SPECIALIZED HEALTH CARE AND MEDICAL EDUCATION DEPARTMENT

GOVERNMENT OF THE PUNJAB

PRODUCT VOCABULARY MEDICAL STORE(PVMS) OF ANESTHESIA AND VENTILATION

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NOTE: Minor variation in sizes and values will not be considered as reason of rejection against any item.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Anesthesia Machine**
Clinical Purpose	The anesthesia machine is used by anesthesiologists and anesthetists to support the administration of anesthesia. The most common type of anesthetic machine is the continuous-flow anesthetic machine, which is designed to provide an accurate and continuous supply of medical gases (such as oxygen and nitrous oxide), mixed with an accurate concentration of anesthetic vapor (such as isoflurane), and deliver this to the patient at a safe pressure and flow. Additionally, machines incorporate a ventilator, suction unit, and patient monitoring devices.

TECHNICAL SPECIFICATIONS

- Anesthesia machine to administer anesthetic agents in precise control and flow manner for Adult, pediatric and Neonates.
- Mobile 3-gases O2/N2O/AIR.

It must comprise of the following components:

- Non-interchangeable pipeline inlets.
- Pipeline & cylinder gauges for O2, N2O and Air.
- Central gas/ electronically driven unit.
- Pin index cylinder yokes for Oxygen & N2O (One each), as backup.
- Pin index type Cylinders will be provided (2xO2 and 2xN2O: BS standard).
- Gas outlet and O2 flush control.
- 1 auxiliary O2 outlet.
- Two Lockable castors.
- Stainless steel/fiber work surface.
- Absorber bag support arm.
- Three gas flow meters for precise control and monitoring of gases.
- Drawer unit 4-6'' high.
- Scavenging system Passive / Active type.

ANESTHESIA VENTILATOR:

- Anesthesia Ventilator with minimum 6” or more color LCD/TFT Screen.
- The ventilator shall be capable of ventilating adult and pediatric patients.

The ventilator shall have following features as a minimum requirement:

- Volume Preset Time Cycled Ventilator (IPPV Mode)
- Pressure Controlled and pressure support Modes
- Breathing Mode Selection (Standby / Volume / Spontaneous and Pressure)
- Built in Oxygen Monitor
- Inverse I:E ratio Capability
- Gas Specific Input Connectors (Air or Oxygen ISO or ANSI Standards)
- Tidal Volume from (20ml to 1400ml) **OR** (5ml to 1400 ml) (Procuring agency to specify).
- Rate or Frequency 4 to 60 bpm
- PEEP (4 to 20 cm H2O)
- Inspiratory Pressure Limit
- Power Supply 220 VAC, 50 Hz
- Battery Backup (60 Minutes or more)
- Low / High FiO2 Alarm

- Incorrect Rate or Ratio alarm
- Mains Failure alarm
- Low battery alarm advance indication
- Hypoxic device guard.
- Pressure and Volume (Spirometery) Loops / curves .
- High / Low pressure alarm.
- The ventilator shall be supplied with complete drive hose and power cable.

Note: Annual maintenance kits (needs to replace annually) will be included in the warranty period as per manufacturer's guidelines.

- The warranty of equipment will be including batteries, oxygen sensor and flow sensor.

Anesthesia Accessories

- Power outlet with 3/4 socket outlets to connect the auxiliary equipment.
- CO2 absorber 800 – 1,500 gm or better complete with valve for bag/ventilator
- Manometer
- Breathing bags
- Re-usable Silicon Autoclave able breathing circuit (Adult, Peads or Infant 01 each)
- Mounts and Y-piece.
- Additional breathing hose and connector with 03 adult & 03 pediatric bellows.

Optional:

- Two pre calibrated Vaporizers of Isoflurane & Sevoflurane vaporizer, temperature and flow compensated.

Monitoring:

- Vital sign monitor.
- Size of minimum 12" or more for display of vital sign parameters.
- Measurement of ECG 5 leads.
- NIBP with re-usable single hose cuff for children and adults
- SpO2 with re-usable cable and sensors for children and adults size (Massimo Type/Equivalent motion tolerance technology).
- HR
- Temperature with nasal probe.
- Respiration
- EtCO2 (main or side stream) (If required Procuring agency to specify).
- Dual Channel IBP (If required Procuring agency to specify).
- 220V, 50 Hz operated.

  Note: Vital sign Monitor must be supplied by the same manufacture and must be Compatible with the machine and Ventilator.

Monitor Accessories:

- 2 NIBP Cuff each

- 2 Spo2 probe
- 2 temperature probe
- IBP Leads
- 2 ECG Leads

Note: Procuring agency to specifies and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Anesthesia Machine with Digital Flow Meter**
Clinical Purpose	The anesthesia machine is used by anesthesiologists and nurse anesthetists, to support the administration of anesthesia. The most common type of anesthetic machine is the continuous-flow anesthetic machine, which is designed to provide an accurate and continuous supply of medical gases (such as oxygen and nitrous oxide), mixed with an accurate concentration of anesthetic vapor (such as isoflurane), and deliver this to the patient at a safe pressure and flow. Additionally, machines incorporate a ventilator, suction unit, and patient monitoringdevices.

TECHNICAL SPECIFICATIONS

- Anesthesia machine to administer anesthetic agents in precise control and flow manner for adult, pediatric and neonates.
- The machine will equip to monitor the vital sign parameters and anesthetic agents during operation.
- Mobile 3-gases O2/N2O/AIR.

It must comprise of the following components:

- Non-interchangeable pipeline inlets
- Pipeline & cylinder gauges for O2, N2O and AIR
- Central gas/ electronically driven unit
- Pin index cylinder yokes for Oxygen & N2O (One each), as backup.
- Pin index type Cylinders will be provided (2xO2 and 2xN2O: BS standard)
- Gas outlet and O2 flush control
- 1 auxiliary O2 outlet
- Two Lockable castors
- Stainless steel/fiber work surface
- Absorber bag support arm
- Three gas digital flow meters for precise control and monitoring of gases and virtual tube display.
- Drawer unit 4- 6'' high
- Scavenging system Passive / Active type

ANESTHESIA VENTILATOR:

Anesthesia Ventilator with minimum 10” or more color LCD/TFT screen.

- The ventilator shall be capable of ventilating adult and pediatric patients.

