

# ESSENTIAL NEWBORN CARE

## EQUIPMENT SPECIFICATIONS

*This document is intended to provide health service managers, doctors and nurses in charge of neonatal facilities help with developing specifications when purchasing equipment.*

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## INCUBATORS AND GENERAL NEONATAL EQUIPMENT

### INTENSIVE CARE CRIB

The mattress platform has the following features:

- Adjustable tilt with reliable locking mechanism to keep the mattress platform locked.
- Provision for X-ray film cassettes beneath the mattress. The mattress is radiolucent.
- All four sides of the mattress platform fitted with transparent panels and have clear measurements on the panels for X-ray placement. The front end and two side transparent panels hinged.
- The heat must be provided by radiant heaters housed in an overhead canopy and the overhead canopy must be mounted level at the top of the rear mainframe at an angle of 90°.
- The overhead canopy must include an inspection light, which could be switched on, when required.
- The overhead canopy must be able to swivel to the left or right and lock in desired position.

The temperature controller

- must incorporate two (2) modes of temperature control as follows:
  - Manual mode.
  - Skin temperature control (Servo mode) utilizing a skin temperature probe.
- The manual heat control mode must provide user selectable heater power from zero (0) to maximum.
- Skin temperature control (Servo) mode must utilize a small disposable temperature probe which will attach to the skin of the infant to monitor and assist in maintaining and controlling the infant's temperature by varying the intensity of the heat according to the selected set point temperature
- The skin temperature set point must be user selectable in the range of at least 34°C to a maximum of 38°C, in 0,1°C increments.
- The minimum temperature measurement range must be from 30°C to 40°C, and the measured temperature must be clearly displayed on a digital numerical display.
- Audible and visual alarms when the skin temperature deviates by +/- 0,2°C from the set point temperature.
- An alarm must sound and power to the heater circuit automatically shut off if the skin temperature probe becomes open circuit and faulty or accidentally disconnected from the controller whilst the unit is being operated in the skin temperature mode.
- Supplied and fitted with an oxygen flow meter, with a range of 0 to 15 litres per minute to supply the resuscitation devices.
- The pressure-limiting device of the resuscitation system must prevent pressures greater than 35cm H<sub>2</sub>O occurring.
- A flow meter mounted onto the accessory rail / bar of the unit and utilising a snap-lock is preferred.
- Fitted with an approved suction regulator providing 0 to 60kPa and a minimum size of an 850ml receiver bottle fitted with an overflow stop valve.
- Supplied with a robust mount for holding oxygen cylinders.
- Supplied with a monitor shelf which can be easily cleaned and will support a multi-parameter monitor.
- Supplied with a syringe pump mounting arm long enough to hold at least 4 syringe pumps.
- The Intensive care crib must be mobile with the provision of 4 (four) castors of suitable diameter and at least two of which must be lockable. The unit is well balanced on the castors.
- Phototherapy must be provided by the unit offered. The phototherapy must be either built into the OVERHEAD HEATER CANOPY or it must be a separate dedicated module/s that mounts onto the side of the overhead heater canopy unit and it must provide effective phototherapy.

## TRANSPORT INCUBATOR

- Double wall transparent canopy with mattress, mounted on stretcher
- Front and head access door, slide-out mattress tray
- Baby restraining straps
- Warm air circulation system
- Bacterial filter to remove air born particles
- Incubator air temperature monitoring and servo control: 25 to 38 C, increments 0.1C
- Digital displays outside shows air temperature
- Two 10 L integrated oxygen cylinders, regulator and flow meter
- Audiovisual alarms: high/low air temperature, temperature sensor failure, power failure and low battery
- Can be dismantled to allow frequent washing and disinfection of the incubator
- Battery and AC supported
- Supplied with:
- 1 x spare air temperature probe
- 1 x spare rechargeable battery
- 2 x empty 10 L oxygen cylinders

## THERMOMETER CLINICAL DIGITAL 32 – 43 DEGREES

- Digital thermometer Celsius scale
- Safe to use, atraumatic, no glass, no mercury
- Measurement range: 32°C – 43°C
- Accurate measurement: +/- 0.1 between 35°C to 41°C
- Liquid crystal display, easy to read
- Beep sound and switch off
- Water proof for ease of cleaning
- Battery powered
- Low battery indicator
- Supplied with:
- 1 x NiCad battery

