

## Amended Technical Specifications

### BLOOD GAS ANALYZER

1. It should measure Blood Gas (full parameters) in its addition to measure Electrolytes like Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>, pH, pO<sub>2</sub>, pCO<sub>2</sub>. and Haematocrit .
2. Calculated parameters: TCO<sub>2</sub>, HCO<sub>3</sub>, Base Excess A-aDO<sub>2</sub>, Buffer Base etc.
3. Should display all results in print out.
4. Should have input parameters of patient Temperature, Hemoglobin FIO<sub>2</sub>, patient ID Etc.
5. Should have a sample temperature control of 37 degree centigrade.
6. It should have inbuilt printer.
7. Analysis time should not be more than 90 seconds.
8. System should be based on liquid / gas calibration technology.
9. System should not be a cartridge based system i.e. electrodes should not be in the cartridge system.
10. Should work on whole blood and should have syringe and capillary sampling.
11. Should be with numeric keypad, graphic / LCD display, and inbuilt printer and RS 232 port.
12. Analyzer with memory of storing patient data/result minimum 250 or more.
13. System should be supplied complete with all standard accessories, electrodes & start up kits.
14. Onboard life of reagents should not be less than one month.
15. Power input: 220 VAC  $\pm$  10%, 50 Hz and a suitable one hr. back up UPS should be supplied along with analyzer. There should be storage facility of data in case of power failure.
16. Maintenance free electrode and the unit should be upgradeability for auto quality control.
17. System should be ISI /CE marked or US FDA approved.
18. Should submit certificate of relevant of IEC safety standards.
19. Any other parts except reagents to be replaced free of cost during warranty period.

## Amended Technical Specifications

### Pulse Oximeter

The pulse oximeter should have the following provisions required for operation theatres, ICUs, ICCUs and NICUs, ambulances and out-patient rooms.

- ✘ LCD display (minimum 4”) large digital display of SpO<sub>2</sub>, pulse rate and plethysmogram with continuous display of high/low alarm limits pulse strength bar graph.
- ✘ Pulse strength bar graph.
- ✘ Wide range of sensors - finger probe for adult and pediatric.
- ✘ Mains & Battery operated. Power input: 220 VAC ±10%, 50Hz.
- ✘ Compact, portable and easy to set up with minimum 4 Hrs. battery backup with battery level indicator.
- ✘ SpO<sub>2</sub> - 0-100%  
Accuracy - ± 2%, 70-100%  
                  ± 3%, 50-69%
- ✘ Pulse rate within 30-250 bpm,  
Accuracy - ± 2% full scale
- ✘ Pulse beep - separately adjustable beep volume (including off), tone frequency varies with the SpO<sub>2</sub> value.
- ✘ Patient alarm - audible and visible alarm with adjustable volume (including off), audible alarm silence key with following alarm range:
- ✘ SpO<sub>2</sub>                   Low - off 50-99%  
                              High - 50-100% off
- ✘ Pulse rate            Low - off 40-100  
                              High - 70-250, off
- ✘ Should have trend memory for pulse & SpO<sub>2</sub>
- ✘ Following alarms to be included:
  - Sensor disconnection
  - Low pulse
  - Low battery

The pulse oximeter should have Nellcore or Masimo module.

Should have BIS or “CE” marked or US FDA approved.  
Should submit certificate of relevant IEC safety standards.