The ventilator shall have following features as a minimum requirement:

- Volume Preset Time Cycled Ventilator (IPPV Mode)
- Pressure Controlled and pressure support Modes
- Breathing Mode Selection (Standby / Volume / Spontaneous and Pressure)
- Built in Oxygen Monitor
- Inverse I:E ratio Capability
- Gas Specific Input Connectors (Air or Oxygen ISO or ANSI Standards)
- Tidal Volume from (20ml to 1400ml) **OR** (5ml to 1400 ml) (Procuring agency to specify)
- Rate or Frequency 4 to 60 bpm
- PEEP (4 to 20 cm H2O)
- Inspiratory Pressure Limit

- Power Supply 220 VAC, 50 Hz
- Battery Backup (60 Minutes or more)
- Low / High FiO2 Alarm
- Incorrect Rate or Ratio alarm
- Mains Failure alarm
- Low battery alarm
- Hypoxic device guard.
- Pressure and Volume (Spirometery) Loops / curves.
- High / Low pressure alarm.
- The ventilator shall be supplied with complete drive hose and power cable.

Note: Annual maintenance kits (needs to replace annually) will be included in the warranty period as per manufacturer's guidelines.

MONITORING:

- Vital sign monitor.
- Size of minimum 15" Touch Screen or more for display of vital sign parameters
- Measurement of ECG 5 leads.
- NIBP with re-usable single hose cuff for children and adults
- SpO2 with re-usable cable and sensors for children and adults size (Massimo Type/ Equivalent motion tolerance technology).
- HR
- Temperature with nasal probe.
- Respiration
- etCO2 (main or side stream).
- Dual Channel IBP
- 220V, 50 Hz operated.

Note: Vial sign Monitor must be supplied by the same manufacture and must be Compatible with the machine and Ventilator.

The warranty of equipment will be including batteries, oxygen sensor and flow sensor.

Anesthesia Accessories

- Power outlet with 3/4 socket outlets to connect the auxiliary equipment.
- CO2 absorber 800 – 1,500 gm or better complete with valve for bag/ventilator
- Manometer
- Breathing bags
- Re-usable Silicon Autoclaveable breathing circuit (Adult, Peads, Infant 01 each)
- Mounts and Y-piece.
- Additional breathing hose and connector with 03adult& 03pediatricbellows.

Monitor Accessories:

- 2 NIBP Cuff each
- 2 Spo2 probe
- 2 nasal temperature probe
- 2 ECG Leads
- IBP Leads

Optional:

- Two pre calibrated Vaporizers of Isoflurane & Sevoflurane vaporizer, temperature and flow

compensated.

- Anesthetic Agent monitoring (With monitor or within the Anesthesia Machine)
- Heart Lung / Cardiac By Pass/ Spontaneous Mode

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Anesthesia Workstations**
Clinical Purpose	The anesthesia workstation is used by anesthesiologists and nurse anesthetists to support the administration of anesthesia. The most common type of anesthetic machine is the continuous-flow anesthetic machine, which is designed to provide an accurate and continuous supply of medical gases (such as oxygen and nitrous oxide), mixed with an accurate concentration of anesthetic vapor (such as isoflurane), and deliver this to the patient at a safe pressure and flow. Anesthesia work station incorporate a ventilator, suction unit, and patient monitoringdevices.

TECHNICAL SPECIFICATIONS

- Anesthesia work station machine to administer anesthetic agents in precise control and flow manner.
- The machine will equip to monitor the vital sign parameters and anesthetic agents during operation.
- It should stay on the theatre (I.O to specify the hanging pendant or for mobile use) housing
- 3-gases O2/N2O/AIR.
- Provision of communication port for sharing and transfer of data.
- Unit shall comprise of the following components:
- Electronically/digitally control, mixing and monitoring of anesthetic gases (O2, AIR, and N2O) both by digits as well as virtual tubes.
- Built-in illumination system.
- Non-interchangeable pipeline inlets
- Pipeline & cylinder gauges for O2, N2O and AIR
- Central gas/ electronically driven unit.
- Pin index cylinder yokes for Oxygen & N2O (One each), as backup.
- Pin index type cylinders will be provided with the unit (2xO2 and 2xN2O: BS standard)
- Gas outlet and O2 flush control
- 1 auxiliary O2 outlet (preferably electronics).
- Two Lockable castors
- Stainless steel/fiber work surface
- Absorber bag support arm
- Integrated heated breathing system.
- Three gas electronic digital flow meters for precise control and monitoring of gases.
- Drawer unit 5-6'' high.
- Power outlet with 3/4 socket outlets to connect the auxiliary equipment.
- CO2 absorber 800 – 1,500 gm or better with changeable during the surgery.
- Complete with valve for bag/ventilator, manometer, 0.5, 1.0, 1.5, 2 & 3 L breathing bags,
- Breathing tube (adult and paeds).
- Mounts and Y-piece.
- Additional breathing hose and connector (adult and paeds).
- Scavenging system passive / active type.
- Suction system.

ANESTHESIA VENTILATOR:

- Anesthesia Ventilator with minimum 12" or more LCD /TFT Screen.
- The ventilator shall be capable of ventilating Neonates /pediatric patients/Adult Patients)

The ventilator shall have following features as a minimum requirement:

- Volume Preset Time Cycled Ventilator (IPPV Mode)
- Manual, spontaneous; Volume Mode (IPPV) / CMV
- Pressure Mode (PCV)
- Pressure Support (PS)
- Pressure Control (PC)
- Pressure Controlled and pressure support Modes
- Synchronized volume controlled ventilation (SIMV) with PS
- PS with apnea back up
- Breathing Mode Selection (Standby / Volume / Spontaneous and Pressure)
- Built in Oxygen Monitor
- Inverse I:E ratio Capability
- Gas Specific Input Connectors (Air or Oxygen ISO or ANSI Standards)
- Tidal Volume from 5ml to 1400ml.
- Rate or Frequency 4 to 60 bpm
- PEEP 3 to 20 cm of H2O.
- Inspiratory Pressure Limit
- Pressure and Volume (Spirometry) Loops / Curve.
- Oxygen / Electronically Driven
- Power Supply 220 VAC , 50 Hz
- Battery Backup (60 Minutes or more)
- Low / High FiO2 Alarm
- Incorrect Rate or Ratio alarm
- Mains Failure alarm
- Low battery alarm.
- Oxygen Senor: Paramagnetic / Galvanic /Equivalent
- Hypoxic Device.
- The ventilator shall be supplied with complete drive hose and power cable.