## EXAMINATION LIGHT

- Mobile light for medical examination
- Stand with 5 anti-static swivel castors
- Articulated arm 105 cm, spring loaded, with on/off switch and integrated transformer
- Halogen bulb: 12V/20W
- Light intensity approx: 20.000 Lux at 40 cm
- Natural white light: colour temperature 4000 K
- Reflector adjustable for positioning
- Power cord: length approx 3 m
- Supplied with:
- 1 x spare halogen bulb
- 1 x spare set of fuses

## ELECTRONIC BABY SCALE

- Measuring range 0 to 10 kg
- Minimum graduation: 5 g
- On switch and auto-off
- Auto-calibration with each switch-on
- Large LED display readable in low light working situations, display cover durable plastic
- Display in kg
- Reading time max 5 seconds
- Zero weighing adjustment
- Freeze reading feature
- Smooth surface, finishing allows for easy cleaning and disinfection.
- All vital parts made of rust proof materials
- Horizontal levelling with height adjustable feet
- Splash proof and shock resistant light-weight body
- Power supply connects to wall sockets and internal rechargeable battery

## INFANTOMETER, 105CM

- Portable infant length-height measuring system
- Measures laying length of neonates and babies
- No need for calibration as all parts have prefixed position
- Reads in centimetres
- Minimum graduation: 1 mm
- Long-lasting hard-wearing ruler/graduation is fully integrated with device
- Measuring slide/wedge glides smoothly and close via ruler, avoiding reading parallax
- Measuring slide/wedge wobbles max 2 mm, over full length
- No sharp edges or corners
- Low stable board, width: 30 cm
- Length, measurement range, approx: 100 cm
- Head/footplate, board and slide/wedge made of quality laminated wood or plastic
- Wood parts should be treated and finished/protected with varnish to prevent chipping of edges and allow easy cleaning
- All connections should be screwed/nailed plus glued

## EQUIPMENT FOR BILIRUBIN MONITORING AND PHOTOTHERAPY

### TRANSCUTANEOUS BILIRUBINOMETER

- Measure the transcutaneous bilirubin level of the newborn with measurements up to a minimum of 40 mmol/l
- Handheld and lightweight in order to facilitate measurements to be carried out within an Infant incubator.
- Operates off a rechargeable battery / battery pack.
- The measurement probe must be built onto the unit and the measurement must be by means of a simple technique e.g
- The measured value is clearly displayed under all lighting conditions on a three digit numerical display and provides measurement values equivalent to laboratory values for serum bilirubin levels.
- The unit offered must provide an accuracy of typically +/- 5% at a reading of 0 to 529 mmol/l and an accuracy of +/- 10% at a reading of 530 – 684 mmol/l
- The unit must be provided with a known test measurement value to confirm the calibration accuracy.
- All essential accessories in order to put the unit into operation immediately must be supplied.
- A protective carry case must be supplied

### PHOTOTHERAPY UNIT

- Heavy sturdy mobile stand phototherapy unit Antistatic castors, 2 with breaks
- Single head, surface size, approx: 0.50 x 0.75 m
- Head height adjustable, approx: 1.40 to 1.75 m
- Blue light, 4 Compact Fluorescence Tubes (CFL), approx: 20 W
- White light, 2 Compact Fluorescence Tubes (CL), approx: 20 W
- Tubes are protected by grill
- Irradiance at skin level, up to: 40 uW/cm<sup>2</sup>/nm
- Wavelength: 420 to 500 nm, with highest intensity at 470 nm
- Integrated cumulative hour timer

Supplied with

- 2 x spare blue CFL tubes
- 1 x spare white CFL tube

### IRRADIANCE METER FOR PHOTOTHERAPY UNITS

- Handheld irradiance meter (spectro-radiometer) to measure the output of conventional phototherapy devices
- Band pass filter, max transmission: 425 to 475 nm
- Light detector, range: 0 to 2000 uW/cm<sup>2</sup> (full bandwidth), 0 to 40 uW/cm<sup>2</sup>/nm
- Minimal graduation: 1 uW/cm<sup>2</sup>/nm
- Accuracy: (±10%)
- Total block for IR and UV
- Large LED/LCD or needle/dial reports measurement
- On switch and auto-off
- Automatic zero setting between measurements
- Measuring time approx: 5 second

