm)

- Absolute colour measurement according to the human eye (CIE1931).
- High speed measurement (18000 luminance measurements per second, 5500 colour measurements per second).
- Measure colour point and luminance in various colour spaces (XYZ, Yxy, CIELab, Yuv, LCH etc...).
- Trigger input for in line applications. General Purpose I/O for control.
- Direct measurement or through fiber optics.
- Measure via a PC (also embedded) or stand alone mode.
- Windows, Linux and MAC OSX compatible.
- SCPI command interface for easy integration in other applications.
- Directly supported in Labview / Labwindows / Visual Studio via VISA library. Other programming languages that support VISA can be used.
- USBTMC standard compliant.

DEF100 Defibrillators, AED

1. Portable defibrillator.
2. The unit shall have the following minimum specifications:
 - Light weight and portable
 - Biphasic energy waveform
 - The unit shall operate in manual mode and semi-automatic defibrillation (AED mode)
 - The unit shall be designed to withstand dust/water, shock, drops and vibration
 - With built-in LCD display
3. Energy:
 - User selectable, 1 to 200 J (increment according to range)
 - 200 Joule recharging time: < 7 seconds
 - Synchronized and asynchronized operation
 - With capability to synchronize with patient monitors
 - Shall be designed to allow for pre-connected electrodes
4. ECG/Heart rate monitoring:
 - Through 3-lead ECG cable
 - Through paddles
 - With external pacemaker
 - Automatic paddle impedance measurement
5. Alarm/self-test system:
 - With advanced automatic self-test at switch on
 - Audiovisual warning in case of errors and measured parameters out of limit
6. Accessories, the following shall be included:
 - External adult paddles
 - External pediatric/neonatal paddle
 - Disposable pacing pads (x50)
7. Optional Internal paddles to be quoted separately and to be selected by the user.
8. Battery/Power supply:
 - Electrical outlet (direct AC operation)
 - With internal rechargeable batteries, minimum of 30 shocks at maximum energy or monitoring time: 3 hours (minimum)
 - With battery status indicator
9. All cables and accessories required for fully functional system shall be included
10. Shall be CE marked and/or FDA approved
11. Power supply: 110-220V, 50-60Hz

DEF100-B Defibrillator Biphasic

The following specifications define a portable, lightweight; battery operated automated external defibrillator to treat patients requiring basic and optional advanced cardiac life support. The equipment shall be capable of monitoring patients ECG, deliver defibrillation energy, and document critical ECG medication events.

A. Physical Specifications

1. Weight - Complete unit, excluding batteries, shall not exceed 5 pounds.
2. Dimensions - To aid in storage and portability, the general overall dimensions of this unit shall not exceed 9 3/8" x 9" x 3" (238mm x 229mm x 76mm)
3. Device Construction - The case shall be constructed to withstand the standard operating conditions in a physician's office and/or hospital. The device must also withstand the harsh operating conditions associated with ambulance use. An optional carrying case with handle and shoulder strap must be available with accessory storage compartments.
4. Safety - The unit shall be safe to use both for the operator and the patient. The unit must comply with IEC 601-1 for leakage currents.
5. Service Life - Under normal usage, the unit shall have a service life of not less than five years (excluding routinely replaced items such as a battery, accessories, etc.).
6. Warranty - Parts and labor shall be furnished under warranty for five full years.

B. Operating Specifications

1. The unit shall operate after exposure shock forces as described in MIL-STD-810E, Method 516.4 (shock); Procedure I (functional)
2. The unit shall operate after exposure to vibration forces as described in MIL-STD-810E, Method 514.4, Category 10
3. The unit shall operate when exposed to non-condensing humidity of up to 95% or 10° to 95° C (non-condensing)
4. The unit shall pass IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection, water ingress
5. Operating temperature range shall be 0° to 50° C, with storage temperature range -30° C to 65° C.

C. ECG Monitor / Display

1. The unit shall have a minimum 5.7" (145mm) diagonal Backlit Liquid Crystal Display
2. The unit shall offer an optional of two-lead monitoring capability using standard snap style or wrist style ECG monitoring electrodes.
3. The display resolution shall be 320 X 240 pixels

4. The device shall have the capability of displaying an ECG waveform on the Liquid Crystal Display
5. ECG signal shall be via, disposable defibrillation electrodes
6. Frequency Response - 0.5 to 40Hz
7. The unit shall display a heart rate. The heart rate range shall be 20 to 300 BPM
8. The unit shall display battery performance gauge with 10 segment display
9. The unit shall provide an ECG Sweep Speed of 22.5 mm/second

D. Defibrillator

1. The device shall have the option of a passcode protected manual override to allow for use by Advanced Cardiac Life Support Personnel
2. The optional manual mode shall incorporate low energy settings within the range of 5 to 50 joules
3. The defibrillator shall incorporate a load compensation circuit to adjust the defibrillation waveform, based upon the patient's impedance, to precisely deliver the selected energy
4. The defibrillator must be capable of the following energy selections in the Basic AED mode: 200, 300, 360 Joules
5. The defibrillator must be capable of the following energy selections in the optional manual mode: 2,5,7,10,20,30,50,70,100,150,200,300,360 joules
6. The defibrillator shall charge to 360J in 8 seconds, with charged battery inserted in the unit
7. The device shall have the option of configurable energy protocol via passcode

E. Power

1. Removable battery shall be located on the front of the machine and also serve as a carrying handle
2. The rechargeable battery system shall utilize Nickel Metal Hydride technology
3. The non-rechargeable battery system shall utilize Lithium Manganese Dioxide technology
4. The unit shall have a battery icon, which will indicate the relative charge state of the battery.
5. The non-rechargeable lithium battery system shall deliver 200 shocks at 360 joules / 360 minutes of monitoring / 5 years standby performance / 10 years of shelf-life (5 years storage + 5 years of standby)
6. The rechargeable nickel metal hydride battery system shall deliver 80 shocks at 360 joules / 150 minutes of monitoring / 2 years standby performance/ 3 hours of ECG monitoring. Charge time no to exceed 2 hours

F. Data Recording/Reporting Options

1. The device shall have an internal memory of 1MB capable of recording event and ECG waveform data of 100-4 second ECG samples or 300 time stamped events
2. The device shall offer the option of storing ECG and event data to an external nonproprietary PCMCIA data card

3. The device shall have the option of printing Log Reports directly to a commercially available printer via serial – to – parallel cable.
4. The device shall have the option of transferring ECG and event data directly to a PC via serial cable for reviewing and/or report generation

G. AED Operation

1. The device shall provide 13, volume adjustable, audible prompts
2. The device shall provide 13 text prompts on the unit liquid crystal display
3. The device shall offer two-button operation: On/Off, Discharge, (4) software configurable buttons

H. Biphasic Defibrillation Capability:

1. The device shall utilize Orbital Biphasic waveform technology as the primary energy delivery option
2. The waveform shall be biphasic truncated exponential
3. The biphasic waveform shall compensate for patient impedances by adjusting the duration of the waveform
4. The biphasic energy protocol shall be supervisor configurable to adapt to local and / or changing protocols and protected via supervisor passcode access.
5. The biphasic waveform shall allow for escalating energies up to 360 Joules
6. The biphasic waveform shall employ a terminating current to depolarize the myocardial cells utilizing a BTE waveform tilt that shall not vary significantly for patient impedance from 25 Ohms to 100 Ohms.
7. The device shall utilize a 500-microfarad capacitor to facilitate the functions of the BTE waveform
8. Each phase of the waveform shall be truncated exponential
9. The waveform shall exhibit the same general characteristics for impedances above and below 85 ohms.

DEF100-E Defibrillator with adult and pediatric electrode and phasing electrode**Technical Specifications**

- Biphasic Defibrillator with Monitor and Recorder Synchronized Cardio version
- Non fade display LCD / TFT
- Biphasic transthoracic (external) defibrillation waveform delivery system.
- Cardio version: Defibrillation output synchronized to ECG, with sync Indicator
- Energy Charging Control on front panel & Apex paddle
- Charge Indicators: Visual indication of charging process
- Audible indication of charge up to selected energy level selected energy level value displayed on monitor.
- Charging Time: Less than 10 sec for Maximum Energy
- Energy Delivery: Control on Sternum & Apex paddle.
- Waveform Trace speed. 25 mm/sec.
- Screen size: approx.5.5 inch. Or more diagonal.

PARAMETERS:

- ECG
- Numeric: Heart Rate –
- Waveform: ECG Trace
- Lead Selection: Paddles and Lead I,II & III through patient cable
- Variable gain: to adjust size of ECG wave form

OUTPUT PARAMETERS:

- ENERGY
- Delivered Energy. Adjustable from 2-200 Joules for External Defibrillation
- Adjustable from 3 to 50 Joules for internal / Pediatric Defibrillation
- ALARMS:
- High and low Heart rate alarms
- Low battery warning

Other features:

- Recorder for ECG waveform and printing of Defibrillation energy
- Pacing Facility
- AED Facility
- 3 channel Recorder speed: 25 mm/sec
- AC 220V / 50Hz
- Built-in Rechargeable battery with charger for 3 hour operation & minimum 50 shocks at max. Energy.

- External Pediatric Paddles attachment
- Country of origin USA,EU,JAPAN
- 02 - Years Warranty with Parts

DEN001 AMALGAMATOR, dental

1. Mixer for amalgam, glass ionomer, cements and other pre-dosed dental materials in capsules or syringes
2. Mixing programs are preset and user defined
3. Large LED Display
4. Two Selectable Speeds
5. Quiet, Reliable Operation
6. Sturdy-built Capsule Holder
7. Protected mixing chamber with integrated safety cover
8. Mixing Frequency: 4500 and 4000 oscillations per second (+/-5%)
9. Mixing Time: Adjustable from 1 to 99 seconds
10. Noise level: less than 65db (A)

DEN002 Light Cure Unit, Dental

1. Powerful light intensity from 900mW/cm² up to 1200mW/cm²
2. Wave Length of 420nm – 480nm
3. “BEEP” at each 5-seconds to indicate remaining curing time
4. Various preset curing times from 5 to 40 seconds.
5. Three Preset Programs
 - 5.1. Fast mode: Full power all the time
 - 5.2. Soft 1 mode: increasing power in first 5 seconds, then full power till the end
 - 5.3. Soft 2 mode: increasing power in first 5 seconds, then half power till the end.
6. Inner Build-in light meter within the base
7. Small, lightweight and ergonomic
8. Cord/cordless operation
9. Standard accessory to include: hand piece, charging base, adapter, cover tips, light guide
10. Base station charger shall have a built in light meter

DEN005 Dental Chair with light and scaler

Complete dental units for dental clinics to be supplied as per below technical specifications:

1. Dental chairs shall have the following features:

- 1.1. 3 section with removable articulated head rest
- 1.2. Good lumbar support for patient comfort
- 1.3. Electrically operated with Zero program. Back tilt and height adjustment
- 1.4. Upholstered in impermeable washable material
- 1.5. 2 armrests: 1 fixed and one movable for easy patient access and wheelchair transfers
- 1.6. Foot control or a touch pad with auto presets positioning of dental chair movements and auto return with safety stop
- 1.7. Ergonomic contoured design
- 1.8. Right/left convertibility

2. Chair mounted cuspidor

- 2.1. Cast aluminum body
- 2.2. Cuspidor basin shall open out to 90°
- 2.3. One piece removable ceramic bowl for simple and effective cleaning
- 2.4. Easy to position suction outlet terminal
- 2.5. High & low volume suction tubing
- 2.6. Removable suction manifold with washable filter
- 2.7. Removable autoclaveable cup and cuspidor fillers
- 2.8. Brackets shall be suitable for most chair models
- 2.9. Configured for connection to surgical suction system (air-ring, wet-ring, liquid- ring, single-surgery or centralized systems)

3. Dentist's console shall have the following features:

- 3.1. Agile, lightweight instrument console on a double self-balancing arm with wall or floor fed services.
- 3.2. Two air turbines: One normal, one with micro head
- 3.3. 1 micro motor with contra angle and straight hand pieces
- 3.4. Ultrasonic scaler with power adjustment
- 3.5. Chip blower
- 3.6. Mayo tray top Tray holder on articulated arm with two aluminum trays
- 3.7. Autoclavable tray handles and hand piece rests
- 3.8. Integral air pressure gauge
- 3.9. Water coolant adjustment via foot control
- 3.10. Accommodates 4 instruments
- 3.11. 3 in 1 Syringe, heated
- 3.12. Exhaust filter for pneumatic instruments (turbine / micro motor)

3.13. Induction micro motor power / speed adjustment, forward & reverse control

- 3.13.1. Soft-switch membrane keyboards shall be able to control:
- 3.13.2. Dental light on/off
- 3.13.3. Chair movements, chair programming and calling up of programmed positions
- 3.13.4. Cup filling and cuspidor rinsing
- 3.13.5. Waterline rinsing

3.14. Foot control for dentist's tools to be incorporated

4. Assistant's tray shall have the following features:

- 4.1. Wall or floor fed services, with saliva ejector hose
- 4.2. Two suction cannulas: HVE (High Volume Evacuator, large) and LVE (Low)
- 4.3. Two supplementary instruments (syringe or LED curing lamp)
- 4.4. 3 in 1 Syringe
- 4.5. Mayo tray
- 4.6. Cuspidor controls
- 4.7. Chair controls (rinse, reset, direct and programmed movements if available)
- 4.8. Dental light on/off
- 4.9. Support, in the operating position, for the extracted suction tubes (handles)
- 4.10. Removable autoclavable handles
- 4.11. Detachable autoclavable suction tubes

5. Dental light and monitor

- 5.1. The dental light shall be mounted on the unit.
- 5.2. Spring balanced articulating arm shall allow optimum ergonomic positioning by the operator.
- 5.3. Light intensity shall be easily adjusted by using a dimmer switch.
- 5.4. Smooth rounded surfaces for easy and effective cleaning.
- 5.5. Variable light intensity, up to 22.000 lux
- 5.6. The monitor shall be mounted on the light support column

6. Central compressed air system and central vacuum system shall be supplied and installed in the dental pumps room in the B1 level as part of this RFP.

The compressed air and vacuum pumps shall be of medical grade, designed and manufactured for use with high-grade dental units. They shall possess the required functional features and capacity to supply all dental units simultaneously under

heavy workload conditions. It shall be equipped with automated controls, backup system in case of failure, etc. in accordance with the highest standards and norms of the industry. All system components shall be low-maintenance, low-noise, etc.

7. STOOL, dentist, with back support, mobile

8. Assistant stool, mobile

9. Instruments

- 9.1. Each dental unit shall be supplied complete with a full set of dental instruments and hand pieces with adequate quantities and types according to each room specialty, and to allow the consecutive work in each dental clinic on 3 or more successive patients without the need of the dentist to wait for instruments reprocessing and sterilization.
- 9.2. Each room set shall be listed by item and quantity separately and referenced by room code and room specialty.

DEN007 STA, Single Tooth Anesthesia System

1. The STA Single Tooth Anesthesia System unit is uniquely capable of numbing a Single Tooth.
2. It shall be computer-controlled drug delivery system that incorporates DPS Dynamic Pressure Sensing technology for safer and painless delivery of anesthesia
3. The computer-controlled STA system shall provide real-time visual and audible feedback when delivering anesthesia.

DEN009 Prophylaxis, Dental

- Dental ultrasonic prophylaxis unit.
- Used in dental clinics for the removal of calculus.
- Unit requires water and air supplies.

DEN010 Compressor, 1 Unit

- The compressor shall deliver high air quality for dental applications.
- This item shall be deleted in case a central supply compressed air is provided
- The delivered air shall be dry, hygienic and oil-free.
- The compressor type shall be oil-free and include hygiene filters and air dryers.
- Four cylinder-type air compressor with output of up to 65 L/min at 5 bars, or better, but not more than 90 L/min
- Pressure range of approximately 5 to 7 bars
- Air tank capacity of 20 liters, or better, but not more than 50 Liters
- Compressor housing cabinet to be included
- Noise emission of the unit outside the cabinet shall not exceed 70 dB or better
- The compressor unit shall be configured to serve 1 dental delivery units. It must be fitted complete with all necessary installation kits, fittings, fixtures, pipes, hoses, etc.

DEN011 Vacuum pump, 1 unit

- The suction unit shall comprise a vacuum pump and separator to separate air, liquids and solids.
- The Vacuum pumps shall be deleted in case a central supply is provided
- The suction shall provide continuous, high reliability suction operation.
- The suction flow rate capacity shall be up to 8 lit/min.
- Vacuum pump housing cabinet to be included
- Noise emission of the unit outside the cabinet shall not exceed 70 dB.
- The suction unit shall be configured to serve 1 dental delivery units. It must be fitted complete with all necessary installation kits, fittings, fixtures, pipes, hoses, etc.

DEN015 Table Top CAD-CAM Milling Machine**Open system**

Use of standard STL files in input for the maximum compatibility with other components of the system. No constraint to use our materials / tools and no mandatory yearly software updating: it will work forever even if not updated. And you can also choose the colour (RAL table or carbon fibre).

Highest Precision

Movement on XYZ axes with precision ball screw and backlash recovery, directly driven by brushless motors with precision encoders for continuous check of position. The 2 rotary axes have the same motors and zero backlash gearboxes.

5 Axes in Continuous

5 axes managed in continuous are needed for modern implantology, which places implants in the optimum position and optimum angle, with no restriction. For simpler jobs, the 5 axes are often useful to reduce the blank thickness (less time and less consumption of materials and tools).

16 Tools Available

Automatic tool change, 16 tools on board; automatic measure of tool length (high precision) and check for tool breakage. Mainly build in aluminium alloy (Anticorodal 6082) to reduce the machine weight.

Technical Specifications	
Weight	220 Kg
Tool change	Automatic. 16 positions
Tool positions	Up to 60,000 rev / min
Rotating Angles	A = $\pm 30^\circ$ C = 360°
Discs	$\varnothing = 98,5$ mm with border
Position Precision	$\pm 0,001$ mm (1 μ)
Tool length	30 – 50 mm

DEN016 CAD-CAM Furnace**Sintering Furnace**

1. The sintering furnace should have high process reliability due to constant temperature control, homogeneous temperature distribution in the firing chamber for final sintering of distortion-free zirconia frameworks.
2. The capacity of the furnace should be upto 3 bowl.
3. The sintering furnace should have Maximum process reliability due to optimally coordinated, fully-automated sintering programs for different restoration sizes
4. The sintering furnace should have 9 sintering program locations; 6 of them individually programmable by the user
5. The sintering furnace should have 3 stackable sintering bowls for maximum utilization of the furnace
6. The sintering furnace should have minimum required space and installation time (supply required)
7. The furnace should perform sintering at the press of a button – very easy operation with touch-screen technology
8. The heating rate should be 1C-30C/min.
9. Speed sintering : 31C to 70 C /min
10. Emergency cooling system should be provided.
11. Automatic start time calculation by hours and weekdays.
12. The sintering furnace should have clear display of the sinter curve and sinter status
13. The sintering furnace should have compatable electrical connections: V/Hz 220-240/50-60, Power: 1720 - 3500 W, Fuse (fast): 12.5 A, Temp Degree protection – IP20
14. Thermal protection class according to DIN EN 60519-2: Class 0
15. All necessary accessories should be provided.

GLAZING FURNACE :

Microprocessor based programmable vacuum furnace for dental ceramics (Elevator model) should have

1. 100 operating programs for all types of ceramics
2. Vacuum range from 60 to 100 mbar
3. Automatic parameter control
4. Operating voltage 220V / 50 Hz
5. Power consumption with vacuum pump : 1700 W, Without vacuum pump : 1500 W
6. Vacuum pump data :
 - Suction capacity upto 22 L/min
 - Vacuum from 0.9-0.94 bar
 - Weight with vacuum pump : 35 kg

DEN018 CAD/CAM Scanner

- 1 Mobile intraoral digital scanning system with wire connected handheld scanner, computer and touch-screen monitor enclosed in mobile cart
- 2 CAD software for acquired data processing
- 3 The system is provided for patient teeth and gums topographic characteristics 3D image acquisition and production of crowns, inlays, onlays, veneers, bridges, implants, diagnostic and work models in dental reconstruction design (CAD) and manufacturing (CAM) systems.
- 4 Scanning process is shown in real time and real colour on carts monitor.
- 5 Scanner:
 - Wire connected to the cart.
 - Surface acquisition of patients tooth and gums
 - Built-in video camera
 - Scanning in natural colour
 - Acquired data is fully compatible with orthodontic treatment planning software.
 - Scanning material: All
 - Precision: 15 microns
 - Contrast agent: None - Technology for spray- and powder free intraoral scanning
 - Scanning tip: Detachable, autoclaveable, 2 scanning positions – upward and downward, anti-mist system
 - Output format: open DCM/STL
 - Scanning technology: Real colour, ultrafast optical sectioning
 - Light source: LED
 - Laser specification: Class 1M
- 6 Computer (supplied system shall be the latest technology available at the time of purchase):
 - Processor: Intel i7 Quad core processor 3.4 GHz
 - Operating system: Windows 7 Embedded, 64 bit
 - Data storage: 300GB
 - Connection: Wireless IEEE802.11b/g/n - 2.4GHz; Wired Gigabit Ethernet; Bluetooth
 - Display: 19" touchscreen, resolution 1280x1024 or better
- 7 CAD software features: processing acquired 3D image, archiving, patient treatment planning and analysis, patient management, appliances design and preparation for manufacturing (CAM).
- 8 The unit shall include all required accessories, software, licenses..etc for full functionality
- 9 Shall be CE marked and/or FDA approved

DEN019 Dental soldering/ Brazing Unit, Hydrogen

- 1 Hydrogen micro flame soldering unit
- 2 Microprocessor-controlled operation with integrated leak detector
- 3 Gas generator with a maximum gas output of 240 litres/hour
- 4 Automatic pressure adjustment
- 5 5-stage switch adjusted to gas consumption of the corresponding nozzle size
- 6 Safety pressure control device
- 7 Thermally controlled gas flow locking device
- 8 Electronic filling level check with low-level indicator and automatic disconnection device
- 9 Reactor, 5 liters capacity
- 10 Gas cleaning/condensate separation without consumption materials
- 11 Low-noise cooling air by a temperature-controlled cooling circuit
- 12 1.5 M rubber hose
- 13 Pencil torch with flame cut-off system
- 14 Soldering torch tips (needles): 24, 23, 22, 21, 20, 19, 18
- 15 Water-Lock valve (flash back arrestor)
- 16 Two tanks with bleed holes and transparent level tubes
- 17 All available accessories to be listed and quoted separately
- 18 Unit must be CE marked and in compliance with applicable safety standards

DEN020 Dental Vacuum Forming Unit

- 1 It shall have powerful vacuum system
- 2 It shall have electronic temperature-controls and thermostat to support symmetrical heating
- 3 It shall be easy to use and have simple operation
- 4 It shall have motorized closure, digital timer, and pre-calibrated settings for common uses
- 5 Results shall be very accurate
- 6 Unit must be CE marked and in compliance with applicable safety standards

DEN021 Porcelain Furnace

- 1 Cycles for all types of porcelain to be included
- 2 It shall include vacuum pump
- 3 It shall have a wide program-memory to allow the user to use a multiple of porcelains
- 4 It shall have a jet to cool the muffle very fast
- 5 It shall have a feature that enables the user to create, modify, print and transfer programs to furnace straight from PC
- 6 It shall have USB port
- 7 It shall have large easy read screen
- 8 It shall have membrane-keys for keypad-durability and less wear
- 9 It shall have high quality muffle that gives excellent insulation and saves energy and costs
- 10 It shall have excellent thermocouple for unsurpassed accuracy
- 11 It shall accommodate 100, 200, and 300 gram rings for more flexibility
- 12 Unit must be CE marked and in compliance with applicable safety standards

DEN022 Dental Oven, Drying

- 1 Interior of oven to be made of specular stainless steel by argon-arc-welding techniques, and the exterior to be made of high-quality steel sheet
- 2 It shall adopt temperature control protection, digital display, microcomputer PID temperature controller with timer function
- 3 It shall have hot air circulation system that composed of blower fan and proper air-channels
- 4 It shall have high quality silicon gasket to ensure long-life under high temperature and to be easy to replace
- 5 It shall have alarm system for temperature-limiting to ensure experiments run safely
- 6 Chamber capacity to be approx. 25 liters
- 7 To be completely supplied with built-in printer
- 8 Unit must be CE marked and in compliance with applicable safety standards

DEN023 Dust Extractor

- 1 It shall be powerful and quite suction-system
- 2 It shall have simple operation system by using touch panel
- 3 It shall have excellent health-protection
- 4 Suction power to be approx. from 20 to 30 liters.sec
- 5 Suction-efficiency: 99.99%
- 6 Jack for foot-switch to be included
- 7 Filter-change to be very simple and fast
- 8 It shall have excellent protection from very fine dusts
- 9 To be included with two filter bags
- 10 It shall have 3-filter system: combined use of filter-bags, very fine filter, and carbon filter
- 11 It shall be freestanding-type
- 12 The housing to be made from ABS (impact-resistant, non-corroding)
- 13 Shall be CE marked

DEN024 Articulator

Articulator must incorporate the following features:

- 1 Tracking fossae, which allow upper and lower frames to remain together during excursive movements
- 2 Wide posterior access that gives enhanced visibility and lingual access
- 3 Durable condyle elements which provide silky-smooth condylar movements
- 4 Single centric lock, which engages with a simple finger movement
- 5 Interchangeability System which allows accurate interchanging of casts between articulators
- 6 Generous inter-frame distance for bulky casts and die systems
- 7 Condyle release mechanisms to permit easy separation of upper and lower frames, if desired
- 8 Condylar guidance featuring:
 - Adjustable condylar inclination
 - Progressive side shift
 - Fixed inter-condylar distance of 110 mm

DEN025 Micromotor

The Micromotor shall have the following features:

- Adjustable speed of approx. 1000 to 35000 rpm
- Support holder, reduction clamps, and key for clamp adjustment
- Dual rotation direction
- Table top power feeder
- The power feeder shall have controls for speed adjustment
- The power feeder shall have a digital display.
- Complete with laboratory hand piece and foot switch.

DEN026 Hydraulic Flask Press

The hydraulic flask press shall have the following features:

- 1 Generate approximately 4000 to 7000 kg of thrust or better
- 2 Manometer displaying measurement in bars
- 3 Approximate dimensions: 22cm W x 19cm D x 47cm H.
- 4 All needed accessories to be included

DEN027 High Speed Grinder with Dust Extractor

- 1 For efficient finishing of dental castings made of non-precious and precious metal alloys.
- 2 Powerful motor with high torque
- 3 Fast tool change with quick-action collect chuck release without switching off the motor
- 4 Hinged transparent cover
- 5 Powerful extraction system with easy changing of filter
- 6 Quiet flat belt drive and vibration free bearing.
- 7 Extraction capacity: 3.4 m³ / min or better
- 8 Speed: 24,000 rpm or better.
- 9 Dimensions (H x W x D): Approximately 20 x 40 x 50 cm
- 10 All needed accessories to be included.

DEN028**Polishing Unit**

- 1 The unit must have the following minimum specifications:
 - Quiet.
 - Powerful and non-vibrating
 - Held in position by 4 suction cups
 - Dust and damp proof
 - Completely electrically insulated
 - Complete with two pig tail chucks.
 - Speed: 1500 and 3000 rpm, approximately
 - It shall include protection screen
 - It shall include viewing light
 - Axis height: approx. 13-14 cm.
 - Output: 400 W.
 - Dimensions: approximately: 40 H x 50 W x 30 D cm.
- 2 The unit must be supplied with a Powerful extraction system with easy changing of filter.
- 3 All needed accessories and fittings must be supplied.

DEN029 Trimmer Unit

1. The cast trimmer is used for grinding working casts for partial or complete prosthodontia as well as for orthodontia.
2. Strong motors that rotate the disc at 2800 rpm and at the same time maintaining a constant high torque.
3. A curved and pleasant design which is also dust and water repellent
4. Powder is vacuumed up by connecting a high power aspirator to the machine.
5. Both trimmer and aspirator to be programmed to function simultaneously
6. Easy maintenance
7. Rotation speed: 2800 rpm
8. Absorbed power: 800 W
9. External disc diameter: 25.4 cm
10. Inner disc diameter: 2.54 cm
11. Feed power: 230 V- 50/60 Hz
12. General switch with automatic disconnection
13. Dimensions (WxDxH): approximately 30x38x32cm
14. All needed accessories to be included
15. The cast trimmer should come with extra grinding discs (one Silicon carbide disc and one diamond disc)

DERM05 Cautery Machine

Cautery Unit with the following features:

1. Micro Processor Base Operating System with self-diagnostic test at power up
2. Pressure less Cutting
3. Minimum lateral Heat
4. Micro Smooth incision
5. Reduced Operating Time
6. Frequency : 4.1Mhz

Modes of Function:

7. Cut : 70% Cut, 30% Coag
8. Coag : 60% Coag, 40%Cut
9. Fulguration : Available

The unit shall include:

10. Foot Switch for activation
11. Autoclavable Hand pieces.
12. Patient Isolation Transformer for Complete Safety.
13. No Need of Ground Contact Or Skin Contact Of Antenna Plate

DERM14 LED CHROMOTHERAPY

Applications:

1. Acne treatment
2. Anti-aging, skin rejuvenation
3. Improving lymph circulation
4. Reducing fine lines, wrinkles, stretch marks
5. Curing skin diseases
6. Repair traumatized skin caused by laser treatment
7. Anti-hair-loss treatment and Hair Regrowth treatment
8. Wound recovery
9. Accelerating skin absorption of cosmetics

Specifications:

10. 3 LED colors: Red, Blue and Yellow
11. Variable output power: 10 levels, 60mw/LED
12. Pulse frequency: 0 to 110 Hz
13. Treatment area: at least 20cm*50cm
14. Minimum 1200 LEDs

DERM22 Fractional Laser

Features:

1. Acne scars
2. Actinic keratosis
3. Laser skin resurfacing
4. Improve texture tone and pore size
5. Smooth wrinkles around the eyes and mouth
6. Rejuvenate neck, chest and hands
7. Minimizes age spot and blemishes
8. Remove intractable chloasmas and pigment
9. Sun damage recovery, Pigment reduction, and Tattoo removal.

Specifications:

10. Wavelength 10.600 mm
11. Controller: color touch LCD screen
12. Pulsed radio frequency: 0.530 W
13. Working state: Ultra pulse mode
14. Average power: 30 W
15. Scan pattern: Square, rectangle, round, triangle, oval, 6-diamond, Shape, lineor customized graphics
16. Scan pattern Size: 0.1 x 0.1 mm - 20 x 20 mm
17. Scan mode free scan; sequence scan; maximum distance scan
18. Spot Size: 0.2 mm at the focus
19. Pulse duration: 0.1 - 10 mm adjustable
20. Spot distance: 0.1 - 2 mm adjustable
21. Pulse energy (power): 1 mJ to 100 mJ adjustable on LCD screen
22. Interval between scanning: 0 - 6s
23. Laser apparatus: Sealed off laser device stimulated by direct current
24. Condenser focus: F: 50 mm
25. Beam divergence angle: 0.3 mrad
26. Aiming beam: 635 nm infrared ray
27. Beam transport device: 7 articular arms
28. Cooling system: Water + airAntenna Plate

DIA004 ELECTROSURGICAL Unit

1. Electrosurgical units (ESUs) having the following characteristics shall be proposed:
 - 1.1. ESU generator
 - 1.2. Footswitch control
 - 1.3. Hand switch control
 - 1.4. Active probes/forceps.
2. System shall be fully compliant and integrated with the smoke evacuation system
3. The ESU shall operate in pure cut, blend cut, and coagulation.
4. The ESU shall operate in monopolar and bipolar modes.
5. The ESU shall be controllable by hand switch or footswitch.
6. Foot switches should be splash proof and unaffected by common OR fluid spills. They should be easy to clean. As the foot switch is usually hidden by the surgical drape, it should have suitable mechanical protection against accidental pedal depression.
7. To improve safety and for consistency among units, the cutting switch should be activated by the leftmost control, and the coagulation switch should be activated by the right switch, as viewed by the operator.
8. Switches should not be susceptible to sticking in the ON position.
9. The ESUs shall have continuity of the return electrode cables and should preferably have protective circuits to monitor contact quality of the return electrodes.
10. The cable continuity monitor shall be designed such that it defeats ESU operation if the return electrode is not plugged into the ESU or if the return electrode cable conductors become excessively damaged.
11. Device design should prevent misinterpretation of displays and control settings.
12. Switches and controls should be protected against accidental setting changes (i.e., due to someone brushing against the panel).
13. The display of estimated delivered output power is a desirable feature.
14. The output power display should be within 20% of the actual power delivered in a manufacturer-specified load resistance of 100 to 1,000 Ω unless the operator's manual contains a different value.
15. The maximum output power shall be at least 300 watts for pure cutting and at least 150 watts for blended cutting.
16. The maximum output power shall be at least 120 watts for coagulation.
17. The maximum output power for the bipolar waveforms shall be at least 50 watts.
18. The maximum open circuit voltage shall be at least 2,000 peak to peak volts (Vp p) for pure and blended cutting.
19. The maximum open circuit voltage shall be at least 6,000 Vp p for coagulation.

20. The maximum open circuit voltage for the bipolar mode shall be at least 300 Vp.
21. Under a fault condition, the ESU should limit the flow of current between the active electrode and ground. The unit should also limit current flow to ground when the dispersive electrode is attached to the patient and the patient is also contacting ground.
22. The power delivered to a 200 S load connected between each active output on the ESU and ground should not exceed 4.5 W when the unit is set to deliver maximum output power.
23. The power decrease measured through impedances ranging from 100 to 1,000 Ω , connected between any active output and ground, compared with that normally delivered between those impedances when connected between the active and return electrodes, should be greater than 80% for the entire impedance range.
24. If the unit does not meet these criteria, it should be labeled as ground-referenced.
25. Radio-frequency electrosurgical current leakage from the return electrode should be minimized to reduce the risk of burns resulting from current flow through grounded patient contact points.
26. The power delivered to a 200 S non-reactive resistance connected from the return electrode to a common electrical ground should not exceed 4.5 W at the maximum setting in any mode with the electrodes operated open-circuited.
27. The power delivered to the 200 Ω load should not exceed 4.5 W when the unit is operated at its maximum output power through its rated load connected between the active and return electrode.
28. The ESU's performance should not be affected by EMI radiated or conducted through the power lines from another device.
29. Units with more than one electrosurgical output ideally should be able to be activated from only one output at a time.
30. Activation of one output should defeat all other activation modes.
31. Special operating modes that allow simultaneous activation, such as the dual-demand coagulation mode, should be clearly indicated on the unit and in the operator's manual.
32. The unit or the manual should show some indication of the power levels delivered when one electrode is activated at a time and when two electrodes are in contact with the tissue and activated simultaneously.
33. Ideally simultaneous activation of the cutting and coagulation switches should result in activation of only the output mode set to deliver the lower output power.
34. The ESU must have an audible activation-tone indicator.
35. It should not be possible to defeat the activation-tone alarm.
36. Audible alarms should be distinct and easily identified.

37. If the alarm volume is adjustable, it should not be possible to turn the volume down so low that it is not likely to be heard.
38. If an alarm is silenced, a visual display should clearly indicate which alarm is disabled.
39. All alarms should be fully explained in the operator's manual.
40. ESUs that have return electrode contact quality monitoring features should meet the following requirements.
41. The contact quality monitor shall be designed such that it defeats ESU operation if the quality of contact between the return electrode and patient poses the risk of a burn.
42. The area of the electrode remaining in contact with the patient's skin just before an alarm occurs (hereafter referred to as the critical area) should not heat to a point that will injure the skin when the electrode carries an amount of energy equivalent to an I²t (current squared H time) heating factor of 40 (0.82 A for 60 sec).
43. If the monitor circuit determines that the contact quality of the return electrode is inadequate, the circuit should audibly and visually alarm and preclude energizing the ESU's output or deenergize the output if the ESU is already energized.
44. An audible alarm should sound for any condition that poses a significant risk to the patient.
45. It should not be possible to silence or disable the audible alarm. Its volume should be sufficiently loud and/or distinctive (e.g., intermittent or alternating tones) to be heard over noise levels typical of the OR.
46. The monitor circuit should be usable on all patients and should not provide erroneous alarms (i.e., alarms that exist for no clinically valid reason) or insatiable alarms (i.e., alarm conditions that are not clinically valid and cannot be satisfied by an action of the clinician).
47. If hydration or dehydration of the electrode affects its impedance characteristics such that it will not be able to provide a safe return path for electrosurgical currents, the monitor circuit should detect this condition and alarm and defeat activation of the ESU.
48. Controls should be sealed against penetration of liquids.
49. The ESU should be easy to clean, disinfect, and/or sterilize, as appropriate.

DIA150 BP Apparatus

1. Mobile aneroid (manual) sphygmomanometer used to manually measure patient's blood pressure.
2. Large approximately 15 cm aneroid blood pressure gauge, with scale ranging from 0 to 300 mmHg, with clear dial, numbers, and face
3. The cuff, gauge, and bulbs should be made of heavy-duty materials that withstand harsh environment.
4. The bulb should have a metal air release valve.
5. The unit should include a quiet, sturdy, easy-rolling, adjustable-height stand, with four legs and heavy weighted base to minimize tilting in transport.
6. The stand should have wire basket to store the cuffs and tubing
7. The Manometer should be securely installed in the stand, with 360° swivel capability.
8. 120 cm-coiled tubing or better
9. Cuff sizes: 3 sizes, adult and pediatric, one of each shall be included
10. Standard accessories shall be included
11. Shall be CE marked and/or FDA approved

DIA151 Thermometer

1. To measure both forehead and ear temperatures by detecting the infrared heat emitted by the respective areas. The functional range of the thermometer in forehead mode is between 89.6°F - 107.9°F (32 °C – 42.2 °C) and 32.0°F - 212.0°F (0 °C- 100 °C) in ear mode.
2. Convenient and easy to use
 - Easy mode of operation – Take measurement with the press of a button
 - Can be used anytime – even when your child is asleep
 - Obtain reading faster than an oral thermometer and more comfortable than a rectal thermometer
 - Ergonomic design
 - Color coded display for fever detection
3. Accurate and quick
 - Utilize the latest infra-red scanning technology – accurate, precise and instant readings.
4. Safe and hygienic
 - Unlike traditional thermometers, there is no glass or mercury that could pose as a potential health hazard. The thermometer is made up of ABS and TPR plastics, a infra-red sensor, an Infrared temperature measuring element, a microcomputer controlled circuit and a LCD screen.
 - BPA and latex free.
5. Memory Recall Has a Memory Mode that can recall 20 previous readings to track changes in temperature.

DIAMCH Dialysis Machine

1. This shall be a mobile high-end system to perform extracorporeal dialysis to replace the main activity of the kidneys in-patients with impaired renal function, such as those with end stage renal disease (ESRD).
2. The delivered unit shall be a multifunctional system that meets or exceeds the following specifications:
 - Acetate and Bicarbonate Dialysis
 - Volumetric Ultra filtration (UF) rate to be specified.
 - Na (Sodium), Bicarbonate and UF profiles customizable to individual patients
 - Automatic test mode
 - Automatic priming
3. Heat and chemical disinfections with automated disinfection and cleaning programs
4. Vital signs monitor
5. Double and single needle dialysis applications
6. Variable dialysate flow rate
7. The unit shall be capable of several modes of therapy that can be selected depending on the condition of the patient:
 - Continuous Mode
 - Intermittent Mode
8. The unit shall comprise the following:
 - A large color display
 - Precise volumetric controlled ultra-filtration
 - Closed system priming
 - Modules for high-flux and low-flux treatment
9. Screen display:
 - Graphic presentation of treatment parameters including dialysate pressure, trans-membrane pressure, conductivity, flow rate, elapsed time, remaining time, prescribed time, UF rate, UF time, UF volume etc.
 - Physiological data and profiles on high-resolution LCD color display.
 - Sodium profiles.
 - Easy handling by detailed operator guidance, warning messages and alarm reports on the LCD display.
10. Safety features:
 - Arterial and venous pressure monitoring: Stop blood pump and clamp line
 - Trans membrane pressure monitoring
 - Blood leak detector: Stops blood pump and clamps venous line
 - Air bubble or foam detector: Stops blood pump and clamps venous line
 - Conductivity monitoring: Stop dialysis
11. Arterial blood pump:
 - User administration for pediatric bloodlines
 - Air bubble detector: Ultrasonic and optical detection.

- Heparin pump with both bolus function and programmable delivery time
 - UF removal rates should be monitored with accuracy of +/- 10% of the set volume
 - Selectable dialysis fluid temperature: 35 °C to 39 °C
 - Blood leak detector sensitivity: less than 0.5 ml blood/min (Hct = 25) at maximum flow 800 ml/min.
12. Alarm system:
- Power failure
 - Change of pressure of venous and arterial lines
 - TMP pressure alarm if <0mmHg
 - Air bubbles or foam into dialysate
 - Dialysate temperature change. Alarm if >41 °C
 - Dialysate conductivity change
13. Automated rinse and disinfection program after dialysis
14. Compatibility to a variety of blood lines and dialyzers
15. Automated self-test on each start of the machine
16. All alarm indicators are clearly displayed on the machine
17. Connection capability to a hemodialysis information system to document patient treatments.
18. Power supply: 110-220V, 50-60Hz
19. Shall be CE marked and/or FDA approved
20. The unit shall include all required accessories, modules, cables, software, licenses etc for full functionality
21. Standard accessories to be provided
22. Disposable sets qty.10 to be provided.

DIAROM Reverse Osmosis Machine

Water treatment system is an important component in haemodialysis treatment. It has to be well maintained and monitored in order to prevent any complication that may arise from chemical and microbiological contamination. Chemical contaminants may give rise to haemolysis and encephalopathy whereas, bacterial contamination may give rise to acute pyrogenic reaction and production of pro-inflammatory cytokines, which can eventually lead to amyloidosis, suboptimal response to Erythropoiesis Stimulating Agents (ESA), malnutrition and accelerated atherosclerosis. Therefore, all centres shall adhere to the standards for maximum allowable chemical, bacterial and endotoxin contamination based on minimum requirements of ISO 23500:2011 Standard.

1. Basic requirements in a water treatment system
 - The room that houses the water treatment system shall be located in an area, which minimizes the noise and disruption to haemodialysis treatment.
 - There shall be adequate ventilation to prevent over-heating.
 - Floor traps shall be made available to drain excess water.
 - Flow diagram of the water treatment system shall be displayed in the water treatment room
 - All water treatment components and equipment shall be clearly labelled.
 - All columns in pre-treatment shall be opaque.
 - Pressure gauge shall be installed before and after each component to monitor fouling of the components. Daily recording of the parameters of water treatment system shall be performed. (See Appendix 3)
2. Daily testing for chlorine/chloramine and hardness shall be done every morning prior to starting haemodialysis treatment. All centres shall have a water treatment system that delivers water quality that meets the ISO 23500:2011 Standards. (Appendix 1 & 2)
3. Components of Water Treatment System
 - (a) Raw Water Tank
 - Appropriate material shall be used for water storage. Examples: stainless steel-grade 316, high-density polyethylene (HDPE)
 - Shall be covered
 - Shall have a low-level alarm sensor shall be fixed
 - Shall be inspected for defects and cleaned at 6 monthly intervals
 - Shall have an appropriate capacity that is adequate to enable at least one shift of treatment to be completed if water supply is disrupted
 - (b) Raw water pump
 - Two stainless steel raw water pumps are recommended
 - (c) Multimedia Sediment Filter
 - Backwash is required 1-3 times per week
 - (d) Carbon Columns
 - Empty Bed Contact Time (EBCT) shall be ten (10) minutes in total or five (5) minutes for each filter stage if two carbon filters are used to optimise the chlorine and chloramines removal.
 - Backwash is required one to three (1-3) times per week and the process shall be done individually for each column by adjusting the timer one to two (1-2) hours apart.

- (e) Softener Column
 - Consist of polymer resin, which will be regenerated by Sodium Chloride from brine tank or equivalent
 - Shall be placed after Carbon Column
- (f) Guard Filter
 - Removes particles between 1-5 microns in diameter
 - Safe guard the Reverse Osmosis unit pump and membranes from clogging
 - Casing shall be opaque
 - Filter shall be replaced as necessary or when there is pressure difference of 15 psi before and after the Guard Filter. However, a reference to the manufacturer's recommendation is advisable.
- (g) Reverse Osmosis (RO) Module
 - The RO product water shall fulfill the ISO 23500:2011 standard. (Refer to Water Quality).
 - Type of RO membrane: Spiral Wound Polyamide, TEC of Polysulfone or equivalent.
 - The recovery rate of RO system shall be at least 50%.
 - Standard water treatment system shall have the following parameters displayed:
 - ♣ Conductivity of permeate
 - ♣ Permeate flow rate
 - ♣ Reject flow rate
 - ♣ Raw water pressure
 - ♣ Guard-in & guard-out pressure
 - ♣ RO (membrane) system-in & system-out pressure
 - Water sample ports shall be available for sampling at the following points:
 - ♣ Post first carbon column
 - ♣ Post second carbon column
 - ♣ Post softener column/Pre-RO module
 - ♣ Immediate post RO module
 - ♣ First point in the distribution loop
 - ♣ Last point in the distribution loop
 - ♣ Last point of the dialyzer-reprocessing loop.
 - In the event of RO pump failure, the softened water shall be diverted into the 0.2 microns Bacterial Filter as temporary measure. However, this shall not exceed 24 hours.
- (h) Treated Water Storage Tank
 - The treated water storage tank is used primarily for dialyser reprocessing or indirect feed for dialysis.
 - Shall be made of stainless steel (Grade 316) or High Density Polyethylene (HDPE) with a conical or bowl shaped bottom and shall drain from the lowest point of the base to ensure complete emptying of the tank.
 - Tank shall be covered with tight fitting lid and fitted with Ultraviolet Irradiator for destruction of bacteria. There shall be an air vent with a bacterial filter.
 - Two booster pumps are recommended for channelling the RO water through a bacteria filter (0.2 micron).
- (i) Water Distribution Loop

- Treated water from the water treatment system shall be distributed to the individual dialysis stations, dialyser reprocessing stations using distribution materials and designs which will minimize or avoid microbiological contamination.
 - Material of the distribution loop varies from Acrylonitrile butadiene styrene (ABS), cross-linked polyethylene (PEX), stainless steel (high grade 316L) or equivalent.
 - Materials suitable for heat disinfection include cross-linked polyethylene (PEX), Polyvinylidene Fluoride and stainless steel.
 - If ozone disinfection is used, all the above materials are suitable except PEX.
- (j) Disinfection of Distribution Loops
- A minimum of six (6) monthly (or as specified by the manufacturer's recommendation) chemical disinfection of distribution loop including the connections to dialysis machine shall be done using per acetic acid 2-3% or chlorine dioxide especially when materials of distribution loop are not heat resistant.
 - Weekly heat disinfection of the tank and distribution loop is recommended for a system which incorporates a heater and uses heat resistant piping.
 - The water shall continuously flow within the loop at a minimum flow velocity of 1.5 feet per second (FPS) for direct feed system and 3.0 FPS for indirect feed system.
 - Additional disinfection may be needed in the following circumstances:
 - (a) Installation of new system
 - (b) Upgrading of existing system
 - (c) Out-break of pyrogenic reaction
 - (d) Breach of the closed loop system.
 - (e) When microbial testing of treated water reach action level

DIATHM Diathermy Machine

A mobile microwave diathermy is used in physical therapy treatments to treat small joints and discrete areas of muscles; it shall have the following features:

1. Pulsed or continuous microwave therapy unit.
2. A large and adjustable electrode arm
3. Frequency, MHz: $2,450 \pm 50$ MHz.
4. Automatic tuning
5. Patient-controlled off switch
6. Digital power output meter
7. The unit should offer rectangular and hemispheric applicators; all optional applicators shall be listed and quoted separately.
8. Digital or electronic type timer ranging from 0 to 30 minutes
9. Output power (continuous): approximately 0-250 watt
10. Output power (pulsed): approximately 800 watt
11. Mobile on 4 casters, 2 lockable casters to immobilize the unit
12. Power supply: 220V/50Hz

DRMTOM Electric Dermatome with different plate sizes

- I. It is a skin grafting instrument to provide variable graft thickness and width capabilities
 4. Should have an electrically-powered surgical skin grafting instrument.
 5. Should have thickness control adjustment ranges from 0 to 0.030 in. (0.75 mm) in 0.002 in. (0.050 mm) increments.
 6. Should have Individual graft widths of 1 in., 1.5 in., 2 in., 3 in. and 4 in. (2.5 cm, 3.8 cm, 5.1 cm, 7.6 cm, 10.2 cm) are obtained with five width plates.
 7. Should have two stainless steel machine screws secure the plates to the underside of the instrument.
 8. The plates are easily fastened and removed with the screwdriver provided.
 9. The dermatome should have powered by an ironless rotor, low inertia motor, which provides nearly vibration-free power.
- II. Maximum Protection Class: Class 1 Degree of Protection Against Electrical Shock: Type BF II.
- III. HANDPIECE
 - Vibration and Shock: Standard Commercial Practice
 - Nominal Speed: 4,500–5,500 cycles/minute
 - Nominal Speed: 4,500–5,500 cycles/Minute

DRY008 DRYER, Anesthesia accessories

1. Microprocessor controlled, free-standing, Drying Cabinet with single door, for drying of anesthesia material (including patient circuits)
2. The drying cabinet shall be designed for easy and quick drying of anesthetic accessories such as corrugated hoses, breathing masks, respiration bags and surgical instruments in trays after they've been washed and disinfected in an automatic washer disinfectant (item WAS056 procured separately within this tender package).
3. Approximate dimensions: (W x D x H) 600x450x2100 (mm)
4. Drying capacity shall be provided.
5. The cabinet should be constructed of double layer insulated polished stainless steel (inside and outside)
6. The door of the cabinet shall be made of double stainless steel plates, with built-in tempered glass, and polished finish with smooth surface
7. Special door insulation shall be incorporated to maintain adequate sound and heat insulation.
8. Drying shall be achieved by germ-free electrically heated air. Air heating shall be achieved by means of incorporated electric element.
 - 8.1. The heating element shall be electronically controlled and regulated by microprocessor and precision thermostat elements
 - 8.2. The cabinet shall incorporate a filtering mechanism for cleaning of the incoming air.
 - 8.2.1. Filter efficiency should be higher than 98% for particle size 0.3 micron or more.
 - 8.2.2. The filter should be easily accessible and removable for cleaning and disinfection in a washer disinfectant.
9. Alphanumeric digital control panel with clear numeric and functional displays and error indicators.
 - 9.1. Variable (user adjustable) internal temperature setting up to 90°C
 - 9.2. Set and actual temperatures should be clearly displayed on the front.
 - 9.3. Cycle timer shall be user programmable with a clear indicator at the front panel showing cycle time and remaining time
 - 9.4. Typical drying time (on full load) for Anesthesia hoses, should not exceed 40 minutes

10. The drying cabinet shall incorporate internal re-circulation fans. Specify number, type and noise level.
11. The unit should be constructed of SS interior and exterior
12. Manual loading / unloading capability
13. The unit shall include a thermal printer for cycle status documentation, including chamber temperature and any other relevant information or alarm conditions
14. End of cycle (ready to unload) notification
15. Vapor condensation shall be incorporated

DVT001**DVT Machine**

It can be used for DVT prevention before, during and after surgery. The DVT machine can be used as the alternative medicine for a stroke patient, a patient who can't use oral administration or any patient who cannot use anticoagulant (heparin or wafarin) to prevent DVT and PE. The DVT machine can be used in conjunction with anticoagulants or compression stockings. Typically compression stockings are used as an adjunct to the IPC therapy.

Main features

- Regular Vascular refilling time, 60secs
- Manual setting (Recommendation)
- Auto gradient pressure settings
- Safety detection systems
- Coincidental compression type

Controller Specification

- Free voltage: AC100 ~ 240V, 50/60Hz
- Power consumption: 25W (35VA)
- Pressure range: • Thigh/calf - 20, 30, 40, 50, 60mmHg,
- Foot – 120, 130, 140mmHg • Interval time: 24, 48 (leg), 60 (foot) seconds
- Main body (mm): 200(W) X 170(D) X 190(H)
- Weight: 3.5kg (Battery is included)
- Battery life time: 6~8hours

Controller specification

- Automatic operation button for optimum DVT prevention
- Automatic detecting sensor recognizing the cuff types
- Automatic pressure controlling system
- Automatic switching system to the power to battery in case of power outage
- Automatic Safety control alarm system (Cuff kind check, Cuff connection check, Pressure checking, Battery check)
- Automatic individual application according to cuff kinds connected to unit
- Selectable mode (DVT prevention and Lymphatic drainage modes)
- Easy to read LCD display
- Built-in battery – Maximum 6~8 hours usable

EEG018 EEG Machine

1. The proposed system shall be based on a high quality personal computer system with the latest technology and shall be provided with a trolley and an external medically isolated and compliant power supply unit
2. The system shall consist of the following:
 - Computer
 - Amplifier
 - Video
 - Flash
 - Microphone
 - Accessories
3. The EEG amplifier system shall have the following features:
 - The amplifier system should be isolated in a head box
 - The EEG amplifier system shall provide 32 electrode inputs, which are isolated to at least type BF classification, and 8 DC inputs
 - The system must be upgradeable to 64
 - All channels can be configured as referential or bipolar in pairs (AC or DC) with extra high level DC inputs for monitoring cerebral and extra cerebral activity
 - The amplifier system shall be equipped with one ADC for each channel to ensure synchronous sampling of all channels. Data acquisition sampling rate range shall be from 128 to 2048 Hz
 - The amplifier input impedance shall be at least 100 Mohm, common mode rejection ratio
 - CMRR >100dB at 60 Hz
 - The amplifier system shall have a master and individual (for each channel) sensitivity control in steps ranging from 1-200 μ V
 - The amplifier system shall have low frequency filters with the range from 0.01-15, DC Hz and high frequency filters with greater than or equal to 100 Hz at the highest setting
 - The amplifier system shall offer an automatic electrode impedance check, automatic calibration, anti-blocking, artifacts detecting
 - The amplifier system shall be available with a fully compatible photic stimulator. The amplifier shall provide a means to accurately record the trigger pulse for the photic stimulator as a trace in the EEG record, to allow accurate correlation of recorded activity and the trigger pulse
 - The amplifier system shall provide an input for an optional external patient event button, which allows a connected patient to mark the EEG record when an event is experienced
 - The amplifier system shall be available with additional auxiliary inputs and outputs interfaces (analog/ digital)
4. EEG Acquisition/ Review Software shall have the following features:
 - Several selectable Montages (fixed and user defined) and graphical view of the current montage on the screen
 - Ability to copy and paste EEG or trends to reports and presentations

- Split screen review (view several recordings in tiled or cascading windows)
 - The acquisition software should have a method to detect a poor electrode connection and provide a notification to the user
 - It shall be possible to measure electrode impedance at any time during an EEG study
 - The software shall provide control for the photic stimulation with different modes and ranges of stimulations
 - The system software shall provide a comprehensive set of messages for identified errors and possible corrective action and offer a wide range of chart annotations
 - Complete patient administrator software for patient scheduling and data management and archiving on DVD /RW writer
 - Topographic brain maps
 - Online and offline spike and seizure detection
 - The EEG system shall be available with digital video and audio recording and review, synchronized with the EEG acquisition. The digital video shall support acquisition form NTSC, PAL and
 - SECAM video equipment and shall provide high resolution video recording
 - Recording of synchronous video using day/light camera more than 640 x480 resolution, selection of several compression methods including MPEG4 or INDE05 for long term EEG Monitoring
 - Ability to store video only around user specified event such as seizures. Possible to store up to 20 minutes before the event and unlimited minutes after
- 18.4.14 EEG display modes on EEG data trend graphs:
- Compressed Spectral Array (CSA)
 - Density Spectral Array (DSA)
 - Dot Density Array (DDA)
5. The desktop computer shall have the following specifications:
- Computer system running under the latest compatible operating system
 - Latest processor available at time of delivery, RAM 3GB, hard desk 500GB
 - 17" minimum color LCD
 - Mouse and keyboard,
 - CD- DVD writer for archiving
 - Color jet or laser jet printer with chart speed range from 1-240 mm/sec or better
6. Complete set of EEG electrodes and paste to be supplied with the system
7. Complete with kits for cerebral and extra cerebral monitoring:
- EEG, EMG
 - Airflow
 - Respiratory/ Abdominal movement
 - Thermistor
8. Standard accessories and any needed accessories shall be included

ELCSRG-O Electro Surgery Unit (Ophthalmology)**Radiofrequency Technology:**

1. High Radiofrequency of 1.5-4.5MHz.
2. Can be utilized for both monopolar and bipolar modalities, at the frequency scientifically and clinically proven to produce the least amount of lateral heat and tissue alteration.

Main Specifications :

RFS-4000K	(220 240 volts)
Mode:	Cut, Cut & Coag, Coag, Fulguration, Bipolar.
Output Voltage:	Variable from 500 to 600 \pm 20%
Output Power:	0~100w
Output Frequency:	Monopolar mode - 4.00MHz. Bipolar mode - 1.71 MHz.
Mode & Output Waveform:	Cut (Fully Filtered) Cut & Coag (Fully Rectified) Coag (Partially Rectified) Fulguration (Spark-Gap) Bipolar

Accessories:

- Footswitches
- RF Surgipens
- Neutral Plates
- Surgical Electrodes
- Bipolar Forcep

RFS-4000K Application Area:

1. Dermatology
2. Oculoplastics
3. Oral/Maxillofacial Surgery
4. Otorhinolaryngology

ELE050 Electric Cast Cutter with Vacuum

1. The cast cutter should allow the user to cut through casts, allowing for either their removal or a partial opening to view underlying tissue.
2. A cast cutter must be able to cut orthopedic casts rapidly without harming the patient
3. The unit shall include integrated vacuum system.
4. Heat and vibration should be minimized.
5. Noise level shall be less than 50db.
6. The chuck must hold the blade securely and should not loosen during operation.
7. The chuck should allow the blade to be repositioned so that the entire cutting edge can be used before it is necessary to replace the blade.
8. The unit shall come with a blade changing tool (e.g., key).
9. The unit shall have a cutting arc of at least 8° and operate at 200 stroke cycles/second or better
10. The blade types desired:
 - 2 φ plaster
 - 2.5 φ plaster
 - 2 φ composite
 - 2.5 φ composite
11. It shall be delivered complete with a mobile stand on castors, with electrical socket and holder for plaster cutter.
12. It shall also include a dust extractor with a minimum of 3-stage filtration that can retain 99.9% of dust particles of size 0.5 micron. A dust bag shall also be included.
13. Standard accessories and any needed accessories shall be included to ensure full operation
14. Shall be CE marked and/or FDA approved

ELTHR1 ELECTRONIC THERMOMETER, Rechargeable

1. Digital Thermometer safe for all ages and shall be for oral and rectal use.
2. Should use interchangeable reusable probes for measurement with disposable probe covers.
3. Fast, accurate readings (specify temperature predict time)
4. Temperature accuracy: 0.1°C
5. Automatic shut-off feature
6. Large display for reading (specify type and size)
7. Should signal after temperature taken
8. Safe to use, with no glass and mercury-free
9. Should have an auto memory to show last 10 temperatures taken
10. Should include rechargeable batteries with charging desk unit
11. Should be supplied with a suitable case, an oral probe with 2 packs of disposable covers (specify number of covers per pack), one spare oral probe, a rectal probe with 2 packs of disposable covers (specify number of covers per pack) as well as one spare rectal probe

EMG001 EMG Machine

- 1 The proposed unit should be state of the art and latest technology
- 2 The unit shall be used for:
 - EMG studies
 - NCV studies
 - Reflexes studies
 - Evoked potential
- 3 EMG studies shall have:
 - Standard EMG: free run EMG and triggered EMG for spontaneous EMG
 - Display of a 4 channel EMG in 8 traces
 - Real time free run EMG data store and replay up to 120 seconds
 - QEMG (quantitative EMG):
 - Allows the full automatic EMG potential analysis of up to 4 different motor units
 - On and off line MUP analysis
 - Automatic motor unit potential (MUP) analysis up to 40 MUPs per muscle
 - Automatic display of the percentage of identified poly-phasic MUPs
 - EMG spectral analysis
 - Single fiber EMG-Macro EMG
- 4 NCV studies shall have:
 - Complete solution for NCS motor and sensory test, F-wave, inching
 - Automatic markers for amplitudes, latencies, areas, turns, phases and back average
 - NCS reference values with anatomical database
- 5 Reflexes studies:
 - Blink reflex
 - H-reflex
- 6 Evoked potential:
 - SEP (somatosensory evoked potential)
 - Auditory evoked potential
 - Visual evoked potential
 - Event related potential (P300)
 - Mismatch negativity
 - Contingent negative variation
- 7 The proposed unit shall have the following specifications:
 - Hardware basis:
 - Computerized system with advanced desktop computer
 - Modular upgradable system
 - The amplifier has four channel inputs and temperature input
 - Two current stimulator with 500 HZ train, 400V and flexible number of trains
 - Dedicated keyboard
 - Trigger in and trigger out
 - USB communication to the computer
- 8 Amplifier features:

- Number of channels: at least 2
 - Sensitivity, steps: 2-1000 $\mu\text{V}/\text{div}$
 - Noise: $<6 \mu\text{V}$, CMRR at 60Hz: $>100 \text{ dB}$, Input Impedance: $> 1000 \text{ ohm}$
 - Frequency Range: 2-10,000 Hz
 - User adjustable Low and High frequency filters
 - Isolated inputs
 - Built-in impedance check, temperature measurement, calibration
 - Built-in selectable stimulus artifact suppression and 50/60 Hz notch-filter
- 9 Current stimulation features:
- Constant current (0-100mA) and constant voltage (0-400V)
 - Number of channels: At least 1 channel
 - Duration: 0.05 to 1 msec
 - Pulses/sec: At least 0.5 – 50
- 10 Waveform Display:
- Size (cm): > 35.6
 - Sweep speed (ms/div): 5-1000
 - Number of traces: >100
 - Resolution (pixels): 1024 x 768
- 11 Computer Averaging:
- Input channels: up to the number of amplifier channels
 - Responses averaged: 1 – 10,000
 - ADC resolution (bits): 16
 - Samples per channel: $>40 \text{ kHz/hr}$
 - Programmable
- 12 Software package:
- The application software should be programmable so new programs can be designed upon user request and run under windows XP. Also to have updates by Web or CD/DVD for unlimited time period.
- 13 Computer specifications:
- Desktop computer
 - Preferably to have standardized computer interface
 - Operating system windows (latest version)
 - Latest processor type
 - 250 GB hard disk
 - 2 GB RAM or higher
 - Super Multi-drive for archiving
 - 17" high-resolution LCD
 - Network card
 - Color Laser printer
- 14 Completely the system shall be supplied with:
- EMG needle cable
 - Reusable concentric EMG needle (different sizes)
 - Patient ground (different sizes: mainly for children)
 - universal electrode cable for NCV

- disk electrodes for EP
 - EMG nerve stimulation electrode
 - Sensor finger electrode
 - Motor recording electrode
 - Set of gel & paste
- 15 The proposed unit should be supplied with mobile trolley with arm for amplifier
 - 16 Trolley mounted pattern VEP monitor shall be include with the arm and bracket and needed connections
 - 17 Flash stimulator
 - 18 Goggle stimulator
 - 19 Auditory phones stimulator
 - 20 Earphones stimulator
 - 21 Power supply: 220 V/ 60 Hz
 - 22 Standard accessories and any needed parts or accessories to ensure full operation as an EMG and EP system should be included.

EMR105 First Aid Cervical Collar

1. Unique adjustable disposable collar available in 2 versions adult and pediatric for immobilizing of cervical column.
2. With 8 sizes of Ambu® Redi-ACE™ and 6 sizes of Ambu® Redi-ACE™
3. Mini the majority of patients can be treated.
4. Easy to use, it has an automatic flip up chin and two locking buttons.
5. It can be placed on the patient using only 3 steps; sizing - locking - placement.
6. Made from radio translucent material.
7. Packaged completely flat

EMR106 Head Immobilizer

1. Composed of two plastic-coated, closed-cell foam head supports, one universal attachment base and two durable head straps.
2. Base plate fits all wooden, aluminum and plastic backboards, and scoop stretchers. Head supports can be used on standard backboards, or turned around for use on the Scoop Stretcher.

Features:

- Unique head strap is designed to conform to the patient's forehead
- Large ear holes for monitoring the patient's ear canal
- Minimal interference with X-ray, MRI, or CT scanning procedures
- Waterproof plastic coating makes it easy to clean and prevents bacterial growth within components
- Will not absorb blood or bodily fluids; easily sanitized between uses
- Meets FMVSS 302 flammability rating

END001 Endoscope video system complete with Colonoscope both pediatric and adult, Nasal scope also

1. Video Endoscopy system, trolley mounted, with documentation for flexible Endoscopy consisting of:
2. Video processing system: for process the signals received from the CCDS fitted on the video endoscopes. The system should feature the following:
 - To provide dedicated control over video endoscopes
 - Image freeze free from color distortion
 - Iris control for accurate observation
 - Image enlargement for viewing small mucosal areas
 - 3-level image enhancement selector for increased image sharpness
 - Sub-screen mode to allow simultaneous viewing of frozen and moving images via main and sub-screen
 - Video signal selector for accurate image processing
 - Record destination selector.
 - Video printer release switch
 - Monitor output selector
 - Digital and analog video outputs including SXGA, DVI-D, RGBS, Y/C, DV, S. Video, A/V and comp.
 - Screen display for clear view of wider areas
 - Remote switch function display
 - Keyboard for patient data and comments input
 - Network Connector:
 - LAN Network.
 - USB Port.
 - Printer Control Connector.
 - Configurable External Device Control with PC.
3. Xenon light source, 300W should include the following:
 - Built-in emergency lamp with automatic switchover
 - Automatic/manual brightness control depending on the video signal
 - Lamp usage time read-out
 - Auto-cooling after shutdown
 - Possibility of trans-illumination in colonoscopy
4. Display:
 - 26" LCD
 - Full HD
 - System: PAL, SECAM and NTSC
 - HDMI, DV, Y/C , RGB, composite video inputs and outputs
 - Built-in speaker system
 - PIP facility
5. Suction Unit: Qty (1)
 - Features and Technical Specifications:

- Vacuum pump: Oil-less.
 - Max airflow: 80 LPM.
 - Vacuum range Adjustable: 0 – 700mmHg.
 - Vacuum gauge: 0-700mmHg and regulation.
 - Collection bottle jars: at least 2000ml.
 - Overflow protection: must be included.
 - All hoses and parts of the collection jar sterilization up to 136°C.
 - Foot switch control.
 - Power supply: 220 VAC, 50 Hz.
 - Standard Accessories:
 - Bottles.
 - 1 Footswitch.
 - 2 meters Suction tubing.
 - Bacteria Filters.
6. VIDEO GASTROSCOPE –adult: Qty= 1
- Direction of view should be zero degree.
 - Minimum of 140 degree of field view.
 - Depth of field from 6mm to 100 mm.
 - Angulations of tip up and down of approx. 210/120 degrees with right and left movement of approx. 100 /100 degrees.
 - Distal end diameter of approximately 9.8 mm
 - Instrument channel approximately 2.8 mm inner diameter
 - Working length of not less than 1050mm
 - Should be compatible with the video system specified.
 - Should have separate locks for up-down & right – left knobs
 - Should be fully immersible for disinfection process.
 - Biopsy forceps and cleaning accessories
7. VIDEO GASTROSCOPE – Pediatric: Qty= 1
- Direction of view should be zero degree.
 - Minimum of 140 degree of field view.
 - Depth of field from 5 mm to 100 mm.
 - Angulations of tip up and down of approx. 210/120 degrees with right and left movement of approx. 100 /100 degrees.
 - Distal end diameter of approximately 8.8mm
 - Instrument channel approximately 2.8 mm inner diameter
 - Working length of not less than 1050mm
 - Should be compatible with the video system specified.
 - Should have separate locks for up-down & right – left knobs
 - Should be fully immersible for disinfection process.
 - Biopsy forceps and cleaning accessories
8. VIDEO GASTROSCOPE – Pediatric(slim) : Qty= 1
- Direction of view should be zero degree.
 - Minimum of 140 degree of field view.
 - Depth of field from 3mm to 100 mm.

- Angulations of tip up and down of approx. 210/120 degrees with right and left movement of approx. 100 /100 degrees.
 - Distal end diameter of approximately 6 mm
 - Instrument channel approximately 2.0 mm inner diameter
 - Working length of not less than 1030mm
 - Should be compatible with the video system specified.
 - Should have separate locks for up-down & right – left knobs
 - Should be fully immersible for disinfection process.
 - Biopsy forceps and cleaning accessories
9. VIDEO COLONOSCOPE - Pediatric: Qty= 1
- Direction of view should be zero degree.
 - Minimum of 140 degree of field of view.
 - Range of observation of 3 mm to 100 mm.
 - Angulations of tip up and down of approx.180/180 degrees with right and left.
 - Movement of approx. 120/120 degrees
 - Distal end diameter of approximately: 11.5mm.
 - Instrument channel of approximately: 3.2 mm
 - Compatible with the video system specified
 - Should be fully immersible for disinfection process.
 - Operation manual in English must be included .
 - Biopsy forceps and cleaning accessories
10. VIDEO COLONOSCOPE - Adult: Qty= 1
- Direction of view should be zero degree.
 - Minimum of 140 degree of field of view.
 - Range of observation of 3 mm to 100 mm.
 - Angulations of tip up and down of approx.180/180 degrees with right and left.
 - Movement of approx. 120/120 degrees
 - Distal end diameter of approximately: 12.8mm.
 - Instrument channel of approximately: 3.7 mm
 - Compatible with the video system specified
 - Should be fully immersible for disinfection process
 - Biopsy forceps and cleaning accessories
11. Video bronchoscope Slim Qt. (1)
- Integrated high resolution CCD, RGB sequencing system
 - Built-in switches for the freeze/release, iris/print, zoom and VTR.
 - Fully immersible
 - Field of view: better than 90°
 - Outer diameter approximately : 3.8 mm
 - Channel diameter: 1.2 mm
 - Range of tip bending: up: 180°, down: 130° approximately.
 - Biopsy forceps (qt. 1)
 - Working length: minimum of 600 mm
 - Biopsy forceps and cleaning accessories
12. Color video printer

13. DVD recorder
14. Standard Accessories: including scope covers, port caps, soak basin, lubricant, brushes, etc., in addition to the CCD camera and any needed accessories to fix all the system parts on the cart, to ensure full operation, shall be included.
15. Original mobile Endoscopy cart shall be included to house the system parts, components and accessories
16. Optional accessories and the different types of scopes shall be listed and quoted separately to be selected by the user

ENTCAB ENT Treatment Cabinet

Features

1. Economical, narrow footprint, laminated treatment cabinet
2. Spacious work surface
3. 1200cc disposable suction container
4. Two Welch Allyn instruments
5. Three pieces of glassware set
6. Vacuum and pressure pumps and hoses
7. Black laminate top standard

Specifications

- Overall Height: 48"
- Height to Work Surface: 35"
- Width: 25" Depth: 20 7 /16"
- Shipping Weight: 220 lbs.
- Top Drawer: 8 13/16" W x 10" L x 1 3 /4" D
- Middle Drawers (2): 20 1 /2" W x 12 1 /2" L x 3" D
- Bottom Drawers: 20 1 /2" W x 12 1 /2" L x 4" D

ENTSTN ENT Workstation complete with accessories

1. An ear-nose-throat (ENT) treatment unit with the following features:
 - Steel housing on four casters
 - Suction system: Approximate 40 liters/ minute, adjustable with bacterial filter
 - Radiofrequency surgical device with the following minimum features:
 - Universal connections for instruments
 - Shall have Monopolar and Bipolar modes
 - Coagulation power of 90 watts at 1 k ohm
 - Max cutting power 100watts at 1 kohm
 - It shall be fitted inside the ENT unit
 - It shall include accessory sets for monopole and bipolar ENT applications
 - Output frequency approx. 3 MHz
 - Large instrument surface with glass cover
 - Warm water device to 38 °C with autoclavable chrome plated handle
 - Water filter system
 - Overflow control
 - Automatic collection jar evacuation with hose rinsing system
 - Diagnosis and therapy system shall be included
 - Liquid container discharge system
 - Compressed air unit
 - Heated mirror rack
 - Ergonomically positioned heater
 - Adjustable electric current source
2. The unit shall include Ear irrigation module based on compressed air
3. Integrated Light source with headlight
4. ENT Patient chair:
 - Electromotive height adjustment by pedal switch
 - The upper part shall rotate approx. 360° and shall be equipped with an arrest or on both sides
 - The seat with integrated handles shall separately rotate both 90° to the right and to the left
 - Variable inclination of the backrest from 10° forward to the horizontal
 - By synchronous coupling with the arm rests and the foot support, the chair shall be converted into a long stable couch
 - By pushing a button the chair is quickly returned into the original position after examination
 - Height adjustable and detachable headrest, arm rests separately to be swiveled off backwards, foot support to be tipped
 - Seat height adjustment from approximately 500 to 800 mm
 - Fully synthetic leather upholstery
5. Endoscopy Camera System:
 - It shall be digital type with digital zoom function
 - The video outputs: VGA, DVI-I

- It shall include xenon light source
 - It shall include 17 inch LCD monitor with Articulated holding arm
 - It shall include three endoscopes: one Laryngoscope, one Ear endoscope and one Nose Pharynx endoscope for adults and pediatrics (the client to decide on the size and viewing angle).
6. Doctor's chair:
- It shall have a gas spring lift mechanism for seat height adjustment.
 - It shall have an articulated backrest with height and depth adjustment.
 - It shall be mounted on five swivel castors of 50 mm approximate diameter.
 - Seat and backrest shall be contoured for extra comfort and made from high-density foam and covered with stain resistant material for easy cleaning.
 - Approximate hydraulic height Adjustment: 500mm-800mm.
 - It shall be non-coloring to the floor
 - It shall be durable, maintenance free, safe from tipping over and of ergonomic and comfortable design
 - Color is subject to selection and approval by the Client.
 - Steel housing on four casters
 - Spacious instrument surfaces in three planes, plastic covering
 - Stainless steel writing and working surface, to be pulled-out
 - Two narrow, deep drawers
 - One empty, compartment to be used as storage space for integrating deposit tray for used instruments
 - 9 large and 6 small trays
 - 2x storage space with door

EXC001**Treadmill**

1. A programmable treadmill suitable for a wide range of rehabilitation and training purposes, such as active rehabilitation, mobilization, cardio-respiratory rehabilitation and/or general training and fitness
2. The treadmill shall be suitable for both adult and pediatric patients
3. The motor and drive system components shall be engineered for efficient, reliable performance, and low maintenance
4. Impact absorbing brakes
5. Low step to allow almost every patient to get on the treadmill
6. With side rails for patient safety
7. Side rails shall be separated (one for child and one for adult)
8. A ramp for easy access by wheelchairs
9. Emergency stop button
10. Non-slip surfaces
11. Pulse monitoring facility
12. Programmable with large and clear digital display of time, speed, distance, etc
13. The treadmill shall have the following specifications:
 - Initial velocity: 0.1 or 0.5 Km/h
 - Maximum velocity: 0.5 to 18 Km/h
 - Reverse belt direction: 0-5 Km/h (promotes knee extension, ankle dorsi flexion and eccentric hamstring control)
 - Inclination: adjustable (0 to 15%)
 - Walking surface (L x W): approximately 145x50cm
 - Motor: frequency controlled electromotor
 - Motor power: approximately 2 HP
 - Maximum patient weight: up to 135 kg

EXC005**Bench Press**

The quadriceps bench shall have the following features:

1. It shall allow exercises to be performed in a sitting position and in a reclining position
2. Densely padded top, covered with stain and flame resistant upholstery
3. Gas spring adjustment for back section
4. Back section adjustment range: 90 - 180°
5. Armrests that is suitable for press-up exercises
6. Swinging arms and upper leg fixation belt to isolate the joint for specific exercise.
7. Independently adjustable load, movement range and application point
8. Foot straps
9. Upholstered thigh support
10. Complete with interchangeable weights

EXC006**Cables & Pulleys**

The chest pulley weight exerciser system shall have the following features:

1. To be used for chest and upper extremity exercises
2. To be designed for wheelchair and ambulatory patients
3. Wall and floor plates shall be made of hardwood with styrene cover
4. Wall and floor shall be equipped with sets of nylon pulleys
5. Two ergonomic foam covered handles at chest level for patient comfort
6. Floor plate to be equipped with rubber bumper stops for quiet operation
7. Weight carrier to elevate vertically on smooth running vertical stainless steel rod guides
8. Disc weights to be added in 1 kg increments up to a maximum of 5 Kg per each side
9. Overall dimensions (W x D x H): approximately 600x200x1600mm.

EXC007 Abdominal Bench

The abdominal bench should have the following features:

- Continuous height-adjustment of the back cushion with elevation to rest the head
- Should be effective for lordosis - mobilization of the thoracic vertebrae section, stretching of the straight abdominal muscle and stabilization of the lumbar vertebrae area
- Should have multi-functional use in conjunction with pulley systems
- Should be mobile

EXC008**Leg Press Machine**

The leg press machine should have the following features:

- Should have a physiological strength curve that ensures even joint and muscle strain over the entire moving range
- Should have especially low initial strain
- Trapeze kinematics should enable for squat-like movements
- End stretching of the hip enhanced by a radial movement
- Lowest possible inertial mass

EXC009**Foam Roller**

Foam Rollers that suits for all your therapeutic exercise, physical therapy, training and conditioning needs as well as for core training, stretching, myofascial release, self massage, postural alignment and balance exercises.

Should have the following enable the strengthening of the following muscles:

- Thoracic Spine
- Hamstring
- Thigh/Quad
- Hip
- Glute
- Chest
- Long back
- Calf

EXC010

Stability Ball

- Training ball set for developing vestibular response and balance, and for exercise.
- Designed for rolling, pushing, throwing and kicking.
- 3 different sizes.
- Latex free

EXC011**Traction Frame**

1. A universal traction unit for lumbar and cervical tractions with electric height adjustment table/couch
2. Traction unit:
 - A microprocessor controlled traction unit
 - LCD, digital control panel
 - Selected parameter: traction force, base force, base hold time, and treatment time
 - The traction force shall be electronically measured and constantly monitored
 - Mechanical maximum force limitation
 - Patient stop switch
 - Patient movement shall not influence the traction force
 - The traction unit shall have the following specifications:
 - Types of treatments: static traction and intermittent traction
 - Traction force: 1.5-90 Kg
 - Treatment time: 1-60 minutes in 1 min steps, with acoustic signal and automatic
 - signal and automatic reducing of traction force
 - Intermittent traction:
 - Traction hold time: 0-90 seconds
 - Base hold time setting: 0-90 seconds
 - Unit to be mounted on the traction table
3. To be completely supplied with standard accessories and to be listed separately
4. Additional Accessories:
 - Pulley
 - Mobile traction frame for cervical traction
 - Carbine hook, galvanized, oval, diameter 70mm
 - Flexi stool with separate height adjustment for each leg

EXC012**Electrotherapy Unit**

1. Therapeutic unit for distance electrotherapy using a non-contact deep application of electric currents by means of electromagnetic induction
2. The electrotherapy unit shall be able to produce all basic types of electrotherapeutic and electro stimulation currents simultaneously with the application of red and infrared optical photo stimulation modulated and polarized light
3. The electrotherapy shall produce currents such as:
 - Continuous TENS currents
 - TENS burst currents
 - Medium frequency amplitude modulated currents
 - Medium frequency and low frequency randomized currents
4. Digital display control panel
5. Unit to be supplied complete with
 - Applicator
 - Mobile stand for positioning of unit and applicator

EXC013**Shockwave, Unit**

The unit shall be used for extra-corporeal shock-wave therapy in the rehabilitation department. It shall have the following features:

- It shall have integrated air compressor
- High frequency from 1 to 15 Hz or better
- Burst mode for extra-sensitive patients
- Color touch screen
- Color therapeutic encyclopedia with anatomical images
- User-defined diagnoses
- Supplied with the different sizes of applicator special
- It shall have ergonomic grip to eliminate backward shocks
- All optional accessories shall be listed and quoted separately.

