Mobile Clinic

TECHNICAL SPECIFICATIONS

1.1 Technical Specifications of Vehicles

The following information should be submitted

✓	Requirements	
	Brand type and manufacture	-1
	Technical specification	-2
	Country of origin	-3
	Year of production	-4
	Warranty Booklet	-5
	After sales services	-6
	Drawing or Pictures: To provide inside, outside, set up within the vehicle and all other necessary configurations and fittings.	-7

Type &Design
- This is a customized specification for Mobile Clinic, Single Cabin , 4x2 Chassis.

- This vehicle is designed to operate in tropical zones at high temperatures and in a salt laden, high humidity atmosphere.

- It is also designed to provide ease of operation, safety, reliability and accessibility for repair and maintenance.

CHASSIS SPECIFICATION
Drive 4x2
Engine approx.: 275 HP @ 2700rpm
Torque approx.: 930 N.m @ 1200 – 2100 rpm
Gearbox 6 forward speeds + 1 reverse
Electrical System Battery: 2 X 12V/120AH, Alternator: 28V/70A
Steering Left hand drive (LHD)
Brakes ABS + EBL (Front & Rear: Disc. 432 mm diameter)
Suspension Front & Rear Parabolic
Anti-roll Bar Front & Rear

CONSTRUCTION
All panels external layers are made of lightweight composite panels that combine the benefits of fibers glass reinforced plastic with the look of aluminum. The internal core is made of high density foam of different thickness and has extremely high strength in compression, tension, bending and shear. Sandwich panels made with high density foam exhibit high impact strength and resistance to dynamic loads. Based on the use of the panel, plywood, aluminum, or lead sheets are pressed in the sandwich construction depending on the place and use of the panel.
The sandwich panel mechanical and anticorrosion properties as well as the fact that they are the best solution in terms of thermal insulation make them the right choice in manufacturing the body of the Mobile Clinic.

Flooring:
Finished floor will be a high performance, homogenous, welded seam sheet polyurethane floor.

ELECTRICAL SYSTEM
AIR CONDITIONING SYSTEM:
A/C cooling/heating will be provided
The A/C's are installed on the roof of the mobile unit
ROAD VEHICLE LIGHTING AND WARNING SYSTEM
 Amber side marker lights on each side
 Front head lights low beam lights / high beam lights (
 Combinational stop/park lights/turn signal with hazard warning lights
 Reverse lights with audible warning when reverse is selected
 Rear registration number plate with light
 Map reading light
 Illumination light on top of the main entrance
AUTOMOTIVE WIRING:

All circuits will be wired with high temperature resistant PVC insulated thin wall Automotive Cables with Electrolytic grade bare annealed bunched Copper Conductors are insulated with a PVC compound (FLRY-B cables as per DIN 72551 Part 6 for temperature range from -40 °C to 105 °C).
All wiring under the vehicle will be routed in Polyamide Corrugated Tube, FFMYD-T2, PA6, and Working Temperature Range: - 40Deg.C to + 150 °C
All electrical circuits will be separately fused, suitably indicated and grouped in to a common control box.
MAIN SUPPLY 220 – 240 VOLTS, AC:
Heavy duty socket and plug for external power supply 220V (±10%) /60Hz (±5%) will be provided. It will be fitted at the bottom or side of the vehicle to provide supply for the unit from external source.
INTERIOR LIGHTING:
The rooms will be illuminated using powerful LED lights powered by 220 V system (either from mains supply or generator). In each room an emergency light will turn ON automatically in case of loss of the main supply. In addition to the Standard Electrical System of the vehicle in accordance with International and local traffic regulations, the following are fitted:
GENERATOR:
Silent Type Generator
Size might vary based on the actual equipment consumption.

PAINTING
Single color.

DOCUMENTATION & OTHERS
Documentation
A set of manuals is supplied as follows:
- Operation and Parts Identification manual
- Electrical Wiring diagram
- Chassis operators manual
- Medical equipment manuals

Two (2) Year from the date of delivery of the vehicle against manufacturing defects.