## EQUIPMENT FOR OXYGEN ADMINISTRATION AND MONITORING

### PULSE OXYMETER

- Compact portable bedside pulse oxymeter with LCD display
- Must provide the latest motion artefact detection software (e.g. Massimo)
- Continuous monitoring of SpO<sub>2</sub> (arterial blood oxygen saturation), pulse rate and signal strength
- Measuring range:
  - SpO<sub>2</sub>: 30 to 100 %, minimal graduation 1%
  - Pulse rate: 30 to 250 bpm, minimal graduation 1 bpm
- Accuracy SpO<sub>2</sub>:
  - 50 to 69% ( $\pm 3\%$ ),
  - 70 to 100% ( $\pm 2\%$ )
- Audible adjustable bleep for heartbeat
- Display shows Sp O<sub>2</sub>(%), HR(bpm) and signal strength bar
- Large display readable from distance, display cover durable plastic
- User pre-set of high/low alarms on SpO<sub>2</sub> and pulse rate monitoring
- Audio visual alarm for SpO<sub>2</sub> and pulse rate in case measurements are outside pre-set range
- Silencing feature for audio alarm
- Display reports system errors, probe failure and built-in battery status
- Internal rechargeable battery
- Automatic switch from mains to batteries in case of power failure

Supplied with:

- 2 x reusable SpO<sub>2</sub> sensors neonate, clip-on type (including connection cable)
- 10 x reusable SpO<sub>2</sub> sensors neonate, wrap around type (including connection cable)
- 1 x spare rechargeable battery

### OXYGEN HOOD OR HEADBOX

- Round shape or have no joins or corners, and easy to clean
- 3 x size small, approx: height 22 cm, diam 25 cm
- 3 x size medium, approx: height 18 cm, diam 20 cm
- Made of autoclavable polycarbonate
- Trauma free silicone neck
- Fitted with oxygen connector
- An adjustable porthole on top for feeding and suctioning

### OXYCHECK

- The monitor must be small and compact.
- The case made of flame retardant plastic or aluminium with provision to mount on to mounting bracket.
- The monitor must be able to work off dry cell batteries.
- The unit must have a battery duration of  $\pm 300$  Hours continuous non-alarming condition, and a low battery indicator.
- The monitor must have an on / off switch and a calibration adjustment control.

- The unit must have a high and low alarm, with a 60 second alarm mute:
- High:  $\pm 21\%$  - 100%                      Low: 18% - 100%
- The monitor must have a digital display, showing measurements as a %.
- The unit must have a highly visible alarm indicator.
- The accuracy must be  $\pm 1\%$  Linear on the measuring range 0% - 100%.
- The sensor type must be of the **R17** type.
- The sensor response time must be less than 6 (six) seconds at 90%.
- The sensor life must be 12 – 18 months under typical conditions.
- The monitor must come complete, with:
  - Batteries
  - O<sub>2</sub> Sensor
  - Sensor Cable

## CPAP

- Nasal CPAP apparatus, which must be pneumatically powered and electronically controlled.
- The CPAP apparatus offered must have the following independent controls and operational characteristics:
  - Integrated air / O<sub>2</sub> blender must provide an O<sub>2</sub> concentration of 21% to 100%.
  - Air / O<sub>2</sub> flow must provide 0 to 15 LPM.
- The CPAP apparatus offered must be capable of monitoring the following parameters:
  - Mean airway pressure.
- The CPAP apparatus offered must have audible and visible alarm parameters for the following:
  - Low mean airway pressure.
  - High mean airway pressure.
- The CPAP apparatus offered must be supplied with silicone nasal prongs / masks in three sizes as well as with three neonatal circuits.
- The CPAP apparatus offered must come complete with colour coded air and O<sub>2</sub> hoses 3 metres long and fitted with Heyer type keys.
- The CPAP apparatus offered must include and be mounted on a height adjustable, stable, mobile stand manufactured from corrosion proof material with at least two of the casters fitted with brakes.
- The CPAP apparatus offered must include and be fitted with a humidifier, which includes all the necessary accessories, equivalent to the Fisher and Paykel MR 850.