## Amended Technical Specifications

### Electro Surgical Unit (Surgical Diathermy)

1. Microprocessor based digital display electrosurgical unit with continuous feedback system & having feather touch controls.
2. Pure cut & 2 blends with varying degree of hemostatis & under water cutting application
3. Spray coagulation, Force & Soft coagulation mode & two Bipolar (micro & macro) mode.
4. Audio alarm on completion of Bipolar Coagulation.
5. Capability to auto store last used values on front panel if unit is shut off
6. The unit should have double paddle explosion protected foot switch for monopolar cut and coagulation and dual pad silicon patient plate for continuously contact monitoring system.
7. The unit should have facility of dual mono polar coagulation.
8. Separate foot switch for Bipolar Coagulation.
9. Automatic switch off circuit when there is break in patient connecting wire and patient plate
10. Safety audio visual alarm for patient plate, disconnection and continuous activation of unit.
11. Pure cut : 300 watt
12. Blend-1 / Low : 250-300 watt
13. Blend 2 : 200 watt
14. Spray Coag : 120 watt
15. Force Coag : 120-150 watt
16. Desiccation : 100 watt
17. Two Bipolar modes: Micro- 70-80 watt & Macro- 70-80 watt
18. Standard accessories:
  - a- Double paddle foot switch with cable
  - b- Bipolar foot switch, mains cable,
  - c- Silicon rubber patient plate with cable (3 no.),
  - d- Autoclavable electrosurgical handle (3 nos.),
  - e- Set of 5 electrodes (1 no.),
  - f- Bipolar forceps of various sizes with cable (3 no.),
  - g- Monopolar cord (3 no.) with connection cable to electrosurgical unit,
  - h- Anti-rusted mobile trolley,
  - i- Reusable hand switching pencil (1 no.)
  - j- Properly rated fuses- 4 nos
19. Unit should operate on  $220 \pm 12.5\%$  V AC, 50 Hz
20. Should submit certificate of relevant IEC safety standard.

## Amended Technical Specifications

### **Technical specification for Light weight Medical Oxygen Cylinder**

Water capacity – around 10.7 Liter, Oxygen Capacity around– 1700 Liter

#### **MEDICAL OXYGEN CYLINDER (MADE OF ALUMINUM)**

1. The Medical Oxygen cylinder should be made of high quality strength Aluminum alloy with heat sensitive coating and duly approved and certified by the Department of explosives Nagpur. The CCE approval should be provided with the bid.
2. Aluminum cylinder should be of DOT-3AL-2015 standard / or any other equivalent international standard having the weight of less than 11 Kg (Empty).
3. The capacity of the cylinder should be around 1700 liters Medical Oxygen Gas.
4. Cylinder should be fitted with valve safeguard and the same should be suitable to hand carry the cylinder.
5. Since portability of the cylinder is vital, the filling pressure of the cylinder should be minimum 140 Bar having test pressure of 250 Bar. Test certificates of the cylinders from the cylinder manufacturer should also be provided.
6. The colour code of the cylinders should be as per IS: 3933-1966/ISO with all updating till date.
7. The valve fitted on top of the medical cylinder should be as per IS: 3745-1978 so as to make sure that the cylinder is easily refilled anywhere in India and there is no need for any custom made refilling hose / station / connector.
8. All fitting of medical oxygen cylinder should be leak proof and there should be no chances of leakages.
9. Medical Oxygen cylinders and all other fittings should be hygienic and there should be no chances of contamination.
10. There should be a certification from the cylinder manufacturer ensuring after sales service & periodic testing of cylinders required as per Gas cylinder rules 1981.
11. The supplier should have a cylinder periodic testing facility and approval from the Chief controller of explosives to provide the same.

All cylinders shall be supplied filled with Medical Oxygen gas and a certificate as comply with IP standard shall be provided by the supplier for filled gas

## Amended Technical Specifications

### Technical specification for Light weight Medical Oxygen Cylinder

Oxygen Capacity around – 7540 Liters (D Type)

#### **FOR MEDICAL OXYGEN CYLINDER (MADE OF ALUMINUM)**

1. The Medical Oxygen cylinder should be made of high quality strength Aluminium alloy with heat sensitive coating and duly approved and certified by the Department of explosives Nagpur. The CCE approval should be provided with the bid.
2. Aluminium cylinder should be of DOT-3AL-2015 standard / or any other equivalent international standard having the weight of around 40 Kg.
3. The capacity of the cylinder should be around 7540 liters Medical Oxygen gas.
4. Cylinder should be fitted with valve safeguard and the same should be suitable to hand carry the cylinder.
5. Since portability of the cylinder is vital, the filling pressure of the cylinder should be minimum 150 Bar having test pressure of 250 Bar. Test certificates of the cylinders from the cylinder manufacturer should also be provided.
6. The colour code of the cylinders should be as per IS: 3933-1966/ISO with all updating till date.
7. The valve fitted on top of the medical cylinder should be as per IS: 3745-1978 so as to make sure that the cylinder is easily refilled anywhere in India and there is no need for any custom made refilling hose / station / connector.
8. All fitting of medical oxygen cylinder should be leak proof and there should be no chances of leakages.
9. Medical Oxygen cylinders and all other fittings should be hygienic and there should be no chances of contamination.
10. There should be a certification from the cylinder manufacturer ensuring after sales service & periodic testing of cylinders required as per Gas cylinder rules 1981.
11. The supplier should have a cylinder periodic testing facility and approval from the Chief controller of explosives to provide the same.