Note: Annual maintenance kits (needs to replace annually) will be included in the warranty period as per manufacturer's guidelines.

MONITORING :

- Modular Vital sign monitor.
- Size of minimum 17" touch screen or more for display of vital sign parameters of neonates, infants and adults.
- Measurement of ECG
- NIBP with re-usable single hose cuff for neonates, child and small adults
- SpO2 (Massimo Technology / Equivalent motion tolerant technology) with re-usable cable and sensors for neonates, infant, adult and small adults sizes (Qty I.O specify).
- HR
- Temperature with nasal probe

- Respiration
- Four Channel IBP
- Anesthetic Agent monitoring (with monitor or with in the anesthesia machine)
- EtCO2 main / side stream (Complete with all sensors probes, reusable).
- Provision of communication port for sharing and transfer of data.
- 220V, 50 Hz operated.
- Battery backup of at least 60 minutes
- Online UPS with backup of 30 minutes for complete unit.

Note: Monitors must be supplied by the same manufacturer and must be compatible with the machine and ventilator.

- The warranty of equipment will be including batteries, oxygen sensor, all kinds of filters and flow sensor.

ACCESSORIES:

- 2 NIBP Cuff each,
- 2 Spo2 probe,
- 2 temperature probe
- Skin Probe
- 2 ECG Leads
- Four Channel IBP leads.

OPTIONAL:

- NIRS (Near Infra-Red Spectroscopy unit for Cerebral Pulse Oximetery for pediatric patients.
- Complete with main unit with monitor and sensors including disposable head sensor/probe (Qty 50 Nos.)
- NMT Neuro muscular transmission.
- BIS Monitoring.
- Two pre calibrated Vaporizers of Isoflurane & Sevoflurane vaporizer (or by choice), temperature and flow compensated.
- Cardiac bypass mode / HLM / Spontaneous Mode .
- Cardiac Output module/monitor

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**ICU Ventilator**
Clinical Purpose	ICU ventilator is life saving equipment, a machine designed to move breathable air into and out of the lungs, to provide breathing for a patient who is physically unable to breathe, or breathing insufficiently.

TECHNICAL SPECIFICATIONS

VENTILATION:

- Microprocessor controlled powerful ventilation system mounted on trolley.
- LCD/TFT color touch screen 12 / 15" Minimum. (Procuring agency to specify the size of screen)
- Patient Range: Pediatrics and Adult
- Breathing classification: Pressure control, Volume control Pressure control with set Volume Breath.
- Autoclaveable reusable patient tubing circuit for paeds and adult (01 each)

MODES OF VENTILATION:

- Volume control
- Assisted CMV
- Pressure control PC
- Assist Pressure Control
- CPAP
- SIMV+ Pressure support
- Noninvasive ventilation
- Bi-level /APRV/BI-PAP Ventilation

CONTROL:

- Set & measured parameters simultaneously.

MEASUREMENT RANGE/ SPECIFICATION:

- Inspiratory tidal volume: (20 to 2000ml) **OR** (5ml to 2000ml Neonatal Mode). (Procuring agency to specify)
- Respiratory frequency: 5 to 120bpm
- SIMV breath frequency: 1 to 50 bmp
- Inspiratory pressure: 10 to 80 cmH2O
- Inspiratory flow: 80 L/Min or cmH2O.
- I : E ratio : 1:4 / 4:1
- PEEP: 3 to 30cm H2O
- FiO2/ O2 delivery: 21 to 100%

Monitoring parameters for set and measured value simultaneously:

- Total breath rate.
- Oxygen concentration FIO2
- Expired minute volume
- Peak expiratory flow
- I : E ratio
- Peak Pressure
- Mean pressure
- Lung Mechanics with pressure and volume loops.
- Others control and functions:
- Back up ventilation
- Pause time INSP
- Microprocessor gas delivery system

- Breath circuit Compliance Compensation
- Expiratory hold/ Inspiratory hold
- Pressure / Volume and flow trigger sensitivity
- Trigger sensitivity indication
- Trend Data
- The waveform should be displayed on ventilator's screen.

ALARMS:

- Apnea
- AC power failure
- High and low Expired minute volume
- High and low peak air way pressure
- High and low breath rate
- FiO2 variation
- Low and high base line pressure
- Gas supply source failure
- Low battery

NEBULIZER:

- Built in nebulizer of the patient during ventilation
- Supply requirements: Electric220 V 50 Hz

BATTERY BACKUP:

- With internal battery backup of one hour.

COMPRESSED AIR SUPPLY:

- The ventilator should be driven on external compressor for powerful ventilation and should have the capability to connect with central medical pipeline system of the hospital.

HUMIDIFIER:

- Automatic compensation (Servo) controlled heated humidifier with temperature monitoring at air way and Humidification camber with alarm for low/ high limits with water tarp in the patient circuit.

Note:The warranty of equipment will be including batteries, oxygen sensor, all kind of sensors and flow sensor.

Accessories:

Optional:

- Air Compressor
- Capnography module to monitor carbon dioxide of the patient.
- External battery backup (Compatible Pure sine wave UPS) for additional battery backup of one hour for complete system functionality.

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Paediatric Ventilator**
Clinical Purpose	ICU ventilator is life saving equipment, a machine designed to move breathable air into and out of the lungs, to provide breathing for a patient who is physically unable to breathe, or breathing insufficiently.

TECHNICAL SPECIFICATIONS

VENTILATION:

- Microprocessor based controlled ventilation system.
- Touch Screen with Built in LCD/TFT color monitor 12/15" Minimum. (Procuring agency to specify the size of screen)
- Breathing classification:Pressure control, Volume control and pressure control with set Volume Breath.

