***No.48-RIMS/HOS/E-13***

Date: 21st January 2014
Due date: 22nd February 2014

1) ***HOT AIR OVEN (DIGITAL)***
Temperature Range $50^0C - 250^0 \pm 1^0C$
Inner Chamber size ( W x H xD)-
355 x 355 x 355 mm
Capacity-45 litres
Shelve-2

2) ***TISSUE FLOTATION BATH (CIRCULAR)***
Temperature Range
Ambient $70^0 C \pm 2^0C$
Chamber Size : (DxDxR)
225x 70x40 mm

3) ***ICU VENTILATOR***

**SPECIFICATIONS:-**

| | |
|---|---|
| 3.1) **Ventilation modes** | - VC-CMV/VC-AC<br>- VC-SIMV<br>- PC-BIPAP<br>- SPN-CPAP<br>-APRV<br>-NIV (Noninvasive ventilation) |

**Displayed values**

3.2) Colour touch LCD/TFT screen, 12 inch or more
3.3) Airways pressure measurement
3.4) Max. airway pressure, plateau pressure, mean airway pressure, PEEP 0 to 99 mbar (or hPa or $cmH_2O$)
3.5) Minute volume (MV) Total \MV, spontaneous MV 0 to 99 L/min, BTPS
3.6) Tidal Volume VT Inspiratory VT, expiratory VT 0 to 3999 mL, BTPS
3.7) Leakage –compensation
3.8) Paramagnetic oxygen sensors
3.9) Inspiratory measured tidal volume VT pat
3.10) Breathing frequency Total and spontaneous respiratory rate, 150/min
3.11) Inspiratory $O_2$ – concentration 21 to 100 % Vol.
3.12) End tidal $CO_2$ with capnography integrated in ventilator with display of values and $EtCO_2$ waveform on the screen (preferred).
3.13) Breathing gas temperature 18 to 48°C (64.4 to 118.4 °F)
3.14) Curve displays Airway pressure, flow, tidal volume.
3.15) Ventilation ratio (I:E) 150:1 to 1:150

| | |
|---|---|
| 3.16) Patient type | **ADULT, PEDIATRIC** |
| 3.17) Respiratory rate | 2/min to 80/min |
| 3.18) Inspiration time | 0.2 to 10 s |

| | |
|---|---|
| 3.19) Tidal volume | 0.05 to 2.0 L, BTPS[2] |
| 3.20) Inspiratory pressure | 1 to 99 mbar (or hPa or $cmH_2O$) |
| 3.21) PEEP/interm. PEEP | 0 to 35 mbar (or hPa or $cmH_2O$) |
| 3.22) Pressure support/ASB | 0 to 35 mbar (or hPa or $cmH_2O$) (relative to PEEP) |
| 3.23) Flow acceleration | 5 to 200 mbar/s (or hPa/s or $cmH_2O/s$) |
| 3.24) $O_2$ – concentration | 21 to 100 Vol. % |
| 3.25) Trigger sensitivity | 1 to 15 L/min |

**Alarms**

| | |
|---|---|
| 3.26) Airway pressures | high/low |
| 3.27) Expiratory minute volume | high/low |
| 3.28) Tidal volume | high/low |
| 3.29) Apnea-alarm time | 15 to 60 sec |
| 3.30) Spontaneous breathing frequency | high |
| 3.31) Inspiratory $O_2$ – concentration | high/low |
| 3.32) Inspiratory breathing gas temperature | high |

**Performance data**

| | |
|---|---|
| 3.33) Maximum continuous flow for pressure Assit/spontaneous breathing | 180 L/min |
| 3.34) Valve response time T 0 … 90 | S 5 ms |
| 3.35) Control principle | time-cycled, volume –controlled pressure. |
| 3.36) Safety valve opening pressure | 120 mbar (or hPa or $cmH_2O$) |
| 3.37) Emergency valve | Automatically enables spontaneous breathing with filtered ambient air if air and $O_2$ supply should fail. |
| 3.38) Automatic gas switch-over function if $O_2$ supply fails | |
| 3.39) Output for pneumatic medicament nebulizer | Synchronized with inspiration. |

**Power supply**

| | |
|---|---|
| 3.40) Mains power connection | 100 V to 240 V, 50/60 Hz AC |
| 3.41) Current consumption | Max. 1.3 A at 230 V, max. 3.4 A at 100 V |
| 3.42) Internal battery | approx. 1 hour (optional extension up to 5 h) |