## NEONATAL VENTILATOR

- The following components must be included
  - Ventilator
  - Trolley
  - All essential accessories.
  - Starter pack of consumables.
- The material used for the construction of both ventilator and trolley must be corrosion resistant and suitable for use in an intensive care environment.
- Ventilator must be well secured on to the trolley.
- Castors must be at least 100mm in diameter with a brake on at least two castors.
- The trolley must be stable and suitable for moving the unit within the institution.
- Patient setting must be user friendly and must include the following:
  - a. Frequency: minimum range of 0 – 100bpm.
  - b. Inspiratory time: minimum range of 0.1s – 3.0s.



- c. Inspiratory Pressure: minimum range of 0 – 60cm H<sub>2</sub>O.
  - d. PEEP: minimum range of 0 – 20cm H<sub>2</sub>O.
  - e. Flow: minimum range of 0 – 30L/min.
  - f. FiO<sub>2</sub>: 21% - 100%.
  - g. Trigger Sensitivity: Flow or pressure trigger.
  - h. Any additional settings available on the unit offered must be detailed by the tenderer.
- The unit must operate off an Input voltage of 220Volt a.c. 50hz single phase allowing a variation of plus and minus 10%. The unit offered must be fused in both the live and neutral.
    - Battery back up must be provided to operate the ventilator for a period of at least one hour
  - Pneumatic gas sources – oxygen and medical air.
  - Unit must be supplied with hoses of at least 3 metres that are colour coded to the requirements of the South African Bureau of Standards and must be terminated with the specific gas SABS Number: 1409 probe.
  - Essential Modes and features must be included as follows:
    - Time cycled pressure limited continuous flow. SIMV/AC.
    - Pressure support.
    - Flow measurement: A proximal flow sensor of the hot wire anemometry type must be used and supplied at no extra cost.
    - Continuous positive airway pressure.
    - Manual breath.
  - Monitoring must be as follows:
    - Peak Airway Pressure
    - Mean Airway Pressure
    - PEEP
    - Expiratory / Inspiratory Tidal Volume
    - Minute Volume
    - Leakage in %
    - Total frequency
    - TI: TE
    - FiO<sub>2</sub>
    - Inspiratory / Expiratory Flow
  - Display of the following waveforms must be included
    - Pressure, flow and volume waveforms
    - Loops
  - Additional features must include
    - Control settings locking mechanism
    - Nebulizer
    - Internal blending system
    - Diagnostic Self-test after power switch on
    - Self - calibrating oxygen monitoring
  - The following ALARMS must be provided
    - Audible and visible with manual override for audible alarm
    - Alarm silence must be for a maximum period of 60 seconds
    - Audible alarm volume control must be provided
    - High breath rate
    - Low battery warning
    - Loss of Power supply

- Apnoea
- Fail to cycle
- High and low airway pressure alarm
- Incompatible settings
- Low PEEP
- Loss of gas supply
- High and low FiO<sub>2</sub>
- Minute volume alarm

The unit must be supplied with the necessary accessories in order that it can be put into use immediately.

- One complete Neonatal circuit must be supplied at no extra cost.
- Dual servo controlled humidifier (water bath type) similar or equivalent to Fisher & Paykel-MR850) must be supplied, complete, at no extra cost so that the unit can be put into operation immediately
- Supply details of the cleaning protocols between patients as per manufacturer's recommendation.
- Specify the details and cost of any consumables that may be required. State the price in the schedule at the end of this specification.

## TRANSPORT VENTILATOR

- The ventilator must be a pneumatically driven transport ventilator suitable for both neonatal and paediatric ventilation during ambulance transport
- Ventilator must be purely pneumatic and powered by medical air with no electronics or electrical circuits.
- Construction: Must be corrosion resistant.
  - Must be robust.
  - It is desirable that a carry handle be provided.
  - Must be splash proof. (IPXO Rating or equivalent).
- Patient setting must be typically as follows:
  - Frequency range of: 0 to 120bpm
  - Tidal volume range of: 0 to 300ml
  - Flow rate range of: 1 to 15Lpm
  - Peak pressure range of: 0 to 70cm H<sub>2</sub>O
  - PEEP range of: 0 to 18cm H<sub>2</sub>O
- Mass should not exceed 10kg
- Medical gas sources – oxygen and medical air
- Unit must be supplied with hoses of at least 1,5 metres that is colour coded to South African standards.
- Pin index type Regulators must be supplied. These regulators must meet the CKS 605-1987 specification for medical gas pressure regulators.
- The ventilator must have the following modes:
  - IMV.
  - Time cycled, pressure limited
  - CPAP