EXC014 Parallel Bar

The parallel bars shall have the following specifications:

1. Parallel bars mounted on a hardwood platform
2. Manual height adjustment with locking mechanism
3. Manual width adjustment with locking mechanism
4. Ends of platform tapered for easy wheelchairs access
5. Anti-slip rubber treads on platform and beam for safety
6. Handrails: stainless steel.
7. Length: approximately 4 meters
8. Hand-rails should be separated for child and adult, the height should be as the following:
 - One children size: 40-60cm
 - One adult size: 60-160cm
9. Width: adjustable for approximately 400 to 610 mm

EXC023 Ergometer, Bicycles

1. An ergo-meter bicycle in which both upper and lower extremities are fully involved in the power generation
2. The ergo-meter bicycle shall have the following minimum specifications:
 - Easy to read display of measured parameters
 - Enclosed flywheel and chain for optimal safety
 - Low-noise belt drive
 - Wear-resistant eddy-current brake
 - Foot pedals designed to keep feet from slipping
 - Adjustable seat height
 - Seat with back support
 - The ergo-meter shall be suitable for adult and pediatric patients
 - Power: max. 600W
 - RPM: up to 60 RPM
 - Displayed parameters: time, heart rate, speed, distance, work, power, resistance and RPM
 - Display: backlit LCD
 - Programs: at least 10 fixed exercise profiles
 - Pulse monitoring: standard with ear clip
 - Heart rate monitoring: chest strap, receiver and pulse sensor
 - Patient weight: up to 150 Kg.

EXC024 Exercise, Chair

This chair is to be used in the rehabilitation department. It shall have the following features:

- 31.1.1 It shall have ergonomic shape for comfort
- 31.1.2 It shall be height adjustable
- 31.1.3 It shall have five swiveling castors with locking brakes
- 31.1.4 It shall have back rest
- 31.1.5 It shall have adjustable hand rests.

EXC025 Rowing Machine

1. Flywheel construction pulley system with effective braking system with the following specifications:
 - Electronic readout / display of time, number or strokes (RPM), rowing speed, energy consumption, and pulse rate
 - Adjustable rowing seat position
 - Solid foot rest
 - Adjustable resistance
 - Smooth and silent rowing
- 2 The units shall be suitable for pediatric and adult use

EXC026 Exercise Floor Mat

- A heavy-duty exercise mat to offer shock absorption
- High density solid foam material
- Anti-bacterial material
- Reinforced mat handles
- To fold for easy storage
- Dimensions (WxDxH): approximately 2000x1500x100mm

EXC027 Ergonomic Standing Table

- Motorized height-adjustable ergonomic standing table
- Height adjustment of the top from 100 to 135 cm
- Powerlift capacity from a sitting position to standing up to 200kg
- Heavy gauge steel powder coated frame
- Hand control for height adjustment
- Raised rim laminate top: 100cm W x 65cm D, with 65cm cut-out
- Padded knee, chest and back supports
- Patient lift harness
- Retractable locking swivel casters with a brake handle
- The unit shall be CE marked and/or FDA approved

EXC028 Elliptical Trainer

The proposed elliptical trainer shall have the following technical features:

1. Upper and lower body workout with movable arms and foot plates
2. Foot place to be more than 35cm long and non-slip
3. Arms to have handgrip sensors that sense heart rate
4. A wireless heart rate sensor to be included
5. It shall be self-powered
6. Adjustable ramp angle: up to 40 degrees
7. Stride length: up to at least 60cm
8. Programs: a full 10 workout programs, including heart rate
9. Integrated TV viewing option with min. 12 inch LCD
10. External data download port (preferably USB)
11. Control readouts: Backlit LCD with keypads
12. Displayed parameters: time, heart rate, speed, distance, calories, power, resistance, profiles and RPM
13. Multiple languages
14. Maximal user weight: 150 Kg
15. Speakers: built-in
16. Transport wheels
17. Accessory holders

EXC029 Basic Ergonomic Hand Exerciser

1. Lightweight frame with clips to block flexion & extension and allow a custom fit for different hand sizes
2. Handle is padded & contoured to fit comfortably in the palm
3. Adjustable resistance: four pairs of graded, color-coded latex-free rubber bands

EXC031 Mirror, Posture

1. A single mirror consisting of only one section or panel for posture, body image, and body awareness training
2. Mirror shall have the following features:
 - To be made of a safe glass
 - Shatter-stop safety backing
 - Mirror to produce a bright, distortion-free image
 - The mirror shall have a frame and base on swivel casters
 - Frame dimensions (WxH): approximately 70x185 cm.

EXC035 Wax Bath

Paraffin therapy helps in the treatment of muscular pain, joint pain and inflammation. It also soothes and moisturizes skin conditions, increases circulation, and has an anti-stress quality in its relaxing effect. Paraffin wax baths should have the following specifications.

- Power Supply: 230 V, 50 Hz
- Output: 2KW
- Thermo State: 0 degree Celsius to 100 degree Celsius
- Double wall insulated tank with cover
- Automatic Thermo state controller
- Power is controlled in 3 steps
- Available in 2 sizes
 - 12" x 12" x 8"
 - 22" x 16" x 8"
- Caster wheels for easy mobility

EXC036 Packs Heater (Hot & Cold Packs)

A hot pack heater offers a larger heating capacity, lockable wheels for better mobility and improved heat insulation. It should have the following features:

- Made from stainless steel (no corrosion)
- 70 litre water capacity
- Protective resistance heating grill
- Adjustable digital thermostat
- Fully insulated to reduce heat loss
- Full drainage valve
- Lockable wheel system
- Capacity to hold 10 hot packs (supplied separately).

Hot & Cold Pack

- A general purpose pack, it can be used hot or cold on any part of the body for muscle sprains and aches, fever and toothache, to reduce swelling and bruises.
- Specially shaped to fit the curve of the neck area, MediGel Neck Pack can be used either hot or cold to soothe and relieve muscular tension and aches at the back of the head, neck and shoulders.

EXC037 Diathermy units, Microwave

A mobile microwave diathermy is used in physical therapy treatments to treat small joints and discrete areas of muscles; it shall have the following features:

- Pulsed or continuous microwave therapy unit.
- A large and adjustable electrode arm
- Frequency, MHz: $2,450 \pm 50$ MHz.
- Automatic tuning
- Patient-controlled off switch
- Digital power output meter
- The unit should offer rectangular and hemispheric applicators; all optional applicators shall be listed and quoted separately.
- Digital or electronic type timer ranging from 0 to 30 minutes
- Output power (continuous): approximately 0-250 watt
- Output power (pulsed): approximately 800 watt
- Mobile on 4 casters, 2 lockable casters to immobilize the unit
- Power supply: 220V/50Hz

EXC038 Diathermy units, Shortwave

1. A mobile, microprocessor controlled short wave therapy unit to generate heat in the body to promote healing, pain relief, and to treat muscle spasms, joint contractures, neurological problems, and respiratory conditions
2. A large digital LCD display of parameters
3. A large and adjustable electrode arm
4. Mobile on 4 casters, 2 lockable casters to immobilize the unit
5. Completer with disc electrodes and dipole electrodes
6. The short wave therapy unit shall have the following specifications:
 - a. Generator frequency: 27.12 MHz \pm 0.6%
 - b. Output power (continuous): 0-400 watt
 - c. Output power (pulsed): 800 watt peak
 - d. Pulse duration: 400 μ s
 - e. Pulse repetition: 20-200 HZ adjustable in 10 steps
 - f. Timer: 0-30 minutes
 - g. Safety: Class I Type BF
 - h. Dimensions (WxDxH): 560x450x900mm

EXC039 Air Splints

1. A set of inflatable air splints made of durable vinyl sheeting with an inner layer to enable molding around the limb.
2. Hand Pump with Safety Valve
3. Fully x-ray translucent
4. Shall include the following sizes:
 - Adult Elbow, Single Chamber
 - Adult Hand, Double Chamber
 - Adult Hand/Wrist, Double Chamber
 - Adult Half Arm, Single Chamber
 - Adult Short Arm, Single Chamber
 - Adult Long Arm, Single Chamber
 - Adult Small Leg Double Chamber
 - Adult Large Leg Double Chamber
 - Infant Arm, Single Chamber
 - Infant Arm, Single Chamber
 - Infant Arm, Single Chamber
 - Child Arm, Single Chamber
 - Child Arm, Single Chamber
 - Child Arm, Single Chamber
 - Child Arm, Single Chamber
 - Child Hand, Double Chamber
 - Child Leg (no foot), Double Chamber
 - Child Leg (no foot), Double Chamber
 - Adult Elbow, Single Chamber
 - Adult Hand, Double Chamber

EXC040 Tens, Portable

1. Dual-Channel Tens Stimulator
2. Fully adjustable parameters including: frequency, pulse duration, modulation modes and timer
3. Power Source: 9V Batteries or similar rechargeable cell
4. Output Waveform: Asymmetrical biphasic square pulse
5. Timer: 15, 30,45,60,90 minute or continuous mode selectable.
6. Stimulation Modes: Burst , Normal, MRW, SD, Bi-Pulse
7. Adjustable pulse amplitude: 0 – 60mA
8. Adjustable Pulse Width: 50 – 250 microseconds
9. Adjustable Pulse Frequency: 2 -150 Hz
10. Adjustable Intensity Levels: 0-40 Volts (at load=500ohm)
11. To be supplied fully operational with all needed accessories
12. The unit shall be CE marked and/or FDA approved

EXC041 Interferential therapy

1. Should have 0-29 programmes.
2. Should have 2 separate output channels – Channel 1 & Channel II.
3. Power consumption shall be 46 watts.
4. Output current shall be 0-60mA
5. Output frequency shall be 4000Hz – 4250Hz for Channel 1 depending on the base and spectrum control & 4000Hz (Constant) for Channel II.
6. Interference frequency shall be 0 Hz – 100 Hz for Base & 0 Hz – 150 Hz for Spectrum
7. Should have Front panel green Bar graph indicator for interference frequency indicator.
8. Should work with input 200 to 240Vac 50 Hz supply.
9. Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.

Muscle Stimulator

1. Micro controller based operation
2. Should be light weight, compact and user friendly
3. Should have galvanic, interrupted galvanic, Faradic and surged faradic modes
4. TENS with continuous and pulsed modes
5. LCD display
6. Outpoint 0 to 120 V
7. Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.

EXC042 Ultrasound units, physical therapy

1. A microprocessor controlled combination unit for ultrasound, electro, and combination therapy
2. The unit shall offer the possibility of a universal application of ultrasound with two ultrasound frequencies 1 and 3 MHz and shall contain a low-and medium frequency current types
3. An easy-to-use selector buttons conveniently arranged on the control panel
4. Large LCD display of treatment parameters to remain visible during treatment
5. Ultrasound:
 - Frequency: 1 and 3 MHz
 - Ultrasound modes: continuous and pulsed
 - Pulsed: at 100Hz, 48Hz, and 16Hz
 - Intensity (continuous): 0-2 W/cm²
 - Intensity (pulsed): 0-3 W/cm²
 - Timer: 1-30 minutes
- 6 Electrotherapy:
 - Number of channels: 2
 - Output: constant current (CC) or constant voltage (CV)
 - Resolution (CC): in steps of 1mA
 - Resolution (CV): in steps of 1mA
- 7 Interferential therapy
 - Maximum amplitude: 100 mA
 - Carrier frequency: 4000 Hz
- 8 A memory for at least 20 programming protocols / therapy parameters
- 9 Safety: Class I Type BF
- 10 To be equipped with all necessary accessories:
 - Patient cables
 - Rubber electrodes
 - Moist pads for rubber electrodes
 - Straps
 - Treatment head 1MHz and 3MHz
 - Water bag for non-congruent surfaces
11. Unit to be supplied with a dedicated equipment cart
12. Shall have an FDA approval and/or CE Mark

FESSYS FESS System

This set of instruments is for endonasal microsurgical operations, like the removal of polypoid diseased mucous membrane, membrane rests, lamellae of bone/septa and nasal polyps. It includes 15 forceps in different shapes and sizes, facilitating access to various difficult areas within the sinus cavities. Defined manipulation at anatomically critical places can be precisely performed.

1. TELESCOPE

1. Should be supplied with a wide angle straight forward rigid telescope 0º, diameter 4mm, length at least 18 cm should be autoclavable with a telescope handle, flat with minimum length 11 cms.
2. All the scopes should have scratch resistant tip.
3. All the scopes should have incorporated fiber optic light transmission.

2. LIGHT SOURCE AND FIBER OPTIC LIGHT CABLE

1.
 1. Should be a halogen light source with minimum 250W light output.
 2. Should have manual light intensity control.
 3. Should have thermal safety cut-off
 4. Should have two lamps of 250W and should have provision to change over in the event of failure from one lamp to another.
 5. Should be supplied with flexible fiber optic light cable with minimum diameter of 3.5mm and minimum working length of 180cm.
 6. Should work with input 200 to 240Vac 50 Hz supply.

3. INSTRUMENTS

1. Hartmann nasal speculum, 13.5 cm
2. v. Eicken antrum cannula, malleable, long curved, 2.5 mm Ø
3. v. Eicken antrum cannula malleable, long curved, 3.0 mm Ø
4. v. Eicken antrum cannula, long curved, 3.0 mm Ø
5. v. Eicken antrum cannula, short curved, 3.0 mm Ø
6. v. Eicken antrum cannula, short curved, 4.0 mm Ø
7. Frazier suction tube, 8 Fr. Ø
8. Frazier suction tube, 10 Fr. Ø
9. Nasal scissors, serrated blades, 13 cm
10. Cottle dorsal scissors, angular, 16 cm
11. Circular cutting punch, 18 cm, 3.5 mm Ø
12. Circular cutting punch, 18 cm, 4.5 mm Ø
13. Frontal sinus curette, 19 cm, oval, 55°
14. Frontal sinus curette, 19 cm, 90°
15. Maxillary sinus ostium seeker, double-ended, 19 cm
16. Frontal sinus ostium seeker, double-ended, curved
17. Freer elevator, 20 cm

18. Gorney suction elevator, 19 cm
19. Blakesley nasal forceps, straight, size 0
20. Blakesley nasal forceps, 45°, size 0
21. Blakesley nasal forceps, straight, size 1
22. Blakesley nasal forceps, 45°, size 1
23. Blakesley nasal forceps, 90°, size 1
24. Moriyama through-cutting forceps, size 3
25. Moriyama backbiter, through-cutting forceps, upcurved size 7
26. Moriyama through-cutting forceps, straight, size 11
27. Moriyama through-cutting forceps, straight, size 13
28. Tobey micro backbiter, 2.0 mm, 360° rotation
29. "Rotating backbiter" antrum punch, 1.5 mm
30. "Rotating backbiter" antrum punch, 2.5 mm
31. Sidebiting antrum punch, 3.0 mm, down left
32. Sidebiting antrum punch, 3.0 mm, down right
33. Frontal sinus punch forceps, 70°, 3.0 mm
34. Biopsy forceps, 70°, opening horizontally
35. Biopsy forceps, 70°, opening vertically
36. Biopsy and grasping forceps, straight
37. Yoon punch, through-cutting, 70° upcurved, sideways left opening
38. Yoon punch, through-cutting, 70° upcurved, sideways right opening
39. Yoon fontanelle forceps, left curved
40. Yoon fontanelle forceps, right curved
41. Blakesley through-cutting forceps, straight, size 0
42. Blakesley through-cutting, 45°, size 0
43. Super punch, through-cutting, straight, 2.5 mm
44. Hartmann nasal cutting forceps, size 1.5 mm
45. Wigand universal forceps, through-cutting, straight
46. Wigand universal forceps, through-cutting, 45° upcurved jaw
47. Wigand forceps, through-cutting, small size, 30° upcurved jaw
48. Antrum curette, 19 cm, 7.0 mm
49. Antrum curette, 19 cm, oval, small size
50. Antrum curette, 19 cm, oval, large size
51. Antrum curette, 19 cm, 6.8 mm, forward cutting
52. Sickle knife, 19 cm, pointed
53. Struycen nasal cutting forceps, 1.2 mm
54. Trocar and cannula for sinuscopy, 5.0 mm Ø, oblique
55. Converse osteotome, 18 cm, 2.0 mm
56. Struempel-Voss nasal forceps, extra delicate, 2.5 mm, 45°
57. Antrum grasping forceps, 360° rotatable, 120° retrograde opening
58. Giraffe forceps, 3.0 mm, 55° upturned, opening vertically
59. Bipolar coagulation forceps, bayonet, 1.0 mm
60. Cable for bipolar forceps, 5.0 m, generator side plug diameter 12.5 mm

GEN302 Tongue Depressors

1. Wooden medical tongue depressors
2. Made of quality birch wood
3. Edges accurately finished
4. Size: 152*17*1.6mm
5. Supplied in boxes of 100 pcs

HEA010 HEAT SEALING device, sterilization pouch, with paper guide

1. Automatically operated thermal sealer for welding of sterile packs used in sterilizers
2. Table top configuration
3. Shall incorporate variable heating level selector for use with different types of sterilization bags
4. The unit shall be microprocessor controlled with visual indicators or digital display of operating parameters and commands
5. To incorporate a built in printing device for printing the date of sterilization and expiry date on each sealed bag
6. To support bags of up to around 50 cm wide
7. Auto-Sealing action shall be automatically triggered upon feeding of the pack through the sealing jaws
8. To incorporate visual indicators (lamp or similar) to indicate the completion of the sealing process and the readiness of the next sealing cycle
9. The unit shall incorporate a roll holder to support rolls up to around 35 cm wide

HODOXY Oxygen Hood

It is an excellent solution to problems encountered during oxygen delivery and Neutral Thermal Environment control. The hood should have the following features:

- Unique "Laminar Flow" design maintains consistent FiO2 levels throughout hood and improves CO2 flushing.
- Convenient top port accommodates temperature and oxygen sensors.
- Raised base ports for convenient placement of tubing and cables. Clear, seamless material allows total visibility of infant from all angles.
- Diffuser prevents oxygen from blowing directly on infant.
- Soft padded neck opening is gentle to infant's skin.
- Weighted base collar keeps hood in place, even with active infants.

Overall Hood Dimensions	
Small (0301)	7.0" L x 7.0" W x 5.4" H
Medium (0300)	7.0" L x 7.0" W x 5.4" H
Large (0305)	8.0" L x 8.3" W x 6.9" H
Large/Wide Neck (0305W)	8.0" L x 8.3" W x 6.9" H
Extra Large (0313)	13.0" L x 10.4" W x 8.5" H
Neck Opening Dimensions	
Small (0301)	2.5" W x 1.8" H
Medium (0300)	3.9" W x 2.5" H
Large (0305)	5.0" W x 3.9" H
Large/Wide Neck (0305W)	5.0" W x 2.9" H
Extra Large (0313)	6.3" W x 5.0" H

IABP01 IABP

Intra Aortic Ballon Pump should have the following features:

Design

- FiberOptix® capability: – AP signal transmitted at speed of light
- Proprietary WAVE® algorithm
- Proprietary Aortic Flow Timing Method
- AutoPilot™ mode of operation
- Microprocessor-based system architecture
- Modular system consisting of display/control module and pneumatic drive unit
- Proprietary deflation timing management

Electrical

- AC requirements: – 90–264 VAC 47–63 Hz
- Typical power consumption: 245 watts
- Maximum power consumption: 420 watts
- Battery operating time: – 90 minutes minimum with full charge – 180 minutes with optional second battery
- Typical battery recharging time: – 80% in 4 hours from full discharge – Recharge to 80% indicated by yellow light

Mechanical Dimensions

- Control module with monitor: – 10" high (25.4 cm) x 13.75" wide (35 cm) x 2" deep (5 cm)
- Pneumatic drive unit: – 31.5" high (80 cm) x 13.5" wide (34.3 cm) x 21" deep (53.3 cm)

Mechanical Weight

- Control module: – 5 lbs (2.3 kg)
- Pneumatic unit for AutoCAT 2 WAVE®: – 95.5 lbs (42.4 kg)
- Total weight for AutoCAT 2 WAVE: – 100.5 lbs (44.7 kg)
- Total weight for AERO® Series: – 91.5 lbs (40.7 kg)

Pneumatics

- Drive system: Stepper motor-driven bellows
- Drive gas: USP-grade helium
- Helium tank: – Disposable canister (500 psi) or refillable (2000 psi) cylinder— US Approval; (2900 psi) cylinder—European Approval
- Pumping volume: – 0.5cc to 50cc, adjustable in 0.5cc increments
- Counter pulsation rate: 40 to 200 pulsations/minute
- Assist ratio options

Condensation Removal

- Thermoelectric system removes moisture continuously from pneumatic system without interrupting counter pulsation

System Modes

- Auto Pilot:
 - Automatically selects ECG/AP signal, sources, trigger mode, and timing method as well as timing settings
 - Automatically changes settings to optimize assist
 - Proprietary software sets timing to correspond to individual patient needs
- Operator:
 - Allows user control of most pump functions

Trigger Modes

- ECG (PATTERN, PEAK, AFIB):
 - Microprocessor-based R-waveform trigger detection algorithms

Pacer (VPACE, APACE):

- Low level (skin) ECG input
 - Pulse width 0.1 to 0.5 ms and pulse amplitude => +5 to +700 mV
 - Pulse width => 0.5 to 2 ms and pulse amplitude => +2 to +700 mV
- High level (monitor) input
 - Pulse width 0.1 to 2 ms and pulse amplitude => 1 V
 - AV pacer detection is <250 msec between pacer pulses

General Trigger Selection Criteria (AutoPilot Mode)

ECG TRIGGER MODES:

- PATTERN: HR<130 bpm no arrhythmia detected
- PEAK HR<130 bpm or arrhythmia detected and arrhythmia timing OFF*
- AFIB: Any HR with arrhythmia detected*
- VPACE: Single or dual pacer (<250 msec apart and no QRS or AP waveform detected)
- APACE Single Pacer with R- wave >100 msec later
Transition only

AP TRIGGER MODE:

- No ECG signal or noisy ECG signal

Inflation/Deflation Timing Methods

INFLATION TIMING METHODS:

- Aortic Flow: Proprietary WAVE algorithm sets the timing intra-beat on average 12 ms of aortic valve closure¹
- Predictive: AP waveform analysis to set inflation
- • Weissler: ECG only, inflation timing based on systolic time intervals

DEFLATION TIMING METHODS:

- R-wave: Real-time deflation on R-wave
- Predictive: Deflation set to occur just prior to next systolic rise
- Weissler: ECG only, deflation timing based on diastolic intervals

MANUAL:

- User set inflation and deflation timing in Operator Mode

Inflation/Deflation Timing Limits (Operator Mode)

- ECG: Inflation, 20%–80% of R-R interval Deflation, 30%–120% of R-R interval
- AP: Inflation, 0–35% of peak systole-peak systole interval Deflation, 35%–75% of peak systole-peak systole interval
- AFIB Trigger: Inflation 80 to 430 ms after R-wave trigger event
- Mode Deflation on R-wave

Display

- Type: Color LCD flat screen
- Channels: Three-channel multicolor waveforms
- ECG: Green trace with white highlight on assisted portion
- AP: Red trace calibrated for direct reading of AP, white highlight on assisted portions when in Operator Mode
- Balloon pressure: Blue trace calibrated in mm Hg and displayed continuously
- Timing reference display: Numerical timing settings in both operating modes as well as a bar graph displaying inflate/deflate events in Operator Mode
- Cursor: Measurement of AP and balloon pressure waveforms

Alphanumeric Data

- Patient hemodynamics: Heart rate, AP—systolic, augmented, diastolic, and mean arterial. When in 1:2 or lower assist ratio the assisted values are displayed in white and the unassisted values are displayed in yellow
- Displayed parameters: ECG source and gain state, alarm status with timer, ON Battery indication, operation mode selection, AP alarm parameter and limit, timing settings, helium tank level, arrhythmia detection, and timing status
- Operations status: Operational mode, trigger mode, helium tank gauge, alarm/battery charge status, balloon volume
- Diagnostic alarm/help messages: Preprogrammed troubleshooting prompts/help

Strip Chart Recorder

- Recorder: Dual-channel dot matrix: Dot density 400 dots/inch, 25 mm/s
- Waveforms: ECG, AP, or balloon pressure (one or two recorded)
- Alphanumeric: Operational mode, trigger mode, ECG lead/source, AP source, AP alarm status, timing settings, assist ratio, balloon volume, timing method, arrhythmia status, alarm condition, date, time, patient hemodynamics

Display Freeze

- Freezes approximately 7 seconds of patient data on screen

Patient Signal Inputs

- ECG: 5 lead skin cable (I, II, III, aVR, aVL, aVF and V) High level monitor input (0 to 5 V)
- AP: Fiber optic signal input from FiberOptix IAB Catheter (WAVE) AP transducer (Spectramed or equivalent), 50 mV/V/cm Hg High-level monitor input (1 V = 100 mm Hg)

ILL007 ILLUMINATOR, X-ray films, single, wall mounted

1. Single x-ray film viewer shall be wall-mounted and designed for general radiology viewing of a broad range of film sizes and types.
2. Viewing panel to be equipped with a gripping mechanism on both the top and bottom edge of viewing panel, with sufficient retaining wires or other suitable mechanism to accommodate a wide range of film sizes.
3. 35 x 43 cm viewing panel should be internally baffled and illuminated by three lamps so as to provide uniform light intensity across the entire viewing surface.
4. Illumination control with on/off and dimmer switch.
5. Installation accessories to be provided

IMG005 Vein Viewer

1. The Vein Viewer provides an easier and more efficient way for clinicians to access patient's veins decreasing the need for additional attempts or complete misses.
2. The unit shall be portable, suitable for placement on regular table tops
3. The unit should include the technology ideal for seeing small veins in pediatric or sclerotherapy patients.
4. The unit should be very effective for dark skins
5. Brightness must be controllable for use in non-standard lighting conditions
6. Depth of visualization: up to 10mm
7. Brightness: 6 lumens
8. Battery or AC operated
9. 9. Drop-tested per IEC/UL60601-1 for quality and durability

IMG012 IMAGER, Radiographic Unit, digital

1. This unit shall be a cassette less digital radiography system for General Purpose X-ray examinations that comprise the following components:
 - Patient table.
 - Vertical stand.
 - Ceiling suspended X-ray tube.
 - X-ray generator.
 - Workstation.
2. **Patient table:**
 - Tabletop height shall be adjustable from 60cm to 90cm approximately.
 - Table top radiation absorption <0.75 mm AL.
 - Maximum patient weight 200 kg.
 - High quality motorized scatter radiation grid.
 - Longitudinal travel ± 45 cm or better.
 - Transverse travel ± 14 cm or better.
 - Floating tabletop of 70 cm width or better.
 - No less than 41 x 41 cm solid state digital flat panel detector with image matrix size of 3000 pixels x 3000 pixels or better to provide an image resolution of not less than 32 LP/cm.
3. **Vertical stand:**
 - Motorized movement from 35 to 170cm above the floor.
 - Scatter radiation grid.
 - No less than 41 x 41 cm solid state digital flat panel detector with image matrix size of 3000 pixels x 3000 pixels or better to provide an image resolution of not less than 32 LP/cm.
 - $-15^{\circ}/+90^{\circ}$ tilt able detector tray in 15° increments.
 - Side support handles.
 - Overhead handle.
 - Securing strap.
4. **Ceiling suspended X-ray tube:**
 - Motorized movement.
 - Longitudinal travel 310cm approximately.
 - Transverse travel 220cm approximately.
 - Vertical travel 150cm approximately.
 - Tube rotation about vertical axis 330° .
 - Tube rotation about horizontal axis 240° with stop positions of 0° and $\pm 90^{\circ}$.
 - Manual and motorized collimator $\pm 45^{\circ}$ rotation with motorized selection of filters.
5. **X-ray generator:**
 - High frequency 80 kW output power.
 - Voltage range: 40-150 KV.
 - Shortest exposure time: 1 m sec.

- mAs range: 0.5 to 800 mAs.
 - Automatic exposure control as well as anatomic programs.
- 6. X-ray tube:**
- Rotating anode type.
 - Anode Heat capacity: 400 KHU.
 - Cooling rate: 75KHU/minute approximately.
 - Dual focus 0.6 and 1.0 mm.
 - Tube over load protection.
- 7. Workstation:**
- It shall be based on a high-end computer with high capacity hard disc drive capable of storing at least 3000 images.
 - RAM: 2GB at least
 - CD/DVD-RW drive
 - 19" minimum high-resolution LCD screen monitor.
 - It shall reconstruct complete images in less than 10 seconds / image.
 - Operating software to include the following:
 - Patient study management.
 - Automatic exposure controls and post processing functions.
 - Pre-defined and customizable anatomically specific programs.
 - Image documentation and archiving.
 - All standard software packages shall be listed with the offer.
 - All optional software packages shall be listed and quoted separately.
8. The system must be FDA approved and CE marked
9. It shall be fully DICOM compliant with all standard DICOM specifications with interface to the hospital RIS/PACS network/system.
10. Complete pre-installation site preparation works inclusive of beam supports for x-ray tube weight bearing ceiling suspensions, floor & wall ducting, power distribution cabinet and finishing shall be carried out by the supplier and coordinated with the civil and electromechanical contractors as required. Bidders may inspect installation site prior to bidding their offers. Radiation warning lights shall be interlocked with system's power-on. Warning signs shall be installed by the supplier in accordance with international and local regulations. Equipment and computer cabinets and control console desk with operator chair shall all be included with the system.

IMG021-D X-ray C-arm with dual monitor

This C Arm System shall incorporate state of the art high-end technological features available from the manufacturer at time of delivery. The offered system should incorporate connectivity to the RIS and PACS.

System Applications & Features

1. The system shall meet or exceed the following applications and features:
 - 1.1. The mobile C-arm unit shall be designed to provide radiographic and fluoroscopic imaging in surgical, critical care, and emergency care procedures.
 - 1.2. It shall be used to image patients in radiolucent beds, stretchers or operating tables as necessary.
 - 1.3. The system's operating modes shall include: Fluoroscopy, Pulsed Fluoroscopy, DSA and Radiography
 - 1.4. The system shall operate from a standard hospital grade electric outlet
 - 1.5. The system shall be composed of two wheeled units:
 - 1.5.1. One supporting the C-arm and the control console
 - 1.5.2. The other supporting the display monitors and image processing and recording devices.

System Specifications

2. X ray Generator
 - 2.1. High frequency 80 KHz generator shall provide constant or near-constant DC high voltage with:
 - 2.1.1. Low ripple
 - 2.1.2. Rapid kV response time
 - 2.1.3. Power rating: 15 KW at 100 kVp
 - 2.1.4. Accurate and reproducible kV, mA, and time setting.
 - 2.2. Fluoroscopic Mode:
 - 2.2.1. kV range : 40 to 120 kV or close similar
 - 2.2.2. mA range : 1 to 60 mA or close similar
 - 2.2.3. Pulsed fluoroscopy: up to 20 pulses per second
 - 2.2.4. Specify Pulse width and pulse rate

2.2.5. List any special imaging modes available in the offered system and their corresponding characteristics. These should include but not be limited to:

2.2.5.1. Automatic Brightness Control System (ABS)

2.2.6. Reduced dose

2.2.7. Snap shot mode

2.2.8. Cine mode shall be included (provide detailed characteristics)

2.3. Radiographic Mode

2.3.1. kV range: 40 to 120 kV or close similar

2.3.2. mA range: 2 to 125 mA or close similar

2.3.3. Time range: 100 to 300 ms

2.3.4. Automatic Exposure Control (AEC)

3. X-ray Tube

The x ray tube shall possess the following characteristics:

3.1. Rotating anode

3.2. Maximum voltage: 120 kV

3.3. Dual focal spots (0.3 in fluoroscopic mode and 0.6 mm in radiographic mode)

3.4. Anode heat storage capacity (300 KHU or close similar)

3.5. Cooling rate: 70 KHU/min or close similar

3.6. Maximum heat dissipation 70 KHU/min

3.7. The system shall possess tube overload and over temperature detection and protection (thermal cutoff)

4. X-ray Collimator

The x ray collimator shall possess the following characteristics:

4.1. 2 independent lead shutters

4.2. The collimator shall have an automatic shutter positioning

4.3. It shall also have asymmetric movable independent shutters

4.4. Shutters material: 3 mm Pb

4.5. Rotation: 360°

5. Flat Detector

5.1. Detector: Amorphous Silicon (Scintillator: Electronic CsI (Cesium Iodide))

5.2. Detector size: approx. 30 x 25 cm

5.3. Pixel pitch: approx. 185 µm

5.4. Active matrix flat detector: 1560 x 1440

5.5. Grid: 70 l/cm, ratio 13:1

5.6. Grid material: Carbon fiber

6. C-Arm movement

The system shall incorporate motorized movements:

- 6.1. Angulation: 135° rotation
- 6.2. Height movement: 500mm
- 6.3. Longitudinal movement: 200 mm
- 6.4. Panning movement 10° or close similar
- 6.5. SID: 1000 mm or better
- 6.6. C-Arm depth: 600 mm

7. Viewing Station - Cart

- 7.1. Automatic selection of the measuring Field should be possible
- 7.2. The cart shall incorporate two (2) 18", High-resolution color touch screen LCD system, with auto room ambient light compensation (1280 x 1024) flicker free, and anti-glare, progressive full scan video monitors
- 7.3. Flexible monitor positioning: height adjustment and rotation.
- 7.4. The cart shall have an extra (optional) 12" LCD monitor that allows displaying the live image enabling accurate positioning of the C-Arm. It shall support visual control for the operator
- 7.5. Image rotation and handling shall be possible from the control console and by remote control
- 7.6. Image rotation: digital, live and on Last Image Hold (LIH)
- 7.7. Image reversal: Digital up/down and left/right, live and on LIH
- 7.8. Zoom formats: field input sizes: 27, 18, 13 cm
- 7.9. Additional features should be clearly stated

8. Software Package:

The standard configuration shall give all the capabilities needed for trauma, and general surgeries.

9. Image processing

- 9.1. The system shall possess extensive image processing capabilities such as filtering,
2D edge enhancement, mosaic display, zoom and roam, measurement, dynamic noise reduction, motion elimination, brightness and contrast control, negate mode, patient information menu, image annotation, white compression, electronic shutters, etc. Provide detailed list with characteristics where appropriate.
- 9.2. Digital video image storage: capacity $\geq 20,000$ images; image matrix 1560 x 1440, 12 bits; with last image hold and frame integration

10. Clinical Software

The system shall include all basic imaging features such as noise reduction, motion artifact reduction, edge enhancement, automatic and manual digital brightness and contrast control, last image hold, zoom and roam functions, etc. in addition to advanced vascular and cardiac software platforms. These shall include but not be limited to the following:

- 10.1. Real time subtraction
- 10.2. Road mapping (RSA)
- 10.3. Peak pacification (MSA)
- 10.4. Re-registration
- 10.5. Variable land marking
- 10.6. Auto cine loop playback
- 10.7. Recording/playback
- 10.8. Digital cine pulse mode
- 10.9. Normal fluoroscopy with Last Image Hold (LIH)
- 10.10. Pulse fluoroscopy for periodic refreshed image
- 10.11. Single-pulse snapshot mode for hard-copy image documentation
- 10.12. Pixel-shift
- 10.13. Smart Mask
- 10.14. Remasking

11. Archiving Options

- 11.1. Integrated paper printer
- 11.2. Medical DVD recorder

12. Networking

- 12.1. The supplier must provide a DICOM Conformance Statement for complete definition of supported DICOM connectivity services. All relevant DICOM classes shall be included (DICOM print, DICOM store, DICOM WLM, DICOM MPPS, DICOM SC...)
- 12.2. There must be a quality assurance program in the system software.
- 12.3. The unit should be provided with the hardware (interfaces) and the software to facilitate connecting the system with the hospital RIS and PACS on pre-defined network nodes. Functionality shall include but not be limited to storage class, print class and worklist / query from any of those network nodes.

13. System mobility

- 13.1. The casters should be a minimum of 12.5 cm (5") in diameter
- 13.2. At least two casters should have locks.
- 13.3. If the casters are equipped with locks, they should be able to maintain the device stationary on a 10° incline.
- 13.4. The casters should be conductive and at least two should swivel.

13.5. Maneuvering the unit should require minimal physical effort.

13.6. The unit should resist tipping over during use and transport

14. Safety Features

The following safety features shall be incorporated as minimum:

14.1. Error detection indicator

14.2. Not-ready indicator

14.3. Audio signal to indicate when the fluoroscopy time is about to expire

14.4. Temperature overload indicator

14.5. X-ray dose summary

14.6. Additional features shall be clearly stated

15. Accessories that shall be included in the standard configuration:

15.1. One set of sterile cover

15.2. Fluoroscopy footswitch

15.3. Radiography hand-switch

15.4. IR remote control

IMG024 IMAGER, Radiographic/ Fluoroscopic Unit, digital

1. This unit shall be a high-end, fully digital, remote controlled and table side operated Radiography/Fluoroscopy system with over table or under table X-ray tube assembly configuration that shall meet or exceed the following specifications:
 - Fully Motorized Table system:
 - Table Tilt: +90°/-90° tilting with auto stop at 0°
 - Table Height adjustment: 65 – 110 cm when table is in 0°.
 - Table Longitudinal travel: 150 cm with travel speed of up to 5 cm/s.
 - Table Transverse travel: ± 15 cm or better.
 - Table top approximate overall dimensions (L x W): 200 x 70 cm.
 - Patient weight capacity: at least 200 kg.
 - Table shall include a full set of standard accessories such as, but not limited to: Compression band, Foot board, Handgrips (pair).
2. Digital imaging system:
 - Variable SID: 110 to 150 cm approximately
 - Longitudinal movement of tube gantry: 100 cm or better.
 - Tube arm angulations range: ± 40 °.
 - Solid state digital detector no less than 41 x 41cm, fully digital, with a minimum of 34 lp/cm spatial resolution.
 - Scatter Radiation Grid: 12:1 ratio with 80 lines/cm.
 - Collimator: Automatic collimation with inherent 1 mm Al filtration and motorized copper pre filters.
 - Remote controlled compression cone with variable compression force
 - Three field AEC.
 - Digital Continuous Fluoroscopy: 10242 image matrix x12 bit depth / pixel, 30 FPS.
 - Digital Pulsed Fluoroscopy: 10242 image matrix x12 bit depth / pixel, up to 15 FPS.
 - Digital Radiography: 10242 image matrix x12 bit depth / pixel, single or rapid acquisition modes.
 - Control Console and Displays:
 - Integrated and streamlined control console with Graphical User Interface and 18" TFT display monitor.
 - Dual 18", flat, TFT monitor screens shall be ceiling suspended in examination room.
 - High capacity hard disk drive with not less than 10,000 images storage capacity.
 - Extensive image processing functions shall be available, including but not limited to:
 - ♣ Last Image Hold.
 - ♣ Image rotation.

- ♣ Image annotation functions.
 - ♣ Bolus chasing.
 - ♣ Fluoroscopy loop.
 - ♣ Image brightness and contrast adjustments.
 - ♣ Edge enhancements capabilities.
 - ♣ Positive / negative image inversion.
 - ♣ Left / right and top / bottom image reversal.
 - ♣ Split screen.
 - ♣ Zoom, windowing and roam functions.
 - ♣ Gray scale optimization capability.
 - ♣ Electronic collimation and zoom.
 - ♣ Automatic image storage to disk.
 - ♣ Instantaneous image review.
 - ♣ Multi image format display and print capabilities.
3. Generator:
- Nominal Power Output: 80 kW.
 - Generator Type: High frequency inverter type.
 - Shall be able to operate 2 X-ray tubes
 - 4 KV range: 40 – 150 kV for radiography.
 - 40 – 110 kV for fluoroscopy.
 - mA range: Up to 800 mA. For radiography
 - Up to 10 mA for fluoroscopy
 - Exposure time: from 1 msec to 6 sec with shortest allowable time auto-selected.
 - Dual speed x-ray tube rotor drive (high/low)
 - Anode heat calculator.
 - Maximum number of radiographic exposures per second: 8
 - Exposure counter and fluoro timer
4. Chest stand equipped with 41x41cm minimum solid state digital flat panel detector with a minimum of 34 lp/cm spatial resolution.
- Motorized movement from 35 to 170cm above the floor.
 - Scatter radiation grid.
 - No less than 41 x 41 cm solid state digital flat panel detector with image matrix size of 3000 pixels x 3000 pixels or better to provide an image resolution of not less than 32 LP/cm.
 - -15°/+90° tilt able detector tray in 15° increments.
 - Side support handles.
 - Overhead handle.
 - Securing strap.
5. X-ray tubes:
- Two X-ray tubes to be supplied:(over / under table and ceiling suspended)
 - Dual focal spots: 0.6 and 1.0 mm.
 - Anode heat storage capacity: 400,000 H.U. or better.
 - mA and kV ratings of the X-ray tube shall match those of the generator above.

6. The system must be FDA approved and CE marked
7. It shall be fully DICOM 3.0 compliant with all standard DICOM specifications with interface to the hospital RIS/PACS network/system.
8. Complete pre-installation site preparation works inclusive of floor and wall ducting, ceiling supports installations, power distribution cabinet and finishing shall be delivered and installed by the supplier and coordinated with the civil and electromechanical contractors as required. Radiation warning lights (interlocked with system's power-on) and warning signs shall be installed by the supplier in accordance with international and local regulations. Equipment and computer cabinets and control console desk with operator chair shall all be included with the system. All final non shielding finishing including painting, tiling, socket outlets etc, after the install of medical and shielding items will be done by building contractor and must be in coordination and with supervision of radiology supplier

IMG035 Wall mounted Digital Dental X-Ray

1. The intraoral digital dental radiographic unit should have the following features:
 - High-frequency technology
 - Wall mounted with wireless sensors.
 - Real-time image acquisition
 - A set (one adult and one pediatric) digital sensors to be included
 - The system hard disk shall be capable of storing at least 5000 images. It shall have CD/ DVD writer for archiving images and patient data.
 - Wireless sensors with interface module to Dental Delivery Unit's computer in Item (DE11165).
 - Sensor cover sleeves
2. The x-ray generator shall have the following features:
 - X-ray tube focal spot size 0.7mm x 0.7mm.
 - KV range approximately 50-70
 - MA range approximately 2-8
 - Exposure time: Approximately 0.01-3.2 s, 26 steps.

Lead shielding for the room should be supplied by the dental xray supplier/bidder and installation of this is also responsibility of the bidder and must be part of the installation. All non-shielding finishing including painting, tiling, socket outlets etc, after the install of shielding will be done by building contractor and must be in coordination and with supervision of dental XRAY supplier.

IMG036 Imager Dental X-ray Unit, Digital Panoramic & Cephalometric Radiographic**I- General requirements**

1. The system shall comply with a multitude of diagnostic requirements: endodontics, periodontics, orthodontics, implantology, as well as dental and maxillofacial surgery, and TMJ analysis.
2. It shall be able to diagnose all patient types from small pediatrics to large adults, in seated or standing positions

II- X-Ray generator

3. High frequency, constant potential Converter type.
4. Micro-Processor controlled.
5. Automatic mains voltage compensation.
6. 60 up to 80 kV
7. Up to 12 mA
8. Automatic Exposure Control AEC.
9. Variable exposure time: up to 18 s panoramic, up to 23 s cephalometry
10. Automatic kV compensation for spine density correction.
11. Pre-programmed and manual technique.
12. Remote-controlled hand switch for exposure release.

III- X-Ray tube

13. Focal spot size: 0.5 mm or better
14. Fixed anode.
15. Anode heat capacity > 20 KHU
16. Minimum total filtration 2.5 mm Al equivalent

IV- Bucky Unit

17. Flat cassette type
18. Magnification: Panoramic 1.2
 Cephalometry: ~ 1.05 – 1.15
18. Cassette size (two cassettes of each size to be submitted as standard):
 Panoramic: 15 x30 cm;
 Cephalometry: 18 x 24 cm

V- Tele-Radiography

20. Film-based cephalostat
21. S.I.D: 500 mm panoramic,
 160-170 mm cephalometry

VI- Stand

22. Suitable for standing and sitting patients.
23. Preferably open view with patient facing radiographer.
24. Vertical movement of the imaging system from 95 cm to 180 cm. fully counterbalanced.

25. Motorized positioning device with laser indication for optimum positioning.

VII- System capabilities

26. TMJ

27. Cephalometry

28. Lateral, AP, PA submentovertex, Water's view for cephalometric; sinus, horizontal/vertical segment, PA cross-sectional, TMJ film marking for panoramic

VIII- Control panel

29. Control panel to be supplied with: Keyboard, mouse, interactive touch screen

30. To have the following requirements: digital, alphanumeric, color LCD or TFT, with touch capabilities and graphic user interface.

31. May be placed by equipment side or remote within the room

Lead shielding for the room should be supplied by the dental xray supplier/bidder and installation of this is also responsibility of the bidder and must be part of the installation. All non-shielding finishing including painting, tiling, socket outlets etc, after the install of shielding will be done by building contractor and must be in coordination and with supervision of dental XRAY supplier.

IMG041 Imager, Mammographic Unit

1. This mammography unit should be a DDR system that is fully digital with flat panel detector technology including the following features:
 - X-ray generator.
 - Column with X-ray tube.
 - Control console with protective shield.
 - Digital detector system.
2. Generator:
 - The mammography unit should utilize a high frequency generator.
 - KV selectable from 22 to 35 KV or better (1 KV increment).
 - MAS selectable from 4 to 500 mAs.
 - Software monitoring of tube load.
3. Tube:
 - The X-ray tube must have a rotating anode, with a minimum anode heat capacity of 200,000 HU.
 - Focal spots: minimum dual focal spots 0.3 and 0.1 mm.
 - Inherent Tube filtration: Molybdenum and (Rhodium or silver) Filters.
 - Internal cone that reduces extra focal radiation by 50%.
 - Automatic Diaphragm with field covered of 18x24 cm² and 24x30 cm².
4. Column:
 - The column must be telescopic and motorized, with rotation of +180 to -130 degrees.
 - Magnification plate allowing several values from 1.5 to 1.8 or better.
 - Source to image distance (SID) to be at least 65 cm to clearly image the smallest micro calcifications.
 - Electromagnetic movement locks.
 - Distance and pressure scale guides.
 - Compression to be manual and motorized with possibility of manual adjustment, as well as programming compression force and speed and decompression height. Compression paddle to be provided.
5. Digital Detector should have the following features:
 - Digital detector size should be 24 x 30 cm approximately.
 - Detector resolution should be > 5 LP/mm.
 - Pixel size, μm to be 100 or less.
 - Image bit depth equal to 14
1. AEC Detector, control the selection of target material, focal spot, filter material, time, mA, mAs, kVp or a combination of any or all of these factors.
2. 2.7 Workstation: The workstation shall include the following.
 - Color touch screen display 21" minimum
 - 4 G Byte RAM
 - Hard disc with a capacity not less than 500 GB

- It shall be fully DICOM compliant with all standard DICOM specifications with interface to the hospital HIS/RIS/PACS network/system.
3. Any software necessary to run the unit should be included & future upgrades, when released
 4. X-ray radiation shield stand with no less than 0.3 mm Pb equivalent shall be provided.
 5. The system must be FDA approved and CE marked
 6. UPS for at least 10 minutes of full operation of the mammography shall be included
 7. Complete pre-installation site preparation works inclusive of any floor ducting, and finishing shall be carried out by the supplier and coordinated with the civil and electromechanical contractors as required. Radiation warning lights shall be interlocked with system's power-on as necessary. Warning signs shall be installed by the supplier in accordance with international and local regulations. Equipment and computer cabinets (if required) and control console desk with operator chair shall all be included with the system.

Lead shielding for the room should be supplied by the dental xray supplier/bidder and installation of this is also responsibility of the bidder and must be part of the installation. All non-shielding finishing including painting, tiling, socket outlets etc, after the install of shielding will be done by building contractor and must be in coordination and with supervision of XRAY supplier.

IMG055 Imager, Bone Densitometer, DEXA

1. The proposed system shall be state-of-art and the latest model at time of delivery
2. The technology of the proposed system shall detect subtle bone changes in a variety of clinical applications and provides advanced Hip assessment and dual energy vertebral assessment
3. The proposed system shall utilize direct digital detector technology to deliver rapid scans
4. The system shall have comprehensive capabilities to cover a complete range of applications (advanced hip assessment, hip axis length, dual femur, upper heck region, dual-energy vertebral assessment, total body, ultralow pediatrics, AP spine, orthopedic analysis and forearm)
5. The system shall have the following technical features:
 - Low patient dose.
 - Active scan area: approx. 60x200cm
 - Scan speeds (mm/sec.): mode dependent
 - Scan parameters: fan automatic mode, width and length, mA, pixel size, speed
 - Scan time, min:
 - 0.5 AP spine
 - 1 dual femur
 - 5 whole body
 - 0.5 forearm
 - Data analysis:
 - Area directly measured
 - BMC
 - BMD
 - T-score
 - Z-score
 - Auto analysis
 - Manual analysis for research or special applications
 - Database with chronological patient data in tabular or graphic format
 - Data corrections
 - Self-calibrating:
 - Integrated program for quality control
 - Uses 3-BMD-level phantom
 - Computer system on mobile trolley to house the computer parts with the following details:
 - Updated operating system
 - Multimedia
 - 2 GB RAM
 - DVD R/W
 - Mouse and keyboard
 - network port
 - 500 GB hard drive

- DICOM
- Positioning system:
 - 113.5.11.1 Fan
 - 113.5.11.2 Automatic w/crosshair laser assist
 - 113.5.11.3 Reposition from console
- Display: 17" SVGA
- Printer: desk jet
- Power requirements: 100-240VAC, 50/60HZ
- Dimensions:
 - Scanner table (HXWxD) approx: 130x110x250cm
 - Operator consol (HXWxD): approx. 70x65x75cm.
- Standard accessories and any needed accessories shall be included to ensure full operation
- Shall be CE marked and/or FDA approved

IMG077 IMAGER, COMPUTER TOMOGRAPHY (CT), 64 slices, with injector

1. This unit shall be an advanced high-speed multi-slice spiral CT scanner that will be used to perform all types of CT examinations including head, spine, chest, abdomen and pelvis in addition to extensive cardiovascular applications.
2. The offered system shall meet or exceed the following minimum specifications:
 - **Gantry:**
 - High-end multi-slice CT scanner that is capable of acquiring at least 64 slices / single rotation simultaneously.
 - Gantry configuration: continuous mono-directional rotation scanning system.
 - Gantry opening (patient aperture): 70 cm or larger.
 - Gantry tilt: $\pm 30^\circ$.
 - Detector type: Solid state.
 - Scan localizer light: laser type.
 - Gantry and table controls: on both sides of the gantry.
 - **X-Ray tube and generator:**
 - Generator nominal power rating: not less than 100 kW
 - Tube Voltage (kVp) range: 80 – 140 kV.
 - Tube Current: 20 – 800 mA or better.
 - Anode heat storage capacity: minimum of 7.5 MHU or equivalent based on high cooling rate.
 - Anode heat cooling rate: 1300 kHU/min or better
 - The anode shall be the dual focus type, with focal spot sizes: 0.7 x 1.0 mm and 1.6 x 1.2 mm, approximately.
 - X-Ray tube design and rated power shall match generator power for optimum performance.
 - **Scanning parameters:**
 - Shortest scan time for a full 360° rotation: 0.35 seconds or less.
 - Maximum horizontal scan length: 170 cm or more
 - Field of View (FOV): 50 cm.
 - Reconstruction time for 512² image matrix at full image quality: 30 images /second, or faster.
 - **Low-contrast resolution (LC):**
 - 20 cm Catphan: 5 mm.
 - Patient skin dose at specified LC: ≤ 20 mGy.
 - High-contrast resolution (HC) at 10% MTF: 16 Lp/cm or better.
 - **Patient Table:**
 - Patient weight capacity without restrictions: 200 kg or better.
 - Table movements shall be fully motorized.
 - Scannable range: 170 cm, or better.
 - Vertical range: 60 – 90 cm, or better.
 - Positioning movement accuracy: ± 0.25 mm.

- **Operator Console and Host Computer:** A high-end computer system should be offered with:
 - It shall incorporate a high speed graphics processor.
 - Dual 18" minimum, flat TFT, high-resolution (1024 x 0124 minimum) display monitors.
 - A high capacity hard disc drive should be offered for local image storage of up to 250,000 images.
 - DVD-CD/ RW should also be offered with DICOM 3.0 (and other formats such as JPEG and TIFF) storage and reading capability.
 - It shall be the multi-tasking type that is capable of performing several functions (such as acquisition, reconstruction, printing and display) simultaneously.
 - The following software functions and packages should be offered:
 - MPR.
 - MIP.
 - Advanced 4D software.
 - CT Angiography.
 - Advanced Cardiac Package including: coronary artery calcification scoring, auto vessel mapping, quantification, ventricular output, and myocardial evaluation.
 - Arrhythmia correction
 - Advanced Vascular Package.
 - Prospective ECG
 - Retrospective ECG
 - Advanced neuro package with perfusion.
 - Respiratory gating
 - Iterative image reconstruction
 - Lung and nodule analysis.
 - Dose reduction software.
 - All available optional software packages and accessories must be listed and quoted separately.
- The system shall be capable of remote diagnostics and shall include an interface that will be capable of interfacing to the manufacturer's remote diagnostics service.
- The system must be FDA approved and CE marked
- It shall be fully DICOM 3.0 compliant with all standard DICOM specifications with interface to the hospital RIS/PACS network/system.

Dye Injector

This section describes the requirements for a contrast media injector that is designed for computed tomography (CT).

The injector should be programmable, dual syringe system, microprocessor controlled with an electromechanical syringe drive mechanism with the following features:

- It shall accommodate disposable syringes of 150 and / or 200 mL capacity.
- It shall have an approximate flow rate range of 0.1 to 10 mL/second.
- It shall have an approximate volume range of 1 to 150 or 200 mL (full capacity of syringe).
- It shall have an approximate delivery pressure range of 50 to 300 psi, or better.
- It shall have user-selectable pressure adjustments.
- It shall employ automatic volume stop mechanisms.
- Continuous status display.
- It shall be capable of being operated from a control panel at CT control console.
- It shall be capable of being synchronized with the CT system.

The unit should be ceiling mounted if possible (refer to site situation)

The system must be FDA approved and CE marked

- Complete pre-installation site preparation works inclusive of chiller/ cooler , floor ducting, power distribution cabinet and finishing shall be delivered and installed by the supplier including the manufacturer designed XRAY shielding and coordinated with the civil and electromechanical contractors as required. Radiation warning lights (interlocked with system's power-on) and warning signs shall be installed by the supplier in accordance with international and local regulations. Equipment and computer cabinets and control console desk with two operator chairs shall all be included with the system. Final finishing works to be coordinated with building contractor. All final non shielding finishing including painting, tiling, socket outlets etc, after the install of medical and shielding items will be done by building contractor and must be in coordination and with supervision of Radiology supplier

IMG080 Imager, MRI, 1.5 Tesla

1. The proposed system should be based on a superconductive magnet of a magnetic field of 1.5T.
2. Bidder should provide a certificate stating that the system is currently in production and will be for the next 2 years.
3. The System should comply with international health organization such as FDA and CE.
4. Bidder shall provide proof of at least 3 similar MRI systems locally installed.
5. The system shall be equipped with parallel imaging technique to be explained in details.
The parallel imaging factor should correspond to maximum time acceleration not less than 6.
6. The system shall meet DICOM3 standard to store query and print images as well as compatible with any existing HIS/RIS System.
7. The system should include the following:
 - 7.1. Magnet System.
 - 7.2. Patient Table.
 - 7.3. Radio Frequency System and Coils.
 - 7.4. Gradient system.
 - 7.5. Sequences and Software Packages.
 - 7.6. Computer system.
 - 7.7. Main Console.
 - 7.8. Stand-alone workstation.
 - 7.9. RF cage.
 - 7.10. Accessories and Safety items.
 - 7.11. Training.

I- MAGNET SYSTEM

8. Superconductive Helium cooled 1.5T with active shielding.
9. Helium consumption should be lower than 0.03l/hour and helium refill less than once a year, for regenerative system yearly electrical consumption should be stated.
10. The magnet should be 90% fill of Helium upon delivery
11. Magnet should be of short flared bore of 1.7m length maximum and minimum weight.
12. The interior should be equipped with light, air ventilation and music.
13. The homogeneity of the magnet should enable a large anatomical field of view greater than 53cm with a homogeneity not exceeding 1ppm DSV.
14. Advanced shim high order is required.

II- PATIENT TABLE

15. Either fixed or removable or dockable with a minimum patient load of 200Kg.
16. Table top should be operated manually to pull out the patient in case of emergency or disaster power failure.

III- RADIOFREQUENCY SYSTEM AND COILS

17. The transmit RF chain should be of digital structure offering high level of precision and power (not less than 15KW).
18. The receive chain shall be of 8 independent channels, upgradeable to 16 channel shall be quoted separately.
19. The RF receiver bandwidth of each of the independent channels is 2MHZ minimum and shall be automatically set, adjusted and modified
20. The aim of the independent RF channels is to use parallel imaging techniques, therefore the time acceleration factor of any parallel imaging technique should be at least 6 or preferably 8.
21. Parallel imaging should be applicable to any imaging sequence for all RF coils.
22. The System should accept connecting and combining multiple coils at the same time so that imaging of different anatomical structure should be done without repositioning the patient
23. The system should be proposed with the following RF coils:
 - 23.1. **Integrated body coil.** Includes multiple elements and capable of total body imaging and total body Angio.
 - 23.2. **Neuro Vascular Rigid coil** of 18 elements minimum covering Head (minimum 8 elements/channels) neck (minimum 4 elements/channels) and upper thorax (minimum 6 channels/elements). The maximum parallel imaging (time acceleration) factor of 8 at least.
 - 23.3. **Phased Array Spine Coil** of 10 channels at least covering Cervical, thoracic and lumbar spine. Parallel imaging compatible.
 - 23.4. **Body Coil** of 4 elements/channels that enables scanning of abdominal and pelvic region with a parallel imaging factor of at least .4
 - 23.5. **Shoulder coil** of at least 4 channels/elements capable of parallel imaging factor .4
 - 23.6. **Knee Coil** of at least 8 channels/elements capable of scanning with parallel imaging factor of at least 8.
 - 23.7. **Foot Ankle Coil** of at least 8 channels/elements capable of scanning with parallel imaging factor of at least 8.
 - 23.8. **Wrist Coil** of at least 8 channels/elements capable of scanning with parallel imaging factor of at least 8
 - 23.9. **Breast Coil** of at least 7 channels/elements capable of scanning both breasts with parallel imaging factor of at least 4.
 - 23.10. **“Three” Flexible Coils: small size, medium and large** General purpose coil with a capability of parallel imaging factor of 2.
 - 23.11. TMJ fixation device to enable TMJ scanning.
 - 23.12. **Mattress** to enables bilateral MR Mammography imaging.
- IV- GRADIENT SYSTEM**
24. The Gradient rating in each of the 3 axis should produce a uniform gradient of at least 33mT/m amplitude and 100mT/m/s slew rate..
25. The Gradient should be of active shielding non resonant operating on the Full FOV of at least 50cm without limitations.
26. Water cooled system through a provided chiller.
27. Duty cycle of 100%.
28. Acoustic Gradient noise reduction of 80% should be provided.

V- SEQUENCES AND SOFTWARE PACKAGES

29. The proposed system should include the following standard sequences:

- 29.1. Spin Echo (single, dual, multi echo, asymmetric echo) (2D, 3D); T1-, T2-weighted.
- 29.2. Fast spin echo (single, dual); 2D, 3D.
- 29.3. Inversion Recovery (IR): fast IR, T1- and T2-weighted; dual IR, short T1 inversion recovery (STIR), fast fluid attenuated inversion recovery (FLAIR and turbo FLAIR).
- 29.4. Gradient echo: (single, dual, multi echo) (2D, 3D): T1- and T2- weighted; fast 2D and 3D (fast and turbo field echo, fast gradient echo).
- 29.5. Echo planar imaging (EPI) (single or multishot): It shall be suitable for minimum 256 factors.
- 29.6. Fat suppression T1- and T2-weighted fast spin echo and gradient echo (2D and 3D) sequences, breath-hold sequences.
- 29.7. Inflow angiography / Time of Flight angiography (2D, 3D)
- 29.8. Phase Contrast Angiography (2D, 3D).
- 29.9. CSF Cine Acquisition.
- 29.10. Black Blood Imaging.
- 29.11. The sequences shall include Magnetization Transfer contrast (MTC) and Magnetization Transfer Rate (MTR) quantitative analyses.
- 29.12. Dynamic Imaging.

30. The proposed system should include the following advanced sequences:

- 30.1. Thrive or 3D Vibe.
- 30.2. Venous Blood or SWI.
- 30.3. 2D 3D Steady State Sequence (B-FFE or True FISP).
- 30.4. TSE with Flip Back Pulse (DRIVE, RESTORE).
- 30.5. 3D TSE (VISTA, SPACE 3D) applicable in different contrasts and anatomies.
- 30.6. GRE or FID EPI.
- 30.7. Fat and Water spectral excitation and separation including SPAIR DIXON and Silicon sequences.
- 30.8. Motion correction sequences, techniques and algorithms and snap shot fast scans applicable in different anatomies (brain, Liver, breast...) and with different sequences TSE, EPI, etc... (Multilane, 1D 2D 3D PACE BLADE BRACE).

31. The proposed system should include the following software packages:

- 31.1. Diffusion and Perfusion including ADC maps and Colour-coded perfusion maps (TTP, MMT, CBF, CBV, etc.).
- 31.2. Basic Cardiac.
- 31.3. Whole Body imaging with multistation or moving table acquisition.
- 31.4. Whole Body Angiography.
- 31.5. Proton single and multivoxel spectroscopy for brain and other body parts such as prostate and breast.
- 31.6. Diffusion Tensor imaging including Tractography or equivalent.
- 31.7. Diffusion weighted imaging with background suppressed.
- 31.8. High resolution 1024 acquisition imaging.
- 31.9. Techniques to reproduce the same scans for patient follow up.
- 31.10. Techniques based on anatomy recognition to automated scan planning at least for brain.

VI- COMPUTER SYSTEM

32. The proposed system should be equipped with a high end 64 bit computer system with an internal memory of 4GB at least enabling the following simultaneous tasks:
- 32.1. Scanning.
 - 32.2. Image stacks reconstruction.
 - 32.3. Archive on DVD.
 - 32.4. Exam review.
 - 32.5. Image reformats and data transfer through network.
33. The proposed system should be equipped with a high end dedicated 64 bit reconstructor computer system with an internal memory of 6GB at least enabling full reconstruction of 1200 images (256x256)/second.

VII- MAIN CONSOLE

34. The operator console shall include a complete **customizable Exam protocols** than include structured multi sequences. Exam Protocols can be executed automatically with necessary post processing and easily exchanged between medical centers having similar systems.
35. The following operations should be performed via the main operation console: Data acquisition, Image generation (reconstruction), Real-time reformation (MPR), Cine display, Image zooming, field of interest selection and viewing different images on the screen, automatic window adjustment and the additional control selection of window settings, Image rotating, Rotating image upward-downward, left- right direction, comparing two, three or four images simultaneously, histogram selection, distance and angle measurement, software for on-screen marking and writing, MIP, Subtraction , In diffusion examination: trace and ADC maps together with the ADC measurements, Color-coded maps in brain perfusion examinations (TTP, rCBV, rCBF, MTT, etc.), Image transfer, Archiving operations; Film printing, Image filtering operation.
36. All proposed software packages should run on the main console, any software package that runs only on the Stand alone Workstation should be clearly stated
37. The local storage capacity within the main console should not be less than 400,000 images of 256x256 uncompressed.
38. The main console should be equipped with a high quality color LCD high resolution monitor (minimum 1280x1024) of 21" viewable area minimum.
39. The main console should be DICOM 3.0 compliant for the following services: Store SCU/SCP, query SCP, Print SCU, and DICOM MEDIA.

VIII- STAND ALONE WORKSTATION

40. The SA Workstation shall perform the same tasks as the main console except for acquisition and acquisition related functionalities.
41. The SA Workstation should have the same software interface as the main console.
42. The local storage of the SA Workstation capacity to be specified.
43. The SA Workstation should be equipped with a high quality color LCD high resolution monitor (minimum 1280x1024) of 19" viewable area minimum.
44. The SA Workstation should be DICOM 3.0 compliant for the following services: Store SCU/SCP, query SCP, Print SCU, and DICOM MEDIA.

IX- RF CAGE

45. The proposed system should include a manufacturer approved RF cage manufactured by reputable company with known references.
46. The RF cage should comply with MIL Standard across the RF spectrum and include a large window (minimum 120x80cm) as well as a standard RF shielded door.
47. The RF Cage should include a Ceiling, wall and floor sound damping system.
48. All final non shielding finishing including painting, tiling, socket outlets etc, after the install of RF cage will be done by building contractor and must be in coordination and with supervision of MRI supplier.

X- ACCESSORIES AND SAFETY SYSTEMS

49. The proposed system should include the following accessories:

- 49.1. Accessory Cart.
- 49.2. Coil Cabinet.
- 49.3. Non Magnetic patient trolley, made of non-ferrous materials
- 49.4. Non Magnetic Wheel Chair.
- 49.5. System Chillers.
- 49.6. Hand held Metal Detector.

XI- DUAL HEAD CONTRAST MEDIA INJECTOR MRI COMPATIBLE

INJECTOR TO INCLUDE

50. Injector head with precision 65ml Contrast and 115ml saline syringes, integrated on a mobile stand for Examination Room.
51. Display control unit with touch-screen with 6 user programmable phases and capability to store and recall injection protocols for Control Room.
52. A single battery, fitted in the base of the stand to operate the injector head
53. Remote charger with a second battery.
54. Fiber optic cable to connect the Injector head with the Display control unit.
55. Remote hand switch.
56. MRI Disposable syringe kit.

SPECIFICATIONS

57. Volume Syringe A: 0.5 ml to maximum syringe volume in:
 - 0.1ml increments between 0.5 and 31 ml
 - 1 ml increments for 31 ml and above
58. Volume Syringe B 1 ml to max. syringe volume in: 1 ml increments
59. Programmable Flow Rate:
 - 0.01to 10 ml/s in:
 - ml/s increments between 0.01 and 3.1 ml/s
 - 0.1ml/s increments between 3.1 and 10 ml/s
60. Programmable KVO:
 - 15 seconds
 - 20 seconds
 - 30 seconds to 75 seconds, 0.25 ml pulse
 - 325 psi Maximum
61. Pressure Safety Limit
62. Delay 1 to 300 seconds in 1 second increments
63. Pause Phase 1 to 900 seconds in 1 second increments

- 64. Injection Capabilities 6 phases per protocol
- 65. Storage capacity 32 protocols of up to 6 phases each
- 66. Protocol and user configuration memory to be maintained when system power is turned off

INC004 INCUBATOR, baby (including weighing scale)

1. Microprocessor controlled IC infant incubator for use in the NICU to safely warm an infant by circulating heated air over the skin in a closed, controlled environment
2. Modes of operation shall include automatic mode and manual mode
3. Variable temperature settings shall not exceed 37⁰ C in the auto mode.
 - 3.1. Higher temperature settings in the manual mode shall be possible only with an overriding function
 - 3.2. In the manual mode, there must be an alarm every 15 minutes, with an automatic heater shutoff if the alarm is not reset
4. Digital numeric display of actual temperatures of hood and patient and control (set) temperature (skin or rectal)
 - 4.1. Temperature setting increments should be 0.1⁰ C
 - 4.2. Temperature display resolution shall be 0.1⁰ C
 - 4.3. Temperature display accuracy shall be $\leq 0.1^{\circ}$ C
5. Skin and rectal reusable probes should be available.
 - 5.1. Two of each should be supplied with the unit at no additional cost
6. Extensive safety features shall be applied, including audiovisual alarms and specific alarm message indications for:
 - 6.1. High/low patient temperature
 - 6.2. High / low Air temperature
 - 6.3. Sensor failure
 - 6.4. Air circulation (fan) failure
 - 6.5. Internal (system) failure
 - 6.6. Power failure alarm with alarm battery Backup
7. When alarm silence is activated, the alarm shall automatically reactivate within 15 minutes if the alarm condition has not been rectified.
8. Secondary temperature safety device shall be incorporated in case of failure of the primary thermal sensing mechanism. Specify type and characteristics.
9. Easy accessibility for infant in case of emergency. Specify (retractable hood, sliding tray, etc.)
10. Temperature deviation shall be minimal if hood is completely open. Provide data.
11. The incubator shall incorporate the following items and accessories:
 - 11.1. Six hand ports

- 11.2. Six tubing ports
 - 11.3. Oxygen inlet connection
 - 11.4. Easily accessible humidification container
 - 11.5. Tilting platform (up to 12°). Specify
 - 11.6. Low fan noise level as measured inside the incubator chamber (specify, should be ≤ 60 dB in normal operating conditions, and ≤ 80 dB in alarm conditions)
 - 11.7. Bacteria filter
 - 11.8. Monitor shelf
 - 11.9. IV pole
12. The carrying cabinet should include, in addition to the cabinet itself, at least one drawer for accessory storage
- 12.1. Cabinet should be mobile with four swiveling, lockable castors for easy mobility and maneuverability

INCTPT Transport Incubator

1. Incubator with air/skin mode heating, collapsible trolley with provision to keep re-fillable oxygen cylinder and battery.
2. Incubator with Double Wall Canopy, Front and Head End Access Doors with Access portholes and Tubing Access Ports. (2 access doors, 2 disposable infant restraint straps, 1 Iris port, 2 Quiet Touch port doors. 6 tubing ports)
3. Digital Displays of Air and Baby Skin Temperatures, set range 22.0° C - 38° C (71° F - 100° F)
4. Indicators for Mains and Battery Modes of Operation :
5. Indicator for Battery Power Capacity: Battery condition status 4 LED indication of battery charge and heater power condition 25-100%. Maintenance free, re-chargeable. Should support all functions together continuously for at least 2 hours
6. Examination Light.
7. Power mode Illuminates AC, DC, or external DC, AC and 12VDC Connectors.
8. Front mounted gas content display
9. Comprehensive Alarm System : Alarm indicators for High temp, Power fail, Sensor fault, Heater temp, Air flow, Low DC
10. 2D or 2E size tank mounts The tank mount permits mounting gas cylinders with a diameter of up to 4.5 in (11.6 cm) and up to 34 in (85 cm) in length
11. Should have O2 concentration range 21% to 58% minimum
12. Should have Noise level,60 dBA
13. Humidity pad Holds 400 ml.(14 oz) sterile distilled water with no significant spillage for up to 45° tilt in either direction with relative humidity 50 to 70% for 10-12 hours using humidity pad
14. Air filter Removes >99% of airborne particles greater than 0.5 micron diameter
15. Controller Displays : On/standby Illuminates when "On"
16. Storage temperature -40° C to 70° C ambient.
17. Trolley: Sturdy trolley, sturdy & shock absorbing Wheels. Space for accessories
18. Power : On mains 230V AC + 10%, 50 Hz + 3%
19. Should have Optional Features like Accessory shelf, IV pole, High Hood, Pressure Regulator and Flowmeter
20. The system should have European CE and/or US FDA approved

INCTPT-V Transport Incubator with ventilator

1. Incubator with air/skin mode heating, collapsible trolley with provision to keep re-fillable oxygen cylinder and battery.
2. Incubator with Double Wall Canopy, Front and Head End Access Doors with Access portholes and Tubing Access Ports. (2 access doors, 2 disposable infant restraint straps, 1 Iris port, 2 Quiet Touch port doors. 6 tubing ports)
3. Digital Displays of Air and Baby Skin Temperatures, set range 22.0° C - 38° C (71° F - 100° F)
4. Indicators for Mains and Battery Modes of Operation :
5. Indicator for Battery Power Capacity: Battery condition status 4 LED indication of battery charge and heater power condition 25-100%. Maintenance free, re-chargeable. Should support all functions together continuously for at least 2 hours
6. Examination Light.
7. Power mode Illuminates AC, DC, or external DC, AC and 12VDC Connectors.
8. Front mounted gas content display
9. Comprehensive Alarm System : Alarm indicators for High temp, Power fail, Sensor fault, Heater temp, Air flow, Low DC
10. 2D or 2E size tank mounts The tank mount permits mounting gas cylinders with a diameter of up to 4.5 in (11.6 cm) and up to 34 in (85 cm) in length
11. Should have O2 concentration range 21% to 58% minimum
12. Should have Noise level,60 dBA
13. Humidity pad Holds 400 ml.(14 oz) sterile distilled water with no significant spillage for up to 45° tilt in either direction with relative humidity 50 to 70% for 10-12 hours using humidity pad
14. Air filter Removes >99% of airborne particles greater than 0.5 micron diameter
15. Controller Displays : On/standby Illuminates when "On"
16. Storage temperature -40° C to 70° C ambient.
17. Trolley: Sturdy trolley, sturdy & shock absorbing Wheels. Space for accessories
18. Power : On mains 230V AC + 10%, 50 Hz + 3%
19. Should have Optional Features like Accessory shelf, IV pole, High Hood, Pressure Regulator and Flowmeter
20. In built pressure limited time cycled ventilator preferable
21. The system should have European CE and/or US FDA approved

INF001 Infusion Volumetric Pump, Single Channel

1. Single channel IV volumetric infusion pump for use in critical and general care areas for all patient populations (adult, pediatric and neonates)
2. Microprocessor controlled, easy to use, with large, digital LCD alphanumeric display of parameters and alarms
3. Variable rate ranging from
 - 3.1. 0.1 to 99.9 ml/hr (or better) in 0.05 mL/hr increments in micro mode
 - 3.2. 0.1 to 999.9 ml/hr (or better) in 1 mL/hr increments in normal mode
4. 5 % accuracy or better. State whether a dedicated infusion set is required to maintain the specified accuracy range. If open system, state so.
5. Dose rate calculation
6. Variable volume-to-be-infused from 1 to 10,000 mL
7. Variable infusion time from 1 minute to 60 hours or better
8. Keep Vein Open (KVO) rate 1 to 5 ml/hr (specify)
9. Piggyback capability (primary / secondary)
10. Digitally displayed parameters to include:
 - 10.1. Infusion rate
 - 10.2. Volume to be infused
 - 10.3. Total infused volume
 - 10.4. Remaining / elapsed infusion time
 - 10.5. Battery / AC operation
 - 10.6. Running indicator
 - 10.7. Time to dose
 - 10.8. Dose remaining
 - 10.9. Reservoir volume
 - 10.10. Alarming condition when active, with indication of alarm type or code
 - 10.11. Back pressure monitor / indicator. If variable occlusion pressure, specify pressure range and default value
11. Programming modes shall include but not be limited to:
 - 11.1. Normal mode
 - 11.2. Micro mode
 - 11.3. Ramp up
 - 11.4. Ramp down
 - 11.5. Primary, secondary and sequential
 - 11.6. Bolus
 - 11.7. Combinations of above listed modes (list)
12. Audiovisual alarms shall include but not be limited to the following:

- 12.1. Infusion set installation and integrity
 - 12.2. Door open
 - 12.3. Air in line
 - 12.4. Line disconnection or free flow (sudden drop in back pressure)
 - 12.5. Occlusion pressure pre-alarm (upstream and downstream)
 - 12.6. Occlusion pressure (upstream and downstream)
 - 12.7. Near end of infusion
 - 12.8. End of infusion
 - 12.9. Empty fluid container
 - 12.10. Unlocked container
 - 12.11. Low battery pre-alarm
 - 12.12. Discharged battery
 - 12.13. Internal malfunction
13. Data log capability and data port for data transmission, display and printing. Any required software for such function shall be included.
14. Logged data to include:
- 14.1. Settings
 - 14.2. Alarms
 - 14.3. Errors
15. Safety features shall include but not be limited to:
- 15.1. Self-test at start-up
 - 15.2. Nurse call interfacing capability
 - 15.3. Splash proof design
 - 15.4. Auto priming
 - 15.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 15.6. Keypad lock
 - 15.7. Impossibility to improperly install infusion set
 - 15.8. Free flow prevention system
 - 15.9. Last parameter setting retention
16. Additional features (if available) shall be listed with their corresponding specs. Features such as:
- 16.1. Preset drug labels
 - 16.2. User parameter setting storage memory
 - 16.3. Programmable profiles for different patients / areas
 - 16.4. Air trapping capability with air accumulation quantity measurement
17. IV stand mounting clamp shall be included
18. Line and rechargeable battery operation
19. Battery autonomy of 3 hrs or more when fully charged. Specify:

- 19.1. Battery type and characteristics (voltage and current capacity)
- 19.2. Autonomy at 10 mL/hr
- 19.3. Recharging time from depleted to 90%

INF001-T Infusion Volumetric Pump, Single Channel with stand

1. Single channel IV volumetric infusion pump for use in critical and general care areas for all patient populations (adult, pediatric and neonates)
2. Microprocessor controlled, easy to use, with large, digital LCD alphanumeric display of parameters and alarms
3. Variable rate ranging from
 - 3.1. 0.1 to 99.9 ml/hr (or better) in 0.05 mL/hr increments in micro mode
 - 3.2. 0.1 to 999.9 ml/hr (or better) in 1 mL/hr increments in normal mode
4. 5 % accuracy or better. State whether a dedicated infusion set is required to maintain the specified accuracy range. If open system, state so.
5. Dose rate calculation
6. Variable volume-to-be-infused from 1 to 10,000 mL
7. Variable infusion time from 1 minute to 60 hours or better
8. Keep Vein Open (KVO) rate 1 to 5 ml/hr (specify)
9. Piggyback capability (primary / secondary)
10. Digitally displayed parameters to include:
 - 10.1. Infusion rate
 - 10.2. Volume to be infused
 - 10.3. Total infused volume
 - 10.4. Remaining / elapsed infusion time
 - 10.5. Battery / AC operation
 - 10.6. Running indicator
 - 10.7. Time to dose
 - 10.8. Dose remaining
 - 10.9. Reservoir volume
 - 10.10. Alarming condition when active, with indication of alarm type or code
 - 10.11. Back pressure monitor / indicator. If variable occlusion pressure, specify pressure range and default value
11. Programming modes shall include but not be limited to:
 - 11.1. Normal mode
 - 11.2. Micro mode
 - 11.3. Ramp up
 - 11.4. Ramp down
 - 11.5. Primary, secondary and sequential
 - 11.6. Bolus
 - 11.7. Combinations of above listed modes (list)
12. Audiovisual alarms shall include but not be limited to the following:

- 12.1. Infusion set installation and integrity
 - 12.2. Door open
 - 12.3. Air in line
 - 12.4. Line disconnection or free flow (sudden drop in back pressure)
 - 12.5. Occlusion pressure pre-alarm (upstream and downstream)
 - 12.6. Occlusion pressure (upstream and downstream)
 - 12.7. Near end of infusion
 - 12.8. End of infusion
 - 12.9. Empty fluid container
 - 12.10. Unlocked container
 - 12.11. Low battery pre-alarm
 - 12.12. Discharged battery
 - 12.13. Internal malfunction
13. Data log capability and data port for data transmission, display and printing. Any required software for such function shall be included.
14. Logged data to include:
- 14.1. Settings
 - 14.2. Alarms
 - 14.3. Errors
15. Safety features shall include but not be limited to:
- 15.1. Self-test at start-up
 - 15.2. Nurse call interfacing capability
 - 15.3. Splash proof design
 - 15.4. Auto priming
 - 15.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 15.6. Keypad lock
 - 15.7. Impossibility to improperly install infusion set
 - 15.8. Free flow prevention system
 - 15.9. Last parameter setting retention
16. Additional features (if available) shall be listed with their corresponding specs.
Features such as:
- 16.1. Preset drug labels
 - 16.2. User parameter setting storage memory
 - 16.3. Programmable profiles for different patients / areas
 - 16.4. Air trapping capability with air accumulation quantity measurement
17. IV stand shall be included
18. Line and rechargeable battery operation
19. Battery autonomy of 3 hrs or more when fully charged. Specify:
- 19.1. Battery type and characteristics (voltage and current capacity)

- 19.2. Autonomy at 10 mL/hr
- 19.3. Recharging time from depleted to 90%

INF002 Infusion Volumetric Pump, Multi-Channel

1. Dual-channel IV volumetric infusion pump for use in critical and general care areas for adult and pediatric patients
2. Microprocessor, independently controlled, easy to use, with large, digital LCD alphanumeric display of parameters and alarms for all infusion channels simultaneously
3. The following specifications shall be valid for all infusion channels
 - 3.1. Variable rate ranging from
 - 3.2. to 99.9 ml/hr (or better) in 0.1 mL / hr increments in micro mode
 - 3.3. to 999.9 ml/hr (or better) in 1 mL / hr increments in normal mode
 - 3.4. 5 % accuracy or better. State whether a dedicated infusion set is required to maintain the specified accuracy range. If open system, state so.
 - 3.5. Dose rate calculation
 - 3.6. Variable volume-to-be-infused from 1 to 10,000 mL
 - 3.7. Variable infusion time from 1 minute to 60 hours or better
 - 3.8. Keep Vein Open (KVO) rate 1 to 3 ml/hr (specify)
 - 3.9. Piggyback capability (primary / secondary)
 - 3.10. Digitally displayed parameters to include:
 - 3.10.1. Infusion rate
 - 3.10.2. Volume to be infused
 - 3.10.3. Total infused volume
 - 3.10.4. Remaining / elapsed infusion time
 - 3.10.5. Battery / AC operation
 - 3.10.6. Running indicator
 - 3.10.7. Alarming condition when active, with indication of alarm type or code
 - 3.10.8. Back pressure monitor / indicator. If variable occlusion pressure, specify pressure range and default value
 - 3.11. Programming modes shall include but not be limited to:
 - 3.11.1. Normal mode
 - 3.11.2. Micro mode
 - 3.11.3. Ramp up
 - 3.11.4. Ramp down
 - 3.11.5. Primary, secondary and sequential
 - 3.11.6. Bolus
 - 3.11.7. Combinations of above listed modes (list)
 - 3.12. Audiovisual alarms shall include but not be limited to the following:
 - 3.12.1. Infusion set installation and integrity
 - 3.12.2. Door open

- 3.12.3. Air in line
 - 3.12.4. Line disconnection or free flow (sudden drop in back pressure)
 - 3.12.5. Occlusion pressure pre-alarm (upstream and downstream)
 - 3.12.6. Occlusion pressure (upstream and downstream)
 - 3.12.7. Near end of infusion
 - 3.12.8. End of infusion
 - 3.12.9. Empty fluid container
 - 3.12.10. Low battery pre-alarm
 - 3.12.11. Discharged battery
 - 3.12.12. Internal malfunction
4. Data log capability and data port for data transmission, display and printing. Any required software for such function shall be included.
5. Logged data to include:
- 5.1. Settings
 - 5.2. Alarms
 - 5.3. Errors
6. Safety features shall include but not be limited to:
- 6.1. Self-test at start-up
 - 6.2. Nurse call interfacing capability
 - 6.3. Splash proof design
 - 6.4. Auto priming
 - 6.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 6.6. Keypad lock
 - 6.7. Impossibility to improperly install infusion set
 - 6.8. Free flow prevention system
 - 6.9. Last parameter setting retention
7. Additional features (if available) shall be listed with their corresponding specs. Features such as:
- 7.1. Preset drug labels
 - 7.2. User parameter setting storage memory
 - 7.3. Programmable profiles for different patients / areas
 - 7.4. Air trapping capability with air accumulation quantity measurement
 - 7.5. Other (specify)
8. IV stand mounting clamp shall be included
9. Line and rechargeable battery operation
10. Battery autonomy of 3 hrs or more when fully charged. Specify:
- 10.1. Battery type and characteristics (voltage and current capacity)
 - 10.2. Autonomy at 10 mL/hr
 - 10.3. Recharging time from depleted to 90%

INF002-T Infusion Volumetric Pump, Multi-Channel with stand

1. Dual-channel IV volumetric infusion pump for use in critical and general care areas for adult and pediatric patients
2. Microprocessor, independently controlled, easy to use, with large, digital LCD alphanumeric display of parameters and alarms for all infusion channels simultaneously
3. The following specifications shall be valid for all infusion channels
 - 3.1. Variable rate ranging from
 - 3.2. to 99.9 ml/hr (or better) in 0.1 mL / hr increments in micro mode
 - 3.3. to 999.9 ml/hr (or better) in 1 mL / hr increments in normal mode
 - 3.4. 5 % accuracy or better. State whether a dedicated infusion set is required to maintain the specified accuracy range. If open system, state so.
 - 3.5. Dose rate calculation
 - 3.6. Variable volume-to-be-infused from 1 to 10,000 mL
 - 3.7. Variable infusion time from 1 minute to 60 hours or better
 - 3.8. Keep Vein Open (KVO) rate 1 to 3 ml/hr (specify)
 - 3.9. Piggyback capability (primary / secondary)
 - 3.10. Digitally displayed parameters to include:
 - 3.10.1. Infusion rate
 - 3.10.2. Volume to be infused
 - 3.10.3. Total infused volume
 - 3.10.4. Remaining / elapsed infusion time
 - 3.10.5. Battery / AC operation
 - 3.10.6. Running indicator
 - 3.10.7. Alarming condition when active, with indication of alarm type or code
 - 3.10.8. Back pressure monitor / indicator. If variable occlusion pressure, specify pressure range and default value
 - 3.11. Programming modes shall include but not be limited to:
 - 3.11.1. Normal mode
 - 3.11.2. Micro mode
 - 3.11.3. Ramp up
 - 3.11.4. Ramp down
 - 3.11.5. Primary, secondary and sequential
 - 3.11.6. Bolus
 - 3.11.7. Combinations of above listed modes (list)
 - 3.12. Audiovisual alarms shall include but not be limited to the following:
 - 3.12.1. Infusion set installation and integrity
 - 3.12.2. Door open

- 3.12.3. Air in line
 - 3.12.4. Line disconnection or free flow (sudden drop in back pressure)
 - 3.12.5. Occlusion pressure pre-alarm (upstream and downstream)
 - 3.12.6. Occlusion pressure (upstream and downstream)
 - 3.12.7. Near end of infusion
 - 3.12.8. End of infusion
 - 3.12.9. Empty fluid container
 - 3.12.10. Low battery pre-alarm
 - 3.12.11. Discharged battery
 - 3.12.12. Internal malfunction
4. Data log capability and data port for data transmission, display and printing. Any required software for such function shall be included.
5. Logged data to include:
- 5.1. Settings
 - 5.2. Alarms
 - 5.3. Errors
6. Safety features shall include but not be limited to:
- 6.1. Self-test at start-up
 - 6.2. Nurse call interfacing capability
 - 6.3. Splash proof design
 - 6.4. Auto priming
 - 6.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 6.6. Keypad lock
 - 6.7. Impossibility to improperly install infusion set
 - 6.8. Free flow prevention system
 - 6.9. Last parameter setting retention
7. Additional features (if available) shall be listed with their corresponding specs. Features such as:
- 7.1. Preset drug labels
 - 7.2. User parameter setting storage memory
 - 7.3. Programmable profiles for different patients / areas
 - 7.4. Air trapping capability with air accumulation quantity measurement
 - 7.5. Other (specify)
8. IV stand shall be included
9. Line and rechargeable battery operation
10. Battery autonomy of 3 hrs or more when fully charged. Specify:
- 10.1. Battery type and characteristics (voltage and current capacity)
 - 10.2. Autonomy at 10 mL/hr
 - 10.3. Recharging time from depleted to 90%

KIC010 KICK bucket

1. The requirements for a Kick Bucket. In general, this Kick Bucket should be designed for use in the operating room.
2. The basin stand kick bucket shall have the following features:
 - 2.1. Constructed entirely in 18/10 stainless steel.
 - 2.2. Mobile, mounted on five castors.
 - 2.3. Single bucket, approx 40 cm diam.