All cylinders shall be supplied filled with Medical Oxygen gas and a Certificate as comply with IP standard shall be provided by the supplier for filled gas”.

**Amended Technical Specifications**

**Surgical Set**

S.No.	Items	No's.
1.	<b>Sponge holding forceps 8"</b>	One
2.	<b>Artery forceps, straight 6"</b>	Two
3.	<b>Artery forceps, curved 6"</b>	Two
4.	<b>Dissecting forceps non-toothed 6"</b>	One
5.	<b>Dissecting forceps Single tooth 6"</b>	One
6.	<b>Scissors straight 6"</b>	One
7.	<b>Scissors curved 6"</b>	One
8.	<b>Needle holders 8"</b>	One
9.	<b>B.P. handle No 3 &amp; 4</b>	One Each
10.	<b>Ellis forceps 6"</b>	Two
12.	<b>Suturing Needle curved Round Body / straight End cutting,</b>	One (each)
13.	<b>Steel tray with top cover 10" x 8"</b>	One

All the instruments should be made of good quality rust proof SS materials and forceps and Scissors head should be made of Tungsten Carbide.

All surgical instruments should be CE marked.

Amended Technical Specifications

**Technical Specifications**  
***Boyles Apparatus***

Features	Specifications
Construction	Tubular, rigid, electro statically powder coated steel section
Cylinder Yokes	Gas specific yokes with sliding stainless steel clamping bars for easy handling. Two each for oxygen and nitrous oxide cylinders.
Table Top	Stainless steel.
Mobility	Four large diameter anti-static castor wheels with ball bearings. Front castors have brakes.
Pressure Gauges	Two each for oxygen and nitrous oxide.
Regulators	Two each for oxygen and nitrous oxide.
Non-return cum Pressure Release Valve	Minimizes risk of backflow of gases, blows off when pressure exceeds 125 cm of water column.
OFWD (Oxygen Failure Warning Device)	Pneumatic device which activates audible alarm (for minimum of 10 seconds) when oxygen supply pressure falls to 205 kPa.
Vaporisers	Space for at least two or more vaporizers of choice. Halothane vaporizer:- Agent specific, colour coded temperature, flow & pressure compensated with graduation from 0.5 to 6% halothane. If recalibration is required at any time, it shall be done free of cost by the company up to 5 years from the date of installation. During repair/recalibration, standby unit, if required, will be provided by the supplier free of cost.
Flowmeters	Long (approx 230 mm) rotating bobbin flow meters calibrated in double/triple scale for accuracy and clarity in reading. Hypoxia guard O <sub>2</sub> → 0.1 to 10 lit/min N <sub>2</sub> O → 0.2 to 10 lit/min



Oxygen Flush

Emergency outlet for supply of O<sub>2</sub> to patient.

Circle absorber

Easy movable circle system (single or double chamber).

Easy open & close circuit switch should be available in the machine at convenient angle.

Accessories

Rigid top tray for monitors.

Two built-in oxygen outlets (4.22 kg/cm<sup>2</sup>) for driving ventilators, etc.

Space for ventilator.

Extended rear platform for two 10 litre water capacity cylinders.

Magill Circuit Complete

Bain Circuit Complete (Adult & Paed.)

Trolley should have one drawer

Key spanner for A type cylinder-2 nos

1, 1.5 & 2 lit antistatic rebreathing bag-1 each

Face mask for Adult & Paediatric

The basic anaesthesia machine should be ISI / CE marked / USFDA approved.  
Halothane vaporizer should be CE marked or equivalent.