### ACCESSORIES:

- The unit must be supplied with all the essential accessories in order that the ventilator can be put into use immediately upon delivery.
- Supply detailed list of cleaning protocols between patients. Specify the details and cost of any consumables that may be required

## EQUIPMENT FOR MONITORING CARDIAC FUNCTION AND FLUID ADMINISTRATION

### ELECTRONIC BP

- Digital electronic sphygmomanometer suitable for neonate
- Use the oscillometric method of measurement
- Cloth cuff with inflatable bag quick-connected via tube to main unit
- Cloth is washable, strong and reinforced at both ends
- Air hose must be a minimum length of 2 metres
- Strip of Velcro fastening; length can be adjusted to fit around neonate upper arm
- Measuring range: up to 300 mmHg
- Minimum graduation: 1 mmHg
- Accuracy: +/- 5%
- Large LCD display readable in low light working situations, display cover durable plastic
- Displays reports: systolic, diastolic and mean pressure and heart rate
- Power requirements: 220 V/50 Hz (with adapter), internal re-chargeable batteries or replaceable batteries (autonomy approximately 6 hours, automatic recharge)

### SYRINGE PUMP, 10, 20, 50 ML

Digital and self-regulating volume controlled portable syringe pump

- Can be mounted on bed/wall rail or mobile pole/stand (supplied with fixation)
- Suitable for all intravenous and intra-arterial infusions
- Continuous volumetric delivery with syringes 10, 20 and 50 ml
- Open system, suitable for different brands of syringes
- Programmable, user entry: infusion volume and time or flow rate
- Rate, adjustable: 1 to 999 ml/h, steps of 1 ml/h
- Accuracy: 1% of total volume delivered
- With occlusion detection and alarm
- Display reports systems errors, end of infusion and built-in battery status
- Audio visual alarm with silencing feature for audio alarm
- Automatic switch from mains to batteries in case of power failure
- Internal re-chargeable battery

### MULTIPARAMETER MONITOR

- Compact portable, suitable for all patient categories, i.e. neonates and infants
- Parameters monitored: ECG, HR, Respiration rate, SpO<sub>2</sub>, NIBP and temperature
- Display: colour TFT, approx. 7 inch, 4-channel
- Soft touch keys, durable and easy to clean
- Measurements, ranges:
  - ECG: I, II, III
  - HR: approx. 30 to 250 bpm <3 bpm>
  - NIBP: approx. 20 to 290 mmHg (systolic) <1 mmHg>
  - SpO<sub>2</sub>: approx. 40 to 100 % <1%>
  - ECG div. respiration: approx. 6 to 180 bpm <1 bpm>

- Temperature: approx. 10 to 45 degree Celsius <0.1 degree Celsius>
- NIBP oscillometric step deflation, manual/automatic, initial inflation pressure user selectable
- Sweep, adjustable: 12.5, 25 or 50 mm/s
- Sensitivity (amplitude) of all signals user adjustable
- Voltage marker, 1 mV
- User preset of high/low alarms on all monitored parameters
- Audio visual alarm in case measurements are outside preset range
- Silencing feature for audio alarms
- Trend display from 2 to 24 hours
- RS232 serial data output provision (peripheral printer or network), analogue output for ECG
- Defibrillator sync and protection
- Pacemaker detection/rejection
- Display reports system errors, leads and sensors failure and built-in battery status
- Unit can be mounted on bed/wall rail or mobile pole/stand
- Automatic switch from mains to batteries in case of power failure
- Monitor: constructed of durable shock proof plastic

#### Supplied with:

- 3 x cuff hose infant
- 2 x sets of 5 neonate BP cuffs (No 1 (3.1-5.7 cm), No 2 (4.3-8 cm), No 3 (5.8-10.9), No 4 (7.1-13.1cm), No 5 (9.6-14.3 cm))
- 1 x patient cable
- 1 x box neonatal ECG-electrodes (200 sets of 3 electrodes, chest and/or extremities, diameter approx 22mm, ultra soft gel, self adhesive)
- 2 x skin temperature transducers
- 2 x reusable SpO<sub>2</sub> sensors neonate, clip-on type (including connection cable)
- 10 x reusable SpO<sub>2</sub> sensors neonate, wrap around type (including connection cable)
- 1 x spare rechargeable battery