LAB001 Tourniquets (set)

Tourniquets should have the following features:

1. Easy to use
2. 2 choices for pressure release: instant or gradual release
3. Ribbon should be of special material to avoid inflammation
4. Blood proof

LAB002

Syringes (case)

1. Sterile syringes of various sizes
2. Latex free with or without needles
3. Made of polypropylene
4. Cannula made of stainless steel

LAB005 Blood Collection Tubes (Box)

The non-vacuumed blood collection tubes are manufactured for the applications that just require traditional method to collect the blood sample for in vitro application

- Tubes should indicate expiration date
- Tubes should have solution for the required test
- Cap of the tube should be properly attached to the tube
- Tubes should be dry

LAB015 Embedding Centre, Automated

1. Paraffin embedding console for use in the clinical histopathology laboratory
2. Microprocessor controlled heating and cooling regulation for all components
3. Independent control and display of each temperature within the system
4. The embedding center shall be composed of the following components
5. Cold Plate
 - 5.1. To be constructed from durable, corrosion and abrasion resistant material, preferably SS.
 - 5.2. To hold up to ~ 40 cassettes simultaneously
 - 5.3. Temperature ~ - 10°C. If variable, state range.
 - 5.3.1. Specify accuracy and stability
 - 5.3.2. Specify time required to achieve temperature
 - 5.3.3. Specify cooling method (CFC free refrigerant)
 - 5.4. To incorporate a drip containment device (drawer or tray. Specify)
 - 5.5. Digital display of temperature (specify resolution and accuracy)
 - 5.6. Sealed work surface
6. Embedding Console
 - 6.1. To include a paraffin bath / dispenser with capacity ≥ 5 liters
 - 6.2. Nozzle dispensing control by hand switch or foot pedal
 - 6.3. Variable temperature from ~ 50°C to 70°C
 - 6.3.1. Specify accuracy and stability
 - 6.3.2. Specify time required to achieve temperature
 - 6.3.3. Specify heating method
 - 6.4. Heated working surface with illuminator and magnifier.
 - 6.5. Specify area and wax drainage system
 - 6.6. Digital display of plate and paraffin temperatures (specify resolution and accuracy)
 - 6.7. Insulated wrist / hand rest
 - 6.8. Heated forceps and positioning well shall be included. Provide specs.
 - 6.9. Peltier cooling spot
7. Warming Console
 - 7.1. To incorporate a heated cassette bath and tray and mold warmer with lid
 - 7.2. Specify number of tissue cassettes that can be stored simultaneously
 - 7.3. Variable temperature from ~ 40°C to 80°C
 - 7.3.1. Specify accuracy and stability
 - 7.3.2. Specify time required to achieve temperature
 - 7.3.3. Specify heating method

8. Paraffin Pitcher - Wax Dispenser

- 8.1. 3 Liters paraffin reservoir
- 8.2. The paraffin dispensing system with integrated filter shall ensure constant, reproducible flow, with ten flow rate settings.
- 8.3. Paraffin dispensing can be activated manually, via foot switch or paraffin mold handle.
- 8.4. To facilitate filling of large molds the dispensing handle may be retracted.

LAB016 TISSUE PROCESSOR, Automatic

1. Fully automated, microprocessor controlled (or PC based) tissue processor for paraffin processing (fixation, dehydration, cleaning, and infiltration) of tissue specimens (without altering their cellular components) for further microtome slicing and microscopic analysis
2. Totally enclosed “closed loop system” using charcoal filters for fume contamination
3. Gentle counter-stir agitation for maximum fluid penetration through the baskets and cassettes
4. Unique reaction chamber to optimize temperature uniformity and continuous agitation
5. Color-coded reagent bottles that plugs easily into position
6. LCD monitor display with full on-screen graphic display
7. User selectable processing parameters shall include, but not limited:
 - 7.1. Heat
 - 7.2. Pressure
 - 7.3. Vacuum
 - 7.4. Immersion time
 - 7.5. Drain time
 - 7.6. Agitation
8. Real time programming to delay start
9. Multilevel pass code security
10. Quality control to alert user when to change reagents and perform maintenance /service
11. Remote monitoring is an asset
12. Safety and operational features shall include:
 - 12.1. Audiovisual alarms to include:
 - 12.1.1. Reagent filling
 - 12.1.2. Temperature
 - 12.1.3. Lid locking
 - 12.1.4. Pressure out of range
 - 12.2. Automatic under fill recovery system to protect specimens
 - 12.3. Independent, selectable flushes (standard or extended flush)
 - 12.4. Water rinse option at end of each cycle
13. The tissue processor shall have the following specifications:
 - 13.1. Cassettes capacity: approximately 300
 - 13.2. Processing programs: approximately 9
 - 13.3. Reagent stations temperature: 35-50 °C
 - 13.4. Paraffin stations temperature: 55-70 °C.

LAB022 LAB, Shaking Machine, Orbital

1. Microprocessor controlled, bench top, orbital mixing and shaking unit for use in the clinical laboratory for platelets and other types of liquids
2. Variable electronic speed control from ~ 30 to 300 oscillations / minute. Specify speed.
3. Quiet operation
4. Variable time control from continuous up to 24 hours or better
5. Variable oscillation amplitude. Provide range specifications.
6. Digital display of speed, temperature and time
7. Audiovisual alarm for parameter out-of-range (temperature, speed), time up, or internal malfunction. Specify details.
8. Outer case shall be made of durable material with corrosion resistant coating. Give details.
9. Top platform shall be made of corrosion resistant material. Specify material.
 - 9.1. Platform size ~ 60 cm W x 60 cm D. Specify exact dimensions.
 - 9.2. Shall be able to support up to 10 kg of liquid load. Specify limit.

LAB032 LAB OSMOMETER & printer

1. Microprocessor controlled, bench top, digital osmometer for measurement of routine osmolality of body fluids including whole blood.
2. Measurement method to be specified
3. Digital alphanumeric display (LCD or similar) and touch controls for user interfacing
4. Fully automated measurement and calibration
5. Auto diagnostics and power up self-test
6. Measurement ranges:
 - 6.1. 0 – 2000 mmol/kg
 - 6.2. 1 mmol/kg resolution
 - 6.3. 0.5 mmol/kg accuracy
 - 6.4. Specify sample volume
 - 6.5. Specify time to obtain result
7. Printer shall be built in.
8. All necessary accessories shall be included: sample holders, etc. Include full list.

LAB035 LAB, incubator, carbon dioxide, bench mounted

1. for use in Microbiology sections
2. Microprocessor controlled thermal and CO₂ level regulation
3. Internal capacity ~ 150 liters
4. Low noise operation. Specify noise level
5. Variable temperature setting from around (Ambient + 3 deg to ~ 60 deg C)
 - 8.5. Specify: exact temperature range, accuracy (0.1 %), stability and homogeneity
 - 8.6. Shall incorporate over-temperature safety device. Specify
9. Variable CO₂ level range from 0 to 20 % or better
 - 9.1. Specify: exact CO₂ range, accuracy (0.1 %), sensitivity and zero drift
 - 9.2. Specify sensing and control technology
10. Recovery time should be < 5 min to return to previous level of CO₂
11. The unit shall incorporate microbiological filters on all gas inlets and sample ports
12. The unit shall incorporate water or air jacket thermal distribution. If water jacket,
 - 12.1. Specify water volume.
 - 12.2. Must incorporate water fill / empty taps
13. Digital alphanumeric display of parameters (Temperature and CO₂), status as well as other relevant information (error messages, alarming conditions, etc.)
 - 13.1. Specify type and dimension of display
 - 13.2. Provide a list of displayed information
14. SS internal chamber possessing contamination control features such as easy accessibility and shelf removal for cleaning; rounded corners, etc.
15. User adjustable temperature and CO₂ audiovisual alarms as well as built in functional alarms
16. Infra-red CO₂ detection independent of temperature and humidity
17. Double doors.
 - 17.1. Outer door insulation to be specified
 - 17.2. To incorporate tight door gasket (specify type: magnetic, etc.)
 - 17.3. Inner door: gasketed (removable gasket for cleaning), non-condensing (specify heated, etc.) glass door with door knob
18. To include at least three SS shelves.
19. The unit will be connected to central CO₂ line provided for this purpose. All connecting accessories shall be provided. Connector type and standard shall be coordinated with electro-mechanical design standard.
20. 17. Temperature and CO₂ monitoring for connection to BMS shall be provided

LAB036 LAB, incubator, aerobic, bench mounted

1. The incubator shall be used for all incubation and cultivation applications and shall be adapted for special applications.
2. A tabletop type incubator with volume of approximately 100 liters
3. A microprocessor controlled temperature and rated temperature of +70°C
4. Digital alphanumeric display of temperature as well as other relevant information (error messages, alarming conditions, etc.)
 - 4.1. Specify type and dimension of display
 - 4.2. Provide a list of displayed information
5. Temperature spatial deviation at 37°C of +/- 0.5°C
6. Minimum heating-up time and no temperature fluctuation
7. Adjustable over-temperature limit controller with independent sensor for unattended operation
8. User adjustable temperature audiovisual alarms as well as built in functional alarms
3. 9. Adjustable value for controlling exhaust air to prevent contamination due to condensation build-up
9. The incubator shall have a 24 hour timer
10. The work chamber shall be made of corrosion-resistant stainless steel, with double door design. Chamber shall possess contamination control features such as easy accessibility and shelf removal for cleaning; rounded corners, etc.
11. The exterior housing shall be made of galvanized pre-coated steel
12. Low noise operation. Specify noise level
13. Thermal distribution method (air chamber, convection, fan, etc.) shall be specified
4. 15. Offer shall include at least four SS shelves and one humidity tray

LAB039 GLUCOSE Meter

6. Microprocessor-controlled, hand held glucose meter to measure blood glucose levels.
7. Should be IVD marked (In Vitro Diagnostic Medical Device).
8. Measuring range: 2.2-27.8mmol/L (40-500mg/dl) Approx.
9. Must give accurate results within Approx. 15 seconds.
10. Must store at least the 20 results.
11. Must be supplied with 200 strips.
12. Must be supplied with a virtually pain-free blood sampling tool (lancing device).
13. Specify the shelf life of strips (vial closed, after opening the vial)
14. Must be supplied with long-life batteries.
10. Must have a case for storage.

LAB051 LAB, stirrer, magnetic, heated

1. Heated platform magnetic-bar stirrer with electronic speed and temperature control and reverse stirring action
2. To use Teflon-coated stir bar
3. Variable stirring speed from ~ 100 to 1000 rpm. State accuracy.
4. Adjustable temperature control up to ~ 250°C. State exact range and accuracy
5. Display of speed.
6. Visual indicator of heater status (indicator lamp when heater is ON)
7. To operate in three modes (selectable): stir only, heat only, stir and heat simultaneously
8. Stirring mode lamp
9. Ceramic or SS hot plate with ~ 25 cm diameter
10. Maximum load: approx. 5kg
11. The offer shall include an external removable / retractable thermometer holder with adjustable clamp height above the stirred media
12. The offer shall include a stirring bar retrieval stick

LAB052 MIXER, vortex

1. For fast mixing of tubes, to incorporate ON/OFF and variable speed controls. Specify speed range.
2. To incorporate rubber feet for counter top slip prevention
3. Standard rubber cup interface for single tube shaking (various tube sizes)
4. Foam pad mixing platform for mixing of flasks or multiple tubes (up to 4 test tubes) simultaneously
5. Chemically resistant attachment heads
6. Continuous and demand shaking modes
7. Demand shaking activation shall be actuated by pressure controlled switch under the rubber cup
8. Dimensions: (W x D x H) approximately 150x250x60mm

LAB055 MIXER, roller type, 5 rollers

1. Rolling and tilting tube mixer for homogeneous, gentle mixing of hematology blood sample tubes
2. Rolling only and rolling and tilting modes of operation should be allowed
3. Fixed speed at ~ 40 rpm
4. Roller length ~ 35 cm
5. Vertical movement ~ 16 mm
6. To incorporate ~ 5 rollers for a total capacity of ~ 15 tubes
7. Individual rollers should be removable to accommodate larger bottles

LAB070 Cryostat, Floor standing

1. Fully automated, microprocessor controlled rotary microtome for high precision sectioning of embedded specimen within a cryostat chamber (top-loading)
2. Automated microtome to incorporate the following features:
 - 2.1. Auto specimen / knife advance
 - 2.2. Motorized coarse feed
 - 2.3. Manual sectioning. Motorized option, price separately
 - 2.4. Specify number of quick freeze stations
3. User defined (variable) parameters shall be modifiable from outside the cryo chamber.

They shall include (specify ranges and increments where applicable):

 - 3.1. Chamber temperature (down to ~ - 35oC). Specify cooling method
 - 3.2. Specimen temperature (down to ~ - 55oC). Specify cooling method and time required to attain lowest temperature
 - 3.3. Cutting speed
 - 3.4. Advance distance:
 - 3.5. 1 – 10 µm in 1 µm increments
 - 3.6. 10 – 60 µm in 5 µm increments
 - 3.7. Section thickness
 - 3.8. Specimen orientation
 - 3.9. Time (for timed programmable features if applicable)
 - 3.10. Auto defrost programming
 - 3.11. Auto decontamination (by Formalin fumigation) programming
4. To incorporate a digital display of cutting and thermal parameters as well as touch key pad for numeric entry and parameter modification, etc. Displayed parameters shall include:
 - 4.1. Chamber temperature
 - 4.2. Specimen temperature
 - 4.3. Cutting speed
 - 4.4. Section thickness (1 to 60 µm or better)
 - 4.5. Specimen position along the travel path (asset)
 - 4.6. Window open / closed indicator

LAB086 LAB, counter, colony

1. Compact and durable design for use with all commonly available Petri dishes ranging in diameter from 55 mm to 100 mm
2. To incorporate a steady (non-blinking), glare free illuminator (specify type) and a magnifying glass (~ 2x magnification) with retractable arm allowing height adjustment
3. To include two background plates; one light (transparent) and one dark
4. User adjustable sensitivity (pressure) level for use with all types of marker pens
5. Audible signal with each count
6. Digital display of accumulated count up to 999 with reset button

LAB091 BLOOD CULTURE ANALYZER automated

1. Fully automated system for continuous detection of microbial growth in patient specimen
2. The system shall be equipped with state-of-the-art advanced technological features providing highest levels of accuracy, linearity and repeatability. Data shall be provided with the offer
3. High resolution LCD screen (or high end PC) for data entry, result viewing and all types of user interfacing
4. Printer for result printing shall be included.
5. Should be capable of running ≥ 100 tests continuously and simultaneously. Detection time as low as four hours. Specify.
6. Barcode capability for test vial handling and tracking
7. Specify detection method and characteristics (fluorescence, colorimetry, radiometry, etc.)
8. List all media types available for use with the offered system (aerobic, anaerobic, pediatric, etc.)
9. Specify specimen other than blood that can be used with the system (body fluids)
10. The system shall possess automatic calibration
11. The system shall possess automatic temperature monitoring and control
12. Sample volume should be ≤ 10 mL. Specify exact sample volume and whether or not special pediatric volumes are allowed.
13. Audiovisual alarms for sample or positioning errors, positive and negative results, internal malfunctioning, including temperature regulation, etc shall be incorporated. List with details
14. Computer connectivity for Bi-directional data transmission from and to the Hospital Information System including archiving capabilities

LAB094**Lab, Water Bath**

1. General purpose laboratory water bath
2. Double layer SS bath, SS exterior case
3. Heating element shall be embedded in a corrosion and wear resistant material.
Provide details.
4. The unit shall incorporate a main power ON/OFF switch with visual indicator lights for power ON and heater ON
5. Variable temperature range from ~ 5 °C above ambient to 100 °C or better
 - 5.1. 1 °C resolution
 - 5.2. Clear digital display of set water temperature
 - 5.3. Clear digital display of actual water temperature
 - 5.4. Electronically controlled temperature regulation. State accuracy
6. Tank dimensions ~ 15 cm x 50 cm x 35 cm (H x W x D). Around 20 L. The tank shall incorporate a drainage tab
7. Safeties should include but not be limited to:
 - 7.1. Overheating/over-temperature shutdown
 - 7.2. Insufficient water level shutdown
 - 7.3. Electrocutation protection
 - 7.4. Mechanism to prevent unintentional temperature setting change
8. The offer shall include the following accessories:
 - 8.1. SS gable lid with plastic carrying handle
 - 8.2. External thermometer holder, compatible with the lid stated above
 - 8.3. Mercury thermometer for visual thermal verification suitable for positioning with the holder listed above.
 - 8.3.1. Reading shall be possible with or without the lid in place.
 - 8.3.2. The temperature range shall be the same as the bath heating range (~30 to 100° C)
 - 8.4. Perforated shell to be placed in the base of the bath above the heating element
 - 8.5. Support platform for Erlenmeyer flasks
 - 8.5.1. Adapter clips (all available sizes shall be included)
 - 8.6. Support frame for tube racks
 - 8.6.1. Tube racks (all available sizes shall be included)

LAB108 LAB, blood cell differential counter, digital

1. Automated, blood cell counter that provide whole blood, and capillary blood analysis
2. Digital LCD display of numeric counters
3. Soft touch keys ergonomically placed for ease of use
4. One step sample processing with touch screen user interface
5. Full STAT capability
6. Approximately 20µL sample size whole blood analysis from both venous and capillary collection
7. Automated probe wide
8. Minimum of 50 samples per hour
9. 3- Part differential including:
 - 9.1. WBC
 - 9.2. RBC
 - 9.3. Hgb
 - 9.4. PCV
 - 9.5. MCV
 - 9.6. MCH
 - 9.7. MCHC
 - 9.8. Platelets
 - 9.9. Neutrophils
 - 9.10. Lymphocytes
 - 9.11. Monocytes
10. Quality control (QC) programs
11. Zero routine maintenance

LAB110**LAB, still, distilled water, 4 l/hr, wall mounted**

1. Water distilling unit to produce high quality pyrogen-free pure water for clinical lab use
2. Fully automated control requiring minimal or no user intervention during normal operation of the system
3. The system shall be complete, fully enclosed, compact and comprising all components necessary for full and efficient functioning. Systems components shall include but not be limited to (detailed specifications of each component shall be provided):
 - 3.1. Boiler
 - 3.2. Electric heater
 - 3.3. Pyrogen reducing baffle
 - 3.4. Condenser
 - 3.5. Inlet feed water electro-valve
 - 3.6. Drain electro-valve
 - 3.7. Automatic collection system, including tank with switch off overflow sensor (if optional, price separately)
4. Wall mounted design
5. Capacity ~ 4 L/hr.
6. High quality pure water (specifications shall be provided: conductivity (0.5 MΩ – cm), hardness, etc.)
7. Cabinet enclosure with easily accessible parts for cleaning and maintenance
8. Detailed technical specs pertaining to each sub-component shall be provided
9. To incorporate energy saving design and low cooling water is a requirement
10. Feed water pretreatment should be provided
11. Connections to water supply and drain shall be provided

LAB111 Glassware

1. Desiccators diameter 0.25 with perforated plate
2. Wash Bottle (Plastic) 300 ml
3. Glass Trough diameter 0.5 m
4. Tripod Stand 25 cm in height
5. Measuring Flask with Stopper 100 cc
6. Watch Glass diameter 10 cm
7. Indicator Bottles 100ml
8. Spatula Stainless Steel 15 cm
9. Silica Crucible with lid 15 cc
10. Platinum Wire Fixed with Glass
11. Test Tube 13 cm x 1.5 cm with rim
12. Boiling Test Tubes 15 cm x 2.5 cm with rim
13. Ignition Tubes
14. Burette (in dose)
15. Stopper Conical Flask
16. Washing Bottle with hollow stopper cap
17. China Dish in dozen
18. Petri Dish
19. Funnel Stand
20. Mortar & Pestle

The above mentioned glassware is required for the laboratory

LAB112 Electrophoresis**I. Horizontal Apparatus**

1. Horizontal Electrophoresis system with all accessories for running Agarose gels.
2. Should have Cell size (W x L x H) 17.8 x 25.5 x 6.8 cm and 12 x 26 x 6.5 cm
3. Gel tray sizes (OD) (W x L) Should be 15 x 7 cm combs (trays have 2 slots for fixed height combs) 15 x 10 cm (15 well and 20 well), 7 x 7 cm (trays have 2 slots for fixed height combs and 7 x 10 cm (8 well and 15 well))
4. Should have Sample throughput around 10-60 (wide mini sub cell) and 8-30 (mini sub cell)
5. Should have buffer volume 650 ml (wide mini sub cell) and 270 ml (mini sub cell)
6. Should not have Buffer recirculation
7. Should have Bromophenol blue migration ~4.5 cm/hr (at 75 V)

II. Power pack

1. Should have control of constant voltage output as well as constant current output
2. Should be suitable for running horizontal electrophoresis application
3. Output current should be in the range 10–300 V, fully adjustable in 1 V steps 4– 400 mA, fully adjustable in 1 mA steps 75 W (maximum) and timer; 1 min–99 hr 59 min, fully adjustable and crossover Output terminals 4 pair recessed banana jacks in parallel
4. Manual programming of voltage, current, temporary changes to power and time parameter can be made in the power pack without interrupting the run
5. Should be provided with pause/resume function
6. The equipment should work in 0–40°C
7. Display should be of LED
8. Should be with adjustable timer for minimum 900min
9. Should include Safety compliance No-load detection; rapid resistance change detection, ground leak detection, overload/short circuit detection, overvoltage protection, over-temperature protection Input protection Fuse on hot and neutral
10. Should be suitable to operate at 220 to 230 V AC, 50 to 60 Hz

III. Vertical Apparatus

1. Vertical Electrophoresis system with all accessories for running SDS-Poly acrylamide gels.
2. Should be able to run 2 gel simultaneously (upgradable to 4 gel)
3. Should accommodate pre-cast and hand-cast gels
4. The system should include plates for casting gels with 10 well system, integrated spacer of 1mm thickness 5. System should include 5 combs, 5 sets of glass plates, casting stand, 2 casting assemblies, sample loading guide, electrode assembly, tank, lid with power cables, mini cell buffer dam (volume 750-1000ml)
5. Should provide run time of 35 to 45 min with 200V constant voltage
6. Should provide trans-blot module

IV. Power pack for high current power supply

1. Should be suitable for vertical electrophoresis application
2. Should provide constant voltage, constant power, or constant current output of 250V (fully adjustable in 1 V increments), 3.0 A (fully adjustable in 0.01 A increments), 300W (fully adjustable in 1 W increments)
3. Should provide with output terminals of 4 pair recessed banana jacks in parallel
4. Should provide with timer up to 99hr, 59min
5. Should be provided with pause/resume function
6. The equipment should work in 0–40°C
7. Display should be of LCD : 2-line, 16 character backlit
8. Should include Safety compliance No-load detection; rapid resistance change detection, ground leak detection, overload/short circuit detection, overvoltage protection, over-temperature protection Input protection Fuse on hot and neutral
9. Should be suitable to operate at 220 to 230 V AC, 50 to 60 Hz V.

All accessories needed to make the equipment functional, must be supplied.

LAB113 LAB, WASHING MACHINE, glassware- SHARED

Washer / Disinfecter / dryer specifically designed for laboratory glassware items, with the following features:

1. Stainless steel bodywork
2. 2 independent washing levels for injector baskets or rotary arms
3. Microprocessor control
4. Recirculating pump flow rate: ~ 350l/min
5. Auto-input / dosing liquid detergent
6. Heating: switchable immersion heaters
7. Auto-input demineralized water
8. Specify water consumption
9. Heating ~ 6 KW
10. Acid rinse: optional, auto input & dosing
11. Basic glassware basket
12. Basic basket with rotary arm
13. Water softener and steam generator to be included

LAB114 Slide

1. Should produce slides with superior optical quality for reliable long-term storage.
2. It should allow for each single glass slide separately and without bubbles.
3. It should have active carbon filters for safety.
4. Should be able to handle slide racks of various manufacturers and should be adaptable to individual laboratory requirements
5. Should be used with common range of mounting media including mounting with wet mountants. Should dispense adequate amount of mountant for coverslipping each slide.
8. Should be equally useful for histopathology and cytopathology slides
6. Should be highly reliable, cause minimum wastage and form a fully automated walk-away system.
7. Should have an inbuilt system for fume extraction so as to minimize expo

LAB121 LAB, Microtome, rotary

Rotary Microtome shall have the following features:

1. Micro and coarse advance movements in enclosed housing.
2. Coarse advance electronically controlled with automatic stop end-positions
3. Forward movement 2 speeds adjustable: ~ 28mm in 12 or 45 seconds
4. Optimum specimen guidance by maintenance-free cross roller guides
5. Safety lock on hand wheel
6. Section thickness adjustment from 0.5um to 100um in defined steps (0.5, 1.0, 2.0, and 3.0...)
7. Precise guide way and clamping device for knife-hold with optimum sliding capability and prism guide
8. Vertical stroke: ~ 60mm
9. Horizontal specimen advance: ~ 28mm
10. Object orientation X/Y axes 8°
11. Z axes 360°
12. Retraction on return stroke
13. Specimen size: up to 50x50 mm or standard cassette size for cassette holder
14. LCD Display of cutting thickness and thickness during trimming
15. Comfortable trimming function: individually adjustable between 1 and 300µm
16. Fast switch between trimming and standard thickness
17. The equipment shall include:
 - 17.1. Universal cassette clamp alternatively standard object clamp
 - 17.2. Knife holder base with disposable blade holder low profile alternatively standard knife holder
 - 17.3. Object orientation unit
 - 17.4. Dust cover

LAB128 LAB, drying oven

1. Microprocessor controlled thermal level regulation
2. Internal capacity ~ 100 liters
3. Variable temperature setting from around 40 °C to 200 °C or better
 - 3.1. Specify: exact temperature range, accuracy, stability and homogeneity
 - 3.2. Shall incorporate over-temperature safety device (e.g., backup thermostat).
4. Thermal distribution by forced air method
5. Digital alphanumeric display of temperature and time as well as other relevant information (error messages, alarming conditions, etc.) Specify type and dimension of display
6. SS internal chamber and shelves (4)
7. User adjustable temperature audiovisual alarms as well as built in functional alarms

LAB169 ANALYSER, Immunochemistry**System Specifications**

Methods	CHEMIFLEX
Maximum Throughput	Up to 100 tests/hour
Sample Types	Serum, Plasma, Whole Blood, Urine
Sample Tubes	Height: 72-102 mm Diameter: 9.6-16.1 mm
Sample Cup	Yes (50 µl dead volume)
Sample Capacity	65
Sample Barcode Types	Code 39, Codabar, Interleaved 2 of 5, Code 128
Sample Result Storage	50,000
Sample Volume	10-150 µL, Average: 62 µL
Automatic Dilution	Yes
Sample Probe Carryover	≤0.1 parts per million
Reagent Capacity	25 refrigerated positions
Reagent Type	100% liquid ready-to-use
Reagent Onboard Stability	14-30 days
Calibration Frequency	Calibrate with new lot number, if controls are out of range or if specified otherwise within the package insert
Sample, Clot and Bubble Detection	Yes
Reagent Pressure	Yes

Monitoring	
Sample Interference Measurement	No
System Control Center	1 SCC, with color touch screen monitor, keyboard and mouse
Onboard Maintenance Records	Yes
Online Error Code Help	Yes
Host Interface	Bidirectional, serial RS-232 interface, host query option available
Remote Diagnostics	AbbottLink
Dimensions (H x W x D)	49" x 59" x 30" 124.5 x 149.9 x 76.2 cm
Weight	636 lbs 288 kg
Electrical Requirements	AC 110-120V or 200-240V, $\pm 10\%$, 50 or 60 Hz self-adjusting
Water Requirements	Purified water to dilute buffer concentrate
Heat Output*	2400 BTU/hr, running mode
Sample Loading	RSH

LAB170 ANALYSER, ESR AUTO

1. Fully automated, microprocessor controlled (or PC based) Erythrocyte Sedimentation Rate analyzer
2. Self-contained system configuration to include tube rack, shaking mechanism, testing device and printer
3. Digital alphanumeric LCD display for system and test parameters as well as keyboard for data entry. Displayed information shall include:
 - 3.1. Date and time
 - 3.2. Temperature
 - 3.3. Test or run status (or timer, etc.)
 - 3.4. Error and alert messages when applicable
 - 3.5. Other, specify
4. The unit shall be capable of giving results of 1 hour and 2 hour Westergren values in 30 minutes or less
5. Automatic and simultaneous testing of 15 ESR tubes or more
6. On-board test result memory. Specify capacity.
7. Integrated thermal printing device for test results report printing
 - 7.1. Reports to include 1 hr Westergren or 1 hr and 2 hr Westergren results
 - 7.2. User configurable printing format
8. Barcode test tube handling capability. Price separately.
9. Computer connectivity for Bi-directional data and results transmission from and to the Hospital Information System including archiving capabilities
10. The following parameters shall be specified for the offered system. Provide the necessary technical details pertaining to each:
 - 10.1. Shaking method
 - 10.2. Reading method
 - 10.3. Number of tubes per run
 - 10.4. Length of test (W1 H and W2 H)
 - 10.5. Accuracy
 - 10.6. Method of QC
 - 10.7. Required blood volume
 - 10.8. Size of blood tube (if specific, price of tube should be specified)

LAB171-1 ANALYZER, coagulation, semi-automated

1. The unit should be microprocessor controlled for semi-automated hemostasis testing and calibration
2. Two (minimum) channel measurement system
3. High resolution LCD display of test parameters, calibration data and results. Specify characteristics.
 - 3.1. Built-in or attached printer for patient results, QC and calibration curves, etc.
 - 3.2. QC processing for normal and pathologic levels (N and P)
4. Capability to be configured to run tests in single or duplicate runs
5. Automatic test start with reagent pipetting
6. Please specify the number of reagent wells and on-board cooling method and stability for each assay
7. Pre-defined (factory preset) test protocols with possibility of user modification and addition of new tests
8. Testing capability should include:
 - 8.1. PT
 - 8.2. APTT
 - 8.3. Fibrinogen
 - 8.4. Thrombin time
9. Optional testing capability should be offered if available:
 - 9.1. Factor assays
 - 9.2. Reptilase
 - 9.3. Lupus Anticoagulant
 - 9.4. PS
 - 9.5. PC
 - 9.6. Heparin assays
10. Reagent life (room temperature and refrigerated) after reconstitution and number of tests per reagent pack for each assay shall be clearly stated
11. Storage reagent requirements (before reconstitution) and life shall be stated
12. Must be user friendly with minimal user maintenance required
13. Specify whether reagent is readily available for immediate use. If reconstitution is required, please state method and required time
14. System shall be equipped with state-of-the-art advanced technological features providing highest levels of accuracy, linearity and repeatability. Data shall be provided with the offer
15. Provide detailed information regarding sample size (normal, reduced and micro modes)

LAB173 ANALYSER HEMATOLOGY, fully automated, 5-part differential

1. Hematology analyzer for routine testing (whole blood samples) with auto-loader, auto sampling and validation, including:
 - 1.1. RBC, Hgb, Hct, RBC indices and morphology indicators (MCV, MCH, MCHC, RDW; other, specify)
 - 1.2. WBC with five part differentials, absolute count and percentage
 - 1.3. Platelet and platelet indices (MPV, PDW)
 - 1.4. Retic count: absolute count, ratio and percentage
2. Specify start up time from equipment off to ready for sample taking
3. Counting methods shall be stated. Detailed parameters of each shall be specified (volumetric impedance, flow impedance, flow cytometry, etc.)
4. Auto dilution. Specify number of counts / dilution
5. Specify aperture number and sizes
6. Automatic coincidence correction
7. Automatic calibration
8. Automatic system QC processing for three levels (low, normal and high), with test interruption for failed QC
9. Built-in QC program for statistical purposes, including SD and CV, without erasing data from patient files
10. Specify fixed or adjustable (manual and automated) threshold for each parameter. Specify parameters
11. Automatic rerun of abnormalities
12. CBC sample rate ~ 80 - 100 / hour (closed tube mode)
13. CBCD sample rate ~ 60 / hour (closed tube mode)
14. To incorporate cap piercing as well as primary sample loading
15. Auto sample handling, including mixing and auto-loading capabilities with barcode reading. Specify the number of sample tubes in walk away mode
16. System shall be equipped with state-of-the-art advanced technological features providing highest levels of accuracy, linearity and repeatability. Data shall be provided with the offer
17. Sample volume should be around 200 μ L in normal closed tube mode. Specify exact sample volume in closed tube, micro and primary modes.
18. STAT capability with positive barcode identification
19. ISBT 128 barcode recognition
20. Data storage for at least 5,000 patient reports with histograms and scatter plots
21. High resolution 15" LCD color screen (or better) for data entry, result viewing and all types of user interfacing
22. High resolution, color printing device for report printing

- 22.1. Reports to include histograms and scatter plots
- 22.2. User configurable printing format
- 23. Built-in automatic maintenance program, preferably zero user maintenance
- 24. Audiovisual alarms for sample error, aspiration and clog errors, reagent detection error, internal malfunction, etc. shall be incorporated. List with details
- 25. Internal troubleshooting software capability is an asset. Specify details.
- 26. Computer connectivity for Bi-directional data, results and report transmission from and to the Hospital Information System

LAB302**LOOP, STERILIZER, Electric**

Loop Sterilization unit for diagnostic lab use, and It shall feature the following characteristics:

1. Powder coated body with heat insulation
2. Dimension: Approx. 12" L x 12" D X 12" H
3. Sterilization at selective temperature range 100 °C to 1200 °C
4. Design shall ensure 100% freedom from Hazardous Aerosol formation
5. Safely sterilizes inoculating loops, needles and culture tube mouths
6. Shall prevent infectious splatter and cross-contamination
7. Flameless electric operation to safeguard personnel and ideal for anaerobic chambers
8. Weighted base for stability
9. on/off switch
10. 6 needle/loop storage holes

LAB304 Real time PCR Machine

1. The system should be automated for both real-time PCR and post-PCR (end point) analysis using in-built Peltier based PCR machine.
2. System should support applications including absolute quantization, simultaneous analysis data for relative quantization of Unlimited plates of 96 wells each, (4-6 color multiplexing), allelic discrimination (SNP), dissociation curve analysis as well as pathogen detection and plus/minus assay using internal positive control.
3. Instrument should have 96-well sample block of 0.1ml capacity, able to run fast and standard run on the same block. It can also have 6 separate Peltier-controlled blocks with a fixed gradient with a 25 degree range.
4. System should complete Fast 40 cycle protocol in less than 40 minutes and standard protocol in under 2 hours.
5. The vendor should offer a complete solution for Fast real-time PCR: Fast instruments, Fast reagents, Fast protocols and Fast assays.
 - Sample Ramp Rate: fast Mode: $\pm 3.5^{\circ}\text{C}/\text{sec}$
 - Standard Mode: $\pm 1.6^{\circ}\text{C}/\text{sec}$
 - 9600 Emulation Mode: $+0.8$ and $-1.6^{\circ}\text{C}/\text{sec}$ $^{\circ}\text{C}/\text{sec}$
 - Pear Block Ramp Rate: $5.5^{\circ}\text{C}/\text{sec}$
 - Temperature range: $4^{\circ}\text{C}-100^{\circ}\text{C}$
 - Temperature Accuracy: $\pm 0.25^{\circ}\text{C}$ ($35^{\circ}\text{C}-95^{\circ}\text{C}$) of set point/ display temperature measured at 3 minutes
- after clock start Temperature Uniformity: $\pm 0.50^{\circ}\text{C}$, 30 seconds after clock start
6. Excitation source should be single blue LED light source or Tungsten Halogen or high intensity Xenon lamp and emission detection by photodiodes or cooled CCD camera. There should be enough excitation and emission filters to cover majority of dyes.
7. System should be flexible to support 96 well plates, individual tubes and 8 strip tubes.
8. System software should provide simultaneous analysis data for relative quantization of unlimited plates of 96 wells each.
9. Normalization of reaction due to non-PCR related fluctuations such as pipetting variations should be possible by using ROX™ or any other calibrated dye.
10. System should support reaction volume 5-30 μL .
11. All assays should run using Universal Thermal Cycling conditions to eliminate optimization of PCR conditions.
12. The instrument software must be capable of detecting and analyzing a different gene, SNP or pathogen target in every well of the 96-well plate. The instrument software should not restrict the number of assays or targets that can be run on a single 96-well plate.
13. The system should have easy door design for loading and unloading 96-well plates or individual 0.2 ml PCR tubes.
14. System should collect data for all filters for all wells regardless of plate setup. The software should allow reanalysis of data so that data is never lost.
15. The instrument should be pre-calibrated for at least seven dyes including the following during installation at the customer site: FAM™/SYBR® Green I, VIC®/JOE™,

NED™/TAMRA™/ and ROX™. The user should be able to use any of these dyes in an experiment without needing to recalibrate the instrument. Addition of new dyes should be possible without hardware change.

16. A dedicated licensed full version software for primer and probe design with comprehensive assay design and development guidelines for quantitative and qualitative real-time assays should be provided to enable designing of custom oligo assays.
17. System should be standardized for at least two homogeneous reaction chemistries including SYBR Green I and dual color TaqMan or four color hybridization probes (FRET).
18. The vendor should be able to offer pre-validated and functionally tested Gene Expression Assays as well as SNP Genotyping Assays and the flexibility to design specific assays for new templates of interest.
18. The instrument software should utilize a multi-componenting algorithm designed to provide precise deconvolution of multiple dye signals to enable the simultaneous detection of multiple fluorophores.
19. The instrument may have display with an LCD touchscreen that is a 6.5inch, full VGA (640 x 480).
20. Analysis work station should be of latest branded Pentium IV with licenced windows XP, operating system and colored laser printer.
21. The vendor should clearly indicate compliance or deviation vis –a vis the tender specifications and should be highlighted in the literature or manuals.
22. The instrument should be UL approved and manufactured according to ISO 9001 standards.
23. Three years warranty with one year spare replacement, if required.
24. Reagents for 500- 1000 reaction should be provided with the instrument.
25. Suitable on - line UPS (about 2 KVA) is required to support the instrument.

LAB305 LAB, pipette, full set

All pipettes shall have the following specs:

1. Incorporated ejector mechanism
2. Smooth running piston
3. Sterilizable (without the need for recalibration)
4. Simple calibration procedure (calibration tool to be included)
5. Each unit shall have its individual calibration (conformity) certificate
6. Ergonomic hand grip design with finger rest
7. Rotary selector knob with clear volume display window
8. Clear marking of volume range and color coding
9. Safety label with plastic cover
10. Blowout step to prevent capillary action in the tip for micro volumes (0.2 μ l - 40 μ l)
11. The offer shall include a set of one single channel micropipettes for each of the volume ranges specified below (manufacturer variations are accepted as long as the whole range is covered):
 - 11.1. 0.2 μ l - 2 μ l
 - 11.2. 0.5 μ l - 10 μ l
 - 11.3. 5 μ l - 50 μ l
 - 11.4. 10 μ l - 100 μ l
 - 11.5. 50 μ l - 200 μ l
 - 11.6. 100 μ l - 1000 μ l
 - 11.7. 1 ml - 2.5 ml
12. Multi-range accuracy parameters (within the specified volume range) for each unit shall be specified:
 - 12.1. Maximum systematic error (inaccuracy) in absolute and relative volumes (μ l and %).
 - 12.2. Maximum random error (imprecision) in SD and CV (SD in μ l and CV in %)
13. The offer shall include one shelf (circular) hanger, capable of holding the pipette set stated above

LAB307 Cell Separator (Aphaeresis)

1. Fully automated microprocessor controlled continuous flow Cell Separator with user friendly touch screen operation.
2. Should be a donor & operator friendly unit.
3. Should have single arm procedure for all protocols.
4. Mobile, easily transportable to patient site for therapeutic uses
5. It should operate on battery backup (UPS) and should also operate at least two hours on a commercially available one KVA UPS.
6. It should have a high yield leuco-depleted platelet collection from a single donor with minimal plasma and should have capability of collecting 3×10^{11} or more platelets from a single donor within 60 minutes using a single arm / double arm procedure.
7. On entering the patient data and procedure characteristic, system automatically set run parameters with predicted run results and should decide yield based on the post HCT, Platelet count and percentage of blood volume to be depleted from donor.
8. It should collect platelet in a pre suspended form.
9. It should have self loading pumps to simplify and speed up aphaeresis kit installation.
10. It should allow collection of up- to two units of leucodepleted RBC concentrated, Both Autologous and Homologous Red Blood Cells and Leuco-depleted platelets.

LAB308 Colorimeter

1. Measuring according the human eye at high speed.
2. Absolute colour measurement according to the human eye (CIE1931).
3. High speed measurement (18000 luminance measurements per second, 5500 colour measurements per second).
4. Measure colour point and luminance in various colour spaces (XYZ, Yxy, CIELab, Yuv, LCH etc...).
5. Trigger input for in line applications. General Purpose I/O for control.
6. Direct measurement or through fiber optics.
7. Measure via a PC (also embedded) or stand alone mode.
8. Windows, Linux and MAC OSX compatible.
9. SCPI command interface for easy integration in other applications.
10. Directly supported in Labview / Labwindows / Visual Studio via VISA library. Other programming languages that support VISA can be used.
11. USBTMC standard compliant

Interfaces

- USB 2.0 USBTMC compliant, SCPI command set, Full speed device
- I²C For embedded purposes, using the same command set as USB.
- RS232 For PC and embedded purposes, using the same command set as USB.
- I/O 4 lines 3.3V general purpose I/O
- Trigger input 3.3V compliant , Absolute maximum rating 5.8V.

Power ratings

	Min voltage	Typical voltage	Max voltage	Consumption
• USB powered	4.75V	5.00V	5.25V	Typical 50mA
• DC-adaptor powered	8.50V	9.00V	15.00V	Typical 50mA
• GPIO powered	8.00V	9.00V	15.00V	Typical 50mA

Mechanical dimensions

Height, Width, depth	50x50x100 mm
Mounting	¼ BSW (fits ¼ UNC) mount on bottom plate, 4xM4 threat holes on bottom plate, and 4xM4 threat holes on front.

LAB309 Tubehoods

- 1 The chemical fume hood shall be capable of preventing the buildup of, and decreasing worker exposure to toxic, flammable, explosive vapors, and particulate resulting from laboratory analytical preparation and testing procedures
- 2 A floor mounted model with acid storage base cabinet.
- 3 A ductwork type exhaust fume hood system complete with built-in exhaust blower
- 4 Built-in exhaust blower:
 - Non-sparking and corrosion -resistant blower with adjustable sheave
 - Molded thermostatic housing and coated aluminum impeller
- 5 By-pass air flow design to ensure stable face velocities
- 6 Pre-set baffle to provide a uniform face velocity pattern across the sash opening of the hood
- 7 Vertical-rising tempered safety glass sash with 70cm sash opening when fully open
- 8 Ergonomic air foil to allow air to sweep to the work area for maximum containment
- 9 Removable front and side panels for easy access to plumbing and electrical wiring
- 10 One piece molded fiberglass liner for corrosion and chemical resistance
- 11 Exterior to be made of dry powder epoxy -coated steel
- 12 Fume hood shall be supplied with:
 - Built-in standard service fixtures (color-coded service fixtures for gas, air, water, vacuum, Cold water fixture kit and other services)
 - Fluorescent lighting
 - Air flow monitor & Carbon filters for applications involving xylene and organic solvents
13. Total exhaust: approximately 1000 CFM
14. Face velocity: 100 FPM
15. The Cabinet meets the performance requirements of the NSF/ANSI/ASHRAE 110-1995 Standards.
16. The fume hood shall conform to Occupational Health & Safety (OSHA) standards
17. Overall size (with base cabinet): approximately (WxDxH) 1400x800x2200mm
18. To be supplied complete with duct connection kit , Ducting work and connection from fume hood to outside/roofline to be carried out by the Electromechanical Contractor.

LAB310 Vacuum pumps

Vacuum pumps combine high tech materials with outstanding engineering. They are designed to fit most laboratory applications, both routine and research.

Innovative Technology: vacuum pumps combine high tech materials with outstanding engineering to provide:

- Long lifetime
- Low consumption
- Small footprint
- Reduced noise level

For Multiple Apps: vacuum pumps are designed to fit most laboratory applications, both routine and research.

- High pumping speed
- Wide ultimate vacuum range
- Excellent chemical resistance
- Minimum maintenance

Perfectly tuned for

- Filtration
- Degassing
- Desiccation
- Distillation
- Concentration
- Drying

Technical Features:

Pumping Speed @ 50/60Hz	9.2 L/min
Ultimate pressure	< 292 mbar
M. overpressure	2.3 bar
IN / EX	hose connector hose nozzle DN 6
Sound level @ 50Hz	< 56 db (A)
Motor power	max. 25 W
Type of protection (motor)	IP 48
Weight	2.3 kg
Overall dimensions (LxWxH)	194/114/191 mm
Ship weight	2.7 kg
Shipping carton dimensions (LxWxH)	280/180/210 mm

LAB311 TB Culture System

1. A fully-automated, bench-top, walk-away blood culture analyzer to continuously monitor and detect the presence of microbial growth in blood specimen and other body fluids.
2. Simultaneous testing of minimum 120 samples per incubator.
3. Continuous monitoring of patient samples.
4. Sample medium: standard, resin, pediatric, mycosis, and mucolytic etc.
5. User-friendly software, on-line result validation software, a comprehensive identification database and quality assurance testing with same-day results.
6. Algorithms for individual bottle types for special circumstances such as low blood volume and pediatric specimens.
7. User interface screen for immediate notification of system status to increase productivity.
8. Ability to detect slow growing organisms such as Homophiles and Neisseria.
9. Bi-directional interface with Laboratory Information System.
10. The Computer Package includes: (latest processor available at time of delivery)
11. An automated external and internal barcode scanner.
12. Automatically prints the results when available.
13. Networking capabilities must be available
14. A compact design for optimal space savings.
15. Uses leak proof and noninvasive system to avoid contamination of equipment and environment.
16. Maintenance free without any need for regular calibrations, controls or standards run by the user.
17. The identification system should be complete in itself without the need of additional tests done manually.
18. The reagents / strips should have high stability and long shelf life. The shelf life of consumables should be declared along with the quote.
19. Supplied in a complete working system with all accessories, hardware like computer, printer etc.

LAB312 Tissue Flotation Bath

Flotation Work Station Baths bring a host of features not found in any typical water bath that equips histotechns to produce the best possible slides.

Our flotation baths are ergonomically designed to provide reliability with advanced digital microprocessor control over temperature protection for preparation of paraffin embedded tissue sections.

The Flotation Work Station Baths are available in multiple designs, sizes and accessories to accommodate every lab's need and are affordably priced.

Combined with General Data's histology consumable and reagents, our baths ensure whole ribbon sections are properly collected without cracking or over-expansion.

Benefits

- LED light array for optimum specimen viewing
- Slide rack accessory for drain-drying slides
- Low-profile for user comfort
- Optional slide dryer and a HISTOOrientator pad for eliminating wrinkles
- Optional programmable feature can have the instrument on when you arrive and turn-off at days-end

Certification	TUV CE FCC
Model Dimensions	15 in. W x 18.75 in. L x 5.25 in.
Weight	11 lbs 6 kg
Voltage	220-240 VAC 50/60 Hz 2.4A

LAB322 LAB, dry block heater, various tube sizes

1. General purpose laboratory dry block tube heater
2. Heating element shall be embedded in a corrosion and wear resistant material. Provide details.
3. Water-free and oil-free heating system
4. The unit shall incorporate a main power ON/OFF switch with visual indicator lights for power ON and heater ON
5. Variable temperature range from ~ 5° C above ambient to 150° C or better
 - 5.1. 1° C resolution
 - 5.2. Specify temperature stability ($\leq 0.75^{\circ}\text{C}$)
 - 5.3. Specify temperature homogeneity throughout the heating block ($\leq 2\%$)
 - 5.4. Clear display of set temperature
 - 5.5. Clear display of actual temperature
 - 5.6. Electronically controlled temperature regulation. State accuracy
6. Capability to support standard tube sizes (up to ~ 17 mm diameter). Specify capacity of each tube size and combinations of sizes if available (simultaneous placement of different tube sizes of the following):
 - 6.1. 6 mm diameter
 - 6.2. 12 mm diameter
 - 6.3. 16 mm diameter
 - 6.4. 20 mm diameter
 - 6.5. 25 mm diameter
 - 6.6. ml Eppendorf
7. Safeties should include but not be limited to:
 - 7.1. Overheating/over-temperature shutdown
 - 7.2. Mechanism to prevent unintentional temperature setting change
 - 7.3. Other, Specify
8. The offer shall include the following accessories:
 - 8.1. Heating block carrying handle or rod
 - 8.2. Mercury thermometer for visual thermal verification
 - 8.3. The temperature range shall be the same as the bath heating range (~ 30 to 150°C)

LAB501 LAB, hot plate

1. Microprocessor controlled hot plate magnetic stirrer for accurate temperature settings.
2. Die cast aluminum case provides durability and long life.
3. Porcelain-coated stainless steel top for corrosion resistance.
4. Approximate (2.5 cm) long topside drip edge protects internal components in case of accidental spillage.
5. Compact, low profile design.
6. Include an integral ring stand holder to accommodate a support rod.
7. Accommodates approximately (9 kg) loads.
8. TEMPERATURE CONTROL:
 - Temperature stability: $\pm 5.0^{\circ}\text{C}$ at 37°C .
 - Uniform temperature across top plate surface.
 - Independent safety circuit to protect the unit against overheating.
 - Flashing warning light when plate is too hot.
 - Maximum temperature can be reached approximately: 400°C .
9. STIRRING CONTROL:
 - Strong magnetic coupling ensures that the magnetic stir bar remains locked with drive magnet, even in viscous aqueous solutions.
10. Overall dimensions (WxDxH): approximately 250X300X120mm

LAB502 Flame Photometer**Key Features**

- Economic, robust and durable solution for use in laboratory and process operations
- Maximum operational safety through intelligent security mechanisms
- Flame photometry simultaneous measurement of up to five alkaline and alkaline earth elements
- Fast measurement: up to 300 measurements per hour – international top position!
- User administration with two authorisation levels
- Traceability of all measured data and device-specific data
- Complete traceability of measurement results
- Extensive interfacing options and comfortable handover of measurement results
- Compliance with international norms and standards such as GMP / GLP and 21 CFR Part 11

Specifications

- High-precision measurement of the concentration of Na, K, Li and Ca in aqueous solutions
- Flame photometry simultaneous measurement of up to five alkaline and alkaline earth elements
- Fast measurement: up to 300 measurements per hour
- User administration: optional setup, two authorisation levels can be activated or deactivated
- Traceability of all measured data and device-specific data
- Complete traceability of measurement results
- Extensive interfacing options and comfortable handover of measurement results
- Compliance with international norms and standards such as GMP / GLP and 21 CFR Part 11
- TFT-Display with integrated touchscreen, 8,4" (21 cm), 800×600 Pixel
- Measurement principle: F-AES flame atomic emission spectroscopy

LAB533 Analyzer, Urine, strip reader

1. Semi-automated Urine strip reader.
2. Tests shall include:
 - Billirubin
 - Blood
 - Glucose
 - Ketone body
 - Leukocytes
 - Nitrite
 - pH
 - Protein
 - Specific gravity
 - Urobilinogen
 - Other, specify
3. Reflectance method shall be employed.
4. Automatic calibration using calibration strips. If other, specify.
5. Specify method of QC and verification
6. Test completion time ≤ 1 minute
7. Data storage for at least 100 tests
8. Specify method of result viewing (screen, preferred, or LEDs) and user interfacing
9. High-resolution printer for report printing shall be incorporated. If optional, price separately
10. Preferably zero user maintenance
11. Audio or visual alarms for errors shall be incorporated. List with details

LAB800 SEMI-AUTOMATED Blood Grouping System**1. General Specifications:**

- 1.1. System should include micro plate as well as Gel Card option for blood grouping & Rh typing system must include centrifuge, incubator & reader.
- 1.2. Should perform ABO grouping & RH typing using cell suspension
- 1.3. Should perform ABO grouping using serum (Reverse Grouping)
- 1.4. Should display grading of Agglutination reaction.
- 1.5. Should be able to detect Weak D.
- 1.6. Should be able to detect Antibody.
- 1.7. Antibody panel test should be performed by using ready kits for screening and identification of the Antibody.
- 1.8. Should be able to differentiate A1 & A2 group.
- 1.9. Should be able to detect Bombay Blood Group.
- 1.10. Should be able to perform direct & indirect coombs test.

2. Safety Features:

- 2.1. Positive Barcode identification of sample tubes and reagents
- 2.2. Lot number & expiry date control.
- 2.3. Liquid level detection.
- 2.4. Clot detection.
- 2.5. RS 232 Connectivity & data sharing ability with software.

3. Technical Specifications:

- 3.1. Capacity:
 - 3.1.1. Reagent Capacity: 18-24 reagents (Antisera, test cells, normal saline...)
 - 3.1.2. Micro plate capacity: 2-4 micro plates.
 - 3.1.3. Gel card capacity: 24-28
- 3.2. System should have centrifuge for micro plate as well as gel card method.
- 3.3. System should have incubator for micro plate as well as gel card method.
- 3.4. Rapid & Accurate reading of micro plate and Gel Cards by CCD Camera.
- 3.5. Micro plate Reader:
 - 3.5.1. 8 measurement channel.
 - 3.5.2. One reference channel.
 - 3.5.3. Wave length range: 340-750 & must have 405, 450, 492 & 620 nm filter.
 - 3.5.4. Accuracy: better than $\pm 10\%$
 - 3.5.5. Resolution: 00001-0.1 OD.
 - 3.5.6. Built in shaking with programmable speed and time.

- 3.5.7. Measurement mode: single and dual wavelength reading (preferably 450 & 620).

4. Blood Grouping: In micro plates

- 4.1. Should perform ABO and Rh grouping using cell suspension (Forward grouping).
- 4.2. Should perform ABO grouping using serum (Reverse grouping).
- 4.3. Should display grading if agglutination reaction.
- 4.4. Should be able to detect weak D.
- 4.5. Should be able to detect antibody.
- 4.6. Antibody panel test should be performed by using ready kits.
- 4.7. Should be able to differentiate A1 & A2 group.
- 4.8. Should be able to detect Bombay Blood group.
- 4.9. Should be able to perform direct and indirect coombs test.
- 4.10. Should be able to perform TPHA Test.

5. Cross Matching: Should be performing major cross matching using Pts. Serum and Donors cell by saline and albumin /enzyme method and IAT Method.

- 5.1. Should be able to perform minor cross matching using patient's cells and donors' serum by saline and albumin/Enzyme.
- 5.2. Should be able to detect incompatible result.
- 5.3. Should be CE & US FDA

LAB801 Discard Autoclave, 100L

Ideal for many laboratory sterilization applications, Discard Autoclave is designed with flexibility and reliability in mind and is ideal for installation in laboratories which do not have access to a drain or water supply.

Main Features:

1. No-action 'push-n-seal' door with pneumatic seal and locking.
2. 8-program Touch screen control system
3. Compact design
4. Stainless steel pressure vessel
5. Built-in air ballast system for fast processing of liquid loads
6. Load-sensed process timer
7. Fan cooling system
8. Operating temperatures from 105°C to 137°C
9. Submerged heaters within the chamber generate steam. The chamber water can be topped up either manually or automatically.
10. Sensors within the chamber should prevent the cycle from starting or continuing if there is insufficient water.
11. A safety micro switch is fitted to the door which will only allow the cycle to start if the door is properly closed and locked.
12. At the end of the cycle, the door will not be released until both temperature and pressure have reached safe pre-set levels.
13. Floor standing models are easily movable on castors.

LAB801-D Dental Autoclave, large Size

- 1 The unit should have fully automated, microprocessor controlled operation
- 2 The unit shall operate on vacuum principle, incorporating at least five standard programs (wrapped instruments and textile at 134°C & 121°C and Flash)
- 3 Test programs shall be incorporated (Bowie Dick and leak)
- 4 Vacuum pump to be built in within the unit
- 5 User customized programs shall be possible
- 6 SS interior (steam jacketed)
- 7 Door system with safety interlock to prevent accidental door opening when chamber is pressurized or during cycle
- 8 Clearly visible parameter displays (temp, pressure, cycle status, etc.)
- 9 Built-in thermal printer for detailed cycle documentation
- 10 The unit shall be equipped with a built in steam generator.
- 11 The unit shall have a built in water reservoir for minimal installation requirements. Connection to external water / drain supply should be unnecessary.
- 12 The unit shall have a steam standby mode (energy storing steam generator), during which the unit will be ready to start sterilization instantly
- 13 Sterilizer chamber capacity: approximately 20 liters
- 14 The chamber shall possess horizontal loading capability and incorporate two (removable) shelves for loading of two surgical instrument trays of sizes up to ~ 20 cm W x 40 cm D x 10 cm H, or double that height by removing the top shelf

LBLGUN Label Gun with Labels

This simple to use dual indicator label for steam and formaldehyde sterilization processes creates a direct link between the process and the patient. Compatible with all manual traceability systems for both large and table top sterilizers. Used in conjunction with the label gun, the information about the pack can be printed by the gun during the preparation process. After sterilization, the label is peeled off and reapplied to either patient or departmental records as evidence of an effective process.

Technical Details:

- Durable, lightweight applicator is easy to use.
- All load identification information is printed in one easy-to-read area.
- Label applicator that prints and applies labels directly where needed.
- Conforms to EN ISO 11140-1 Class 1
- Dual Adhesive indicator for record keeping
- Dual Indicators – steam and formaldehyde on each label
- Records; process date, expiry date, operator number, sterilizer number and cycle number
- Easy to use with the Label Gun
- Non-toxic
- Lead free

LFT900

Mortuary Lifter

1. Lift, mortuary, welded steel, acrylic enamel finish lifter.
2. Welded stainless steel tray pallet, to have the following feature:
 - Fingertip control lift loads to desired height, between 305mm to 1550mm
 - Roller bearing polyurethane wheels
 - Powered by 2 rechargeable batteries, provided with built-in charger
 - Elevating capacity of 680 Kg
 - Power supply: Battery
 - Lifting mod: electric / hydraulic.

LIG015 Light, observation/examination, mobile

1. Mobile examination light on sturdy and stable stand with electrically conductive lockable castors and height adjustable extension arm unlimitedly rotatable.
2. The mobile stand shall incorporate an ergonomic weight balance system in all joints for easier positioning of light head.
3. All light movements (in all axes and directions) shall be specified in details (height adjustment, rotation, vertical tilt, etc.)
4. The light head shall be designed against dust with an impact resistant material, resistant to disinfecting agents. It shall consist of a smooth surface with no visible screws for an efficient and hygienic cleaning.
5. Easy, safe and accurate positioning of the light head through an ergonomic handle directed toward the examination field.
6. On/Off switch, easily accessible on the light head.
7. The light head shall incorporate white LED light sources for better tissue differentiation. The design of the light sources inside the light head shall feature a shadow-free field of view. The number of light sources shall be provided.
8. The light intensity shall be 10,000 lux approximately at 1m.
9. The following specifications shall be provided:
 - 9.1. Color rendering index
 - 9.2. Color temperature
 - 9.3. Heat dissipation
 - 9.4. LED light sources lifetime
 - 9.5. Illumination field dimensions
10. The offer shall include two reusable sterilizable handles

LIG018 LIGHT, CSSD, mounted on a shelf

1. On/Off switch, easily accessible on the light head.
2. All light movements in an easy, safe and accurate positioning of the light head through an ergonomic handle directed toward the viewing field
3. The light head shall be designed against dust with an impact resistant material, resistant to disinfecting agents. It shall consist of a smooth surface with no visible screws for an efficient and hygienic cleaning.
4. The design of the light sources inside the light head shall feature a shadow-free field of view. The number of light sources shall be provided.
5. The light intensity shall be 10,000 lux approximately at 1m.
6. The following specifications shall be provided:
 - 6.1. Color rendering index
 - 6.2. Color temperature
 - 6.3. Heat dissipation
 - 6.4. LED light sources lifetime
 - 6.5. Illumination field dimensions

LIG025 Overhead Warmer

1. The unit should be easily mobile on lockable castors, well balanced structure for easy placement above crib or incubator of any size and in any position
2. Intensive phototherapy mode of operation, incorporating a combination of white and blue fluorescent light tubes to maximize efficiency. Specific details shall be provided with the offer.
3. To incorporate an hour counter and an ON/OFF switch with timer function
4. Should have +/- 90 degrees rotation of diffusing hood and variable height

LIG031 Single Head LED OT Light MOBILE

1. It shall be a single light head configuration
2. Shall be LED light technology to generate a cool and shadow-less light
3. The light head shall have the following features:
 - Luminance at 1 meter: 160,000 lux
 - Light Intensity: adjustable from 30% to 100% of maximum output
 - Color rendering index: not less than 95
 - Color temperature: adjustable; 3,800 to 4,800 K
 - Field size diameter: 25 cm
 - Depth of illumination: 100 cm
 - Light housing diameter: 600 mm
 - Rotation: 360 °
 - Vertical adjustable range: 120cm
4. The unit shall include an integrated control unit for each head
5. Suspension system:
 - Should be mobile
 - Joints and a suspension system shall provide full freedom of movement
 - Shall include a non-drifting, cardanic suspension system.
6. Light head housing:
 - Shall be sealed, dust and fracture proof
 - All light heads shall have a detachable, sterilize able positioning handle
 - Autoclavable handles (2qty each) should be supplied with light.
7. All surfaces shall be resistant to disinfectants
8. Shall be CE marked and/or FDA approved

LIG032 Surgical Light

1. Shall be CE marked and/or FDA approved
2. It shall be a dual light heads configuration
3. Shall be LED light technology to generate a cool and shadow-less light
4. Each light head shall have the following features:
 - Luminance at 1 meter: 160,000 lux
 - Light Intensity: adjustable from 30% to 100% of maximum output
 - Color rendering index: not less than 94
 - Color temperature: adjustable; 3,800 to 4,800 K
 - Field size diameter: 25 cm approx.
 - Depth of illumination: 100 cm approx.
 - Light housing diameter: 600 mm approx.
 - Rotation: 360 °
 - Vertical adjustable range: 120cm
5. The unit shall include an integrated control unit for each head
6. Suspension system:
 - Ceiling mounted
 - Joints and a suspension system shall provide full freedom of movement
 - Shall include a non-drifting, cardanic suspension system.
7. Light head housing:
 - Shall be sealed, dust and fracture proof
 - All light heads shall have a detachable, sterilizeable positioning handle
 - The light heads shall have a single ceiling interface.
 - Shall be laminar flow compatible
8. Camera system:
 - One of the light heads shall include an integrated high resolution camera system
 - Shall be capable of being connected to hospital's LAN network.
 - Zoom: Optical zoom: x10; x120 combined optical and digital zoom, minimum
 - TV Standard: PAL/NTSC
 - Focal length: 2.4 – 60 mm approximately
 - Electric shutter: 1/1 to 1/1,000s approximately proof
9. All the needed accessories and cabling shall be included to ensure full operation
10. All surfaces shall be resistant to disinfectants
11. The supplier shall supply and install the safest, most durable ceiling interface configuration and shall be coordinated and approved by the client and relevant contractors.
12. The supplier shall coordinate with the client and electromechanical contractors for installation requirements, exact locations, wiring, power requirements...etc.
13. Please refer to 1:20 detailed loaded drawings
14. Shall be CE marked and/or FDA approved

LIG050 LIGHT, magnification, dermatology

1. A floor stand type, mobile on castors fixed on an articulating arm.
2. Magnifier to be shadow free lens
3. Shall have a power switch
4. Shall have the following specifications:
 - Light source: Fluorescent
 - Lens diopter: not less than 3
 - Color Temperature: less than 5500 Kelvin
 - Power Supply: 100-240 Vac, 50/60 Hz
 - Meet the medical and the electrical safety standards
 - Shall include all the standard accessories to ensure full operation

LIG200 Image Processor with light source

1. The system shall have a dedicated image processor for real-time image manipulation of 3D reformatting into orthogonal, oblique, and double oblique orientations.
2. The image processor shall be capable of image manipulation including 3D reformatting shall be available from the system operating console independent of image acquisition and raw data reconstruction.
3. The image processor shall have hard disks dedicated to raw data ≥ 144 GB; main memory ≥ 8 GB.
4. The image processor shall have high image reconstruction speed ≥ 1300 images/sec (256 x 256) matrix.
5. The image processor shall have capability of simultaneous scan and reconstruction.
6. A xenon light source 180W for the same should be included

LIG502 Light, Infrared

The heat intensity is fully adjustable and the unit is supplied complete with protective grilles and table bracket.

High-standard Infrared Heat lamp, packed with many practical features:

- Designed for relief of muscular pain.
- Light dimmer from 1 to 250w for precise control of your treatments
- Double-walled vented shade for safe and precise heating of the targeted area
- Light Dimmer from 1 to 250W – Control the intensity of your treatment for various body parts and requirements
- Double-walled vented shade – Precise heating of the targeted area
- Protective safety grill – Prevents accidental contact with the heat bulb
- Practical handle – Easy and accurate adjustment with only 1 hand
- 60cm Long flexible arm – Extra long reach to direct the light exactly where needed
- Supplied with a sturdy table clamp

LIGLED Torch (LED)

1. The light features on OP reflector, which provides professionals with the perfect flood of light for a variety of tasks.
2. The pen light uses a CREE XP-L V6 LED, which comes in cool or neutral white, and is designed to last for more than 20 years before it will need to be replaced.
3. The light can emit a maximum of 300 lumens for a period of 51 minutes off of two AAA batteries.
4. The penlights should not start in high mode – instead the designed to be configured to begin in Firefly mode. This makes it a great choice for medical professionals because the 0.4 lumens allow the light to be used for a variety of medical tasks.
5. The LED Light offers a user friendly interface. Powering the light on or off is done via the tail switch. Changing between the various modes can be done in one or two ways but both require the light to be turned on.
6. Modes can be cycled through by twisting the head of the light from loose to tight. The easiest way to cycle through the modes requires you to halfway press the tail switch.

Specifications:

- **Weight:** 1.09 ounces without batteries
- **Dimensions:** 5.23 inches long and 0.55 inches diameter
- **Lowest setting:** 0.4 lumens for 137 hours
- **Highest setting:** 300 lumens for 51 minutes

LIGVGN Vaginal light Hysteroscope

1. Flexible Video Hysteroscopy for use in the emergency department – female section to include all operational equipment and accessories for full functionality, including mobile trolley, video processor, light source, documentation system (printer and DVD recorder), with the highest specifications available at time of delivery
2. Scope specifications:
 - Outer diameter 4.9 mm or close equivalent.
 - Angulations range: Up 120°; Down 120°, or close equivalent.
 - Working length 300 mm, or close equivalent.
 - Instrument channel inner diameter 2.2 mm or close equivalent.
 - Direction of view: Angle of 0° (straight forward).
 - Standard accessories supplied with the hysteroscope shall be listed clearly. They shall include: Protective hard case, pressure cap, leakage tester, biopsy forceps, Grasping forceps, cleaning brush, etc.
3. The flexible video hysteroscope should be delivered complete with all endoscopy equipment and accessories and additional adaptors for connecting it with the endoscopy system included with this item.

LIT050 Ultra Intracorporeal lithotripter system

It is used for fragmentation of urinary stones; the combine unit gives more power.

Consisting Of:

- Dual foot pedal,
- Compressed air connection
- Pneumatic hand piece
- ultrasound hand pieces stone catcher
- a selection of a Pneumatic and Ultrasound hydraulic, kinetic Probes

Technical specification of Pneumatic Lithotripter Pneumatic + Ultrasound

- 1 1 x Main control unit including : 1 x holder for stone fragment catcher
- 2 1 x Electric foot pedal :
- 3 1 x Spare tube for the pneumatic hand piece without connector
- 4 1 x spare fuses
- 5 1 x stone catcher Autoclavable, reusable :
- 6 1 x Ultrasound hand piece set :
- 7 1 x Pneumatic hand piece set including:
- 4 x pneumatic probes :
- 8 1 x Probe, 2.0 mm, length 425 mm :
- 9 1 x Probe, 1.0 mm, length 605 mm :
- 10 1 x Probe, 0.8 mm, length 605 mm :
- 11 1 x Pneumatic probe 1.0 mm, length 570 mm :
- 12 - 2 x Ultrasound probes, Ø 3.3 x 403 mm :
- 13 1 x Vacuum/Suction set incl. :
- 14 1 x Suction/vacuum System body :
- 15 1 x Suction set for Suction/vacuum System (silicone tubing with 2 connecting pieces) :
- 16 - 1 x Suction/vacuum System tube set including:
- 17 1 x Suction tube for Suction/vacuum System, Ø 4.0 mm, length 353 mm (to be combined with pneumatic probe) :
- 18 1 x Suction tube for Suction/vacuum System, Ø 3.5 mm, length 380 mm :
- 19 1 x Length adapted pneumatic probe, Ø 1.6 mm, length 453 mm
- 20 1 x Suction tube for Suction/vacuum System, Ø 1.6 mm, length 595 mm :
- 21 1 x Length adapted pneumatic probe, Ø 0.8 mm, length 668 mm.
- 22 1 x roller clamp (set of 2) for adjustment of suction flow in connection.
- 23 1 x Compressed air tube 3.0 m for the compressor :
- 24 1 x main cord Europe for power supply :
- 25 1x Intra corporeal lithotripter pump
- 26 1 x Medical Air Compressor
- 27 1 x Imported Cart
- 28 1 x Double reusable suction jar set of 2 jars with equal capacity Or EHL + EKL

A rapid discharging of sparks from the probe's tip produces steep compressional waves (shock waves) in the liquid, directly in front of the concernment. Mechanical stress is created inside the concernment which results in the disintegration of the stone. The repetition rate of the spark discharge should depend on the intensity settings and the type of EHL probe being used.

Recognition of EHL Probes.

- The unit should recognize the type of EHL probe being used.
- The unit should automatically select the appropriate frequencies depending on the type of probe and the intensity setting in use.
- Should be supplied with 2 probes of user recommended.

Electro Kinetic Lithotripsy (EKL).

- The handle of the EKL probes should contain a driving unit that produces a magnetic field with a high energy density. This shock wave should be transmitted from the probe's tip to the stone causing its disintegration.
- Different shock wave energies and repetition rates may be selected. Should be supplied with 4 probes and 2 suction probes of user recommended.
- Once the handle has been connected to the probe connector, the unit should automatically switches to the EKL operation mode.
- The unit should be able to select the corresponding frequencies depending on intensity setting.

Mains Supply

Voltage: 100 V \pm 10%

115V \pm 10%

230V \pm 10% 50-60Hz

Frequency

EHL Discharge Energy (min., max.):

Intensity A / Impulse frequency max. 250mJ / 60 Hz

Intensity B / Impulse frequency max. 500mJ / 50Hz

Intensity C / Impulse frequency max. 900mJ / 40Hz

EKL Shock Energy:

Intensity A / Impulse frequency 45mJ / 3Hz

Intensity B / Impulse frequency 60mJ / 20Hz

Intensity C / Impulse frequency 75mJ / 15Hz

Classification:

Protection class I

Protection (application part) BF

Explosion protection None

Classification acc. to 93/42/EEC 93/42/EEC

"Protection Against Penetration From Water Or

Foreign Material:

Handle with protective

Covers: protection IP67

Quality Certificate CE or FDA certified

Origin: Europe, USA, Japan

LPRSCO Laparoscopy System**1. The Laparoscopic Systems shall have the features:****Performance Specifications & Features**

- HDTV or higher Video System Processor :
- HDTV or higher. With minimum 1080 effective scanning lines of picture information.
- Compatible with PDD (Photo Dynamic Diagnosis)
- HD/SD SDI output for high-quality video image transfer
- HDTV signal output : RGB, YPbBr, HD-SDI
- SDTV signal output : RGB, YPbPr, SDI, VBS (composite), Y/C
- Video recording
- Digital video: SDI, FireWire (IEEE 1394).
- Still images: PC Card interface, adapter available.
- Controlled by surgical integration system.
- LED -Cold Light Source
- Automatically adjusts light intensity to achieve ideal illumination.
- Backlit front panel indicators and controls improve operability.
- Compatible with PDD (Photo Dynamic Diagnosis) .
- Protection against electric shock: class 1.
- LED Lamp .
- Lamp life: approx. 5000 hrs. on continuous use.
- Brightness adjustment: light-path diaphragm control.
- Emergency LED lamp: . Emergency lamp life: approx. 500 hrs. on continuous use.
- Controlled by surgical integration system.
 - i. Must come with appropriate set of light guide cables (x2).

2. Suction Irrigation Pump

- Effective suction and irrigation in one device Peristaltic roller pump technology.
- High safety by constant pressure control Single use and reusable tubing available.
- (0 m height of irrigation bag): 1600 ml/min.
- Max. pumping pressure: 1200 mbar.
- Max. Capacity: 1350 ml/min.
- Max. Pumping pressure: .660 mbar.
- Ultrasonic surgical Cut and Coagulation machine
 - Low frequency ultrasonic vibration to enable fast cutting and coagulation.
 - Two frequency settings 23.5 kHz/47 kHz
 - Adjustable amplitude: 8 to 200 micron
 - Maximum Output: 150W (PEAK)
 - Instant homeostasis along the full length of the blade.