Quality Management
- This vehicle is designed and built according to the Standards of AS 9100C & ISO 9001: 2008

The bidders must provide 2D & 3D rendered drawings for all types of quoted mobile clinic vehicle showing location of various components, sub-assemblies for structure, interior layouts, layout of seats & furniture, medical equipments, non- Original Equipment Manufacture electrical system layout, etc along with the technical bid.

1.2 Technical Specifications of medical equipment

Mobile clinic equipment List:

No	Requested equipment	Quantity
1	Portable X-Ray Machine	1
2	Patient Monitor	1
3	ECG Machine	1
4	Oxygen System	1
5	Portable Ventilator	1
6	Defibrillator	1
7	Ultrasound	1
8	Infusion Pump	1
9	Syringe Pump	1
10	Operating Table	1
11	Mobile Operating Lamp	1
12	Oxygen Concentrator	1

Price list of all consumables, accessories & spares valid for a period of 1 years must be submitted along with the technical bid. (These prices will not be taken into account during the technical or financial bid evaluation).

1. Portable X-ray

Computer aided detection technology with Portable X-ray system to screen

Core components are:

1. X-ray generator
2. Generator stand
3. X-ray detector
4. Detector stand
5. Portable workstation/PC-console and/or portable remote control-station with imaging processing software
6. Built-in batteries to support X-ray generator, X-ray detector, console laptop and CAD device for on line and offline.
7. Carrying bag
8. External charger
9. Accessories, including radiation protection devices

X-ray generator

High frequency X-ray generator:

- Voltage range must include the range from 50kV to not less than 90kV

(better with minimum range at least: from 50 kV up to 110 kV), preferably digitally displayed
- X-ray generator current-time range must include the range from 0.5 to 2.5 mAs (better with minimum range at least: from 0.3 up to 100 mAs) and preferably digitally displayed
- Maximum current: at least 5mA @ 90kV (or calculated on the product voltage available) (better: up to at least 20 mA)
- X-ray Generator to be supplied with all needed cables and connectors
X-ray tube and collimator:
- Stationary or rotating (better) anode with focal spot size less than 1.3mm
- Heat storage capacity of the anode at least 10,000 HU (preferably higher) and/or Nominal Radiographic anode input power (IEC 60613, ed 3) at least: 0.45 kW (=90 kV * 2.5 mAs / 0.5 s), preferably 22 kW (=110 kV * 100 mAs/0.5s)
- Preferably, high anode temperature alarm and automatic blockage/alarm for high tube temperature.
- Multileaf collimator with patient centering light. Total filtration with collimator not lower than 2.5 mm @70kV (or calculated on the product voltage available) Al equivalent (10).
Exposure features:
- Time range must include the range from 0.04 to at least 0.5 s (better with minimum range at least: from 0.01 to 4.0 s), preferably with at least 20 steps
- Preferably: Automatic Exposure Control facility
- Exposure release switch, preferably detachable, cordless remote control even more preferable.
- Maximum exposure switch operating distance to be specified as well as the optimal source-image distance (SID)
- Exposure capacity when fully charged (battery autonomy time) greater than 100 exposures.
- Preferably: detachable/replaceable battery (at least 1 extra battery / back up batteries would be preferable, if applicable)
- Preferably: DAP display to record/display patient examination dose or alternatively software to calculated dose

X-ray Generator Stand

Stand/frame with at least the following main characteristics:
- Lightweight
- Vertical movements range must include the range from 50 to 150 cm from ground
- The stand/frame shall be capable to set the best Generator's position for all the clinical applications/uses/interventions requested and available
- Preferably, with rotation of 90 degrees around vertical axis
- Preferably, fully counterbalanced for safe and easy movement (if necessary). The counterbalanced system to be specified, if any.

X-ray detector

Dimension:
- Active detector area not less than 35*43cm
Main features:
- Time to display image after exposure no longer than 10 sec
- Preferably, pixel pitch not greater than approximately 150μm.