MODES OF VENTILATION:

- Volume control
- Assisted CMV
- Pressure control PC
- Assist Pressure Control
- CPAP
- SIMV+ Pressure support
- Non invasive ventilation
- Bi-level/APRV/BI-PAP Ventilation

CONTROL:

- Set & measured parameters simultaneously.
- Measurement range/ specification
- Inspiratory tidal volume : minimum 5ml or less
- Respiratory frequency : 10 to 120bpm
- SIMV breath frequency : 1 to 50 bpm
- Inspiratory pressure : 10 to 80 cm H2O
- Inspiratory flow : 80 cm H2O
- I : E ratio : 1:4 / 4:1
- PEEP : 0 to 20cm H2O
- FiO2/ O2 delivery : 21 to 100%

Monitoring Parameters for set and measured value simultaneously with Digital Display

- Total breath rate.
- Oxygen concentration FIO2
- Expired minute volume
- Peak expiratory flow
- I : E ratio
- Peak Pressure
- Mean pressure
- Lung Mechanics with pressure and volume loops.

OTHERS CONTROL AND FUNCTIONS:

- Back up apnea ventilation
- Pause time INSP
- Microprocessor gas delivery system
- Breath circuit Compliance Compensation
- Expiratory hold/ Inspiratory hold
- Pressure / Volume and flow trigger sensitivity.
- Trigger sensitivity indication
- Should able to operate on single air/ and gas source at 21% Oxygen.
- Mounted on trolley with lockable wheel
- Autoclaveable reusable patient tubing circuit for paeds
- Trend Data

ALARMS:

- Apnea
- AC power failure
- High and low Expired minute volume
- High and low peak air way pressure
- High and low breath rate
- FiO2 variation
- Low and high base line pressure
- Gas supply source failure
- Low battery

NEBULIZER:

- Built in nebulizer of the patient during ventilation.

BATTERY BACKUP:

- With internal battery backup of one hour.

COMPRESSED AIR SUPPLY:

- The ventilator should be driven on external compressor for powerful ventilation and should have the capability to connect with central medical pipeline system of the hospital.
- **Air compressor:**
  During electricity failure air compressor turn on automatically.

HUMIDIFIER:

- Automatic compensation (Servo) controlled heated humidifier with temperature monitoring at air way and
- Humidification camber with alarm for low/ high limits with water tarp in the patient circuit.

Note: The warranty of equipment will be including batteries, oxygen sensor, all kind of sensors and flow sensor.

ACCESSORIES:

OPTIONAL:

- Capnography module to monitor carbon dioxide of the patient.
- External battery backup (Compatible Pure sine wave UPS) for additional battery backup of one hour for complete system functionality.

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**HFO Ventilator**
Clinical Purpose	High frequency ventilation is a type of ventilation which utilizes a respiratory rate greater than 4 times the normal value.

TECHNICAL SPECIFICATIONS

- Pre Mature Infant & Peads Ventilator System with High Frequency Ventilation
- Microprocessor controlled ventilation system with HF ventilation
- LCD/TFT color Monitors 10/ 12" (Procuring agency to specify)
- Patient Range: Pre Mature Infant and Peads
- Body weight range 0.3kg. – 20kg
- Modes of Ventilation:
  - CMV
  - Pressure Control/PS
  - CPAP
  - SIMV
  - Volume Targeting
  - High Frequency Ventilation
  - NIV

CONTROL

- Set & measured parameters simultaneously
- Measurement Range/Specification
- High Frequency Ventilation:5-10Hz
- InspiratoryTidal Volume: 2-150 ml or more
- Respiratory Frequency:5-150bpm
- Inspiratory Pressure:5-60cm H2O
- Peep:20cm H2O
- I:E Ratio:4.1
- FiO2/O2 Delivery:21-100%
- Monitoring Parameters for set and measured value simultaneously with Digital Display
- Total breath rate
- Oxygen concentration FiO2
- Expired Minute Volume
- Expired Tidal Volume
- Peak expiratory flow
- I : E Ratio
- Peak Pressure
- Mean Pressure
- Lung Mechanics with pressure and volume loops

OTHERS CONTROL AND FUNCTIONS

- Back up Ventilation.
- Microprocessor Gas Delivery System
- Breath Circuit Compliance Compensation

- Expiratory hold/Inspiratory Hold
- Pressure / Volume and Flow Trigger Sensitivity.
- Trigger Sensitivity Indication
- Should able to operate on single air/and gas source at 21% Oxygen.
- Mounted on trolley with lockable wheel
- Autoclaveable Reusable Patient Tubing Circuit for Infant & Peads (O2 each)
- Trend Data

ALARMS

- Apnea
- AC Power Failure
- High and Low Expired Minute Volume
- High and Low Peak Air Way Pressure
- High and Low breathe rate
- FiO2 Variation
- Low and High base line pressure
- Gas Supply Source Failure
- Low battery

HUMIDIFIER:

- Automatic compensation (Servo) controlled heated humidifier with temperature monitoring at air way and
- Humidification camber with alarm for low/ high limits with water tarp in the patient circuit.

POWER SUPPLY

- 220V 50Hz with internal chargeable battery backup with compressor time for minimum 1 hr.

PNEUMATICS

- The unit will be driven on the central compressed air and oxygen
- Should have provision of connecting external compressor

ACCESSORIES:

Optional:
Nebulizer
CO2 Analyzer
APRV mode

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Syringe Pump**
Clinical Purpose	A syringe pump is a small infusion pump used to gradually administer small amounts of fluid (with or without medication) to a patient. Syringe drivers are also useful for delivering IV medications over several minutes. In the case of a medication which should be slowly pushed in over the course of several minutes, this device saves staff time and reduces errors

TECHNICAL SPECIFICATIONS

- Syringe pump for fluid administration.
- Flow Rates: 0.1 - 400 ml/hr. (Approx)
- Digital display of set parameters.
- Universal Syringe acceptance capability for disposable, Plastic, Size, 10, 20, 50, 60 ml.
- Drive Accuracy. ±3%
- Display of drug name, Infusion rate, infused volume and volume to be infused.
- Automatic adaptation of controls according to syringe /infusion set.
- Quick freed/rapid infusion facility.
- Rechargeable battery and mains operated 220V, 50Hz.
- Safety alarm audible and acoustic for occlusion end of infusion, low battery.
- Battery back up 3 to 4Hours.
- Should be compatible with docking station.
-

ACCESSORIES:

OPTIONAL :
TCI / Equivalent Technique
Docking station of two/four/six/eight or more.