- Full 360°, two ways, rotation performed with the tip of one finger to reduce hand fatigue.
 - All hand held instruments to be autoclavable.
 - Ability to evacuate the mist through the insufflators.
 - Ergonomic handle design to reduce operator hand fatigue.
 - Tip diameter 5.5 mm
 - Foot switch operation
- Ultrasound Aspirator
 - System must use Ultrasonic Surgical Technology for aspiration
 - Ultrasonic vibrations from the ultrasonic generator to power probes
 - Generator to operate on two possible frequencies: 23.5 kHz / 47 kHz
 - Suction Pump to have Nominal free air flow rate of 20 l/min (±10 %)
 - Suction Pump to have Nominal vacuum of 85 kPa 119.6.8.6 Suction pump must be compatible with single-use or reusable systems.
 - Suction pump must incorporate hydrophobic microbial filter.
 - System must be comprised of the irrigation unit and suction pump is a compact system
 - Probes must be autoclavable
- Standard Accessories
 - Shall be supplied with all standard accessories required for the proper operation and function of the unit.
 - Accessories to include the following:
 - Ultrasonic Transducer
 - Tapered, sheath for endoscopic surgery with compatible probe
 - 15° angled sheath with compatible probe for open surgery
 - Straight, sheath for open surgery with compatible probe"
- Set of accessories
 - Footswitch, Curved Scissors (Laparoscopic and Open)
 - Straight Scissors (Laparoscopic and open)
 - Hook
- Consumables
 - Shall be supplied with all standard consumables, where applicable.
- HD Digital Camera Head for URO/GYN applications
 - 1080i High Definition Video
 - Observation pickup system interline type CCD solid-state image pickup
 - Classification protection against electric shock type CF
 - Fully Autoclavable
 - 3 programmable function buttons
 - Light weight camera head
 - L-shaped head
- Optical High Definition Telescopes
 - Minimal chromatic aberration for maximum image quality
 - Aspherical lenses prevent distorted imaging right into the corners.
 - Bright and even light distribution
 - 10 mm, 310 mm working length,

- 0° direction of view,
 - Quick lock compatible
 - Autoclavable
- Single port trocar
 - Must provide minimum of three access ports for both instruments and laparoscopes
 - Must have at least one 10mm port with two ports no less than 5mm each
 - Insufflation and smoke evacuation ports must be integrated in the trocar
 - Trocar must be made of material that provides maximum flexibility
 - Trocar must include detachable boot for specimen removal
- Insufflator
 - Large display for status checking
- Should have separate locks for up-down & right – left knobs
 - 35 l/min insufflation
 - Can Use low pressure gas from central gas wall supply
 - Automatic smoke evacuation system
 - Automatic overpressure release for patient safety
 - Adjustable Flow rate from 0.5-35l/min
 - CO2 Cylinder
 - Standard ACCS Kit.
 - Workstation trolley (That can be detached from the surgical pendant and work separately)
 - Universal Platform with antistatic castors
 - A modular workstation system,
 - Unique Sleek design in order to facilitate ergonomic placement of the trolley for maximum surgeon comfort
 - Must include Articulating LCD arm
 - Must Include Keyboard arm
 - Must include gas Cylinder holder
 - Must include IV Pole
 - Power block mounted on trolley with separation transformer
- Medical grade HDTV LCD
 - 24" LCD screen
 - Must support High definition signals up to 1080 scanning lines
 - Must be Medical Graded
- Flexible Tip 5mm scope
 - Four-way angulations at 100DEG in every angle 119.6.19.2 Built-in CCD chip at the distal end
 - Fully immersible in disinfectant solutions, ETO serializable
 - Field of view: 80°
 - Direction of view: .0° (forward viewing)
 - Depth of field: 18–100 mm
 - Distal end outer diameter: 4 mm

- Rigid portion outer diameter: .5.3 mm
 - Working length : 370 mm
- Uterine Morcellator (qty 1 only in total for the hospital)
 - Easy Assembly and Disassembly
 - Compact and light-weight system
 - High Cutting Speed range from 50 to 1000rpm
 - Foot Switch Controlled variable speed mode
- Accessories must include:
 - Trocars
 - Two Tube System
 - Myoma drill: 10 x 330 mm
 - Claw Type Grasping forceps: 15x365 mm
- Uterine manipulator
 - Atraumatic
 - Deflecting
 - Accessories must include:
 - Cervix adapters
 - Chromopertubation adapters
- Bipolar TUR in saline set
 - Bipolar Resection in Saline
 - Self-cleaning effect of loop-wire when plasma is activated
 - Rotatable Continuous Flow sheath Systems
 - working length of 194 mm
 - 26 Fr. and 27 Fr. resection sheath
 - High Speed Vaporization 119.6.26 Accessories must include:
 - 30° wire loop electrode
 - Mushroom Shaped Vaporization Electrode
 - HF-Resection electrode, 45° needle,
 - Optical Obturator
 - Pneumatically driven stabilizer arm for video-endoscopic camera
- 3. Mounting Method
 - The proposed unit shall be mounted on manufacturer supplied Cart ,
- 4. IT Connectivity Requirements & Parameters Sent out to CIS
 - HL7 compatible.
 - Able to connect and interface with HIS using TCPIP and/or IEEE 802.11n WLAN standards.
 - Manufacturers shall provide all integration drivers; HL7 interfacing capability to integrate with one selected HIS system.
- 5. System Integration/ Solutions
 - Shall be part of the OR integration system; Controllable from the head and from the OR integration system.
- 6. Standard Accessories
 - Shall be supplied with all standard accessories required for the proper operation and function of the unit.
- 7. Optional Accessories/ Features

- Shall be supplied with all optional accessories/ features for the client's selection.
8. Consumables
 - Shall be supplied with all standard consumables
 9. Approximate Physical Dimensions
 - 119.13.1 For dimensions, the system consists of multiple items, so bidders shall refer to relevant design drawings noting that dimensions (length/width) of unit are indicative and hence, Bidder shall ensure Service column unit can accommodate all the item contents and services required.
 10. Compliance with International Approvals & Standards Agencies
 - Should have an FDA approval and/or CE Mark, where applicable. List any other international

LSRSRG Laser Machine

1. 93.1 CO2 laser system shall be mobile on heavy duty castors and suitable for general surgical use (ENT, Urology, Gynecology and general surgery)
2. 93.2 Microprocessor controlled Gaussian beam laser emission
3. 93.3 The system console shall incorporate a clear digital alphanumeric display of all operating and safety parameters, including but not limited to the following:
 - Operating condition: READY / ACTIVE / STANDBY
 - Power output
 - Actual emitted energy
 - Mode of operation
 - Delivered energy counter (Joules / pulse and total Joules)
 - Emergency stop switch
 - Key lock
 - Audiovisual Laser emission indicator
 - Any warning or error indicators necessary for the safe and accurate performance of the clinical procedure
4. Controls shall be spill and splash proofed
5. Parameter variation and controls shall be protected against accidental setting changes or tampering
6. Laser activation by footswitch. The footswitch should be spill-proof.
7. The following system parameter and specifications should be met or exceeded:
 - Continuously variable power selection up to 40 Watt or better in 1 Watt increments
 - Accuracy should be within 5 % or better
 - Variable exposure time from ~ 0.05 sec – 1 sec + continuous
 - Spot size: circular and uniform.
 - Aiming beam with intensity up to 5 mW, the aiming system and the therapeutic laser should be concentric and sufficiently close in size and shape.
 - Air-cooled or water-cooled system, fully integrated. For water cooling, should be fully integrated with built-in re-circulating water reservoir. No external connections to water supply or drain
8. It shall be supplied with all needed accessories for full operation including the standard accessories
9. The attachments and accessories for each surgical procedure (ENT, Gynecology, Urology, general surgery) shall be listed and quoted separately
10. Power supply: 110-220V, 50-60Hz
11. Shall be CE marked and/or FDA approved

LTHSRG-U Urological Surgery (Lithotripter)

1. This section describes requirements for an extracorporeal shock-wave lithotripsy (ESWL). In general the (ESWL) is a noninvasive alternative to open surgery or percutaneous nephrolithotomy procedures, it is also used to treat stones in the ureter, gallbladder, bileduct, and pancreatic duct
2. The lithotripter laboratory shall consist of an extracorporeal renal lithotripsy system composed of the following major subsystems and components:
 - Fluoroscopic imaging system
 - Patient table and accessories
 - Shock-wave generator (electromagnetic, spark gap, piezoelectric)
 - Control console
3. FLUOROSCOPIC IMAGING SYSTEM
 - The fluoroscopic imaging system shall have the following characteristics:
 - The fluoroscopic imaging system shall be suitable for lithotripsy procedures with the patient in the supine position.
 - The gantry shall permit free selection of multiple angulations while maintaining free access to the patient on all sides.
 - All motions of the gantry shall be isocentric and shall maintain orthogonal projections of the central x-ray beam, such that the faces of the x-ray tube collimator and image intensifier remain parallel at all times.
 - Gantry construction shall be mechanically stable and rigid to prevent vibration during operation.
 - Gantry design shall provide for rapid positioning and adjustment by both motorized and manual operation.
 - Safety devices (interlocks) shall prevent movements resulting in collision of the gantry with other subsystems and components.
 - When not in use, the gantry shall be capable of being parked so as not to interfere with other use of the lithotripsy system.
 - The x-ray system shall have the following characteristics:
 - Dual focal spots.
 - KV range: 40-110 or better.
 - Tube Anode heat storage: 400KHU minimum.
 - Tube Anode heat dissipation rate: ≥ 35 KHU/minute.
 - X-ray tube overload "lock-out" devices shall be provided, which limit tube exposures that would result in tube damage. A display light must indicate that the overload has been selected. A warning buzzer indicating higher heat loading of x-ray target during cine filming should be provided.
 - Automatic collimation to size of the image intensifier with a round collimator or an iris-type diaphragm
 - The image intensifier shall incorporate an image tube with the following characteristics:
 - Cesium iodide image tube
 - Solid state power supply and control circuit

- Minimum of 9 inch diameter.
- Appropriate, removable grid nominal 8:1 or 10:1, 80- to 110-line, fiber interspaces.
- Spatial resolution of greater than 3 lp/mm in the 9-inch mode, greater than 3.5 lp/mm in the 7-inch mode, and greater than 4 lp/mm in the 4.5-inch mode, throughout the entire active area, measured at the face of the image intensifier with a 0.1 mm lead pattern at 60 kVp without any phantom in the beam.
- The system shall have an automatic brightness control that correctly adjusts the image intensity within one second regardless of kVp and field size changes.

4 PATIENT TABLE AND ACCESSORIES

- The patient table shall be similar to a motorized, general-purpose urology table. It shall have a floating top of minimum dimensions 210 cm in length and 65 cm in width.
- It shall have a motorized adjustable tabletop height over the range of 85 to 116 cm and a flat or slightly concave rigid carbon fiber top (less than 0.8 mm aluminum equivalent x-ray absorption) with head support.
- It shall have Positive locks with conveniently located switches.
- The table shall have a tilting range from -15 to + 15 °.
- The table must include an enclosed, water-filled cylinder that protrudes through the table and has a cushion that touches the patient's skin.
- A water degassing system, which prevents bubble formation, should be included with the water-filled cylinder.
- An ellipsoid or other acoustic reflector, necessary to focus shock waves at the stone, should be included in the cylinder.
- The table shall be capable of supporting and positioning a 200 Kg patient without deflection at maximum tabletop extension.
- The following items shall be provided with the patient table:
 - Two sets of restraints
 - Two tabletop mattresses (equal to 0.1 mm Al equivalent x-ray absorption)
 - Two headrest pads
 - Two sterilizable handles
 - Drainage accessories
 - Leg crutches (pair)

5. SHOCK-WAVE GENERATOR

- The shock-wave generator supplied shall be an electromagnetic, spark gap, or piezoelectric generator.
- The generator shall have the following characteristics and capabilities:
 - Selectable manual, respiratory or ECG-triggering
 - Pulse frequency of 60 pulses per minute minimum
 - Shock wave penetration depth minimum of 150 mm or better
 - Pressure at focus shall be more than 40 MPa

6. CONTROL CONSOLE

- The control console shall consist of at least two, 18-inch monitors.
 - The control console shall include the following patient monitoring features:
 - ECG, respiration
 - Patient ID
 - Patient demographics
 - The control console shall incorporate control of the shock wave generator and imaging systems.
 - Matrix size of 512 x 512
 - Storage of 13 images on one screen
 - Storage of 10000 images in memory
7. The system must be FDA approved and CE marked
 8. A UPS should be included to protect control console and computer from loss of main power. It should give the operator a minimum of 10 minutes to save, print last patient study and shutdown the system.
 9. It shall be fully DICOM 3.0 compliant with all standard DICOM specifications (such as but not limited to: Storage Send/Receive, Storage Commitment and Print) with interface to the hospital RIS/PACS network/system.
 10. Complete pre-installation site preparation works inclusive of chiller/ cooler (if required), floor and wall ducting , power distribution cabinet and finishing shall be delivered and installed by the supplier and coordinated with the civil and electromechanical contractors as required. Bidders may inspect installation site prior to bidding their offers. Radiation warning lights (interlocked with system's power-on where necessary) and warning signs shall be installed by the supplier in accordance with international and local regulations. Equipment and computer cabinets and control console desk with operator chair shall all be included with the system.
 11. Optional Ultrasound System to be offered.

MAC001 Medical Gas Compressor System**1. Required Pressures**

- There are two systems of medically pure compressed air in general use.
- System A which is to supply air to operating theatres for use on surgical instruments and System B, which is to supply air for respiratory purposes to wards and theatres.
- System A units shall be High Pressure Air, regulated between 700 kPa and 800 kPa gauge and System B shall for Low Pressure Air, regulated at 400 kPa gauge.

2. Piping System

- The medical compressed air system, so far as pipe runs, outlets, etc. are concerned, shall be as specified in the Project Specification.
- Pipes shall be of medical grade copper.
- The air shall be free from oil moisture and bacteria.
- The pressure requirements for respiratory purposes are for use either as a driving gas for respiratory machines, or for air/oxygen mixing.
- The medical gas keyed probes shall be in accordance with S.A.B.S. 1409 – 1986 (Outlets Sockets and Probes for Medical Services used in Hospitals).
- The medical compressed air shall be dried by bacterial filtration desiccant driers and refrigerated air driers as detailed in the Project Specification.
- Starting at the plant room and immediately after the compressor, receiver, driers, filters, etc., the supply line shall be split and pressure reducing valves installed in each leg to produce the required pressure for the low pressure supply lines system B and high pressure lines system A. the pipelines shall each have relief valves to prevent excess pressure build-up in case of regulator failure. Reference must be made to drawing.

3. Medical Air Compressors and Filtration

- The compressor and filtration system to be used shall produce medically pure “oil free”, “moisture free” and “bacteria free” air (reference must be made to the Project Specification).
- All air compressors shall be of air-cooled Stop – Start controlled type. Where a type A installation is required it shall be rated at 1000 kPa gauge working pressure. Units may be two stage compression type. Where a type B installation is specified it shall be rated at 700 kPa gauge working pressure. The output of the compressor and all other requirements shall be as specified in the Project Specification.

4. Compressed Air Receivers

- The size of the air receiver will be given in the Project Specification.
- Two receivers are required. The receiver shall be of welded construction with dished ends, tested and stamped by an Independent Inspection Authority in terms of the Occupational Health and Safety (as amended).

- It shall be fitted with a safety valve set at 70 kPa above the cutout point of the mercury control switch and a 75mm diameter dial pressure gauge with gauge cock. The working pressure shall be marked in red.
- The receiver shall be galvanised internally and externally. The tank shall be painted with a suitable metal primer undercoat and final enamel coat, colour White with Salmon Pink (A40) colour to S.A.B.S. 1091.
- The pipe connections to the receiver shall be fitted with sufficient loops and/or offsets to render them sufficiently resilient to absorb vibration.

5. Pressure Reducing Valves

- There shall be two adequately sized pressure reducers in the supply line after the filters, which shall maintain a constant pressure in the line of 800 kPa gauge or 400 kPa gauge for system A and B respectively.
- The pressure reducer shall be such that it is possible to adjust the pressure by at least 140 kPa each way when required.
- Pressure reducing valve stations shall be fitted with pressure gauges having dials of not less than 100mm diameter.
- The gauges are to be marked with red lines at the maximum pressure (on the face). Manufacturer's flow charts must be supplied with the regulators.

6. Drives

- The drives to be as per the Project Specification.

7. Bases

- When erected on existing concrete floors, bases for mounting compressor units shall consist of a top reinforced concrete slab at least 75mm thick, preferably with a 40mm angle iron frame to form the top edges, trowelled to a smooth finish and coloured to suit the plant room floor with golden yellow/black diagonal stripes on all vertical edges.
- The compressor unit shall be mounted on anti-vibration mountings. For new installations reference must be made to standard drawing.

8. Emergency Cylinder Bank for Compressed Air

- If required in terms of the Project Specification, an emergency stand-by cylinder bank shall be provided, using a Standard Manifold.
- A back-up capable of 12 hour storage to the low pressure supply shall be supplied to operate in the event of a primary system failure.

9. Stand-By Facility

- The compressor unit together with the entire medical gas and vacuum system shall be connected to the Hospital stand-by electrical power.

10. Medical Air Purity

- The degree of purity of air to be achieved shall be in accordance with CKS 64.

11. Noise Level (For Compressed Air and Vacuum Plant)

- The sound level shall be that portion of the sound spectrum attributable to the operation of the plant and shall not be objectionable in any of the wards, treatment areas, theatres, or any other occupied area of the Hospital.

MAT001-P Air Mattress with pump

1. Air cells inflate and deflate in alternating cycles to provide pressure relief.
2. The air supply unit attaches easily to footboard of virtually any bed frame.
3. Rounded corners designed for safety
4. Super quiet
5. Low energy consumption
6. Bubble type disposable pad
7. High grade non- toxic PVC
8. Non scent and convenient
9. Repair kit included
10. Noise level Silent
11. Voltage(Power supply) 100V/ 60Hz, 220V/50Hz
12. Power consumption 5-10 n watts
13. Air flow rate 5L/Min Max
14. Pressure 130 mm Hg Max
15. Cycle time approx 10 minutes

MEA001 Medical Air Emergency Manifold

It provides a centralized source of bottled gas. The unit is designed to provide a duty and standby gas supply at a constant pressure via two banks of bottled gas cylinders with status monitoring.

- A standard system would feature a central control panel with a header assembly.
- The unit is designed for wall mounting as standard, however, options should be available to include floor mounted assemblies and formats to suit customer requirements.
- Also available is a high flow capable of providing a distribution flow rate in excess of 2000 L/m.

AUTOMATIC Control Panel

1. The control panel includes pressure gauges which indicate the gas pressure of each header and also the pipeline distribution pressure. The panel also displays the following:
 - Power On
 - System Fault
 - Bank Running for each cylinder header
 - Bank Empty for each cylinder
 - Low Pressure
 - High Pressure
2. The panel also incorporates a plant to alarm interface which provides contacts for both a medical gas alarm system and BMS system, it also displays the following:
 - Normal
 - Duty Bank Empty Standby Running
 - Duty Bank Empty Standby Low
 - Reserve Cylinder Bank Low
 - Pipeline Pressure Fault The panel also includes a piped discharge safety relief valve, a lockable line valve and a copper stub pipe for connecting to the distribution pipe work on the system.

HEADER RACK AND TAIL PIPE ASSEMBLY

- Each header comprises of a bottle rack with retaining chains, high pressure gas specific tailpipes and high pressure pipe work to suit the relevant number of gas cylinders.
- Each connection on the header assembly is fitted with a non return valve, which ensures that when a cylinder is changed the high pressure gas is not released from the system.

ESM-Emergency Safety Manifold

- The emergency standby manifold acts as a backup to a primary supply on a gas distribution system.
- The unit is designed to provide a supply of gas at a constant pressure in the event of any failure to the primary system.
- A standard system would feature a regulating panel with header assembly for two cylinders.
- The unit is designed for wall mounting as standard

MANUAL MANIFOLD Panel

- The regulating panel includes pressure gauges to indicate the gas pressure of the header assembly and also the distribution pressure.
- The panel includes a pressure reducing regulator, a pressure switch, a non return valve, a piped discharge safety relief valve, lockable line valve and a copper stub pipe for connecting into the distribution pipe work on the system.

ESM Header Assembly

1. Each unit comprises of a bottle rack with retaining chains and two high pressure gas tailpipes.
2. Each header is fitted with a non return valve which ensures that when a cylinder is changed the high pressure gas is not released from the system.
3. The assembly is fixed to the wall at a set height dependent on the gas in question, for oxygen and compressed air the gas distribution header is mounted higher from the floor level than that for nitrous oxide and oxygen/nitrous oxide mix.

MEN001 Medical Nitrous Emergency Manifold**1. General**

- The central gas bank shall comprise two banks of gas cylinders main and reserve, connected to a manifold. Both main and reserve banks shall be connected to the system; in such a way that only one bank will supply the system at any one time.
- When the operating bank becomes depleted or should the supply pressure fall, the reserve bank shall automatically come into use and the depleted bank shall be shut off. Electrically operated changeover panels are not acceptable.
- All gas cylinder manifolds shall be of the duplex type with semi-automatic change over from one bank to the other and at the same time actuating the warning system. Each bank shall supply the system through its own pressure reducer. A master pressure reducer shall ensure the correct line pressure no matter which bank is in operation. Each pressure reducer shall be fitted with a safety valve set to operate at 1 ½ times the working pressure and be vented to atmosphere.
- The gas cylinder banks shall be placed in rooms indicated on the drawings and shall be of the capacities indicated in the project specification. On site manufacture of manifolds is not permitted. Oxygen and compressed air banks must preferably be in separate rooms, in order to avoid mixing of cylinders as these cylinders have identical bull-nose outlets.
- Pressure gauges indicating the cylinder and supply line pressures shall be incorporated in the manifold and on all pressure reducers.
- A service point (i.e. a medical gas outlet) shall be connected into the main line from each pressurized gas line in the plant room immediately after the main line valve. The service point height shall be about 1.5 meters above the finished floor level.

2. Manifold Materials

- The fittings used to make up the manifold shall be forged bronze while the tubing shall be of heavy gauge copper. Pigtailed shall be of annealed copper. All the high-pressure side equipment of the manifold shall withstand a test pressure of 40000kPa gauge.
- Piping used in the manufacture of manifolds must be of medical grade piping and subject to the same cleaning procedures as for piping used in the gas reticulation.
- Pressure test certificates must be supplied with all manifolds.

3. Manifold Equipment

- The manifolds shall accommodate the number of cylinders specified and shall be arranged as shown on the drawings. Pigtailed for connecting the manifold to

the cylinders shall be long and flexible enough to allow easy connection to the cylinders without having to strain the tube. Each outlet for connecting the manifold to the pigtail shall have a header valve. Pigtails shall be connected to these valves with high-pressure gas connections and shall have standard bull-nose cylinder valve connections for cylinder coupling. The regulator assembly, which shall operate on the semi-automatic changeover system, shall be as shown on the main drawings and shall include: -

- Two pressure regulators set at 600 kPa gauge.
 - Two pressure regulators set at 400 kPa for oxygen, nitrous oxide and compressed air manifolds.
- The gas main diagrams show the position of pressure gauges. At least five pressure gauges must be installed: -
 - one high pressure gauge for each bank;
 - one pressure gauge for each bank to indicate the intermediate pressure
 - One pressure gauge to indicate the low pressure on the distribution system.
- All pressure gauges shall have a maximum reading of not more than twice normal working pressure.
- A stop valve shall be provided on the low pressure outlet side of each regulator. The whole manifold regulator assembly etc. shall be securely bolted to a channel iron frame or directly to the wall and shall not be enclosed. All piping must be surface mounted on the front of the frame. All new or replacement changeover panels are to be as “Afrox GPA Standard” or other approved. All gas cylinders shall stand against a rack with individual safety chains (approximately 20 x 14 x 4mm diameter) for each cylinder to prevent these from falling over. These shall encircle the cylinders at about 2/3 of their height. Safety chains shall be secured with eye bolts and shall have a deep hood on the other end.
- Safety valves shall be fitted after all pressure reducing stations
- Safety and pressure reducing valve capacities shall be confirmed by means of manufacturer’s graphs, which are to be supplied by the contractor.

4. Cleaning

- After assembly, the manifold, header, fittings and connections shall be blown out with medical compressed air and cleaned. A brass or copper plate shall be mounted on the manifold, stating test pressure, date of manufacture and manufacturer’s name.
- A certificate shall be submitted to the Secretary for Health to this effect by the Testing Authority.

5. Operating Instructions

Detailed, clearly printed instructions on how to operate the manifold and including any drawings, which may be necessary, shall be provided by the contractor. These shall be mounted in glass fronted frames fixed to the wall above the manifold by the contractor.

6. Accommodation

The accommodation required for the medical gas installation is as follows: -

- A machine room for the medical air compressor, vacuum and scavenging units.
- A gas bank room, or partitioned area nitrous oxide cylinders.
- A separate partitioned area for each of medical compressed air and each other medical gas that may be required.
- An empty gas cylinder store.
- A full cylinder gas store.

Note that all plant room doors must be fully louvred with aluminium Trox (or other approved) weather louvres, complete with approximately 15 x 15mm bird screening. Conveyor type rubber belting is required on floors where full or empty gas bottles are to be stored or connected to manifolds as well as at gas bottle off-loading points.

7. Safety and Relief Valve Settings

Percentage of Nominal Operating Pressure

Maximum Safety Valve Full Discharge	155 mm Hg
Maximum Safety Valve Lift	135 mm Hg
Minimum Safety Valve Lift	125 mm Hg
Over Pressure Alarm	120 mm Hg
Maximum Operating Pressure	110 mm Hg
Nominal Operating Pressure	100 mm Hg
Minimum Operating Pressure	90 mm Hg
Under Pressure Alarm	80 mm Hg

MEO001 Medical Oxygen Emergency Manifold**1. General**

- The central gas bank shall comprise two banks of gas cylinders main and reserve, connected to a manifold. Both main and reserve banks shall be connected to the system; in such a way that only one bank will supply the system at any one time.
- When the operating bank becomes depleted or should the supply pressure fall, the reserve bank shall automatically come into use and the depleted bank shall be shut off. Electrically operated changeover panels are not acceptable.
- All gas cylinder manifolds shall be of the duplex type with semi-automatic change over from one bank to the other and at the same time actuating the warning system. Each bank shall supply the system through its own pressure reducer. A master pressure reducer shall ensure the correct line pressure no matter which bank is in operation. Each pressure reducer shall be fitted with a safety valve set to operate at 1 ½ times the working pressure and be vented to atmosphere.
- The gas cylinder banks shall be placed in rooms indicated on the drawings and shall be of the capacities indicated in the project specification. On site manufacture of manifolds is not permitted. Oxygen and compressed air banks must preferably be in separate rooms, in order to avoid mixing of cylinders as these cylinders have identical bull-nose outlets.
- Pressure gauges indicating the cylinder and supply line pressures shall be incorporated in the manifold and on all pressure reducers.
- A service point (i.e. a medical gas outlet) shall be connected into the main line from each pressurized gas line in the plant room immediately after the main line valve. The service point height shall be about 1.5 meters above the finished floor level.

2. Manifold Materials

- The fittings used to make up the manifold shall be forged bronze while the tubing shall be of heavy gauge copper. Pigtailed shall be of annealed copper. All the high-pressure side equipment of the manifold shall withstand a test pressure of 40000kPa gauge.
- Piping used in the manufacture of manifolds must be of medical grade piping and subject to the same cleaning procedures as for piping used in the gas reticulation.
- Pressure test certificates must be supplied with all manifolds.

3. Manifold Equipment

- The manifolds shall accommodate the number of cylinders specified and shall be arranged as shown on the drawings. Pigtails for connecting the manifold to the cylinders shall be long and flexible enough to allow easy connection to the cylinders without having to strain the tube. Each outlet for connecting the manifold to the pigtail shall have a header valve. Pigtails shall be connected to these valves with high-pressure gas connections and shall have standard bull-nose cylinder valve connections for cylinder coupling. The regulator assembly, which shall operate on the semi-automatic changeover system, shall be as shown on the main drawings and shall include: -
 - Two pressure regulators set at 600 kPa gauge.
 - Two pressure regulators set at 400 kPa for oxygen, nitrous oxide and compressed air manifolds.
- The gas main diagrams show the position of pressure gauges. At least five pressure gauges must be installed: -
 - one high pressure gauge for each bank;
 - one pressure gauge for each bank to indicate the intermediate pressure
 - One pressure gauge to indicate the low pressure on the distribution system.
- All pressure gauges shall have a maximum reading of not more than twice normal working pressure.
- A stop valve shall be provided on the low pressure outlet side of each regulator. The whole manifold regulator assembly etc. shall be securely bolted to a channel iron frame or directly to the wall and shall not be enclosed. All piping must be surface mounted on the front of the frame. All new or replacement changeover panels are to be as “Afrox GPA Standard” or other approved. All gas cylinders shall stand against a rack with individual safety chains (approximately 20 x 14 x 4mm diameter) for each cylinder to prevent these from falling over. These shall encircle the cylinders at about 2/3 of their height. Safety chains shall be secured with eye bolts and shall have a deep hood on the other end.
- Safety valves shall be fitted after all pressure reducing stations
- Safety and pressure reducing valve capacities shall be confirmed by means of manufacturer’s graphs, which are to be supplied by the contractor.

8. Cleaning

- After assembly, the manifold, header, fittings and connections shall be blown out with medical compressed air and cleaned. A brass or copper plate shall be mounted on the manifold, stating test pressure, date of manufacture and manufacturer’s name.
- A certificate shall be submitted to the Secretary for Health to this effect by the Testing Authority.

9. Operating Instructions

Detailed, clearly printed instructions on how to operate the manifold and including any drawings, which may be necessary, shall be provided by the contractor. These shall be mounted in glass fronted frames fixed to the wall above the manifold by the contractor.

10. Accommodation

The accommodation required for the medical gas installation is as follows: -

- A gas bank room, or partitioned area, for oxygen cylinders.
- A separate partitioned area for each of medical compressed air and each other medical gas that may be required.
- An empty gas cylinder store.
- A full cylinder gas store.

Note that all plant room doors must be fully louvred with aluminium Trox (or other approved) weather louvres, complete with approximately 15 x 15mm bird screening. Conveyor type rubber belting is required on floors where full or empty gas bottles are to be stored or connected to manifolds as well as at gas bottle off-loading points.

11. Safety and Relief Valve Settings

Percentage of Nominal Operating Pressure

Maximum Safety Valve Full Discharge	160 mm Hg
Maximum Safety Valve Lift	140 mm Hg
Minimum Safety Valve Lift	130 mm Hg
Over Pressure Alarm	120 mm Hg
Maximum Operating Pressure	110 mm Hg
Nominal Operating Pressure	100 mm Hg
Minimum Operating Pressure	90 mm Hg
Under Pressure Alarm	80 mm Hg

MET005 METER, pH, temperature

1. Microprocessor controlled, bench top, digital pH meter with automatic temperature compensation
2. Digital alphanumeric display (LCD or similar) and touch controls for user interfacing
3. Fully automated calibration (3 buffers) with auto buffer recognition
4. Auto diagnostics and power up self-test
5. Measurement ranges:
 - 5.1. pH: 0 – 14; 0.01 resolution; 0.01 accuracy
 - 5.2. Voltage: 0 – 2000 mV; 1 mV resolution; 1 mV accuracy
 - 5.3. Temperature: 0 – 100°C; 0.1°C resolution; 0.1°C accuracy
6. To incorporate an electrode arm / support and tube / beaker holder
7. Sealed membrane keypad resistant to chemicals

MGA001 Medical Gas Area Service Module & Alarm Module

1. Service Module Service Module

- Modules are wall mounted units that may include a maximum of five area valve service units, pressure sensors and an area alarm panel.
- The complete assembly is housed in a steel, powder coated enclosure. The units are available for either surface or semi-flush mounting.
- AVSU's are available for oxygen, nitrous oxide, 50% oxygen/50% nitrous oxide mixture, medical air, surgical air and medical vacuum.
- The emergency release mechanism on each AVSU is easily operated with no risk of injury to personnel.
- Gas specific NIST connectors are incorporated into each AVSU for the connection of an emergency supply or for purging, testing and gas sampling.
- A clearly visible internal label plate is fitted to each AVSU to identify the areas served.

2. Alarm System Alarm System

- Line pressure sensors are connected to the downstream side of the AVSU's and wired to an integral area alarm panel to provide local monitoring of the pipeline pressures.
- AVSU Modules can be supplied pre-piped, pre-wired and factory pressure tested if required.

3. Designed to meet the requirements of

- | | |
|----------------------|--|
| • HTM 2022/HTM 02-01 | Medical Gas Pipeline Systems. |
| • C11 NHS | Model Engineering Specification – Medical Gases. |
| • BS EN ISO 7396-1 | Pipelines for compressed medical gases and vacuum. |
| • BS EN 15908 NIST | Low pressure connectors for medical gases. |
| • BS EN 60601-1-8 | Medical devices – Electrically generated alarm signals |

4. AVSU Module with Area Alarm & Pressure Switches

- These kits comprise a 1st Fix Assy and a 2nd Fix Assy. The 1st Fix Assy consists of a steel backplate c/w pre-piped 22mm AVSU's, pre-wired pressure sensors and electrical connection boxes.
- The 2nd Fix Assy consists of a white, powder coated fascia c/w AVSU doors and area alarm panel.

MIC025 MICROSCOPE, binocular, Laboratory

1. The microscope unit shall incorporate advanced technology and optics components for use in general medical laboratory applications
2. Inclined binocular tube head with ~ 30° angle and 360° rotation
3. Adjustable inter-papillary distance ~ 50 – 75 mm. Specify exact range.
4. Dual eyepieces 10x with diopter adjustment of ~ +/-5 D, compensating for any visual differences.
5. Color coded plan achromatic bright field or other as required for each specialty objectives for easy and rapid identification. To be supplied as per intended use in terms of magnification and type
6. Quadruple (sextuple for dual head microscopes) rotating objective nose-piece, with ball bearing mechanism and stop locator when in the correct position.
7. Sub stage of ~ 14 cm x 16 cm
8. Rack and pinion adjustable height, with bilateral coaxial focus.
9. Fine adjustment, in 0.1 mm steps
10. Course adjustment up to 15 mm or better.
11. Slide holder (stage) with incorporated scale of 0.1 mm to incorporate smooth X (~ 50 mm) and Y (~ 75 mm) movement (specify exact range).
12. ABBE Condenser to be included in the standard configuration. The offer shall include the following condensers (if available) as options, each priced separately. Detailed optical characteristics of each shall be specified (NA, object distance and magnification range):
 - 12.1. Swing out condenser
 - 12.2. Achromatic condenser
 - 12.3. Dark field condenser
 - 12.4. Phase contrast condenser
13. Halogen illumination: 30 W or better
14. Daylight (blue) filter
15. F.O.V.: 22 mm or close equivalent
16. Dust cover shall be included

MIC250 Microscopes, examination, E.N.T

1. High flexible and easy handling ENT Microscope for examination purposes, with the following minimal features and specifications:
 - Variable Inclination, easy to balance
 - Two beam splitter ports for video or still camera adapters and stereoscopic observer.
 - Objective Level fine focus - 11mm
 - Objective lens, *F*: 250mm
 - Magnifications of 3x, 5x, 8x, 13x & 20x
 - Counter-balanced pantographic arm (340° rotation)
 - 1.7 meter fiber optic cable
 - 150W/15V halogen lamp
 - Coaxial thru-the-lens shadow-less illumination
 - 12.5 Wide Field eyepieces with diopter locks
2. Floor Stand:
 - Sturdy suspension with extended arm
 - Mobile on castors
3. Video camera adapter to be included
4. Standard accessories to be included
5. Power supply: 110-220V, 50-60Hz
6. Shall be CE marked and/or FDA approved

MICENT Surgical Microscope (ENT)

1. The ENT operating microscope is to be ceiling mounted with adjustable height and to have the following minimum features and specifications:
 - Clean, dust free and sterile
 - Ergonomically designed
 - Binocular tubes:
 - Straight and inclinable configuration
 - Multiple and variable focal lengths: 200 to 400mm
 - Diopter adjustable range
 - Microscope:
 - Eyepiece power options: at least 10x and 12.5x
 - Inter pupillary distance approximate adjustable range: 55mm to 75mm
 - Multistep magnification with a minimum of 5 steps and zoom feature
 - Magnification approximate range: 4x to 20x
 - Field of view approximate diameters: 30 to 55 mm
 - Manual and power focusing with a wide focusing range.
 - Hand controls
 - Fiber optic illumination:
 - Light source: Halogen or equivalent
 - An emergency backup light source should be provided and should maintain the illumination necessary to complete the procedure
 - Capability to add color filters and other filters
2. The supplier shall supply and install the safest, most durable ceiling interface configuration and shall be coordinated and approved by the client and relevant contractors for the exact location.
3. Photo and video adapter is to be included
4. Integrated digital visualization
5. The system shall allow the capture and storage of digital videos and still images
6. The unit is to be supplied with a sterile drape
7. To be fully equipped with necessary accessories
8. Standard accessories, and any needed accessories to ensure full operation should be included
9. Shall be CE marked and/or FDA approved

MICEYE Surgical Microscope (Eye)

1. The proposed microscope shall be the latest model at time of delivery and state-of-the art for ophthalmic surgery
2. The microscope shall have LED-illumination to have high-contrast and true color images
3. Shall have completely integrated stereoscopic assistant's microscope
4. Shall have a deep view system to allow the user to choose between optimized depth perception or maximum light transmission
5. Shall have integrated slit illumination for true-retro-illumination during lens extraction
6. Shall have ergonomic hand grips for precise positioning
7. Shall have fully apochromatically corrected optics
8. Shall have a bright red reflex illumination system
9. Shall be supplied with x-y coupling
10. Shall be mounted on a heavy duty mobile floor stand:
 - Electromagnetic brakes
 - Vibration damping
 - Programmable functions
 - Touch-screen to control the settings of the microscope and floor-stand
 - Single or 3-chip video camera
11. The proposed microscope shall have the following minimum technical specifications:
 - Surgical microscope:
 - Apochromatic optics with anti-reflex multi –coating
 - Motorized zoom system (zoom ratio 1:6)
 - Motorized focus and the focusing range to be approx. 50mm
 - Tilttable binocular tube: 0-180° or 200°
 - Eyepieces: 12.5X or 10.0X (wide angle)
 - Objective lens: F=200mm or F=175mm
 - Illumination:
 - 6° illumination, continuous fading
 - Red reflex
 - Integrated slit illumination:
 - Vertical: width 2.5mm
 - Horizontal: width 2.5mm and 5mm, movable
 - Integrated 408nm UV cut-off filter
 - Swing-in GG475 filter to reduce blue portion
 - Retinal protection device
 - Scleral glare reduction filter
 - Fiber light guide
 - X-Y coupling
 - Adjustment range: 40mm x 40mm
 - Light source:
 - LED-illumination
12. The system shall allow the capture and storage of digital videos and still images.

13. It shall include HD LCD monitor for viewing
14. It shall be able to transfer images through wireless connection or USB connection
15. The system shall include BIOM or EIBOS (to be compatible for posterior segment-surgery)
16. The system shall include multifunction foot pedal
17. Standard accessories shall be included.
18. Shall be CE marked and/or FDA approved

MNM001 Medical Nitrous Oxide Automatic Manifold

1. The automatic manifold provides a continuous supply of gas from two banks of cylinders to the medical gas pipeline system by changing from the duty bank to the standby bank automatically when the duty bank has become depleted. The automatic medical gas manifold plant is supplied as a packaged product ready for immediate installation, tested and prepared at the factory for the specific gas indicated. The manifold control panel shall be type tested for electrical safety, full certification shall be provided with each manifold control panel.
2. The manifold control panel shall fully comply and meets with the requirements of ISO 7396-1. The manifold control panel shall be manufactured under an ISO 13485:2003 quality management system. A copy of the certificate of registration shall be provided for review. The manifold is CE marked as a medical device to 93/42/EEC Annex II directive.
3. The manifold control panel shall be powder coated in the appropriate color for the gas e.g. N₂O= Blue, no wider than 500 mm to ensure optimal use of wall space within the facility.
4. Automatic control panel indicates which bank of cylinders is running, which is empty and which is running low if the other bank is empty. The panel will also indicate if the distribution pipeline pressure has risen or fallen beyond acceptable limits. The display incorporates an alarm status indicator and includes volt free contacts for connection to the central alarm system and BMS outputs included as standard.
5. Automatic changeover of 'duty bank' to 'reserve bank' shall occur at a cylinder gauge pressure of 14 bars, actuated by a dual output piston pressure switch. Line pressure shall be continuously monitored by an electronic pressure switch; mechanically actuated pressure switches are not acceptable. The supply of gas shall not be affected due to power failure.
6. The empty LED will show a depleted bank by turning yellow; when the system is reset by replacing the depleted cylinders with full cylinders the indicator will turn green. If the manifold is connected to the central alarm system that will also indicate the bank is depleted and, in turn reset. All critical connections of the automatic medical gas manifold are gas specific to the gas indicated.
7. The Auto panel incorporates a PCB/Microprocessor and digitally controls gas valves. A LCD panel display's pressure in cylinders and outlet pressure. Regulators will regulate the pressure in 2 stages to enable high peak flow rates without a reduction in line pressure. Single stage and line regulators combined are not acceptable; Pressure regulators shall comply with EN ISO 2503, and have a documented test report confirming completion of the oxygen ignition tests stated in ISO 7291.
8. Each control panel shall be powered by an internal 24 VDC power supply. Higher voltages are intrinsically unsafe and should not be permitted. There shall be manual changeover button to provide simple selection of duty bank. The automatic control panel shall be supplied fully assembled and tested.
9. The system shall be duplexed such that component failure will not affect the integrity of the medical gas supply. The manifold shall employ be a fail-safe system in the event of power failure so that both bank isolation solenoid valves open and continuity of

supply is assured. Upon restoration of the electrical supply, the original running bank shall return on line. All pressure regulators shall be protected from over-pressurization by relief valves that are vented to atmosphere. The line pressure relief valve shall be provided with easing gear.

10. Two non-return valves, one for each bank, shall be provided within a line pressure manifold block and shall provide gas tight isolation and continuity of service in the event of any upstream component failure.
11. The manifold control panel outlet shall be provided with on-site copper to copper joint installation; lockable isolation valve and non-return valve assembly shall be included to enable positive tamperproof isolation for maintenance. Piped exit pressure relief valve assembly is provided to the hospital exhaust pipeline.

Header Racks and Gas Specific Tailpipe Connections

1. The Cylinder header racks for oxygen service shall be provided with connections for bull nose cylinder or pin index connections. Cylinder racks shall be manufactured from steel double primed painted epoxy powder coating and shall be designed to securely support cylinders of varying diameters using stainless steel chains. Manifold header racks shall be high-pressure rated >250bar with gas specific tailpipe connections.
2. Mechanical seals only shall be used for gas tightness. No O-Rings should be used within the header rack and tailpipes design to avoid impregnation of gases and subsequent failure/leakage at high pressure. Manifold header racks shall incorporate hard-seat, 100% non-return valves integral with each cylinder connection point to maintain system in the event of tailpipe fracture and prevent backflow of gas into the high pressure cylinders.
3. Heaters designed to the flow rate required shall prevent any icing of the manifold; these shall be powered by an external 13amp 240v fuse spur supply.
4. Tailpipes shall have gas specific connections to the manifold header with threaded connections as specified in HTM2022 and the cylinder. Each tailpipe shall be manufactured from flexible degreased copper tube and be tested to >250 bar and certified, supplied with the bottle connector Bull nose, CGA or Pin Index, stamped with the appropriate gas type for supply in a polythene sealed bag detailing the gas type and relevant standards each tailpipe confirms too. Stainless steel flexible connections without anti-whip connections are not acceptable.
5. A cylinder rack of capacity equal to one bank shall be provided for the storage of spare cylinders for immediate replenishment of a depleted bank.

Manifold System Design

1. All regulators shall be protected from over-pressurization by relief valve that are vented to atmosphere. A gas outlet test point (supplied separately) shall be isolated from the supply with a 15mm ball valve.
2. The control panel enclosure shall be housed in a single panel having a solid construction using a steel box and reinforced glass; access shall be only by available by using specialist tools. The enclosure shall be able to be fully removable to allow access for maintenance. To aid maintenance the connections within the panel shall use "O"

rings sealing against flat face connectors to allow easy removal and replacement of components, thread lock or ptfe tape shall not be permitted within the construction of the panel. The manifold control PCB and digital display shall be mounted on a hinged unit inside the control enclosure to enable maintenance.

Manifold Control System Operation

1. The monitoring & status panel incorporates two sections, one labeled “Manifold Indicator Unit” and one labeled “Alarm Signal Status Unit”. The manifold indicator unit displays the status of the cylinder banks and the distribution pipeline pressure, whilst the alarm signal status unit displays the main central alarm system conditions.
2. The Manifold Status Unit includes the following indicators.
 - For each bank, a green LED indicator (RUNNING) illuminates to display which bank is currently running.
 - For each bank, a yellow LED indicator (LOW PRESSURE) illuminates to display that the bank that is running has fallen to the low pressure setting and the standby bank is still empty.
 - For each bank, a yellow LED indicator (EMPTY) illuminates to display that a bank of cylinders is empty and changeover to the standby bank has occurred.
 - A red LED indicator (HIGH PRESSURE) illuminates to display when the distribution pipeline pressure has risen above the pressure sensor setting.
 - A red LED indicator (LOW PRESSURE) illuminates to display when the distribution pipeline pressure has fallen below the pressure sensor setting.
3. The Alarm Signal Status Unit includes the following indicators.
 - A green LED indicator (POWER ON) illuminates to show that the power to the manifold is on.
 - A green LED indicator (NORMAL) that illuminates when the manifold is operating correctly and no faults exist.
 - A yellow LED indicator (CHANGE CYLINDERS) which illuminates when changeover from the duty to the standby bank has occurred.
 - A yellow LED indicator (CHANGE CYLINDERS IMMEDIATELY) which illuminates when the bank that is running has fallen below the pressure sensor setting and the standby bank is empty.
 - A red LED indicator (RESERVE LOW) which illuminates when the duty bank of the emergency reserve manifold (ESM) has fallen below the low pressure setting.
 - A red LED indicator (PRESSURE FAULT) which illuminates when the distribution pipeline pressure has risen or fallen beyond the respective pressure sensor settings.
 - A red LED indicator (SYSTEM FAULT) which illuminates in the event of a cabling fault

MOG001 Oxygen Generator

Oxygen Generators produce from 20 to 5,000 cubic feet of oxygen per hour at up to 95.5% oxygen concentration. When electricity and a source of compressed air is supplied, these dependable machines can provide oxygen for any application.

Features

- Produces oxygen from an independent compressed air source
- Microprocessor controlled
- Low operating cost
- Automatic and unattended operation
- Easy to install and maintain
- HMI NEMA 4 Touch screen control panel with integrated oxygen concentration monitor

Product Characteristics

Product Flow	4,000 - 4,600 SCFH (105.15 - 120.93 Nm ³ /hr)
Product Pressure	45-65 psig (310-448 kPa)
Product Concentration (nominal)	93%
Product Dew Point	-100°F (-73°C)
Dimensions (W x D x H) (nominal)	122 x 87 x 196 in (310 x 221 x 498 cm)
Weight	17,012 lb (7,717 kg)
Physical Connections Compressed Air Inlet Product Gas Outlet	3" 150# ANSI Flange 1" NPT
Ambient Operating Conditions	Locate the oxygen generator in a well-ventilated area that is protected from weather elements and remains between 40°F (4°C) and 104°F (40°C)
Feed Air Requirements	Pressure: 90 psig (621 kPa) minimum Temperature: 122°F (50°C) maximum
Control Power Requirements (Single Phase)	120 V ~ ±10%, 50/60 Hz, 3.0 A or 220 V ~ ±10%, 50/60 Hz, 1.0 A
1,550 Gallon Oxygen Receiver Characteristics	
Dimensions (Dia. x H)	62 x 180 in (157 x 457 cm)
Weight	2,500 lb (1,134 kg)

MOM001 Medical Oxygen Automatic Manifold

1. The automatic manifold provides a continuous supply of gas from two banks of cylinders to the medical gas pipeline system by changing from the duty bank to the standby bank automatically when the duty bank has become depleted. The automatic medical gas manifold plant is supplied as a packaged product ready for immediate installation, tested and prepared at the factory for the specific gas indicated. The manifold control panel shall be type tested for electrical safety, full certification shall be provided with each manifold control panel.
2. The manifold control panel shall fully comply and meets with the requirements of ISO 7396-1. The manifold control panel shall be manufactured under an ISO 13485:2003 quality management system. A copy of the certificate of registration shall be provided for review. The manifold is CE marked as a medical device to 93/42/EEC Annex II directive.
3. Automatic Control Panel Each manifold control panel should be designed and certified for use with oxygen at 300 bars and 60°C and shall provide an uninterrupted supply of medical oxygen from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa, 700kPa or 10000kPa.
4. The manifold control panel shall provide a minimum flow of 1000 l/min to the nominal 400 kPa medical oxygen pipeline system. Higher flow options are available up to 5000l/min. The manifold control panel shall be powder coated in the appropriate color for the gas e.g. N2O= Blue, no wider than 500 mm to ensure optimal use of wall space within the facility.
5. Automatic control panel indicates which bank of cylinders is running, which is empty and which is running low if the other bank is empty. The panel will also indicate if the distribution pipeline pressure has risen or fallen beyond acceptable limits. The display incorporates an alarm status indicator and includes volt free contacts for connection to the central alarm system and BMS outputs included as standard.
6. Automatic changeover of 'duty bank' to 'reserve bank' shall occur at a cylinder gauge pressure of 14 bars, actuated by a dual output piston pressure switch. Line pressure shall be continuously monitored by an electronic pressure switch; mechanically actuated pressure switches are not acceptable. The supply of gas shall not be affected due to power failure.
7. The empty LED will show a depleted bank by turning yellow, when the system is reset by replacing the depleted cylinders with full cylinders the indicator will turn green. If the manifold is connected to the central alarm system that will also indicate the bank is depleted and, in turn reset. All critical connections of the automatic medical gas manifold are gas specific to the gas indicated.
8. The Auto panel incorporates a PCB/Microprocessor and digitally controls gas valves. A LCD panel display's pressure in cylinders and outlet pressure. Regulators will regulate the pressure in 2 stages to enable high peak flow rates without a reduction in line pressure. Single stage and line regulators combined are not acceptable; Pressure regulators shall comply with EN ISO 2503, and have a documented test report confirming completion of the oxygen ignition tests stated in ISO 7291.

9. Each control panel shall be powered by an internal 24 VDC power supply. Higher voltages are intrinsically unsafe and should not be permitted. There shall be manual changeover button to provide simple selection of duty bank. The automatic control panel shall be supplied fully assembled and tested.
10. The system shall be duplexed such that component failure will not affect the integrity of the medical gas supply. The manifold shall employ be a fail-safe system in the event of power failure so that both bank isolation solenoid valves open and continuity of supply is assured. Upon restoration of the electrical supply, the original running bank shall return on line. All pressure regulators shall be protected from over-pressurization by relief valves that are vented to atmosphere. The line pressure relief valve shall be provided with easing gear.
11. Two non-return valves, one for each bank, shall be provided within a line pressure manifold block and shall provide gas tight isolation and continuity of service in the event of any upstream component failure.
12. The manifold control panel outlet shall be provided with on-site copper to copper joint installation; lockable isolation valve and non-return valve assembly shall be included to enable positive tamperproof isolation for maintenance. Piped exit pressure relief valve assembly is provided to the hospital exhaust pipeline.

Header Racks and Gas Specific Tailpipe Connections

1. The Cylinder header racks for oxygen service shall be provided with connections for bull nose cylinder or pin index connections. Cylinder racks shall be manufactured from steel double primed painted epoxy powder coating and shall be designed to securely support cylinders of varying diameters using stainless steel chains. Manifold header racks shall be high-pressure rated >250bar with gas specific tailpipe connections.
2. Mechanical seals only shall be used for gas tightness. No O-Rings should be used within the header rack and tailpipes design to avoid impregnation of gases and subsequent failure/leakage at high pressure. Manifold header racks shall incorporate hard-seat, 100% non-return valves integral with each cylinder connection point to maintain system in the event of tailpipe fracture and prevent backflow of gas into the high pressure cylinders.
3. Heaters designed to the flow rate required shall prevent any icing of the manifold; these shall be powered by an external 13amp 240v fuse spur supply.
4. Tailpipes shall have gas specific connections to the manifold header with threaded connections as specified in HTM2022 and the cylinder. Each tailpipe shall be manufactured from flexible degreased copper tube and be tested to >250 bar and certified, supplied with the bottle connector Bull nose, CGA or Pin Index, stamped with the appropriate gas type for supply in a polythene sealed bag detailing the gas type and relevant standards each tailpipe confirms too. Stainless steel flexible connections without anti-whip connections are not acceptable.
5. A cylinder rack of capacity equal to one bank shall be provided for the storage of spare cylinders for immediate replenishment of a depleted bank.

Manifold System Design

1. All regulators shall be protected from over-pressurisation by relief valve that are vented to atmosphere. A gas outlet test point (supplied separately) shall be isolated from the supply with a 15mm ball valve.
2. The control panel enclosure shall be housed in a single panel having a solid construction using a steel box and reinforced glass; access shall be only by available by using specialist tools. The enclosure shall be able to be fully removable to allow access for maintenance. To aid maintenance the connections within the panel shall use “O” rings sealing against flat face connectors to allow easy removal and replacement of components, threadlock or ptfе tape shall not be permitted within the construction of the panel. The manifold control PCB and digital display shall be mounted on a hinged unit inside the control enclosure to enable maintenance.

Manifold Control System Operation

1. The monitoring & status panel incorporates two sections, one labelled “Manifold Indicator Unit” and one labelled “Alarm Signal Status Unit”. The manifold indicator unit displays the status of the cylinder banks and the distribution pipeline pressure, whilst the alarm signal status unit displays the main central alarm system conditions.
2. The Manifold Status Unit includes the following indicators.
 - For each bank, a green LED indicator (RUNNING) illuminates to display which bank is currently running.
 - For each bank, a yellow LED indicator (LOW PRESSURE) illuminates to display that the bank that is running has fallen to the low pressure setting and the standby bank is still empty.
 - For each bank, a yellow LED indicator (EMPTY) illuminates to display that a bank of cylinders is empty and changeover to the standby bank has occurred.
 - A red LED indicator (HIGH PRESSURE) illuminates to display when the distribution pipeline pressure has risen above the pressure sensor setting.
 - A red LED indicator (LOW PRESSURE) illuminates to display when the distribution pipeline pressure has fallen below the pressure sensor setting.
3. The Alarm Signal Status Unit includes the following indicators.
 - A green LED indicator (POWER ON) illuminates to show that the power to the manifold is on.
 - A green LED indicator (NORMAL) that illuminates when the manifold is operating correctly and no faults exist.
 - A yellow LED indicator (CHANGE CYLINDERS) which illuminates when changeover from the duty to the standby bank has occurred.
 - A yellow LED indicator (CHANGE CYLINDERS IMMEDIATELY) which illuminates when the bank that is running has fallen below the pressure sensor setting and the standby bank is empty.
 - A red LED indicator (RESERVE LOW) which illuminates when the duty bank of the emergency reserve manifold (ESM) has fallen below the low pressure setting.

- A red LED indicator (PRESSURE FAULT) which illuminates when the distribution pipeline pressure has risen or fallen beyond the respective pressure sensor settings.
- A red LED indicator (SYSTEM FAULT) which illuminates in the event of a cabling fault

MON002 MONITOR, Vital Signs, on mobile stand

A compact type of vital signs monitor with the following specifications:

1. All vital signs monitors shall have a common user interface for ease of operation and maintenance.
2. The monitor shall be used for adult, pediatric and neonatal patients.
3. The monitor shall incorporate the fastest processor and the latest software version at time of delivery.
4. Display specifications:
 - 4.1. The monitor shall have an 8" color LCD display.
 - 4.2. The monitor shall be capable of displaying at least 3 simultaneous real-time waveforms.
5. It shall be HL7 compatible and support patient trends transfer to the Hospital Information System (HIS).
6. The monitor shall be capable of monitoring the followings parameters:
 - 6.1. Pulse Rate
 - 6.2. NIBP
 - 6.3. Temperature
 - 6.4. SpO2
7. NIBP:
 - 7.1. Manual, automatic measurements by intervals or non-stop measurements
 - 7.2. Adult / pediatric measurement range:
 - 7.2.1. Systolic 30-255 mmHg
 - 7.2.2. Diastolic 15-220 mmHg
 - 7.2.3. Mean 20-235 mmHg
 - 7.3. Neonatal measurement range:
 - 7.3.1. Systolic 30-135 mmHg
 - 7.3.2. Diastolic 15-110 mmHg
 - 7.3.3. Mean 20-125 mmHg
 - 7.4. BP accuracy: +/- 5mmHg
 - 7.5. Pulse Rate accuracy: +/- 2%
8. SpO2
 - 8.1. Manual or continuous monitoring
 - 8.2. Waveform or numerical display
 - 8.3. Range: 0-100%
9. Temperature

- 9.1. Continuous mode
 - 9.2. Probes: esophageal, rectal or skin
 - 9.3. Range: 25 – 45°C
 - 9.4. Accuracy: +/- 1°C
10. The monitor shall be supplied with a rolling stand with locking casters from the same manufacturer. The stand shall incorporate a handle and an accessory basket for storage of NIBP cuff and other accessories.
11. The monitor shall integrate a thermal recorder.
12. All accessories (for adult, pediatric and neonatal patients) necessary to monitor the above listed parameters shall be supplied with the monitor in addition to 5 rolls of recorder paper.
13. The monitor shall include a lithium ion battery:
- 13.1. Operating time: 4 hours with NIBP every 15 minutes
 - 13.2. Battery status indicator on screen
14. Alarms
- 14.1. Each monitor shall be equipped with audible and visual alarms, patient status and monitor status alarms.
 - 14.2. The monitor must include a reset function which will silence alarms and have a built-in reminder for the user if patient status continues to exceed alarm limits.
 - 14.3. The alarm limits shall be programmable.
 - 14.4. The monitor shall include different programmable (high, medium and low) alarm levels with distinctive tones and colors for each measured parameter.
15. The monitor shall be capable of recording up to 96 hours of graphical and tabular trends.

MON002-W Patient Monitor with accessories (wall mount)

1. The unit shall have the following minimum features:
2. Shall be fully functional for patient categories:
 - Adult
 - Pediatric
3. Shall be configured system, i.e. integrated CPU and display in one unit
4. All surfaces shall be resistant to common disinfectants
5. Display/screen:
 - LCD color
 - Screen size: 10" or better
6. The unit shall include all the required software, modules, parts and accessories to monitor the following parameters with the minimum ranges:
 - SpO2 and Pulse Rate
 - SpO2 measuring range: 3 – 99%
 - SpO2 accuracy: ± 3 digits
 - Shall have high accuracy even during motion artifacts and low perfusion rates
 - Temperature
 - 1 channels
 - Measuring range: 4 – 43° C
 - Non Invasive Blood Pressure
 - Oscillometric method
 - Systolic, diastolic and mean pressure monitoring and display
7. Alarm/self-test system:
 - With advanced automatic self-test at switch on
 - With alarm history for 12 hours
 - Audio and visual alarming system
 - Shall warn user in case of (but not limited to):
 - Monitored parameters out of set limits
 - 107.7.4.2 Disconnected SpO2 sensor...etc
 - Power supply failure
 - System faults with error coding system
 - Low battery
8. Accessories (the following shall be included):
 - Reusable SpO2 finger sensor for adult and pediatric (x1 each)
 - Reusable skin temperature sensor for adult and pediatric (x1 each)
 - Reusable NIBP hoses for adult and pediatric (x1)
 - Reusable NIBP cuff for adult and pediatric (4 sizes), 1 each
9. Mounting:
 - The unit shall be with mounting arm
 - The mounting arms shall be attached to wall, Bedhead unit or pendant (please refer to drawings for exact configuration)

- The unit supplier shall provide all required adapters, interfaces...etc for the bracket.
10. Battery/Power supply:
- Mains supply
 - Internal rechargeable batteries shall be included
11. The unit shall include all required accessories, modules, cables, software, licenses...etc for full functionality
12. Shall be CE marked and/or FDA approved

MON013 Multiparameter Monitor

1. The supplied systems shall incorporate the latest, state-of-the-art technological advancements at time of installation, including latest software and firmware revisions and platforms

It shall meet all the below specifications:

2. The monitor shall provide a flexible and a fully modular monitoring solution for the associated department.
3. All monitors shall have a common user interface for ease of operation and maintenance.
4. The monitor shall be capable of being configured for adult, pediatric and neonatal patients.
5. The monitor shall incorporate the fastest processor speed and shall run the last software release at the time of delivery.
6. The monitor shall not have any cooling fan for better hygienic environment and less service and maintenance.
7. All monitors shall possess Medical Grade, Touch Screen technology
8. Display specifications:

- 8.1. 15" color LCD display
- 8.2. 6 waveforms or better

9. The monitor shall be mounted on the bed head unit which shall include all necessary accessories for this purpose.

10. All specified monitors shall be capable of measuring the following parameters:

- 10.1. 12 Lead ECG
- 10.2. Respiration
- 10.3. Temperature
- 10.4. SpO2
- 10.5. NIBP

11. ECG

- 11.1. 12-Lead ECG analysis, simultaneously displayed if needed
- 11.2. Isolated input ECG module
- 11.3. 1 mV calibration
- 11.4. Heart rate display
- 11.5. Adjustable heart rate alarms
- 11.6. Lead fault-alarm
- 11.7. Apnea alarm
- 11.8. Frequency response: 0.05 to 150 Hz

12. Respiration:

- 12.1. Impedance variation detection
- 12.2. Range: 0-200 breaths/min
- 12.3. Alarms: user-selectable upper and lower respiration rate limits
- 13. NIBP:
 - 13.1. Adult and pediatric blood pressure capabilities
 - 13.2. Displayed parameters: systolic, diastolic, and mean pressure
 - 13.3. Measurement modes: manual and automatic
 - 13.4. Pressure range (adult/pediatric): 20-250 mmHg
 - 13.5. Alarms: adjustable high / low
- 14. Body temperature:
 - 14.1. 1 channel
 - 14.2. Temperature range: 0 - 45 °C
 - 14.3. Alarms: user-selectable upper and lower limits
- 15. SpO2:
 - 15.1. Monitored parameters:
 - 15.2. SpO2
 - 15.3. Peripheral Pulse Rate (PPR)
 - 15.4. SpO2 range: 50-100%
 - 15.5. Alarms: user selectable upper and lower limits for SpO2 and PPR
- 16. The monitor shall be able to generate patient reports with pre-defined or customized templates and print them on direct connected or LAN connected printers. Clinicians shall be able to generate these reports manually or automatically at user-defined intervals.
- 17. Drug, hemodynamic, ventilation and oxygenation calculation capabilities shall be included.
- 18. Clinicians shall be able to create profiles containing measurements settings and monitor properties. Pre-defined profiles, when activated, apply automatically suitable alarm safety limits and speed up the setup procedure performed after each care location changing or patient category modification (adult, pediatric or neonatal).
- 19. The monitor shall incorporate an ECG output for defibrillator synchronization.
- 20. Alarms
 - 20.1. Each monitor shall be equipped with audible and visual alarms, patient status and monitor status alarms.
 - 20.2. The monitor must include a reset function which will silence alarms and have a built-in reminder for the user if patient status continues to exceed alarm limits

- 20.3. The monitor shall have different programmable alarm levels with distinctive tones and colors for each measured parameter.
- 20.4. The monitor shall integrate a smart prioritization of patient alarms.
- 21. All monitors shall be supplied with standard accessories to ensure the full and adequate functionality of the supplied systems. Any missing software or hardware items that are seen as part of the supplied system, and are needed for its full functional operation will be the responsibility of the supplier and shall be supplied at no additional cost. This includes, but is not limited to, wires, cables, cuffs, probes, hoses, brackets, etc.
- 22. The suppliers shall coordinate their work with the medical consultant drawings to ensure all pre-installation requirements are met, including power, mounting accessories, etc. In case of any missing pre-installation works, the monitors' supplier shall ensure proper execution of missing works to suit his intended installation. All such costs – if any
 - shall be embedded within the package deal and not charged separately as civil works.
- 23. The monitor shall be supplied with a flexible module rack having at least 4 slots to host plug-in measurement modules.
- 24. Modules specifications:
 - 24.1. The modules shall be connected into any of the slots.
 - 24.2. The modules shall be interchangeable between all monitors.
 - 24.3. The modules shall retain patient demographics, calibration, alarm settings and trends when moved from one monitor to another or during patient transfer without any data loss.
- 25. The essential measurements (12 lead ECG, Respiration, NIBP, SpO2 and temperature) shall be incorporated in a single multi-measurement module that shall have the following specifications:
 - 25.1. It shall be rugged and light weight.
 - 25.2. This module, similar to other modules, shall retain patient demographics, calibration, alarm settings and patient trends when unplugged from the modules rack. And then, it shall transmit the stored data to the host monitor when re-plugged.
 - 25.3. This module shall record patient trends for up to 48 hours

MON013-W Multiparameter Monitor with Accessories (wall mount)

1. The unit shall have a wall mount and have the following minimum features:
2. Shall be fully functional for all patient categories:
 - Adult
 - Pediatric
 - Neonate
3. Shall be fully modular system, i.e. separated CPU/modules server and display
4. The unit's parameter modules shall be swappable with other patient monitors in the hospital (same
5. modules interface)
6. All surfaces shall be resistant to common disinfectants used in operation theaters
7. Display/screen:
 - Medical grade
 - LCD color touch screen
 - Operation and navigation shall be via touch screen (simple and intuitive to use)
 - Screen size: 19"
 - Adjustable waveforms sweep speed: 6.25, 12.5, 25 and 50 mm/sec
 - With preset and configurable interfaces/layouts
 - Simultaneous display of 8 channels/waveforms
 - The order and color of waveforms and numerical parameters shall be user selectable
8. The unit shall include all the required software, modules, parts and accessories to monitor the following parameters:
 - ECG and Heart Rate :
 - 12-lead ECG monitoring.
 - The number of waveforms displayed shall be user selectable
 - Heart rate measuring range: 15 – 300 bpm
 - Adjustable gain: 5 to 40 mm/mV
 - Filtration of power line frequency (50 Hz), muscle artifacts, baseline wander and interference from electrosurgical units
 - Lead disconnection detection
 - With pacemaker detection and marker
 - Arrhythmia:
 - Advanced detection and classification of different types of arrhythmias for adults and pediatrics
 - Shall detect and classify arrhythmias including (but not limited to):
 - Ventricular Fibrillation
 - Ventricular Tachycardia
 - Supraventricular Tachycardia
 - Ventricular bigeminy
 - Sinus Bradycardia
 - Sinus Tachycardia
 - Asystole

- ST segment analysis:
 - Advanced monitoring and analysis of ST segment deviation for adults and pediatrics
 - Continuous for all monitored leads
 - Adjustable ISO and ST points for each lead
- SpO2 and Pulse Rate:
 - SpO2 measuring range: 1 – 100%
 - SpO2 accuracy: ± 3 digits
 - Pulse rate: 25 – 250 bpm
 - Pulse rate accuracy: ± 3 digits
 - Shall be compatible with Massimo, Nellcor Sensors and others
- Respiration:
 - Respiration monitoring via impedance calculation, through ECG lead
 - Measuring range: 1 – 150 bpm
 - Accuracy: ± 1 bpm
 - Adjustable apnea time
- Temperature:
 - Simultaneous measurement and display of 2 channels
 - Measuring range: 0 – 45° C
 - Accuracy: $\pm 0.1^\circ$ C
- Non Invasive Blood Pressure:
 - Oscillometric method
 - Systolic, diastolic and mean pressure monitoring and display
 - With manual and automatic activation
 - Adjustable interval between measurements (for automatic activation): 1 min to 2 hours
 - Inflation pressure range shall be according to patient category (adult, pediatric, and neonate)
 - Automatic cuff deflation if measurement is not obtainable
- Invasive Blood Pressure:
 - Simultaneous measurement and display of 4 channels, such as (ART, CVP, ICP, LA...etc)
 - Systolic, diastolic and mean pressure monitoring (according to IBP type)
 - Pulmonary Wedge Pressure monitoring capability
 - Measuring range: -25 to 360 mmHg
 - Accuracy (excluding transducer): ± 3 %
 - Zero balance range: ± 200 mmHg
 - The appropriate interface cables/adapters between the monitor and transducer shall be included (coordinate with the client regarding the preferred transducer manufacturer to be used by the hospital)
- Cardiac Output:
 - Measuring range: 0.5 – 15 l/min
 - Accuracy: ± 5 %
 - Blood temperature range: 25 – 42° C
 - Injectate temperature range: -1 – 30°C

- Bispectral Index (BIS):
 - Monitoring of BIS value to measure the effect of sedation on the brain
 - Measuring range: 0 – 100
 - For pediatrics
 - With manual and automatic sensor impedance check
- 9. The unit shall be capable (software ready/enabled) to monitor the following parameters
- 10. (Unit price list for these parameter modules and related accessories/consumables shall be provided):
 - EtCO₂:
 - Non-dispersive infrared method
 - Sidestream capability
 - Inspired and expired CO₂ concentration values and waveforms
 - Measuring range: 0 to 100 mmHg
 - Accuracy: $\pm 5\%$
 - 12 lead ECG monitoring for adult and pediatric with ST analysis for all leads
 - EEG:
 - 2 channels (4 preferable)
 - User selectable filtration (high, low...etc)
 - Spectral Edge Frequency measurement capability
 - Sampling rate: 1000 Hz (16 bit resolution)
 - Input impedance: $>100M\Omega$
 - With electrode impedance measurement
 - Anesthetic gases and agents:
 - N₂O concentration monitoring
 - Measuring range: 0 to 100 %
 - Accuracy: $\pm 5\%$
 - Monitoring of Isoflurane, Sevoflurane, Desflurane, Halothane and Enflurane
 - Automatic anesthetic agent identification
 - Measuring range: 0 to 7 % for all except Desflurane, 0 – 20 % for Desflurane
 - Accuracy: $\pm 5\%$
 - With moisture trap
 - Additional 2 channels for invasive blood pressure
 - Additional 1 channel for SpO₂
 - PiCCO, capability to monitor cardiac circulatory functions:
 - Global End-Diastolic Volume (GEDV)
 - Stroke Volume Variation (SVV)
 - Systemic Vascular Resistance (SVR)
 - Pressure Velocity Increase (dPmx),
 - Global Ejection Fraction (GEF)
 - Extravascular Lung Water (EVLW)
 - Neuromuscular Transmission (NMT)

- With the following simulation modes: Train Of Four, Single Twitch and Tetanic stimulation
 - Automatic activation
 - User selectable interval: 10s, 20s, 1min, 5min, 15min or 30 min
 - User selectable width: 100, 200 or 300 μ s
 - User selectable current setting: 10 to 60 mA
- With defibrillation synchronizing capability
- With drug calculation management capability
- Networking and connectivity
 - Shall be fully compatible, connectable and interfaced with the anesthesia machine for bidirectional data sharing (interface shall be coordinated with the anesthesia machine supplier)
 - Shall import and display waveforms and numerical parameters acquired by the anesthesia machine
 - Shall be networkable to share data with hospital networks (bidirectional) such as Hospital
 - Information System (HL7 compliant), Laboratory and PACS as well as with a central station via Local area
 - Network (LAN) (coordinate with client and IT contractors)
 - Shall facilitate remote monitoring of other patient monitors on the network with capability for slave monitoring via other screens in the OR
 - Shall facilitate report generation via networked printer and recorder
 - Units located in the Operating Room, must be compatible, integrate-able with the OR integration system
- Trending /Events storage:
 - Numerical and graphical trending
 - Trending capacity: 48 hours for user selectable parameters
 - Trend resolution: 1 min
 - Events storage: 50 events
 - Event storage duration: 20 s
 - Shall store all monitored parameters for each event
- Alarm/self-test system:
 - With advanced automatic self-test at switch on
 - With alarm history for 24 hours
 - Alarm silence for 2 – 5 min
 - Adjustable alarm volume (alarm volume cannot be turned off or reduced to inaudible level)
 - Prioritized (three alarm levels)
 - Audio (tone coded) and visual (color coded) alarming system according to alarm level
 - Shall warn user in case of (but not limited to):
 - Monitored parameters out of set limits
 - Arrhythmia detection
 - Disconnected ECG lead, SpO2 sensor...etc
 - Power supply failure

- System faults with error coding system
 - Low battery
 - All events, trends, alarm history, drug calculations and other patient data shall be deleted by discharging the patient
 - The unit, its accessories and modules applied parts shall be:
 - CF type for invasive applied parts
 - BF type for noninvasive applied parts
 - Defibrillation protected
 - Electrosurgical unit protected and isolated
 - Accessories (the following shall be included):
 - Reusable ECG cables for adult, pediatric and neonate (x1 each)
 - Disposable electrodes for adult, pediatric and neonate (x100 each)
 - Reusable SpO2 finger sensor for adult, pediatric (x1 each)
 - Disposable SpO2 adhesive sensor for neonate (x50)
 - Reusable skin temperature sensor for adult, pediatric and neonate (x1 each)
 - Reusable rectal temperature sensor for neonate (x1)
 - Reusable NIBP hoses for adult (x1)
 - Reusable NIBP hoses for pediatric (x1)
 - Reusable NIBP hoses for neonate (x1)
 - Reusable NIBP cuff for adult and pediatric (3 sizes), 1 each
 - Disposable NIBP cuff for neonate (3 sizes, 10 each)
 - Reusable IBP transducer (x1)
 - Disposable IBP kit (x10)
 - Disposable Cardiac Output kit (x10)
 - Disposable BIS sensor for pediatric (x25)
 - Mounting:
 - The unit shall be with mounting arm for both screen and module server
 - The mounting arms shall be attached to the service column or anesthesia machine (Please refer to drawings for exact mounting location)
 - The unit supplier shall provide all required adapters, interfaces...etc between the bracket and service column (or anesthesia machine).
 - Battery/Power supply:
 - Power supply: 110-220V, 50-60Hz
 - With Internal rechargeable batteries (preferable)
 - Battery run time: 30 minutes of moderate functionality
11. The unit shall include all required accessories, modules, cables, software, licenses..etc for full functionality and shall have a wall mount.
12. The unit shall be flexible and upgradable
13. Shall be CE marked and/or FDA approved

MON018 MONITOR, Physiological, NICU

1. The supplied systems shall incorporate the latest, state-of-the-art technological advancements at time of installation, including latest software and firmware revisions and platforms
2. The NICU monitor shall meet all the below specifications:
3. The monitor shall provide a flexible and a fully modular monitoring solution for the associated department.
4. All monitors shall have a common user interface for ease of operation and maintenance.
5. The unit shall be able to be configured for neonatal monitoring.
6. The monitor shall incorporate the fastest processor speed and shall run the last software release at the time of delivery.
7. The monitor shall not have any cooling fan for better hygienic environment and less service and maintenance.
8. All monitors shall possess Medical Grade, Touch Screen technology
9. Display specifications:
 - 9.1. 19" color LCD display
 - 9.2. 6 waveforms or better
10. Connectivity:
 - 10.1. Networking capability from the bedside monitor to the central station or from bedside monitor to bedside monitor within the department through hospital LAN.
 - 10.2. The bed-to-bed overview shall be guaranteed even in case of central station failure.
 - 10.3. The monitor shall be able to access all relevant patient information existing on the hospital intranet such as PACS images, Lab data, anesthesia records, etc.
11. The monitors shall be mounted on the services supply unit rails or wall mounted.

Mounting accessories should be included.
12. All specified monitors shall be capable of measuring the following parameters:
 - 12.1. 12 Lead ECG
 - 12.2. Respiration
 - 12.3. Temperature
 - 12.4. SpO2
 - 12.5. NIBP
 - 12.6. IBP

12.7. tcpO2-tcpCO2

13. ECG

- 13.1. 12-Lead ECG analysis, simultaneously displayed if needed
- 13.2. Isolated input ECG module
- 13.3. 1 mV calibration
- 13.4. Heart rate display
- 13.5. Adjustable heart rate alarms
- 13.6. Lead fault-alarm
- 13.7. Apnea alarm
- 13.8. Frequency response: 0.05 to 150 Hz

14. Respiration:

- 14.1. Impedance variation detection
- 14.2. Range: 0-200 breaths/min
- 14.3. Alarms: user-selectable upper and lower respiration rate limits

15. NIBP:

- 15.1. Neonatal blood pressure capabilities
- 15.2. Displayed parameters: systolic, diastolic, and mean pressure
- 15.3. Measurement modes: manual and automatic
- 15.4. Pressure range (neonatal): 20-250 mmHg
- 15.5. Alarms: adjustable high / low

16. Full arrhythmia and S-T segment analysis

- 16.1. Arrhythmia must be based on 4 leads
- 16.2. Trending, graphic display editing and tabular display of arrhythmia parameters
- 16.3. The following shall be displayed simultaneously on the monitor and the central station:
 - 16.3.1. Patient alarm, rhythm status, heart rate, and alarm limits
 - 16.3.2. Graphic trend display of arrhythmia
 - 16.3.3. S-T segment analysis, including trending and cursor control

17. Body temperature:

- 17.1. 1 channel
- 17.2. Temperature range: 0 - 45 °C
- 17.3. Alarms: user-selectable upper and lower limits

18. SpO2:

- 18.1. Monitored parameters:
- 18.2. SpO2
- 18.3. Peripheral Pulse Rate (PPR)
- 18.4. SpO2 range: 50-100%

- 18.5. Alarms: user selectable upper and lower limits for SpO2 and PPR
- 19. IBP:
 - 19.1. 2 channels
 - 19.2. Pressure range selection
 - 19.3. Auto-zero calibration
 - 19.4. Pressures display: systolic, diastolic and mean pressures
 - 19.5. Range: -25 to +300 mmHg
 - 19.6. Alarms: user-selectable upper and lower limit
- 20. tcpO2-tcpCO2:
 - 20.1. tcpO2 Range 0 to 750 mmHg (0 to 100kPa)
 - 20.2. Resolution 1 mmHg (0.1 kPa)
 - 20.3. tcpCO2 Range 5 to 200 mmHg (0.7 to 26.7kPa)
 - 20.4. Resolution 1 mmHg (0.1 kPa)
- 21. Tabular and graphical trending capability for at least 48 hours for all patient monitored parameters enabling clinicians to evaluate whether a particular vital sign has been maintained within a certain range
- 22. The monitor shall be able to generate patient reports with pre-defined or customized templates and print them on direct connected or LAN connected printers. Clinicians shall be able to generate these reports manually or automatically at user-defined intervals.
- 23. Drug, hemodynamic, ventilation and oxygenation calculation capabilities shall be included.
- 24. Clinicians shall be able to create profiles containing measurements settings and monitor properties. Pre-defined profiles, when activated, apply automatically suitable alarm safety limits and speed up the setup procedure performed after each care location changing.
- 25. The monitor shall incorporate an ECG output for defibrillator synchronization.
- 26. Alarms
 - 26.1. Each monitor shall be equipped with audible and visual alarms, patient status and monitor status alarms.
 - 26.2. The monitor must include a reset function which will silence alarms and have a built-in reminder for the user if patient status continues to exceed alarm limits
 - 26.3. Alarms limits set at bedside must automatically set at central and vice versa
 - 26.4. The monitor shall have different programmable alarm levels with distinctive tones and colors for each measured parameter.
 - 26.5. The monitor shall integrate a smart prioritization of patient alarms.