- Spatial resolution not less than 3 lp/mm (better: at least 3.5 lp/mm.
- Preferably, DQE, detective quantum efficiency @ RQA5 at least 70% (better: at least 80%)
- Dynamic range of A/D converter at least 14 bit (preferably 16 bit) or at least 10 pixels resolution
- Exposure capacity when fully charged (battery autonomy time) at least 100 chest X-ray @ 90KV (or calculated on the product voltage available)
- Detector connectivity to workstation capabilities (wireless feature/option preferably included)
- To be supplied with all needed cables and connectors, if any
- Preferably: Automatic Exposure Detection feature available

X-ray Detector Stand

Stand/frame with at least the following main characteristics:
- Lightweight
- Vertical movements range must include the range from 50 to 150 cm from ground (better up to 200 cm)

Workstation

Workstation / Console with the following minimum requirements:
- One Led or LCD colour display, at least 13", at least 2 Mpixel (system integrated or external)
- Two or more Microprocessors, each of at least 1.7 GHz
- RAM at least 6 GB
- Hard drive not less than 500 GB SSD
- Ability for high-resolution (at least 1440*1440) images to be retrieved, reproduced and stored without loss of quality
- Capacity to store and to transfer data to other workstations / PC-consoles / networks
- Display languages should include at least English (preferably with French and Spanish options. National language/s of the user/s will be an asset)
- Additional generator-integrated console/monitor/viewer are an advantage
- Wireless feature shall be included.

Software

Dedicated software for calibration and image management, with at least all the following functions to be included, and DICOM 3.0 compatible (image storage and transfer):
- Patient registration/data
- Exposure parameter regulation; exposure parameter registration/ recording
- Image processing (clip, zoom, magnifier, invert, rotate, flip, annotations, measurements, digital collimation, etc.), image view, detail enhancement and noise suppression, tissue equalization
- Alphanumeric annotation of images required
- Chest X-ray program by default with patient thickness range including at least the range from 14 to 40 cm
- Last image hold facility required, displayed on clear screen
- Storage capacity of at least 2000 images, with capacity for removable media storage
- Preferably: interoperability with other Software
- Demonstrated integration with AI-powered Computer-Aided Detection

(CAD) solutions
- To be supplied with original necessary licenses (CAD, PACS, etc.) in final beneficiary name.
- If Computer Aided diagnostics/AI is included in the equipment offered, it has to be approved by WHO, or a stringent regulatory agency for "software as medical device" (i.e. EC, FDA, TGA. Etc.) and compliance must be demonstrated. Moreover, the manufacturers shall state the intended purpose of the CAD (diseases/ conditions covered, screening, diagnostics and standards approved).
- If CAD available, preferably provided with ability to analyze multiple diseases
- Preferably: open source software that can be adapted to local needs

Electrical supply:

X-ray Generator and Detector powered by rechargeable batteries (preferably with the capability for both devices to be charged during operations).
Recharge power source: AC power input to be 120 or 220 VAC +/-10%, 50/60Hz, single phase, fitted with compatible mains plug (if applicable: appropriate transformer /condenser array to be included).
Battery recharging time less than 6 hours (both for Generator and Detector).
Low battery alarms (preferable).
The battery back-up related to the whole system (Generator, detector and workstation) allow at least 100 chest x-ray exposures @90KV with imaging transmission/storage.
Voltage corrector / stabilizer to allow safe and stable operations at ± 20% of local rated voltage (when necessary/specified by the user).
Detector preferably provided with a separate, removable Lithium-ion battery (where applicable)

Accessories:

Must be supplied with at least the following accessories:
- Transport Case/Bag which shall allow an easy and safe transportation of the entire portable digital X-ray system (including Generator and Detector) and accessories provided (including workstation/PC/console)
- External charging system: the external power system (e.g., solar system, power bank, charging dock, etc.) shall be able to charge all electric components (generator, detector and workstation) of the portable digital X-ray system
- At least no.2 protective aprons with the following characteristics:
• shoulder to knee length;
• material should be as light as possible (i.e. lead-based composite or lead-free materials with high atomic numbers and low densities);
• at least 0.25 mm Pb protection equivalence (measured @ 90 kVp at least);
• adult size / adjustable front lead apron with Velcro / buckle;
• weight of each apron provided less than 4 kg;
• to be supplied with at least no.1 thyroid shield/collar.
- Based on a workload assessment, a mobile protective shield could be considered preferable in addition to previously mentioned aprons.
- At least no.1 set/pack of radiation hazard and pregnancy warning signs which can be installed outside the screening rooms to keep workers and visitors informed of X-ray areas; warning signs shall be made of durable,

outdoor-rated materials.
- At least no.10 highly visible impact detection stickers ("Shock Stickers") or adhesive labels with tamperproof shock sensors mechanically activated in case of mishandling.

Spare parts:

List to be provided of important spares and accessories, with their part numbers and cost. Spare parts availability for the equipment lifespan, not less than 7 years.

2. Patient Monitor

- Patient monitor suitable for ambulance use.
- Wall Mounted, Transport patient monitor with an international certified fixation system
- Patient monitor, complete unit with all standard accessories
- Wall Mounted with an international certified fixation system.
- With colored TFT screen has size about 8.5".
- Display waveforms and possibility to display 12 waveforms in 12-lead ECG view.
- Waveforms should be color coded and have clear visibility.
- Prioritized alarms for all monitored parameters, optimized for Critical Care environment, with alarm limits shown
- On the screen and alarm messages in clear English.
- Patient trends should be available for all parameters, in both numeric and graphical format for up to 72 hours at the bedside monitor.
- Automatic saving of patient waveforms during alarm conditions in the monitor memory wit
- Possibility to review the saved waveforms.
- Possibility to have different operating modes according to the type of patient, as well as different patient
- Viewing possibilities in each mode.
- The monitors should include the following parameters:
    - ECG, with automatic ST analysis and arrhythmia (extended arrhythmia), with 12 lead ECG
    - NIBP
    - SpO2
    - Spectral index monitoring for monitoring depth of sedation
    - O2 monitoring with paramagnetic maintenance-free sensor, providing also O2 waveform

General requirements:

Should have the capability to work directly on mains electrical supply as well as on a battery.

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.

Working temperature 0 till + 50 °C

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

3. ECG Machine

Microprocessor controlled digital 3 channel ECG machine suitable for adult, pediatric and neonate applications**.**

Three channel ECG machine with complete accessories.
Simultaneous 12 lead acquisition: aVR, aVL, aVF, I, II, III and V1-V6 derived from 10 electrodes (RA, LA, RL, LL, V1 - V6).
Minimum gain/sensitivity settings include 2.5, 5, 10 and 20 mm/mV.
Adjustable trace speeds include 5, 10 (and/or 12.5), 25 and 50mm/sec.
Minimum HR range 30 – 300 bpm with rhythm analysis.
Common Mode Rejection Ratio (CMRR) at 60 Hz > 105 dB or better.
Calibration signal of 1 mV, manual and/or automatic.
Selectable/adjustable filters for baseline drift, muscle artefacts, mains power.
Defibrillation fluctuation/overload protection.
Capable of displaying one group of at least three channels simultaneously.
Integrated/built-in printer.
Paper speeds include 5, 10 (or 12.5), 25 and 50 mm/s.
Compatible with Z-fold paper and optionally with roll paper also (indicate compatibility).
Integrated alpha-numeric keyboard.
Patient data input fields include name, age, height and weight, gender.
Built-in rechargeable lithium-ion battery.
Minimum battery operating time is 100 ECG exams or 4 hours of continuous recording.
Automatic switch to battery in case of power failure, automatic recharge on connection to mains.
All standard accessories, consumables and parts required to operate the equipment

General requirements:

- Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
- Working temperature 0 till +50 °C
- CE or USA FDA approved device.
- Service manual (English language).
- Operation manual (English language).

4. Oxygen System

a. Two oxygen cylinder with Oxygen Pressure Reducer

- Should be manufactured as per international and Sudanese standards.
- Max. Working Pressure at 15O C: 150kgf/cm2
- Capacity: 40L
- Built in / attached with Pressure gauge, regulator and cylinder wrench/key
- Pressure regulator with plug-in type outlet port capable to accommodate the probe of the driving gas hose of ventilator or the inlet probe of the oxygen flow-meter directly in single action without any intermediate connectors or adapters etc.
- Adequate length tubing, mask (adult, child and infant sizes), transparent, non- rebreathing, venturi, and valveless, nasal cannulas

(adult, child and infant sizes)

b. Oxygen Flow Meter with Humidifier

- Dial setting type without any floats, needles or moving parts to indicate the flow level.
- Pressure compensated for inlet pressure range of 3 to 5 bar, be able to regulate the flow from 0 to 15 liters per min and should show the actual oxygen flow rate.
- Installed vertically so as to not interfere with the other outlets and should be easily readable from the Doctor's/Paramedic' seat.
- The inlet probe should be fully adaptable to the terminal outlet in the ambulance as well as to the outlet adapter of the portable oxygen cylinder specified below in the list of medical equipments
- The outlet of the flow-meter should be universal in design to accept the humidifier, the flow selector switch or a direct connector
- Should have a humidifier made up of an impact resistant polycarbonate bowl with cap and inlet outlet nipples
- Should include 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
- Should be supplied with a direct connector to provide oxygen therapy without humidifier, insufflation kit and nasal prong
- Should be European CE or US FDA certified

5. Portable Ventilator

- Unit to be used for adult, child and infant ventilation during cardiopulmonary resuscitation and for ventilation during transportation when necessary.
- Wall Mounted Pneumatic/Turbine based Transport Ventilator
- To have frequency control 4 to 100 breaths per minute.
- Tidal volume control 5 - 2000 ml,
- Modes of ventilation: ACMV or CMV
- PEEP/CPAP 0-20cmH20
- Gas source : Compressed air / oxygen
- FIO2: 100% oxygen & air mix mode (with approx. 45% to 100 %)
- Equipment should be supplied complete with integrated carrying bracket for ambulance mounting as well as on ambulance cot, patient circuit, driving gas hose, PEEP Valve and breathing valve. (Transport Ventilator Kit)
- Should have airway pressure monitor& disconnect/low pressure / high pressure alarms.
- Should be European CE or US FDA certified

6. Defibrillator

Defibrillator for reviving heart functionality by applying selected

electrical energy on the chest wall of the patient.

- Defibrillator, complete unit with all standard accessories
- Wall Mounted, Transport defibrillator with an international certified fixation system.
- Should have manual and Automated external defibrillation (AED) mode
- Synchronized & a synchronized cardioversion
- Biphasic defibrillator with energy range 0-200J joule
- Should include TFT or LCD display screen > 6"
- Delivered energy indicator (meter)
- Standard external paddles for adults and pediatric with charge/ discharge controls
- Charging time: =< 15 sec. for 200J
- Should include a 3-leads ECG monitor for vital cardiac signs monitoring
- ECG leads and including reusable electrodes
- Should include paper speed: 25/50 mm/s for recorder
- Should include abnormal heart rate alarm
- Controllable alarm volume
- Should have the capability to work directly on mains electrical supply as well as on a battery.
- Should have a rechargeable battery with charging indicator.
- Should include Low battery indicator
- Should have self-test capability

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
Working temperature 0 till +50 ℃
CE or USA FDA approved device.
Service manual (English language).
Operation manual (English language).

7. Ultrasound

A general purpose fully digital B & W Ultrasound imaging system
System shall come with main unit, 1 probe, 1 unit of black and white thermal printer and Ultrasound gel warmer 1 unit.
Main applications: OB/GYN, abdominal, peripheral vessels and small parts.
The system shall have at least 10” or higher flat LCD monitor
Shall have B-mode, M-mode, B/M mode, 2B mode & 2D mode.
The system must have at least two active probe ports for easy use and convenient operation.
256 Grey shades for sharp contrast resolutions.
Shall have real time continuous dynamic focus.
Shall have facility for image zoom, freeze, text annotation.
The system shall have Tissue Harmonic Imaging.
Near and far gain adjustable.
Contrast, adjustable.
Focus: auto adjustable.

Shall have an alpha-numeric keyboard with easy access scans controls and track ball and status display.

Cine memory of 250 frames for cine loop playback.

Frame rate: not less than 50fps.

Probe: 2 to 5 MHz convex probe for Obs. /Gyn. and abdominal application is to be supplied.

Black and white thermal printer with recording paper: 01 no.

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.

Working temperature 0 till +50 ℃

CE or USA FDA approved device.

Service manual (English language).

Operation manual (English language).

8. **Infusion Pump**

- A microprocessor controlled infusion pump unit is needed to include but not limited to the following features:
- Flat hygienic touch screen.
- Syringe loading sensor – with KVO (keep vein open)
- Self-calibrated, self-diagnosis capability
- Volume range from 1 – 999 ml/hr or better in 1 ml increment
- High accuracy rate < /- 2%
- Audio visual indicators
- Multi types A/V alarms to include occlusion, door open, low battery, empty, etc…
- Open system using standard IV lines
- Air in line/ fluid detector
- Built in rechargeable battery, at least two hours operation
- IV stand, original approved by the manufacturer
- Input power supply: 220 ± 20 % V AC , 50Hz, shuko type

9. Syringe Pump

- The Syringe Infusion Pump provides uniform flow of fluid by precisely driving the plunger of a syringe down its barrel. It provides accurate and continuous flow rate for precise delivery of I.V. medication in critical medical care.
- The syringe pump must be programmable, user friendly, safe to use
- Microprocessor controlled self-calibrated syringe pump with but not limited the following specification:-
- Using standard I.V syringe from between 20ml to 60ml.
- Volume range: - form 1 - 99 ml
- Syringe loading sensor – with KVO (keep vein open)
- Audio and visual indicator
- Air inline alarm
- Anti-bolus system to reduce pressure on sudden release of occlusion
- Occulusion pressure not more than approx 750mm Hg or less
- The above must be of high quality, robust heavy duty.
- Internal rechargeable battery works for ≥ 30 minutes.

- Input power supply: 220 ± 20 % V AC , 50Hz

10. Operating Table

Hydraulic operating tables are simple tables for performing surgical procedures and it works without electrical power.

OT Table is required for general surgery

Operating Table Hydraulic with complete accessories.

Four section table top with divided foot section.

The table shall be mobile on castors with efficient braking system for stability during surgery.

All table positioning, i.e., height, back section, lateral tilt, trendelenburg, and anti-trendelenburg, except foot and head section must be operated hydraulically.

The casings on the frame and center supporting column must be made of hygienic stainless steel

Dimensions (approx. +/- 10 % variations):

Height: 730-1040 mm.

Side tilt: + 15 degrees.

Back section adjustment: - 15 degrees to 70 degrees.

Foot section adjustment: - 90 to 0 degree, detachable.

Trendelenburg and anti-trendelenburg: +/- 25 degree.

Head section adjustment: -40 to -30 degrees, detachable.

Maximum width: 555 mm.

Length: 1950 mm.

Accessories:

Padded arm rest with straps: pair with damps.

Side supports: pair with clamps.

Knee crutches: pair with damps

SS bowl with clamps

Infusion rod with clamp

Legs Support.

All standard accessories, consumables and parts required to operate the equipment

General requirements:

Working temperature 0 till +40 °C

CE or USA FDA approved device.

Service manual (English language).

Operation manual (English language).

11. Mobile Operating Lamp (LED):

Mobile operating light is required for carrying out operations in an emergency environment and the system can be moved from place to place.

Shall operate on mains electric supply as well as on battery.

Operating Light Mobile with single light head, moveable on casters and with all standard accessories.

The light shall be designed with good counterbalance mechanism in order to ensure stability of light head in all positions

Shall have single light head.

Light head shall not be greater than 400mm diameter

Light intensity range, shall not be less than 80,000 lux at 1 meter distance from light source. Bidder shall attached certified test certificated showing the compliance of this requirement with TSF.

Light temperature, between 4000 - 4500 K.
Shall have color rendering index in between 92 - 94.
Shall have 99% heat filtrating.
Temperature increase at head shall not be more than 2 oC.
Temperature increase on operating field shall not be more than 15 oC.
The light offered shall have safety designed to prevent patient from burns
Working distance range (focal length): 70 - 130cm.
Depth of field with focused light: > 60cm.
Luminance field size: 15 ~ 25cm diameter, adjustable.
Shall have a control to regulate light intensity and to switch on the unit.
Shall have an On/Off switch at lamp head.
Shall come with continuous dimmer, continuous focus adjustment, continuous field adjustment.
Sterilizable handle to regulate light field size, 2 pcs.
Vertical adjustment shall not be less than 115cm.
Rotation 360 degree.
Come with Ophthalmic procedures safe light bulbs with a minimum of 1000 hours lifespan.
Transformer and operating elements shall be integrated in light head housing.

Mobile Stand:

Shall be based on light weight easily moveable stable support with at least 4 casters with locking counter balance mechanism in order to ensure stability of light head in all positions and with swivel arm. Caster must be medical chemical resistant.

Battery:

· Lithium ion built in rechargeable batteries with capacity sufficient for operating in battery mode (fully charged) for minimum of 3 hours.
· Shall include a built-in automatic battery charger with proper protection against battery damage.
· Shall include battery power (charge) indicator.

General requirements:

Should have the capability to work directly on mains electrical supply as well as on a battery.
Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
Working temperature 0 till + 50 °C
CE or FDA approved device.
Service manual (English language).
Operation manual (English language).

12. Oxygen Concentrator

Output flow: max 5 LPM (Liter per minute).
Flow meter range: 1 to 5 LPM.
Output pressure: 60 kPa.
Oxygen concentration: 95% +/- 3% at 1-3 LPM, 92% +/- 3% at 4 LPM, 90% +/- 3% at 5LPM.
Time to reach 95% the specified performance: 5 minutes.
Four-step filtering (coarse, pre, inlet and bacterial) of air-intake.
All filters replaceable, coarse filter washable/reusable.
Continuous monitoring, with visual and audible alert on:
· Low and high output pressure
· Low oxygen concentration

· Oxygen monitor: amber light on the front illuminates when oxygen concentrator is below 85%. If concentration remains below 85% for more than 15 minutes, an audible alarm sounds.
· Power failure
· Battery test.
Temperature operating range: 20 to 50 OC.
Sound level produced: 40 to 50 dB(A).
Shall have 4 antistatic swivel casters, 2 with brakes and with integrated handle allows for easy moving and positioning.

Flow Splitter for Oxygen Concentrator

Five way split of oxygen flow provided by an oxygen concentrator.
Each flow can be adjusted individually via its flow meter, range: 0.125 to 2 LPM (Liter per minute).
The output nozzle can either be fit with tubing or left blank.
Input pressure: approx. 50 to 350 kPa.
Flow splitter allows precise distribution of the oxygen output of a concentrator towards 2, 3, 4 or 5 patients, i.e. neonates and infants.

Accessories:

· 1 x Adult cannula, with 2m tubing.
· 1 x Infant/Pediatric cannula, with 2m tubing.
· 1 x New-born cannula, with 2m tubing.
· 1 x Connector for above.
· 1 x Humidifiers.
· 1 x 50' tubing.
· 1 x tubing adapter kit.
· 1 x Spare coarse filters.
· 1 x Spare pre-filters.
· 1 x Spare inlet-filters.
· 1 x Spare bacterial-filters.

All standard accessories/consumables/parts required for the proper operation of the above item shall be included.

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
Working temperature 0 till + 50 °C
CE or FDA approved device.
Service manual (English language).
Operation manual (English language).