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Infusion Pump**
Clinical Purpose	Infusion pump used to gradually administer small amounts of fluid (with or without medication) to a patient or for use in chemical and biomedical research Infusion pumps are also useful for delivering IV medications over several minutes. In the case of a medication which should be slowly pushed in over the course of several minutes, this device saves staff time and reduces errors

TECHNICAL SPECIFICATIONS

- Operates on any brand of infusion set.
- Automatic control of infusion rate independent of venous or arterial pressure
- Solution container height and solution viscosity.
- Bolus function automatic.
- Air bubble detector.
- Automatic pressure release after occlusion.
- Automatic switchover to keep-vein-open (KVO) rate of 1.0 ml/hr (or previous rate, whichever is less).
- Compatible with commonly available Infusion sets.
- Portable operation from self-contained rechargeable battery with 03 hours or more operation time.
- ON/OFF:
- Light indicates main or battery operation
- Detects a “no flow” situation i.e. empty container

DISPLAY:

- LED/LCD digital display which indicates flow rate
- Infused volume
- Volume to be infused
- Volume balance
- Infusion time
- Remaining time
- Battery capacity
- Occlusion level
- Medication name

INFUSION RATE:

- 0.1-999.9 ml/hr in 1 ml increments

INFUSION TIME:

- 99 to 95 hours

AUTOMATIC RATE CALCULATION:

- On total volume + time

VOLUME LIMIT SELECTION:

- From 1 -999 ml
- Accuracy of above parameters +/- 5%

KVO RATE:

- 1– 3.0ml/hr

AUDIBLE AND VISUAL ALARMS:

- Activated by: Empty Container
- Occlusion
- Low Battery
- Open Door
- Air-in-Line
- Internal Malfunction
- End of infusion.

BATTERY:

- Rechargeable maintenance free dry batteries with 3 hours or more operation when fully charged.

SAFETY FEATURES:

- Door locks while functioning

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Ultrasonic Nebulizer Heavy Duty**
Clinical Purpose	A nebulizer is a drug delivery device used to administer medication in the form of a mist inhaled into the lungs.The technology inside an ultrasonic wave nebulizer is to have an electronic oscillator generate a high frequency ultrasonic wave, which causes the mechanical vibration of a piezoelectric element. This vibrating element is in contact with a liquid reservoir and its high frequency vibration is sufficient to produce a vapor mist.

TECHNICAL SPECIFICATIONS

- For nebulization of respiratory tracts.
- Hospital grade for continuous operation.
- Ultrasonically generated uniform and highly dense particles of 0.5-5 microns size.
- Approximately 65-70% of particles of less than 4 micron size.
- Autoclave able delivery pipes.
- Air flow of 10 L/min.
- Aerosol heating facility
- Quiet operation with noise level of less than 40dB.
- Nebulizing time setting from 0-30 min.
- Medication cup capacity: 150 ml.
- Power of 220 Volts / 50 Hz.
- One extra Flexible arm/ delivery pipe/masks (all sizes).
- Complete with bacteria filter

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**C-PAP Unit**
Clinical Purpose	Continuous positive airway pressure (CPAP) is a form of positive airway pressure ventilator, which applies mild air pressure on a continuous basis to keep the airways continuously open in people who are able to breathe spontaneously on their own. It is an alternative to positive end-expiratory pressure (PEEP). CPAP typically is used for people who have breathing problems, such as sleep apnea. CPAP also may be used to treat preterm infants whose lungs have not yet fully developed. CPAP improves survival and decreases the need for steroid treatment for their lungs.

TECHNICAL SPECIFICATIONS

A device for delivery of continuous positive airway pressure (CPAP) through servo control mechanism for constant flow of oxygen/air to the patient at a preselected pressure

- Monitor Display to display the digital data.
- Airway pressure range to be user settable
- Controls to be easy to operate, numbers and displays to be clearly visible.
- Display of CPAP Pressure,
- Alarms Level,
- O2 concentration and Spontaneous breathing frequency.
- Alarms to alert user to" not in connection,
- Overpressure,
- Supply pressure of O2 and Air,
- O2 concentration,
- Upper and lower CPAP Pressure.
- CPAP range: 4–10 mbar
- FiO2 : 21-100%
- Provision of overpressure safety valve
- Humidifier with patient circuit (reuse able).
- External Air compressor to produce air for making air/ oxygen mixture.
- Noise level less than 50dB
- Trolley with lockable wheels
- Internal / External (UPS) battery backup of two hours with complete system functionality.
- 220V, 50Hz

ACCESSORIES:

- Continuous flow with breathing circuits
- Continues flow breathing kits
- Flow masks

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**BI-PAP Unit**
Clinical Purpose	Bi-level positive airway pressure is a form of non-invasive pressure support ventilation that uses a time-cycled or flow-cycled change between two different applied levels of positive airway pressure. It generates inspiratory (IPAP) and expiratory (EPAP) pressure gradients that complement the patient's own respiratory cycle, optimizing the lungs' efficiency and reducing the work of breathing. BiPAP has been shown to be an effective management tool for chronic obstructive pulmonary disease and acute and chronic respiratory failure Bi-level positive airway pressure is used when positive airway pressure is needed with the addition of pressure support.

TECHNICAL SPECIFICATIONS

- Automatic BIPAP unit for pre & post operative treatment to assist breathing mechanism & gas exchange for pediatrics & adult patients and also sleep apnea.
- Mode of ventilation will be Bi-level Ventilation or equivalent.
- Digital display for pressure and time parameters.
- Adjustable pressure range up to 30 cm H2O.
- Pressure bar Graph for patient breaths and pressure.
- Display of patient parameters.
- Alarms on adjustable values.
- Internal / External (UPS) battery backup of two hours with complete system functionality.
- Temperature control ventilation system.
- Complete with filters, carrying case and temperature controlled Humidifier.
- Power of 220 V, 50 Hz

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**(SCD) Sequential Compression Device**
Clinical Purpose	Intermittent pneumatic compression is a therapeutic technique used in medical devices that include an air pump and inflatable auxiliary sleeves, gloves or boots in a system designed to improve venous circulation in the limbs of patients who suffer edema or the risk of deep vein thrombosis (DVT) or pulmonary embolism(PE)

TECHNICAL SPECIFICATIONS

- DVT prophylaxis, the Compression device with Vascular Refill Detection increased the volume expelled per hour in the post-thrombotic leg, Customized Compression Cycles – Moves blood from the lower extremities as quickly as the veins refill.
- Venous Thromboembolism (VTE)
- Prophylaxis for the obese & morbidly obese patient
- Small, Medium and Large Sleeves.
- Foot cuff sleeve.
- Lithium Ion Battery
- Up to 8 Hours of Uninterrupted Compression on battery
- One Touch Operation
- Port A& B indicator.
- Audio and visual alarms, e.g. Low battery, single port use etc.
- 220 VAC
- Compression Parameters
- 45 mmHg (ankle), 40 mmHg (calf), 30 mmHg (thigh)
- Sequential, Gradient, Circumferential
- 5 sec. 130mmHg foot compression
- Vascular Refill Detection
- Automatic pressure adjustment
- Compact & Portable, patient bed hanging system.