27. All monitors shall be supplied with standard accessories to ensure the full and adequate functionality of the supplied systems. Any missing software or hardware items that are seen as part of the supplied system, and are needed for its full functional operation will be the responsibility of the supplier and shall be supplied at no additional cost. This includes, but is not limited to, wires, cables, cuffs, probes, hoses, brackets, etc.
28. The suppliers shall coordinate their work with the medical consultant drawings to ensure all pre-installation requirements are met, including power, mounting accessories, communication infrastructure (LAN as required), etc. In case of any missing pre- installation works, the monitors' supplier shall ensure proper execution of missing works to suit his intended installation. All such costs – if any - shall be embedded within the package deal and not charged separately as civil works.
29. The monitor shall be supplied with a flexible module rack having at least 4 slots to host plug-in measurement modules.
30. Modules specifications:
 - 30.1. The modules shall be connected into any of the slots.
 - 30.2. The modules shall be interchangeable between all monitors.
 - 30.3. The modules shall retain patient demographics, calibration, alarm settings and trends when moved from one monitor to another or during patient transfer without any data loss.
31. The essential measurements (12 lead ECG, Respiration, NIBP, SpO2 and temperature) shall be incorporated in a single multi-measurement module that shall have the following specifications:
 - 31.1. It shall be rugged and lightweight.
 - 31.2. This module, similar to other modules, shall retain patient demographics, calibration, alarm settings and patient trends when unplugged from the modules rack. And then, it shall transmit the stored data to the host monitor when re- plugged.
 - 31.3. This module shall record patient trends for up to 48 hours

MON021 MONITOR, Physiological, ICU

1. The supplied systems shall incorporate the latest, state-of-the-art technological advancements at time of installation, including latest software and firmware revisions and platforms

The ICU monitor shall meet all the below specifications:

2. The monitor shall provide a flexible and a fully modular monitoring solution for the associated department.
3. All monitors shall have a common user interface for ease of operation and maintenance.
4. The monitor shall be capable of being configured for adult and pediatric patients.
5. The monitor shall incorporate the fastest processor speed and shall run the last software release at the time of delivery.
6. The monitor shall not have any cooling fan for better hygienic environment and less service and maintenance.
7. All monitors shall possess Medical Grade, Touch Screen technology
8. Display specifications:
 - 8.1. 17" color LCD display
 - 8.2. 8 waveforms or better
9. Connectivity:
 - 9.1. Networking capability from the bedside monitor to the central station from bedside monitor to bedside monitor within each department through hospital LAN.
 - 9.2. The bed-to-bed overview shall be guaranteed even in case of central station failure.
 - 9.3. The monitor shall be able to access all relevant patient information existing on the hospital intranet such as PACS images, Lab data, anesthesia records, etc.
10. The monitors shall be mounted on service supply unit which shall include all mounting accessories necessary for this purpose.
11. All specified monitors shall be capable of measuring the following parameters:
 - 11.1. 12 Lead ECG
 - 11.2. Respiration
 - 11.3. Temperature
 - 11.4. SpO2
 - 11.5. NIBP
 - 11.6. IBP (Two channels for each monitor and one dual-channel IBP module shared for every 4 beds)

- 11.7. EtCO₂ (One EtCO₂ module for every 2 beds)
- 11.8. CO (One CO module for every 4 beds)
- 12. ECG:
 - 12.1. 12-Lead ECG analysis, simultaneously displayed if needed
 - 12.2. Isolated input ECG module
 - 12.3. 1 mV calibration
 - 12.4. Heart rate display
 - 12.5. Adjustable heart rate alarms
 - 12.6. Lead fault-alarm
 - 12.7. Apnea alarm
 - 12.8. Frequency response: 0.05 to 150 Hz
- 13. Respiration:
 - 13.1. Impedance variation detection
 - 13.2. Range: 0-200 breaths/min
 - 13.3. Alarms: user-selectable upper and lower respiration rate limits
- 14. NIBP:
 - 14.1. Adult and pediatric blood pressure capabilities
 - 14.2. Displayed parameters: systolic, diastolic, and mean pressure
 - 14.3. Measurement modes: manual and automatic
 - 14.4. Pressure range (adult/pediatric): 20-250 mmHg
 - 14.5. Alarms: adjustable high / low
- 15. Full arrhythmia and S-T segment analysis:
 - 15.1. Arrhythmia must be based on 4 leads
 - 15.2. Trending, graphic display editing and tabular display of arrhythmia parameters
 - 15.3. The following shall be displayed simultaneously on the monitor and the central station:
 - 15.3.1. Patient alarm, rhythm status, heart rate, and alarm limits
 - 15.3.2. Graphic trend display of arrhythmia
 - 15.3.3. S-T segment analysis, including trending and cursor control
- 16. Body temperature:
 - 16.1. 1 channel
 - 16.2. Temperature range: 0 - 45 °C
 - 16.3. Alarms: user-selectable upper and lower limits
- 17. SpO₂:
 - 17.1. Monitored parameters:
 - 17.2. SpO₂
 - 17.3. Peripheral Pulse Rate (PPR)

- 17.4. SpO2 range: 50-100%
- 17.5. Alarms: user selectable upper and lower limits for SpO2 and PPR
- 18. IBP (Two channels for each monitor and one dual-channel IBP module shared for every 4 beds)
 - 18.1. Pressure range selection
 - 18.2. Auto-zero calibration
 - 18.3. Pressures display: systolic, diastolic and mean pressures
 - 18.4. Range: -25 to +300 mmHg
 - 18.5. Alarms: user-selectable upper and lower limit
- 19. Cardiac output (thermodilution) (One CO module for every 4 beds):
 - 19.1. Injection volume: 3, 5 and 10CC
 - 19.2. Displayed parameters:
 - 19.2.1. Cardiac output curves
 - 19.2.2. Blood temperature
 - 19.2.3. Injectate temperature
 - 19.3. Range: 0.2 to 20 liters /minute
- 20. EtCO2 (One EtCO2 module for every 2 beds)
 - 20.1. The EtCO2 shall use the mainstream technology
 - 20.2. Range: 0 to 98mmHg (0.0 to 13KPa)
 - 20.3. Alarms: user-selectable upper and lower limits
- 21. Tabular and graphical trending capability for at least 48 hours for all patient monitored parameters enabling clinicians to evaluate whether a particular vital sign has been maintained within a certain range
- 22. The monitor shall be able to generate patient reports with pre-defined or customized templates and print them on direct connected or LAN connected printers. Clinicians shall be able to generate these reports manually or automatically at user-defined intervals.
- 23. Drug, hemodynamic, ventilation and oxygenation calculation capabilities shall be included.
- 24. Clinicians shall be able to create profiles containing measurements settings and monitor properties. Pre-defined profiles, when activated, apply automatically suitable alarm safety limits and speed up the setup procedure performed after each care location changing or patient category modification (adult, pediatric or neonatal).
- 25. The monitor shall incorporate an ECG output for defibrillator synchronization.
- 26. Alarms
 - 26.1. Each monitor shall be equipped with audible and visual alarms, patient status and monitor status alarms.

- 26.2. The monitor must include a reset function which will silence alarms and have a built-in reminder for the user if patient status continues to exceed alarm limits
- 26.3. Alarms limits set at bedside must automatically set at central and vice versa
- 26.4. The monitor shall have different programmable alarm levels with distinctive tones and colors for each measured parameter.
- 26.5. The monitor shall integrate a smart prioritization of patient alarms.
- 27. All monitors shall be supplied with standard accessories to ensure the full and adequate functionality of the supplied systems. Any missing software or hardware items that are seen as part of the supplied system, and are needed for its full functional operation will be the responsibility of the supplier and shall be supplied at no additional cost. This includes, but is not limited to, wires, cables, cuffs, probes, hoses, brackets, etc.
- 28. The suppliers shall coordinate their work with the medical consultant drawings to ensure all pre-installation requirements are met, including power, mounting accessories, communication infrastructure (LAN as required), etc. In case of any missing pre- installation works, the monitors' supplier shall ensure proper execution of missing works to suit his intended installation. All such costs – if any - shall be embedded within the package deal and not charged separately as civil works.
- 29. The monitor shall be supplied with a flexible module rack having at least 8 slots to host plug-in measurement modules.
- 30. Modules specifications:
 - 30.1. The modules shall be connected into any of the slots.
 - 30.2. The modules shall be interchangeable between all monitors.
 - 30.3. The modules shall retain patient demographics, calibration, alarm settings and trends when moved from one monitor to another or during patient transfer without any data loss.
- 31. The essential measurements (12 lead ECG, Respiration, NIBP, SpO2 and temperature) s hall be incorporated in a single multi-measurement module that shall have the following specifications:
 - 31.1. It shall be rugged and lightweight.
 - 31.2. This module, similar to other modules, shall retain patient demographics, calibration, alarm settings and patient trends when unplugged from the modules rack. And then, it shall transmit the stored data to the host monitor when re- plugged.
 - 31.3. This module shall record patient trends for up to 48 hours

MON023 MONITOR, Physiological, Recovery

1. The supplied systems shall incorporate the latest, state-of-the-art technological advancements at time of installation, including latest software and firmware revisions and platforms
2. The Recovery monitor shall meet all the below specifications:
3. The monitor shall provide a flexible and a fully modular monitoring solution for the associated department.
4. All monitors shall have a common user interface for ease of operation and maintenance.
5. The monitor shall be capable of being configured for adult, pediatric and neonatal patients.
6. The monitor shall incorporate the fastest processor speed and shall run the last software release at the time of delivery.
7. The monitor shall not have any cooling fan for better hygienic environment and less service and maintenance.
8. All monitors shall possess Medical Grade, Touch Screen technology
9. Display specifications:
 - 9.1. 17" color LCD display
 - 9.2. 8 waveforms or better
10. Connectivity:
 - 10.1. Networking capability from the bedside monitor to the central station or from bedside monitor to bedside monitor within the department through hospital LAN.
 - 10.2. The bed-to-bed overview shall be guaranteed even in case of central station failure.
 - 10.3. The monitor shall be able to access all relevant patient information existing on the hospital intranet such as PACS images, Lab data, anesthesia records, etc.
11. The monitors shall be mounted on the services supply unit rails which shall include all mounting accessories necessary for this purpose.
12. All specified monitors shall be capable of measuring the following parameters:
 - 12.1. 12 Lead ECG
 - 12.2. Respiration
 - 12.3. Temperature
 - 12.4. SpO2
 - 12.5. NIBP

- 12.6. IBP (Two channels for each recovery monitor and one dual-channel IBP module to be shared between each 4 recovery monitors)
- 12.7. EtCO₂ (One EtCO₂ module for every 2 recovery monitors)
- 12.8. CO (One CO module for every 4 recovery monitors)

13. ECG

- 13.1. 12-Lead ECG analysis, simultaneously displayed if needed
- 13.2. Isolated input ECG module
- 13.3. 1 mV calibration
- 13.4. Heart rate display
- 13.5. Adjustable heart rate alarms
- 13.6. Lead fault-alarm
- 13.7. Apnea alarm
- 13.8. Frequency response: 0.05 to 150 Hz

13. Respiration:

- 14.1. Impedance variation detection
- 14.2. Range: 0-200 breaths/min
- 14.3. Alarms: user-selectable upper and lower respiration rate limits

15. NIBP:

- 15.1. Adult and pediatric blood pressure capabilities
- 15.2. Displayed parameters: systolic, diastolic, and mean pressure
- 15.3. Measurement modes: manual and automatic
- 15.4. Pressure range (adult/pediatric): 20-250 mmHg
- 15.5. Alarms: adjustable high / low

16. Full arrhythmia and S-T segment analysis

- 16.1. Arrhythmia must be based on 4 leads
- 16.2. Trending, graphic display editing and tabular display of arrhythmia parameters
- 16.3. The following shall be displayed simultaneously on the monitor and the central station:
 - 16.3.1. Patient alarm, rhythm status, heart rate, and alarm limits
 - 16.3.2. Graphic trend display of arrhythmia
 - 16.3.3. S-T segment analysis, including trending and cursor control

17. Body temperature:

- 17.1. 1 channel
- 17.2. Temperature range: 0 - 45 °C
- 17.3. Alarms: user-selectable upper and lower limits

18. SpO2:**18.1. Monitored parameters:****18.1.1. SpO2****18.1.2. Peripheral Pulse Rate (PPR)****18.2. SpO2 range: 50-100%****18.3. Alarms: user selectable upper and lower limits for SpO2 and PPR****19. IBP (Two channels for each recovery monitor and one dual-channel IBP module to be shared between each 4 recovery monitors)****19.1. Pressure range selection****19.2. Auto-zero calibration****19.3. Pressures display: systolic, diastolic and mean pressures****19.4. Range: -25 to +300 mmHg****19.5. Alarms: user-selectable upper and lower limit****20. Cardiac output (thermo dilution) (One EtCO2 module for every 4 recovery monitors):****20.1. Injection volume: 3,5 and 10CC****20.2. Displayed parameters:****20.2.1. Cardiac output curves****20.2.2. Blood temperature****20.2.3. Inject ate temperature****20.3. Range: 0.2 to 20 liters /minute****21. EtCO2 (One EtCO2 module for every 2 recovery monitors)****21.1. The EtCO2 shall use the mainstream technology****21.2. Range: 0 to 98mmHg (0.0 to 13KPa)****21.3. Alarms: user-selectable upper and lower limits**

22. Tabular and graphical trending capability for at least 12 hours for all patient monitored parameters enabling clinicians to evaluate whether a particular vital sign has been maintained within a certain range

23. The monitor shall be able to generate patient reports with pre-defined or customized templates and print them on direct connected or LAN connected printers. Clinicians shall be able to generate these reports manually or automatically at user-defined intervals.

24. Drug, hemodynamic, ventilation and oxygenation calculation capabilities shall be included.

25. Clinicians shall be able to create profiles containing measurements settings and monitor properties. Pre-defined profiles, when activated, apply automatically

suitable alarm safety limits and speed up the setup procedure performed after each care location changing or patient category modification (adult, pediatric or neonatal).

26. The monitor shall incorporate an ECG output for defibrillator synchronization.

27. Alarms

27.1. Each monitor shall be equipped with audible and visual alarms, patient status and monitor status alarms.

27.2. The monitor must include a reset function which will silence alarms and have a built-in reminder for the user if patient status continues to exceed alarm limits

27.3. Alarms limits set at bedside must automatically set at central and vice versa

27.4. The monitor shall have different programmable alarm levels with distinctive tones and colors for each measured parameter.

27.5. The monitor shall integrate a smart prioritization of patient alarms.

28. All monitors shall be supplied with standard accessories to ensure the full and adequate functionality of the supplied systems. Any missing software or hardware items that are seen as part of the supplied system, and are needed for its full functional operation will be the responsibility of the supplier and shall be supplied at no additional cost. This includes, but is not limited to, wires, cables, cuffs, probes, hoses, brackets, etc.

29. The suppliers shall coordinate their work with the medical consultant drawings to ensure all pre-installation requirements are met, including power, mounting accessories, communication infrastructure (LAN as required), etc. In case of any missing pre- installation works, the monitors' supplier shall ensure proper execution of missing works to suit his intended installation. All such costs – if any - shall be embedded within the package deal and not charged separately as civil works.

30. The monitor shall be supplied with a flexible module rack having at least 8 slots to host plug-in measurement modules.

31. Modules specifications:

31.1. The modules shall be connected into any of the slots.

31.2. The modules shall be interchangeable between all monitors.

31.3. The modules shall retain patient demographics, calibration, alarm settings and trends when moved from one monitor to another or during patient transfer without any data loss.

32. The essential measurements (12 lead ECG, Respiration, NIBP, SpO2 and temperature) shall be incorporated in a single multi-measurement module that shall have the following specifications:

- 32.1. It shall be rugged and lightweight.
- 32.2. This module, similar to other modules, shall retain patient demographics, calibration, alarm settings and patient trends when unplugged from the modules rack. And then, it shall transmit the stored data to the host monitor when re-plugged.
- 32.3. This module shall record patient trends for up to 48 hours

MON033 MONITOR, Pulse Oximeter

1. The unit shall be portable, suitable for placement on regular table tops (bedside cabinet, etc.)
2. To measure and display heart rate and O₂ saturation for adult and pediatric patients, with the following range:
 - 2.1. SpO₂ ~ 0 % – 99 %, accuracy \pm 2%
 - 2.2. HR ~ 30 BPM – 250 BPM
3. These parameters should be clearly displayed on a relatively large numeric display.
4. Waveform display for plethysmography is required
5. Massimo technology
6. Audiovisual alarms for monitored parameters
 - 6.1. Clearly visible “alarm active” indication
 - 6.2. User adjustable alarm volume
 - 6.3. Easily adjustable limits (high and low)
 - 6.4. Alarm overriding capability with auto restart after 1 – 2 minutes if alarm condition not cleared
 - 6.5. Visual indication shall remain clearly visible during alarm override period.
7. Adjustable QRS beep volume
8. Capability to operate on all patients from neonatal to adult, with movement artifact suppression
9. Each unit should be supplied with the following:
 - 9.1. One adult reusable (finger clip) sensor
 - 9.2. One pediatric reusable sensor
 - 9.3. One neonatal (flex) reusable sensor.
 - 9.4. One extension sensor cable
10. Incorporated safety features shall include, but not be limited to:
 - 10.1. Auto self-test on start up
 - 10.2. Clear diagnostic messages during operation (sensor off, equipment malfunction, etc.)
11. The unit should operate on batteries as well as AC electricity, with automatic battery charging while in use.
 - 11.1. Specify battery type
 - 11.2. Specify battery capacity
 - 11.3. Specify time required to reach 90% capacity from fully depleted battery
 - 11.4. Automatic battery charging while in use
 - 11.5. Battery charger / AC adapter should be built in the unit (external battery chargers or AC adapters will not be accepted).
 - 11.6. Low battery alarm shall allow at least 20 minutes of additional operation time before

MON221 Fetal Heart Monitor

This monitor is intended for use in the labor and delivery unit for monitoring of fetal heart rate and uterine activity during labor as well as mother's ECG, NIBP and SpO2.

1. The monitors shall be capable of detecting and displaying fetal heart rate (using US transducer) and Uterine Activity (UA) (using TOCO transducer)
2. Digital numeric display of all parameters with clearly distinguishing annotations for fetal parameters.
3. The monitor shall be capable of: Internal self-diagnostics with corresponding clear messages
4. The monitor shall incorporate fetal movement detection and indication capability
5. The monitors shall have a built in thermal printer for all parameters and waveforms within the capability of the monitoring system. The printer shall have:
 - 5.1. Variable speed
 - 5.2. Adjustable scale
 - 5.3. Extensive annotation capabilities; such as:
 - 5.3.1. Date
 - 5.3.2. Time
 - 5.3.3. Speed
 - 5.3.4. Mode
 - 5.3.5. Other, specify
6. Integrated maternal monitoring for ECG, NIBP and SpO2 shall be integrated as part of the same monitor
7. Each monitored parameter shall have its own variable (user settable) alarm levels (high and low), with audiovisual alarm indications
8. Standard accessories supplied with the system shall be clearly listed

MON222 MONITOR Fetal / Maternal, Antepartum, with twin option

This monitor is intended for use in the labor and delivery unit for monitoring of fetal heart rate and uterine activity during labor as well as mother's ECG, SpO2 and NIBP. It shall possess the capability to monitor twins in the standard configuration.

1. The monitors shall be capable of detecting and displaying fetal heart rate (using US transducer) and Uterine Activity (UA) (using TOCO transducer) for both fetuses simultaneously.
2. Digital numeric display of all parameters with clearly distinguishing annotations for both fetuses' parameters simultaneously.
3. The monitor shall be capable of: Internal self-diagnostics with corresponding clear messages
4. The monitor shall incorporate fetal movement detection and indication capability
5. The monitors shall have a built in thermal printer for all parameters and waveforms within the capability of the monitoring system. The printer shall have:
 - 5.1. Variable speed
 - 5.2. Adjustable scale
 - 5.3. Extensive annotation capabilities; such as:
 - 5.3.1. Date
 - 5.3.2. Time
 - 5.3.3. Speed
 - 5.3.4. Mode
 - 5.3.5. Other, specify
6. Integrated maternal monitoring for ECG, NIBP and NIBP shall be integrated as part of the same monitor
7. Each monitored parameter shall have its own variable (user settable) alarm levels (high and low), with audiovisual alarm indications
8. Standard accessories supplied with the system shall be clearly listed

MONCTR Central Monitor

1. The unit shall have the following minimum features:
2. Advanced patient monitoring central station to be used throughout all departments including: ICU, CCU, NICU...etc.
3. Shall provide access to all patient data including physiologic waveforms, hemodynamic and demographics for up to 16 patients
4. General:
 - Shall collect and display real-time data from bedside monitors
 - Central monitoring:
 - Simultaneous display of 16 bedside monitors
 - With capability to display full data for one patient
 - With capability to preview all monitored parameters at bedside monitor such as: ECG (all channels), SpO2, Respiration, Temperature, NIBP, IBP, etCO2, EEG...etc
 - With audiovisual alarming
 - With capability to preview and adjust alarm limits
 - With alarm silence at central station and bedside monitor
 - With capability to preview ventilator settings and parameters wherever applicable
5. Full disclosure:
 - Duration: 72 hours
 - Capacity: 16 patients
 - Shall store all monitored waveforms and numerical values for all patients
6. Trending:
 - Duration: 24 hours
 - Capacity: 16 patients
 - Numerical and graphical trending for all monitored parameters
7. Events:
 - Duration: 72 hours
 - Capacity: 1000 event per patient for 16 patients
8. ST segment analysis
 - Advanced monitoring and analysis of ST segment deviation for pediatrics and neonates
 - Continuous for all monitored leads
 - Adjustable ISO and ST points for each lead
9. Arrhythmia analysis:
 - Advanced detection and classification of different types of arrhythmias for adults and pediatrics
 - Shall detect and classify arrhythmias including (but not limited to):
 - Ventricular Fibrillation
 - Ventricular Tachycardia
 - Supraventricular Tachycardia
 - Ventricular bigeminy
 - Sinus Bradycardia

- Sinus Tachycardia
- Asystole
- Drug calculation

10. PC:

- Processor: latest compatible at time of delivery
- Processor speed: 3GHz or highest compatible
- RAM: 4 GB DDR2
- Hard desk: 500 GB
- With Ethernet communication ports

11. Display/screen:

- Color LCD screen, screen size: 21"
- With preset and configurable interfaces/layouts
- Simultaneous display of 16 patients
- With capability to display full data for one patient
- With networked color laser printer (1200 x 1200 dpi)
- With latest compatible Windows operating system
- With all required software and licenses for fully functional system

12. Networked recorder:

- 2 channels
- Speed: 1, 6.25, 12.5, 25, 50 mm/sec
- Resolution: 200 dpi
- Paper: 50 mm
- Patient ID, date and time shall be printed

13. Networking and connectivity

- Shall be networkable to bedside monitors via Local Area Network (LAN)
- Shall be networkable to share data with hospital networks (bidirectional) such as Hospital Information System (HL7 compliant), Laboratory and PACS (DICOM/latest) (coordinate with client and IT contractors)
- Shall facilitate multi format report generation via networked printer and recorder
- With capability to preview bedside monitors from doctors' offices (for 5 doctors) as an option and quoted separately
- With capability to preview bedside monitors from any PC outside the hospital (web based application) (for 5 doctors) as an option and quoted separately
- The unit shall include all required servers, accessories, installation materials/cables, switches/routers, software, licenses...etc. for full functionality.
- Each central unit shall be connected to its dedicated peripheral monitors in each department as required.
- The unit shall be flexible and upgradable

14. Power supply:

- Mains supply

15. Shall be CE marked and/or FDA approved

MTC001 Mobile Technology Cart Package

1. HD video, audio, and image sharing for medical professionals and patients—no matter where they are located
2. The ability to bring high definition telehealth technology to the patient point of care is more important than ever in today's dynamic healthcare environment. The Cart solution should enable medical professionals to provide patients access to care regardless of time or distance constraints.
3. The Practitioner Cart solution is also ideal for broadcasting medical procedures for education or telementoring. The Polycom Practitioner Cart is specifically designed to meet the needs of mobile telehealth applications. The solution's small footprint is designed around a durable, enclosed cart frame that is easy to clean, protects internal electronics and computer from spills, and provides the ultimate in maneuverability and flexibility.

Key applications

- Stroke/neurology
- Psychiatry/mental health
- Primary care
- Dermatology
- Intensive care
- Orthopedics/surgical follow-ups
- Cardiology
- Pulmonology
- Emergency/trauma
- Telementoring
- Sign and spoken translation services
- Case management

Benefits

- High-definition video conferencing 720p 30/60 fps or 1080p resolution for life-like experience
- Platform support for customer IT needs (laptop/PC)
- Highly mobile, small footprint with enclosed technology compartment for security and spill protection
- AES encryption for HIPAA compliancy in patient care environments
- Provisioned for mobile use with battery power
- Maintain eye contact with powered electronic lift for height adjustment

The Cart should transform a roomful of technology into a simple, mobile workstation that sits at the head of a table or fits comfortably in an exam room.

Video display

- 24" LED with speaker bar

Video standards & protocols

- H.264
- H.264 High Profile (HiP)
- H.263++
- H.261
- H.239/Polycom® People+Content™
- H.263 and H.264 video error concealment

People video resolution

- 720p, 30 fps from 512 Kbps
- 720p, 60 fps from 832 Kbps
- 1080p, 30 fps from 1024 Kbps
- 4SIF/4CIF, 30 fps from 128 Kbps
- 4SIF/4CIF, 60 fps from 512 Kbps
- SIF (352 x 240), CIF (352 x 288)
- QSIF (176 x 120), QCIF (176 x 144)
- HD Continuous presence multipoint

Content video resolution

- Resolutions supported: HD (1920 x 1080), WSXGA+ (1680 x 1050), SXGA (1280 x 1024), HD (1280 x 720), XGA (1024 x 768), SVGA (800 x 600), VGA (640 x 480)
- Output: 720p (1280 x 720), 1080 (1920 x 1080), XGA (1024 x 768), SVGA (800 x 600)
- Content frame rate: 5–30 fps
- Content sharing: Polycom People+Content, Polycom® People on Content™ and Polycom® People+ Content™ IP

Audio standards & protocols

- Polycom® StereoSurround™ technology
- 22 kHz bandwidth with Polycom® Siren™ 22 technology
- 14 kHz bandwidth with Polycom® Siren™ 14 technology, G.722.1 Annex C
- 7 kHz bandwidth with G.722, G.722.1
- 3.4 kHz bandwidth with G.711, G.728, G.729A
- Automatic gain control
- Automatic noise suppression
- Instant adaptation echo cancellation
- Audio error concealment
- Keyboard noise reduction
- Live Polycom® MusicMode™ technology

Other ITU-supported standards

- H.221 communications
- H.224/H.281 far-end camera control
- H.323 Annex Q far-end camera control

- H.225, H.245, H.241
- H.239 dual stream
- H.231 in multipoint calls
- H.460 NAT/firewall traversal

Maneuverability

- 4" twin wheel precision bearing casters (front locking)

Height adjustability

- 12" height adjustability (work-surface group includes display, camera and work-surface) from floor
 - Work surface: 32–44"
 - Camera: 60.4–72.4"

Cart construction

- Compact work surface
- Light weight aluminum and steel construction
- Easy to clean, powder coated finish
- Padded rear handle

Storage

- Lockable storage located under work surface: 3.5" x 15" x 12" (H x W x D)
- Accessory bin located on rear of cart
- Lockable drawer with electronic keyless entry located below technology enclosure 2" X 12" X 10" (H x W x D)

Dimensions & weight

- Footprint dimensions: 21.5" x 17"
- Overall dimensions
 - Width: 21"
 - Depth: 26.5" (including handle)
 - Height: 56.5"–68.5" (12" of height adjustability)
- Cart weight
 - Shipping weight 230 lbs.
 - Cart weight 215 lbs.

Input/ Output connections

- Side connection panel
- 1 x RJ-45 for LAN (Codec and PC)
- 1 x VGA and digital input from laptop
- 1 x composite video
- DVI out
- 3 x USB ports and (1) HDMI port available with integration of a PC
- 1 x 3.5 mm audio in
- 2 x stereo audio in
- 1 x S-video

Power system

- Meets UL60601-1 leakage current specifications
- Automatic transfer switch
- Battery power system
- Audible low battery sound warning
- 55 amp sealed lead acid battery provides up to 2.5 hours of continuous, uninterrupted call time
- Central on/off switch with visible battery power gauge

Operating environments

- Operating temperature: 10–32°C
- Humidity operating: 10–80% non-condensing Regulatory
- ANSI/AAMI ES60601-1:2005
- CAN/CSA-C22.2 No. 60601-1:2008
- NRTL & NRTL/C certified
- FDA Class 1 Medical Device Data System
- IEC 60601-1:2005
- EN 60601-1:2006

MVP001 Medical Vacuum Plant System

1. Central Medical Vacuum Supply System is used to provide a reliable and continuous suction in various departments of a hospital, such as Operation Theaters, Intensive Care Units, Coronary and Neonatal Care Units, Delivery and Emergency Departments and also Patient wards.
2. Medical Vacuum Plants are designed to meet the requirements of HTM 2022, HTM 02-01, ISO 7396, C11 and EN 737 with a quality scheme of manufacturing according to ISO 9001:2008, EN 46001:1997, ISO 13485:2003, and the Plants are CE marked to meet the requirements of Medical Device Directive 93/42/EEC.
3. Medical Vacuum Plant Equipment:
 - Vacuum Pumps, Oil Lubricated Or Oil Free
 - Bacterial Filter Group
 - Vacuum Reservoir
 - Electrical Control Panel
 - Non-Return Valves and Connection Pipe
4. Capacities and Flow calculation for Medical Vacuum Plant are determined in strict compliance to HTM 2022 and EN 737 requirements. Medical Vacuum Plants operate 380V - 50/60 Hz. electric voltages and fully comply with HTM 2022, HTM 02-01, C11, ISO 7396, EN 737 and IEE requirements.
5. Vacuum Pumps
 - Medical vacuum pumps are used to supply the required vacuum for the hospitals. Vacuum Pumps are manufactured as air cooled, oil lubricated and oil free rotary vane types. The motor capacity is about 0, 18 kW and 30 kW.
 - The Vacuum Pumps don't have any risk to draw over current and cut off. One of its properties is to run at the maximum vacuum value.
 - The maximum vacuum level is about 720 mmHg and it can also run at the vacuum level about 500-620 mmHg.
 - The capacity of the vacuum pump is determined according to the calculation result of the hospital flow. Vacuum pumps have a range of 4-630 m³/h depending upon size of the hospital.
6. Digital Electrical Control Panel
 - The system is protected against damages by over current relays, short circuit and high pressure relays, which are located on the electric control panel.
 - Digital Electric Control Panel PCP 3M has been designed to control the plant automatically or manually which max. 3 Pumps can be operated and protect the electrical system.
 - The panel is designed to show the on or off and fault conditions of each pump separately at the required value. Leading pump selection can also be programmed through this panel on day / month / year basis.

- Tank vacuum level is shown on the panel digitally, and also pump's on and off vacuum levels can be programmed from this panel. Panel will allow the Medical Vacuum Plant to operate in Manual mode through built in vacuum switches in case of any fault on vacuum transducer or electronic control.
- The system can also be used manually in case of a malfunction in the system. The gauges which show the work time of the pumps are also located on the control panel. It has the property to transfer the data on the panel to another one on a distant location or to be connected to the hospital BMS system by an interface unit.

7. Bacterial Filter Group

- Duplex arrangement of bacterial filter group prevents bacteria accumulated in the Pipeline to reach vacuum tank and thus provide hygiene in hospitals where Medical Vacuum plants are used.
- The duplex bacterial filter system shall incorporate high efficiency filter elements. Each filter shall be designed and sized to carry the full plant design flow capacity with a pressure drop not exceeding 33mbar (25mmHg).
- This process is significant in those situations where the plant is used and in hospitals where hygiene is top important. This part of the plant is located between the reservoir and the service.
- The Bacterial Filter Group is composed of filters and valves. Bacterial Filter elements shall have penetration levels not exceeding 0.005% when tested by the sodium flame method in accordance with BS 3928:1969 and utilizing.

8. Vacuum Reservoir

- The vacuum reservoir is manufactured to meet the requirements of the hospital and has the function to start or to stop the vacuum pump.
- The vacuum reservoir from the vacuum plant is calculated in accordance with HTM 2022 Standard and meets 100% of the vacuum requirement of the hospital. Vacuum Reservoir manufactured in accordance with BS 5169 Class 3 and tested at 4 Bar according to HTM 2022, Vacuum tank capacities are calculated as liquid capacity equal to 1 min of free air aspired at 450 mm Hg of Medical Vacuum Plant according to HTM 2022 Section 9.26 and HTM 02-01.

9. Flexible Connection

10. Collector

11. Non-Return Valves and Connection Pipe

12. CE MARKING

- Medical Vacuum Plant is 'CE' marked under the Medical Devices Directive 93/42/EEC with approval from notified body no. 2195 (SZUTEST). Under this directive, the specified products are classified as Class IIa Medical Devices.

NEBULT NEBULIZER

The Ultrasonic Nebulizer unit shall have the following characteristics:

1. 15-minute cycle, without storage bottle, especially for short-time nebulization of medicaments in medication cups.
2. Technical Data
 - 2.1. Transducer frequency: to be specified.
 - 2.2. Nebulization capacity: 2 – 8 ml/min.
 - 2.3. Drops Size: 0.5 – 6Um.
 - 2.4. Integrated safety against dry running: to be specified
 - 2.5. Designed for: 1-litre and 2-litre bottles aqua pack system.
3. The offer shall include a trolley for storing above items

OBSDOP Fetal Heart Doppler

1. The unit shall be compact and handheld, specifically designed for routine obstetrical examinations of fetal heart rate
2. The unit shall incorporate a digital numeric display of heart rate, preferably with a heartbeat detection indication
3. Adjustable volume and ear phone receptacle
4. Incorporated ultrasonic probe, frequency: 2 - 3 MHz
5. Battery operated.
6. The batteries shall be rechargeable. AC charger shall be included.
7. The offer shall include a carrying case

**OPH001 OPHTALMOOGY, Workstation, complete, including patient chair
& physician stool**

1. Ophthalmology workstation for use in the refraction clinic to house the various diagnostic equipments and to provide minimal patient mobility during examination
2. The workstation shall have the ability to hold the slit lamp, the phoropter, the chart projector and the auto kerato – refractometer
3. Workstation should be able to hold wells for a retinoscope and a direct ophthalmoscope with their charging ability
4. Shall incorporate functions that make it suitable for pediatric and elderly patients
5. Room light switch connection for on, off and dimming capability from the doctor's position
6. The phoropter arm holder shall incorporate counter balanced horizontal and vertical smooth movements, with a locking mechanism for parking or in-use positions
7. The slit lamp support shall provide easy access and slide away tray for equipment switch over during examination
8. Kerato – refractometer shelf with the following characteristics shall be incorporated
 - 8.1. It shall provide sturdy support to withstand the equipment's weight as well as the patient's head weight during examination.
 - 8.2. It shall be capable of sliding in and out of testing position easily
 - 8.3. It shall incorporate a locking mechanism for test and parking positions
9. To incorporate a fluorescent over the top lamp with on / off switch access from the control panel (doctor's position)
10. Chart projector shelf to allow the patient to view the projected information without moving
11. To incorporate a drawer for accessory storage and a shelf for trial lens set
12. The offer shall include a compatible patient examination chair with the following characteristics:
 - 12.1. Same color as the base unit
 - 12.2. Full electronic control within the base unit's control panel
 - 12.3. Up and down control by foot switch as well as the control panel
 - 12.4. Electric movements: up, down and inclination (from sitting to flat horizontal)
 - 12.5. 180 degree axial rotation and lock in any position
 - 12.6. Arm rests and fixed headrest

Doctor examination stool with the following specs shall be included:

13. Same color as the base unit
14. The stool shall provide unlimited (all direction) mobility
15. Wide castor base to provide sturdy and stable support
16. Thick cushioned sitting platform and back support covered with durable washable vinyl cover (specify all available colors)
17. Sitting platform 360o rotation capability in both directions
18. Lever controlled (under seat) pneumatic column elevation
19. Adjustable height from ~ 50 to 65 cm from floor level

OPH013 CASE, trial lens, with electric ophthalmoscope**I- Lens set:**

1. The set shall include a large variety of lenses and prisms
2. Full diameter lenses encased in metallic frames
3. Lens frames to incorporate color coded, marked carrying tab for easy access and identification
4. The set shall include the following lens related accessories:
 - 4.1. Occluder
 - 4.2. Pin hole 0.5 mm, 1.0 mm and 1.5 mm
 - 4.3. Slit 0.5 mm, 1.0 mm and 1.5 mm
 - 4.4. Polarizing filter
 - 4.5. Green lens
 - 4.6. Red lens
 - 4.7. 0.0 Sphere
 - 4.8. Red Maddox rod
5. The set shall be placed in a slotted, cushioned case made of durable material
6. The offer shall include a mobile stand for placement of the lens set case

II- Trial frame:

7. Adjustable fit to suit all patient sizes from pediatric to adult
8. Metallic constructed base, with durable and lightweight structure
9. Spring loaded temples for comfortable, stable and firm positioning
10. Adjustable rotating cylinder for axis correction
11. Shall incorporate large easy to read imprinted numeric's
12. Shall incorporate four lens slots for any single or combination of lens types
13. The following adjustments shall be possible. Suppliers are requested to provide detailed specs and measures of each parameter:
 - 13.1. Horizontal and vertical bridge adjustments
 - 13.2. Saddle bridge adjustment (for nose fitting)
 - 13.3. PD adjustment (separate for each eye, in case of asymmetrical face structure)

III- Electric Ophthalmoscope:

14. Complete ophthalmoscope unit that should include:
 - 14.1. Ophthalmoscope head.
 - 14.2. One rechargeable handle and integrated halogen illumination.
 - 14.3. Spare lamps.
15. The handle should be lightweight, easy to grip and clean.

16. The Ophthalmoscope head, specula and lenses should be easy to change; however, they should lock in place when being used. The heads should be equipped with high-intensity halogen lamps.
17. The Ophthalmoscope should be made of high-quality stainless steel or plastics and incorporate aspherical optical system mounted in metal chassis, 6-apertures wheel and separate red-free filter.
18. Reusable specula should be resistant to agents recommended for cleaning and sterilization.
19. The unit should be lightweight and able to be held in one hand.
20. The unit should have no sharp edges and easy to clean.
21. The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
22. Switches, knobs, and other controls should be designed for conditions of heavy use.
23. The controls should be visible and clearly identified, and their functions should be self-evident.
24. Controls should be sealed against penetration of fluids

OPH014 SLIT LAMP with applanation tonometer**I- Slit Unit:**

1. To possess color balanced halogen illumination with continuously adjustable brightness control. Please state type of illumination:
 - 1.1. Direct
 - 1.2. Retro
 - 1.3. Tyndall effect
2. Variable slit width from 0 to 14 mm
3. Variable slit height from 0.5 to 14 mm
4. Variable diaphragm size from 0.5 to 14 mm
5. Slit lamp rotation around the y-axis 180 degrees
6. Slit lamp rotation around the x-axis (tilting) up to 20 degrees
7. Incorporated (built in) filters:
 - 7.1. Cobalt blue
 - 7.2. Red free
 - 7.3. Heat absorption

II- Base Unit:

8. The base unit shall incorporate a patient head fixation mechanism with:
 - 8.1. Forehead rest
 - 8.2. Chin rest
 - 8.3. Fixation light
9. Multiple structure movements for optimum patient and light positioning shall include:
 - 9.1. The base shall allow forward and backward movement of ~ 10 cm
 - 9.2. Up and down movements of the slit lamp unit ~ 3 cm
 - 9.3. Side movement of the slit lamp unit ~ 10 cm
 - 9.4. Up and down movements of the chin rest ~ 6 cm
10. The unit shall incorporate a mount adapter for applanation tonometer
11. The unit shall incorporate mounting adaptation and accessories for placement on the ophthalmology workstation (OPH001)

III- Applanation Tonometer:

12. Goldmann-type Applanation tonometer for permanent mounting on the slit lamp specified in this tender
13. To include all necessary installation accessories including bracket and mount, etc.
14. Direct Intra Ocular Pressure (IOP) measurement shall be made with the patient seated at the slit lamp; by swinging the prism into reading position when an IOP measurement is required
15. The unit shall possess high accuracy and repeatability. Error shall not exceed ± 0.5 mm Hg.
16. Suppliers shall specify the range of measurement as well as the accuracy (reproducibility data shall be provided if available) and resolution.

OPH015 Ophthalmoscope, indirect

1. The unit shall achieve precise binocular viewing and stereopsis
2. Its observation paths shall be adjustable from 45 mm to 75 mm (or close similar) to handle the widest and narrowest interpupillary distances.
3. It shall offer a convergence control for small pupil capability.
4. It shall have a diffuser filter for enhanced peripheral viewing of the retina.
5. The design shall be convenient and durable to allow simple operation and protection against accidental drops
6. It shall have a Halogen Light Source
7. Sealed Optics shall protect optics from dirt for long-term clear viewing
8. An Integrated UV/IR Filter shall provide safe illumination.
9. The optics shall be aligned using an advanced video alignment system to guarantee that all components have the precise orientation required for accurate viewing
10. Should have an adjustable, light weight, soft cushioning metallic head band with non slip contoured ophthalmoscope.
11. It shall be supplied with:
 - 11.1. Teaching Mirror
 - 11.2. BIO (condensing) lens set
 - 11.3. Scleral Depressor (thimble type, medium)
 - 11.4. Replacement Lamp
 - 11.5. Carrying Case
 - 11.6. Fundus Charts and Pencils
 - 11.7. Replacement Battery
 - 11.8. Wall and Portable Power Source

OPH016 RETINOSCOPE

Unit intended to measure the refraction of the eye by illuminating the retina and noting the direction of movement of the light on the retinal surface and of the refraction by the eye of the emergent rays.

It shall have the following features:

1. Enable quick and accurate refractions even in patients with the smallest pupils
2. Crossed Linear Polarizing Filter shall help the user to perform a more precise exam
3. Continuously rotating external focusing sleeve shall improve comfort and maneuverability of the scope
4. Special construction shall keep the optics cleaner for more effective examinations
5. The optical system shall provide the best brightness
6. Possibility to have a Spot Retinoscope and Streak Retinoscope
7. Should use halogen/Xenon streak lamps.
8. It shall be supplied full with:
 - 8.1. Carrying case
 - 8.2. Rechargeable Power Handle
 - 8.3. Charging Stand Adapter
 - 8.4. Streak Replacement bulb
 - 8.5. Spot Replacement bulb

OPH018 Eye chart system

1. Digital 19 inch, high-resolution LCD flat panel display, wall mountable, self-contained digital eye chart system for use in the refraction clinic without the need for a conventional projector
2. Easy to use, infrared remote control to allow access of all tests from anywhere in the exam room.
3. Large range of optotypes and tests
4. Random sequencing
5. Contrast acuity and sine-wave grating, contrast sensitivity testing
6. Cartoon loop with sound for pediatric fixation
7. Adjustable Red/Green for compatibility with any refraction system
8. May be configured for direct or mirrored viewing.
9. Patient education slides
10. Max Illumination: 220 cd/m² or close equivalent
11. Photopic Illumination 85 cd/m² or close equivalent
12. Mesopic Illumination 3 cd/m² or close equivalent
13. Refraction Range: 1.8 m to 9 m

OPH019 Phoropter

The Phoropter should offer all the latest features in automated refraction. It includes a high speed lens chamber, small optical head and several controllers.

1. Features:
 - 1.1. Compact design
 - 1.2. Fast lens rotation
 - 1.3. Comfortable operation
 - 1.4. Near chart LED illumination
 - 1.5. Dial operation
 - 1.6. User friendly interface
2. Specifications:
 - 2.1. Range of measurement:
 - 2.1.1. Sphere -27.00D ~ +27.00D (0.25D / 3.00D step)
 - 2.1.2. Cylinder -8.00D ~ +8.00D (0.25D / 0.50D step)
 - 2.1.3. Axis of astigmatism 0° ~ 180° (1° / 5° step)
 - 2.2. Prism: 0 ~ 20Δ (0.1Δ / 0.5Δ / 0.1Δ)
 - 2.3. Near distance examination: Optical axis of both lenses converges mechanically at 40cm / 67cm in front of eyes.
 - 2.4. Binocular balance test: Rotary prism, Polarized filters and red-green filters
 - 2.5. Cross cylinder: Cylinder ±0.25D or ±0.50D
 - 2.6. PD: 48mm ~ 80mm (0.5mm / 1.0mm step)
 - 2.7. Visual field: 35°
 - 2.8. Corneal alignment: 12.00mm/ 13.75mm /16.00mm/ 18.00mm/ 20.00mm

OPH020 FUNDUS CAMERA WITH FLORESCENCE FILTER

1. A fundus camera with a dedicated table to offer the following minimum types of photography:
 - Fluorescein fundus angiography (FA)
 - ICG angiography (ICGA)
 - Blue reflectance (BR)
 - Infra-red reflectance (IR)
 - FA+ ICGA, simultaneous
 - ICGA + IR simultaneous
 - Color photography
 - Monochromatic light fundus photography
2. Precise focusing and working distance adjustment
3. Automatic filter settings of fluorescein angiography
4. The fundus camera shall have the following specifications:
 - Photo angles: not less than 35 degrees
 - Illumination: Xenon 50W or better
 - Filters: blue, green, red, and barrier
 - Processing and archiving software to be included
 - Area measurement for PDT & TTT
 - Shall handle small diameter pupils down to 3.7mm
 - Dynamic high speed Angiography
5. The system shall include a PC for image acquisition, image filing
6. The unit shall include electrically height adjustable table for the acquisition device
7. The system shall include high definition printer
8. Accessories shall include Objective field Lens 55 and a dust cover
9. To meet the FDA or the CE safety standards or equivalent
10. Power Supply: 100-240 Vac, 50/60 Hz
11. All standard parts and accessories to be included for full operation

OPH021 ELECTRONYSTAGMOGRAPHY

1. It shall be the latest generation of vestibular test systems at time of delivery
2. It shall provide a comprehensive, systematic VNG/ENG solution
3. It shall be portable
4. It shall handle vestibular test-functionalities and capabilities for securing data and consolidating
5. patient-records
6. The hardware to assure a smooth stimulus presentation and accurate data collection:
 - For oculomotor-tests: to allow the collected data to be synchronized with the precise corresponding stimulus position, and buffered in hardware
7. It shall have integrated analysis and normative data displays
8. It shall provide instant automatic analysis that rejects poor-responses
9. It shall have interpretation and analysis capability
10. It shall have eye tracking algorithm
11. To be completely supplied with:
 - Lightweight full-shield goggles with built-in fixation light for adult and pediatrics
 - Portable light-bar for oculomotor-tests
 - Built-in video recorder with playback functionality and quick review
 - Integrated irrigator
 - Remote control
 - Foot switch
12. Completely supplied with computer system with all the needed accessories like the monitor, keyboard, etc. and the processor to be the latest version at time of delivery
13. Standard accessories shall be included
14. Power supply: 100-240 VAC/50-60 Hz
15. Shall be CE marked and/or FDA approved

OPH022 ROTATING CHAIR SYSTEM

1. The rotating chair system rotates at a certain frequency and the presence or absence of involuntary eye movements, eye drifts, eye jerks and fixation difficulties are measured to detect vestibular dysfunctions
2. This system is to be used with item ME11479
3. The chair should be microprocessor controlled and compatible with the computer operating system of the item ME11479.
4. Tests:
 - Rotational and pendulous
 - User configurable
5. Maximum speed: 200deg/s
6. Acceleration/Deceleration: Programmable up to 100deg/s²
7. Number of slip rings: Approximately 20
8. Safety features:
 - Patient alarm button
 - Emergency stop button
9. Backrest recline angle: 0- 90 degrees
10. Maximum patient weight: Approximately 150 kg
11. Approximate dimensions: 100cm x 70cm x 180cm

OPH023 MICROSCOPES, EXAMINATION, OPHTHALMIC

1. The proposed examination ophthalmic microscope shall be high quality
2. The support system must be able to provide balanced support and stability for the microscope and all accessories.
3. The optical tube shall be binocular, with provisions for an auxiliary eyepiece.
4. The optical tubes shall be configured to operate in inclined position.
5. The eyepiece power shall have 10x or 12.5x
6. Focusing shall be provided in both manual and power modes.
7. Controls shall be operable by both manual and foot controls.
 - The controls (e.g., switches, knobs) should be visible and clearly identified, and their functions should be self-evident.
 - Device design should prevent misinterpretation of displays and control settings.
 - Switches and controls should be protected against accidental setting changes.
 - Controls should be sealed against penetration of liquids.
8. The unit shall be with a motorized XY coupling to guarantee reliable, exact positioning of the microscope on the mobile floor stand
9. The unit shall be with a photo/video adapter.
10. The unit shall include a custom sterile cover.
11. The proposed ophthalmic microscope shall have the following technical data:
 - Magnification: 5-step magnification changer with factors 0.4/0.6/1.0/1.6/2.5
 - Focusing: motorized
 - Main objective: f=200mm or f=175mm
 - Tube: inclined
 - Illumination: fiber optic illumination with 12V/100W halogen reflector lamp or better
 - Filters:
 - Daylight filter FG6
 - Physician's safety filter GG475
 - Retinal protection device
12. The proposed examination ophthalmic microscope shall be mounted on a heavy duty floor stand:
 - Easy-to-move joints and castors to guarantee mobility and stability.
 - Reliable brakes to ensure the system remains locked in the required position
- 13.
14. Standard accessories to be included
15. All other needed accessories to ensure the intended functionality shall be included
16. Shall be CE marked and/or FDA approved

OPH024 OPHTHALMOSCOPE, DIRECT

1. A direct ophthalmoscope with ergonomically-designed handle that sits comfortably in the hand and provides a secure grip

2. The ophthalmoscope shall have halogen/xenon mix gases light for true tissue color and consistent, long lasting illumination and to provide white light
3. The ophthalmoscope shall have 6 apertures for general use: micro, small spot, large spot, fixation target, slit aperture and red free filter
4. The ophthalmoscope shall have 28 focusing lenses with a range of –25 to +40 diopters
5. The ophthalmoscope shall have brow rest to prevent scratching of eyeglasses
6. Slim head for ease and comfort
7. Sealed optics to keep out dust and dirt for long time of maintenance-free operation
8. The optical system shall be coaxial filament to produce a shadow-free spot, easier entry into undilated pupils, and a larger field of view
9. The ophthalmoscope shall have the following filters:
 - Cobalt filter
 - Red free filter
 - Polarizing filtering (to eliminate corneal reflection)
10. The ophthalmoscope shall be supplied with 3.5V rechargeable battery operated handle
11. Easy to use on/off switch
12. Complete with carrying case and standard accessories

OPH025 OPHTHALMOSCOPE, TONOMETER

1. Non-contact, table top tonometer to measure inter-ocular pressures (IOP), shall have the following minimum features and specifications:
 - No contact type
 - Fast readings
 - Soft air puff
 - User-friendly icon based operating system
 - Easy to read backlit LCD display
 - Up to 3 IOP measurements and an average of for each eye
 - Working distance: 11 mm approximately.
 - Measurement range: up to 60 mmHg
 - Shall include height adjustable table
 - Printing facility: the unit shall include thermal printer
 - Power supply: 110-220V, 50-60Hz
2. Standard accessories and any needed accessories shall be included to ensure full operation
3. Shall be CE marked and/or FDA approved

OPH026 Auto Kerato-Refractometer

- A revolutionary auto Kerato- Refractometer.
- The tiltable and rotatable touch screen will change the way of working for ever.
- The operator can use the KR-1 from various angles, ensuring the best interaction with the patient.
- The Topcon KR-1 can be used in several set-ups, which use a minimum of working space.

4 unique features

- Fully automated operation with touch screen
- Flexible & space saving lay out
- Reliable & fast measurements
- Compact ergonomic design

Specifications

Refractive power measurement	Spherical refractive power: -25 to +22D (0.12D/0.25D steps)* Cylindrical refractive power: 0D to ± 10 D (0.12/0.25D steps)* Astigmatic axial angle: 0° - 180° (1°/5° steps)
Corneal curvature measurement	Minimal measurable pupil diameter \varnothing 2.0 mm corneal curvature radius: 5.00 mm - 10.00 mm (0.01 mm step) Corneal refractive power: 67.50D - 33.75D (0.12/0.25D steps) (Corneal refractive index = 1.3375) Corneal astigmatic refractive power: 0D - ± 10 D (0.12D/0.25D steps) Corneal astigmatic axial angle: 0° - 180° (1°/5° steps)
PD measurement range	20 - 85 mm (1 mm step)
Data transport terminal	USB (import), RS-232C (export), and LAN (export)
Dimensions	286 ~ 326 mm (W) x 445 ~ 526 mm (D) x 466 ~ 615 mm (H)
Weight	19 kg
Power supply	100-240V AC, 50-60Hz, 75VA

OPH027 LASER, EXCIMER, OPHTHALMIC

1. The Excimer laser system shall be high end, top of the range and have the latest specifications available at time of delivery.
2. The Excimer laser system shall be used for refractive treatment (PRK, LASIK, LASEK and PTK) and includes the following components as a minimum: The laser, patient bed, microscope, monitor, operating software.
3. The Excimer laser system shall have the following minimum features:
 - Type of Laser: ArF Excimer
 - Wavelength: 193nm
 - Power output at tissue: 0-2.5 W or better
 - Delivery modes: continuous and pulsed
 - Beam diameter: 1-5 mm or better
 - Pulse repetition rate: 10 – 400 Hz or better
 - Pulse duration: 10-15nsec
 - To have an integrated energy counter
 - To have laser aiming beam at a wavelength of 630nm
 - To have a high precision spot delivery method
 - Safety features:
 - Safety interlock
 - Key operation
 - Emergency off switch
 - Air cooling system
 - Eye tracking speed: 300Hz or better
 - Infrared illumination source: 2
 - Active tracking range: $\pm 4.0\text{mm}$ or better
4. PTK automated mode:
 - Selectable treatment zone for photo-therapeutic treatment on the cornea
 - Adjustable patient bed in three dimensions (X-Y-Z) by a control unit
 - Electronically adjusted by progressive joystick: forward/backward, up/down, right/left
 - Automatic home position
 - Step-less motor drive
5. Stereo surgical microscope:
 - Microscope body
 - Step magnification changer (4.5x, 6x, 8x) approx.
 - Tilted view: 150°
 - Wide angle ocular field 10x with lock for eyeglass wearers
 - Front object lens: 250mm
 - One set of sterilizable caps for the proposed surgical microscope
 - Optimized working distance: 25cm or better
6. Operating software:
 - Mode of operation: PRK/LASEK, LASIK, and PTK

- Gas change
 - Fluence test, service mode
 - Programmable LASIK table
7. Monitor:
 - Adjustable, TFT, visible, color, approx. 12"
 - Integrated key board
 - Integrated leak-proof gas
 - 8.
 9. Beam splitter for the proposed operating microscope
 10. C-mount adapter for beam splitter
 11. Standard accessories and any needed accessories, parts or components shall be included to ensure full operation
 12. Any optional parts or accessories shall be listed and quoted separately
 13. Shall be CE marked and/or FDA approved

OPH028**Auto Chart Projector**

1. Auto Chart Projector provides improved sharp and clear image projection and fast chart rotation.
2. A cordless remote controller allows instant projection of the 30 test charts at a rate of 0.03 seconds per frame.
3. In addition, the Projector can offer 3x5 character charts with a wide projection size (330x270) for fast and efficient testing.
4. Coupled with CV Series
 - The ACP can be remote controlled directly with the CompuVision CV Series remote controller and by CV-PC series, using a PC as a controller. This combination allows the operator to quickly and easily access all functions for general visual examination.
5. Program settings
 - The ACP can be programmed to project a specific sequence of charts for maximum flexibility and refraction ease.
6. Single character masking
 - The versatile masking capabilities of the ACP allow projection of a single character at a time.
7. Easy setup and maintenance
 - It is very easy to replace the bulb. You needn't adjust the position and focus of the bulb after replacement.
8. Tilt function
 - The horizontal axis of the projector can be adjusted to guarantee a perfectly positioned projection on the screen.

Specifications

Refracting distance	3.0 to 6.1 m
Projection magnification	30x (in 5 m refraction)
Projection size	330x270 mm, Ø 300 mm
Number of charts	30
Chart change-over	1 frame / 0.03 sec
Number of masks	All versions: Open: 1, R&G: 1EM and MC: versions: Horizontal line: 5, vertical line: 5, vertical line: 8, single isolation: 21
Mask change-over	1 frame / 0.02 sec
Program step	2 type, max 30 steps available
Projection Lamp	12v 50w (halogen lamp)
Automatic Shut-off	after 10 min

Technical Specification

LOT 1 – Plant & Medical Equipment

Electricity	AC 120, 220, 230 or 240 V, 50/60 Hz
Power consumption	80 VA
Dimensions	226 (W) x 300 (D) x 245 (H) mm *including base height
Weight	6.0 kgs

9. Standard accessories

- Projection metal screen (21.7' x 17.7' with non-glare finish)

OPHPHC**Phaco-Emulsifier****Features**

- Compact, portable and light weight Phaco-emulsifier with advanced fluidic and latest Ultrasound Technology, and an all new titanium U/s hand piece
- Continuously tuned emulsification with various phaco modes, advanced irrigation and aspiration, built-in Vitrectomy and cautery
- Convenient, travel-tested portability, rugged and dependable engineering, minimal maintenance

Technical Specifications

Surgeon profile	2 independent profiles with 6 program modes for each surgeon profile
Modes	U/s 1, U/s 2, I/A, capvac, diathermy, vitrectomy
Display	5.8" soft touch LCD display
Footswitch	slim and narrow foot angled

Vacuum	5 – 100 mmHg, linear/ non-linear
Irrigation	gravity fed
Aspiration type	peristaltic
Flow rate	1 – 40 cc/min, linear/ non-linear
Reflux	continuous flow from irrigation source
Vent	Air and fluid vents
Tubing	reusable

Ultrasound

U/s Hand piece	light weight slim hand piece (40 KHz)
U/s mode	continuous / pulse / burst/ m pulse
U/s power	1 – 100 %

Aspiration

Type	Peristaltic pump
Vacuum Range	5 – 500 mmHg
Flow rate	1 – 40 cc/min

Diathermy

Power	7 Watts
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Vitrectomy

Cut Rate	single cut & repetitive cuts from 60 to 900 cuts/min
Cutter	pneumatic guillotine cutter 20G

Foot Switch

irrigation, aspiration, phaco power & reflux button

Electrical Specifications

Power Supply	~ 110-230 V, 50-60 Hz, 6A (max)
Power Consumption	150 Watts

Physical Parameters

Dimensions

210 mm(L) x 210 mm(LB) x 150 mm(UB) x 220 mm(H)

Weight

gross – 8 Kg, net – 5 Kg

ORTHDRL ORTHO DRILL SYSTEM

- The drill system shall be used for neurosurgery and orthopedic applications
- Power method shall be battery.
- The drive system shall be microprocessor controlled, heavy duty, high torque systems with digital display of operating parameters and controls
- The drive system shall be capable of operating two hand pieces simultaneously and provide constant power output under any load or load variation
- Foot control shall have drip-proof design
- Neuro-Surgery system:
 - The system shall be battery powered instruments for use in Neurosurgical procedures
 - The system shall contain the following items:
 1. Battery high speed motor
 2. Microprocessor based control console for high speed motor
 3. Foot control with cable
 4. Cleaning nozzle attachment
 5. Cleaning brush: different sizes
 6. Perforated driver
 7. 7cm straight attachment
 8. 10cm straight attachment
 9. 7cm curved attachment
- Orthopedic system:
 - The system shall be suitable for use in a wide range of surgical procedures, including arthroscopy, large bone orthopedics, and small bone orthopedics.
 - The system shall contain the following items:
 10. Micro drill console with drive cable
 11. Footswitch
 12. Micro sagittal Saw
 13. Micro oscillating Saw
 14. Micro reciprocating Saw
 15. Micro drill
 16. Micro drill medium angled attachment
 17. Micro drill straight long attachment
 18. Sterilization Case for micro drill, cable, and attachments
- Standard accessories and any needed accessories, cabling or tools shall be included to ensure full operation for both systems
- All available and optional accessories or parts for the above mentioned systems shall be listed and quoted separately to be selected by the user
- Shall be CE marked and/or FDA approved

OTGEN-A OT TABLE WITH ACCESSORIES

- Operating tables proposed shall have the following minimum features:
 - Shall be a modular construction to allow all specialty options including: General surgery, Gynecology, Urology, Trauma, Orthopedics, Cardio-vascular, Neurosurgery, Ophthalmology, Pediatric and Bariatric
 - The base attachment shall be a mobile type with conductive castors that are protected against soiling and easily accessible for cleaning
 - Shall have a minimum of 6 sections: head section, upper and lower back section, seat section (with perineal cut out) , leg section
 - AC operation with backup battery (capacity for a minimum of 1 week of operation)
 - Shall be equipped with electromechanically driven running gear and manual back up capability with a braking system that does not allow any movement when engaged.
 - Operating tabletop complete with soft padded, easy to clean, flame and tear proof, anti static and chemical resistant table padding.
- Controls:
 - Shall include corded control unit, infrared control unit (with charger) and foot switch.
 - In the event of control units' failure, there shall be a facility for manual override control.
 - Ability to control the table via the selected OR integration system (coordinate with client and OR integration system supplier), if applicable.
- The table shall achieve the following positions from the horizontal plane:
 - Motorized Height adjustment: 60 - 110 cm (Approximately)
 - Motorized Trendelenburg / reverse Trendelenburg: $\pm 35^\circ$
 - Motorized Lateral tilt: $\pm 25^\circ$
 - Head section: $+90^\circ$ to -45°
 - Motorized Back section: $+75^\circ$ to -45°
 - Motorized Leg section: $\pm 90^\circ$
 - Top rotation: 200°
 - Motorized Longitudinal sliding top: 25 cm
- Load capacity (for the table and accessories):
 - Static: 350 kg
 - Articulated: 270 kg
- Approximate dimensions (WxL): 55 cm x 210 cm
- Shall have a radio translucent top:
 - Shall have adequate longitudinal access to facilitate C arm access
 - Shall accept up to a 14" x 17" size x ray cassettes
- Accessories for general applications:
 - Accessory rails (on both sides)
 - Anesthesia screen

- Arm boards with mattress
- IV poles
- Translucent sectional mattress
- Body restraint and safety straps
- Knee straps
- X-ray cassette tunnel
- Clamps for attachments
- Supplier shall provide detailed list for accessories for all available specialty applications
- The unit shall include all required accessories for full functionality
- Shall be CE marked and/or FDA approved

OTORTH OT TABLE WITH ACCESSORIES AND ORTHOPEDIC ATTACHEMENTS

- Orthopedic tables proposed shall have the following minimum features:
 - Shall be a modular construction to allow all positioning options for Orthopedic and Traumatologic surgery.
 - With patient positioning and traction capability (with required accessories) to facilitate easy and efficient patient positioning for upper and lower limb procedures; such as fracture procedures, shoulder surgery, nonoperative myelograms, ender nailing, interlocking nailing of the femur, tibia, and fibula, anterior total hip replacement...etc.
 - The base attachment shall be a mobile type with conductive castors that are protected against soiling and easily accessible for cleaning
 - Shall have a minimum of:
 - a. Back section: 3-plates (with 2 detachable shoulder segments)
 - b. Seat plate: with 2 detachable bottom supports
 - c. Divided leg section
 - The spatial apparatus and traction unit for lower extremity procedures shall be:
 - d. Mounted/attached to the operating table
 - e. Shall not require floor mounted support/weight bearing
 - f. Adjustable articulation in all directions (single hand operation)
 - g. With adjustable axial- rotation of $\pm 45^\circ$
 - AC operation with backup battery (capacity for a minimum of 1 week of operation)
 - Shall be equipped with electromechanically driven running gear and manual back up capability with a braking system that does not allow any movement when engaged.
 - Operating tabletop with soft padded, easy to clean, flame and tear proof, anti-static and chemical resistant covering.
- Controls:
 - Shall include corded control unit, infrared control unit (with charger) and foot switch.
 - In the event of control units' failure, there shall be a facility for manual override control.
 - Ability to control the table via the selected OR integration system (coordinate with client and OR integration system supplier), if applicable
- The table shall achieve the following positions from the horizontal plane:
 - Motorized Height adjustment: 75 - 115 cm (Approximately)
 - Motorized Trendelenburg / reverse Trendelenburg: $\pm 20^\circ$
 - Motorized Lateral tilt: $\pm 15^\circ$
 - Motorized Back section: $+30^\circ$ to -30°
- Load capacity (for the table and accessories):
 - Static: 250 kg
 - Articulated: 180 kg
- Shall have a radio translucent top:
 - Carbon fiber table top
 - Shall have adequate longitudinal access to facilitate C arm access

- Additional Accessories (the following shall be included):
 - Standard orthopedic traction and holding accessories for supine, lateral and prone positions
 - Counter-traction post for femur with roll pad (supine and lateral positions)
 - Traction boots
 - Accessory rails (on both sides)
 - Arm boards with mattress
 - Body restraints and safety straps
 - Clamps for attachments
- Supplier shall provide detailed price list for accessories for all available specialty applications
- The unit shall include all required accessories for full functionality
- Shall be CE marked and/or FDA approved

OVE013 OVEN, HOT AIR OVEN, HEAVY DUTY, 1600WATT, CAPACITY 26 LITRES

1. A tabletop, general-purpose hot air oven ideal for general laboratory drying applications.
2. Microprocessor temperature control from 40 to 250 °C indicatively.
3. Digital temperature display.
4. Rapid heat up time.
5. Self-diagnostic facility.
6. Adjustable over-temperature safety thermostat.
7. Timer: 60 minutes auto stop and auto start.
8. Corrosion-resistant, easy to clean, stainless-steel interior with powder-coated steel exterior and circulation fan must be available.
9. Exterior remains at safe temperature (not overheated).
10. Door and Over Temperature Audio/visual temperature alarm.
11. Quick, easy temperature setting.
12. Fast temperature recovery time.
13. Indicator lights show which thermostat is controlling oven temperature.
14. Adjustable shelf heights.
15. Oven temperature can be monitored in port on top.
16. Door opens minimum 180° and features grabber-type latch.
17. Uniformity at (100°C): $\pm 4^{\circ}\text{C}$ (Indicatively).
18. Control Sensitivity: $\pm 0.3^{\circ}\text{C}$ (Indicatively).
19. Recovery time (at 200°C): Approximate 5minutes.
20. Maximum Air Exchanges per Hour never exceeds: 25 (Indicatively).
21. At least 2 multi-position shelves.
22. Minimum Capacity (Chamber Volume): 100 L or above.
23. External dimensions (WxDxH): approximately 700x700x600mm.
24. The supply/supplier should be minimum an ISO certified well established company with good reputation and experience and should be able to provide onsite service whenever required.

PAV001 Ambulance Vehicle**General Vehicular Design, Types and Floor Plan****a. Design**

The ambulance and the allied equipment furnished under this specification shall be the manufacturer's current commercial vehicle of the Type, Class, and Configuration specified. The ambulance shall be complete with the operating accessories, as specified herein. It shall be furnished with such modifications and attachments as may be necessary to enable the vehicle to function reliably and efficiently in sustained operation as an ALS ambulance. The design of the vehicle and the specified equipment shall permit accessibility for servicing, replacement, and adjustment of component parts and accessories with minimum disturbance to other components and systems. The term "heavy duty", as used to describe an item, shall mean in excess of the standard quantity, quality, or capacity and represents the best, most durable, strongest, etc., part, component, system, etc., that is commercially available on the OEM chassis.

b. Life Support Ambulance

The base vehicle shall be OE Manufacturer's integral van with two divided rear doors with 270 degree opening and external side wall latching of the doors in the open conditions to enable safe movement of the vehicle in open patient compartment to narrow areas / lanes and by lanes for speedy and easy evacuation. This vehicle shall be suitable for subsequent ambulance conversion / modification in compliance with the requirements herein.

c. Configuration of Patient compartment

Unless otherwise specified, Configuration Life support shall be provided in the patient compartment. All the devices, equipments, accessories and consumables etc., should be loaded to position the patient's head forward in the vehicle.

When specified for Life support applications, the patient would be located on the main automatic rolling stretcher cum trolley and four secondary seated attendants / patients (in case of any mass casualties or disaster) on the squad bench (four seater) and Doctor / EMT / Paramedic on the intended head end chair. The main automatic rolling stretcher cum trolley shall be slightly off centered mounted more towards the driver side wall in such a way that it does not collide with the side wall or any other fittings on it while loading or unloading.

d. Base Vehicle

The base vehicle to be used for the ambulance must be an integrated panel van in monocoque construction.

Engine	: Diesel, 4 Cylinder, 4 Stroke, Direct Injection / Turbo charged inter cooled
Emission Norms	: Minimum BS III

Wheel Base : Minimum 3200mm.
 Maximum Engine Output : Minimum 75 BHP
 Transmission Manual
 Alternator Minimum 90 Amp. @ 13.5 Amp.
 Battery Minimum 2x80AH Low Maintenance
 Drive Rear wheel drive
 Axles
 Front: Dead rigid beam
 Rear: Live rigid

Dimension (Patient Cabin)
 Length: 3200 mm. Minimum
 Width: 1600 mm. Minimum
 Height: 1700 mm. Minimum
 Ground Clearance: 190 mm. Minimum
 GVW: 3.0T Minimum

e. Suspension: Leaf springs at both front and rear

Rear Door: Centrally Divided rear doors on high quality steel hinges ensuring 270° opening for both the doors. In the fully open condition the doors must get latched rigidly to the outer surface of the side-wall of the body on the respective sides. It must be mandatory to manually release the latch levers to free the doors for closing.
 Both the rear doors should be provided with full width fixed windows made from toughened glass approved for automotive use.
 There should be a full width rear footstep entry allowing easy entry and exit from the patient compartment.

f. Ambulance Body & Patient Area

Patient Compartment Interior Dimensional Parameters

The patient compartment shall provide a minimum of 8.75m³ space while complying with the following:

The length measured from the partition to the inside edge of the rear loading doors at the floor, shall be at least 3.2m. The width of the patient compartment at the floor level should be at least 1.6m. and the height of the patient compartment the height point should be minimum 1.7m.

g. Cabin Conversion of Patient Compartment

Complete interior panelling of the sidewalls, both sides of the partition wall between patient cabin and driver cabin, roof (of both patient and driver cabin) & back door panels should be made from Acrylonitrile Butadiene Styrene (ABS) Sheets.

The ABS sheets in semi-gloss / matt finish should be of high impact resistant and stiff ABS.
 The ABS sheets should be co-extruded and UV Protected and should not be from recycled

ABS sheets. The heat resistance of the sheets measured based on ISO 306B should be 94oC to 100oC.

The complete interior should be edgeless and suitable for easy cleaning / scientific fumigation / treatment of disinfectants. The panels must be suitably formed using the appropriate ABS processing technology so as to match to the contour of the vehicle and looks aesthetically pleasing.

The panels for each of the surfaces should be produced as one single without any joints either along the length or the width of the panels.

Flat panel ABS sheets bend and glued / riveted / fixed to the structure of the base vehicle won't be accepted. The minimum thickness at any point of the panels should not be less than 2 mm.

The ceiling, both the sidewalls, both sides of the partition wall should be produced in one single piece matching to the dimension of the patient compartment dimension of the ambulance.

Between the interior conversion panels and the internal surface of the base vehicle body there should be adequate insulation of appropriate grade to have a good climatic control environment inside the vehicles.

The joint of one panel to the other must be suitably engineered so that all the joints are functionally hygienic and protected from any ingress of liquids and any other medical secretions of any kind. The joints should be finished in such a way so that these appear aesthetically appealing. In case of any replacement needs (accidental repairs etc.) it should be possible to detach each individual panel and replace the same without damaging or affecting the other parts of the interior panels.

The interiors should have reinforced fixtures for holding medical, communication and extrication equipments. Partition wall between patient & driver cabin with sliding glass window having lock. The window should be made up of extruded aluminum profile in rounded rectangular shape (all the corner edges are curve so that there are no sharp corner edges along the window frame). There should be only one joint in the frame and the inner profiles must have synthetic sliders for smooth movement of the glass panes. The sliding glass should be of toughened glass as needed for automobile applications. The flooring should be made up of min. 12mm. thick marine grade ply, rigidly bolted the steel base plate of the base vehicle construction. The top layer of the floor should be made from minimum 1.5mm. thick vinyl layer laid as a joint less flooring. The flooring material should conform with EN 426 for Dimensions, EN 428 for Overall Thickness, EN 430 for Weight, EN 433 for Residual Identification After Static Load, EN 434 Dimensional Stability, EN 435 for Flexibility, EN 660-2 for Abrasion Resistance, BS 476 Part 7 for Surface Spread of Flame, BS 476 Part 6 for Fire Propagation, IS 15061-2002 (ARAI) for Horizontal and Vertical Burning Test, ISO 140-8 for Sound Absorption, ISO 105-B02 for Color Fastness to Day Light, DIN 51130 for Slip Resistance, EN 425 for Bearing a Castor Chair, EN 423 for

Resistance to Chemicals, EN 685 for Performance Classification. The floor must withstand a distributed load of minimum 150Kg/m².

h. Internal Storage Compartments

All the internal storage compartments, surfaces and space provisions should be made to accommodate / fix the various medical life saving medical devices, trauma equipment for transportation and immobilization, medical glassware, medical disposables and consumables, fresh and dirty linens, infusion bottles, drugs, accessories, wastes, documents, records, files etc. as per requirement in the ambulances.

The storing consoles must designed keeping in consideration all the possible requirements of a medical work place. The patient compartment should be provided with storing console at the head end of the patient across the complete width of the patient compartment integrated to the partition wall of the driver cabin and patient cabin and overhead storing compartments along the roof. All storage compartments should be aesthetically and ergonomically well designed. To preclude injury in the event of an accident all cabinet will be firmly anchored / fixed to the base structure of the ambulance. Storage cabinets, drawers and kits should be easily open-able but should never ever open during transit on account of the vehicle movement. All the internal furniture should be produced with double side laminated plywood in 19mm. thickness. The inlay, supporting, auxiliary and decorative elements can be in smaller thickness as the design may require. All the exposed thickness of the substrate should be edge banded with curved trimmed pvc edge bands. All the right angle ends should be finished in curve and not sharp 90 degree corners.

All the edges / joints / exposed surfaces should be appropriately finished to ensure that there are no sharp edges of any kind to cause any accidents. Storage compartments should be divided into various sections according to the different varieties of the medical items to be stored in it. All the sliding as well as openable doors should be provided with self-locking locks.

The locks should have integrated flushed handles for firm grip to open the sliders and the doors as the case may be. All the drawers should be keyless type self locking drawers. All the vertical flap doors with opening towards the topside should be latched using adequate capacity pneumatic lifters of appropriate capacity. The pneumatic lifters should have integrated friction mechanism to keep the lid / door at the point of opening and not to push it to the highest position once left.

i. Patient Compartment Seating

All seats in the patient compartment shall conform to detailed specification as mentioned below. These will be padded and have the largest practical padded back and headrests. Padding material shall be polyester urethane foam of a medium to firm density (not less than 50gsm), with a minimum finished thickness (padding and upholstery) of 50mm. for seat pads, headrest and backrests. All padding and upholstery shall be fire retardant. The upholstery shall be non-absorbent, washable and impervious to disinfectants. The upholstery should be made from reinforced vinyl based materials with minimum 1.5mm. thickness. All seats frames, surfaces and upholstery should be designed to facilitate cleaning and disinfecting. All exposed surfaces shall be free of vent devices that would

permit the entrapment of biological contaminants. All seating positions in the patient compartment should have vertical overhead clearance for getting into the seat and coming out.

j. Doctor / EMT / Paramedic Seating

At the head end of the main patient stretcher the ambulance should have a rear mounted foldable base EMT / Doctor seat.

The seat should have two foldable armrests. When unfolded for sitting the backrest should offer a soothing angle (more than 95 degree) to the base offering optimum comfort and safety to the occupants, who sits in directions not in line with the movement of the vehicle.

The back rest (without the head rest) should be minimum 500 mm. in height. The head rest should be minimum 200mm. in height.

k. Seat Safety Belts and Anchorages

All designated seating positions in the patient compartment shall be equipped with safety restraint systems appropriate for each type of seating configuration. The seat should have an adjustable headrest and retractable seat belt. The seat should be aesthetically pleasing and ergonomically well designed. The seat base should have the largest padded backrest with contoured support for the back.

Padding should be furnished with polyester urethane foam of a medium to firm density and should be minimum 60 mm. on the base, backrest and headrest (at the thickest cross section of the head rest the headrest may be contoured to the lateral ends). Padding should provide ultimate comfort to the occupants.

The upholstery should be of leather-match vinyl / polyurethanes / leatherette, color in dark colors matching the interior color of the ambulance. The padding and upholstery should be fire retarded.

Additionally the upholstery should be non-absorbent, washable in impervious to disinfectants. The seat should be fully foldable and rear mounted providing complete clean floor below the base without any framework for fixation.

l. Squad / Attendant Seat

Additionally there should be three more seats for the squads / attendants on the co-driver side in the patient cabin. These seats should be single pivot point base mounted chairs with complete clean floor below the base without any framework for fixation.

The seats should have integrated revolving mechanism by which these can be turned from facing the patient stretcher to the front of the vehicle with a single activation of the revolving control.

This would enhance the safety of the occupants to align their position from a side way sitting to a front facing seating the ideal position in a moving ambulance. The seat should be completely foldable.

The backrest should have integrated head rest means it should be tall enough beyond the shoulder level in the sitting position. The seats should have retractable seat belts and foldable armrest.

The seats should be aesthetically pleasing and ergonomically well designed. The seat base and backrest should be padded at least 420mm wide and have the largest padded backrest with contoured support for the back. The base should be at least 370 mm. in depth.

Padding should be furnished with polyester urethane foam of a medium to firm density, identical to that of the Doctor / EMT / Paramedic. Padding should provide ultimate comfort to the occupants. The upholstery should be of leather-match vinyl / polyurethanes / leatherette, color in dark colors matching the interior color of the ambulance.

The padding and upholstery should be fire retarded. Additionally the upholstery should be non-absorbent, washable in impervious to disinfectants.

m. IV Holder For Intravenous Fluid Containers

At least two ceiling / wall mounted IV bottle holders specifically designed for firmly holding IV containers should be provided, which should include Velcro type or other identical straps to adequately secure an IV bag / bottle when the vehicle is in motion.

In ceiling mounted holders the mount should protrude too much below the internal surface of the finished ceiling level of the patient compartment thereby creating any safety hazards.

This should be placed securely around the main automatic rolling stretcher cum trolley in such way that infusion administration to any part of the body is easy.

n. Wash Basin

The internal furniture layout must include a washbasin made up of ABS / SS material or any other pvc / acrylic based composite material in an aesthetic finish.

The water tap of the washbasin should be operated with a foot / elbow switch at a convenient and safe place around the wash basin area, so that it is easy for the users to activate the switch and get water flow.

The tap should be operated using 12V DC water pump placed at the fresh water tank. The capacity of the fresh water tank as well as the waste water tank should be at least 20L.

The fresh water tank should be suitably placed in the driver cabin so that water refilling can be done easily without water spillage. Even in case there is any water spillage it should not wet the driver cabin.

The waste water tank should be mounted below the base vehicle chassis / body frame with an easy operating valve to drain the waste water at any designated place.

o. AC System

The patient compartment must be provided with an engine driven air conditioning system of adequate capacity matching to the total heat load of the patient compartment when fully occupied and the patient loaded.

The compressor should be engine mounted and engine run. All hoses should be machine crimped to avoid the leakages. AC system should be certified for passenger vehicle usage. Both the patient compartment as well as the driver cabin should be airconditioned with separate and individual digital controls.

There should be no cross ventilation / contamination / free air flow of air between the driver cabin and the patient compartment with the partition wall window closed.

p. Compressor

Displacement: Minimum 160 m³/Rev.

Cooling Capacity: Matching the cooling capacity of the driver and patient compartment.

Refrigerant: R-134a

The installation of the compressor should be done with brackets as per the requirement of the engine without any modifications to any engine components.

q. Evaporator

Cooling Capacity for Patient Compartment: Minimum 6.5 KW

Cooling Capacity for Driver Compartment: Minimum 4 KW

r. Condenser

Roof mounted condenser unit matching to the cooling capacity of the Evaporator

s. Oxygen, Main Supply and Installation.

Oxygen System

The ambulance shall have medical oxygen system capable of storing and supplying minimum two 7m³ gas capacity (equivalent to 46.7L water capacity) high pressure oxygen cylinders manufactured as per IS:7285, BIS-certified and approved by the Chief Controller of Explosives.

The facility provided should be for cylinders fitted with bull-nose 5/8" BSP RH (f) outlet valve as per IS:3224, BIS-certified. The seal should be by direct contact between the bullnose connector of the high pressure hose (from the manifold block) and the cylinder valve.

The installed medical oxygen piping and outlet system shall be leak test at 150% of the rated pressure level for the respective parts (source and distribution) of the system. After the successful completion of tests, the system shall be capped then tagged with date and signature of person and firm performing the tests.

Replacement of empty cylinders would be done from outside of the vehicle.