## INFUSION CONTROLLER

- The unit must automatically regulate the user SET infusion rate during intravenous administration including blood administration. The type of giving sets required must be specified.
- Universal giving sets are preferred.
- The unit offered must also be capable of delivering a user selectable VOLUME at a desired user selectable RATE which must be automatically controlled by the internal circuitry employing a linear peristaltic drive mechanism. The linear peristaltic drive mechanism must have proven reliability..
- The internal rechargeable battery must be of a reasonable capacity, such that with battery power the unit must be able to operate continuously for a minimum of six (6) hours at a user set infusion rate of 125ml/h.
- If a drop / flow sensor is used to detect flow it must have the following features:
  - It must have an extensible cable.
  - It must be robust.
  - Detect fluid flow through a drip chamber.
- If a drop / flow sensor is not used, bidder must briefly describe how the flow is controlled and regulated.
- The unit must provide user selectable infusion **RATE** in a minimum range of 0.1 to 999ml/h.
- The unit must provide variable pressure settings which can be manually adjusted with a continuous on screen display.
- The unit must be provided with a user selectable infusion **VOLUME LIMIT** in the minimum range of 1 to 9999ml.
- The response time of the infusion pump to attain and maintain the user selected infusion **RATE** must be rapid. State the response time over the whole range.

- It must not be possible to change the RATE while the infusion is in progress, the infusion must first be stopped to allow user to select a new RATE before restarting infusion or alternately there must be ample safety precautions against unauthorized tampering of any infusion settings.
- The following must be clearly displayed on the front panel under all lighting conditions:
  - Pump is switched in the ON position
  - A.C. mains power supply operation
  - Battery powersupply operation
  - Infusion RATE selected
  - Volume to be infused setting
  - Volume infused
  - Alarm condition and possible alarm / error messages.
  - Pressure reading
- The unit must be small and lightweight. Preferably the unit must be part of a stacking / docking system.
- All alarm conditions must be accompanied by an audible and visible warning
- A bolus function must be provided which is easily accessible with adjustable rate and volume settings.
- When an infusion is completed it must be accompanied by an audible warning
- On completion of an infusion, there must be provision for a KEEP VEIN OPEN (KVO) RATE. State the KVO rate on the unit offered.
- The unit must ensure automatic clamping of the line on removal from the unit to prevent free flow of fluid.
- The unit offered must activate alarms for the following minimum conditions:
  - Air in the infusion line / air in line detection
  - Closed clamp on infusion giving set during infusion start up attempt
  - Occlusion during infusion administration
  - LOW battery
  - Open door
  - Infusion set removed and also when not properly loaded
  - Mispositioned flow sensor / detector where applicable
  - Completion of selected volume to be infused
  - Zero infusion rate selected and start up attempted
  - Zero volume selected for infusion and start up attempted
  - Internal malfunction
  - Malfunctions detected during self test at power up
  - High pressure limit exceeded
- The LOW BATTERY alarm must alert the user that there is a limited duration of battery power operation left.
- At the COMPLETION OF THE SELECTED VOLUME TO BE INFUSED and where the unit goes onto the KVO rate, the unit must warn the user with an audible intermittent warning that the selected volume to be infused has been completed and that the instrument has now gone onto a KVO rate.
- All other alarm conditions must either prevent an infusion being started or must stop the infusion and deliver an audible warning.
- The infusion pump offered must deliver the preset volume with an accuracy of better than  $\pm 5\%$  throughout the whole range of infusion.

## RESUSCITATION EQUIPMENT

### RESUSCITAIRE

- The resuscitation unit must be designed to incorporate all the necessary requirements for the resuscitation of newborn infants.
- This unit must be a mobile resuscitator with provision for an O<sub>2</sub> Cylinder.
- This resuscitation unit must come complete with a regulated suction unit with bottle capacity of not less than 500ml.
- The unit must have a 0 – 15L/min flow meter and pressure compensated water manometer with pre-set levels of 25, 30, 35cm H<sub>2</sub>O.
- The heating system must include a 400 Watt infrared ceramic type of heater element operating on 240 Volt 50hz a.c. single phase supply and temperature must be controllable.
- The inspection light system must also operate off 220 Volt 50hz a.c. single phase supply and must have a brightness control on the control panel.
- The unit must be supplied with an infant tray (adjustable) complete with mattress and also be supplied with the following:
  - Drip hanger.
  - Lockable castors.
  - Instrument rail
- Maximum height of the unit must not exceed 2 metre and the unit's maximum width must be 0,7 metres.