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Transport Ventilator**
Clinical Purpose	Transport ventilator used for the patient during transportation to move breathable air into and out of the lungs, to provide breathing for a patient who is physically unable to breathe, or breathing insufficiently in ambulance, air ambulance.

TECHNICAL SPECIFICATIONS

TRANSPORT VENTILATOR

- Microprocessor controlled ventilator with following minimum modes.
- Continuous Mandatory Ventilator (CMV).
- Synchronized intermittent Mandatory ventilation (SIMV)
- Continuous positive airway pressure (CPAP)
- Pressure Support Ventilation
- Non Invasive Ventilation
- Tidal volume 100-2000ml

MONITORING DISPLAY:

- Graphic Screen 04" screen or more.
- Display parameters:- Airway pressure, Breath rate
- Inspiratory time
- Exhaled minute volume I:E ratio
- Exhaled tidal volume
- Trend Data.

Adjustable alarm for high/low respiratory rate.

- Chargeable Built in battery backup, upto 4 hours and battery level indication.
- 12V DC operations
- Complete with breathing circuits, hose, test lung & universal masks or other accessories required for proper functioning of the equipment.

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Oxygen Concentrator**
Clinical Purpose	An oxygen concentrator is a device which concentrates the oxygen from a gas supply (typically ambient air) to supply an oxygen enriched gas stream

TECHNICAL SPECIFICATIONS

- Oxygen concentrator with Built-in oxygen purity indicator
- High and low oxygen alarms.
- Metal cannula connection.
- Option to connect all types of Humidifier Bottles.
- Oxygen concentration should be above 90% at all flow settings.
- Flow meter scale should be from 0.5 to 5.0 liter per minute.
- Outlet pressure should be more than 5.0 PSI.
- Sound level should not be more than 45 dBA

- **ACCESSORIES:**

- **OPTIONAL:**

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Patient Monitor**
Clinical Purpose	A medical monitor or physiological monitor is a medical device used for monitoring. It can consist of one or more sensors, processing components, display devices (which are sometimes in themselves called "monitors"), as well as communication links for displaying or recording the results elsewhere through a monitoring network.

TECHNICAL SPECIFICATIONS

- Bedside monitor for Adult, Paeds.

- **OPERATING FEATURES AND CHARACTERISTICS:**
- Non fade Touch screen TFT color display
- Electro-surgical interference suppression/protection
- Defibrillator protection
- Freeze and cascade facility
- Waveform traces speed; 25/50mm/sec.
- Screen size: min. 12" TFT/LCD Touch Screen color display.
- Capacity to interface with LAN/WLAN for data transfer

ECG:

- Numeric: heart rate.
- Waveform: Six Wave forms minimum, real time and freeze ECG trace

NON-INVASIVE BLOOD PRESSURE(NIBP):

- Method: Oscillometric principle
- Numeric: systolic, diastolic and mean pressure
- Selectable auto inflate interval settings
- Rising cuff continuous pressure display
- Reusable cuff

TEMPERATURE:

- Numeric: temperature selectable in °C/°F.

PULSE OXIMETRY:

- Numeric: 0-100% oxygen saturation measuring range.
- Waveform-Plethysmograph pulse.
- Reusable sensor electrode.

ARRHYTHMIA ANALYSIS:

- Arrhythmia analysis and St. analysis

RESPIRATION:

- Breath rate display and apnea alarms.
- Sweep speed; 6.25, 12.5 mm/sec.

OTHER FEATURES:

- Trend data; graphical and tabular

ALARMS:

- High & low (settable) on all parameters
- Visual and audible indication of alarms

- OPERATING REQUIREMENTS:
- AC 220V/50HZ
- Built-in rechargeable battery for at least 1 - 2 hour AC power failure at full parameter.

NOTE: The system must be complete with all sensors, probes, cables or any other accessories required for measuring all the above selected parameters for Adults and Peads.

ACCESSORIES:

OPTIONAL:

- IBP two Channel/Four Channel.
- Capnography (EtCO2)
- Cardiac output.
- Single / Dual Channel Printer

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**High End Invasive Patient Monitor**
Clinical Purpose	A medical monitor or physiological monitor is a medical device used for monitoring. It can consist of one or more sensors, processing components, display devices (which are sometimes in themselves called "monitors"), as well as communication links for displaying or recording the results elsewhere through a monitoring network.

TECHNICAL SPECIFICATIONS

- Patient monitor for display of vital sign monitoring of Adult, Neonate and Paeds.
- The Monitor have plug in modules / pods for measurement, recording and display of different Vital Signs.
- Mounted on Wall.
- The monitoring solution shall make available all the directly connected monitoring parameters accessible at the bedside during transport.
- The monitoring solution shall be capable of displaying a minimum of ten waveform channels, and can expand up to 16 channels when required.
- Monitors can be connected with Central station wirelessly / wired

OPERATING FEATURES AND CHARACTERISTICS:

- Non-fade TFT Touch color display.
- Electro-surgical interference suppression/protection.
- Defibrillator protection.
- Freeze and cascade facility.
- Waveform traces speed; 25 / 50mm/sec.
- The monitoring solution should be a minimum display size of 17 inches wide Touch screen.
- Provision of Communication port for sharing and transfer of data.