Oxygen piping system should be concealed and not exposed to the elements, securely supported to prevent damage, and be readily accessible for inspection and replacement, whenever needed.

A cylinder changing wrench shall be furnished. The wrench shall be chained and clipped within the oxygen cylinder compartment. The cylinders should be fastened to a loading platform, which should rigidly fix the cylinders in position ensuring that the cylinder is absolutely safe all the time it is inside the ambulance including the all the dynamic situations during the movement of the vehicle. The fastening and unfastening system to fix and release the cylinders should be easy to use and preferably single hand operation. The loading platform should have system to easily load and unload cylinders to and from the vehicle. The number of fixing points for each cylinder on the loading platform should be optimum (minimum two) as per the length of the cylinder.

The connections at the cylinder pressure level should be done using highpressure flexible hose appropriate for the rated pressure of the oxygen cylinder (150 Bar or more). The outlet of the high-pressure regulator should be connected to the terminal outlet block inside the patient compartment using low pressure flexible medical gas hoses complying and color coded specific to oxygen as per ISO 9170-1:2008. This should hose should be crimped to the connectors at both end (outlet of high-pressure regulator and inlet of terminal outlet block assembly) using crimping ferrules.

The patient compartment must have an oxygen distribution block having two oxygen outlets, connected in parallel through one common feeding port. The terminal outlets should comply with DIN-EN-ISO 9170-1:2008 standards for medical gas supplies as well as medical device directives 93/42/EEC. The outlets must have two completely distinguishable parking and operating positions. Both the parking and operating positions should have the facility of unlocking by means actuators. The terminal outlets should operate at the standard distribution pressure level corresponding to the outlet pressure of the high-pressure regulator, which is 4 - 5 bar. The terminal outlet should be in all metal (non-ferrous grade preferably brass, aluminium and stainless steel) construction, appropriately nickel or chrome plated or anodised in matt finish. It must be possible to operate the outlets in one hand for the purpose of coupling and decoupling.

t. Oxygen Pressure Regulator & Pressure Display System

The pressure regulator should be meant for reducing the cylinder pressure of the oxygen tank to the distribution pressure level suitable for feeding to the medical oxygen terminal outlets as well as other inhalation and respiratory equipments in the ambulance and should be specifically designed and manufactured for use with medical oxygen. It should

have the facility to adjust the distribution pressure level as well as the pressure relief valve for safety. Each ambulance should be provided with two nos. of pressure regulators in such a way that one acts as the duty regulator and the other as a stand-by in case of any faults to the duty regulator. Changing from one cylinder to the other should not affect the distribution pressure in any way and this change over should occur with manual operation of single valve. The inlet port of the regulator should be connected to both the cylinders in parallel using two nos. of ball valves, allowing any of the cylinders to be in line or out of line with the cylinder at any point of time without closing the individual cylinder valves.

The patient cabin must have a digital display panel for oxygen supply status display as per DIN-EN-ISO 7396-1:2000 and certified as per Medical Device Directives (93/42/EEC). The display panel should have three individual LED display windows to constantly indicate the pressure level of both the cylinders as well as the distribution pressure level. The digital displays should show the actual pressure measured by three individual digital pressure sensors as per the pressure level under monitoring (one each for both the cylinders and one for the line pressure).

The connections of the high-pressure regulator, isolation valve, high & line pressure sensors, high-pressure connecting hose from cylinder to high-pressure regulator, low-pressure hose from the outlet of the high-pressure regulator to the terminal outlet block should be connected to each other using high pressure flexible connectors. There should be no welded joints in the entire connection assembly of the oxygen distribution system.

u. Electrical System

The ambulance electrical system should be equipped with, but not limited to, the following:

- Dual, OEM's batteries.

- Generating, starting, lighting, visual and audible warning systems.

- Specified electronics equipment and devices (including master consoles located in the cab and patient compartment).

- Other specified accessory wiring.

All electrical system components and wiring should be readily accessible through access panels.

All switches, indicators, and controls should be located and installed in a manner that facilitates easy removal and servicing.

All exterior housings of lamps, switches, electronic devices, connectors, and fixtures should be corrosion resistant and weatherproof grade all preferably integrated to the exterior of the vehicle.

All electrical devices and equipment installed, including the electromagnetic coils of high current solenoids, and relays etc, which produce RFI, should include filters, suppressers, or shielding to prevent electromagnetic radiation and the resultant interference to radios and other electronic equipment.

v. Warning Indicators

The electrical system should, incorporate a warning light panel located in the driver's compartment. It shall provide indicator light as well buzzer for open patient compartment entry doors.

w. Wiring Installation

The ambulance body and accessory electrical equipment should be served by circuit(s) separate and distinct from vehicle chassis circuits.

All wiring provided by the manufacturer / supplier should be copper.

All wiring should have high temperature cross-linked polyethylene or better insulation. The use of multi conductor or ribbon cables are permitted provided they are not exposed to under hood or under vehicle temperatures/conditions.

The wiring should be permanently color coded or marked for the entire length of the wire.

Wiring should be routed in conduit or appropriate looms.

When cables are supplied by a component manufacturer to interconnect system components, these cables need not be continuously color coded/identified. They should be coded / identified at the termination or interconnection points.

All added wiring should be located in accessible, enclosed, protected locations and kept at least 150mm. away from exhaust system components.

Electrical wiring and components should not terminate in the oxygen storage compartment except for the oxygen controlled solenoid, compartment light, and switch /sensor plunger or trigger device.

Wiring necessarily passing through an oxygen compartment should be appropriately protected from damage.

All conduits, looms, and wiring should be secured to the body or frame with insulated cable straps. All apertures on the vehicle should be properly grommited for passing wiring. All items used for protecting or securing the wiring should be appropriate for the specific application and be standard automotive, aircraft, marine, or electronic hardware. Cable ties should not be used to support harnesses, but may be used for bundling purposes. Electrical panels that are accessible to accidental contact should have a protective cover, shield, etc. to prevent shorts that can result in injury, fire, or damage to the electrical system.

x. Wiring Criteria

All wiring (including grounds), devices, switches, outlets, etc., except circuit breakers, should be rated to carry at least 125% of the maximum ampere load.

A service loop of wire or harness should be provided as required at electrical components, terminals, and connection points.

All splices and terminals provided should comply with applicable standards meant for specific applications.

All terminals should be permanently numbered or coded.

Terminal strip(s) block(s), or multi-pin connector(s) should be readily accessible for checking and service.

All exterior wiring to lights or any other component should utilize sealed connectors or splices.

The ambulance electrical system should incorporate a master circuit breaker or other electronic, non-disposable, current protection devices, in each circuit, which comply with specific application. (if circuit breaker is used it should be readily accessible for resetting by the driver).

When multi-conductor cables / ribbon cables are used for low current (self limiting) circuits, additional fuses / circuit breakers are not required.

All circuit breakers should be securely mounted, easily removable, and readily accessible for inspection and service.

All electrical and electronic components, switches, connectors, circuit breakers, lamps, and indicators, including the vehicle batteries, should be marked with an easily read identification code number and / or letter.

y. Grounding

Dedicated grounds for the appliances, circuits, etc. should be furnished. The use of appliance mounting screws / hardware should not be used for grounding purposes unless specifically designed for such use by the appliance manufacturer.

Emergency Light Bar cum Public Address System

Emergency Light Bar cum Public Address System at the top of the vehicle on the front end. The layout should comprise of LED flashing lights. Each light bar should have minimum four high intensity LED flashers and a speaker in the centre.

The light bar control unit must have all the necessary control for the various components of the light bar.

It must have a microphone. The control unit should be connected to the light bar via the connecting wires all inside a master wire sleeve. It should have variable tones like Wail, Yelp, Siren, Manual etc. The operational voltage should be 12V DC.

The power consumption should be maximum 100W. All the controls should be provided on the driver's console. External Lights & Flashers There should be minimum six nos. of high intensity LED flashers in pair of red and orange on either side and rear.

On each side there should be at least one and on the rear side at least two LED white light for general lighting the area outside the ambulance in case of dark evacuations.

z. Cabin Lighting & Electrical

There should be minimum four nos. of 12V / 36W lighting elements in the patient compartment emitting white light meant for general lighting of the compartment.

The lighting fixtures should preferably be seamless in construction without much edges and joineries in the frame and diffuser. There should be three LED spot lamps along the length of the main stretcher for purpose of patient examination. There should be two 12V DC operated and minimum 6" wall mounted fans one on each side of the patient compartment.

The patient compartment should have minimum 2Nos. of 230V / 6Amp AC Sockets with switches and minimum 4 Nos. of 2\12V DC Sockets for the various medical and general equipments in the ambulance.

The driver cabin should also be supplied with 1No. 230V / 6Amp AC Socket with switch.
The driver cabin should be supplied with a FM Radio Player with two speakers.

aa. Marking of Switches, Indicators and Control Devices

All switches, indicators, and control devices supplied by the manufacturer / supplier shall be clearly visible to the driver / co-driver / doctor / EMT / paramedic / squad / attendant or anybody using the ambulance. They shall be perceptively and permanently identified with at least 12 point letters for the noun or function, and 8 point letters for the remainder of the legend. The identifications shall be contrasting colors etched or engraved in plastic or metal, or printed and laminated in see through plastic, and grouped according to function.

True sine wave inverter with SMPS Power Supply

Inverter Capacity - Minimum 600 watts / 800 VA

Waveform: TRUE SINUSOIDAL

Efficiency - 85% Minimum

Minimum 10 Meter length three core 10 mm. charging wire with male 15Amp. three pin ends to be provided.

Ab. External Charging Socket

There should be a weather protected and spring loaded external charging port with spring loaded lid.

The charging port should allow charging of the ambulance batteries from external AC source when the ambulance is stationary.

The charging port should be located near the driver door area so that the pilot is aware that the ambulance is connected to external Ac source and must be disconnected before moving the ambulance.

Ac. Standard Mandatory Miscellaneous Equipment

Each ambulance shall be equipped with, but not limited to the following:

Fire extinguishers: Two, (ABC dry chemical or carbon dioxide) minimum 1Kg. unit, in a quick release bracket, one mounted in the driver/cab compartment or in the body reachable from outside the vehicle and one in the patient compartment.

“No Smoking”, “ Oxygen Equipped” and “Fasten Seat Belts” signs: Conspicuously placed in the cab and patient compartment.

Ad. Patient Transport & Immobilization Equipments

Roll-in Patient Stretcher cum Trolley

The base frame of the stretcher cum trolley should be modelled to consent more comfortable and effective operations on the patient.

The wheels must have diameter of minimum 200 mm. and should be made from plastic tyre compound to optimise bump absorption. The backrest should be infinitely adjustable having pneumatic shock-absorbers and not with fixed point adjustments. The stretcher must have at least one intermediate position apart from the two distinct fully folded and fully unfolded position.

There should be a manually activated mechanical lock to keep the legs in completely folded position and use the trolley as a stretcher if required so under certain evacuation requirements.

The stretcher must be supplied with its own fixture to rigidly fix the stretcher to the floor of the ambulance. The fixture should be an integrated loading platform with three point anchorage activated automatically once the stretcher slides into position and all the three anchorage points deactivated by single latch when the stretcher to be released from the fixation platform.

The locking of the stretcher should be fully automatic without any manual intervention or activation of any locks or latches. The unlocking of the stretcher should be possible with one hand. The loading and unloading of the stretcher should be completely seamless and the loading wheels should not roll on the floor of the ambulance directly.

While loading the no part (including legs) should touch any part of the vehicle (like the rear entry foot step or the rear edge of the patient compartment at the floor level).

The loading platform should have an integrated foldable flap to guide the stretcher in and out of the ambulance without any part of the stretcher (including the legs) striking any part of the ambulance body including the rear footstep.

The loading platform should have integrated space in it to firmly accommodate a full body length spine board or even a scoop stretcher inside it for ergonomic storing. Once the loading is completed the foldable flap of the loading platform should be lifted and remain firmly in position not getting inadvertently opened when the vehicle is in move. This should be supported with pneumatic lifters.

The loading platform should be manufactured as an original equipment accessory by the stretcher manufacturer complying with the same standards as that of the stretcher.

The stretcher should be made from high grade aluminium and should not be more than 40Kg in weight.

The load capacity of the stretcher cum trolley should be 200 ± 10 Kg.

The physical dimensions of the stretcher should be:

Length: 200 ± 5 cms.,

Width: 59 ± 5 cms.,

Height: Adaptable to the height of the ambulance.

The stretcher must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency. The device must comply with EN 1789 standards. The device must be manufactured in an ISO 13485 certified facility.

The universal head immobiliser must ensure optimum head immobilization to trauma patients. The immobiliser must have integrated universal belts for fixation with spine boards thereby allowing transportation of patients in critical conditions during long and uncomfortable journeys as well. The immobilizer should have physiological shape supporting the brain and avoiding as much as possible further compression of cranium and completing the immobilization the rachis through the cervical collar.

The unit should comprise of two mono block shells made of a soft plastic and a base. The mono block shells should be impermeable and should avoid absorption of any organic liquid (blood, vomit, mucous) and should be free from any seams and should have optimum thick protective film. The mono block shells should not get damaged by routinely used chemical substances or solvents in the ambulance and should remain soft in varying temperature conditions. The mono block shells should be positioned on the base using wide and stable velcro system sewn to the base. Both the mono block shells must have through holes allowing inspection of the aural pavilion also permitting verification of any loss of blood or liquids. The holes also generously accommodate the aural pavilion there by allowing the rescuer to communicate with the patient. The base should be able to accommodate two types of mono blocks for adult and pediatric patients by just removing an additional cushion in the centre of the base.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency. The device must be manufactured in an ISO 13485 certified facility.

The spine board should be extremely rugged in construction and should be built from high quality material thereby avoiding splintering and cracking.

The surface should be impervious to body fluids and secretions and should be completely seamless to eliminate ingress of fluid. It should have a firm surface for CPR & immobilization.

It should have compact dimensions for easy maneuvering and should have provision for cervical collars or head immobilizers. It should have easy underside allowing easy lifting access. It should be x-ray translucent.

The weight of the spine board should not be more than 10 Kgs.

The load capacity of the spine board should be 180 ± 10 Kg.

The physical dimensions of the spine board should be: Length: 180 ± 5 cms.,

Width: 40 ± 5 cms., Height: 5 ± 0.5 cms.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency. The device must be manufactured in an ISO 13485 certified facility.

Ae. Universal Head Immobiliser

Spine Board.

Scoop Stretcher

The stretcher should be designed allowing coupling and uncoupling of any of the ends and gently scoop up the patient using the two scoops of the stretcher.

The stretcher should be telescopic to accommodate the tallest patient and should be folded for compact storage. The frame should be made of high quality anodized aluminum and blades should be made up of extruded aluminum.

The scooping blades should be fixed with aluminum frame by interposition of alloy fusions. It should have an integrated handle to select the length of the distal part of the stretcher. The scoop stretcher should be easily foldable in one swift movement.

It should have easy locking and unlocking nylon restraint belts to fix the patient to the stretcher. The fixture should have two points of holding the stretcher but only one point of fastening. The fastening point should have a locking system operated by single hand with lockable twist with locking arrangement to protect any inadvertent use.

The stretcher must be supplied with an ambulance mount manufactured as an original accessory by the manufacturer to rigidly fix the stretcher in folded condition to the wall of the ambulance in vertical position.

The weight of the stretcher should not be more than 10 Kgs.

The load capacity of the stretcher should be 180 ± 10 Kg.

The physical dimensions of the stretcher should be: Maximum Unfolded

Dimension: Length: 220 ± 5 cms., Width: 44 ± 5 cms., Height: 6 ± 0.5 cms.

Maximum Folded Dimension: Length: 170 ± 5 cms., Width: 44 ± 5 cms., Height: 6 ± 0.5 cms.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device must be manufactured in an ISO 13485 certified facility.

Evacuation Chair

Evacuation Chair should be made from aluminium alloy with built-in pull through handles for easy handling.

The chair should have four wheels out of which two should be fixed and two should be pivoting type.

The evacuation chair should be mounted to the rear door (on the co-driver side).

The weight of the stretcher should not be more than 12 Kgs.

The load capacity of the wheel chair should be 150 ± 10 Kg.

The physical dimensions of the wheel chair should be:

Height: 90 ± 5 cms., Width: 50 ± 5 cms., Depth: 20 ± 1 cms.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device must be manufactured in an ISO 13485 certified facility.

Af. Resuscitation & Airway Management Equipments

Oxygen Flowmeter

The oxygen flow-meter should be fully compatible to the oxygen terminal outlets. These must be direct mounted and operated by oxygen supply inside the ambulance.

The oxygen outlet should have integrated outlet probes complying with DIN-13260-2 made up of stainless steel and manufactured as an original OE either by the terminal

outlet manufacturer or the oxygen flow meter manufacturer. Any other third party manufactured probe won't be accepted.

The flow tube should be calibrated in the range of 0 to 15 litres per minute. The flow tube must be calibrated in dual scale thereby allowing precision settings in low flow ranges as well. The ultra accurate flow tubes must have extra accuracy in low flow ranges there by ensuring high clinical efficiency to the end users.

The tubes should have accuracy not exceeding ± 0.05 LPM for flow in the range of 1 LPM. The Flow-meter body should be made of high quality chrome plated brass. Both the inner and outer tubes should be made from special clear and impact resistant high-grade polycarbonate.

The float be made up of stainless steel and should rest on chrome plated solid brass, vitone rubber and plastic. The humidifier must ensure moderate relative humidity to the breathing oxygen.

Bubble humidifier with porous diffuser should be designed to increase the humidity level with minimal noise.

The humidifier should be reusable and auto-clavable till 130 degree C and made of Polycarbonate.

The scope of supply should include insufflation kits and nasal prongs.

The body of the flowmeter should have a flow selector switch to bypass the flow of the oxygen through the humidifier and allow nebulization to the patient directly using the flow of the oxygen. Once the process of administering nebulizer is complete the flow selector switch can be set back to standard oxygenation.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device must comply to the latest international standard ISO 15002:2008.

The device must be manufactured in an ISO 13485 certified facility.

Suction Aspirator

An electrically powered portable suction unit of highly rugged and modern design should be provided. It should be very compact, handy and housed in ergonomically designed ABS casing. The unit must have integrated oil free no maintenance piston pump ensuring high level of functionality and dependability as a professional suction unit.

The suction capacity of the pump should be minimum 30 LPM. The on / off switch should be water resistant. The unit should be equipped with a vacuum gauge to show the vacuum level.

The vacuum level should be adjustable from 0 to 630 mm. of Hg by means of a rotary control knob on the front panel of the machine, easily accessible by the Doctor / EMT /Paramedic.

The unit should be supplied with a 1000 ml. polycarbonate collection jar auto-clavable at 121°C with overflow safety valve that, during operation, there by preventing any liquid or secretion from reaching and damaging the vacuum pump.

The device must have integrated built-in lead batteries allowing minimum 1hour autonomous operation. The unit should be able to work on 12V DC and 240V AC.

The total weight of the unit should not be more than 5 Kg. The scope of supply must include bacteria filter and suction hose.

The unit should be supplied with its own wall fixture to rigidly fix the unit to the ambulance wall. The fixture should be manufactured as an original equipment accessory by the manufacturer.

The device must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device should be certified for application in an ambulance and the ambulance wall mount for the device must be EN1789 compliant.

The device as well as the wall mount must be manufactured in an ISO 13485 certified facility.

Intubation Kit

The contents of the kit should include the following:

Laryngoscope Handle (Minimum 28mm. Diameter) - 1No.

Made from Chrome Plated Brass

Stainless Steel Fibre Optic Macintosh Blades (One each of size: 1, 2, 3 & 4) - 1 Set

The laryngoscope and the blades must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device as well as the wall mount must be manufactured in an ISO 13485 certified facility.

Guedel airway set (0,1,2,3,4) - 1 No.

Endotracheal Tube set (6,7,8,9) - 1 No.

Adhesive Tape - 1 No.

Emergency Kit

The contents of the kit should include the following:

Sphygmomanometer with Adult & Paediatric Cuff Stethoscope

Portable Oxygen Bottle 1L with Pressure Reducer and Connecting

Tube

Resuscitator Bag with Mask (1 Adult, 1 Paediatric)

Adult Resuscitator with capacity of 1600 ml. & Paediatric Resuscitator with capacity of 500 ml. respectively

Should be CE or its equivalent certified

Components made from Latex free Silicone material

Should be Non-Toxic & Non-Allergic

Easy to disassemble/assemble for efficient cleaning

Autoclave-able

Should have reservoir bag and transparent face mask

Should have intake valve with oxygen connector & an additional connector to connect to reservoir bag

Should also be decontaminated by ETO sterilization or cold sterilization

Should have transparent, low resistance, non-rebreathing valve without any forward or backward leaks

Should have pressure relief device

Should have a standard 15mm. / 22mm. (ID/OD) at the patient end which connects to all standard masks & 15mm E/T Tube connectors

Should have quick and uniform bag re-expansion
 Should allow use in spontaneously breathing patients
 Should allow effective IPPV

Portable Manual Suction Device

Should be independent of any power source and should be able to develop 500mm. of Hg of vacuum and 25 LPM of suction flow rate.

Should be simple to operate by foot, hand or knee to clear patient's airways safely and efficiently, anytime, anywhere.

All components should be easily accessible and should be remove-able, for cleaning and replacing.

Should be completely autoclave-able

The device should be complete with aspiration pump, suction vessel and over spill protection

Physical Dimensions should not exceed:

Length: 220±5 mm., Width: 170±5 mm., Height: 110±5 mm.

The weight should not exceed 1.5±0.1 kg.

Magill Forceps

Universal scissor

Non-rebreathing Mask - Adult & Paediatric (1 Each)

Low Resistance Check valve to prevent the re-breathing through the mask

Should be CE or its equivalent certified

Should Allow exhaled gases to escape

Latex Free , Odorless, Transparent Vinyl

Adjustable elastic band

With 1.5 Lt Reservoir bag

Tubing : 7 ft length

Tongue forceps

Tourniquet

Plastic penlight

Digital Thermometer

Tongue Depressor

Medical Equipments for Advance Life care Support Ambulance:

Ag. Cardiac Defibrillator cum Patient Monitor

The device should be a combined device with:

Therapy Unit for Defibrillation and Non-invasive Pacing

Monitor Unit for ECG, SpO2, Non-invasive Blood Pressure, End Tidal Carbon Dioxide

The device must be supplied with its ambulance wall mount as an original accessory manufactured and certified by the manufacturer. The ambulance mount should have built-in charger to automatically charge the internal battery of the device when the device is mounted on it. It should be portable and lightweight - Weight should not exceed 8 (with battery)

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device with the ambulance mount must comply with EN 1789 standards. The device must be certified against Environmental Conditions, Operational Shocks, Crash Safety Category as per RTCA/DO-160F Standard.

It should have a minimum 8 inch diagonal colour monitor with bright displays visible from any angle and in most lighting conditions.

The monitor should be able to display at least up to 6 traces simultaneously.

The device should also be certified as minimum IP X4 for waterproof & IP 5X for dust proof as per IEC 60529.

E.C.G

E.C.G. pick up from paddles, pads and leads

Multiple lead ECG monitoring

Facility of 12-lead ECG

Facility for arrhythmia detection of at least the peri-arrest rhythm disturbances

ST segment analysis

Generates audio-visual alarms for arrhythmia and set parameter

Lead off detection

Defibrillator

Should be both Manual and AED

Changeover from AED to manual by switching the knob or pressing the button

Biphasic wave form with full impedance compensation

Should be able to Defibrillate using either paddles or pads

Selection level of energy from minimum 2 joule up to 200 Joules

Energy selection and Charging possible from the front panel of the device and from the paddles

Should be able to charge to its highest energy level in less than 10 seconds.

User friendly method of delivering shock Specified buttons on the equipment with clear indications of steps of defibrillation

Should have capability to assess paddle-to-patient contact and to make compensation to the selected deliverable shock

On synchronized mode "SYNC" message should be flashed on the screen.

AED Mode

Usable for 8 years to adult age group

Energy Output: Biphasic with energy output conforming to the latest international guidelines

Charge Time less than 10 seconds

Analysis Time less than 15 seconds

Loud and clear Audible Prompts to guide through the steps of CPR as well

Clearly visible Visual Prompts

Easy to understand and operate controls

Low Battery Indicator

Battery Capacity: At least 100 discharges for use in adults

Transcutaneous (Non-invasive) Pacing

Demand and Fixed modes

Adjustable rate and output (mA)

Pulse Oximetry

Should have separate displays for SpO₂, Pulse rate and Plethysmographic waveform

Should have bar graph displays for Pulse Amplitude and Perfusion quality indication

Should have a variable audible tone that varies in pitch with rise and fall of oxygen saturation

Should have on screen display of SpO₂ and Pulse Alarm limits readings

Should have audible & visual alarm for low/high pulse rate and saturation

Functioning and accuracy should be Low perfusion tolerant

Sensor Probe should be reusable

User selectable alarm limits

Non Invasive Blood Pressure

Display of systolic, diastolic and mean arterial pressures

Capable of making continuous, manual and interval measurements

Alarm Limits: Selectable alarm limits.

End Tidal Carbon Dioxide

End Tidal Carbon Dioxide Monitoring using Main Stream Technology

Capable of monitoring both intubated and non-intubated patients.

Configurable digital display and waveform display as required.

Rechargeable

Capable of minimum 4 hours of monitoring and giving up to minimum 100 energy shocks at the highest level.

Low battery and charging indicator should be there.

Should be capable of delivering DC shock with AC plugged in even if battery is fully discharged.

Minimum 100mm. wide integrated strip chart printer.

Prints the primary ECG lead with event annotations and event summary reports, including ECG rhythm strips and 12-lead ECG reports.

Should print measurements in real-time.

Ah. Communication

Facility for Wireless data transfer via integrated GSM modem to computer and central console / receiving hospital.

Ai. Transport Ventilator

Time-cycled, volume controlled and pressure limited emergency ventilator for the controlled ventilation of patients.

Compact dimension of the ventilator should not exceed 225x100x225 mm. (WxHxD) and the weight not exceeding 3.2 Kg. maximum.

The ventilator must have integrated handle for lifting and carrying by hands as well as quick latching to all common rail and pole profiles.

Ventilation Mode: IPPV / CMV

Ventilation Frequency: 4 to 54 per minute

Minute Volume: 3 to 20 LPM

I:E Ratio: 1:1.5 Fixed. Maximum

Airway pressure: 25 to 60 mbar

Oxygen Concentration: Approx 60% in Air Mix and 100% in No Air Mix Modes.

Gas consumption of control: Not exceeding 1 LPM

Pressure Gauge Display: -10 to 80 mbar.

Both audible and visual alarms for Supply Pressure Low, Airway Pressure High and Airway Pressure Low.

The device should be supplied with the ambulance mount complying to the same standard as the ventilator as well as manufactured as an OE by the manufacturer not any retrofit item from any other sources.

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency. The ventilator must be vibration tested and certified as per MIL STD 810 F standard. The device must comply with EN 1789 standards.

The device must be manufactured in an ISO 13485 certified facility.

Aj. Syringe Infusion Pump

Should be of continuous mode operation.

Must have programmable flow rate from 0.1 to 500 ml/hr.

Should accept standard disposable syringes.

Selectable occlusion pressure trigger level from 100 mm hg to 900 mm hg to allow user a range of application.

Comprehensive alarm package including alarm pressure, pre alarm, end of infusion, low battery, near empty alarm, syringe disengaged alarm etc.

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device must be manufactured in an ISO 13485 certified facility.

Ak. Refrigerator

Compressor: 12V or 24V compressor

Usable capacity: 50 Liters

(L X B X H) : 21.5" X 19.5" X 18.0"

Electricity: DC 12V, 3A @ evaporating temp of -25°C

Refrigerant: HFC-134a

Chiller temperature: + 3

Insulation: 1 inch polyurethane foam @ 36kg/m³

External walls: coated steel cabinet

Internal walls: Plastic

Weight: (approx.) 10-15 kg

AC DC operated.

PEN136**Pendant System**

1. Supply and install a medium-duty ceiling-mounted equipment service column to provide the platform for creating optimal workplace in all designated areas.
2. The units shall be CE marked and/or FDA approved.
3. The units shall comply with HTM 08-03 and BS 11197:2009 (unless otherwise requested by the Client/Project Designer).
4. The unit shall be supplied with British Standard medical gas terminal units and shall meet the requirements of "HTM 02-01".
5. Medical gas terminal units shall meet the requirements of BS 5682:1998 standard (unless otherwise requested by the client).
6. Electrical sockets, and Data point outlets, shall meet the requirements of HTM 06-01 and be supplied to conform to Country regulations and Project requirements (unless otherwise requested by the Client/Designer).
7. For extra low voltage provisions such as "Nurse Call" components; the Supplier shall be provided with pull wires to allow Nurse Call Contractors run their wiring smoothly through the system.
8. Low voltage wires, extra low voltage wires and medical gases pipelines must be segregated in separate raceways/compartments within the service column unit.
9. The complete Service Column shall be factory assembled to include all mechanical, medical gases, data points, and electrical components and outlets; pre-piped, pre-wired, factory tested and delivered to site with terminal connections for each service and each circuit. To this effect, a certificate from manufacturer, dully stamped, shall be submitted with the offer.
10. Samples and Manufacturers' technical data sheets of each type of included components must meet Project requirements and shall be submitted to the Client/"Medical Consultant" for review and final approval.
11. All wiring shall be marked, color coded and tie wrapped to facilitate easy circuit identification.
12. All surfaces and exposed components of the Service Column shall be resistant to corrosion and disinfectants materials.
13. Arms shall have appropriate lengths to ensure efficient accessibility during surgical procedures. Column/carrier length shall be tailored to accommodate the number of services outlets, shelves, rails, provision, etc...
14. The unit shall consist of a ceiling-mounted interface, a ceiling hood, one vertical column "Wet" side, (two-section arm), with a minimum of 1500mm overall length and one height adjustable column "Dry" side, (two- section arm), with a minimum length of 1500mm to accommodate the ventilator unit, the physiological monitor and all designated devices as per the room schedule and approved drawings.
15. It shall include a dual braking system that combines air and (friction or electrical brakes). Air for brakes shall have a dedicated circuit and NIST connection to Air supply. A flow limiting device and non-return valve shall be incorporated.
16. The outlets shall be ergonomically spaced so that they can comfortably carry items such as oxygen regulators with humidifiers and suction regulators with suction jars without clashing or obstructing other services.

17. All outlets, connectors, provisions, equipotential bonding, as required by the Project, are deemed to be supplied and coordinated with all appointed Contractors (MEP, IT, Nurse Call, etc...) in order to provide a final product that meets Project requirements and that shall accommodate and service all designated ancillaries, fixtures, components and any attachments as per the room schedule.
18. Length of the columns shall be tailored to accommodate the number of services outlets, shelves, rails, etc. Supplier shall refer to room schedule and the relevant design drawings for the type and number of outlets, provisions, and services designated on this service column.
19. The design shall allow for retrofitting of additional shelves, rails, etc., should the need arise in the future.
20. Arms and columns configurations shall be coordinated with the Client and the Suppliers of the ventilator, the infusion pumps, physiological monitor system, etc...
21. Arms shall have a swiveling range of approximately 330° and shall be absolutely steady at any set parking position. However, swivel range shall be adjusted on site to meet the actual operating requirements.
22. Columns axial rotating range: a minimum of 300°
23. Arms and column shall be made of high quality Aluminum materials.
24. All required attachments, wiring, brackets, etc... are deemed to be the responsibility of the Supplier.
25. The column system (Wet side) shall feature the following:
 - A double articulating arms of total minimum length (1500 mm), mounted on a central interface fixed to the ceiling.
 - Shall be configured to carry infusion and syringe pumps (not less than 12 fixed infusion pumps) on stainless steel frame with sufficient IV poles and all related attachments.
26. The height adjustable column system (Dry Side) shall feature the following:
 - Motor driven height adjustment.
 - Height adjustable range: Minimum of 500 mm.
 - It shall have a heavy carrying capability to carry a complete ventilator system with all its attachments as well as the physiological monitor and any other designated equipment as per the loaded drawing. It shall feature a locking-in mechanism to safely lock the Ventilator in place.
 - A double articulating arms of total minimum length (1500 mm), mounted on a central interface fixed to the ceiling.
 - The lower arm (holding the supply system) shall be height-adjustable. It shall allow vertical movement (electrical height adjustment) to meet the working conditions.
 - The following accessories shall be included:
 - Separate arms, brackets, rails, minimum 4 shelves to carry all equipment intended to be attached to this column. This may include, but not limited to, ventilator system, physiological monitor, and other mounted equipment, wherever applicable.

- The column system shall include a swivel articulating arm to carry the physiological monitoring unit. The monitor shall be connected to the central station, therefore, all required adaptors, cables, network points, electrical points shall be easily accessible for proper interface of the physiological monitors.
 - Side handles and at least two side rails.
27. The Supplier/Contractor is deemed responsible to comply with the following:
- Supplier shall supply and install ALL required components to connect the service column to main electromechanical services, including electrical junction boxes, connections for medical gases (copper inlet pipes with male and female NIST connections)...etc.

PHTLIG Phototherapy Unit

1. Shall be a fiber optic photo-therapy system consisting of a fiber optic light source, a flexible fiber optic cable and a transparent plastic pad.
2. The unit is used to treat hyper bilirubinemia
3. Smart software system
4. Temperature regulation and stable environment with integrated fan groups and Thermo elevation System
5. Reduction on treatment time
6. Rapid reduction in serum bilirubin levels
7. No need for blood transfusion
8. Skin temperature measurement with skin probe
9. Ambient temperature measurement with cabin probe
10. Electrical elevation of the upper couple on a push of a button
11. Adjustable treatment time 1-99 hours and automatic therapy ending
12. Continuous display of treatment time and lamp usage time
13. 100% sliding out bed for easy access to the infant
14. Ergonomic design
15. Side windows for total supervision
16. Safety system against worn out hammock
17. Monitor Shelf, 1 drawer
18. IV Pole
19. Fluorescent Tubes - 16 Nos.

PRI021 PRINTER, LABEL/SLIDE

1. Slide printer for fast, high-resolution 1-D and 2-D printing at 360 dpi
2. Prints bar codes, graphics, and alphanumeric characters
3. Uses reagent-resistant, smudge-proof ink
4. Offers intelligent unloading of slide and cassette trays
5. Handles most existing numbering formats to provide extensive printing customization
6. Equipped with large capacity magazines that manage colors automatically
7. Prints up to 950 slides per hour
8. Has capacity for 450 slides
9. Manages up to 3 different slide colors at one time
10. Handles most slide types
11. The software shall allow users to customize printing formats to their specific needs using reagent-resistant ink for printing to remain smudge-free.
12. Intelligent tray unloading and an on-board reserve of slides.
13. Printer to include Windows-driven operating platform to interface with the existing
14. Windows or laboratory information systems

PRI023 PRINTER, cassette

1. High-quality cassette printer for use in the pathology department
2. The printer shall allow users to customize printing formats to their specific needs and to operate as a on-demand or batch printer
3. Easy-to-read 2D barcodes and text
4. The printer shall use permanent black type ink, resistant to chemical exposure and physical wear
5. Small footprint allows printer to fit at the grossing station
6. Automatic printing of cassettes by scan barcodes
7. LIS connectivity
8. High speed and throughput with automated collection system
9. Barcode scanner and LCD monitor to be included

PRNCEN CENTRAL PRINTER FOR MRI, CT**Laser Imager and Printer**

Laser imaging technology, tabletop printing convenience and built-in mammography capabilities. Able to handle full range of applications:

- Computed Radiology (CR)
- Digital Radiography (DR)
- Magnetic Resonance Imaging (MRI)
- Computed Tomography (CT)
- Ultrasound, CR and Full-Field Digital Mammography

High-Quality Laser Imaging

- High-resolution laser imaging at 508 pixels per inch
- Automatic Image Quality Control calibrates film and imager settings to user preferences
- DRYVIEW Daylight Load Cartridges to allow users to load film quickly and easily in normal lighting conditions
- Innovative film loading designable two sizes available on demand
- Technology should not use thermal print heads, therefore requiring no daily or weekly maintenance on print heads or film transport rollers
- A built in Web portal should allow users to view imager status and performance data from any workstation on network

Built-in Mammography Capabilities

- No hardware or software upgrades needed to print high-quality, high-resolution images from Full Field Digital Mammography (FFDM) and CR-Mammography systems
- Mammography optimized capabilities should include user-selectable test patterns and key control charting parameters and values

Technology

- Photothermographic (dry laser)

DRYVIEW laser imaging quality

- True laser technology
- 508 laser pixels per inch

- 50 micron laser spot spacing
- 14-bit pixel depth architecture

Throughput

- Time to first print: 100 seconds
- Up to 70 films per hour: 14 x 17 in. (35 x 43 cm)
- Up to 110 films per hour: 8 x 10 in. (20 x 25 cm)

Dimensions

- Height: 26.2 in. (66.6 cm)
- Width: 24.6 in. (62.6 cm)
- Depth: 25.5 in. (64.9 cm)
- Weight: 175 lbs. (79 kg)

Operating Environment

- Temperature: 59 to 91°F (15 to 33°C)
- Humidity: 20 to 80% RH, non-condensing
- Magnetic field: < 50 Gauss
- Altitude: -100 to 9,800 ft (-30 to 3,000 m)

DRYVIEW Laser Imaging Film

- Blue or clear 7-mil polyester base
- Daylight-load film packaging (125 sheets)
- Lifetime (100+ years) film archivability for demanding applications (oncology, mammography, pediatrics, etc.)

DRYVIEW Mammography Laser Imaging Film

- Daylight-load film packaging (125 sheets)
- Lifetime (100+) years film archivability
- Enables higher Dmax images
- 3.6 Dmax with DVM film
- 4.0 Dmax with DVM+ film

Choice of film sizes

- The DRYVIEW 5950 Laser Imager should support the following film sizes:
 - o 14 x 17 in. (35 x 43 cm)
 - o 14 x 14 in. (35 x 35 cm)
 - o 11 x 14 in. (28 x 35 cm)
 - o 10 x 12 in. (25 x 30 cm)
 - o 8 x 10 in. (20 x 25 cm)

Automatic Image Quality Control (AIQC)

- No manual start-up or film calibration procedures
- Should ensure consistency from film to film
- Automatic with no manual user intervention

Power

- 90–130 VAC; 50/60 Hz; maximum 9 amps
- 180–264 VAC; 50/60 Hz; maximum 4.5 amps

Network Connectivity

- Integrated DICOM interface supports printing from DICOM modalities
- Built in with no separate DICOM server

Network Connection

- 10/100/1000 Base-T Ethernet connection to imager

Network connection via CAT5 UTP cable terminating in an RJ-45 plug

To be supplied with a minimum 500 total film quantity in varying sizes for startup and initial running.

PSA001**Sea Ambulance**

Length: 10 - 11 m Draft: 0.5 – 1 m Beam: 3 – 4 m Capacity: 13 - 15 Persons, (Crew: 3 navigations + 2 medical, Patients: 2 laying, 10 maximum) Speed: 30 – 40kn Engine Type: Outboard Engine Capacity: 2*250hp Fuel Tank: 700 – 800 ltr	Deck and cabin Structure in Fiber glass for nautical environment. Medical area for patient treatment separated from cabin Special equipment for medical rescue and resuscitation. Shock absorbing stretcher Shock absorbing seats for pilot, crew and health worker Storage cabinet for medical equipment Foldable ramp for loading of terrestrial stretchers Tempered glass on the entire cabin Navigation Lights/mooring light kit Courtesy Light (stern) for patient loading area Stainless steel bollard 1 Rear access door weather proof 1 service door for co-pilot side Magnetic Compass VHF Radio Radar and GPS Plotter Fire Extinguisher	Portable Oxygen System consisting of two “M” oxygen cylinder with regulators, humidifiers, two oxygen masks and tubes. Flex Roll in chair Back Board with head immobilizer IV Hooks on the ceiling above patient area x2 Stethoscope for Adult and pediatric One Piece Cervical Collar First Aid Kit Portable Suction Unit Laryngoscope handle kit including handle, bulbs, battery and 3 Macintosh spare blades Blood Pressure Apparatus SS Toiletries (male and female urinal, Bed Pan, Kidney dish and Vomit Bowl) Heartstart FRX Defibrillator Vital Sign Monitor Nebulizer 100 Watt Electronic SIREN <i>Boscarol brand or equivalent</i>
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Medical Equipments for Advance Life care Support Ambulance:**1. Cardiac Defibrillator cum Patient Monitor**

The device should be a combined device with:

Therapy Unit for Defibrillation and Non-invasive Pacing

Monitor Unit for ECG, SpO2, Non-invasive Blood Pressure, End Tidal Carbon Dioxide

The device must be supplied with its ambulance wall mount as an original accessory manufactured and certified by the manufacturer. The ambulance mount should have built-in charger to automatically charge the internal battery of the device when the device is mounted on it. It should be portable and lightweight - Weight should not exceed 8 (with battery)

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device with the ambulance mount must comply with EN 1789 standards. The device must be certified against Environmental Conditions, Operational Shocks, Crash Safety Category as per RTCA/DO-160F Standard.

It should have a minimum 8 inch diagonal colour monitor with bright displays visible from any angle and in most lighting conditions.

The monitor should be able to display at least up to 6 traces simultaneously.

The device should also be certified as minimum IP X4 for waterproof & IP 5X for dust proof as per IEC 60529.

E.C.G

E.C.G. pick up from paddles, pads and leads

Multiple lead ECG monitoring

Facility of 12-lead ECG

Facility for arrhythmia detection of at least the peri-arrest rhythm disturbances

ST segment analysis

Generates audio-visual alarms for arrhythmia and set parameter

Lead off detection

Defibrillator

Should be both Manual and AED

Changeover from AED to manual by switching the knob or pressing the button

Biphasic wave form with full impedance compensation

Should be able to Defibrillate using either paddles or pads

Selection level of energy from minimum 2 joule up to 200 Joules

Energy selection and Charging possible from the front panel of the device and from the paddles

Should be able to charge to its highest energy level in less than 10 seconds.

User friendly method of delivering shock Specified buttons on the equipment with clear indications of steps of defibrillation

Should have capability to assess paddle-to-patient contact and to make compensation to the selected deliverable shock

On synchronized mode "SYNC" message should be flashed on the screen.

AED Mode

Usable for 8 years to adult age group

Energy Output: Biphasic with energy output conforming to the latest international guidelines

Charge Time less than 10 seconds

Analysis Time less than 15 seconds

Loud and clear Audible Prompts to guide through the steps of CPR as well

Clearly visible Visual Prompts

Easy to understand and operate controls

Low Battery Indicator

Battery Capacity: At least 100 discharges for use in adults

Transcutaneous (Non-invasive) Pacing

Demand and Fixed modes
Adjustable rate and output (mA)

Pulse Oximetry

Should have separate displays for SpO₂, Pulse rate and Plethysmographic waveform
Should have bar graph displays for Pulse Amplitude and Perfusion quality indication
Should have a variable audible tone that varies in pitch with rise and fall of oxygen saturation
Should have on screen display of SpO₂ and Pulse Alarm limits readings
Should have audible & visual alarm for low/high pulse rate and saturation
Functioning and accuracy should be Low perfusion tolerant
Sensor Probe should be reusable
User selectable alarm limits

Non Invasive Blood Pressure

Display of systolic, diastolic and mean arterial pressures
Capable of making continuous, manual and interval measurements
Alarm Limits: Selectable alarm limits.

End Tidal Carbon Dioxide

End Tidal Carbon Dioxide Monitoring using Main Stream Technology
Capable of monitoring both intubated and non-intubated patients.
Configurable digital display and waveform display as required.
Rechargeable
Capable of minimum 4 hours of monitoring and giving up to minimum 100 energy shocks at the highest level.
Low battery and charging indicator should be there.
Should be capable of delivering DC shock with AC plugged in even if battery is fully discharged.
Minimum 100mm. wide integrated strip chart printer.
Prints the primary ECG lead with event annotations and event summary reports, including ECG rhythm strips and 12-lead ECG reports.
Should print measurements in real-time.

2. Communication

Facility for Wireless data transfer via integrated GSM modem to computer and central console / receiving hospital.

3. Transport Ventilator

Time-cycled, volume controlled and pressure limited emergency ventilator for the controlled ventilation of patients.
Compact dimension of the ventilator should not exceed 225x100x225 mm. (WxHxD) and the weight not exceeding 3.2 Kg. maximum.
The ventilator must have integrated handle for lifting and carrying by hands as well as quick latching to all common rail and pole profiles.
Ventilation Mode: IPPV / CMV
Ventilation Frequency: 4 to 54 per minute
Minute Volume: 3 to 20 LPM
I:E Ratio: 1:1.5 Fixed. Maximum
Airway pressure: 25 to 60 mbar
Oxygen Concentration: Approx 60% in Air Mix and 100% in No Air Mix Modes.
Gas consumption of control: Not exceeding 1 LPM
Pressure Gauge Display: -10 to 80 mbar.

Both audible and visual alarms for Supply Pressure Low, Airway Pressure High and Airway Pressure Low.

The device should be supplied with the ambulance mount complying to the same standard as the ventilator as well as manufactured as an OE by the manufacturer not any retrofit item from any other sources.

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency. The ventilator must be vibration tested and certified as per MIL STD 810 F standard. The device must comply with EN 1789 standards.

The device must be manufactured in an ISO 13485 certified facility.

4. Syringe Infusion Pump

Should be of continuous mode operation.

Must have programmable flow rate from 0.1 to 500 ml/hr.

Should accept standard disposable syringes.

Selectable occlusion pressure trigger level from 100 mm hg to 900 mm hg to allow user a range of application.

Comprehensive alarm package including alarm pressure, pre alarm, end of infusion, low battery, near empty alarm, syringe disengaged alarm etc.

The device with the ambulance mount and all the accessories must comply with Medical Device Directives (93/42/EEC) having the CE mark along with the four-digit code from the certifying agency.

The device must be manufactured in an ISO 13485 certified facility.

5. Refrigerator

Compressor: 12V or 24V compressor

Usable capacity: 50 Liters

(L X B X H) : 21.5" X 19.5" X 18.0"

Electricity: DC 12V, 3A @ evaporating temp of -25°C

Refrigerant: HFC-134a

Chiller temperature: + 3

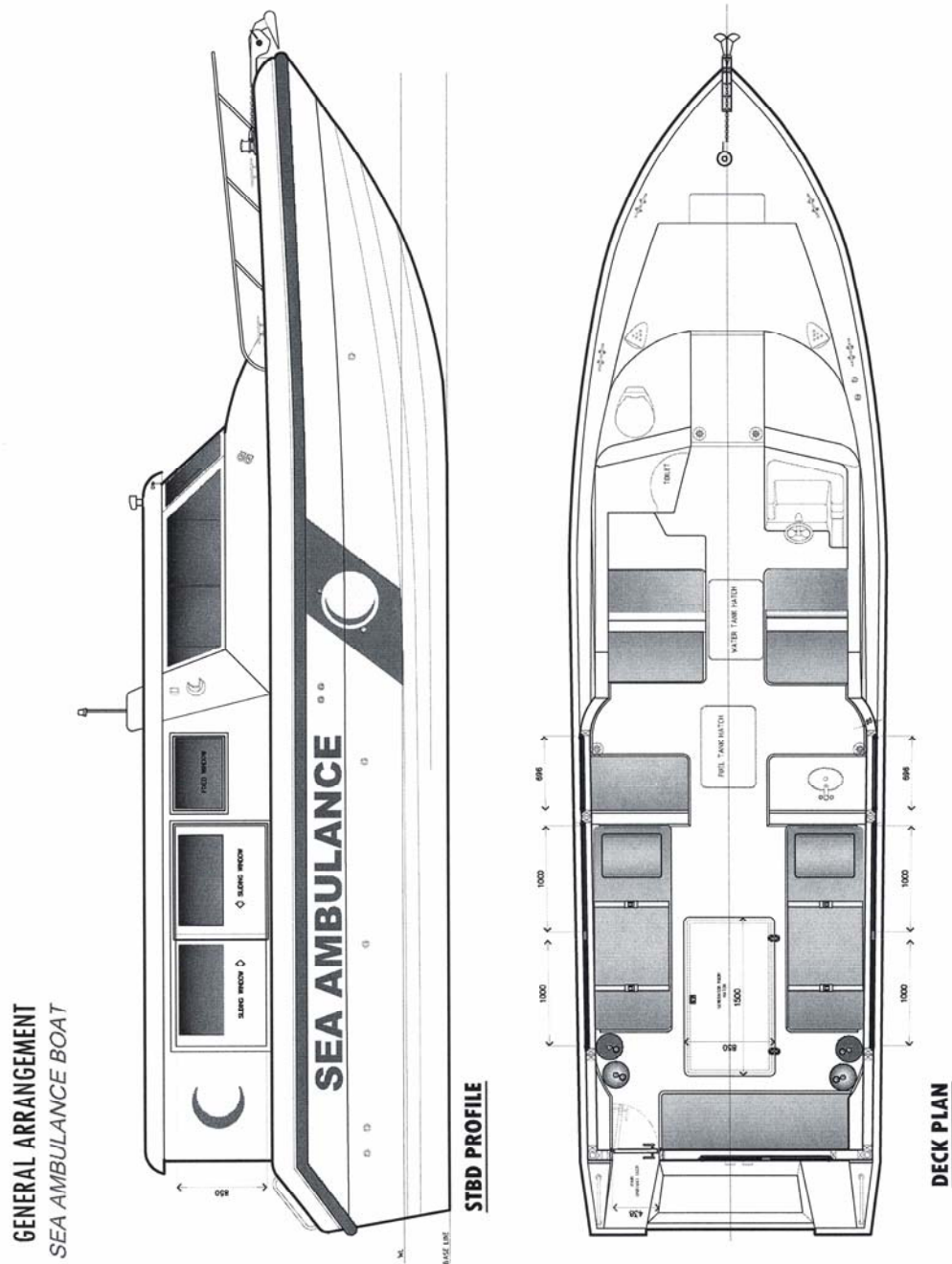
Insulation: 1 inch polyurethane foam @ 36kg/m³

External walls: coated steel cabinet

Internal walls: Plastic

Weight: (approx.) 10-15 kg

AC DC operated.



PTTWRM Patient Warmer

The Patient Warming System combines more effective thermal transfer with simplicity of use making it superior to other methods currently available

Features

1. Ultimate convenience
 - Compact control unit fits on anaesthetic trolley or drip stand
 - Lightweight and X-ray translucent
 - Completely silent operation-performance without the distraction of noise pollution
2. Unhindered access to patient
 - Fits under patient with no warming of surrounding environment or surgical team
 - Integrated pressure relief
3. Significant cost reduction and management
 - No disposables, no leaks, very low maintenance
 - Warm any number of patients at no extra cost
 - Better overall outcomes and shorter post-operative stays
4. Safe & robust
 - Low voltage operation for reduced operating costs
 - Durable, latex-free cover
5. Mattresses are particularly suited to use in the operating room and the pre-operative period. These give the most efficient heat transfer and are completely unobtrusive, being under the patient.
6. Blankets can be used in conjunction but are typically used in the recovery room (PACU) and other situations where it is not practical to place a mattress under the patient.
7. The advanced unit is mains powered, with options to add integrated battery and DC power input. The optional battery will power the mattress for at least an hour, and is automatically re-charged when the unit is connected to mains power. The DC power input can be run from any supply between 12 V dc and 28 V dc.
8. Mattresses and blankets are available to suit the full range of surgical procedures.
9. The patient warming range is also well suited for use in the recovery area, intensive care unit and during the pre-operative period.
10. The compact, lightweight design, combined with battery operation or DC power input make it a perfect solution for transport or patient transfers.

Technical Specifications

- Mattress Construction:
 - flexible polymer heating sheet, with pressure relief pad under and 305 g.m expanded polyester comfort lining over
 - Encapsulated in latex-free, nylon fabric cover, with non-microporous polyurethane coating, fully sealed with RF welded seams

- In-built temperature sensor and over-temperature thermal cut-out
- Connection cable, 200 mm long, with strain relief, fully sealed entry grommet and IP61 rated waterproof connector
- Sensors and cables let into pressure relief pad for patient comfort
- Temperature Output Range:
 - 37 °C to 40 °C (99 °F to 104 °F) in steps of 1 °C (2 °F)
 - Over-temperature safety cut-out at 43 °C (109 °F)
- Power:
 - Alpha Control Unit 100 Vac or 110 Vac or 230 Vac (±6%), 50Hz/60Hz, 75 W
 - AlphaPlus Control Unit 100 Vac to 240 Vac (±6%), 50 Hz/ 60 Hz (auto-ranging), 100W
 - Battery Input (Optional): Integrated battery module
 - Capacity: 1 hour for standard full length mattress (OTM1) from full charge
 - Charging: Automatic charging when mains power applied 18 hour charge time from complete discharge to fully charged
 - D.C. Input (Optional): 12 Vdc to 28 Vdc (±10%)
 - Patient Temperature
 - Monitor function (Optional): Requires approved patient temperature probe
 - Mattresses and Blankets 24 V (nom.)
25 W to 65 W,
depending on size

PUMEF1-I PUMP, External Feeding, Neonatal

1. Microprocessor controlled with digital LCD alphanumeric display of parameters and alarms
2. Variable flow rate ranging from 1 to 600 ml/hr or better, in 1 ml/hr increments
3. Possibility to modify rate during delivery (without resetting volume)
4. 10 % accuracy or better
5. Variable delivery time up to 60 minutes or better, in minute increments
6. Variable volume-to-be-delivered from 1 to ~ 600 ml or similar
7. Digitally displayed parameters to include:
 - 7.1. Delivery rate
 - 7.2. Battery / AC operation
 - 7.3. Running indicator
 - 7.4. Volume to be delivered
 - 7.5. Remaining volume
 - 7.6. Remaining / elapsed time
 - 7.7. Alarming condition when active, with indication of alarm type or code
8. Auto calculation of flow rate after entering volume to be delivered and delivery time
9. KLO (keep line open) at end of delivery. Please specify rate.
10. Audiovisual alarms shall include but not be limited to the following:
 - 10.1. Delivery set installation and integrity (detection)
 - 10.2. Occlusion (please specify back pressure)
 - 10.3. End of delivery
 - 10.4. Volume limit
 - 10.5. Line empty
 - 10.6. Free flow
 - 10.7. Door open
 - 10.8. Low battery pre-alarm
 - 10.9. Discharged battery alarm
 - 10.10. Internal malfunction
 - 10.11. Other, please specify
11. Data log capability and data port for data transmission, display and printing. Any required software for such function shall be included.
 - 11.1. Logged data to include:
 - 11.2. Settings
 - 11.3. Alarms
 - 11.4. Errors
 - 11.5. Other (please state)
12. Safety features shall include but not be limited to:
 - 12.1. Self-test at start-up
 - 12.2. Nurse call interfacing capability
 - 12.3. Splash proof design
 - 12.4. Auto priming
 - 12.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 12.6. Keypad lock

- 12.7. Impossibility to improperly install delivery set
- 12.8. Free flow prevention system
- 12.9. Non IV compatible connectors
- 12.10. Last parameter setting retention
- 13. Stand and table top mounting capability. IV stand mounting accessory shall be included
- 14. Specify availability of any of the following features. Specifications related to these features shall be detailed:
 - 14.1. Intermittent bolus feeding. Specify rate
 - 14.2. Interval feeding. Specify interval settings
 - 14.3. Patient hydration
- 15. Battery autonomy of 12 hrs or more when fully charged. Specify:
 - 15.1. Battery type and characteristics (voltage and current capacity)
 - 15.2. Autonomy at 10 ml/hr
 - 15.3. Recharging time from depleted to 90%

QMS001 Queue Management System

iQMS is specially designed queuing system for effective management of queues in OPDs of hospitals. The system is designed keeping in mind the common problems of handling large number of patients to be attended by a number of Doctors in an OPD.

It incorporates advanced technology for data communication, control and display ensuring excellent reliability. Use of the intelligent queue management system provides –

- Reduction in work load of hospital staff
- Effective time management for Doctors
- Ensures smooth sequential flow
- Convenient & transparent queuing for patients
- Clear unambiguous display of current patient number
- Easy ticket printing Token Dispenser. Available in various models
- Convenient keypad for doctors to call patients
- Creates a good environment and enhances the goodwill of the hospital

Functional Description:

1. The hospital may have number of Reception Counter depending of Number of Chambers and regular turnout of patients. Each counter is equipped with Reception Counter Terminal.
2. The system has the flexibility of incorporating slots if more than one Doctor occupies the particular chamber at different time.
3. The intending Patient willing to consult any doctor can book his / her appointment at any counter. The receptionist has to insert the Room No and Slot no. of concerned Doctor. On pressing the Print command, the data inserted are sent to the Master Controller.
4. The master Controller, process the request for new booking, generates the next Sl. No against each slot and send backs the information to Reception Counter and commends the printer for printing.
5. Format of the Token can be Customized incorporating the Name address, telephone Number and other details of the Hospital, Chamber No. and Slot No. of the doctor, Date of booking, Sl. No. of booking, Now the patient waits for his/her turn in the waiting area in front of the room allotted.
6. Each chamber is provided with a Key Board with LCD display. To call the patients seriously, the Doctor presses next key and the new number is displayed at outside the Chamber or at waiting room.

Technical Specification:**Hardware Specification:**

- SAW Technology Based Touch Screen Based Token Dispensing Unit.
- Multiple Screen Support.
- Auto Cutter Thermal Printer.

- Powder Coated Metallic Body
- 50 Kgs Weight.
- Inbuilt ATOM Processor With 1 GB RAM, 100 GB Storage
- IP Configurable

Software Specification:

- Display Integrated Module.
- 20 User License for Calling Token.
- Multilingual Token Announcement.
- Server Client Application
- Browser Based Easily Configurable Token Calling Module
- Easy To Operate.
- Customizable Centralized Reporting
- Inbuilt Digital Signage, Play Video, Upload Images, Upload Unlimited Ticker

Client Side Requirement

- Dedicated IP
- LAN Connectivity
- TV / Monitor for Token Display With HDMI / VGA In
- Speakers for Token Announcement

REF059 Refrigerator, Medical (drug/vaccine)

1. Under Counter medical refrigerator used for the storage of vaccines, drugs, etc.
2. Single-door, under counter-refrigerator
3. The refrigerator should have the following features:
 - 3.1. Adjustable stainless steel drawer
 - 3.2. Two or three adjustable shelves.
 - 3.3. Illuminated interior, incandescent lighting
 - 3.4. Automatic condensate evaporator
 - 3.5. Temperature should be set to operate at 2° C to 4° C
 - 3.6. Integrated temperature monitoring system
 - 3.7. Stainless steel interior
 - 3.8. Four heavy-duty swiveling casters, with brakes
 - 3.9. Dished bottom to contain spills
4. The monitor shall display chamber temperature to the tenth degree centigrade
5. The refrigerator shall have a seven day temperature chart recorder.
6. Audible alarm should not be defeatable, but rather temporarily silenced. A corresponding visual indicator should be ON during temporary alarm silencing period.
7. The refrigerator shall have a security locking system: Positive door latches with key lock security
8. The refrigerator should have an adjustable high/low temperature alarm
9. The refrigerator should have an audible and visual alarm to alert staff to power loss and temperature deviation
10. The refrigerators shall have provision for contacts to interface with the Building Management System (BMS)
11. Approximate dimensions to be : WXD X H 600 X 600 X 850 mm
 1. The refrigerator shall have a magnetic door gasket for positive seal
 2. Refrigeration System
 - 13.1. Hermetically sealed, air-cooled compressor.
 - 13.2. Non-CFC refrigerant.
 - 13.3. Forced air circulation maintains chamber uniformity of +/-1°C and provides quick recovery.
 - 13.4. Interior fans shut down when door is opened.
 - 13.5. Automatic condensate evaporation system.
 - 13.6. Rapid temperature recovery following door opening

REF506**REFRIGERATOR, Laboratory, 700 liters, Single door**

1. Laboratory refrigerator for storage of cultures, media, serums, specimens and general lab storage
2. Single-door, freestanding design, with approximate capacity of 700 Liters
3. The refrigerator should have the following features:
 - 3.1. Five adjustable shelves
 - 3.2. Illuminated interior, incandescent lighting
 - 3.3. Automatic condensate evaporator
 - 3.4. Temperature should be variable between 2° C to 6° C or better
 - 3.5. Integrated temperature monitoring system
4. The monitor shall display chamber temperature to the tenth degree centigrade
5. The refrigerator shall have a seven-day temperature chart recorder.
6. The laboratory refrigerator shall have a security locking system
7. The refrigerator should have an adjustable high/low temperature alarm
8. The refrigerator should have an audible and visual alarm to alert staff to power loss and temperature deviation
9. The refrigerator will have a method to manually test alarms.
10. Audible alarm should not be defeatable, but rather temporarily silenced. A corresponding visual indicator should be ON during temporary alarm silencing period.
11. The refrigerator shall have provision for contacts to interface with the Building Management System (BMS)
12. Approximate dimensions to be: WDXH 80 X 80 X 200 cm, and should pass through standard doorways.
13. To incorporate four casters, at least two of which should be lockable
14. The refrigerator shall have a magnetic door gasket for positive seal
15. Refrigeration System
 - 15.1. Hermetically sealed, air-cooled compressor
 - 15.2. Non-CFC refrigerant
 - 15.3. Forced air circulation maintains chamber uniformity of +/-1°C and provides quick recovery.
 - 15.4. Interior fans shut down when door is opened.
 - 15.5. Automatic condensate evaporation system

REF521 FREEZER, laboratory, upright -20 deg.C, single door

1. General laboratory freezer for specimen freezing to be used in the main lab
2. The laboratory freezer capacity shall be approximately 500 Liters.
3. The temperature range must be between -15°C to -30°C or better
4. A temperature monitor shall be included and integrated at top of freezer. The monitor will display chamber temperature to the tenth degree centigrade (°C).
5. The temperature display shall be independent of the control circuitry so that malfunctioning control temperature sensing circuits can be detected.
6. The display shall be visible in bright, dim, or sunlight, and the alarms shall be audible over background noise.
7. Special features or modes and alarm settings should be easy to operate and understand.
8. Alarms
 - 8.1. Laboratory freezer will have factory-set high/low alarms that can be reprogrammed. High and low limits will be displayed (at least while they are being set).
 - 8.2. Laboratory freezers will have an audible and visual alarm to alert for power loss and/or temperature deviation beyond set limits.
 - 8.3. The laboratory freezer will have a method to test alarms.
 - 8.4. Audible alarm will not be defeat able, or will have a corresponding visual indicator during a temporary alarm silence period.
 - 8.5. The freezer shall have provision for contact to interface with the Building Management System (BMS)
9. Cabinet Construction:
 - 9.1. The approximate external dimensions to be 2000x750x750 (mm) (HxDxW), and should pass through standard doorways.
 - 9.2. Locking casters, where available.
 - 9.3. At least five stainless steel racks.
 - 9.4. Sure-Seal self-closing door system (includes standard key lock).
 - 9.5. Interior cabinet bottoms formed to contain spills for easy clean up.
 - 9.6. Interior light.
 - 9.7. Security lock.
10. Refrigeration System:
 - 10.1. Hermetically sealed, air-cooled compressor.
 - 10.2. Non-CFC refrigerant.
 - 10.3. Forced air circulation maintains chamber uniformity of +/-1°C and provides quick recovery.

- 10.4. Interior fans shut down when door is opened.
- 10.5. Automatic defrosting.
- 10.6. Automatic condensate evaporation system.
- 11. Freezer should meet the standards established by the AABB and FDA for specimen storage.
- 12. Operator safety and system performance should not be adversely affected by fluid spills.
- 13. 13. The unit should be secure and provide adequate protection against moving and electrically energized parts.
- 14. The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
- 15. Switches, knobs, and other controls should be designed for conditions of heavy use.
- 16. Connections should be secure to resist accidental disconnection.
- 17. There will be safeguards against changing temperature limits inadvertently.
- 18. The laboratory freezer will have a seven-day temperature chart recorder.

REF586 Deep Freezer (-86°)

1. Upright freezer to meet critical storage demands for red cell and tissue preservation for blood, clinical or biomedical applications.
2. 30.2 Freezer shall be equipped with circular chart recorders to meet blood bank validation standards for storing red cells or plasma as required by the AABB.
3. Refrigeration system:
 - Uniform cabinet temperature down to -86°C precisely
 - Two industrial-quality, 1 HP, hermetically sealed compressors
 - Down-feed evaporator and automatic scrubbing cycle for efficient heat removal
 - Insulated outer door and individual inner doors to minimize cold air loss
 - Double-seat lid and door gaskets to minimize frost buildup
 - Spark free, Frost-Free Operation and CFC free freezer (No Auto-Defrost preferable)
 - Independent double-seal lid and/or door gaskets minimize frost buildup
 - Exclusive down-feed evaporator and automatic scrubbing cycle for efficient heat removal
 - Minimal seven Shelves and Four sets of (Medium size) suitable gloves must be provided to handle ultra-low temp. Samples
4. Cabinet construction:
 - Heavy-gauge steel cabinet with easy to clean high-impact epoxy finish
 - Recessed, heavy-duty casters
 - Key lock door latch for security
 - Pressure equalization to allow easy access after door closing
 - Washable condenser intake filter
 - Durable and easy to clean
 - Capacity approximately 700 liters
5. Alarm/monitor system:
 - Microprocessor, multiple function alarm system
 - Digital temperature display with resolution to 1°C
 - Audible and visual warning of temperature deviation
 - Alarm silent button
 - High/low temperature alarm set points, adjustable in 1°C increments
 - Clean-filter indicator light warns of dirty air filter
6. Must be able to connect to remote alarm and temperature monitoring system.
7. Must provide connectivity to a remotely located Temperature Management System which provides continuous temp. monitoring and temp. out-of-range alarm response.
8. Power failure alarm indicator advises of low voltage source
9. Alarm: Audible and visual; high/low temperature, power failure, test alarm, etc.
10. Chart recorder time: 7-day, 24-hour electronic recording thermometer.
11. Temp indicator: External digital display
12. Electronic digital controller for temperature adjustment
13. Interface to BMS/SCADA to broadcast an alarm in the event of power failure or temperature variance
14. Meets requirements of BSI and UL

- 15 Installation of this item should be coordinated with the installation of Cabinetry Modules, counters or other such items.
- 16 Exterior dimensions approximately (WxDxH). 800x800x1900 mm

REF900 Refrigerator Mortuary, 3 tiers, vertical

This unit shall be a morgue refrigerator having a 3-large-body capacity, vertically and vertically stacked. It shall have the following features:

1. An operating temperature of 4o C
2. A high/low, audio/visual temperature alarms.
3. Self-contained with top mounted compressor unit
4. End-opening type with full-extension carriages for front loading and storage
5. Constructed entirely of stainless steel
6. 3-piece stainless steel full-extension telescopic tray carriage with ball bearing rollers
7. Anti-sweat, perimeter heaters surrounding each door to prevent condensate buildup
8. Air-tight seal door gasket.
9. Automatic condensate evaporator
10. Lighting fixture with pilot switch (Vapor-proof incandescent light)
11. Each door shall be fitted with door handle and body tag holders.
12. The refrigerator must be supplied with 3 Removable, stainless steel body tray
13. Capability to connect to central alarm or BMS (building management system)

REFDRY**Freeze Dryer**

1. Typical freeze drying system
 - A freeze dryer consists of a vacuum chamber accommodating refrigerated and heated shelves connected to a refrigerated condenser piped to a vacuum pumping system.
 - Sublimed water is pumped by the refrigerated condensers at $\sim -70^{\circ}\text{C}$.
2. The vacuum pumping system need to meet the following major requirements:
 - Ensure pump down of chamber and condenser to ~ 0.05 mbar in less than 30 minutes
 - Ensure fast pump down below 1 mbar
 - Ensure final vacuum of 0.01 mbar or lower in the chamber
 - Ensure reliability, as loss of vacuum during sublimation process can damage the product or the entire batch
 - Provide clean vacuum, especially for pharmaceutical injectable
 - Avoid cross contamination between cycles
 - Monitor vacuum level to ensure repeatable process performance

REG101 Flow meter, Air

1. Air flow meter shall deliver a set flow rate for a variety of medical devices such as tents, masks, endotracheal tubes, nasal cannulae and catheters.
2. The flow meter shall operate at a flow rate of 0 to 15 L/min, with an accuracy of ± 0.5 L/min or 10%, whichever is greater.
3. Accuracy of a back-pressure-compensated flow meter should not be affected by partial obstruction of the outlet line.
4. The flow meter gauge should be float in tube or aneroid type
5. The flow meter should be structurally sound and able to support the weight of an “E” cylinder.
6. Flow meter performance should not be affected by temperature and humidity extremes encountered in operation, storage, and transport.
7. Fittings attached to flow meters shall allow connection only to air sources.
8. Fully opening the needle valve should provide a “flood” or “flush” rate at least several times the 15 L/min maximum calibrated level.
9. The flow meter should be electrically conductive from inlet to outlet to prevent arcing and possible fire from the accumulation of static electricity generated by nebulizers.
10. The flowmeter should be able to withstand a 200-psi inlet pressure without damage in the event of a faulty regulator valve.
11. The flowmeter shall be clearly labeled and color-coded to conform to existing standards. Each unit should be permanently marked with the manufacturer, model number, calibration conditions, and specific point on the float at which the readings should be made.

REG102 FLOWMETER, Oxygen 0-15 LPM

1. Oxygen flow meter shall deliver a set flow rate for a variety of medical devices such as tents, masks, endotracheal tubes, nasal cannulae and catheters.
2. The flow meter shall operate at a flow rate of 0 to 15 L/min, with an accuracy of ± 0.5 L/min or 10%, whichever is greater.
3. Accuracy of a back-pressure-compensated flow meter should not be affected by partial obstruction of the outlet line.
4. The flow meter gauge should be float in tube or aneroid type
5. The flow meter should be structurally sound and able to support the weight of an “E” cylinder.
6. Flow meter performance should not be affected by temperature and humidity extremes encountered in operation, storage, and transport.
7. Fittings attached to flow meters shall allow connection only to oxygen sources.
8. Fully opening the needle valve should provide a “flood” or “flush” rate at least several times the 15 L/min maximum calibrated level.
9. The flow meter should be electrically conductive from inlet to outlet to prevent arcing and possible fire from the accumulation of static electricity generated by nebulizers.
10. The flow meter should be able to withstand a 200-psi inlet pressure without damage in the event of a faulty regulator valve.
11. The flow meter shall be clearly labeled and color-coded to conform to existing standards. Each unit should be permanently marked with the manufacturer, model number, calibration conditions, and specific point on the float at which the readings should be made.

REG105 REGULATOR suction, adjustable

1. The vacuum regulator shall be designed to control suction, typically from wall vacuum outlets, in the evacuation of various substances in the body that can impair breathing, impede healing, or obscure the surgical site.
2. The regulator should incorporate a pressure gauge that covers the range of vacuum levels that the regulator is designed to deliver. The gauge should display the vacuum level on the patient side of the regulator.
3. Adjustable vacuum range: 0 up to - 80 kPa in clearly marked standard units (e.g., kPa, mm Hg, cm H₂O, or Hg). Specify units.
4. The gauge should be readable at a distance of 1 m at a 60° angle.
5. The gauge should be accurate to +/- 2.5 kPa.
6. The gauge should have a pin stop that will prevent the gauge needle from making more than one revolution.
7. The pin stop should not be marked as the zero vacuum level
8. The regulator should continue to deliver a steady flow rate in case of hospital vacuum source pressure fluctuations
9. In an emergency, the suction regulator should allow a suction rate as rapid as possible with the regulator set to full line suction or its highest vacuum level.
10. In the event that the overflow device in the suction canister being used with the regulator fails, or if overflow protection is not used, fluid or spray aspirated into the internal mechanism of the regulator should not significantly affect its performance. Also, dried aspirate in the regulator should not significantly affect its performance.
11. Repeated occlusion and opening of the suction tubing or mechanical shock to the regulator should not significantly alter the set occlusion pressure.
12. The adjustment control (e.g., handle, knob) should be sufficiently stiff in operation to preclude changes occurring in the set vacuum level due to vibration.
13. The direction to move the control to increase vacuum levels should be clearly marked.
14. The adjustment control should require a sufficient number of turns to allow easy adjustment to the smallest graduation on the gauge.

RESABA Resuscitator, Ambu Bag, Adult with Mask

1. A portable manually operated resuscitator (Ambu bag) for adult use.
2. To incorporate a pressure relieving valve and rubber bag of ~ 2000 ml
3. It shall be possible to override the pressure relief valve in order to provide higher pressure ventilations.
4. Offer shall include one set of all available adult size masks. Facemasks shall be anatomically shaped.
5. It shall be supplied with a tube for introducing oxygen: the oxygen concentration must be able to be as high as 55%.
6. The resuscitator must be steam sterilizable
7. The following specifications shall be provided:
 - 7.1. Tidal volume
 - 7.2. Dead space
 - 7.3. Inspiratory and expiratory resistance pressures
 - 7.4. Maximum acceptable temperatures (for sterilizing)
 - 7.5. Patient connection dimensions
 - 7.6. Dimensions of auxiliary connections.
 - 7.7. The pressure at which the pressure relief valve activates
8. Storage and carrying case shall be included

RESABI**Resuscitator, Ambu Bag, Infant/Neonatal, with Mask**

1. A portable manually operated resuscitator (Ambu bag) for infant/neonatal use.
2. To incorporate a pressure relieving valve and rubber bag of ~ 250 ml
3. It shall be possible to override the pressure relief valve in order to provide higher pressure ventilations.
4. Offer shall include one set of all available infant/neonatal size masks. Facemasks shall be anatomically shaped.
5. It shall be supplied with a tube for introducing oxygen: the oxygen concentration must be able to be as high as 55%.
6. The resuscitator must be steam sterilizable
7. The following specifications shall be provided:
 - 7.1. Tidal volume
 - 7.2. Dead space
 - 7.3. Inspiratory and expiratory resistance pressures
 - 7.4. Maximum acceptable temperatures (for sterilizing)
 - 7.5. Patient connection dimensions
 - 7.6. Dimensions of auxiliary connections.
 - 7.7. The pressure at which the pressure relief valve activates and limits the maximum resuscitation pressure.
8. Storage and carrying case shall be included

RESABP Resuscitator, Ambu Bag, Pediatric with Mask

1. A portable manually operated resuscitator (Ambu bag) for pediatric use.
2. To incorporate a pressure relieving valve and rubber bag of ~ 700 ml
3. It shall be possible to override the pressure relief valve in order to provide higher pressure ventilations.
4. Offer shall include one set of all available pediatric size masks. Face masks shall be anatomically shaped.
5. It shall be supplied with a tube for introducing oxygen: the oxygen concentration must be able to be as high as 55%.
6. The resuscitator must be steam sterilizable
7. The following specifications shall be provided:
 - 7.1. Tidal volume
 - 7.2. Dead space
 - 7.3. Inspiratory and expiratory resistance pressures
 - 7.4. Maximum acceptable temperatures (for sterilizing)
 - 7.5. Patient connection dimensions
 - 7.6. Dimensions of auxiliary connections.
 - 7.7. The pressure at which the pressure relief valve activates and limits the maximum resuscitation pressure.
8. Storage and carrying case shall be included

RESATO**Auto resuscitator**

1. An emergency resuscitator specially designed for first responders.
2. Simple, one-button operation delivers optimal levels of oxygen, and dramatically reduces complications associated with “bag-valve-masks” and “time-cycled devices”.
3. It automatically maintains adequate ventilation for each patient through an advanced pressure and flow sensing system.
4. This patient-responsive resuscitator assures a constant flow rate and safe pressure limit during inhalation and allows for passive exhalation.
 - Reduces the risk of gastric insufflations and barotraumas common with the use of bag-valve-masks
 - Eliminates “stacking of breaths” associated with “bag-valve-masks” and “time-cycled” ventilation
 - More efficient use of oxygen as a power supply
 - Single use, quick change viral / bacterial filter
 - Audible and visual indication of airway obstructions
 - Simple, one-button operation designed for single person rescue
 - Light-weight, impact resistant design
 - Frees hands to focus on mask seal to improve airway management
 - Easy cleaning and assembly
 - Few moving parts, minimal maintenance required
 - Manual and continuous cycling modes
 - FIO₂ of 1.0 during resuscitation

Unique Operating Features

- Alerts to Airway Obstruction—“Stuttering” Sound
- Alerts to Mask or “Tube” Leak—No Cycling Occurs
- NO “Stacking” Occurs—Adapts to Exhalation Length
- Reduces Gastric Insufflation—Flow Rate < 30L/Min.
- Easily Operated by Heavily Gloved Hand—HAZMAT
- Keeps the Airway Open—2-4 cmH₂O PEEP-Auto Mode
- Reduces Caregiver’s Fatigue—Two Hands to Seal Mask
- Adapts to I : E Ratios—Patient Sets “Natural” BPM
- “Positive Pressure” Ventilation—CPR / HAZMAT

FEATURE:	SPECIFICATIONS:
WEIGHT	0.18 kg; 0.40 lbs
DIMENSION (Diameter X Length)	48mm x 100 mm, 1.87 in x 3.94 in
MATERIAL OF HOUSING	Acetal
REQUIRED SOURCE PRESSURE	45-80 psig, 3.0-5.5 bar
REQUIRED FLOW (Source)	min. 40 lpm (vs. 1.0 mm orifice)
DEAD SPACE	20 ml
INSPIRATORY FLOW RATE	30 lpm (max)
MINUTE VOLUME DELIVERED	10 to 12 litres per minute (auto mode)
AVERAGE TIME OF OXYGEN SUPPLY	Cylinder vol. divided by 12 l/min
AVERAGE INHALATION / EXHALATION RATIO	1 to 1 : 5, or manually controlled

Technical Specification

LOT 1 – Plant & Medical Equipment

PEEP (Auto Mode Only)	2 to 4 cm H2O
VENTILATORY FREQUENCY	Auto-adjusting to lung capacity (auto mode)
PRESSURE RELIEF	20 cm H2O, 15 mm Hg
EXPIRATORY RESISTANCE	Approximately 5 cm H2O (manual mode)
SUITABLE BODY MASS RANGE	10 kg+, 22 lbs+
OXYGEN CONCENTRATION	100% during auto resuscitation mode
VIRAL-BACTERIAL FILTER	Single use, disposable
MASK / AIRWAY CONNECTIONS	15 mm internal / 22 mm external
USAGE TEMPERATURE RANGE	(-30C to +60C) or (-22F to +140F)
STORAGE TEMPERATURE RANGE	(-40C to +70C) or (-40F to +158F)
OBSTRUCTED AIRWAY WARNING	Rapid cycling, audible and visual
OXYGEN INLET CONNECTION	DISS, ISO Standards

ROC012 ROCKER, BLOOD BAG

- The blood bag rocker shall be used to accelerate blood collection time and to thoroughly mix anticoagulant and blood in the bag.
- The unit shall be portable, light weight, and easy to move
- The oscillating platform shall have an angle of tilt of up to approx. 15°
- The unit shall have a variable speed control of up to 30 rpm.
- The unit should function when the donor is in either a seated or supine position
- The unit shall accept blood bag sizes of up to 450 ml
- Approx. dimensions: approximately, (W x D x H) 350x350x200mm

ROP001 Reverse Osmosis System for Dialysis**Specification of Portable RO System [Online Water Treatment Unit (WTU)] Dialysis**

1. Should be of compact design on wheels for easy movement.
 2. Should be able to produce 125 vs 200 Liters/Hour of permeate.
 3. The system must be Microprocessor based.
 4. In build capabilities to show on display for Permeate (Supply in liters/min, Temperature) & for Raw Water (Consumption in liters/min & Pressure)
 5. Should have built in dual column softener with fully automated brine, fill and clean cycles, also have a brine tank incorporated in the system.
 6. Should have built in cartridge type Charcoal Filter.
 7. Should have fully automatic disinfection system in place.
 8. Should have built in cartridge filter of 10 Micron and 5 Micron.
 9. Should have programmable fully automated Rinse cycle for membranes wash.
 10. There should be a provision of OFF line mode and ONLINE mode of Permeate Supply, In case permeate supply is to be used to run dialysis machines directly without collecting permeate to tank it should be possible.
 11. There should be a water saving system in place which adjusts the output to the number of machines in use and control yield accordingly.
 12. Should not have noise level more than 65 dB
 13. Should deliver the water quality as per AAMI standard.
 14. Yield setting should be between 50 to 70 %.
 15. Should have EC certification attached with tender document.
 16. Provision of U-V filter at the final treated water supply point
- All equipments should be EC/US FDA/CE (European)/UL or BIS approved & Certification.
 - Manufacturers/suppliers should have ISO Certification for quality standards.
 - Electrical safety conforms to standards for electrical safety IEC-60601 or better- general requirements.
 - Certificate of calibration and inspection of the supplied & installed equipment.
 - All consumables for installation and standardization of equipment required for 1year period in Staggered supply basis for smooth functioning of the equipment should be included in the quoted rate.

SCA010**Scale, Blood**

- Micro controller based Blood Bank Scale is designed for weighing Blood and blood components.
- LCD display, displays the weight and volume with an accuracy of 1 gm/ml.
- Easy conversion of weight to volume.
- Tare provision to account for the weight of the blood bag.
- Compact model.
- ABS molded body is preferred.
- Displays volume and weight of blood components.
- Auto Calibration.
- Motor activated clamping at the end of process.
- Audio-visual alarm at the end of process.
- Blood bank scale with built in interface to integrate an electronic plasma extractor.
- Volume can be set in 1g/ml increments.
- The supply/supplier should be minimum an ISO certified well established company with good reputation and experience and should be able to provide onsite service whenever required.

SCA011 SCALE, baby

Unit shall have the following features:

1. Digital scale
2. Unit shall have both lb/kg increments.
3. High quality plastic baby tray, integral and untellable
4. Retain weight reading until reset
5. Weight capacity of up to 8 Kgs
6. Measuring rod shall have both inches/cm increments.
7. Battery operated on internal rechargeable batteries. Power pack including adapter to be included
8. High accuracy.

SCA080 Weighing Scale

- The scale should be electronic with digital display in switchable between Kilograms and pounds
- It should be hospital quality and usage regarding durability cleaning and infection control standard
- The scale should weight accurately to the nearest 100g/0.2 Lbs or better.
- The scale should be made from sturdy plastic material and should be stain resistant
- Maximum capacity should be 200Kg/440lbs or better
- The scale should be operated by battery (rechargeable integrated in the scale) and through main source

SCA081 SCALE, Floor Standing, with height measurement

1. Floor standing patient scale with height-measuring rod for adults and large pediatrics.
2. Instant digital readout at waist level.
3. Unit shall have both lb/kg increments.
4. Weight capacity up to 200 kgs.
5. The scale should be highly accurate with no need of adjustment or periodic calibration. Accuracy shall be better than or equal to 1 %. Provide detailed characteristics
6. Unit shall include a measuring column made from corrosion resistant hard aluminum and shall have a measuring range of approximately 750 mm to 2,000 mm in divisions of approximately 5 mm.
7. Measuring rod shall have both inches/cm increments.
8. Batteries and Mains powered
9. Calibration weight set to be included

SCO050 Cystoscope

The video-cystoscope with a genuine atraumatic tip of just 9.8 Fr. The instruments can therefore be quickly and easily inserted on your patients.

1. Suction
 - A special suction valve permits quick, safe removal of irrigation fluid from the bladder at the press of a button.
2. Settings
 - The two ergonomically positioned buttons on the handle enable various functions to be activated on the camera controller.
3. Positioning
 - To fix the tip to a given angle, the instrument features a brake operated by a toggle lever on the control lever.
4. Chip on the tip
 - A video chip placed inside the tip produces a brilliant, consistently sharp focused endo image such as has never been achieved before, with no pixelation or Moiré effect. It also transfers an unusually large and natural circular image onto the user's monitor.
5. Atraumatic tip
 - Very short, 45° oblique, atraumatically styled instrument tip of just 9.8 Fr., made of ceramic, permitting quick, low-pain access to the urethra.
 - In order to operate this video urethro-cystoscope a monitor, a universal camera controller and a light source is required. And the camera controller can also be used in conjunction with standard camera heads and video laparoscopes too.
 - Flexible video urethro-cystoscope bevelled, distal tip, 9.8 Fr., shaft 15.9 Fr., working and irrigation channel 6 Fr., angle of view 0°, image angle 120°, adjustment: 210° up, 150° down (in total 360°), working length 400 mm, with fixed light cable, including: leak tester with bayonet connection, Gas sterilization valve, cleaning brush and case, distal control lever – adjustment downward.
6. Recommended accessories:
 - Endocam controller usable with standard camera heads
 - Light projector xenon light source, 180 Watts
 - Flat-screen monitor for pin-sharp endo images
 - Pedestal base
 - Biopsy forceps, dual-movement jaws, working length = 550 mm, 5 Fr.
 - Foreign body forceps, dual-movement jaws, working length = 550 mm, 5 Fr
 - Flexible button electrode, for coagulation, working length = 400 mm,
 - Attachment with instrument insertion tap
 - Biopsy valve with automatic seal for easy insertion of probes and ancillary instruments
 - Adapter for automatic leak test.

SCO250**Bronchoscope**

- With more image guide fibers, this routine scope offers enhanced image quality and excellent performance.
- To provide the level of image quality today's bronchial applications demand, more optical fibers than its predecessor, producing sharper, smoother pictures with less moir.
- This enhanced image quality is supported by a wide 120... field of view that brings more of the target site into view, as well as 180... up / 130... down angulation that makes it easier to maneuver the scope in the bronchi and access the target site.
- With a distal-end diameter of only 4.9 mm, a 2.2 mm wide inner channel, compatibility with high frequency electrosurgical devices, and OES and EVIS video system connectivity, this scope is ideal for a wide range of routine applications.

Specifications

Optical System	Field of View	120°	
	Direction of View	0° (Forward viewing)	
	Depth of Field	3 ~ 50 mm	
Insertion Tube	Distal end outer diameter	4.9 mm	
	Insertion Tube outer diameter	5.0 mm	
	Working Length	600 mm	
Instrument Channel	Channel Inner diameter	2.2 mm	
	Minimum visible distance	5mm from distal end	
Bending Section	Angulation Range	Up 180°, Down 130°	
Total Length		900 mm	

SCOLRA LARYNGOSCOPE Set, Adult

1. Rigid laryngoscope set for adult patients
2. Fiber optic light transmission
3. Halogen illumination
4. Light pathway shall be replaceable in case of fiber deterioration
5. The handles should be lightweight, easy to grip and clean
6. Blades shall be made of SS, steam sterilizable and to possess single piece construction (no soldered joints)
7. Handle shall incorporate rechargeable batteries; battery charger incorporated in desk unit shall be supplied.
8. Complete set with hard storage case, Macintosh blades no. 3, 4 & 5 and miller blade no. 3

SCOLRAIP Laryngoscope set (adult and pediatric AND INFANT)

- Autoclavable
- Sapphire lens
- Connectable to all major manufacturers
- Shall include different Adult, Pediatric and Infant sizes total Qty.6

SCOLRA-P Laryngoscope set (adult and pediatric)

- Autoclavable
- Sapphire lens
- Connectable to all major manufacturers
- Shall include different Adult and Pediatric sizes total Qty.4

SCOLRI LARYNGOSCOPE Set, Neonatal

1. Rigid laryngoscope set for use on hospital wards
2. Fiber optic light transmission
3. Halogen illumination
4. Light pathway shall be replaceable in case of fiber deterioration
5. The handles should be lightweight, easy to grip and clean
6. Blades shall be made of SS, steam sterilizable and to possess single piece construction (no soldered joints)
7. Handle shall incorporate rechargeable batteries
8. Charging of batteries using plug in DC socket incorporated within the handle
9. Battery charging AC/DC adaptor should be included as well as hard storage case
10. Complete set with extra small and small blades.

SCOLRP Laryngoscope Set, Pediatric

1. Rigid laryngoscope set for pediatric patients
2. Fiber optic light transmission
3. Halogen illumination
4. Light pathway shall be replaceable in case of fiber deterioration
5. The handles should be lightweight, easy to grip and clean
6. Blades shall be made of SS, steam sterilizable and to possess single piece construction (no soldered joints)
7. Handle shall incorporate rechargeable batteries; battery charger incorporated in desk unit shall be supplied.
8. Complete set with hard storage case, Macintosh blades no. 2 & 3 and miller blades no.2 & 3.

SCRLED Mobile Lead X-ray Screen

Powder coated steel frames, precision TIG welded for years of trouble-free service completely enclosing the leaded glass panel for increased durability and safety.

- Lead glass or lead acrylic options available
- 1.5 mm lead equivalent opaque base covered in “Sintra” plastic for easy cleaning and durability
- Modular parts can be easily replaced, including the glass if needed
- Stainless steel finish available. Use -SS when ordering
- Custom color options

SEA012 Blood Bag Heat Sealer, Hand Held

- A portable and handle type tube sealer to reach the sealing part for blood bag tubing as well as aphaeresis tubing.
- It creates air and watertight seals on sterilization rolls (paper-plastic) and sterilization tubing (plastic-plastic) materials.
- A built-in warning beeper to notify the user when each seal is complete.
- Rechargeable battery operated unit.
- Battery to last at least 500 sealing of standard blood bag tubing.
- Multi-color battery indicators to show the remaining capacity at a glance.
- At least 3mm wide seal with perforation.

SHX001 SHIELD, X-ray, leaded, apron

1. X-ray protective apron made of flexible lightweight material. All sizes shall be priced individually for client selection. Specify weight and length for each size.
2. Wrap around model to provide 0.50 mm protective lead equivalency in the front and 0.3 mm in the back
3. Wide shoulder cut to provide wide weight distribution and reduce inflicted fatigue
4. Fastening shall be easy and reliable (Velcro type fasteners for example).
5. Specify all available colors

SHX002**SHIELD, X-ray, leaded, half apron**

1. X-ray protective half apron for adults, made of flexible lightweight material. All sizes shall be priced individually for client selection. Specify weight and length for each size.
2. Wrap around model to provide 0.50 mm protective lead equivalency in the front and 0.3 mm in the back
3. Fastening shall be easy and reliable (Velcro type fasteners for example). Specify.
4. Specify all available colors

SPH006 Diagnostic Set, Otoscope/ Ophthalmoscope, portable

1. Complete diagnostic set that should include:
 - Ophthalmoscope head.
 - Otoscope head, with different-size set reusable specula.
 - Large handle with 3.5 V rechargeable batteries: qty of 2.
 - Desktop charger with two wells, and charging LEDs.
 - Disposable specula dispenser.
 - Spare lamp.
2. The handles should be lightweight, easy to grip and clean.
3. The Otoscope/Ophthalmoscope heads, specula and lenses should be easy to change; however, they should lock in place when being used. The heads should be equipped with high-intensity halogen lamps.
4. The Otoscope should be made of high quality stainless steel, with distal fiber optic illumination, insufflations port, and 3x magnification swivel window and an airtight seal.
5. The Ophthalmoscope should be made of high-quality stainless steel or plastics and incorporate aspherical optical system mounted in metal chassis, 6-apertures wheel and separate red-free filter.
6. Reusable specula should be resistant to agents recommended for cleaning and sterilization.
7. The batteries should be easy to recharge and/or replace.
8. The batteries should operate the unit for at least two to three hours.
9. The batteries should require no more than 16 hours of recharging after depletion.
10. The unit should be lightweight and able to be held in one hand.
11. The unit should have no sharp edges and easy to clean.
12. The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
13. Switches, knobs, and other controls should be designed for conditions of heavy use.
14. The controls (i.e., switches, knobs, etc.) should be visible and clearly identified, and their functions should be self-evident.
15. Controls should be sealed against penetration of fluids.
16. The unit should be simple to learn to use, operate, and maintain.

SPH006-W Diagnostic Set Wall Mounted

1. Instrument Panel used to house the diagnostic sets in an organized manner.
2. Shall be large enough to mount an Oto-ophthalmoscope set, blood pressure unit, cuff, specula dispenser and basket
3. The electrical outlet for the Oto-ophthalmoscope transformer to be on the panel or next to it
4. Sturdy construction and installation to prevent the unit from pulling out when the cuff or other accessories' cords are stretched
5. The panel shall be made to hang on a special bracket (included in the offer, allowing easy removal of the diagnostic equipment for calibration or maintenance)
6. Diagnostic sets to include:
 - Otoscope-Ophthalmoscope with transformer:
7. Complete diagnostic set that should include:
 - 3.5V coaxial Ophthalmoscope head
 - 3.5V Otoscope head, with different-size set reusable specula.
 - Wall-mounted transformer with two handles and integrated halogen illumination.
 - Disposable specula dispenser
 - Spare lamps qty.5
8. The handles should be lightweight, easy to grip and to clean.
9. The Otoscope/Ophthalmoscope heads, specula and lenses should be easy to change and should lock in place when being used. The heads should be equipped with high-intensity halogen/xenon mix gases lamps.
10. The Otoscope shall be with distal fiber-optic illumination, insufflation port, and 3x magnification swivel window and an airtight seal.
11. The Ophthalmoscope shall be coaxial and incorporate a spherical optical system mounted in metal chassis, 6-apertures wheel and separate red-free filter.
12. The wall-mounted transformer should incorporate:
 - 2.5m spiral cords for both handles, with brightness control built into the handles.
 - On-off switch and mounting brackets
 - The two handles can be used at the same time.
13. Reusable specula should be resistant to agents recommended for cleaning and sterilization.
14. The unit should be well constructed with durable materials to withstand typical abuse and cleaning.
15. Switches, knobs, and other controls should be designed for conditions of heavy use.
16. Sphygmomanometer, Aneroid, Wall Mounted

- Wall mounted aneroid (manual) sphygmomanometer used to manually measure patient's blood pressure.
- Large 15 cm aneroid blood pressure gauge, with scale ranging from 0 to 300 mmHg, with clear dial, numbers, and face
- The unit should be accurate to within 1% of the scale.
- The cuff, gauge, and bulbs should be made of heavy-duty materials that withstand harsh environment.
- The bulb should have a metal air release valve.
- The unit should include a wall-mounting bracket for permanent installation. The wall mounting shall ensure viewing and accurate readability from all angles.
- The bracket should have wire basket to store the cuffs and tubing.
- 120 cm-coiled tubing or better
- Cuff sizes: Adult and Pediatric different sizes, one of each shall be included

SPR001 SPRAYGUN, water/compressed air, with nozzle attachments and hose

1. Compressed air / hot water gun for cleaning and sanitizing heat and moisture resistant items
2. To be connected to central CA or hot water supply outlets
3. Heat resistant hose shall be included with heat insulated grip for extra safety
4. Single handed, fingertip squeezing action, with alternating CA / water spray action
5. The offer shall include all available nozzles, connecting brushes, options and accessories. Each to be listed separate

SPR050**Spirometer**

- The diagnostic spirometer shall be computer based spirometer and used to measure airflow rates
- and volumes resulting from basic spirometric maneuvers. It shall consist of:
- Measuring device
- PC unit, laptop design
- It shall have the following minimum features and specifications:

Measuring device:

It shall be a handheld pneumotachograph

RS232/USB computer interface

It shall be connected to the computer system

Volume range, L: up to 7 or better

Volume accuracy: 5%

Flow range, L/sec: up to 13 or better

Flow accuracy: 5%

- Real-time plots: Timed spirogram and flow-volume loop or better
- Procedures/parameters evaluated: TV, FVC, FEV1 and MVV as a minimum.
- BTPS correction included
- Predictive values: User preference; Knudson, ECCS and NHANES III as a minimum.
- Trending capability
- Reporting capability
- Computer system (laptop) with the following minimum features and specifications:
 - Updated operating system with the spirometer operating software
 - Multimedia
 - Mouse and keyboard
 - Enough RAM capacity
 - CD or DVD R/W
 - USB ports
 - Hard drive
 - Display: LCD / LED, with a size of 14" or better
 - Printer: Laser type and compatible with the PC
- The following accessories shall be included:
 - Nose clip, qty.20
 - Disposable mouth pieces, qty.50
- Standard accessories and any needed parts, accessories or software shall be included to
- ensure full operation
- Shall be CE marked and/or FDA approved

SRG001**LSCS Sets**

- 1 Sponge Holding Forceps 25cm
- 4 Green Armytage Forceps
- 6 Artery Forceps cvd 15cm
- 6 Artery Forceps St 15cm
- 4 Allice Tissue Forceps Medium 15cm
- 4 Allice Tissue Forceps Large 15cm
- 2 Bebbcock Tissue Forceps 15cm
- 2 Toothed Forceps 15 cm
- 2 Dissecting Forceps Toothed 15cm
- 2 Dissecting Forceps Non Toothed 15cm
- 1 Needle Holder Mayo Heger 15 cm
- 4 Kell's Clamp 15cm
- 1 Suction Tip
- 1 Tissue Cutting Scissors 17.5cm
- 2 B.P.Handle no4
- 4 Towel Clip Cross Action
- 1 Bowl 20"
- 1 Doyen Retractor 5 cm
- 1 Morr's Retractor 5cm
- 1 Self Retaining Retractor
- 1 Dever's Retractor 5 cm
- 1 Instruments Bag

SRG002 Laparotomy setsInstrument Set Contents

- 1 Steel Ruler 6"
- 2 Scalpel Handle #3
- 2 Scalpel Handle #4
- 2 Yankauer Suction Tube
- 2 Op Sciss 5 1/2" Str Sh/bl
- 2 Op Sciss 5 1/2" Cvd Sh/bl
- 1 Mayo Diss Sciss Str 5 1/2"
- 1 Mayo Diss Sciss Cvd 6 3/4"
- 3 Hartmann Mosq Str Serr 3 1/2"
- 3 Hartmann Mosq Crv Serr 3 1/2"
- 6 Halsted Mosq Fcp Str 5"
- 6 Halsted Mosq Fcp Cvd 5"
- 6 Roch-pean Fcp Cvd 6 1/4"
- 3 Roch-pean Fcp Cvd 8"
- 6 Roch Pean Fcp Str 6 1/4"
- 3 Roch-pean Fcp Str 8"
- 2 Roch Ochsner Fcp Cvd 1x2 6 1/4
- 2 Roch Ochsner Fcp Str 1x2 8"
- 12 Crile Fcp Str 5 1/2"
- 12 Crile Fcp Cvd 5 1/2"
- 3 Roch-ochsner Fcp Str 5 1/4 1x2
- 3 Roch-ochsner Fcp Cvd 5 1/4 1x2
- 2 Serrated Dressing Fcps 5 1/2"
- 2 Serrated Dressing Fcps 8"
- 3 Tissue Fcp 1x2 5 1/2"
- 1 Tissue Fcp 1x2 8"
- 2 Russian Tissue Fcp 8"
- 2 Mayo Hegar Nh Serr 6" Tc
- 2 Mayo Hegar Nh Serr 7" Tc
- 1 Metz Lahey Del Crv Sciss 5 3/4
- 1 Metzenbaum Sciss Del Cvd 7"
- 1 Stevens Tenot Del Crv Bb 4 1/2
- 3 Roch Pean Str Del 5 1/2"
- 3 Roch Pean Cvd Del 5 1/2"
- 1 Semkin Dress Fcp Nar 5" Serr
- 1 Semkin Tiss Fcp Nar 1x2 5"
- 3 Babcock Fcp 5 1/2"
- 3 Allis Tiss Del Fcp 4x5 5 1/2"
- 1 Yankauer Suct Tube Ped

- 1 Miller Senn Retr Shrp D/e 6"
- 1 Miller Senn Retr Blnt D/e 6"
- 2 Probe Dbl End 6"
- 2 Probe W/eye 6"
- 2 Babcock Forceps 6 1/4"
- 2 Babcock Forcep 8"
- 3 Allis Tiss Fcp 4x5 6"
- 6 Allis Tiss Fcp Del 5x6 7 1/2"
- 2 Adson Brown Tiss Sd Grasp 43/4
- 1 Adson Tiss Fcp 1x2 Del 4 3/4"
- 2 Adson Dress Fcp Serr Del 4 3/4
- 12 Backhaus Towel Clamp 5 1/4"
- 1 Metz-nelson Sciss Cvd 9"
- 2 GEMINI CLAMP DEL ANG 8"
- 2 Us Army Retr Set/2 D/e 8 1/4"
- 1 Parker De Retr 5/8x5 Set/2
- 1 Richardson W/sklrgrp Hndl Med
- 1 Richardson-eastman Retr Set/2
- 2 Deaver Skl Grip Hdl #2 1"x 13"
- 2 Deaver #0 1x9
- 2 Deaver #3 1 1/2x12
- 1 Deaver #4 2x12
- 1 Zalkind Ribbon Retr 1/2"x7.75"
- 3 Zalkind Ribbon Retr 3/4"x7.75"
- 2 Zalkind Ribbon Retr 1x13"
- 2 Zalkind Ribbon Retr 1 1/2x13"
- 2 Senn D/e Retractor Sharp 6"
- 2 Senn D/e Retractor Blunt 6"
- 1 Balfour Abdom Retr Fenstr Bl7"
- 2 Ballengr Spng Fcps Str Serr 7"
- 2 Schnidt Half Crv Tons Fcp 71/2
- 2 Metzenbaum Scissors Cvd 7"
- 2 Foerster Sponge Serr Str 91/2"
- 2 Foerster Spng Cvd Serr 9 1/2"

SRG003**Laparoscopy sets**

- 1 Knife Handle No. 3
- 1 Scissors, Mayo Dissecting 6 3/4" Str
- 2 Forceps Foerster Sponge 9" Str Serr
- 2 Forceps Allis Tissue 4x5 th
- 12 Clamp Backhaus Towel 5 1/4"
- 2 Forceps Coller 6 1/4" Cvd
- 1 Forceps Hudson Dressing
- 1 Needle Holder Crile Wood 6"
- 1 Speculum Graves Vaginal Medium
- 2 Forceps Schroeder Tenaculum
- 1 Sound, Simpson Uterine
- 1 Retractor Sims, Double ended
- 1 Speculum Auvard Weighted, 2 ½ lbs
- 2 Forceps, Barrett Tenaculum 7 1/4"

BASIC LAPAROSCOPY INSTRUMENT SET	
ITEM	AMOUNT
HOPKINS II Telescope Straight Forward Telescope 5 mm 0°	1
HOPKINS II Telescope Forward-Oblique Telescope 5mm 30°	1
HOPKINS II Telescope Forward-Oblique Telescope 10 mm 30°	1
HOPKINS II Telescope Straight Forward Telescope 10mm 0°	1
HOPKINS II Telescope Forward-Oblique Telescope 4mm 0°	1
HOPKINS II Telescope Forward-Oblique Telescope 4mm 30°	1
Trocars with Pyramidal Tip, Insufflation Stopcock & Multifunctional Valve 10mm	2
Trocars with Pyramidal Tip, Insufflation Stopcock (Sharp) 5mm	4
Trocar, Size 11mm-30103 C2- Sliding cone -30103A	1
Cone for Trocars	2
Reduction Sleeve, Reusable	2
Reducer 11/5 mm	4
CLICKline Grasping Forceps, Rotating, Without Ratchet, Connector Pin for Unipolar Coagulation	2
CLICKline Disecting & Grasping Forceps, Rotating, Without Ratchet, Connector Pin for Unipolar Coagulation	2
CLICKline METZENBAUM Scissors, Rotating, Curved Jaws, Without Ratchet, Insulated with Connector Pin for Unipolar Coagulation	2
Click Line Manhes Grasping forceps,	4
Click Line Babcock Grasping forceps	2
Click Line Grasper Reddick-Olsen	2

Click Line Metzenbaum scissors	2
Click Line Claw forceps	2
Click Line Spoon forceps,	2
Coagulating & dissecting electrode,	2
Liver retractors (fan) 5mm	1
Liver retractors (fan) 10mm	1
Suction and Coagulation Cannula	2
Monopolar High Frequency cord-300cm	1
Clip Applicator for Ligating clips,	1
Clip Applicator for Titanium clips,	1
Suction & Irrigation Tube	1
Cleaning Brush, different sizes	10
Cleaning Brush, diameter 11 mm working channel dia 3-9	10
Veress Pneumoperitoneum Needle	2
Seal Bonnet for trocars,size:11mm(60/10) -Karl stoz	10
Seal bonnet (50/04)- Karl storz	10
Reducer 11/5 mm	2
SZABO-BERCI Needle Holder straight handle with ratchet with tungsten carbide inserts for suture materials 2/0 - 4/0 needles	2
SZABO-BERCI Needle Holder straight handle with ratchet with tungsten carbide inserts for suture materials 2/0 - 4/0 needles	2
Titanium Clips Medium- Large, Pacs	20
Titanium Clips Medium- Large, Pacs	20
Endo- Loop ligature 3 mm length 33 cm	20

SRG004 D&C Sets

Description	Qty.
Scalpel Handle #3	1
Scalpel Handle #7	1
Scalpel Handle #3L	1
Crile Forceps Str 6 1/4"	6
Crile Forceps Cvd 6 1/4"	6
Dressing Forceps 8"	1
Tissue Forceps 1 x 2 Teeth 8"	1
TC Crile-Murray NH Serr 6"	1
TC Mayo-Hegar NH Serr 7"	1
Backhaus Towel Clamp 5 1/4"	6
Bozeman Forceps Double Curved 10"	1
Foerster Sponge Forceps Cvd Serr 9 1/2"	2
Jackson Retractor Small Blade 3" x 1 1/2"	1
Jackson Retractor Medium Blade 3 1/2" x 1 1/2"	1
Auvard Weighted Speculum Medium 2 1/2 lbs.	1
Graves Vaginal Speculum Medium 1 1/4" x 4"	1
Graves Vaginal Speculum Large 1 3/8" x 4 1/2"	1
Pederson Vaginal Speculum Small 1/2" x 3"	1
Kogan Endospeculum w/ Gauge and Screws	1
Goodell Dilator Large 13"	1
Hegar Dilators (Set of 8)	1
Sims Sound Plain 12 1/2"	1
Sims Curette Sharp 11" #2	1
Sims Curette Sharp 11" #3	1
Sims Curette Sharp 11" #4	1
Sims Curette Sharp 11" #5	1
Kevorkian-Younger Endocervical Curette w/ Basket 12"	1
Schroeder Tenaculum Forceps 9 1/2"	1
Javerts Forceps Serr 9 1/2"	1

SRG005 Hysteroscopy sets

Hysteroscope sets optimize fluid flow and visualization when used with the tissue removal system. The 100% continuous flow enables controlled, precise and thorough procedures.

Benefits of the hysteroscope sets include:

- Optimal viewing of cervical canal and uterine cavity for the purpose of performing diagnostic and surgical procedures
- Rigid 0° hysteroscope with straight-through, D-shaped working channel with offset optic
- 100% uninterrupted continuous flow
- Compatibility with commonly available camera and light cords
- Autoclave sterilization

The 5C hysteroscope set:

- Smallest instrumentation available today, facilitating gentle, effective procedures†
- Ideal for in-office procedures and patients with a stenotic cervix as little or no dilation is required
- Longer scope means access to the entire uterus, including cornua and fundal wall
- For use with the INCISOR and the ULTRA Mini devices

The 8.0 hysteroscope set:

- Large working channel offers capability to use additional hysteroscopy instruments
- Option to use obturator for gentle introduction of the sheath into the uterine cavity
- For use with the INCISOR Plus and the ULTRA Plus devices

Tissue removal devices:

- Simultaneous tissue cutting and aspiration to reduce procedure time
- Proprietary suction control feature to minimize fluid loss
- Four pathology-optimized disposable devices:
 - INCISOR device for soft tissue
 - INCISOR Plus device for soft tissue
 - ULTRA Mini device for dense tissue
 - ULTRA Plus device for dense tissue

SRG006 Gyne Surgery sets

	<u>Names</u>
1	LSCS sets
2	D& C set
3	Gynae tray
4	Coper T set
5	Gynae laparoscopy set
6	Doyens retractor sets
7	Ovum forceps set
8	Gynae destructive set
9	Hegars dialators
10	Suction curette
11	Sims speculum
12	Cuscos speculum
13	Delivary forceps long
14	delivary forceps small
15	punch biopsy forceps
16	Allis golden handles
17	Endometrial curette
18	Anterior wall retractor
19	Metal catheter

- GYNECOLOGICAL SURGERY SET

Description	Qty.
Scalpel Handle #3	1
Scalpel Handle #4	1
Scalpel Handle #3L	1
Scalpel Handle #4L	1
Yankauer Suction Tube Stainless Steel	1
Operating Scissors S/B Cvd 6 1/2"	1
Pratt T-Shaped Clamp Str 5 1/2"	2
Rochester-Pean Forceps Cvd 8"	3
Rochester-Pean Forceps Str 8"	3
Rochester-Ochsner Forceps Cvd 8"	3
Rochester-Ochsner Forceps Str 8"	3
Crile Forceps Str 6 1/4"	6
Crile Forceps Cvd 6 1/4"	6
Dressing Forceps 8"	1
Tissue Forceps 1 x 2 Teeth 8"	2
Russian Tissue Forceps 8"	1
Russian Tissue Forceps 10"	1
Mayo-Hegar NH 8"	1

Heaney NH 8 1/4"	2
TC Mayo-Hegar NH Serr 7"	2
TC Mayo-Hegar NH Serr 8"	2
Sklarlite Operating Scissors S/S Str 5 1/2"	1
Sklarlite Operating Scissors S/B Str 5 1/2"	1
Poole Suction Tube (Slip on End) 23 French	2
Allis Tissue Forceps 5 x 6 Teeth 7 1/2"	2
Allis Tissue Forceps 5 x 6 Teeth 10"	2
Backhaus Towel Clamp 5 1/4"	8
TC Potts-Smith Dressing Forceps 8 1/4"	1
Metzenbaum Scissors Cvd 9"	1
Metzenbaum Scissors Str 9"	1
Bozeman Forceps Double Curved 10"	2
Foerster Sponge Forceps Str Serr 9 1/2"	2
Mayo Dissecting Scissors Str 9"	1
Mayo Dissecting Scissors Cvd 9"	1
Heaney Forceps Light Single Tooth 7 3/4"	2
Heaney Forceps Heavy Single Tooth 7 3/4"	2
Phaneuf Uterine Artery Forceps Ang 8"	2
DeAlvarez Forceps 8 1/4"	2
Eastman Retractor Small Blade 3" x 1 1/2"	1
Eastman Retractor Medium Blade 3 1/2" x 1 1/2"	1
Eastman Retractor Large Blade 4" x 1 1/2"	1
Auvard Weighted Speculum Medium 2 1/2 lbs.	1
Graves Vaginal Speculum Small 3/4" x 3"	1
Graves Vaginal Speculum Medium 1 1/4" x 4"	1
Graves Vaginal Speculum Large 1 3/8" x 4 1/2"	1
Hank Dilators (Set of 6)	1
Simpson Uterine Sound CM Graduation	1
Schweizer Uterine Forceps 9 1/2"	1
Schroeder Tenaculum Forceps 9 1/2"	2
TC Allis Grasping Forceps 7 1/2"	2

SRG006-E Emergency Gynecology Sets

	<u>Names</u>
1	LSCS sets
2	D& C set
3	Ovum forceps set
4	Hegars dialators
5	Suction curette
6	Delivery forceps long

	<u>Bundles</u>
1	Laparotomy bundle
2	Hernia bundle
3	Gown drums
4	Cytoscopy bundle

SRG007 Delivery forceps

Forceps are instruments designed to aid in the delivery of the fetus by applying traction to the fetal head. Many different types of forceps have been described and developed. Generally, forceps consist of 2 mirror image metal instruments that are maneuvered to cradle the fetal head and are articulated, after which traction is applied to effect delivery.

Forceps have 4 major components, as follows:

- **Blades:** The blades grasp the fetus. Each blade has a curve to fit around the fetal head. The blades are oval or elliptical and can be fenestrated (with a hole in the middle) or solid. Many blades are also curved in a plane 90° from the cephalic curve to fit the maternal pelvis (pelvic curve).
- **Shanks:** The shanks connect the blades to the handles and provide the length of the device. They are either parallel or crossing.
- **Lock:** The lock is the articulation between the shanks. Many different types have been designed.
- **Handles:** The handles are where the operator holds the device and applies traction to the fetal head.

List of Forceps

- Elliot forceps
- Simpson forceps
- Kielland forceps

SRG008

Destructive sets

Destructive Obstetric Instruments:

- Fenestrated vectis with 45degree handle
- Right angle decapitating hook
- Double-toothed crochet, and a sharp hook
- Unplated steel with ebony handles

SRG009**Micro instruments**

- Micro Vessel Clamps for occlusion of very small vessels during micro surgery
- Visibility Background Material to assist the Micro Surgeon in visualizing the vessels in the operating field, available in three colours green, blue and yellow this product is supplied sterile in boxes of 12 pcs.

Description:

Silicone piece with 1mm grid on one side and plain on reverse side, available in blue, green and yellow colours. Sterile packed in boxes of 12 pcs.

Application:

For use in Micro Surgical Anastomosis of micro vessels under a microscope to allow the surgeon to better visualise the detail of the vessels, being closed.

The Visibility Material can be used either with the grid side up to give the surgeon a scale of the vessel alternatively the reverse plain side can also be used.

The micro vessel occlusion clamps with many design advantages for the Micro Surgeon:

- Light and compact design
- Extremely durable
- Corrosion resistant
- A unique gripping surface
- Smooth sliding bar action on the approximator clamps
- Clamp profile with parallel sided jaws
- Matt finish

Micro Instrument Set

1 Micro Instrument Container
 1 Micro Scissors R/B 15cm Straight
 1 Micro Scissors R/B 15cm Curved
 1 Micro Needle Holder R/B 15cm Straight
 1 Micro Needle Holder R/B 15cm Curved
 1 Suture Tying Forceps R/B 15cm Straight
 1 Suture Tying Forceps R/B 15cm Curved
 2 Jewellers Forceps No.5 11cm
 1 Micro Vessel Dilator 11cm
 1 Clamp Applying Forceps - No Lock
 1 Clamp Box
 1pr Single Acland Clamps B-2V
 1pr Single Acland Clamps B-3V
 1pr Single Acland Clamps HD-S

Micro Instrument Set for Nerve Repair Surgery

1 Micro Instrument Container
 1 Micro Needle Holder R/B 15cm Curved
 1 Micro Scissors Flat Handled 15cm Straight Serrated Blade
 2 Jewellers Forceps No.5 11cm

SRG010**Cardiovascular Surgery Set****1. PACEMAKER SET**

Item #	Description	Qty.
06-2903	Scalpel Handles #3	2
06-2907	Scalpel Handle #7	1
16-1510	Sklar Edge Mayo Dissecting Scissor Tungsten Carbide, Straight, 6 3/4"	1
16-1610	Sklar Edge Mayo Dissecting Scissor Tungsten Carbide, Curved, 6 3/4"	1
16-1905	Sklar Edge Metzenbaum Lahey Scissor Tungsten Carbide, Delicate, Curved, 5 3/4"	1
16-2110	Sklar Edge Metzenbaum Scissor Tungsten Carbide, Curved, 7"	1
17-1550	Halsted Mosquito Forceps Curved, 5"	4
17-1762	Mixter Forceps Right Angle, 6 1/4"	2
17-2262	Rochester-Pean Forceps Curved, 6 1/4"	4
17-2862	Rochester-Ochsner Forceps Straight, 1x2 Teeth, 6 1/4"	4
17-3055	Crile Forceps Straight, 5 1/2"	4
17-3155	Crile Forceps Curved, 5 1/2"	10
19-1060	Dressing Forceps Serrated, 6"	2
19-1260	Tissue Forceps 1x2 Teeth, 6"	2
21-8001	TC Halsey Needle Holders Serrated, 5 1/4"	2
21-8031	TC Mayo Hegar Needle Holders Serrated, 6"	2
22-8255	Weitlaner Retractor 2x3 Teeth, Sharp, 4 1/2"	1
23-2521	Sklarlite XD Mixter Forceps Right Angle, 6 1/2"	2
36-2160	Allis Tissue Forceps 4x5 Teeth, 6"	4
47-2955	Backhaus Towel Clamps 5 1/4"	2
50-1290	Cushing Vein Retractors 9"	2
50-1472	Adson Forceps Curved, 7 1/4"	4
50-3047	Adson Tissue Forceps 1x2 Teeth, 4 3/4"	2
50-3147	Adson Dressing Forceps Serrated, 4 3/4"	2
52-5162	Debaquey Atraumatic Forceps 2mm, 6 1/4"	2
60-1085	US Army Retractor Set of 2, Double End, 8 1/4"	1
60-1656	Kelly Retractors 9 1/2", 2" x 1 1/2"	2
60-1676	Richardson Retractors SklarGrip Handle, Small, 9 1/2", 1" x 3/4"	2
60-5824	Volkman Retractors Ring Handle, 4 Prongs, Sharp, 8 1/2"	2
87-2195	Foerster Sponge Forceps Straight, Serrated, 9 1/2"	2

2. BASIC OPEN HEART SET

Item #	Description	Qty.
50-1585	Adson Dura Hook, 4mm, Blunt, 8"	1
50-1472	Adson Forceps, Curved, 7 1/4"	4
50-3047	Adson Tissue Forceps 1x2 Teeth, 4 3/4"	2
36-2160	Allis Tissue Forceps 4x5 Teeth, 6"	8
36-2275	Allis Tissue Forceps 5x6 Teeth, 7 1/2"	4
55-7990	Ankeney Sternal Retractor Adult	1
47-2955	Backhaus Towel Clamps 5 1/4"	6
07-1850	Cooley Suction Tube, 8mm, 13 1/4"	1
17-3155	Crile Forceps Curved, 5 1/2"	12
50-1290	Cushing Vein Retractors 9"	2

52-5177	DeBakey Atraumatic Forceps 2mm, 7 3/4"	2
52-6631	DeBakey Atraumatic Multi-Purpose Clamp 60° Angle, 10	1
52-6634	DeBakey Atraumatic Multi-Purpose Clamp 60° Angle, 9 1/2"	1
52-6614	DeBakey Atraumatic Vena Cava Clamp Medium, 9 3/4"	1
52-6652	DeBakey Derra Atraumatic Clamp Medium, 6 3/4"	2
52-5195	DeBakey Tissue Forceps Straight, 2mm, 9 1/2"	2
19-1060	Dressing Forceps, Serrated, 6"	2
36-2578	Duval Lung Forceps 1" Jaw, 8"	2
55-7685	Finochietto Rib Spreader Medium	1
87-2195	Foerster Sponge Forceps Straight, Serrated, 9 1/2"	2
50-2008	Frazier Suction Tube 8 French	1
47-1180	Gerald Dressing Forceps, Straight, Serrated, 7"	2
52-2073	Glover Coarctation Clamps Angled, 10 1/8"	2
57-1485	Green Retractors Fenestrated, 8 1/2"	2
17-1550	Halsted Mosquito Forceps Curved, 5"	6
17-1450	Halsted Mosquito Forceps Straight, 5"	6
52-6881	Harken Auricle Clamp #1, 9 1/2"	1
52-6778	Lambert-Kay Clamp 8"	1
55-2892	Mixer Forceps Right Angle, 9 1/4"	4
52-1980	Patent Ductus Clamps Straight, 8 1/4"	2
52-2845	Potts-Smith Scissor Angled, 45° Angle, 7 1/4"	1
60-1695	Richardson-Eastman Retractor Set of 3	1
17-2862	Rochester-Ochsner Forceps, 1x2 Teeth, 6 1/4"	8
17-2262	Rochester-Pean Forceps Curved, 6 1/4"	6
17-2272	Rochester-Pean Forceps Curved, 7 1/4"	6
36-2790	Rochester-Pean Forceps Curved, 9"	2
06-2903	Scalpel Handle - #3	1
06-2915	Scalpel Handle - #3L	1
06-2907	Scalpel Handle - #7	1
15-3315	Sklarhone™ Metzenbaum Scissor, Smooth, Curved, 9"	1
23-2525	Sklarlite XD™ Mixer Forceps, Right Angle, 7 1/4"	1
21-8010	TC Crile-Wood Needle Holders, Serrated, 10"	2
21-8031	TC Mayo Hegar Needle Holders, Serrated, 6"	2
21-8033	TC Mayo -Hegar Needle Holders, Serrated, 8"	2
40-1024	TC Pin Cutter Angled, Double Action, 8 1/2"	1
21-8015	TC Ryder Micro Needle Holders, Serrated, 8"	2
16-1610	TC Sklar Edge™ Mayo Dissecting Scissor, Curved, 6 3/4"	1
16-1510	TC Sklar Edge™ Mayo Dissecting Scissor, Straight, 6 3/4"	1
16-2110	TC Sklar Edge™ Metzenbaum Scissor, Curved, 7"	1
16-2310	TC Sklar Edge™ Metzenbaum Scissor, Curved, 9"	1
16-2105	TC Sklar Edge™ Metzenbaum Scissor, Curved, Delicate, 7"	1
21-9065	TC Sternal Wire Twisters - 7"	2
19-1280	Tissue Forcep1x2 Teeth, 8"	1
19-1260	Tissue Forceps 1x2 Teeth, 6"	2
11-1281	Utility Scissor, Black, 7 1/2"	1
17-3961	Vorse Tube Occluding Forceps, Serrated, 7"	6
42-1875	Weitlaner Retractor 3x4 Teeth, Blunt, 8"	1
07-1805	Yankauer Suction Tube Stainless Steel	1

3. VEIN SET

Item #	Description	Qty.
06-2903	Scalpel Handle - #3	1
16-2110	Sklar Edge Metzenbaum Scissor - Tungsten Carbide, Curved, 7"	1
17-1550	Halsted Mosquito Forceps Curved, 5"	10
19-1060	Dressing Forcep Serrated, 6"	1
19-1260	Tissue Forcep 1x2 Teeth, 6"	1
21-8032	TC Mayo-Hegar Needle Holder Serrated, 7"	1
42-1865	Weitlaner Retractor 3x4 Teeth, Blunt, 6 1/2"	1
52-5162	Debakey Atraumatic Forcep, 2mm, 6 1/4"	1
55-2894	Mixer Forcep Right Angle, Longitudinal Serrations, 10 1/2"	1
60-1085	US Army Retractor Set of 2, Double End, 8 1/4"	1

4. AV FISTULA SET

Item #	Description	Qty.
06-2903	Scalpel Handle #3	2
06-2907	Scalpel Handle #7	1
10-1675	Medicine Cup 2oz., Graduated Measure	1
16-1510	Sklar Edge Mayo Dissecting Scissor Tungsten Carbide, Straight, 6 3/4"	1
16-1905	Sklar Edge Metzenbaum Lahey Scissor Tungsten Carbide, Delicate, Curved, 5 3/4"	1
17-1225	Micro-Mosquito Forceps Curved, Delicate, 4 3/4"	6
17-1450	Halsted Mosquito Forceps Straight, 5"	4
17-1550	Halsted Mosquito Forceps Curved, 5"	10
17-2262	Rochester-Pean Forceps Curved, 6 1/4"	4
17-2862	Rochester-Ochsner Forceps Straight, 1x2 Teeth, 6 1/4"	2
17-3155	Crile Forceps Curved, 5 1/2"	10
21-8001	TC Halsey Needle Holder Serrated, 5 1/4"	1
21-8006	TC Baby Crile-Wood Needle Holders Serrated, 6"	2
21-8040	TC Castroviejo Needle Holders Straight with Lock, 5 1/2"	2
21-8087	TC DeBakey Cardiovascular Needle Holder 7"	1
22-8345	Weitlaner Retractor 2x3 Teeth, Blunt, 4 1/2"	1
22-9027	Alm Retractor 4x4 Teeth, Blunt, 2 3/4"	1
23-2521	Sklarlite XD Mixer Forceps Right Angle, 5 1/2"	2
36-2160	Allis Tissue Forceps 4x5 Teeth, 6"	2
36-2790	Rochester-Pean Forcep Curved, 9"	1
47-2572	Gillies Skin Hooks 4mm, 7"	2
47-2655	Blair-Rollet Retractors 4 Prong, Sharp, Delicate, 5 1/2"	2
47-2852	Lorna-Edna Towel Clamps 5 1/2"	2
50-2008	Frazier Suction Tube 8 French	1
50-3047	Adson Tissue Forceps 1x2 Teeth, 4 3/4"	2
50-3147	Adson Dressing Forceps Serrated, 4 3/4"	2
51-4370	TC Potts-Smith Dressing Forcep Serrated, 7"	1
52-5162	Debakey Atraumatic Forceps 2mm, 6 1/4"	2
52-6575	Bulldog DeBakey Atraumatic Forceps Straight, 5"	2
52-6577	Bulldog DeBakey Atraumatic Forceps Curved, 5"	2

52-6580	Bulldog DeBakey Atraumatic Forceps Ring Handle, 45° Angle, 5"	2
52-6670	Garrett Vascular Dilator Set 8 1/2", Set of 9	1
60-1085	US Army Retractor Set of 2, Double End, 8 1/4"	1
60-1676	Richardson Retractors SklarGrip Handle, Small, 9 1/2", 1" x 3/4"	2
60-6164	Senn Retractors Double End, Blunt, 3 Prongs, 6 1/4"	2
64-1342	Stevens Tenotomy Scissor Curved, Blunt/Blunt, 4 1/2"	1
64-3142	Westcott Tenotomy Scissor Right, Blunt, 5"	1
65-1842	Desmarres Lid Retractors 14mm	2
66-6852	Heparin Needle Luer Lock, 3mm, 2 1/2"	1
80-1410	Bozeman Forcep Double Curved, 10 1/4"	1
98-4108	Diethrich Bulldog Clamps Angled, 8mm	4
52-2802	DeBakey Vascular Scissor 45° Angle, 7"	1

5. THORACOTOMY SET I

Item #	Description	Qty.
06-2903	Scalpel Handles #3	2
06-2907	Scalpel Handle #7	1
06-2915	Scalpel Handle #3L	1
16-1510	Sklar Edge Mayo Dissecting Scissor Tungsten Carbide, Straight, 6 3/4"	1
16-1610	Sklar Edge Mayo Dissecting Scissor Tungsten Carbide, Curved, 6 3/4"	1
16-2110	Sklar Edge Metzenbaum Scissor Tungsten Carbide, Curved, 7"	1
16-2310	Sklar Edge Metzenbaum Scissor Tungsten Carbide, Curved, 9"	1
16-2311	Sklar Edge Metzenbaum-Nelson Scissor Tungsten Carbide, Curved, 1"	1
17-1550	Halsted Mosquito Forceps Curved, 5"	6
17-2262	Rochester-Pean Forceps Curved, 6 1/4"	8
17-2280	Rochester-Pean Forceps Curved, 8"	4
17-2862	Rochester-Ochsner Forceps Straight, 1x2 Teeth, 6 1/4"	4
17-3055	Crile Forceps Straight, 5 1/2"	4
17-3155	Crile Forceps Curved, 5 1/2"	16
19-1060	Dressing Forceps Serrated, 6"	2
19-1080	Dressing Forceps Serrated, 8"	2
19-1260	Tissue Forceps 1x2 Teeth, 6"	2
19-1280	Tissue Forceps 1x2 Teeth, 8"	2
19-2280	Russian Tissue Forceps 8"	2
21-8032	TC Mayo-Hegar Needle Holders Serrated, 7"	2
21-8033	TC Mayo-Hegar Needle Holders Serrated, 8"	2
21-8034	TC Mayo-Hegar Needle Holder Serrated, 10 1/2"	1
36-1677	Babcock Intestinal Forceps 8"	2
36-2160	Allis Tissue Forceps 4x5 Teeth, 6"	4
36-2275	Allis Tissue Forceps 5x6 Teeth, 7 1/2"	2
36-2578	Duval Lung Forceps 1" Jaw, 8"	4
47-2852	Lorna-Edna Towel Clamps 5 1/2"	2
47-2955	Backhaus Towel Clamps 5 1/4"	2
50-1290	Cushing Vein Retractors 9"	2
50-3047	Adson Tissue Forceps 1x2 Teeth, 4 3/4"	2

52-3310	Potts-Smith Dressing Forceps Serrated, 10"	2
52-5177	DeBakey Atraumatic Forceps 2mm, 7 3/4"	2
52-5195	DeBakey Tissue Forceps Straight, 2mm, 9 1/2"	2
52-6624	DeBakey Atraumatic Tangential Clamp 10"	2
55-2892	Mixer Forceps Right Angle, 9 1/4"	4
55-2898	Gemini Forcep Right Angle, Delicate, 11"	4
60-1085	US Army Retractor Set of 2, Double End, 8 1/4"	1
60-1661	Kelly Retractors 9 1/2", 2" x 2 1/2"	2
60-1676	Richardson Retractors SklarGrip Handle, Small, 9 1/2", 1" x 3/4"	2
60-1681	Richardson Retractors With SklarGrip Handle, Medium, 9 1/2", 1" x 1 1/4"	2
60-3615	Zalkind Ribbon Retractor Malleable, 1 1/2" x 13"	1
60-3620	Zalkind Ribbon Retractor Malleable, 2" x 13"	1
60-7113	Balfour Retractor 2 Pair Interchangeable Arms, 10"	1
74-3075	Schmidt Tonsil Forceps Half Curved Jaws, 7 1/2"	3
87-2195	Foerster Sponge Forceps Straight, Serrated, 9 1/2"	3
90-2641	Bridge Forceps Curved, Delicate, 11"	3

6. THORACOTOMY SET II

Item #	Description	Qty.
55-1614	Bethune Rib Shears 14"	1
55-5980	Alexander Rasp 8"	1
55-6965	Doyen Rib Rasp Right, 6 1/2"	1
55-7065	Doyen Rib Rasp Left, 6 1/2"	1
55-7195	Davidson Spatula Retractor Large, 3" x 3 1/2"	1
55-7365	Bailey Rib Contractor Child	1
55-7685	Finochietto Rib Spreader Medium	1
55-7880	Burford-Finochietto Rib Spreader Two Sets of Blades, 8" Spread	1

SRG011**Ortho Surgery Set**

	<u>Names</u>
1	Hand Set
2	IM Nailing set
3	IM Nail Guide wire
4	DHS Instrument set
5	Austin Moore Set
6	Prosthesis Set
7	Pin Set
8	Skeletal Traction set
9	External Fixation Set
10	Hand fixation Set
11	K Nail Set
12	K Nail Reamer set
13	V Nail Set
14	Rush Nail Set (Big)
15	Rush Nail Set (Medium)
16	Rush Nail Set (Small)
17	TKR Instrument set
18	Suture wire set
19	Mini Saw
20	Elizarow Set
21	DCP plate set (Narrow)
22	DCP plate set (Broad)
23	Plate set (different types)
24	Small Fragment set
25	A/O Set 3.5 mm
26	A/O Set 4.5 mm
27	A/O Set 6.5 mm
28	Cannulated set 3mm (with screws)
29	Cannulated set 4mm (with screws)
30	Cannulated set 7mm (instruments)
31	Screw set 2.7 mm
32	Bone sets
33	Bone holder sets
34	Forearm Set
35	Forearm Bone holder Set
36	Laminectomy set
37	Spine Instruments set
38	Hand Immobilizer
39	Arthroscopy set
40	ACL reconstruction set

- 41 K- wire sets
- 42 ACL LARS set
- 43 TENS Nails set
- 44 PFN Set
- 45 Modular saw
- 46 CTS set
- 47 Stryker set
- 48 Screw driver set
- 49 Self retaining retractor set
- 50 Hammer set
- 51 Spine curette set
- 52 Osteotome set
- 53 Drill bit set
- 54 Libra Set
- 55 DHS implants set
- 56 Plate bender set
- 57 Bone gouge set
- 58 Allies set
- 59 Curette set

Separate packs

- 1 T handle
- 2 Spike Big
- 3 Spike Medium
- 4 Cutting player
- 5 Pin Cutter Big
- 6 Cutter small
- 7 Bone cutter

SRG011-E Emergency Ortho SetNames

- 1 Elizarow Set
- 2 Small Fragment set
- 3 Bone sets
- 4 Bone holder sets
- 5 Forearm Set
- 6 Forearm Bone holder Set
- 7 Plate bender set
- 8 Bone gouge set
- 9 Currette set
- 10 Stryker Set
- 11 External fixation set Lower limb
- 12 External fixation set Upper limb
- 13 K wire sets
- 14 Pin cutter

Bundles

- 1 Ortho bundle
- 2 Arthroscopy bundle
- 3 Laparotomy bundle
- 4 Gown drums

SRG012 Urology Surgery Set

	<u>Names</u>
1	Urethral dialator set Adult
2	Urethral dialator set Paed
3	Nephrectomy set
4	Pyelolithotomy set
5	Cystolithotomy set
6	hypospadiasis set
7	Catheter introducer
8	Uro hegars dialtor
9	Catheter introducer
10	TUR Tray

UROLOGY INSTRUMENTS SET FOR TRANS URETHRAL SURGERIES

Cystoscope - Urethroscope Sheath (Adult) & Obturator 22 Fr (Blue)	1
Cystoscope - Urethroscope Sheath (Paed) & Obturator 13 Fr	1
Cystoscope - Urethroscope Sheath (Adult) & Obturator 18.5 Fr (Metal)	1
Cystoscope - Urethroscope Sheath (Adult) & Obturator 20 Fr (Red)	1
Cystoscope - Urethroscope Sheath (Adult) & Obturator 22 Fr (Red)	1
Cystoscope and Urethroscope (Paed) 14.5 FR	2
Biopsy Forceps 7 Fr	1
Bridge (Paediatric)	1
Bridge (Adult)	1
Coagulating Electrode (Black) angle 90 deg (Paediatric)	1
Coagulating Electrode Blunt End (Black) (Paediatric)	1
Coagulating Electrode Pointed End (Black) (Paediatric)	1
Coagulating Electrodes 24 FR	1
Coagulation Electrodes 5 FR	1
Coagulation Electrodes 7 FR	1
Coagulatory Electrode for Resectoscope (Adult)	1
Coagulatory Electrode for Resectoscope (Paed)	1
Cold Knife	4
Cutting Loop (Black Paed)	1
Cutting Loop 24 FR	5
ELLIK Evacuator Set	1
Foreign Body Forceps DP-2	1
Foreign Body Forceps 7Fr LS FR	1
Light Source	1
Light Cord	2
Telescope 4mm (paediatric) 0 degree	1
Telescope 4mm (Adult) 30 degree	1

Telescope 4mm (Adult) 30 degree	2
Telescope 4mm (Adult) 70 degree	1
Obturator	1
Internal Urethrotome 21Fr	1
Laser cystoscope-Urethroscope(Adult)	1
Laser Cystoscope-Urethroscope(Paed)	1
Otis Urethrotome with knife	1
Resectoscope Set (Obturator and sheath) 26 Fr	1
Resectoscope Set (Obturator and sheath) 28 Fr	1
Resectoscope working element	1
Resectoscope working element	1
Visual Urethrotome	1
Telescopicbougie set	1
Stone holding forceps	1
Rigid Grasping forceps	1
Aligator forceps	1
Cutting Loop (paediatric)	2
Coagulating Electrode ,Angled Blunt (paed)	2
Coagulating Electrode ,Hook shaped Ball ended(p)	2
Coagulating Electrode ,Hook shaped pointed(p)	2
Coagulating Electrode ,angled pointed(p)	2
Cauty cable	1
Fiber optic light cable	1

SRG013 ENT Surgery Sets

	<u>Names</u>
1	SMR set
2	Shea speculum set
3	Tonsilectomy set
4	Antral lavage set
5	tracheostomy set
6	Mouthgag set
7	Plastic surg. mouthgag set
8	Mastoidectomy set
9	Tympano plasty set
10	Cleft palate set
11	Cleft Lip set
12	Draffin bipods
13	FESS set
14	D/L scopy set
15	ENT micro instruments set
16	Stepidectomy set

SRG014 Ophthal Surgery SetsNames

- | | |
|---|---------------|
| 1 | Catract set |
| 2 | DCR set |
| 3 | DCt set |
| 4 | Pterygium set |
| 5 | Chalazion set |

Bundles

- | | |
|---|----------------|
| 1 | Ophthal Bundle |
| 2 | Ophthal drum |

SRG015 General Surgery SetNames

- 1 Laparotomy Set
- 2 Intestinal Suction set
- 3 Surgical Set
- 4 Vasectomy set
- 5 Sigmoidoscopy set
- 6 Anal dialator set
- 7 Paediatric set
- 8 Dressing tray
- 9 Laparoscopy set
- 10 Retractor set
- 11 Paediatric retractor set
- 12 Circumcision
- 13 Minor set
- 14 Hernia Set
- 15 Laparoscopy retractors
- 16 Proctoscope
- 17 Long toothed forceps
- 18 Long non toothed forceps
- 19 Parks retractor
- 20 Paediatric proctoscope
- 21 Skin grafting Knife handle
- 22 Vein stripper
- 23 Bakes dialator set

Separate packs

- 1 Long Arteries
- 2 Long curved arteries
- 3 Long curved Kochers
- 4 Long straight Kochers
- 5 Aneurysm needle
- 6 Stone Holding forceps
- 7 Thyroid retractor
- 8 Right angle forceps
- 9 Sinus forceps
- 10 Trochar and cannula
- 11 Scoop curette
- 12 Bulldog clamps
- 13 Double hook retractor
- 14 Single hook retractor
- 15 Biopsy needle

Technical Specification

LOT 1 – Plant & Medical Equipment

- 16 Probes
- 17 Skin grafting board
- 18 Lane tissue holding
- 19 Right angle retractor

SRG015-C Circumcision sets

Medical Tools comprehensive 30 Pcs Circumcision kit is designed for clinical needs and practical challenges. Kit has all necessary tools to perform Circumcision Surgery. All tools are made from high grade surgical stainless steel used by professionals.

The Circumcision Surgery instrument set includes:

- 01 Metzenbaum Scissors 18cm TC Curved
- 01 Metzenbaum Scissors 18cm TC Straight
- 01 Adson Forceps 12cm
- 01 Adson Forceps 1:2 12cm
- 02 Tissue Forceps 16cm
- 06 Kelly Forceps 14cm Curved
- 01 Mayo Hagar Needle Holder 16cm TC
- 02 Allis Tissue Forceps 16cm
- 02 Tissue Forceps 16cm
- 06 Mosquito Forceps 12.5cm Straight
- 06 Mosquito Forceps 12.5cm Curved
- 01 Scalpel Handle # 3

Technical Specifications

Material: Stainless Steel

Rusting Prevention Procedure: Passivated

Ultrasonic Cleaned: Yes

Dull-Polished: Yes

Tests Performed: Boil Test, Performance Test, Shape Test

Packing: Individually Packed

QC Passed: Yes

SRG015-G Skin grafting sets (Knife/ Board)

S.No.	Description of item	Qty
1	Board, skin graft	2
2	Blade, skin graft, Rocket, disposable	5
3	Towel Clip, Backhaus	5
4	Dissector, Mac Donald	1
5	Forceps, Dissecting, Straight, 1/2 Teeth, Serrated, 150mm	2
6	Forceps, Dissecting, Straight, Plain, 145mm	2
7	Forceps, Sponge Holding, 200-240mm	2
8	Handle, blade, skin graft	2
9	Hook, Skin, Gilles	1
10	Scissors, Metzenbaum, Straight, 140mm	1
11	Instrument Container, s/s, With Cover	1

SRG015-H Hernia sets

S.No.	Description of item	Qty
1	Forceps, Sponge Holding, 180mm	2
2	Towel Clip, Backhaus, 90mm	4
3	Handle For Surgical Blade No3	1
4	Scissors, Mayo, Straight, 140mm	1
5	Scissors, Mayo, Curved, 140mm	1
6	Scissors, Metzenbaum, Curved, 180mm	1
7	Scissors, Dressing, Straight 145mm	1
8	Forceps dissecting slender pattern 1 5cm	1
9	Forceps, Dissecting, Straight, Plain, 145mm	1
10	Forceps, Dissecting, Straight, Plain, 145mm	1
11	Forceps, Dissecting, Straight, 1/2 Teeth, 145mm	1
12	Forceps, Dissecting, Straight, 1/2 Teeth, 180mm	1
13	Forceps, Tissue, Allis, 4x5 Teeth, 155mm	1
14	Forceps, Artery, Straight, 125mm	1
15	Forceps, Artery, Curved, 140mm	4
16	Forceps, Artery, Straight, 135mm	6
17	Forceps, Artery, Straight, Kocher, 1/2teeth, 160mm	1
18	Forceps, Artery, Straight, Kocher, 1/2teeth, 185mm	1
19	Forceps, Mikulicz peritoneum 205mm	1
20	Forceps, Mikulicz peritoneum 205mm	1
21	Needle Holder, Mayo, 150mm	1
22	Needle Holder, Mayo, 200mm	1
23	Director, 1 5cm	1
24	Probe, Myrtle leaf, 1 5cm diameter 5cm	2
25	Retractor, fine pattern 1 sharp prong	2
26	Retractor, Senn-Miller baby, sharp	1
27	Retractors, Set of Farabeuf	2
28	Retractor, Langenbeck, 28 x 10mm	2

SRG015-R Retractor sets (different types)

There are two broad categories of retractors:

1. **Hand Retractors** - (Manual) must be held by an assistant, a robot or the surgeon during a procedure.
2. **Self Retaining Retractors** - (Stay open on their own) have a screw, ratchet or some type of clamp to hold the tissue by itself. These allow the surgeon with two free hands.

Retractors fall under the "Retracting and Exposing" instruments used in the OR. The various types of retractors are usually named after the organ which they are used in conjunction with.

1. Common Hand-held Retractors (Manual)

1. Senn - is a handheld, double-ended retractor used to retract primarily surface tissue. "Often used in plastic surgery, small bone and joint procedures, or thyroidectomy and dissection of neck tissue."
2. Army- Navy - Used to retract shallow or superficial incisions. From small wounds to abdominal operations.
3. Ribbon (Malleable) Used to retract deep wounds. May be bent to various shapes to assist in holding back tissue.
4. Hohmann - used in orthopedics to expose bone for procedures.
5. Farabeuf - It is a versatile handheld retractor that is used in multiple procedures. It may be used in dentistry, wrist and hand procedures, or in hernia repair to name a few.
6. Meyerdling - frequently used to hold back tissue and muscle in spinal and neurosurgical procedures such as laminectomy.
7. Deaver - used to retract deep abdominal or chest incisions. Used in Cholecystectomy (removal of gallbladder) for retraction of right lobe of liver. Used in Truncal vagotomy (division of the main trunk of the vagus nerve) for retraction of left lobe of liver.
8. Richardson - retract abdominal or chest incisions. Used for holding back multiple layers of deep tissue. This is one of the most common general retractors.

2. Self-Retaining Retractors (Hold their shape and position once set in place)

1. Weitlaner - It is a popular instrument, most commonly used in basic plastic surgery, large bone and joint procedures.

2. Balfour Abdominal Retractor - Retract wound edges during deep abdominal procedures.
3. Finochietto Rib Retractor (rib spreader) specifically designed to separate ribs in thoracic surgery.
4. Hip Retractor *system* - The self retaining hip retractor helps to free assisting personnel while providing excellent exposure during hip arthroplasty and hip fracture surgery.
5. Gelpi - retract shallow incisions. Often used in smaller surgical sites. Common in spine surgery.

SRG015-V Vein Stripper set

Material	Description	Packaging
MIL10291	NABATOFF VEIN STRIP. WO C	1 EA
MIL10310	POOLE SUC. TUBE CVD 23 FR	1 EA
MIL10312	POOLE SUC. TUBE STR 30 FR	1 EA

SRG017**Cautery Unit**

- 6 ft. cord
- Long battery life
- 24 gauge platinum wire
- Unit includes 3 tips
- Complete, and ready to use

Benefits

- No site burns
- Stable temperature

Applications

- Any surgical procedure

Specifications

LINE VOLTAGE	110V/220V, 60Hz/50Hz
OUTPUT WAVE SHAPE	Clipped Sinusoidal
OUTPUT POWER	0-30 W \pm 6 W (0.2 Ω Load)
MAXIMUM OUTPUT POWER	36 Watts (0.2 Ω Load)
DIMENSIONS	13cm x 13cm x 20cm (dxwxh)
SHIPPING WEIGHT	5 lb (2.3 kg)

SRG221 Surgical InstrumentsNames

- 1 Laparotomy Set
- 2 Intestinal Suction set
- 3 Surgical Set
- 4 Vasectomy set
- 5 Sigmoidoscopy set
- 6 Anal dialator set
- 7 Paediatric set
- 8 Dressing tray
- 9 Laparoscopy set
- 10 Retractor set
- 11 Paediatric retractor set
- 12 Circumcision
- 13 Minor set
- 14 Hernia Set
- 15 Laparoscopy retractors
- 16 Proctoscope
- 17 Long toothed forceps
- 18 Long non toothed forceps
- 19 Parks retractor
- 20 Paediatric proctoscope
- 21 Skin grafting Knife handle
- 22 Vein stripper
- 23 Bakes dialator set

Separate packs

- 1 Long Arteries
- 2 Long curved arteries
- 3 Long curved Kochers
- 4 Long straight Kochers
- 5 Aneurysm needle
- 6 Stone Holding forceps
- 7 Thyroid retractor
- 8 Right angle forceps
- 9 Sinus forceps
- 10 Trochar and cannula
- 11 Scoop curette
- 12 Bulldog clamps
- 13 Double hook retractor
- 14 Single hook retractor
- 15 Biopsy needle
- 16 Probes
- 17 Skin grafting board

- 18 Lane tissue holding
- 19 Right angle retractor

SRGMIN Minor sets

The Minor Surgery Instrument Set includes:

- 1 x Mosquito Artery Forceps 5" Straight
- 1 x Gillies Toothed Dissecting Forceps 6"
- 1 x Kilner Needle Holder 5.25"
- 1 x Iris Scissors 4.5" Curved
- 1 x Martins Splinter Forceps 4.5"
- 1 x Mayo Scissors 6.5" Straight
- 1 x Gillies Skin Hook
- 1 x Stitch Scissors 5" Sharp/Sharp
- 1 x Allis Tissue Forceps 6"
- 1 x Scalpel Handle No. 3 (to take blades 10-15)
- 1 x Spencer Wells Artery Forceps 5" Straight
- 1 x McIndoe Plain Dissecting Forceps 6"
- 1 x Volkmann Scoop

SSU001 BEDHEAD UNIT, Vertical

1. The supplier shall supply and install a vertically wall-mounted patient bed head service trucking, complete with provisions for power supply, nurse call, medical gases and other facilities.
2. System Description: The system shall have the following features:
 - It shall be constructed of extruded anodized aluminum alloy sections.
 - Anodized aluminum facials shall be removable to provide access to individual components mounted within the unit.
 - The unit shall be contoured and ergonomically designed.
 - Front panels shall be finished with high-pressure plastic laminate face.
3. The Vertical Bedhead Unit shall comprise the services outlined on the corresponding detailed loaded drawings (1:50) and consisting of:
 - Four (4) x twin electric socket outlet switched in bedhead unit + 1 single electric socket in bed locator
 - One (1) x Data outlet
 - One (1) x Telephone Outlet in bed locator
 - Nurse Call system: as specified
 - Medical gases outlets: One (1) x medical oxygen outlet
 - Medical gases outlets: One (1) medical vacuum outlet
 - Medical gases outlet: One (1) medical air outlet
4. The outlets shall be Color coded. Coding to be coordinated with the Hospital's electro- mechanical consultant or contractor.
5. The outlets shall be ergonomically spaced so that they can comfortably carry items such as oxygen regulators with humidifiers and suction regulators with suction jars without colliding or obstructing other service outlets. Connection of all outlets and connectors to the supply systems are the responsibility of the supplier and shall be coordinated with the Hospital's electro-mechanical consultant or contractor
6. The bedhead unit shall include accessory tracks for mounting various accessories.
7. The bedhead unit installation and design shall meet the international quality and safety standards for medical gases, pipeline system and bedhead units adopted by the hospital.
8. Approximate overall dimensions (D x H): 10 x 35 cm. For approximate Width dimension, refer to the corresponding Loaded Drawings.

9. A wall mounted rail shall be installed under each bedhead unit. It shall be sturdy enough to carry several items such as baskets and physiological monitors.
10. The bedhead unit supplier shall submit detailed shop drawings showing items in plan and elevation views with the color schemes matching the patient's furniture, for the Client / Engineer approval prior to shipment and delivery of bedhead unit items to site.
11. Shop drawings shall show dimensions and details of related services including wiring and piping diagrams. They shall also show a complete list of components, attachments and accessories for approval.
12. The bedhead unit installation and design shall meet the standards and norms adopted by the electro-mechanical consultant (NFPA, HTM, etc.).
13. Suppliers shall install medical gas outlet terminals and electrical socket outlets using the same type already installed in the existing hospital.
14. Outlet provisions and outlet installations for patient monitors, data, telephone and nurse call systems shall be fully coordinated with the electromechanical consultant.
15. The bedhead unit supplier shall ensure compatibility of the delivered bedhead units with patient beds for the purposes of connectability of patient overbed lighting system, nurse call system, telephone and TV system to bed side rail controls, wherever applicable.
16. The bedhead unit shall be pre-piped and pre-wired; factory assembled electrical and mechanical components. It shall also be factory tested and delivered to site with singular terminal connections.

SSU008 SERVICE SUPPLY UNIT

1. The supplier shall supply and install wall-mounted patient service trunking, complete with provisions for power supply, nurse call, medical gases and other facilities.
2. The Unit shall comprise the services outlined on the corresponding detailed loaded and consisting of:
 - 2.1. Medical gases outlets: One (1) x medical oxygen outlet
 - 2.2. Medical gases outlets: One (1) x medical vacuum outlet
 - 2.3. Medical gases outlets: One (1) x medical compressed air (4 bar)
 - 2.4. Medical gases outlets: One (1) x Nitrous Oxide outlet
3. The outlets shall be Color coded. Coding to be coordinated with the Hospital's electro-mechanical consultant or contractor.
4. The outlets shall be ergonomically spaced so that they can comfortably carry items such as oxygen regulators with humidifiers and suction regulators with suction jars without colliding or obstructing other service outlets. Connection of all outlets and connectors to the supply systems are the responsibility of the supplier and shall be coordinated with the Hospital's electro-mechanical consultant or contractor.
5. The bedhead unit installation and design shall meet the international quality and safety standards for medical gases, pipeline system and bedhead units adopted by the hospital.
6. For approximate dimension, refer to the corresponding Loaded Drawings.
7. The unit supplier shall submit detailed shop drawings showing items in plan and elevation views with the color schemes matching the patient's furniture, for the Client / Engineer approval prior to shipment and delivery of unit items to site.
8. Shop drawings shall show dimensions and details of related services including wiring and piping diagrams. They shall also show a complete list of components, attachments and accessories for approval.
9. The unit installation and design shall meet the standards and norms adopted by the electro-mechanical consultant (NFPA, HTM, etc.).
10. Suppliers shall install medical gas outlet terminals and electrical socket outlets using the same type already installed in the existing hospital.
11. Outlet provisions and outlet installations for patient monitors, data, telephone and nurse call systems shall be fully coordinated with the electromechanical consultant.
15. The unit supplier shall ensure compatibility of the delivered units with patient beds for the purposes of connect ability of patient over bed lighting system, nurse call system, telephone and TV system to bed side rail controls, wherever applicable.
16. The unit shall be pre-piped and pre-wired; factory assembled electrical and mechanical components. It shall also be factory tested and delivered to site with singular terminal connections.

SSU120 SERVICES SUPPLY UNIT

1. The supplier shall supply and install a wall-mounted patient trunking, complete with provisions for power supply, nurse call, medical gases and other facilities.
2. The trunking Unit shall comprise the services outlined on the corresponding detailed loaded drawings (1:50) and consisting of:
 - 2.1. Medical gases outlets: One (1) x medical oxygen outlet
 - 2.2. Medical gases outlets: One (1) x medical vacuum outlet
 - 2.3. Medical gases outlets: One (1) x medical compressed air (4 bar) outlet
4. The outlets shall be Color coded. Coding to be coordinated with the Hospital's electro- mechanical consultant or contractor.
5. The outlets shall be ergonomically spaced so that they can comfortably carry items such as oxygen regulators with humidifiers and suction regulators with suction jars without colliding or obstructing other service outlets. Connection of all outlets and connectors to the supply systems are the responsibility of the supplier and shall be coordinated with the Hospital's electro-mechanical consultant or contractor.
6. The unit installation and design shall meet the international quality and safety standards for medical gases, pipeline system and bedhead units adopted by the hospital.
7. Approximate overall dimensions (D x H): 10 x 25 cm. For approximate Width dimension, refer to the corresponding Loaded Drawings. In general, the width will be approximately 200 cm.
8. The unit supplier shall submit detailed shop drawings showing items in plan and elevation views with the color schemes matching the patient's furniture, for the Client's approval prior to shipment and delivery of unit items to site.
9. Shop drawings shall show dimensions and details of related services including wiring and piping diagrams. They shall also show a complete list of components, attachments and accessories for approval.
10. The unit installation and design shall meet the standards and norms adopted by the electro-mechanical consultant (NFPA, HTM, etc.).
11. Suppliers shall install medical gas outlet terminals and electrical socket outlets using the same type already installed in the existing hospital.
12. Outlet provisions and outlet installations for patient monitors, data and nurse call systems shall be fully coordinated with the electromechanical consultant.

STE020 STERILIZER, autoclave, bench mounted

1. Microprocessor controlled fully automatic bench top steam sterilizer
2. Chamber capacity in terms of trays size: approx. 300 x 200 x 20 mm: 5 pcs to be included
3. Chamber capacity in terms of cassettes size: approx. 300 x 200 x 40 mm: 3 pcs to be included
4. Sterilizer equipped with at least the following cycles:
 - 134°C Flash cycle for solid, unwrapped instruments “dropped instrument cycle”. Cycle time max 11 min
 - 134°C wrapped cycle “B-process” for all type of loads, wrapped, unwrapped, solid, hollow or porous. Cycle time, including drying: max 25 minutes with 3.5 Kg load.
 - 121°C wrapped cycle “B-process” for all type of loads, wrapped, unwrapped, solid, hollow or porous. Cycle time, including drying: max 35 minutes with 3.5 Kg load.
5. Temperature range from 105° C to 135° C in 1°C increment
6. Control panel with display positioned above the chamber door with full support of English language.
7. The sterilizer shall be equipped with a square chamber constructed according to most severe quality and safety standards
8. Internal chamber approximate dimensions:
 - 8.1. Width: 200 mm
 - 8.2. Height: 150 mm
 - 8.3. Depth: 350 mm.
9. Glass blastered chamber surface for better cleaning.
10. The sterilizer shall be equipped with a horizontal opening/closing sliding door
11. The water reservoir shall be fully integrated and accessible for cleaning and made of stainless steel
12. There should be a built in water quality control system, giving an alarm when the feed water for the steam generator is above defined limit
13. The built-in vacuum pump has to have a very high efficiency with low noise level, producing vacuum in a short time, mounted on vibration protection.
14. The air entering the chamber at the end of the sterilization cycle has to be filtered by an air filter with separation efficiency higher than 99.998% for particles of 0.3 µm.
15. There shall not be more than three solenoid valves in the complete sterilizer piping system to simplify service

16. There should be a built-in steam generator, maximum 1.8kW in the sterilizer.
17. The elements for the steam generator shall never be in contact with the feed water and have a guaranteed 10 years life time
18. There should be an automatic electronic process control, including at least the following components:
 - 18.1. CPU processor with backup battery;
 - 18.2. Digital inputs and outputs for sterilizer control
 - 18.3. Analogical inputs for measurements
 - 18.4. COM port for printer and PC
19. The sterilizer must be fitted with a process evaluation system
20. The automatic control system has to command all the system functions, to watch all the operations, to contain optical signals/alarms, to display the chamber pressure and temperature
21. Operator access to the test programs/cycles, parameter settings, calibration, service or maintenance has to be allowed only by passwords/preset access levels, avoiding unauthorized access.
22. Time for sterilization should be: 10-90 min. approx.; for drying: 0-90 min Approx.
23. RS232 connection
24. The sterilizer shall be supplied with 5 perforated aluminum trays (from the different sizes) and 3 cassettes as stated in 1 and 2 above

STE040 Sterilizing Unit, Steam, Table Top

1. The unit should have fully automated, microprocessor controlled operation
2. The unit shall operate on vacuum principle, incorporating at least five standard programs (wrapped instruments and textile at 134°C & 121°C and Flash)
3. Test programs shall be incorporated (Bowie Dick and leak)
4. Cycle documentation via built-in printer, Vacuum pump to be built in within the unit
5. User customized programs shall be possible
6. SS interior (steam jacketed) and exterior panels
7. Door safety system with safety interlock to prevent accidental door opening when chamber is pressurized or during cycle
8. Clearly visible parameter displays (temp, pressure, cycle status, etc.)
9. Built-in thermal printer for detailed cycle documentation.
10. The unit shall be equipped with a built in electric heating or steam generator.
11. The unit shall have a built in water reservoir for minimal installation requirements. Connection to external water / drain supply should be unnecessary.
12. Sterilizer chamber capacity: not less than 20 liters.
13. The chamber shall possess horizontal loading capability and incorporate at least two (removable) shelves.

STE042 STERILIZER, Plasma, gas, low-temperature, double door

1. Microprocessor controlled Hydrogen Peroxide (plasma) sterilizer for heat and moisture sensitive material
2. Factory preset (user modifiable) sterilization program cycles. Cycle time should not to exceed 60 minutes.
3. Cycle byproducts: water vapor and oxygen
4. Double door system, with safety interlock to prevent accidental door opening when chamber is pressurized. The door shall be Automatic Sliding enabling safe and smooth open/closure. They shall have a window for process and load monitoring to check quality and homogeneity of Plasma inside.
5. Alphanumeric display for sterilizer and/or cycle status and parameter display before, during and after a cycle (temp, pressure, ready, etc.)
6. Integrated thermal array printer for detailed cycle documentation and relevant system information or warning and alarming messages
7. Capacity should be around 200 liters.
8. SS interior and exterior panels
9. Agent source: disposable, single use cassettes or cartridges.
10. To incorporate multilevel safety features and audiovisual alarms (door sensor, chamber pressure, end of cycle, etc...)
11. The offer shall include all the items or equipment necessary for the full operation of the system
12. The unit shall be floor mounted
13. The offer shall include two loading carts designed specifically for use with the offered sterilizer.
 - The cart shall be mobile and easily maneuverable using incorporated handles.
 - Parking mechanism for loading / unloading shall be incorporated within the sterilizer / cart system.
 - The cart shall accommodate at least two wire baskets for simultaneous loading into the sterilizer chamber.
 - The baskets shall be designed as to easily slide in and out of the cart for loading and unloading
 - The capacity of the baskets shall be such as to utilize the full and maximum capacity of the sterilizer.
14. The unit should be fully contained, requiring no connections to external sources and utilities except AC power (no connections to drain, water supply, external exhaust, etc.)
15. The offer shall include a listing of all compatible devices that can be sterilized with the offered system (FDA approvals).
16. Any required accessories for narrow channel devices shall be listed and included with the main offer.

STE060 STERILIZER, Steam, DD, 450L

1. The unit shall have fully automated, microprocessor controlled operation with preset programs for linen, metals, liquid and rubber material. The programs shall include pretreatment and post treatment cycles.
2. Air removal by vacuum and gravity (for liquids)
3. The system programs shall include flash sterilization capability
4. SS interior (steam jacketed) and exterior panels
5. Double door system, with safety interlock to prevent accidental door opening when chamber is pressurized
6. Clearly visible digital alphanumeric parameter displays (temp, pressure, cycle status, etc...)
7. Built-in thermal printer for detailed cycle documentation.
8. The unit shall be equipped with a built in steam generator, specifically designed and manufactured for use with the offered system. It shall be fully integrated.
9. Sterilizer chamber capacity ~ 450 liters.
10. Safety features shall include chamber pressure withstanding capacity of at least 3 bars with safety relief pressure valve in case of malfunction
11. The offer shall include the following items:
 - 11.1. Two loading carts designed specifically for use with the offered sterilizers. The carts shall be mobile and easily maneuverable using incorporated handles.
 - 11.2. Parking mechanism for loading / unloading of racks shall be incorporated within the sterilizer / cart system.
 - 11.3. Two racks (one for each cart). The racks will be used to house the instrument baskets and other loading materials such as cloth packs and liquid containers inside the sterilizer during the sterilization cycle.
12. Each rack shall have 4 shelves to fulfill the purpose stated above

STE101 Steam Biological Incubator

Steam Microbial Incubators are specially designed for use with Verify Self Contained Biological Indicators (SCBIs) and can process either 6 or 28 individual SCBIs. The incubators are available in single or dual temperatures for steam and ethylene oxide (EO) sterilization process. For steam, the incubators operate at 55-59 °C. For EO, they operate at 35-39 °C. The Incubator must be compact, and can be seated on a table top or bench

Main Features:

1. Productivity: Automatic temperature control provides consistent operation.
2. Ease of Use: Dry heat block is simple and eliminates spillage or contamination concerns.
3. Easy to Validate: LCD on heating block provides constant temperature monitoring.

STH001 Stethoscope, Adult

Technical Specifications:

Frequency range 30 Hz ... 150 KHz
Operating temperature -10 ... +40 °C
Output volume digitally adjustable (32 levels)
Headphones 32 Ω
Power supply 4 x AAA battery
Battery life 30 h
Dimensions 220 x 35 x 35 mm
Length sensors 70 / 280 mm

Delivery contents

1 x machine stethoscope PCE-S 42, 1 x headphones, 1 x long measuring tip, 1 x short measuring tip, 6 x AAA batteries, 1 x carrying case with shoulder strap, 1 x instruction manual

STH002 Stethoscope, Pediatric

Two-sided models with traditional bell/diaphragm chest pieces are designed, sized and acoustically precise for children and infants.

Features

- One-inch traditional bell (pediatric) and bell (infant) combined with a floating diaphragm
- Solid stainless steel chest piece
- Excellent acoustic seal and comfortable fit with patented 3M™ Littmann® Snap Tight Soft-Sealing ear tips
- Comfortably angled, anatomically correct headset
- Single-lumen tubing available in attractive colors
- Three-year warranty

SUC007 SUCTION UNIT, high pressure, portable

1. Mobile suction unit for use during surgical procedures for all types of aspirates
2. It shall be used to remove/evacuate soft tissue and fluids from various parts of the body
3. Stable mobile stand made of lightweight, heavy-duty, antirust metal with 4 antistatic swiveling castors and wide base to prevent accidental tripping.
4. The suction unit shall possess (or exceed) the following technical specifications:
 - 4.1. Single rotary pump type
 - 4.2. Free air flow: up to 30 LPM or better
 - 4.3. Vacuum pressure from 0 to -800 mbar, with an easy to read negative pressure gauge indicating actual pressure.
 - 4.4. Low noise operation (≤ 45 dB @ 1 meter)
 - 4.5. Incorporated bacteria filter (specify type).
 - 4.6. Dual collection jars ~ 2.5 L each, with overflow safety device to be included as standard items. (Glass jars are not recommended).
 - 4.7. Foot switch operation in addition to hand control is an asset
5. Standard accessories should be listed in details with part number and quantities.

SUC009 VACUUM SUCTION FOR DELIVERY

Electric vacuum pumps are being used to achieve a vacuum and keep the pressure at the desired level. There are many benefits in using electric vacuum delivery (EVD) instead of manual vacuum equipment, especially if the EVD system is purpose built for obstetric vacuum delivery.

- Better control of suction
- Fewer cup «pop-offs» due to vacuum reservoir
- Equipment compensates for minor air leakages
- Precise, repeatable setting of desired vacuum pressure
- Equipment regulates vacuum pressure, not physician
- Physician is hands-free from suction source
- Fast vacuum build-up
- Improved visualization of the birth field
- Increased focus on mother and baby
- Increased safety
- Less potential for human error

SUC050 Respiration Suction Pumps

- Portable and versatile thanks to a compact design and battery-powered option.
- Hygienically designed pump and collection systems allow for efficient routine cleaning.
- Intuitive handling and safety features require little instructions.
- Swiss technology offers precision of vacuum level settings and reliability of operation.
- Light weight and portable, designed for airway suctioning and for small surgical interventions. It offers easy and intuitive handling.
- Can be used with either a Disposable or a Reusable Collection System, according to the customer's requirements.

Specifications:

Max. vacuum [kPa/mmHg]	Tolerance: -75/-563 ± 15%
Flow [l/min]	18 l/min. ± 10%
Dimensions [mm]	380 x 170 x 285 height including filter and 90° coupling piece: 440
Weight [kg]	AC 3.5 AC/DC 4.2
Drive unit	QuatroFlex piston/cylinder technology
Power supply	AC 230–240 V, 50 Hz / 230–240 V 60 Hz / 120 V, 60 Hz AC/DC 100–240 V, 50–60 Hz
Power consumption [W]	AC 90 (70 for 100–120 V version AC) AC/DC 80
Noise level [dB(A)]; measured in Medela acoustic room at 1 m distance	51.2
Vacuum regulator	Membrane
Protection against electric shock	Type CF (cardiac floating: max. earth leaking current 10 µA)
Medical Device Classification – According to 93/42/EEC	Class IIa
Protection against electric shock	Class II Equipment
Ingress Protection	IP21
Battery	NiMH
Operation from battery (at full charge)	30 minutes
Charging time of battery	5 hours
Low battery indication	LED and acoustic
Overflow protection	Disposable overflow protection/bacterial filter (5 pcs included)
Warranty [years]	2; QuatroFlex and battery 6 months
Operating temperature, relative humidity, pressure	5 to 40 °C, 15–93 %, 70–106 kPa

Transport/storage temperature, relative humidity, pressure	–20 to +50 °C, 15–93 %, 70–106 kPa
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Main compatible accessories:*Reusable Collection System*

- Reusable 1 l set with PSU suction jar
- Reusable 2 l set with PSU suction jar

Disposable Collection System

- Adapter for Vario
- Suction jar PC, 1.5 L
- Disposable suction liner 1.5 L
- Disposable suction liner 1.5 L with solidifier
- Suction jar PC, 2.5 L
- Disposable suction liner 2.5
- Disposable suction liner 2.5 L with solidifier

Filters

- Vario disposable filter set
- Disposable overflow protection/bacteria filter with Medela connections
- Disposable overflow protection/bacteria filter with Medela and conical connections

Tubing, silicone

- Silicone tubing Ø 7x12 mm, without coupling pieces 1 m
- Silicone tubing Ø 7x12 mm, without coupling pieces, 2 m
- Silicone tubing Ø 7x12 mm with 1 coupling piece, 60 cm
- Silicone tubing Ø 7x12 mm with 1 coupling piece, 100 cm
- Silicone tubing Ø 7x12 mm with 2 coupling pieces, 30 cm
- Silicone tubing Ø 7x12 mm with 2 coupling pieces, 60 cm
- Silicone tubing Ø 7x12 mm, 25 cm, with 1 coupling piece and 1 coupling piece 90°

Tubing, disposable

- Disposable (PVC) tubing, 180 cm, with fingertip, sterile
- PVC tubing Ø 12.7x18 mm, 200 cm for patient connection Ø 10–14 mm
- Disposable PVC tubing, 150 cm CH 25, sterile

SUCMRI MRI COMPATIBLE SUCTION

1. The suction regulator shall be connected to central vacuum system to regulate the vacuum level for common suction therapy procedures.
2. The regulator shall be impact-resistant and durable
3. Shall be constructed of MRI compatible high quality materials (up to 3 Tesla MRI application)
4. The regulator shall have the following minimum features:
 - Shall provide continuous operation modes

- Regulation range: 0 to -760 mmHg
 - Flow rate: 0 - 80 l/min (approximately)
 - Nominal working pressure: -760 mmHg
 - With shutoff valve to prevent fluids from ingress to central pipeline system
 - With bacteria filter
 - Directly connected to central vacuum system outlet with British standard probe to BS
 - 5682:2005
 - All surfaces shall be disinfectable
5. All required accessories, consumables, hoses...etc for full functionality shall be included
 6. The unit shall be CE marked and/or FDA approved

SUCMRI-W MRI COMPATIBLE WALL SUCTION

1. The suction regulator shall be connected to central vacuum system to regulate the vacuum level for common suction therapy procedures.
2. The regulator shall be impact-resistant and durable
3. Shall be constructed of MRI compatible high quality materials (up to 3 Tesla MRI application)
4. The regulator shall have the following minimum features:
 - Shall provide continuous operation modes
 - Regulation range: 0 to -760 mmHg
 - Flow rate: 0 - 80 l/min (approximately)
 - Nominal working pressure: -760 mmHg
 - With shutoff valve to prevent fluids from ingress to central pipeline system
 - With bacteria filter
 - Directly connected to central vacuum system outlet with British standard probe to BS 5682:2005
 - All surfaces shall be disinfectable.
5. All required accessories, consumables, hoses...etc for full functionality shall be included
6. The unit shall be CE marked and/or FDA approved
7. Wall attachment required

SURDEN-1 Dental Surgery Set Endo

ENDO FORCEP 95MM
 ENDO FORCEP 110MM
 ENDO FINGER RULER 38MM
 ROOT FRAGMENTS 45' MICRO
 ROOT FRAGMENTS 90' MICRO
 ORTHODONTIC PLIER NERV CANAL
 TWEEZERRS/ TISSUE FORCEPS LONDON-COLLEGE LOCK
 TWEEZERRS/ TISSUE FORCEPS LOCKING 15CM
 TRAYS ENDONTIC BOX
 ENDO TIPS STAND

Conservative & Endodontics

Composite kit (composite, flowable composite, bonding & etchant)	1
Applicators	1
Hand Instruments 14 pcs	1set
Gates Glidden Drills, assorted	1
Dappen glass	2
Glass Slab	2
Cement Spatulla	2
K Files # 15 – 40, 45 – 80	2 pack
H Files # 15 – 40, 45 – 80	2 pack
Barbed Broaches Assorted	2
Matrix Strip Celluloid	1
Enamel Hoe	2
Enamel Hatchet	2
Tofflemire Band	1
Tofflemire Retainer	1
NITI Files Assorted (hand and rotary)	2
Spreaders, Pluggers	2 sets
Agate Spatula	2
Polycarboxylate Cement	1
Dycal	1
Zinc Oxide Powder	1
Pits & fissure sealant	1
GC FUJI type IX gp	1
GC FUJI type II regular	1
Temporary filling material	1
RC Seal (Epoxy Bonded Sealant)	1
RC Cal Root Canal Calcium Hydroxide	1
RC Help (Zinc Oxide Eugenol with Iodoform)	2
G.P. Condenser	2
GP Points (20%) # 15-40, 45-80 (120 Pts)	2 each
Caustinert Forte	1

Technical Specification

LOT 1 – Plant & Medical Equipment

Paper Points	2 boxes
Cavity Varnish 12ml	1
Carborandum Discs 100 Pcs	1
Sodium Hypochlorite 5%	1

SURDEN-2 Dental Surgery Set Perio

PERIO SURGERY KIT CODE: PERI

1104E	COLOR PROBE CP12 (3-6-9-12) 6EZ
1601	STANDARD GRACEY GR1/2
1606	STANDARD GRACEY GR11/12
1607	STANDARD GRACEY GR13/14
1807	SURGERY KNIVES KGF7
1901	SURGICAL CURETTES PR1/2
1923T	PERIOTOME PT2 TIT SERRATION
1924T	PERIOTOME PT1 TIT SERRATION
2001T	SURGICAL CHISELS 13K/TG
2008	KRAMER NEVINES TG-O
3506T	PERIOSTEALS MOLT9 TITANIUM
3523	PERIOSTEALS SELDEN23
4102	SURGICAL CURETTES LUCAS85
4103	SURGICAL CURETTES LUCAS86
4111	SURGICAL CURETTES MOLT2/4
5403	MAYO-HEGAR
5513N	CASTROVIEJO 16CM T/C STR
5920	GUM SCI IRIS CURVED 11.5CM
6420	UNIVERSITY OF MINNESOTA
6502	FORCEP ADSON 1X2 12CM
6905	SCALPEL HANDLE 5
6923	SCALPEL HANDLE 180° ADJUSTABLE
7512	CASSETTES 15 HOLD WITH ACCESSORY RACK

SURDEN-3 Dental Surgery Set Prostho

Upper and Lower impression trays (rim lock dentulous & endentulous)	1 set
Crown cutting burs	1 set
Composite polishing kit	1
Acrylic trimming burs	1 set
Alginate	5
Plaster of paris	2
Dental stone (kalabhai)	2
Die stone (kalrock)	2
Plaster Spatula – Straight / Curved	2
Lacrons Carver	2
Rubber Bowl big	2
Spirit lamp	2
Wax knife	2
Wax Spatula	2
Crown Remover normal	1
Cold Cure Powder & Liquid	1
Adams Plier	1
Wire Cutter	1
Ligature Wire 26G	1
Universal Pliers	1
DPI Impression Paste	1
Pinnacle tracing sticks	1
Wax sheet	1
Articulating paper	2
Crown Cutter metal cutting bur	2
Adhesive Remover ortho debonding bur	1
Filling Remover bur	1

SYR003 SYRINGE Pump

1. Microprocessor controlled with digital LCD alphanumeric display of parameters and alarms
2. Variable rate ranging from 0.1 to 500 mL/hr or better, with 0.1 mL/hr increments
3. 3 % accuracy or better
4. Variable volume-to-be-infused from 1 to 1,000 mL or similar
5. Digitally displayed parameters to include:
 - 5.1. Infusion rate
 - 5.2. Battery / AC operation
 - 5.3. Running indicator
 - 5.4. Alarming condition when active, with indication of alarm type or code
 - 5.5. Back pressure monitor / indicator
6. Capability to accept different syringe types and sizes with automatic syringe detection and identification
7. Syringe compatibility and auto detection shall include but not be limited to all sizes of the following (1 to 60 mL):
 - 7.1. BD
 - 7.2. Terumo
 - 7.3. Monoject
 - 7.4. Braun
 - 7.5. Fresenius
8. Variable bolus rate
 - 8.1. Specify maximum flow rate
 - 8.2. Bolus infused volume indicator during bolus activation
 - 8.3. Protected access
9. Audiovisual alarms shall include but not be limited to the following:
 - 9.1. Syringe installation and integrity (detection)
 - 9.2. Line disconnection (sudden drop in back pressure)
 - 1.3. Occlusion pressure pre-alarm
 - 9.4. Occlusion pressure
 - 9.5. Near end of perfusion alarm
 - 9.6. End of perfusion
 - 9.7. Volume limit pre-alarm
 - 9.8. Volume limit
 - 9.9. KVO (1 ml/hr; if other, specify)
 - 9.10. Low battery pre-alarm
 - 9.11. Discharged battery

- 9.12. Internal malfunction
- 10. Data log capability and data port for data transmission, display and printing.
Any required software for such function shall be included.
- 11. Logged data to include:
 - 11.1. Settings
 - 11.2. Alarms
 - 11.3. Errors
- 12. Safety features shall include but not be limited to:
 - 12.1. Self-test at start-up
 - 12.2. Nurse call interfacing capability
 - 12.3. Splash proof design
 - 12.4. Auto priming
 - 12.5. Adjustable alarm volume. No permanent silencing shall be possible.
 - 12.6. Keypad lock
 - 12.7. Impossibility to improperly install infusion set
 - 12.8. Free flow prevention system
 - 12.9. Last parameter setting retention
- 13. IV stand mounting accessory shall be included
- 14. Battery autonomy of 3 hrs or more when fully charged. Specify:
 - 14.1. Specify battery type and characteristics (voltage and current capacity)
 - 14.2. Autonomy at 10 mL/hr
 - 14.3. Recharging time from depleted to 90%

SYR003-T SYRINGE Pump WITH STAND

1. Microprocessor controlled with digital LCD alphanumeric display of parameters and alarms
2. Variable rate ranging from 0.1 to 500 mL/hr or better, with 0.1 mL/hr increments
3. 3 % accuracy or better
4. Variable volume-to-be-infused from 1 to 1,000 mL or similar
5. Digitally displayed parameters to include:
 - 5.1. Infusion rate
 - 5.2. Battery / AC operation
 - 5.3. Running indicator
 - 5.4. Alarming condition when active, with indication of alarm type or code
 - 5.5. Back pressure monitor / indicator
6. Capability to accept different syringe types and sizes with automatic syringe detection and identification
7. Syringe compatibility and auto detection shall include but not be limited to all sizes of the following (1 to 60 mL):
 - 7.1. BD
 - 7.2. Terumo
 - 7.3. Monoject
 - 7.4. Braun
 - 7.5. Fresenius
8. Variable bolus rate
 - 8.1. Specify maximum flow rate
 - 8.2. Bolus infused volume indicator during bolus activation
 - 8.3. Protected access
9. Audiovisual alarms shall include but not be limited to the following:
 - 9.1. Syringe installation and integrity (detection)
 - 9.2. Line disconnection (sudden drop in back pressure)
 - 1.4. Occlusion pressure pre-alarm
 - 9.4. Occlusion pressure
 - 9.5. Near end of perfusion alarm
 - 9.6. End of perfusion
 - 9.7. Volume limit pre-alarm
 - 9.8. Volume limit
 - 9.9. KVO (1 ml/hr; if other, specify)
 - 9.10. Low battery pre-alarm
 - 9.11. Discharged battery
 - 9.12. Internal malfunction

10. Data log capability and data port for data transmission, display and printing.

Any required software for such function shall be included.

11. Logged data to include:

- 11.1. Settings
- 11.2. Alarms
- 11.3. Errors

12. Safety features shall include but not be limited to:

- 12.1. Self-test at start-up
- 12.2. Nurse call interfacing capability
- 12.3. Splash proof design
- 12.4. Auto priming
- 12.5. Adjustable alarm volume. No permanent silencing shall be possible.
- 12.6. Keypad lock
- 12.7. Impossibility to improperly install infusion set
- 12.8. Free flow prevention system
- 12.9. Last parameter setting retention

13. IV stand mounting accessory shall be included along with IV stand.

14. Battery autonomy of 3 hrs or more when fully charged. Specify:

- 14.1. Specify battery type and characteristics (voltage and current capacity)
- 14.2. Autonomy at 10 mL/hr
- 14.3. Recharging time from depleted to 90%

The IV pole/stand shall have the following features:

- Constructed in 18/10 stainless steel
- The IV pole shall have at minimum four Ram's Horn style hooks.
- The IV pole should be height adjustable by means of a telescoping upright rod.
- The height adjustment shall be secured in place (i.e., with a twist lock, knob handle, foot pedal).
- Casters
 - The IV pole should have a minimum of four 75 mm (3-inch) diameter casters, two with brakes
 - The casters should be conductive and should swivel.
 - Maneuvering the unit should require minimal physical effort

SYR004 SYRINGE Pump, anesthetic

1. Microprocessor controlled with digital LCD alphanumeric display of infusion and dose parameters and alarms
2. Pre-programmed agents' protocols (drug library) to include default settings and min/max values. Please provide details.
3. Choice of programming units:
 - 3.1. $\mu\text{g/kg}$ per hour or per minute
 - 3.2. mg/kg per hour or per minute
 - 3.3. ml or ml/hr
4. Variable rate ranging from 0.1 to 1500 mL/hr or better, with 0.1 mL/hr increments.

Possibility to change rate during infusion without interruption
5. Variable concentration (dilution) from 0.5 $\mu\text{g/ml}$ to 25 mg/ml
6. Variable patient weight up to 200 kg
7. Variable induction dose from 0.01 $\mu\text{g/Kg}$ to 100 mg/Kg and from 0.1 mL to around 60 mL. Variable duration from 30 seconds to 15 minutes
8. 3 % accuracy or better
9. Digitally displayed parameters to include:
 - 9.1. Infusion rate
 - 9.2. Dose parameters
 - 9.3. Battery / AC operation
 - 9.4. Running indicator
 - 9.5. Alarming condition when active, with indication of alarm type or code
 - 9.6. Back pressure monitor / indicator
10. Capability to accept different syringe types and sizes with automatic syringe detection and identification
11. Syringe compatibility and auto detection shall include but not be limited to all sizes of the following (1 to 60 mL):
 - 11.1. BD
 - 11.2. Terumo
 - 11.3. Monoject
 - 11.4. Braun
 - 11.5. Fresenius
12. Variable hands-free bolus:
 - 12.1. In doses: From 1 μg to 1000 mg , from 0.01 $\mu\text{g/kg}$ to 100 mg/kg
 - 12.2. In ml: From 0.1 ml to max induction dose
 - 12.3. Duration: from 30 seconds to 15 minutes
 - 12.4. Display of speed, volume and dose

13. Audiovisual alarms shall include but not be limited to the following:

- 13.1. Syringe installation and integrity (detection)
- 13.2. Line disconnection (sudden drop in back pressure)
- 13.3. Occlusion pressure pre-alarm
- 13.4. Occlusion pressure
- 13.5. Near end of perfusion alarm
- 13.6. End of perfusion
- 13.7. Volume limit pre-alarm
- 13.8. Volume limit
- 13.9. KVO (1 ml/hr)
- 13.10. Low battery pre-alarm
- 13.11. Discharged battery
- 13.12. Internal malfunction

14. Data log capability and data port for data transmission, display and printing.

Any required software for such function shall be included.

15. Logged data to include:

- 15.1. Settings
- 15.2. Alarms
- 15.3. Errors

16. Safety features shall include but not be limited to:

- 16.1. Self-test at start-up
- 16.2. Nurse call interfacing capability
- 16.3. Splash proof design
- 16.4. Auto priming
- 16.5. Adjustable alarm volume. No permanent silencing shall be possible.
- 16.6. Keypad lock
- 16.7. Impossibility to improperly install infusion set
- 16.8. Free flow prevention system
- 16.9. Last parameter setting retention

17. IV stand mounting accessory shall be included

18. Battery autonomy of 3 hrs or more when fully charged:

- 18.1. Specify battery type and characteristics (voltage and current capacity)
- 18.2. Autonomy at 10 mL/hr
- 18.3. Recharging time from depleted to 90%

TAB075**Procedure Table**

1. Procedure table proposed shall have the following minimum features:
 - The base attachment shall be a mobile type with castors that are protected against soiling and easily accessible for cleaning
 - Shall have a minimum of 3 sections: back section, seat section and leg section
 - AC operation with backup battery (capacity for a minimum of 1 week of operation)
 - Shall be equipped with electromechanically driven running gear and manual back up capability with a braking system that does not allow any movement when engaged.
 - Operating tabletop with soft padded, easy to clean, flame and tear proof, anti static and chemical resistant covering.
2. Controls:
 - Shall include corded control unit with manual override.
3. The table shall achieve the following positions from the horizontal plane:
 - Motorized Height adjustment: 60 - 90 cm (Approximately)
 - Motorized Trendelenburg / reverse Trendelenburg: $\pm 25^\circ$
 - Motorized Lateral tilt: $\pm 20^\circ$
 - Back section: $+45^\circ$ to -25°
 - Leg section: $\pm 60^\circ$
4. Load capacity (for the table and accessories):
 - Static: 250 kg
 - Articulated: 180 kg
5. Approximate dimensions (WxL): 55 cm x 210 cm
6. Shall have a radio translucent top:
 - Shall have adequate longitudinal access to facilitate C arm access
 - Shall accept up to a 14" x 17" size x ray cassettes
7. Accessories for general applications:
 - Accessory rails (on both sides)
 - Anesthesia screen
 - Arm boards with mattress
 - Body restraint and safety straps
 - X-ray cassette tunnel
 - Clamps for attachments
8. Supplier shall provide detailed price list for accessories for all available specialty applications
9. The unit shall include all required accessories for full functionality
10. Shall be CE marked and/or FDA approved

TAB076 TABLE Operating, Translucent Top, C-section

1. Three-sectional delivery table for use in standard delivery rooms.
2. The table shall include a back / head section, a pelvis section and a foot section.
3. Each section shall consist of a supporting platform made of heavy duty material, covered with anti-rust, anti-corrosion material or finish, with high resistance to cleaning and disinfection abrasive chemicals normally used in such rooms.
5. Removable padding for each section shall be made of suitable cushion material to support patient weights up to a few hours without inflicting body sores.
6. The pads shall be covered with washable anti bacteria covering, capable of sustaining cleaning with washing and disinfection chemicals.
7. The backrest angle and table height shall be electrically adjustable.
8. Table height adjustment shall be capable of reaching as low as 50 cm for easy patient accessibility during labor.
9. The foot section shall easily detach to allow access to the mother's perineal area.
10. The table shall incorporate receptacles for hand grips and Goepel knee crutched.
11. Hand grips shall be included, with suitable heavy duty, washable padded covering.
12. One pair of Goepel knee crutches shall be included, incorporating padded foot supports.
13. The table shall have a removable drain pan or fluid basin immediately under the pelvis section.

TIMLAB Timer, Laboratory, 60 Minutes

1. Digital laboratory timer
2. Portable and light weight
3. Chemical-resistant case
4. Compact size
5. Should alert when done
6. Alarm “off” operates manually or is silenced automatically after 1 minute.
7. Should be supplied with batteries.

TRA001

Dressing Trays

Minor Dressing Tray with Econo™ Floor Grade Instruments

1. Instruments:

- OR Scissors, S/B
- Dressing Forceps
- Adson Tissue Forceps

2. Prep:

- PVP Prep Pad
- Alcohol Prep Pad

3. Absorbent Material:

- (3) Gauze Sponges, 4 x 4, 12-ply
- Towel/Drape, 17 x 19, 4-ply

4. Miscellaneous:

- Micropore Tape, 1 x 36
- Refuse Bag w/ Tie
- Tray

TRA002 I&D Trays*Incision and Drainage Trays*

- TRAY, INCISION&DRAINAGE includes: four 8-ply 4" x 4" (10 cm x10 cm) gauze dressings, fenestrated drape, 13" x 19" (33 cm x 48 cm) white polybacked towel, Mosquito straight forceps, Adson Thumb serrated forceps, alcohol prep pad, 3/pk PVP swabsticks and polybag with red twist tie in ridged tray
- TRAY, INCISION&DRAINAGE, DELUXE, STERILE includes: compartment tray, eight 12-ply 4" x 4" (10 cm x 10 cm) gauze dressings, fenestrated drape, 13" x 19" (33 cm x 48 cm) white polybacked towel, Mosquito forceps straight (comfort loop), Adson thumb tissue dressing forceps straight, scissors sharp/blunt straight, scalpel no.11), probe w/eye, PVP prep pad and CSR wrap
- TRAY, INCISION&DRAINAGE, STERILE includes: four 8-ply 4" x 4" (10 cm x 10 cm) gauze dressings ,fenestrated drape, 13" x 19" (33 cm x 48 cm) white polybacked towel, Kelly forceps straight, Adson thumb forceps serrated, scalpel no. 11, alcohol prep pad,3/pk PVP swabsticks, and polybag with red twist tie in ridged tray
- TRAY, INCISION&DRAINAGE, STERILE includes: compartment tray, two-pack 4" x 4" (10 cm x 10 cm) post op sponge dressings, fenestrated drape, 13" x 19" (33 cm x 48 cm) white polybacked towel, Kelly forceps wire straight, Adson thumb forceps wire serrated, scalpel no. 11, alcohol prep pad, PVP prep pad, clear polybag with twist tie
- Not made with natural rubber latex

SPECIFICATIONS

Antiseptic	Alcohol & Pvp, Pvp
Fenestrated Drape Included	Yes
HPIS Code	511_210_0_0
Kelly Forceps Included	Yes
Latex Free	Yes
Lidded Or Csr Wrap	Lidded Tray, Csr Wrap
Mosquito Forceps Included	Yes
Scalpel Size	No 11
Scissors Included	Sharp/blunt
Type of Adson Forcep	Adson Serrated
UNSPSC	42311901

TRA003**Suture Trays****SPECIFICATIONS**

Color	Stainless Steel, Wire
HPIS Code	511_460_0_0, 510_420_0_0
Latex Free	Yes
UNSPSC	42312207

TRA004 Excision sets

EXCISION SET includes

- Metzenbaum Scissors
- Iris Scissors
- Needle Holder
- Adson Forceps
- Hemostat
- Scalpel Handle
- 5"x10" Sealable Transparent Autoclavable Pouch

TRA006 Exchange transfusion set

Exchange-transfusion set should contain the following items

Contents:

- 1 four-way stopcock equipped with 1 injection site (for injections of additional medication)
- 1 extension tube for the evacuation of the discarded blood
- 1 5 Fr exchange transfusion catheter (PVC)
- 1 7 Fr exchange transfusion catheter (PVC)
- 2 20 ml Luer-lock syringes
- 1 10 ml Luer-lock syringe
- 1 15 x 0.5 mm (25G) Luer hypodermic needle
- 1 graduated plastic container
- 1 transfusion set
- 1 15 cm ruler for venous pressure measurement
- 3 50 x 50 mm gauze dressings
- 1 50 x 60 cm fenestrated drape
- 1 pair of gloves
- 1 control sheet
- 1 air-venting needle

TRA050 Tracheostomy Set**1. PERCUTANEOUS TRACHEOSTOMY SET WITH MULTIPLE DILATOR**

- Should have Dilator with preload guiding catheter.
- Should have guide wire with position markings.
- Should have introducer needle with sheath.
- Should have multiple tube loading dilator of 14Fr. 21 Fr. 24 Fr. 27 Fr

2. PERCUTANEOUS TRACHEOSTOMY KIT WITH DILATING FORCEP & TRACHEOSTOMY WIRE –

- Should have cannula on needle
- Reusable dilating forceps on wire technique
- Scalpel & Syringe
- Tracheotomy tubes adult size, cuffed
- „J“ tip Guidewire

3. FENESTRATED TRACHEOTOMY TUBE SYSTEM WITH SUBGLOTTIC SUCTION FOR VENTILATED PATIENT

- Should have fenestrated cuff tube Fenestration
- Should be just above the cuff
- Should have standard cannula, decannulation plug , soft touch holder
- Should be supplied with subglottic suction cannula Size; 4, 6, 8 &10 No.

TRNIQT Tourniquet system

The Tourniquet System is a dual-port, dual-cuff medical tourniquet system with microprocessor controls and dedicated ports for supplying and measuring pressure independently. It should have the following features:

- Personalized Pressure Technology - Personalized Pressure can help surgeons choose a more individual, often lower, cuff pressure. Lower tourniquet cuff pressure reduces post-operative wound complications after TKA
- Limb Occlusion Pressure (L.O.P.) - Technology that's designed to calculate a patient pressure at an individual level and apply the minimum amount of tourniquet pressure needed to occlude a limb at a specific time for a specific patient.
- Dual Port
- Dual Cuff
- Table or Pole Mount
- Lithium Ion Battery - 6 hours
- Touchscreen User Interface
- Compliant with International Alarm Standard 60601-1-8
- 8.4" Color Display

TRO313 TROLLEY, Infant Radiant Warmer with Cot and Resuscitator

1. Microprocessor controlled unit, for open care of neonates following natural or caesarean section delivery.
2. The unit shall be mobile on swiveling lockable castors with easy maneuverability
3. Control panel with easy to read digital displays of:
 - 1.1. Patient temperature
 - 1.2. Control temperature
 - 1.3. Power setting of heater
 - 1.4. Elapsed time indicator
2. Oxygen supply from central O2 supply, flow rate adjustable.
3. Suction unit central vacuum, flow rate adjustable.
4. Bacteria filter and collection jar (500 ML) with overflow safety device shall be included
5. Adjustable radiant heater unit with not less than 550 W heater output rating, heater ON and level indicator shall be incorporated
6. To incorporate halogen or fluorescent examination lighting with separate ON/OFF switching
7. The examination light shall provide at least 100 foot-candles at mattress level.
8. Baby tray (removable) with manual tilting facility of approximately $\pm 10^\circ$.
Approximate dimensions: 75 x 60 cm.
9. Soft pad covered with antibacterial material that is resistant to cleaning and disinfection chemicals shall be included
10. Demountable cot side panels constructed in clear plastic.
11. Sturdy cabinet construction, with two storage drawers and base tray
12. Built in IV pole and monitor tray
13. A portable manually operated neonatal resuscitator (Ambu bag) shall be included.
14. To incorporate a pressure relieving valve and rubber bag of ~ 700 ml
15. One-way valves with 45cm H2O pop off with override.
16. Tube for introducing oxygen: the oxygen concentration must be able to be set as high as 45%.
17. The resuscitator must be steam sterilizable
18. Offer shall include one set of all available neonatal masks.
19. Storage and carrying case shall be included.

TUB012 Tube, Sealer

1. A tabletop blood bag heat sealer to seal a wide range of blood bag tubing from 2 to 6 mm in thickness.
2. It creates air and watertight seals on sterilization rolls (paper-plastic) and sterilization tubing (plastic-plastic) materials.
3. A built-in warning beeper to notify the user when each seal is completed.
4. Indication lamp for ready and seal stages.
5. Integrated sealing head.
6. Fast sealing within 1 to 2 seconds.
7. At least 3mm wide seal with perforation.
8. Sealer to make a notch at the center of seal for easier segmentation.
9. Detachable head protector for cleaning.
10. Retractable splashguard for protection of user from accidental blood splash.
11. Light weight compact model is preferred.

ULT006 ULTRASONIC CLEANER, bench top

1. Electronic, bench top ultrasonic cleaner for general instruments and accessories cleaning
2. Built-in tank and generator
3. Solid stainless steel tank
4. Chamber dimensions approx. 15 cm H x 30 cm L x 50 cm W (approx. 20 L)
5. To include a SS instrument basket with handle, beaker positioners and lid
6. Ultrasound frequency ≥ 40 kHz
7. Noise level ≤ 70 db
8. 3 Control Options:
 - 8.1. **Mechanical timer:** To incorporate a timer up to 60 minutes and continuous operation
 - 8.2. **Mechanical timer with heater:** To incorporate a timer up to 60 minutes, continuous operation and heater switch (On/Off)
 - 8.3. **Digital timer:** To incorporate a timer up to 99 minutes and continuous operation. Temperature range can be set to 20-70 deg. C.
9. To incorporate a heater with variable temperature controller from 30 up to around 60 degrees.
10. Overheating protection shall be incorporated into the design of the unit
11. Incorporated water drain tap
12. The unit shall be supplied with a cover

ULT007 ULTRASONIC CLEANER

1. Microprocessor controlled Ultrasonic energy cleaner for cleaning surgical instruments by sonic vibrations passed through detergent wash water
2. Two-chamber design
3. Stainless steel sonic cleaning chamber with approx. dimensions of: L550 x W300 x D300mm
4. Stainless steel lid, opens automatically at end of cleaning process, closes by foot actuated bar switch
5. Welded instrument tray with approx. dimensions: L520 x W270 x D75mm, and a stainless steel rack
6. Rinsing/drying chamber lid, of the same design, size and construction as the one on the cleaning chamber
7. Rinsing/drying chamber to contain positioned nozzles for rinsing instruments
8. The chamber to include a port in the rear wall for hot air to enter and dry the instruments
9. Detergent & wash water fill drain switches as well as tap water temperature and sonic cleaning selector are mounted in the cabinet back splash
10. Under structure: Includes a compartment for sonic generator, air heaters and blower, water pumps, detergent reservoir, vapor condenser.
11. It shall incorporate a timer up to 60 minutes
12. It shall incorporate a heater with variable temperature controller up to around 80 degrees
13. It shall incorporate overheating protection into the design of the unit
14. The ultrasound frequency shall be approx. 30 - 40 KHz, and approx. 1 KW power output

ULT014 Portable Ultrasound Scanner (Gyne use)

High end, high performance color imaging system for abdominal, vascular, obstetrics, gynecology, and small parts applications.

1. The system shall possess extensive computational power, image-manipulation capability and workflow flexibility.
2. The system shall employ digital beam-forming technology and multi-frequency technology.
3. The system shall be compatible with one-button image optimization and adaptive image processing for noise and artifact reduction to improve tissue conspicuity.
4. The system shall be supplied with a gel warmer, to be mounted on each unit.
5. The following minimal system performance characteristics shall be incorporated:
 - 5.1. Multi-Frequency/Digital Broadband Beam former Technology
 - 5.2. Displayed Imaging Depth shall be provided
 - 5.3. Minimum Depth of Field shall be provided
 - 5.4. Maximum Depth of Field shall be provided
 - 5.5. User Selectable Transmission Focus Points
 - 5.6. User Selectable Focal Zone
 - 5.7. Minimum of 8 independent TGC controls plus general gain and dynamic gain adjustment controls
 - 5.8. Minimum of 2 independent lateral gain controls
 - 5.9. 256 Shades of Gray
 - 5.10. Up to 232 dB Dynamic Range in 3dB steps
 - 5.11. Adjustable Field of View (FOV)
 - 5.12. Image Reversal
 - 5.13. Image Rotation
 - 5.14. Three Active Probe Ports
 - 5.15. Integrated HDD (≥ 500 GB. Specify capacity)
 - 5.16. CINE memory capacity ≥ 256 MB for up to 1500 frames or close similar (variable speed and sequence selection. Provide details)
 - 5.17. Integrated CD-R/W Drive and USB
6. The system shall be suitable for the following applications:
 - 6.1. Abdominal
 - 6.2. Obstetrical
 - 6.3. Gynecological
 - 6.4. Vascular
 - 6.5. Urological
 - 6.6. Small Parts and Superficial
7. The system shall incorporate strain elastography for breast and uterine applications.
8. The system shall possess capabilities for the following scanning methods:

- 8.1. Electronic Convex
- 8.2. Electronic Linear
- 9. Operating modes shall include but not be limited to:
 - 9.1. B-Mode
 - 9.2. M-Mode
 - 9.3. Color M-Mode and Optional M-mode perpendicular to the anatomy independent of transducer orientation)
 - 9.4. Color Flow Mode
 - 9.5. Power Doppler Imaging
 - 9.6. Adaptive color Doppler
 - 9.7. Tissue Harmonic Imaging
 - 9.8. Automated Doppler Analysis
 - 9.9. Compound imaging
 - 9.10. PW Doppler
 - 9.11. Trapezoidal Imaging
 - 9.12. CPA or Color Power Angio
 - 9.13. Optional pan view
- 10. Display modes and capabilities shall include simultaneous display of duplex or triplex as well as alternating and multi-image split screen modes. Provide list of modes and possible combinations.
- 11. The system shall incorporate a 19" non-interlaced, high-resolution flat display color monitor with:
 - 11.1. Tilt/rotate adjustment
 - 11.2. Digital Brightness/Contrast Adjustment
 - 11.3. Integrated Task Light
- 12. A second slave monitor shall also be included in the offer, for patient viewing. All necessary mounting accessories shall be supplied.
- 13. The user interface panel shall possess ergonomic and friendly functional design, including:
 - 13.1. Alphanumeric keyboard for data entry with ergonomic key operations
 - 13.2. Interactive backlighting
 - 13.3. Indicator lights to identify activated keys
- 14. The system cart shall possess features of high stability and maneuverability, including:
 - 14.1. On-board Storage for color-printer
 - 14.2. Swiveling castors ($\geq 5''$ diameter), heavy duty, capable of withstanding shocks from elevator and similar uneven floor transportation within the hospital.
 - 14.3. Multiple probe holders

- 14.4. Gel dispenser holder
- 14.5. Rear handles for transport maneuverability
- 15. A color small format (A4), high resolution printer shall be included with the offer
- 16. The system shall possess extensive display annotations including:
 - 16.1. Institution name
 - 16.2. Date / Time
 - 16.3. Patient Demographics
 - 16.4. System parameters (frequency, power, gray/color bar, cine gauge, probe type, application name, etc.)
 - 16.5. Imaging parameters by mode (gain, edge enhancement, frame averaging, image depth, dynamic range, etc.)
 - 16.6. Measurements and calculations
 - 16.7. Focal zone markers
 - 16.8. TGC Curve (LGC or Lateral Gain Compensation)
 - 16.9. Body patterns
 - 16.10. System messages display
 - 16.11. Trackball functionality status
 - 16.12. Biopsy guide line and zone
- 17. Extensive digital image pre-processing and post-processing (calculation packages) capabilities shall be incorporated. Provide a list for all modes with associated parameters and ranges.
- 18. The system shall integrate networking capabilities to support DICOM media store, DICOM print, DICOM work list and as well as DICOM structured reporting.
- 19. The system shall integrate Ethernet connectivity to the hospital management system and PACS.
- 20. The following probes shall be included (all probes shall be multi-frequency, wide band technology):
 - 20.1. Abdominal convex probe: specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint.
 - 20.2. Endo-vaginal convex probe: specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint. (Biopsy guide shall be quoted)
 - 20.3. Linear Probe for vascular, small parts, breast: specify the frequency range, the number of elements, the convex radius and the FOV
 - 20.4. This system shall be compatible with the 4D probe

ULT015 ULTRASOUND SCANNER, general, mobile

1. The below tender will cover all general ultrasound units in the hospital.
2. The system shall be a multipurpose, high performance color imaging ultrasound for abdominal, vascular, obstetrics, gynecology, neonatal, urology, Transcranial and small parts applications
3. The system shall possess extensive computational power, image-manipulation capability and workflow flexibility. Ergonomic and intuitive design Easy to move with small footprint.
4. The system shall employ digital beam-forming technology, wide band and multi-frequency technology.
5. The system shall be compatible with one-button image optimization and adaptive image processing for noise and artifact reduction to improve tissue conspicuity.
6. The system shall be supplied with a gel warmer, to be mounted on each unit.
7. The system shall be suitable for the following applications:
 - 7.1. Abdominal
 - 7.2. Obstetrical
 - 7.3. Gynecological
 - 7.4. Musculoskeletal
 - 7.5. Vascular
 - 7.6. Urological
 - 7.7. Small Parts and Superficial
 - 7.8. Pediatric and Neonatal
 - 7.9. Transcranial Doppler
 - 7.10. Anesthesia.
 - 7.11. Other, List (Cardiac, Fertility and Transesophageal)
8. Imaging modes shall include but not be limited to:
 - 8.1. 2D grayscale imaging with advanced pulse coding, pulse shaping and frequency compounding technologies
 - 8.2. M-mode
 - 8.3. M-mode color Doppler
 - 8.4. M-mode Tissue Doppler
 - 8.5. Tissue Harmonic Imaging (THI)
 - 8.6. Color Doppler
 - 8.7. Color Power Angio imaging (CPA)
 - 8.8. High-PRF pulsed wave (PW) Doppler
 - 8.9. Duplex and simultaneous 2D/PW Doppler
 - 8.10. Duplex continuous wave (CW) Doppler
 - 8.11. Duplex color flow and CW Doppler
 - 8.12. Duplex 2D, color flow, PW Doppler

- 8.13. Duplex 2D, CPA, PW Doppler
 - 8.14. Tissue Doppler Imaging (TDI)
 - 8.15. Anatomical M-mode Analysis
9. The system shall possess capabilities for the following scanning methods:
- 9.1. Electronic Sector
 - 9.2. Electronic Convex
 - 9.3. Electronic Linear
10. The system shall be capable of accommodating the following transducer types:
- 10.1. Convex
 - 10.2. Micro-convex
 - 10.3. Linear array probe
11. The following minimal system performance characteristics shall be incorporated:
- 11.1. Multi-Frequency/Digital Broadband Beam former Technology
 - 11.2. Displayed Imaging Depth shall be provided
 - 11.3. Minimum Depth of Field shall be provided
 - 11.4. Maximum Depth of Field shall be provided
 - 11.5. User Selectable Transmission Focus Points
 - 11.6. User Selectable Focal Zone Positioning
 - 11.7. TGC controls plus general gain and dynamic gain adjustment controls
 - 11.8. 256 Shades of Gray (8 bit)
 - 11.9. Up to 232 dB Dynamic Range in 3dB steps
 - 11.10. Adjustable Field of View (FOV)
 - 11.11. Image Reversal
 - 11.12. Image Rotation
 - 11.13. Up to four Active Probe Ports
 - 11.14. Integrated HDD (≥ 320 GB. Specify capacity)
 - 11.15. CINE memory capacity ≥ 256 MB for up to 3 min.
 - 11.16. Integrated CD-R/W Drive and USB
12. Display modes and capabilities shall include simultaneous display of duplex or triplex as well as alternating and multi-image split screen modes. Provide list of modes and possible combinations.
13. The system shall incorporate a 17" non-interlaced, high-resolution flat display color monitor with:
- 13.1. Tilt/rotate adjustment
 - 13.2. Digital Brightness/Contrast Adjustment
 - 13.3. Integrated Task Light
14. A second slave monitor shall also be included in the offer, for patient viewing. All necessary mounting accessories shall be supplied.
15. A color small format (A4), high resolution printer shall be included with the offer

16. The user interface panel shall possess ergonomic and friendly functional design, including:
 - 16.1. Alphanumeric keyboard for data entry with ergonomic key operations
 - 16.2. Interactive backlighting
 - 16.3. Indicator lights to identify activated keys
17. The system cart shall possess features of high stability and maneuverability, including:
 - 17.1. On-board Storage for color-printer
 - 17.2. Swiveling castors ($\geq 5''$ diameter), heavy duty, capable of withstanding shocks from elevator and similar uneven floor transportation within the hospital.
 - 17.3. Multiple probe holders
 - 17.4. Gel dispenser holder
 - 17.5. Rear handles for transport maneuverability
18. The systems shall possess extensive display annotations including:
 - 18.1. Institution name
 - 18.2. Date / Time
 - 18.3. Patient Demographics
 - 18.4. System parameters (frequency, power, gray/color bar, cine gauge, probe type, application name, etc.)
 - 18.5. Imaging parameters by mode (gain, edge enhancement, frame averaging, image depth, dynamic range, etc.)
 - 18.6. Focal zone markers
 - 18.7. TGC Curve (LGC or Lateral Gain Compensation)
 - 18.8. Body patterns
 - 18.9. System messages display
 - 18.10. Trackball functionality status
 - 18.11. Biopsy guide line and zone
19. Extensive digital image pre-processing and post-processing (calculation packages) capabilities shall be incorporated within the 3 systems in the Imaging department. Provide a list for all modes with associated parameters and ranges. (Offline optional analysis software for advanced analysis such as IMT Intima Media Thickness and other vascular analysis)
20. System shall have 3 active probe ports. The following probes shall be included with all offered systems (all probes shall be multi-frequency and wide band technology) and having the below characteristics:

- 20.1. Abdominal convex probes: 2 probes with each system to cover the whole patient size spectrum specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint.
- 20.2. Endo-rectal/vaginal convex probe: specify the frequency range, the number of elements, the convex radius, the FOV and the physical footprint (Biopsy guide shall be included).
- 20.3. Linear Probe for vascular, small parts, breast, neonatal and pediatrics: specify the frequency range, the number of elements, the convex radius and the FOV.

21. Connectivity:

- 21.1. USB ports on control panel
- 21.2. Hard drive space
- 21.3. Internal slot-load DVD RW drive
- 21.4. DICOM print, store, and storage commitment
- 21.5. DICOM structured reporting for cardiac, obstetrics, and vascular
- 21.6. Modality worklist
- 21.7. DICOM reader saved onto media
- 21.8. Export data as PC-compatible or DICOM files
- 21.9. Ethernet at 1000 Mb/second
- 21.10. B/W printer
- 21.11. Color Printer

22. Software and features:

- 22.1. Pre-defined protocols for guidance with on-screen display
- 22.2. Data storage formats include DICOM
- 22.3. Voice recognition reporting tool
- 22.4. Real-time compound imaging
- 22.5. Live compare

ULTBTH Ultrasonic Bath

Compact analogue controlled ultrasonic baths, providing a high standard of reliable and effective ultrasonic technology. Suitable for use in a wide range of applications from healthcare to laboratories, the choice of two baths come in a great value-for-money package, with stainless steel basket and ABS plastic lid included as standard (available in 230V versions only).

- Excellent entry level ultrasonic bath
- Fast, effective, efficient, easy and safe cleaning and processing of diverse instruments, components and solutions
- Robust design offers outstanding durability and reliability
- Easy to operate and accurate control of cycle time via simple analogue controls. Easy to operate even when wearing gloves.
- Time control 0-15 minutes on both baths
- Heated ambient +5°C to 70°C on the XUBA3
- Ergonomic plastic lid - Reduces noise volume and minimizes potential of aerosol escape. Included as standard
- Stainless steel basket - Designed specifically to generate maximum ultrasonic activity, prevent items resting on the tank and prevent operators coming into contact with chemical solutions. Included as standard
- Stainless steel basket and ABS plastic lid forms a drip collection unit to collect excess liquid when the basket is removed from tank
- Stainless steel basket, ABS plastic lid and one bottle of M2 Ultrasonic solution included as standard
- A choice of 2 sizes

7. Applications

- Healthcare/Clinical - the first stage of the decontamination process for reusable surgical instruments in dental, podiatry and general practice settings
- General use - glass, equipment, component cleaning, sonication of cytometer nozzles, dispersion and solubilisation
- Laboratories - cleaning of components, degassing fluids, mixing fluids and compounds, cell disruption, fluid dissolution
- Industrial - light manufacturing
- Biopharm - dissolution of samples

UROFLO Uroflowmetry full system**Uroflowmetry full system with Chair, printer etc..**

A computer based wireless flowmeter designed for practical, everyday flow studies, when ease of use, simplicity and cost effectiveness are top priorities.

Using Bluetooth® technology, device should have a wireless connection between the battery operated flow transducer and PC/laptop, eliminating all cables and power plugs. The flow transducer can be placed in another room or bathroom for optimal patient privacy.

Using the device, recording begins automatically when the patient starts voiding. A special software algorithm reduces artifacts and selects the optimal flow/volume scales. Pre-flow and post-flow times are user-selected.

Specifications

Procedure Type: Uroflowmetry

Dimensions:

Sensor- 5.3 cm x 15 cm x 17 cm (2 in x 5.9 in x 6.6 in)

Stand- 54.5 (71) cm x 36.5 cm x 36 cm (21.4 {27.9} in x 14.3 in x 14.1 in)

Weight:

Sensor incl battery- 0.6 kg (1.3 lb.)

Stand- 2.5 kg (5.5 lb.)

Connectivity: Bluetooth®

Accessories: 2 x Micturition Chair, 2 x Height Adjustable Flow Stand

Benefits**Hardware Technology:**

- Bluetooth® wireless technology facilitates increased patient privacy while voiding.
- Battery-powered operation eliminates messy power plugs and enables easy portability.
- Print full- color reports with patient data, study results, graphs, nomograms and comments with custom clinic logo.
- Portable, compact design ideal for a clinic environment.

Software Capabilities:

- Extended patient database for secure storage of a large number of uroflow studies.
- To be supplied with 2 sensors that can be operated from a single computer (should be possible to upgrade to more sensors in future), providing an optimal solution for a busy clinic environment.
- Flow nomograms according to Liverpool, Miskolc and Siroky.
- Automatic flow and volume scale selection.
- Network capability.
- Integrate clinical data with a Hospital Information System (HIS) or Electronic Medical Record (EMR).
- Automatic artifact detection.
- Multi-language support.

Including for :

- Scanmaster, USB ultrasound bladder scanner
- To be supplied with a height-adjustable uroflow stand and micturition chair.

UROPMP Uropump

- Compact pressure pump for use in URS/PCNL
- Pressure regulator
- Over Pressure Alarm
- Digital Display
- Silicon tubing for connecting irrigation

VEN025 Ventilator, Adult-Pediatric

These units are intended for use in the SICU and other critical care areas as needed. They should incorporate state-of-the-art advanced technology and highest available specs for their class at time of delivery. The below specifications and features shall be met or exceeded

General

1. Microprocessor controlled ventilator designed for use on critically ill patients ranging from small pediatric to adults
2. The unit shall operate using central gas outlets for O2 and compressed air.
3. Battery backup for at least 30 min, with automatic battery charging while unit is plugged into AC supply (whether the unit is in operation or stand by)
4. Color coded hoses (3 m each) for central gas supplies (O2 and compressed air) shall be included with the system with corresponding outlet connectors. Outlet type to be coordinated with electro-mechanical standard
5. The unit within the cardiac resuscitation and all intensive care units shall be pendant mounted which shall include all mounting accessories necessary for this purpose.
6. All other units (4 in trauma rooms) will be installed on specially manufactured mobile trolleys designed and manufactured specifically for use with the offered ventilator, and incorporating swiveling and lockable castors, breathing tube arm, etc. The seven trolleys shall be provided
7. The unit shall be capable of network communication with other critical care monitoring devices and the Hospital Information System, including report generation capabilities.

System Specifications

8. The unit shall incorporate a color LCD TFT touch screen with clearly distinguished separation between displayed information. All ventilation settings with corresponding alarm settings as well as monitoring data (numerical values as well as breathing curves and loops) shall be displayed.
9. A keyboard for data entry shall be included or incorporated if necessary to easily operate the ventilator.
10. The unit shall record patient trends for up to 48 hours
11. It shall be capable of storing up to 10,000 events
12. The ventilator shall be capable of automatically calculating ventilation parameters and corresponding alarm limits based on the patient's ideal body weight and other demographic information, with capability to accept (confirm) or easily modify any or all settings.

13. An active heater shall be incorporated to prevent condensation within the breathing circuit.
14. The ventilator shall operate in Pressure and Volume controlled modes (Assist / Control and Synchronized Intermittent Mandatory Ventilation), pressure support spontaneous breathing, CPAP and Apnea (mandatory pressure or volume controlled) as well as combination modes
15. Non-invasive ventilation capability
16. Ventilation parameters to be continuously adjustable within suitable ranges for the specified patient groups. Adjustment shall be possible while the unit is operational, following operator confirmation (to prevent accidental tampering).
17. Adjustable parameters shall include:
 - 17.1. Tidal volume, 20 – 2,000 mL (Infants: 20 - 75 mL, Pediatrics: 50 - 500 mL, Adults: 200 – 2,000 mL)
 - 17.2. Inspiratory flow: 3 - 180 mL/min
 - 17.3. Inspiratory pressure: 0 - 80 cm H₂O
 - 17.4. Respiration rate: 0 – 120 BPM
 - 17.5. Inspiratory time: 0 – 3 sec and pause
 - 17.6. Expiratory time: 1 – 8 sec
 - 17.7. I:E ratio: 1:4 to 4:1
 - 17.8. Inspiratory plateau: 0 – 3 sec
 - 17.9. FiO₂: 21 - 100 %
 - 17.10. PEEP/ CPAP: 0 - 45 cm H₂O
 - 17.11. Pressure support: 0 - 45 cm H₂O
 - 17.12. Flow, pressure triggering and both
 - 17.13. Manual breath
 - 17.14. Pressure slope/ramp adjustment
 - 17.15. Bias/base flow range: 1 - 20 L/min
18. Ventilation parameters and alarm limits shall be retained when switching between ventilation modes
19. Monitoring unit shall display all information related to ventilation settings, alarms, graphs and loops. Such information shall include:
 - Pressure and flow
 - PEEP, plateau pressure
 - Loops P/V, V/F, F/P
 - FiO₂: 15 – 100%
 - Breath type (control, assist or spontaneous) and delivered breath phase (inspiration or exhalation)
 - Delivered O₂ concentration and total respiratory rate
 - End expiratory / inspiratory pressures
 - Exhaled tidal and minute volumes, spontaneous minute volume and I:E ratio
 - Maximum and mean circuit pressures, compliance and resistance (on demand)

- Simultaneous display of one or two waveforms shall be possible. The waveforms shall include: pressure-time curve, flow-time curve and volume-time curve as well as display of pressure/ volume loop with automatic inspiratory area calculation. Freezing of all waveforms shall be possible.
 - Metabolic monitoring shall be offered as option if available
 - Self-diagnosis (valve leak, sensor failure, etc.)
 - Digital values of: Mve, VTe, MVi, VTi, RR, Ppeak, Pmean, RR/VT (RSB), (MVi-MVe)/MVi (leak index), TI/Ttot, Cstat, Rstat, FiO2, Insp. Peak flow, Resp. Peak flow, etc.
20. User adjustable alarm settings and multilevel audio-visual alarm indicators, with alarm volume control and suspension (regenerate after 2 minutes if condition persists), alarm log for quick review.
21. Alarming conditions shall include:
- Clinical alarms: FiO2, Low minute volume, Low inspiratory pressure, High pressure, Loss of PEEP, Apnea, High continuous pressure/occlusion, Inverse IE, High respiratory rate, High minute volume, High PEEP, etc.
 - System / equipment alarms: Breathing circuit disconnect, Gas supply failure, Power failure, Ventilator inoperative, Low battery, Self-diagnostics, etc

Safety

22. The system shall incorporate extensive safety features such as:
- System self-test for electronic and pneumatic components on startup (including fully automated compliance and leak tests as well as automatic calibration of all sensors), O2 and compressed air fail alarm, power fail and low battery alarms (battery operation), etc.
 - Dynamic compliance correction and auto compliance checking after replacement of patient hoses
23. Interface to central station alarm or nurse call system shall be offered
24. The system should be delivered complete with all accessories, consumables, tubings, patient circuits, etc. (1 adult and 1 pediatric set per unit)
25. Heated humidifiers (Fisher and Paykel latest model or similar) shall be included. The offer shall include all accessories and parts necessary for the installation, mounting and full functioning of the humidifiers.

VEN033 VENTILATOR, Respiration Infant

This unit is intended for use with small pre-mature neonates. The tender must include all devices and device components as well as all accessories needed for the units to function fully and properly. Detailed list of standard accessories is provided.

General:

1. Microprocessor controlled ventilator designed for use on critically ill neonatal patients. Specify minimum patient weight
2. The unit shall operate using central gas outlets for O₂ and compressed air.
3. Battery backup for at least 30 min, with automatic battery charging while unit is plugged into AC supply (whether the unit is in operation or stand by)
4. Color coded hoses (3 m each) for central gas supplies (O₂ and compressed air) as well as connectors shall be included with the system. Connector type to be as per electro- mechanical standard
5. The unit shall be mobile, compact and lightweight, incorporating swiveling, lockable castors and accessory drawer
6. The unit shall be capable of network communication with other critical care monitoring devices and the Hospital Information System, including report generation capabilities.

System Specifications:

7. The unit shall incorporate a color LCD TFT touch screen with clearly distinguished separation between displayed information. All ventilation settings with corresponding alarm settings as well as monitoring data (numerical values as well as breathing curves and loops) shall be displayed.
8. A keyboard for data entry shall be included or incorporated if necessary to easily operate the ventilator.
9. The ventilator shall have default (preset) ventilation parameters and corresponding alarm limits based on the patient's ideal body weight and/or other demographic information, with capability to accept (confirm) or easily modify any or all settings.
10. An active heater shall be incorporated to prevent condensation within the breathing circuit
11. The ventilator shall operate in:
 - Pressure and Volume controlled modes (Assist / Control and Synchronized / Intermittent Mandatory Ventilation)
 - Pressure support spontaneous breathing
 - CPAP and Apnea (mandatory pressure or volume controlled).
 - All operating modes shall be listed with detailed parameters.

12. Non-invasive ventilation capability
13. Ventilation parameters continuously adjustable within suitable ranges for the small pre- mature neonatal patients.
14. Adjustment shall be possible while the unit is operational, following operator confirmation (to prevent accidental tampering).
15. Adjustable parameters shall include:
 - Tidal volume: 2- 500 mL
 - Inspiratory flow: 0 – 70 mL/min
 - Inspiratory pressure: 0 - 80 cm H₂O
 - Respiration rate: 0 – 150 BPM
 - Inspiratory time: 0.1 – 3 s
 - Expiratory time: 0.2 – 20 s
 - I:E ratio: 1:4 to 4:1
 - Inspiratory plateau: 0 – 3 s
 - FiO₂: 21 – 100 %
 - PEEP/ CPAP: 0 – 20 cm H₂O
 - Flow and pressure triggering
 - Apnea parameters
16. Ventilation parameters and alarm limits shall be retained when switching between ventilation modes
17. Monitoring unit shall display all information related to ventilation settings, alarms, graphs and loops. Such information shall include:
 - Breath type (control, assist or spontaneous) and delivered breath phase (inspiration or exhalation)
 - Delivered O₂ concentration and total respiratory rate
 - End expiratory / inspiratory pressures
 - Exhaled tidal and minute volumes, spontaneous minute volume and I:E ratio
 - Maximum and mean circuit pressures, compliance and resistance (on demand)
 - Simultaneous display of one or two waveforms shall be possible. The waveforms shall include: pressure-time curve, flow-time curve and volume-time curve as well as display of pressure/ volume loop with automatic inspiratory area calculation. Freezing of all waveforms shall be possible.
 - User adjustable alarm settings and multilevel audio-visual alarm indicators, with alarm volume control and suspension (regenerate after 2 minutes if condition persists), alarm log for quick review. Alarming conditions shall include: high circuit pressure, high exhaled minute volume, high exhaled tidal volume, high respiration rate, low exhaled mandatory tidal volume, low exhaled minute volume, low exhaled spontaneous tidal volume, etc.

Safety:

18. The system shall incorporate extensive safety features such as:

- System self-test for electronic and pneumatic components on startup (including fully automated compliance and leak tests as well as automatic calibration of all sensors), O2 and compressed air fail alarm, power fail and low battery alarms (battery operation), etc.
- Dynamic compliance correction and auto compliance checking after replacement of patient hoses
- Interface to central station alarm or nurse call system shall be included

19. The system should be delivered complete with all accessories, consumables, tubings, patient circuits, etc. (2 neonatal sets)

20. Heated humidifiers (Fisher and Paykel latest model or equivalent) shall be provided. The offer shall include all accessories and parts necessary for the installation, mounting and full functioning of the humidifiers.

VEN033A VENTILATOR, Respiration infant, High Frequency

This unit is intended for use in the NICU and other critical care areas as needed. The tender must include all devices and device components as well as all accessories needed for the units to function fully and properly. Detailed list of standard accessories is provided.

Heated humidifier (Fisher and Paykel 850 or similar quality) shall be offered and priced separately. The offer shall include all accessories and parts necessary for the installation, mounting and full functioning of the humidifiers.

High frequency ventilation mode shall be incorporated within the main ventilator unit.

I- GENERAL

1. Microprocessor controlled ventilator designed for use on critically ill neonatal patients
2. The unit shall operate using central gas outlets for O2 and compressed air.
3. Color coded hoses (3 m each) for central gas supplies (O2 and compressed air) shall be included with the system
4. The unit shall be mobile, compact and lightweight, incorporating swiveling, lockable castors

II-SYSTEM SPECIFICATIONS

5. The unit shall incorporate digital display of ventilation settings and corresponding alarms,
6. The ventilator shall operate in Pressure and Volume controlled modes (Assist / Control and Synchronized Intermittent Mandatory Ventilation), pressure support spontaneous breathing, CPAP and Apnea (mandatory pressure or volume controlled). All operating modes shall be listed with detailed parameters.
7. High frequency ventilation. Provide detailed technical specifications
8. Ventilation parameters continuously adjustable within suitable ranges for the specified patient groups.
 - Adjustment shall be possible while the unit is operational. Adjustable parameters shall include (detailed specs and ranges shall be specified for each parameter):
 - Inspiratory flow
 - Inspiratory pressure
 - Respiration rate
 - Inspiratory/ expiratory time
 - FiO2

- PEEP/ CPAP
 - Flow and pressure triggering
 - In addition to Apnea parameters.
 - Displayed parameters shall include all adjustable parameters in addition to:
 - Tidal volume
 - I:E ratio
9. Ventilation parameters and alarm limits shall be retained when switching between ventilation modes
10. Battery backup for at least 30 min, with automatic battery charging while unit is plugged into AC supply (whether the unit is in operation or stand by)
11. User adjustable alarm settings and multilevel audio-visual alarm indicators, with alarm volume control and suspension (regenerate after 2 minutes if condition persists). Alarming conditions shall include: high circuit pressure, other, specify.

III- SAFETY

12. The system shall incorporate extensive safety features such as:
- System self-test for electronic and pneumatic components on startup (including compliance and leak tests as well as automatic calibration of all sensors), O₂ and compressed air fail alarm, power fail and low battery alarms (battery operation), etc.
 - Dynamic compliance measurement and auto compliance checking after replacement of patient hoses

VENTRAN VENTILATOR, Transport

The offer must include all devices and device components as well as all accessories needed for the unit to function fully and properly.

1. Microprocessor controlled ventilator designed for use on critically ill patients
2. The unit shall be designed for use on pediatric and adult patients
3. The unit shall operate using the hospital's central gas supply system. The offer shall include the necessary color-coded hoses (3 m each).
4. Built-in, low-noise compressors shall be submitted if available. Alternatively, operation from compact compressed air cylinder, with enough capacity to last for 6 hours of ventilation or more shall be provided (to include the necessary cylinders, regulators, etc.). Units with built-in compressors (turbine or other method) specifically designed for and incorporated within the ventilator will be preferred for simplicity of operation and handling.
5. The unit shall be compact and lightweight, trolley mounted; to include all system components and accessories. Trolley shall incorporate brackets for O2 cylinder mounting (alternate option stated above)
6. The ventilator shall operate in Pressure Control mode, Assist / Control, Synchronized Intermittent Mandatory Ventilation and CPAP
7. Ventilation parameters continuously adjustable within suitable ranges for the specified patient groups.
8. Parameter adjustment shall be possible while the unit is operational, using dial or toggle switches.
9. Adjustable parameters shall include:
 - Tidal volume: 100 – 1000 mL
 - Inspiratory flow: ≥ 60 L/min
 - Inspiratory pressure: 0 – 80 cm H₂O
 - Respiration rate: 0 – 60 BPM
 - Inspiratory time: 0 – 2 s
 - I: E ratio: 1:1 to 1:3
 - FiO₂: 21 – 100 %
 - PEEP: 0 – 20 cm H₂O
 - Other, please list
 - Detailed specs and ranges shall be specified for each parameter
10. The unit shall display information related to ventilation settings, such as PEEP, peak inspiratory pressure, mean airway pressure, exhaled tidal volume and exhaled minute volume

WAS016 Auto- Disinfector, endoscope, reprocessor

1. Microprocessor controlled endoscope disinfector used to wash and disinfect (high level disinfection) automatically flexible fiber optic or video endoscopes
2. To accommodate one scope per cycle
3. LCD display for cycle status and parameter display before, during and after a cycle (temp, pressure, ready, end of cycle, etc.)
4. Integrated printer for detailed cycle documentation and relevant system information or warning and alarming messages
5. Audio visual alarms to alert user as necessary
6. Shall incorporate built in reservoirs for disinfection agents and detergents. Reservoirs and other solutions to be easily accessible for replacement (preferably in under-cabinet, to be included as part of the system)
7. Shall incorporate built in heater to bring water temperature to desired level
8. Shall have temperature and pressure sensors for temperature control and pressure monitoring
9. Shall have a backup battery in order to maintain cycle memory during power outages
10. Scope compatibility: all submersible flexible fiber optic and video endoscopes suitable for high level disinfection
11. Technical data
 - Configuration: floor, stand-alone, top or front drop-down loading, movable with 4 locking castors
 - Auto disinfect cycle is included
 - Cycles: programmable or to have:
 - Wash: at least 2 separate washes
 - Pre-rinse: at least 2 separate rinses
 - Disinfect: at least 5 minute contact with disinfectant
 - Post-rinse: at least 2 separate rinses
 - Air: adjustable with sufficient time to remove excess rinse water
 - Germicidal agents
 - Approved agents, solutions and composition to be listed separately
 - Chemical indicators: from germicide manufacturer
 - Water supply
 - Type: tap, filtered
 - Pressure: 40-60 PSI (2.76 bar-4.14 bar)
 - Flow rate (hot water): 10.0 - 12.0 liters /minute
 - Temperature: not exceed 50°C
 - Connection
 - Permanent: ¾ inch nipple fitting
 - Length of supply hose: approx. two meters
 - Detergent/Disinfectant
 - Type: recommend low foaming, low surfactant and to minimize biofilm. Either aldehyde-based or oxidant-based

- Injection: automatic
 - Disinfectant Reservoir volume: minimum of 2 liters
- Bacteria Retentive Filter size: Minimum 0.2um
- Information input /output
 - Display: Alphanumeric
 - Hard copy: printer
 - Control interface: dedicated controls, touch panel or rotary knob
 - Alarms: audible, visual
- Accessories
 - Automatic endoscope leakage test
 - Bar Code Reader or RFI system
- The proposed system should have FDA approval or CE marking
- All needed parts, mounts or accessories shall be included to ensure full operation

WAS052 SHOWER EMERGENCY, Eye & Face Wash

1. Emergency shower for use in the laboratory to deliver a heavy deluge of water to rapidly dilute or wash away contaminants
2. To include eye and face wash elements
3. Spray head made of SS or ABS plastic.
4. Self-adjusting flow regulators to maintain a constant flow rate under varying hydraulic conditions.
 - 4.1. Wide-flow spray head to thoroughly flush the entire head / body area.
 - 4.2. Wall mounting configuration
5. To include wall-mount bracket and emergency eye wash sign.
6. Specify the following parameters:
 - 6.1. Water Supply (pressure and diameter
 - 6.2. Waste or Outlet
 - 6.3. Flow Rate
7. Hand and foot pedal operation shall be offered

WAS056 WASHER-DISINFECTOR, CSSD, Double Door

1. Washer/decontaminator units shall clean and decontaminate reusable instruments and utensils that have become contaminated with blood, cellular debris, and other organic substances.
2. The washer/decontaminator shall be double-ended with two drop down/vertical sliding doors.
3. The washer/decontamination capacity should be approximately 350 Liters.
4. The washer/decontamination should have following features:
 - 1.1. Heating: steam or electrical
 - 1.2. Manual loading / unloading.
 - 1.3. Adjustable cycles (instruments, gentle, utensils, glassware, plastic goods and rubber goods).
 - 1.4. Each cycle to be equipped with 4 phases (pre-wash, wash, rinse and thermal rinse) as standard.
 - 1.5. Automatic detergent / rinsing solution pumps coupled to sensor devices to give appropriate indication messages and alarms at end of solution. The pumps shall possess a priming cycle on demand for use when solution tanks are installed
 - 1.6. Detergent / rinsing solution compartment (cabinet) shall be built in within the main unit
 - 1.7. Hot air drying and vapor condensation shall be incorporated
 - 1.8. Descaling cycle to be provided (factory programmed) for removal of scale and other hard water deposits from chamber and recirculation piping.
 - 1.9. Priming cycle to be provided (factory programmed) for automatic priming of chemical pump(s) on initial set up of the equipment or as needed.
 - 1.10. Internal battery backs up all cycle memory.
 - 1.11. Temperature device to sense the temperature inside the chamber
 - 1.12. Water level sensors to monitor water level of the chamber sump.
 - 1.13. Complete with barrier and wall flange kit.
 - 1.14. The unit shall possess high power washing capability to un-necessitate the use of acid or alkaline detergents
 - 1.15. Thermal disinfection with temperature up to approx. 95°C
 - 1.16. The unit should be constructed of SS interior and exterior
 - 1.17. Alphanumeric digital control panel with clear numeric and functional displays and error indicators
2. The washer/ decontamination shall possess an audible signal indicating when the machine is ready for unloading.

3. The washer/ decontaminator unit shall have the capability to be programmed to operate on a wash-only cycle.
4. The washer/ decontaminator unit should be controlled automatically with a manual backup system in case of power failure.
 - 4.1. The automatic controller, which can be motor driven or microprocessor based, shall operate all functions of the unit.
 - 4.2. The manual controller shall consist of a single programming wheel, dial, or handle with a cycle-phase indicator.
5. Preferably, a temperature indicator/recorder should be provided to monitor and record the chamber temperature throughout the cycle.
6. The washer/ decontaminator unit shall include various safety features indicating that the door is unlocked, the chamber temperature is below the set point, or that hot water is present in the chamber when it should have been drained (such as tank overflow prevention, empty tank, auto door lock, overheating protection, etc.).
7. Washing carts for instruments, tubular instruments, OP shoes, Containers, unaesthetic equipments and others must be offered separately as option
8. The offer shall include three (3) loading / unloading carts designed specifically for use with the offered washer
 - 8.1. The carts shall be mobile and easily maneuverable using incorporated handles.
 - 8.2. The mechanism for loading / unloading shall be incorporated within the washer / cart system (double door, one way entry / exit)
12. The offer shall include two (2) anesthesia racks and three (3) combination racks for surgical instruments and accessories of larger sizes, as well as all necessary rack dividers and inserts.
 - 12.1. Each combination rack shall have three (3) shelves to allow, among other items, the simultaneous placement of four of the instrument baskets (trays) listed below
 - 12.2. Six (6) sets of SS instrument wire baskets designed specifically for use in high temperature cleaning and processing of surgical instruments, including steam sterilization
 - 12.3. Each wire basket set shall be composed of two of each of the following (approximate) sizes:
 - 12.3.1.1. 25 x 17 x 7 cm
 - 12.3.1.2. 35 x 25 x 7 cm
 - 12.3.1.3. 45 x 35 x 7 cm

WOR876 WORK STATION, Pathology, Grossing

1. Histology Workstation shall be designed specifically for use in the pathology laboratory for examination and sectioning of specimen
2. The unit shall be capable of preventing the buildup of, and decreasing worker exposure to, toxic vapors and particulate resulting from preparations performed on tissues on the work surface.
3. The exterior shell shall be made of a rigid, nonflammable material that is resistant to damage or degradation by the substances to be used in the laboratory environment.
4. The construction material of the interior (work surface, side and rear panels) shall be made of a chemical- and acid-resistant material, preferably Stainless Steel.
5. The enclosure shall be connected to a ductwork exhaust (provided by the main contractor) for 100% air removal to outside the building
6. The air circulation system shall incorporate a pre-filter (fine particles) and an active carbon filter for air decontamination prior to expelling the air to the outside. A formaldehyde neutralizing filter is an asset. Specify filters' properties and efficiency.
7. Blower fan for air extraction shall be included. Specify flow and power characteristics. The system shall (preferably) have an emergency speed mode for quick cabinet exhaust
8. Control panel to be user friendly and self-explanatory, providing display of relevant operating information and audio visual alarm indicators (specify)
9. Hour-meter shall be incorporated for quick checks of filter life
10. A continuous airflow monitor shall be incorporated into the cabinet's design.
11. The cabinet shall possess the following specifications:
 - 11.1. Floor mounted configuration and corresponding support base shall be included
 - 11.2. Stainless steel interior (preferable) and work surface (removable for cleaning and decontamination)
 - 11.3. Powder coated steel finish exterior to withstand cleaning agents normally used in a laboratory
 - 11.4. Work surface to incorporate a sink with hot and cold water taps / mixer, as well as a work surface rinsing bar
 - 11.5. Sink to incorporate a motorized disposer
 - 11.6. Fluorescent light shall be incorporated within the cabinet with separate on / off Switch
 - 11.7. The cabinet shall have a mains circuit breaker as well as individual power switches for all components (light, AC outlets, etc.)
 - 11.8. Electrical outlets (1 x duplex) and 1 data outlet
 - 11.9. Low noise level. Specify
12. The following accessories shall be included:
 - 12.1. Integrated ruler
 - 12.2. Formalin dispenser
 - 12.3. Paper towel disposer
 - 12.4. Sharps container
 - 12.5. Magnifier (on flexible arm)
 - 12.6. Cutting pad
 - 12.7. Splash shield
 - 12.8. Other, specify

13. Specify international safety standard(s) conformance
14. Approximate cabinet (external) dimensions: 150 x 80 cm (W x D). Specify height and exact internal and external dimensions
15. If a remote blower is necessary for the proper and safe operation of the unit as intended, then one must be included in the offer. The power and flow characteristics of the remote blower and internal extraction fan will depend on mechanical design issues such as length of ducting from equipment site to building roof, number of elbows, diameter and quality of ducting used, etc. Suppliers are requested to coordinate their proposed equipment with electromechanical / general site consultant following detailed review of mechanical site drawings
16. The required electromechanical services shall be specified

WSHDEN Dental Instrument Washer

1. The washer-disinfector line is ideal for small surgery centers and dental practices where it is used to clean and disinfect surgical instruments.
2. Easy to install benchtop single door washers provide fast and effective treatment and a perfect preparation for sterilization.
3. Operation is simple: load the material, close the door and select the cycle.
4. The machine does the rest, thus minimizing risks associated with handling infected instruments.

FEATURES

- Washing and disinfection temperatures are fully adjustable up to 93°C
- Temperature controlled by means of two independent PT1000 probes
- Fresh water intake between each phase of the cycle promotes hygiene and better cleaning
- Three level water filtering system
- Heavy duty self-cleaning water circulation pump ensures rapid flow rate and effective spray pressure
- Powerful integrated filtered air drying system (only in Lava 50 DRS)
- Steam condenser prevents condensation from entering in the washing area Design and Convenience
- LED display with 3 adjustable washing programs
- RS232 printer connection for documenting washing phases
- One or two dosing pumps
- Self-cleaning chamber with rounded edges

WSHMCH Laundry Washing Machine (approx 30 Kg Capacity)**FEATURES**

- Freestanding, high spin
- Complete stainless steel cabinet
- Xcontrol Plus - Fully programmable
- Stainless steel drum and tub
- Patented Soap Hopper
- Large drain valve (Ø 76 mm) (MXB 360, 500, 700 - 2 x Ø 76 mm)
- Easy access to all important parts from all sides
- Large door opening for easy loading & unloading
- Automatic door positioning
- Easy Soap - liquid soaps connection
- External lubrication system
- Golden lock - patented inner door lock mechanism
- Patented Cascade drum (MXB)

OPTIONS

- USB plug (on the side panel)
- Liquid soap pumps
- Water recovery option incl. second drain valve
- Steam heating version
- Water sample tap
- Trace-Tech® traceability software and networking system
- Second display

TECHNICAL SPECIFICATIONS**CAPACITY**

Drum Capacity (kg/lb):	28/65
Drum Volume (l):	280
Drum Diameter (mm):	Ø750
Number of Drums:	1
Number of loading doors:	1
Number of unloading doors:	1

DRUM SPEED

Washing Speed (rpm):	42
Highest spin speed (rpm):	914

G-FACTOR	350
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PROGRAMMER

XControl Plus	standard
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CABINET

Stainless Steel	standard
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HEATING

Electrical (kW)	21.9
Steam	3-8

CONNECTIONS

Electrical	3x 200-240V 50/60 Hz
Water inlet	3x DN20 ¾"
Steam inlet	1x DN15 ½"

DIMENSIONS

Size HxWxD (mm)	1455 x 1130 x 1145
Net Weight (kg)	490

According to ISO 9398-1

WSHPAN Bedpan Washer

1. Automatic bedpan washer-disinfector as a standalone unit.
2. Quick and easy to install, it also takes up a minimal amount of space.
3. Simply pop it in place or mount it on the wall
4. It's one-touch operating system, but it doesn't cut any corners when it comes to getting care utensils hygienically clean.
5. The availability of custom racks makes it easy to clean multiple different brands of regular and fracture bedpans, urine bottles, kidney bowls, urine jugs, children's potties and commode buckets.
6. Robust & stainless steel design.

WSTCTR-P Waste Container, Processed

1. Should be made of epoxy coated steel with rounded edges finishing on internal and external surfaces.
2. The shielded top cover should be opened by a heavy duty foot pedal for quick waste disposal.
3. The container shall have an approximate capacity of 60 liters or more.
4. The container should be completely shielded with lead sheet of 1/8"

WSTSTR Biohazardous Waste Sterilizer with Shredder

1. The Integrated Sterilizer & Shredder provides health-care facilities the opportunity not only to treat their own waste and with the most advanced, environmentally friendly technology, but also to significantly reduce their costs. The ISS performs both shredding and waste steam sterilization in a single vessel. The vessel is fitted with a motor-driven shaft, with powerful shredding/crushing blades which reduce the size and volume of the waste.
2. 15-25kg of hazardous medical waste can be loaded into the chamber, without opening the bags/cartons or plastic containers.
3. The air is removed from the chamber through the biohazard filter with the help of the powerful vacuum pump
4. Steam is introduced into the chamber until the sterilization temperature (134°C and pressure of 312kPa) is reached. The steam is internally produced by a steam generator, supplied by water purification and draining system.
5. The stainless steel vessel is fitted with a motor-driven shaft, with powerful crushing blades that can rotate in two directions to reduce the size of the waste down to 20% of the original volume. The 5,5kW motor is sufficient to rotate the shaft with an RPM of 400-1700 for various operations. The blades are mounted on the shaft and are designed to shred waste such as sharps, dialyzers, syringes, papers, cloth, plastic and glass
6. When the unit reaches 134°C, it starts sterilizing for at least 10 minutes. During the exhaust stage, the steam is being removed from the chamber and the drying is done by pushing air inside.
7. The chamber rotates to the unloading position and the fragmented and non-toxic waste is evacuated to the bin.

Features:

- | | |
|--|---|
| 8. Environmentally Sound | Shredded waste is reduced to as little as 1/5 its original volume, without emitting harmful substances. |
| 9. Cost-effective | Inexpensive operation and maintenance. |
| 10. Totally Safe | Automatic locking door prohibits unauthorized interruption. |
| 11. Efficient | A single unit can serve any middle size hospital, clinic or laboratory |
| 12. Compact | Room of only 3 x 4 meters is necessary. |
| 13. Supplied complete with Manufacturer Supplied Steam Generator to ensure full operation of the unit. | |
| 14. Supplied with 6 bins of each size and 500 Waste bags for start up operations. | |