**Gas supply**

| | |
|---|---|
| 3.43) Air | Turbine technology |
| 3.44) $O_2$ gas supply | 3 bar (43.5 psi) to 10 % up to 6 bar (87 psi). |

## 4) *ADVANCED NEONATAL INTENSIVE CARE VENTILATOR*

**SPECIFICATIONS:-**

4.1) Advanced technology dedicated neonatal ventilator ( not universal use ventilator) for neonates.
4.2) Multi microprocessor controlled integrated system with individual selection of various ventilation parameters.
4.3) Turbine based design.
4.4) Gas supply (automatic) - in the event of failure of one gas (air or oxygen), automatic compensation for Preset volume & pressure
4.5) Capability for both pressure & flow trigger system
4.6) Ventilation modes-
a) Volume control
b) Pressure control
c) Pressure support with back up ventilation
d) CPAP
e) SIMV (Volume control) + pressure support
f) SIMV (Pressure control) + pressure support
g) Nasal CPAP

4.7) Specifications:-

| | | |
|---|---|---|
| a) Tidal volume | ---------- | 2-350 ml |
| b) CMV frequency | ---------- | 1-300/min |
| c) SIMV frequency | ---------- | 1-40/min |
| d) Inspiration time | ---------- | 0.1 – 5 sec |
| e) Expiration time | ---------- | 0.1- 60 sec |
| f) Pmax | ---------- | 5-60 cm $H_2O$ |
| g) PEEP | ---------- | 0-40 cm $H_2O$ |
| h) Trigger sensitivity | ---------- | |
| | Flow---------- | 0.2- 3 L/ min |
| | Pressure---------- | 0.2- 3 cm $H_2O$ |
| i) I: E ratio | ---------- | 1:10 – 4:1 |
| j) FiO2 | ---------- | 21 – 100% |
| k) Inspiratory flow | ---------- | 1 – 30 L/min |
| l) High frequency ventilation capable | ---------- | CPAP + HFV, IMV + HFV<br>frequency – 5- 20 Hz |

4.8) Audio- visual alarms-

| | | |
|---|---|---|
| a) Airway pressure | - | high/low |
| b) High continuous pressure | - | high/low |
| c) Tidal volume | - | high/low |
| d) Expired minute volume | - | high /low |
| e) Apnoea | | |
| f) End expiratory pressure | - | high/low |
| g) Respiratory failure | - | high/low |

h) Gas failure

4.9) Battery ( internal rechargeable, with back up time of minimum 45 mins)
4.10) Separate user interface & ventilation unit.
4.11) Trend display for 24 hours ( upto at least 20 parameters)
4.12) Non- consumable FiO2 monitoring system ( with paramagnetic oxygen sensor)
4.13) Suction support with pre - & post – oxygenation timings
4.14) Flow sensors- re-usable
4.15) Autoclaveable expiratory unit
4.16) Display screen-
a) Adequate ( minimum 12") size of colour single device user interface screen with ability to display at least 3 types of waveforms & loops for each breath. ( flow, pressure, volume flow-volume loop, pressure volume loop etc)
b) 24 hr ( day & night ) visibility
c) Access- both rotary dial ( manual) & touch screen
4.17) Humidifier ( heatable)
4.18) Oxygen mixer loss- Zero
4.19) Breathing gas temp. 20 – $40^0$ C
4.20) Power supply 100- 240 V AC, 50-60 Hz, 210 VA, 24V DC (opt).
4.21) Gas supply-
AIR 2.7 – 6.5 bar
$O_2$ 2.7 – 6.5 bar

## 5) *SEMI AUTOMATIC CLINICAL CHEMISTRY ANALYSER*

**SPECIFICATIONS:-**

5.1) Compact type with Integral screen keyboard and printer.
5.2) 192 channels.
5.3) Direct access keys for all test (at least 64 tests).
5.4) Adjustable reaction temperature ($20^o$ C – $40^o$ C in steps of $1^o$ C)
5.5) Optional Incubator (cuvettes).
5.6) Internal quality control software.
5.7) External quality assessment programme.
5.8) Optical system: - 8 wavelengths i.e. 340, 415, 510, 546, 570, 600, 660, and 700 nm).
5.9) Halogen tungsten lamp.
5.10) Compliant with in vitro diagnostics.
Medical device directive 98/79/EC
5.11) CE Marking.
5.12) Reaction Volume range: - 200µl – 5 ml
5.13) Open System.