PARAMETERS:

ECG:

- Real time and freeze ECG trace.
- Measuring Range : 15 to 300 bpm

NON-INVASIVE BLOOD PRESSURE (NIBP):

- Method: Oscillometric principle.
- Numeric: systolic, diastolic and mean pressure
- Modes of operation: Manual, Interval, Continuous, Venous stasis.
- Rising cuff/continuous pressure display.

TEMPERATURE

- Numeric: temperature selectable in °C and °F.
- Measuring Range: 0 to 50 °C (equal to °F).

PULSE OXIMETERY

- Numeric: 1-100% oxygen saturation measuring range.
- Measuring Method: Absorption.
- Display Parameters: Saturation, Pulse Rate and Perfusion rate.
- Massimo Technology / other patient technology with motion tolerance.

ARRHYTHMIA ANALYSIS:

- Arrhythmia analysis and ST analysis.
- More than 13 types of arrhythmia should be detected.

RESPIRATION:

- 2 sensing leads.
- Measuring Range: 0 to 150 bpm.
- Breathe rate display and apnea alarms.

CAPNOGRAPHY:

- Measuring Parameters: End-tidal CO2, Inspired CO2 and RRC.
- CO2 measuring Range: 0 to 100 mmHg.
- Unit selection: %, mmHg, KPa.
- Measuring Range: -40 to 400 mmHg

IBP

- 4 channel IBP

OTHER FEATURES:

- Up to 72 hours of Trend data.
- 1 to 2 hours battery backup.
- Nurse call Connection option should be available in monitor.
- Audible and Visible alarm.
-

ACCESSORIES:

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OPTIONALS:

- PiCCO
- NMT
- BIS
- Total Hemoglobin
- Perfusion index
- Total oxygen content
- Carboxyhemoglobin saturation.
- Hemoglobin saturation.
- Pleth variability index.

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Central Monitoring System**
Clinical Purpose	Central Monitoring System make it possible to see the patient's data on the central/main monitor, wherever the patient may be.

TECHNICAL SPECIFICATIONS

Multi-channel central station for 8/16/24/34/64 bedside monitors. (Procuring agency will specify the exact requirement)
Operating features and characteristics:
Colored monitor
Resolution minimum 1024 x 1024
Laser printer
For connection to: Bedside monitors with 19"/24" (HD LED) LCD TFT (Procuring agency to specify the screen size) central station monitor.
Parameters :
Selectable display of all parameters of bedside monitors
As selected.
Alarms :
All parameters alarms on central station monitor with bed no. Identification.
All alarms of each bedside monitors selectable from central workstation.
Full Disclosure :
Other Features:
Ac 220v / 50Hz.
Keyboard and mouse
Trend data: graphical and tabular
Arrhythmia analysis feature.
Operating Requirements:
Built-in battery and charger for at least 1 hour on ac power at full parameter or imported full sine wave ups.

ACCESSORIES:

OPTIONAL:
HIS Connectivity / RIS Connectivity / Data transfer and sharing provision through communication port.

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Patient Transfer Trolley With Transport Ventilator, Vital Sign Monitor & Infusion Pump**
Clinical Purpose	Patient Transfer trolley is a trolley which is used with all important monitoring equipment for the transfer of patient form one place to another place.

TECHNICAL SPECIFICATIONS

PATIENT TROLLEY

- Critical Patient Transport Trolley Mattress base: 3-sectional
- Base plate of epoxy coated steel
- Mattress base frame made of chromed or epoxy coated steel, Mattress size: 650 x 1900 mm or better
- Castors: Ø 150/200 mm, anti-static, Central braking system
- Bumpers on all corners
- Collapsible Side Rails.
- Hydraulic height adjustment, operating pedals on both sides of the trolley
- Adjustment range from floor to base plate: 650 – 900 mm
- X-ray platform 480 – 950 mm, Back section adjustment gas spring-assisted (0°…+70°) Leg section adjustment gas spring-assisted (0°…–45°)

TRANSPORT VENTILATOR

- Microprocessor controlled ventilator with following minimum modes.
- Continuous Mandatory Ventilator (CMV).
- Synchronized intermittent Mandatory ventilation (SIMV)
- Continuous positive airway pressure (CPAP)
- Pressure Support Ventilation
- Non Invasive Ventilation
- Tidal volume 100-2000ml

MONITORING DISPLAY:

- Graphic Screen 04” screen or more.
- Display parameters:- Airway pressure, Breath rate
- Inspiratory time
- Exhaled minute volume I:E ratio
- Exhaled tidal volume

ADJUSTABLE ALARM FOR HIGH / LOW RESPIRATORY RATE:

- Built in battery backup, upto 4 hours and battery level indication.
- Complete with breathing circuits, hose, test lung & universal masks or other accessories required for proper functioning of the equipment

PORTABLE VITAL SIGN MONITOR:

- Suitable / Recommended for Transport Monitoring.
- Parameters: ECG, NIBP, Respiration, Temperature and Masimo Pulse Oximeter with Motion Tolerance technology.
- Screen color minimum 10" TFT
- Complete with Standard accessories for above mentioned Parameters.

INFUSION PUMP:

- Infusion pumps for fluid administration.
- Programmable, Automatic control of infusion rate independent of venous or arterial pressure, solution container height, and solution viscosity.
- Automatic function to keep vein open rate of 0.1ml/hr
- PCA.
- Drug Library for 650 drugs.
- Dose Rate Calculation.
- Digital display to indicate flow rate and volume infused, volume remaining and the name of the drug.
- Rate of infusion 0.1 – 99ml/hr in 0.1 ml/hr increments.1.0 – 999 ml/hr in 1.0 ml /hr increments.
- Accuracy: +/-5%
- Universal/ standard infusion set acceptance capability.
- Visual and Audible alarms for empty Container, occlusion, low battery, Air-in-line and internal malfunction.
- Power of AC 220V/50Hzwith a battery back-up of 2 hours operation.

NOTE: Monitor, Ventilator and Infusion Pump should be properly mounted with Trolley for smooth Transportation of Patient.

ACCESSORIES:

- Mattress
- I/V Stand

OPTIONAL:

Infusion Pump

- TCI / Equivalent Technique

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Cerabral Oximetry Monitor (NIRS) Monitor**
Clinical Purpose	Noninvasive, infrared monitoring of cerebral and myocardial oxygen sufficiency and circulatory parameters.