### SELF INFLATING BAG AND MASK FOR RESUSCITATION, NEONATE, 500ML, 250ML

- Resuscitator for manual ventilation of neonates
- Ventilation can be done with ambient air or with oxygen
- Resuscitator can be totally disassembled, is easy to clean, disinfect and sterilize
- All parts can be autoclaved at 121 °C(except O<sub>2</sub> reservoir bag)
- Manufactured from durable high-strength synthetic not requiring special maintenance or storage
- Resuscitator is supplied as a complete set in a box
- Compressible self-refilling ventilation bag, capacity, approx. 500 ml and 250 ml with non-rebreathing patient valve with pressure limitation
- Intake valve with nipple for O<sub>2</sub> tubing
- O<sub>2</sub> reservoir bag complete, capacity approx.: 2000 ml
- Set of 3 cushioned silicone neonate size masks, translucent. Size 0/0, 0/1,0/2

### LARYNGOSCOPE SET, NEONATE

- Laryngoscope set with neonate blade
- Constituted of large hollow, cylindrical, slightly ribbed handle and a set of depressors in stainless steel
- Handle is made of either chromium-plated or stainless steel and can be opened at an extremity to insert two alkaline batteries (LR14, size C, 1.5 Volts). The other end has a stud contact which fits the various sizes and types of depressors.
- 2 x straight depressors, Miller type No. 0 and 1 with halogen bulb
- Presented in suitable protective plastic box

Supplied with:

- 2 x spare halogen bulbs

## PUMP, SUCTION, PORTABLE, 220V W/ACCESS

- Portable suction pump with 1 litre plastic jar
- Dismantable for easy cleaning, jar autoclavable
- Shock resistance protects from dropping
- Light, easy to carry and keep clean
- Jar with plastic cover, gasket and overflow valve
- With suction regulator, vacuum gauge
- Size, approx: 260 x 180 x 220 (H) mm
- Suction power: 17 L/min
- Vacuum, max: 800 mmHg
- Supplied with:
- 1x set of silicone rubber suction tubing, approx: diam. 10 mm, length 1.5 m
- 1 x spare jar with cover
- 1 x spare set of fuses

## RECOMMENDATIONS WHEN PURCHASING EQUIPMENT

- A Service Contract must be included and cover all periodical maintenance, service calls, spare parts and travel
- All equipment, materials and workmanship provided must be guaranteed for a minimum period of twelve (12) months
- The supplier must arrange with to commissioning the equipment at the facility
- The guarantee period must only take effect on successful commissioning at the facility
- The recommended number of services per annum, by the manufacturer, must be included during and up until the end of the guarantee period and all costs related to the provision of such service/s will be the suppliers
- Spares that may be required during the guarantee period will be at the expense of the supplier
- Downtime during the guarantee must extend the guarantee time on a day-to-day basis if a loan unit is not supplied during the downtime
- The supplier must supply, deliver, commission and install the equipment and will be required to demonstrate the product to the applicable staff at the Institution and costs for the abovementioned must be included in the price.
- Original service repair manual in English and in book form must be supplied
- Where Equipment operates off 220 Volt, 50Hz a.c. supplier must ensure that the product is fitted with a 16 Amp SABS approved mains plug top, which is held together by two screws.
- The unit must comply with an acceptable International Safety Standard such as IEC 60601-1 and 60601-1-2 for Medical Equipment.
- The mains cable of the unit must be the Hospital Grade Type and it must be a minimum length of (3) three metres and be S.A.B.S. colour coded.
- The equipment must be protected against electro magnetic interference.

## REFERENCES:

1. Equipment specifications: Department of Health, KwaZulu Natal Province
2. Toolkit for Setting Up Special Care Newborn Units, Stabilisation Units and Newborn Care Corners, Unicef, India
3. Groote Schuur Hospital equipment recommendations