## 6) *E.M.G MACHINE*

**SPECIFICATIONS:-**

6.1) Should be a PC based system. Should have adaptor box with dedicated keyboard on it or if possible all controls shall be on the amplifier box.
6.2) It shall have option to feed patient information such as ID, Date, Patient information, Age, Sex, Height, Physician, Technician, Ref. Physician Diagnosis etc.
6.3) It shall continuously display patient information test name and nerve being tested.
6.4) It shall have shock stimulator, headphones for auditory stimulator and extra monitor for VEP stimulator.
6.5) Smooth Expandable arm for holding EMG amplifier shall be provided.
6.6) Amplifier box shall be easily mountable / demountable from the stand.
6.7) It shall have volume control ON/OFF switch on the amplifier box.
6.8) Adaptor box shall have provision for grounding.
6.9) It shall have inbuilt speaker for EMG.
6.10) It shall have provision to switch ON/OFF and save the waveforms from the shock handle only.
6.11) Shock handle shall have provision to give shock to the adults as well as paediatrics.
6.12) It shall fully isolated shock stimulator and amplifier for patient safety.
6.13) It shall have footswitch for start/stop/save.
6.14) It shall have compatibility with USB1/USB2.
6.15) It shall have inbuilt battery backup for at least 30 minutes or more.
6.16) It should have EMG / NCV / EP Studies with following features.

a. Channels : 4
b. Sensitivity : 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500 Y/div; 1,2,3,5,10,mV/div.
c. High cut : 2 pole (12 dB / octave) filter, selectable at 100, 200, 500 Hz, 1,2,3,5,10 khz.
d. Low cut : Selectable at 0.2, 2, 20, 30, 100, 200, 500 hz.
e. Sweep speeds (NCS & EP) : 1 to 500ms/div. in 17 steps. (1,1.5,2,3,5,7.5,10,15,20,30,50,75,100,150,200,300,500)
f. Sweep speeds (EMG) : 2 to 500 ms/div in 12 steps (2,4,6,10,20,30,50,100,150,200,300,500)
g. CMRR : >100dB
h. Input impedance : >100 M Ohms (common mode)
i. Noise : 3pV peak to peak (10Hz to 10khz)
j. A/D Converter : 14 bit analog-digital conversion.
k. Average : Number of averages per channel 2 to 10,000
l. Electrical stimulation : 0.05, 0.10, 0.20,0.50, 1.0ms
m. Repetition rates : 0.5, 1,3,5,10,15,20Hz pps regular or random repetition rates depending on stimulus type, sweep speed and control.
n. Electrical stimulator : should have independent control, Hand held type having constant current electrical stimulator with stimulus intensity dial and stimulus trigger on handle with electrical range of 0-100mA with adjustable duration, intensity and repetitive rate.

o. Auditory stimulator
: Should be a headphone having frequency range 0.25-8kHz, 0-100 dB intensity, having presentation on left, right or both ears, Pulse duration of 100us square wave clicks.

p. Visual stimulator
: Should have a monochrome VEP monitor for black and white, pattern reversal check board simulation, vertical bars, and horizontal bars.

6.17) All the equipments supplied should operate from 200 to 240Vac, 50 Hz input supply.

6.18) Should be supplied with a PC of adequate configuration having HDD of storage not less than 360 GB HDD, DVD/CD writer, Colour Printer & USB Port.

6.19) Monitors provided along with PC should be 17" LCD / TFT and Colour Printer should be Colour Inkjet Printer.

6.20) Should supply online UPS of sufficient capacity with 1 hour backup to connect all the equipments supplied except Tread Mill system.

6.21) Should be supplied with a suitable Cart for keeping the equipment, PC, Printer and all the accessories.

6.22) Should supply the following accessories and consumables.

a. EMG / NSV disc electrodes.
b. Sensory ring electrodes.
c. EMG needle electrodes.
d. Stimulating electrodes.
e. Conductive gel & EPP paste.
f. Measuring tape 7 market.
g. Single fiber EMG facility
h. Autonomic nervous system testing kit.
i. Collision technique.

6.23) 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.

## 7) ***OBSTETRIC LABOUR TABLE***

**SPECIFICATIONS:-**

-Dimension 72" x 27" approximately.
- Stainless top in three sections.
- Trendlen burg position adjustment
- Leg support adjustable with screw
- Hand support
-Drip stand (adjustable with screw)

**(Prof. S. Sekharjit Singh)**
**Director,**
**Regional Institute of Medical Sciences,**
**Imphal**