TECHNICAL SPECIFICATIONS

- Near Infra-Red Spectroscopy (NIRS) based Cerebral/ Regional oximetry monitor.
- Bilateral cerebral tissue oxygen saturation monitoring.
- Numeric display of bilateral cerebral tissue oxygen saturation with alarm limits.
- Color coded trend graph display of bilateral cerebral tissue oxygen saturation with alarm limits.
- Real time data display
- High-resolution color LCD screen, size 8” or more.
- Ethernet LAN connectivity.
- Mains power 100-240, 50 HZ
- Built in rechargeable battery to provide >2 hours backup time.
- Cerebral oximetry disposable sensors 20 sets.

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ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia and Ventilation
Generic Name	**Pulse Oximeter**
Clinical Purpose	A pulse oximeter is a medical device that indirectly monitors the oxygen saturation of a patient's blood (as opposed to measuring oxygen saturation directly through a blood sample) and changes in blood volume in the skin, producing a photoplethysmogram.

TECHNICAL SPECIFICATIONS

Non-invasive measurement of oxygen saturation and pulse rate with LCD screen.
Display of oxygen saturation and pulse rate.
Oxygen saturation measurement range from 0 -100%.
Pulse strength perfusion indication
Capability of Plethesomography.
Pulse rate measurement from 20-250 bpm.
Visual and audible indication of alarms.
High and low alarms settings.
Power of 220 V/ 50 Hz

ACCESSORIES:

Complete with standard accessories, including reusable type Adult, Pediatric & Neonatal sensors

OPTIONAL:

Qty of Reusable sensors

Note: Procuring agency to specify and justify the optional.

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Brain Function Monitor**
Clinical Purpose	The cerebral function monitor (CFM) records an integrated electroencephalogram on slow-running paper, and therefore is suited to long-term, continuous monitoring.

TECHNICAL SPECIFICATIONS

- Four channels of real-time EEG data.
- Bilateral coverage to monitor both sides of the brain.
- EEG-derived Index (0-100), to suggest level of consciousness.
- Density Spectral Array (DSA) for presentation of EEG power from both sides of brain to identify "asymmetry" and burst suppression.
- High-resolution color LCD/LED display.
- Trend data storage and review for all "monitored" parameters up to 24 hours.
- Ethernet LAN connectivity.
- Built-in rechargeable battery to provide >2 hours backup time.
- Mains power 100-240 V, 50 HZ.
- Brain function monitoring sensors (25).

ACCESSORIES:

OPTIONAL :

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Portable Fiber Intubation Scopes (Peads)**
Clinical Purpose	It is used to maintain an open airway or to serve as a conduit through which to administer certain drugs. It is frequently performed in critically injured, ill, or anesthetized patients to facilitate ventilation of the lungs, including mechanical ventilation, and to prevent the possibility of asphyxiation or airway obstruction.The most widely used route is orotracheal, in which an endotracheal tube is passed through the mouth and vocal apparatus into the trachea.

TECHNICAL SPECIFICATIONS

Fully immiscible and Repressible.
Insertion tube diameter 2.0-3.1 mm or better.
Working length 600 mm or better.
Total Length 850 mm or better.
Angle of View 90 or better.
Focal Range 3-50 mm or better.
Tip deflection Up/Down 120/120
Light Source: LED/HALOGEN
Complete with standard set list of accessories.

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Portable Fiber Intubation Scopes (Adult)**
Clinical Purpose	It is used to maintain an open airway or to serve as a conduit through which to administer certain drugs. It is frequently performed in critically injured, ill, or anesthetized patients to facilitate ventilation of the lungs, including mechanical ventilation, and to prevent the possibility of asphyxiation or airway obstruction. The most widely used route is orotracheal, in which an endotracheal tube is passed through the mouth and vocal apparatus into the trachea.

TECHNICAL SPECIFICATIONS

Fully immiscible and Repressible.
Insertion tube diameter 4.2 to 5.2 mm or better.
Instrument Channel 1.5 to 2.6 mm or better.
Working length 600 mm or better.
Total Length 850 mm or better
Light Source: LED/HALOGEN
Angle of View 90 or better.
Focal Range 4 to 50 mm or better.
Tip deflection Up/Down 120-160/100-130.
Light Source: LED/HALOGEN
Complete with standard set list of accessories.

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Portable Fiber Intubation Scopes (Adult Therapeutic)**
Clinical Purpose	It is used to maintain an open airway or to serve as a conduit through which to administer certain drugs. It is frequently performed in critically injured, ill, or anesthetized patients to facilitate ventilation of the lungs, including mechanical ventilation, and to prevent the possibility of asphyxiation or airway obstruction.The most widely used route is orotracheal, in which an endotracheal tube is passed through the mouth and vocal apparatus into the trachea.

TECHNICAL SPECIFICATIONS

Fully immiscible and Repressible.
Insertion tube diameter 4.2 to 5.9 mm or better.
Instrument Channel 1.5 to 2.5 mm or better.
Working length 600 mm or better
Total Length 850 mm or better
Angle of View 90 or better
Focal Range 4 to 50 mm or better
Tip deflection Up/Down 120-160/100-130.
Light Source: LED/HALOGEN
Complete with standard set list of accessories.

ACCESSORIES:

OPTIONAL:

Clinical Specialty	Anesthesia & Ventilator
Generic Name	**Video Solution for Fiber Intubation Scope**
Clinical Purpose	It is used to maintain an open airway or to serve as a conduit through which to administer certain drugs. It is frequently performed in critically injured, ill, or anesthetized patients to facilitate ventilation of the lungs, including mechanical ventilation, and to prevent the possibility of asphyxiation or airway obstruction.The most widely used route is orotracheal, in which an endotracheal tube is passed through the mouth and vocal apparatus into the trachea.

TECHNICAL SPECIFICATIONS

C-mount coupler attached to camera head
Sensor: CCD video camera
White Balance
Electronic anti moiré filter.
Electronic Shutter.
2 programmable buttons.
Light Source: LED / HALOGEN
Waterproof camera head
Power Supply
Lamp: LED / HALOGEN.
Automatic over temperature protection
Brightness Manual adjustable.

Desktop computer with 21" LCD monitor and medical imaging software.

OR

Video Processor with 21" LCD monitor.

ACCESSORIES:

OPTIONAL: