



# Ethiopian Food, Medicine and Healthcare Administration and Control Authority

## National Medical Instruments List with minimum specification



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Addis Ababa

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## FOREWARD

Health development shall be seen not only in humanitarian terms but also as an essential component of the package of social and economic development as well as being an instrument of social justice and equity. Our Government's firm commitment to a community-centered effort aimed at ensuring universal access to primary health care has been central to this progress.

As healthcare delivery continuous to expand and improve in quality, an increasing number of sophisticated medical equipment will be introduced into the healthcare delivery of the country. As a result, a system capable of supporting the utilization of the medical technologies must be in place. Managing medical equipment has always been an integral part of healthcare system and will remain so in the future.

Ethiopian health policy ensures that medical equipment which is required for prevention, diagnosis, treatment, mitigation and rehabilitation of diseases affecting the majority of people have to be identified and classified to respective levels of health service delivery.

The Medical equipment list and minimum specification for Ethiopia is hereby introduced in the latest developments of the fields of the healthcare. By taking the new three-tier health care delivery system into consideration, the National medical equipment list and minimum specification will be further categorized. Hence, users of this document will refer to the respective sub-lists relevant to their level of services. Therefore, it gives me a great pleasure to introduce this edition of the list and minimum specification to all beneficiaries, which is the fruit of the joint effort of the staff of the Authority, the National technical working group, healthcare facilities, professional associations and development partners as well as the participants of the review workshops. I hope that the National medical equipment list and minimum specification as well as its sub-lists and minimum specification will serve as useful guides for the production, procurement, distribution and use of medical equipment in the country.

Finally, I would like to express my gratitude to all those who have directly or indirectly extended their helping hands in the development of this list and minimum specification. I also call upon health professionals and interested parties to continue their usual support in updating this document by forwarding comments and suggestions to the Food, Medicines and Healthcare Administration and control Authority of Ethiopia through P.O. Box 5681, Tel. 251-11 552 41 22, e-mail: regulatory@fmhaca.gov.et, Addis Ababa, Ethiopia

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## ABBREVIATIONS

DOC	Declaration of Conformity
EFMHACA	Ethiopian Food, Medicine, Healthcare Administration & Control Authority
US FDA	United States Food and Drug Administration of
CE	Certified Equipment/EU
IEC	International Electro technical Commission/India
EP	Essential Principle
GHTF	Global Harmonization Task Force
IVD	In vitro Diagnostic
PQM	Promoting Quality of Medicine
QMS	Quality Management System
STED	Summary Technical Documentation
USP	United States Pharmacopeia
WHO	World Health Organization
GMP	Good manufacturing practice
PAL	Pharmaceutical Administration Law
MHU	Mega Heat Unit
VCR	Video Cassette Recorder
IPA	Integrated Panoramic Array
IPP	Integrated Panoramic Positioning
ISO	International Organization for Standard
IAEA	International Atomic Energy Agency
HVL	Half-Value Layer
DIN	A loud discordant confused noise
CEE	International Electro-technical Commission

## INTRODUCTION

As the dynamicity of the healthcare continuous to expand, an increasing number of sophisticated medical instruments will be introduced into the healthcare delivery system. As a result, a system capable of supporting the utilization of the medical technologies must be in place. Managing medical equipment has always been an integral part of healthcare system and will remain so in the future.

Medical Instruments are ranging from simple tongue depressors and bedpans to complex programmable pacemakers with micro-chip technology and laser surgical devices. In addition, medical instrument includes in vitro diagnostic products, such as general purpose laboratory equipment, reagents, and test kits, which may include monoclonal antibody technology. Certain electronic radiation emitting products with medical application and claims meet the definition of medical device. Examples include diagnostic ultrasound products, x-ray machines and medical lasers. In this regard the Food, Medicine and Healthcare Administration and Control proclamation no 661/2009 defines “Medical Instrument” as any instrument or supply that may be used on the inner or outer part of the body for diagnosis or treatment of a disease in human, and includes various diagnostic, laboratories, surgery, dental medical instruments and suturing materials, syringes, needles and other supplies.

Even though it is included in the definition of medicines, this definition provides a clear distinction between a medical instrument and other regulated products at national level. Since medical instruments are health products which could be used by human beings, they need a serious regulation. That is why they are one of the products included in the national legislation for their regulation.

The regulation of medical instrument is a vast and rapidly evolving field. They usually need rigorous safety standards in production and are demanding a well-established regulatory system. This is because of the safety concern that may cause by the improper use of any personnel or medical staff on patients who are not able to respond to hazardous conditions or pain, an actual electrical connection between the equipment and patient may exist, and certain types of medical instrument function as life support, the failure of which could result in the death of the patient.

Different countries use different classification schemes for medical instruments depending on their set up. Accordingly, for our purpose we use the GHTF harmonized classification method and all equipment will be classified according to the potential risk level they have and will also be categorized and listed on the different level of care we have.

The availability of the correct standards of medical instrument at each level of health care is crucial for the proper use. These devices should be safe, effective and affordable. Moreover, the devices must have the required quality and avail in adequate quantity at all times. One of the tools for ensuring the availability, accessibility and affordability of these devices and equipment is setting a proper regulatory system. The regulation system of medical instrument includes the following issues but not limited to

- Classifying the medical instrument based on their levels of potential risk to the user and categorizing based on the level care.
- Assessing compliance with a set of agreed essential standards for their quality, safety and performance.
- Controlling their manufacturing processes for their established quality, safety and performance.
- Registering based on their quality, safety and performance profiles.
- Regulating their supply, distribution, storage and other parameters.
- Monitoring adverse event and establishing their reporting mechanisms.

Therefore, to establish the proper regulation system and ensure the safety, quality, performance, efficient, reliable and cost effective instruments in the country, the preparation this list with minimum specification at national level is found necessary.

In line with the potential risk level classification method we have, basically the listing is done in sixteen (16) groups. The grouping is simply bases on the consensus reached by the professionals. This is taken as grouping system of the medical instruments in our set up. Here a coding system is also introduced for all of the instruments included in this list. The coding system used in this document is based on the agreement reached. The coding system used is given below.

01: Indicates the name of the department or class or in which the instrument belongs to.

01.01: Represents the type of general practice the department may be stands for or the instrument may be used for

01.01.01: stands for the specific practice that unit or class stands for or the instrument may be used

01.01.01.01 stands for the specific name of the instrument

For its usage and benefit of this document it should be flexible with the science of the medical technologies.

The technology in the field of medical instruments and supplies is always dynamic and ever changing and developing from time to time. Hence updating these lists should keep in pace with the new and recent developments of diagnostic, Therapeutic and monitoring devices and equipment

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## LISTS AND MINIMUM TECHNICAL STANDARDS/SPECIFICATIONS OF MEDICAL INSTRUMENTS

### Health Facility Equipment and Furniture



**Photo 1: Hospital Bed with Cabinet**

#### 01.01 Medical furniture

##### 01.01.01 Beds

##### **01.01.01.01 Patient bed/Adult with mattress**

**General Description:** Adult patient Bed, with mattress.

**Technical Specifications:**

Standard hospital bed, 2 sections.

Mounted on 4 swivel castors, of which two with brakes.

Protective bumpers at all four corners. (optional)

Bed-ends, finished with panels or equivalent.

Two section platform, epoxy-painted steel mesh with side supports to immobilize mattress.

Mattress cover removable via side zipper.

Manually adjustable backrest, to approx. 45 degrees.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Mattress: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Sleeping surface: approx. 2000 x 900 mm (l x w).

Height of surface: approx. 550 mm.

Mattress: approx. 120 mm (h)

Frame, diameter: approx. 30 mm.

Swivel castors, diameter: approx. 120 mm.

Carrying capacity: approx. 150 kg.

**Supplied with:**

1 x set of tools required for assembly.

1 x fitting mattress with cover.

List of parts

Detailed step-by-step line drawing based instructions for assembly and safe use.

**01.01.01.02 Paediatric Bed**

**General Description:** Paediatric Beds

**Technical Specifications:**

Complete with full-length drop side safety railings.

Head and leg bows of equal height.

Mounted on four 10 cms. dia. castors (2 with brakes).

Pre-treated and powder coated.

Dimensions not less than 137 x 76 x 60cm

**Specification**

- Framework of rectangular CRC material.
- Drop side, safety railing at both sides.
- Adjustable Back Rest.
- Mounted on four 10 cm. dia. castors (2 with brakes).
- Pre-treated and epoxy powder coated.

**01.01.01.03 Bed, Fowler, with mattress**

**General Description:** Bed, Fowler, with mattress

**Technical Specifications:**

Fowler Bed made of high quality materials, components and accessories.

Four section sheet metal top.

Fowler Bed with adjustable back section and knee-rest.

Manually operated crank system for various positions.

Standard: SS panels, sheet metal platform.

Fowler Bed also available in ABS panels, ABS railings, collapsible aluminum/SS railings.

High quality castors.

Standard dimension: bed frame 2030mm L x 900 mm W x 600 mm H (approx).

Pre-treated and powder coated Fowler Bed.

**01.01.01.04 Delivery Bed**

**General Description:** Bed, labour delivery, with accessories

**Technical Specifications:**

Bed, labour and delivery, 2 sections.

All sections fit with padded mattress, detachable from bed for easy cleaning.

Mattress covers removable via side zipper.

**Body section:**

Mounted on 4 sturdy supports, finished with rubber feet.

Knee crutch holders welded to the frame of the bed.

Crutches are height and width adjustable, set with sturdy clamps with heavy knob.

Leg section

Mounted on swivel castors, of which two with brakes.

This section recesses entirely under body section.

When fully extended, both sections align to perfectly flat surface.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Sliders/fixtures for the knee crutches: tubular steel, welded to the bed frame.

Recession tracks smoothly finished for easy sliding.

Mattress: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Body section: approx. 1000 x 900 x 750 mm (l x w x h).

Leg section: approx. 900 x 850 x 750 mm (l x w x h).

Frame, diameter: approx. 40 mm.

Swivel castors, diameter: approx. 120mm.

Mattress: approx. 100 mm (h)

Carrying capacity: approx. 150 kg.

**Supplied with:**

1 x set of tools required for assembly.

2 x leg holders with canvas straps, adjustable height and width.

2 x knee crutches, adjustable height and width.

1 x set fitting mattresses, body and leg section.

List of parts.

Detailed step-by-step line drawing based instructions for assembly and safe use.

**01.01.01.05 Bed side Cabinet & Over bed table**

Lowest drawer including integrated railing and bottle holder.

Ergonomic formed handles made of stainless steel at drawer door support an easy handling.

Bedside table can be adjusted in height simply by lifting it up with the handle.

It is supported by a lifting support.

**Beds for Kids and Babies**

Chassis made of steel tube and with 4 rubber-tyre, ball-bearing castors small diameter. All with individual braking system.

three sides, (Head and foot parts as well as one side of the bed )is well fenced with grill made of steel tube which is well painted with different colors

Mattress frame made of steel tube and with lattice wire base. Mattress frame **with** protective rails at the longitudinal sides.

**The baby crib trolley**

with removable crib comes into its own

it is ideally suited for pushing under a hospital bed.

Trendelenburg and reverse

Trendelenburg approximately 14° possible.

It can be tilted up to 15°

#### **01.01.01.08 ICU bed**

**General Description:** Bed, hospital, Intensive Care Unit, with mattress.

**Technical Specifications:**

Hospital bed, intensive care, 4 sections.

Mounted on 4 swivel castors, of which two with brakes.

Protective bumpers at all four corners.

Bed-ends, finished with panels or equivalent.

Four section platform, epoxy-painted steel mesh with side supports to immobilise mattress.

Mattress cover removable via side zipper.

Manually adjustable backrest (to approx. 80 degrees), leg section and foot section.

With adjustable and removable folding side rails.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Mattress: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Sleeping surface: approx. 2000 x 900 mm (l x w).

Height of surface: approx. 550 mm.

Mattress: approx. 120 mm (h)

Frame, diameter: approx. 30 mm.

Swivel castors, diameter: approx. 120 mm.

Carrying capacity: approx. 150 kg.

**Supplied with:**

1 x set of tools required for assembly.

1 x fitting mattress with cover.

List of parts

Detailed step-by-step line drawing based instructions for assembly and safe use.

#### **01.01.01.09 Bed side cabinet with Over Bed Table.**

**General Description:** Cabinet, bedside, standard

**Technical Specifications:**

Movable basic patient bedside cabinet with Over Bed Table.

Mounted on 4 swivel castors, of which two with brakes.

Lower part: storage compartment with one fixed shelf, door closes with handle.

Upper part: drawer, closes with handle and is lockable with key.

Side rail handle allows for easy repositioning.

**Materials:**

High resistance to corrosion (tropical environment).

Frame, side panels, base, top, door and shelves: epoxy coated plate steel.

Top has smooth finishing allowing for easy cleaning.

**Dimensions:**

Overall: approx. 400 x 400 x 800 mm (l x w x h).

Swivel castors, diameter: approx. 50 mm.

Carrying capacity: approx. 30 kg.

**Supplied with:**

1 x set of tools required for assembly.

2 x keys, unique per cabinet.

List of accessories and parts.

Detailed step-by-step line drawing based instructions for assembly and safe use.

**Packaging and labelling:**

Weight/Volume: in Cubic meter (cm)

Estimated Weight: (in Kg)

Estimated Volume: (in cdm or m<sup>3</sup>)



**01.01.01.10 Positioner, bag, patient, small**

**General Description:** Positioner, bag, patient, small

**Technical Specifications:**

Vinyl covered sandbags with sewn,sealed seams

Totally fluid-proof, Non-Skid, may be disinfected with any viricide/germicide

Dimensions approx 200x200mm weight approx 1 kg

Set of 2

**Material :** Vinyl sandbags

**Packaging and labelling :**

Refer General requirements

**Accessories/Spare parts/Consumables :** n/a

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use :**

Positioning sandbags provide positioning, support, and pressure

**01.01.01.11 Positioner, bag, patient, medium**

**General Description:** Positioner, bag, patient, medium

**Technical Specifications:**

Vinyl covered sandbags with sewn,sealed seams

Totally fluid-proof, Non-Skid, may be disinfected with any viricide/germicide

Dimensions approx 250x250 mm weight approx 2.5 kg

Set of 2

**Material :** Vinyl sandbags

**Packaging and labelling :**

Refer General requirement

**Accessories/Spare parts/Consumables :** n/a

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use :** Positioning sandbags provide positioning, support, and pressure

**01.01.01.12 Positioner, bag, patient, large**

**General Description:** Positioner, bag, patient, large

**Technical Specifications:**

Vinyl covered sandbags with sewn, sealed seams

Totally fluid-proof, Non-Skid, may be disinfected with any viricide/germicide

Dimensions approx 300x300mm weight approx 5 kg

Set of 2

**Material :**

Vinyl sandbags

**Packaging and labelling :**

Refer General requirement

**Accessories/Spare parts/Consumables:**N/A

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in dm<sup>3</sup>/mm<sup>3</sup>/cm<sup>3</sup>

**Instructions for use :** Positioning sandbags provide positioning, support, and pressure

#### **01.01.01.13 Pillow, abduction**

**General Description:** Pillow, abduction

**Technical Specifications:**

Abduction Pillows to maintain hip positions post operatively.

Foam filled PVC pillow with straps .

Tapered contoured design for superior fit

Dimensions: approx ( L x D x W) 46 x13 x 36cm > taper 12 cm

**Material :**

Various composite materials

**Packaging and labelling :** refer general requirement

**Accessories/Spare parts/Consumables :** n/a

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use :** Abduction Pillows are used to maintain hip positions post operatively

#### **01.01.01.14. Patient Screen**

**General Description:**

Mobile screen to screen patients during clinical examinations for privacy

**Technical Specifications:**

Mobile three section bed screen

Comprising a metal tube frames mounted on 4 casters.

Casters positioned in a broad stance for stability of the frame.

Frame suspends a curtain material for privacy.

Each side of the frame has a hinged section that can be angled for privacy.

Frame of round enamelled coated steel

Curtains of white plastic material

Dimensions (w x d x h),  $\geq (2.10 \times 0.05 \times 1.70)$

**Material:** Frame: anti-corrosive and epoxy coated steel.

**Packaging and labeling:** refer general requirement

**Accessories/Spare parts/Consumables :** N/A

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in  $\text{dm}^3/\text{mm}^3/\text{cm}^3$

**Instructions for use :** Manoeuvre the frame according to shield patient as required.

**Safety procedure:**

#### **01.01.02 Patient Transportation**

##### **01.01.02.01 Stretchers**

**General Description:** Stretcher for patient transport

**SPECIFICATIONS**

Patient's stretchers for use in patient's recovery areas/ transportation.

Upholstered top, with adjustable head approx 1900 x 600mm, at 890mm high, including 750mm head, 75mm thick, with full upholstery

Side rails

Bumper bar/push handle

IV pole

$\geq 200$  mm base plate castors

Safe Working Load  $\geq 180$  kg

Head section adjustable.

#### **01.01.02.02 Wheel chairs**

**General Description:** Wheelchair, adult, foldable.

**Technical Specifications:**

Stretcher frame fitted with metal patient support in 2 sections

Basic foldable wheelchair for adult.

Heavy carriage mounted on 4 anti-static ball-bearing wheels.

Front wheels free rolling, 360 degrees swivel.

Both rear wheels with brake.

Foot lever, integrated in frame, facilitates tilting the wheelchair.

Two handles at the rear fit with plastic rims.

Swing-away foot and arm supports for easy stepping on/off.

Armrests seat and back are upholstered.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Upholstery: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

Tires: heavy duty solid rubber.

**Dimensions:**

Overall: approx. 450 x 500 x 850 mm (d x w x h).

Back support: approx. 500 x 400 mm (w x h).

Frame, diameter: approx. 25 mm.

Wheels, diameter: front approx. 200 mm, rear approx. 600 mm.

Carrying capacity: approx.  $\geq 150$  kg.

#### **01.01.03 Trolleys**

##### **01.01.03.01 Trolley, medication**

**General Description:** Trolley, dressing, stainless steel, 2 trays

**Technical Specifications:**

Dressing trolley, two shelves.

Heavy carriage mounted on 4 swivel castors, of which two with brakes.

Fit on both sides with push bar-handle.

Top and bottom shelves with guard rails, along one length and both widths.

Protective bumpers at all four corners.

**Materials:**

High resistance to corrosion (tropical environment).

Frame and tray: Austenitic stainless steel 18/10.

**Dimensions:**

Overall: approx. 900 x 550 x 1000 mm (L x W x H).

Frame, diameter: approx. 30 mm.

Thickness shelves: approx. 1.5 mm

Swivel castors, diameter: approx. 100 mm.

Carrying capacity: approx. 100 kg.

Basic trolley for transport of nursing supplies in wards; emergency rooms; delivery rooms; etc., in health care facilities.

##### **01.01.03.02 Trolley Instrument**

**General Description:** Trolley, instrument, with drawers.

**Technical Specifications:**

Emergency response trolley with work surface and storage.

Heavy carriage mounted on 4 swivel castors, of which two with brakes and two anti-static.

Work surface with elevated edges, finished with anti-slip layer.

Four side-to-side drawers for storage of medicine, renewable and equipment.

One central lock to secure all drawers.

Inside of drawers is customizable, with organizer dividers.  
Front of each drawer fit with prefixed content identification strips.  
Integrated fitting for waste basket and sharps container.  
Lateral positioned lift-up worktop extends work surface.  
Fit with push bar-handle.  
Protective bumpers at all four corners.

**Materials:**

High resistance to corrosion (tropical environment).  
Frame, side panels, base and drawers: epoxy coated steel plate, ABS or equivalent polymer.  
Push handle: Austenitic stainless steel 18/10.  
Worktop: ABS or equivalent polymer.

**Dimensions:**

Overall: approx. 800 x 600 x 1000 mm (l x w x h).  
Worktop extension: approx. 400 x 500 mm (l x w).  
Height upper drawers: approx. 100 mm.  
Height middle drawer: approx. 200 mm.  
Height base drawer: approx. 400 mm.  
Swivel castors, diameter: approx. 100 mm.  
Carrying capacity: approx. 100 kg.  
Basic lockable trolley for storage and transport of emergency medicines; medical devices and renewable, and resuscitation equipment in health care facilities.

**01.01.03.03 Trolley Instrument, Mayo**

**General Description:** Table, instrument, Mayo type, stainless steel, on castors.

**Technical Specifications:**

Movable height adjustable instrument table, Mayo type.  
Heavy carriage mounted on 4 swivel castors, of which two with brakes and two anti-static.  
Support column side-on-base, facilitates positioning under low clearance treatment area.  
Solid manual lever allows setting telescopic upper part at required height.  
A brake blocks at maximum height.  
Upper section fit with removable instrument tray.

**Materials:**

High resistance to corrosion (tropical environment).  
Frame and tray: Austenitic stainless steel .

**Dimensions:**

Height, adjustable: approx. 800 to 1200 mm.  
Upper tray: approx. 600 x 450 x 20 mm (l x w x h).  
Frame, diameter: approx. 30 mm.  
Swivel castors, diameter: approx. 60 mm.  
Carrying capacity: approx. 40 kg.  
Mayo type movable table for (sterile) presentation of instruments in operating theatres, delivery rooms, etc. in health care facilities.

**01.01.03.04 Trolley General Purpose**

**Description:** Trolley, general purpose, 90 x 60 cm, stainless steel, Aluminium trays

**Technical Features:**

- \* Available with two or three laminated shelves in two sizes with upstands
- \* push handle
- \* mounted on 4 swivel castors (min diam 80 mm)
- \* Dimensions, approx.: 90 x 60 x 80 cm (w x d x h)
- 50mm liquid retaining painted aluminum trays (max load 40.0kg per tray)
- Tray height positions:
  - Two Tray - 210 & 845mm
  - Three Tray - 210, 525 & 845mm

**Tray size:**

- Small - 705 x 445mm
- Large - 855 x 445mm
- 100mm swivel castors

**01.01.03.05 Trolley soiled linen**

**General Description:** Trolley, used to transport soiled linen.

**Technical Specifications:**

Trolley holds bag for collection and transportation of soiled linen.

Mounted on 4 swivel castors, of which two with brakes.

Accommodates removable linen bag with draw string.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Linen bag: canvas.

**Dimensions:**

Trolley: approx. 500 x 500 x 900 mm (w x d x h).

Frame, diameter: approx. 25 mm.

Swivel castors, diameter: approx. 100 mm.

Carrying capacity: approx. 50 kg.

Linen bag capacity: approx. 100 litres.

Purpose: Basic trolley for collection and transportation of soiled linen in health care facilities. Must be cleaned after each use.

**01.01.03.06 Trolley Emergency**

**General Description:** Trolley, emergency, with drawers.

**Technical Specifications:**

Emergency response trolley with work surface and storage.

Heavy carriage mounted on 4 swivel castors, of which two with brakes and two anti-static.

Work surface with elevated edges, finished with anti-slip layer.

Four side-to-side drawers for storage of medicine, renewable and equipment.

One central lock to secure all drawers.

Inside of drawers is customizable, with organizer dividers.

Front of each drawer fit with prefixed content identification strips.

Integrated fitting for waste basket and sharps container.

Lateral positioned lift-up worktop extends work surface.

Fit with push bar-handle.

Protective bumpers at all four corners.

**Materials:**

High resistance to corrosion (tropical environment).

Frame, side panels, base and drawers: epoxy coated steel plate, ABS or equivalent polymer.

Push handle: Austenitic stainless steel 18/10.

Worktop: ABS or equivalent polymer.

**Dimensions:**

Overall: approx. 800 x 600 x 1000 mm (l x w x h).

Worktop extension: approx. 400 x 500 mm (l x w).

Height upper drawers: approx. 100 mm.

Height middle drawer: approx. 200 mm.

Height base drawer: approx. 400 mm.

Swivel castors, diameter: approx. 100 mm.

Carrying capacity: approx. 100 kg.

Basic lockable trolley for storage and transport of emergency medicines, medical devices and renewable, and resuscitation equipment in health care facilities.

#### **01.01.03.07 Trolley Patient records**

##### **General description:**

Trolley, patient records to be constructed from epoxy-coated steel

##### **Technical Specifications:**

With box section to hold the folders and writing top made of laminated plastic

The box section should accommodate up to 30 patient records with max. size 45 x 40 cm

Lockable

Mounted on four, approx. 10 cm diam. castors

Dimensions, approx.: 90 x 55 x 100 cm (w x d x h)

Complete with 30 foolscap files

##### **Material:**

Heavy duty plastic and steel

**Packaging and labeling:** refer general requirement

##### **Accessories/Spare parts/Consumables:**

Complete with 30 foolscap files

##### **Weight/Volume/Dimensions:**

- estimated weight: kg

- estimated volume: cm<sup>3</sup>

##### **Instructions for use:**

Patient record trolley to be used in the patient ward to store and transport patient information during patient visits in the ward.

#### **01.01.03.08 Trolley Food Safety**

Description:- **Meal distribution trolley (3 shelves covered with stainless steel)**

##### **Specification**

Construction : made of stainless steel sheet.

Consist: three shelves with list on each side.

Castors : 5" castor, bumper on each castor

#### **01.01.03.09. Trolley House keeping**

**Description:-** triple bucket technique, trolley which carry three buckets and with four wheels

##### **Specifications**

plastic foldable trolley spec

Open size :  $\geq 38 \times 33 \times 36$  cm

Close size :  $\geq 38 \times 36 \times 8$  cm

The height of handle : approx. 87.5cm

Load:25Kg

#### **01.01.03.10. Trolley, clean linen distribution-**

**General Descriptions:** Trolley used for transporting clean linens, double door

##### **Technical Specifications:**

Four wheels, covered with stealiness steel

Shelves,three hinged two doors & with keys

Dimesions: 90x 50x 185cm (wxdxh)

01.01.04 Storage

#### **01.01.04.01 Instrument cabinet**

**General Description:** Cabinet, instruments, double door.

##### **Technical Specifications:**

Instruments cabinet, double door.

Mounted on 4 sturdy supports, finished with rubber feet, of which one height adjustable.

Clearance underneath allows for easy cleaning.

Inside fixtures facilitate height adjustment of the 4 shelves.

Recessed safety glass in the doors allows for viewing cabinet content.

Doors are triple hinged, closed with handle and lockable with key.

**Materials:**

High resistance to corrosion (tropical environment).

Frame, side panels, base, top and shelves: epoxy coated plate steel.

Doors: framed hardened glass, with key-lock.

**Dimensions:**

Overall: approx. 800 x 400 x 1900 mm (l x w x h).

Carrying capacity each shelf: approx. 30 kg.

Purpose: Basic lockable double door cabinet for secure storage of medical equipment/instruments in health care facilities.

**01.01.04.02 Medicine cabinet, lockable**

**General Description:** Cabinet, medicine, double door.

**Technical Specifications:**

Medicine cabinet, double door.

Mounted on 4 sturdy supports, finished with rubber feet, of which one height adjustable.

Clearance underneath allows for cleaning.

Inside fixtures facilitate height adjustment of the 4 shelves.

Plain side panels and doors, block view on cabinet content.

Doors are triple hinged, closed with handle and lockable with key.

Integrated, separately key-lockable controlled medicines compartment.

**Materials:**

High resistance to corrosion (tropical environment).

Frame, side panels, base, top and shelves: epoxy coated plate steel.

Doors and controlled medicines compartment: epoxy coated plate steel, with key-lock.

**Dimensions:**

Overall: approx. 800 x 400 x 1900 mm (l x w x h).

Carrying capacity each shelf: approx. 30 kg.

Basic lockable double door cabinet for secure storage of medicines (central pharmacy or wards). Integrates lockable inner compartment for controlled medicines (such as narcotics / psychotropic) in health care facilities.

**01.01.04.03 Shelves**

**Description:** Shelf, coated steel, 5 levels, atleast 30cm above the floor.

**General Description:** Steel shelving with adjustable shelf positions, supplied with 5 shelves.

**Technical Specifications :**

Starting section of coated steel shelving

Made of coated welded steel

Starting section with 2 side panels

Should at least have 5 adjustable levels

Dimensions approximately: 1.00 x 0.40 x 2.00 m (w x d x h)

Carrying capacity: approx. 250 kg.

**Material :**

Shelves and Frame: anti-corrosive and epoxy coated steel.

**Packaging and labelling:**

Refer general requirements

**Accessories/Spare parts/Consumables :** N /A

**Weight/Volume/Dimensions :**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use :**

For general purpose shelving storage within facilities.

#### **01.01.04.04 Cupboard**

##### **Medicine cupboard**

Cabinet for medicine with 2 glass doors and shelves

##### **Construction:**

- made from steel sheets/wood
- Painted with white epoxy powder coated

##### **Doors:**

- 2 hinged glass doors
- With lock and 2 keys

##### **Shelves:**

- Adjustable 4 .5mm thick glass shelves

##### **Bottom base:**

- Frame steel construction, epoxy powder. Coated, with 4-6 brass gliders button or similar (to prevent rusting)

**Dimension (approx.):** 180 x 40 x 80 cm (H X D X W)

#### **01.01.04.05 Refrigerator, Kitchen**

**General Description:** Refrigerator with stainless steel covering on the inside and outside.

##### **Technical Features:**

Cooling system with finned evaporator

-5 to + 15 C.

Outside control panel with thermostat

Automatic defroster

Self-closing door with lock

Inside lighting

3 shelves per compartment

Ambient temperature 43 degr.C.

volume: around 650 liter

dimensions external: 200 x 76 x 80 cm (hxwxd)

dimensions internal: 145 x 62 x 67 cm (hxwxd)

power requirements: 220V/50Hz

power consumption: around 340 W

**Material:** St.st. Covering on the inside and outside

##### **Packaging and labeling:**

Refer general Requirements

##### **Accessories/Spare parts/Consumables:**

##### **Weight/Volume/Dimensions:**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use:** Large refrigerator to be used in the kitchen of the hospital..

##### **Safety procedure:**

#### **01.01.05 Examination tables**

##### **01.01.05.01 Couch, examination, gynaecology**

**General Description:** Table, gynaecology, delivery, with accessories.

##### **Technical Specifications:**

Gynaecological examination and delivery table, 3 sections.

Mounted on 4 sturdy supports, finished with rubber feet, of which one height adjustable.

All sections fitted with a padded mattress, detachable from table for easy cleaning.

Mattress covers removable via side zipper.

Robust mechanics allow for manual repositioning between gynaecological and obstetric use.

Back section:

Adjustable via secured pawl and gear ratchet, safe for patient and operator.

Sides of the section are fit with handgrips.

Knee crutch holders welded to the frame of the table.



Padded crutches are height and width adjustable, positioned with sturdy clamps with heavy knob. This section integrates support for slide-out basin-tray.

Leg section:

Recesses entirely downwards, approx. 90 degrees.

When elevated and fully extended, all sections align to perfectly flat surface.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Sliders/fixtures for knee crutches: tubular steel, welded to the table frame.

Mattress: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

Bowl (or tray): Austenitic stainless steel 18/10.

**Dimensions:**

All sections extended: approx. 1800 x 800 x 750 mm (l x w x h).

Frame, diameter: approx. 35 mm.

Mattress: approx. 50 mm (h)

Carrying capacity: approx. 150 kg.

Bowl or tray, capacity: approx. 3 liters.

Standard table for gynecological examination and delivery for use in health care facilities.

**01.01.05.02 Couch, examination**

**General Description:** Table, examination in 2 sections.

**Technical Specifications:**

Mounted on 4 sturdy supports, finished with rubber feet, of which one height adjustable.

Both sections fit with thick upholstery.

Backrest adjustable via secured pawl and gear ratchet, safe for patient and operator.

When fully extended, both sections align to perfectly flat surface.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Upholstery: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

All sections extended: approx. 1800 x 550 x 750 mm (l x w x h).

Frame, diameter: approx. 30 mm.

Upholstery: approx. 50 mm (h)

Carrying capacity: approx. 150kg.

Standard examination table for health care facilities. Must be cleaned after each use.

**01.02 Other furniture**

**01.02.01 Stool**

**01.02.01.01 Footstool, two step, epoxy coated steel**

**General Description:** Footstool with two steps.

**Technical Specifications:**

Sturdy 2 step footstool.

Mounted on robust supporting legs spaciouly arranged for optimal stability.

Both steps and feet, fit with anti-slip.

**Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated steel.

Steps and feet: heavy duty solid rubber.

**Dimensions:**

Overall: approx. 450 x 250 x 400 mm (l x w x h).

Frame, diameter: approx. 30 mm.

Carrying capacity: approx. 100 kg.

Foot stool to assist patients ascending and descending examination/delivery table and beds in health care facilities.

#### **01.02.01.02 Workbench/table**

#### **01.02.01.03 Chair**

**Description:** Chair blood collection

**Technical specifications:**

Upholstered seat and backrest

With special armrest for venepuncture procedures.

**Material:** Metal

Packaging and labeling:

**Refer general Requirements**

Accessories/Spare parts/Consumables: N/A

**Weight/Volume/Dimensions:**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use:** Chair, blood collection, is to be used in the blood collecting area.

### **01.03 Laundry**

#### **01.03.01 Washing/Drying**

#### **01.03.01.01 Washer Extractor**

**General Description:** LAUNDRY/ Industrial type washing machine

**SPECIFICATIONS**

Not less than 18kg, 15 kg, 40 kg & more capacity /cycle

Washing Machine should be front loading type. (vertical spread)

Method of washing should be tumble wash.

Machine should be made of 304 grade of stainless steel (Inner cage should have die-sunk perforations on adequate area and thickness should be of 14 SWG S.S and outer body thickness 16 SWG 304 S.S).

Machine should have large stainless steel front door with toughened glass.

Machine should have auto-reverse / open pocket with low spin extract.

Machine should have level indicator.

**Power requirements:**

Machine should have heavy duty motor of ISI mark (minimum 2 KW).

Low and high voltage cut-off provision should be there.

Motor should operate on 3 phase 380/ 415 V $\pm$  10%, 50 Hz

**Safety Future**

Machine should have Thermal overload protection.

Machine should have dual operating system options i.e. both electrical and steam heating provisions.

Machine should have automatic door locking system while machine is in operation.

Machine should have adequate sized water inlet and drain outlet size.

Machine should have adequate in-built safety measures

#### **01.03.01.02 Dryer/Tumbler**

**General Description:** Dryer/tumbler, single door, electrically heated

**Technical Specifications:**

Tumbler dryer of solid steel construction.

Epoxy coated external sheeting.

Capacity per load: not less than 12 kg, 20 kg, more dry weight.

Total rating: approx 24 Kw

Drum volume: not less than 400 liters.

**Material:**

Tumbler dryer of solid steel construction.

Epoxy coated external sheeting.

**Power requirements:**

Machine should have heavy duty motor of ISI mark (minimum 2 KW).

Low and high voltage cut-off provision should be there.

Motor should operate on 3 phase 380 V  $\pm$  %, 50 Hz

**Safety Future**

Machine should have Thermal overload protection.

Machine should have dual operating system options i.e. both electrical and steam heating provisions.

Machine should have automatic door locking system while machine is in operation.

Machine should have adequate sized water inlet and drain outlet size.

Machine should have adequate in-built safety measures.

01.03.02 processing, clean work area

**01.03.02.01 Flatwork ironer**

**General Description:** Flatwork ironer, 250 cm length, electrically heated.

**Technical Specifications:**

Length of the cylinder: atleast 2500 mm

Diameter: approx. 480 mm

Variable speed: 0, 5 - 5,5 m/min.

Dimensions, approx.: 250 x 100 x 140 cm

**Power requirements:**

380 V  $\pm$  10%/50Hz

Power consumption: describe .

**Material:** Metal.

**01.03.02.02 Iron, electric**

**General Description:** Laundry iron, electric

**Technical specifications:**

Choice of steam or dry ironing

Water spray and super steam facility

Variable thermostat control and pilot light.

Provided with swivel cord entry and cord storage facility

Automatic switch off

**Power requirements:**

Power requirement: 220V  $\pm$  10%, 50 Hz

Power consumption: describe .

**Material:** Metal housing

**01.03.02.03 Sewing machine, large**

**General Description:** Sewing machine, small, household model

**Technical specifications:**

Single needle lock stitch

Straight and zigzag sewing

Power requirements: 220V  $\pm$  10%/50Hz

Power consumption: describe

**Material:** Metal housing

**01.03.02.04 Ironing board**

**General Description:** Ironing board, wall mounted

**Technical specifications:**

Special ironing plate, wall mounted system

Water-proof

Heat-resistant

**Material:** Enamelled steel construction

#### 01.03.02.05 Trolley, box, wet laundry

**General Description:** Trolley, box, wet laundry

**Technical Specifications:**

Mobile box of non-rust polymer construction for solidity and durability.

Designed for extracting laundry and moving bulk materials through laundry and hospital.

dimensions: approx. 736 x 660 x 965 mm (h x w x l).

With 2 rigid and 2 swivel castors.

With outlet tap

**Material:** Polymer

**Packaging and labeling:**

Refer general Requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use:** Trolley, box, wet laundry to be used in the laundry department.

#### 01.03.02.06 Worktable, sorting/folding, laundry linen

**General Description:**

Worktable, sorting/folding, laundry linen, 200 x 100 x 85 cm

**Technical Specifications:**

Laundry sorting table,

Tubular steel frame

Laminated top

With smooth edges on all sides.

**Material:** Steel frame and laminated top

**Packaging and labeling:**

Refer general Requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use:**

Worktable, folding/sorting to be used in the laundry department.

#### 01.03.03 Transport Trolley Park

##### 01.03.03.01 Trolley, soiled linen

**General Description:** Soiled linen trolley with a two rings for supporting and transporting two linen bags.

**Technical Specifications:**

Trolley, soiled linen.

Double ring to support 2 soiled linen bags, suitable for 1.50 m circumference linen bags.

Mounted on 4 anti-static swivel wheels.

Push handle with protection buffers.

Including 4 spare canvas bags with closing cords.

**Dimensions:**

Trolley: approx. 0.46 (L) x 0.46 (W) x 0.89 (H) m.

Tubes: approx. diam. 0.25 x 0.015 m.

Swivel castors: diam. approx. 0.10 m.

Bags Canvas, circumference 1.50 m

Carrying capacity approx.  $\geq 150$  kg.

**Material:**

Trolley frame: epoxy coated steel.

Linen bags: Canvas

#### **01.03.03.02 Trolley, clean linen**

**General Description:** Trolley, designed to distribute clean linen

**Technical Specifications:**

Mounted on 4, heavy duty, swivel wheels

With 4 wire mesh shelves of chromium construction

Nylon cover for the whole trolley, executed with 2 zipper in front of the trolley

Dimensions, approx.: 90 x 65 x 185 cm (w x d x h)

**Material:** Chromium steel construction

#### **01.03.03.03 Bag, soiled linen**

**General Description:** Soiled linen trolley with a single ring for supporting and transporting a linen bag.

**Technical Specifications:**

Trolley, soiled linen.

Single ring to support soiled linen bag, suitable for 1.50 m circumference linen bags.

Mounted on 4 anti-static swivel wheels of diameter at least 0.10 m.

Push handle with protection buffers.

Including 2 spare canvas bags with closing cords.

Overall dimensions: 0.50 (L) x 0.46 (W) x 0.89 (H) m.

Bags Canvas, circumference 1.50 m

Carrying capacity approx.  $\geq 150$  kg.

**Material:**

Trolley frame: epoxy coated steel.

Linen bags: Canvas

#### **01.03.03.04 Trolley, tub, laundry**

**Description:** Trolley with aluminum tub, for transport of laundry bags

**General Description:** Trolley with aluminum tub, for transport of laundry bags

**Technical Specifications:**

Capacity, approx.:  $\geq 200$  kg

Mounted on four, approx. 20 cm diam. castors, 2 fixed and 2 swivel

Double perforated bottom

Outlet faucet

Dimensions, approx.: 103 x 63 x 71 cm (w x d x h)

**Material: Heavy duty aluminum**

**Packaging and labeling:**

Refer general Requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: in kg

- estimated volume: in cdm

**Instructions for use:**

Transport tub-trolley to be used to collect bags with dirty laundry to be transported to the laundry department.

#### **01.03.03.05 Cold room**

**General Description:** Cold rooms are normally used to store vaccines at the national or sub-national level for periods of several months; Cold room(s) for storing bulk vaccine.

**Temperature control:** Cold room temperature must remain between **+2°C to +8°C** when measured in any part

#### **01.03.03.06. Freezer rooms**

**General Description:** Freezer room(s) for storing bulk vaccine.

**Temperature control:** Freezer room temperature must remain between **-25°C to -15°C** when measured in any part of the room, under any loading condition between empty and full design limits, and over the full ambient temperature range.

**Climatic conditions:** The temperature control set out must be achieved under the following climatic conditions:  
**Hot zone:** maximum continuous ambient summer temperature +43°C and minimum continuous ambient winter temperature 0°C. OR

**Temperate zone:** maximum continuous ambient summer temperature +32°C and minimum continuous ambient winter temperature 0°C. OR

**Cold zone:** maximum continuous ambient summer temperature +32°C and minimum continuous ambient winter temperature -10°C.

**Capacity:** The freezer room(s) and shelving layout(s) must be sized to accommodate the volume(s) of vaccine required.

**Control by thermostat:** Freezer room temperature must be controlled by a thermostat within the tolerances specified. The thermostat must be calibrated to ITS-90 and accurate to  $\pm 0.5^{\circ}\text{C}$  or better.

**Holdover time:** In the event of power failure the freezer room temperature must remain below  $-10^{\circ}\text{C}$  for a minimum period of 8 hours at the specified maximum ambient operating temperature.

**Power consumption:** Confirm the following for each freezer room at the time of tendering: the maximum starting current per phase, the maximum running current per phase, the estimated annual energy consumption in kW/hrs based on the climatic conditions at the specified site. Low power consumption is a factor in the selection of equipment.

**Electrical safety rating:** At time of tender, confirm the national or international electrical safety standards to which each incorporated electrical and electronic component is manufactured and installed. Provide written evidence of compliance.

Must comply with IEC60335-1 Household and similar electrical appliances-safety.

**Panel insulation:** Foam insulation must be CFC-free. In cold zones the thermal transmittance (U value) of the roof, wall and floor panels must be  $0.25\text{ W/m}^2\text{K}$  or better.

In temperate zones the thermal transmittance (U value) of the roof, wall and floor panels must be  $0.20\text{ W/m}^2\text{K}$  or better. In hot zones the thermal transmittance (U value) of the roof, wall and floor panels must be  $0.17\text{ W/m}^2\text{K}$  or better.

**Panel construction:** Panels must be made from hot-dip galvanized steel sheet, fully insulated, without internal structural members or stiffeners between the skins. Tongued and grooved joints between panels must be designed to minimize cold-bridging. Gaskets are to be resistant to damage from oil, fats, water and detergents. Floor panels must have a hard-wearing nonslip finish. Wall and roof panels must have a white plastics coating.

**Pressure relief valve:** Provide a pressure relief valve in the roof.

**Door construction:** Doors must be insulated to same standard as the panel. They must be lockable with 100% fail-safe provision for opening from inside. The clear opening width of door must be 600mm minimum for rooms up to 10 cubic metres and at least 800 mm for larger rooms. Provide an internal clear plastic strip curtain. Provide a door frame heating element. A door frame heating element is essential for freezer rooms.

**Heater mat:** Provide an electric resistance heater mat below freezer room floor, with thermostatic control.

**NOTE:** Under certain circumstances, a freezer room can freeze the soil under the room floor. Freezing causes the ground to expand and can crack a concrete floor slab.

Laying an electric heater mat under the freezer room floor panels eliminates this risk.

A heater mat is also necessary if a freezer room is located on an upper floor, in order to prevent excessive cooling of the structural floor slab and consequent damage from moisture condensation on the ceiling below.

Whether a heater mat is required ultimately depends upon the location of the store, the climatic regime and the size of the freezer room: seek the manufacturer's advice.

**Shelving:** Provide wall-mounted or free-standing stove enameled steel, galvanized steel, stainless steel, or aluminium slatted adjustable shelving units to carry vaccine in packages. Slatted shelves are preferred. Shelves must be not less than 450 mm and not more than 600 mm deep at approximately 450 mm vertical centres. The lowest shelf must be mounted 200mm above the floor.

**Refrigeration units:** Provide packaged refrigeration units with single-phase or three-phase compressors sized to give 100% stand-by capacity under worst-case conditions. There must be a timer-operated electric or hot gas defrosting system and an electrically heated condensate drip tray and drain connection. Provide an automatic duty-sharing circuit with seven-day changeover and a manual over-ride to be used in the event of mechanical failure. Position the

evaporator units so that the plume of discharged air cannot be blocked by stored vaccine. Provide protection against high or low voltage and against cycle fluctuations. There must be an automatic cut-out when conditions are outside the freezer room manufacturer's defined safe limits and an automatic cut-in within 6 minutes of the restoration of safe conditions. Units must be wall-mounted with the condenser unit discharging inside building that houses the freezer room.

OR

OPTION 1: The evaporator units must be wall-mounted with a weatherproof condenser unit mounted externally.

OR

OPTION 2: The units must be ceiling-mounted with the condenser unit discharging inside the building that houses the freezer room.

OR

OPTION 3: The evaporator units must be ceiling-mounted with a weatherproof condenser unit mounted externally.

NOTE: Strike out options which do not apply. (e.g. compressors located in a confined space may overheat, especially in hot climates).

**Refrigerant:** CFC-free to comply with the requirements of the Montreal Protocol. Flammable refrigerants are not acceptable. The casing of each refrigeration unit must carry a permanent label clearly identifying the refrigerant used in letters not less than 10mm high. The casing of each refrigeration unit should be permanently marked with the WHO/EPI 'CFC-free' symbol. The symbol must not be less than 100mm in diameter.

**Lighting:** Provide an internal ceiling-mounted tungsten filament light fitting with external switch and pilot light. The external light and light switch must be fixed to the wall of the cold room enclosure near to entrance door.

NOTE: Fluorescent lighting damages certain vaccines and must not be used.

**Alarm system:** Provide a mains-operated audible alarm with battery backup and automatic recharge, which is triggered in the event of mains failure or when freezer room temperatures are outside set limits. All alarm systems must comply with PQS E06 equipment specifications.

NOTE: The alarm sounder must be located where it can be hear. This may not be in the building where the freezer room is housed.

**Temperature recording:** Provide a programmable electronic temperature and event logger system with auto-dialer to comply with PQS E06/TR03 linked to the alarm system specified. Provide a backup dial thermometer to comply with PQS E06/TH02 mounted on the wall of the cold room in an accessible position

OR

OPTION 2: Provide a 7-day wall-mounted pen recording thermometer with a temperature sensor and door-open sensor. The device is to comply with PQS E06/TR04,

NOTE: A PC-based system with auto-dialer is now considered essential for national stores and is preferred for all cold room. If no suitable PC is available to run the temperature-logging software, ensure that one is obtained as part of the installation contract.

Door-open sensors are desirable, but not essential. Pen recorders are an acceptable alternative for smaller cold rooms located at the intermediate level. They are only acceptable at the primary level as a backup device.

**Voltage stabilizer:** Provide protection against high or low voltage and against cycle fluctuations. The freezer room manufacturer must offer a voltage stabilizer appropriate to the electricity supply conditions where the store is to be constructed.

**Consumables:** Provide consumables sufficient for 2 years of normal operation at the specified location(s).

**Spare parts:** Provide spare parts sufficient for 2 years of normal operation at the specified location(s).

**Instructions:** For each cold room provide a user's manual, a workshop manual and an installation guide in English language.

**Installation and commissioning/acceptance test:** Installation and commissioning/acceptance test must be carried out by the manufacturer, the supplier, or the supplier's appointed agent. Details of the commissioning tests must be recorded and a copy of the test report must be handed over with instruction manuals.

**Quality control standards:** Component manufacture and all installation and commissioning processes are to be in accordance with ISO 9001.

**01.03.03.07. Ambulance car/Motorcycles**

**Description:** Purpose- for patient transport, immunization services

**Technical Specification**

Vehicle should be Four wheel drive equipped with standard siren/Alarm

All Emergency equipment such as:

Stretcher

Oxygen gas supplier

First Aid kit

Other Monitoring devices should be installed in it

**01.03.03.08. Insulated containers**

**Description:** Purpose: for immunization services

Technical Features

Tongue and groove friction-fit lid

Channel walled construction for more efficient convective cooling

Stand-off pads on base to keep product away from any condensation

Rounded corners enhance physical strength and minimize friction damage

Available in a variety of stock sizes ready for immediate shipment

Recyclable

True 1½" and 2" thick styrofoam insulation for high value shipments

lightweight, durable mailer boxes that minimize payload breakage and shipping costs

**01.03.03.09. Ice Packs****Technical Features:**

High performance; longer lasting thaw time

Won't leak or release water when thawed

Reusable HUNDREDS of times

Flexible when frozen

Safe & non-toxic

Simple to use

**01.03.03.10. Temperature Monitoring devices- for immunization services****01.03.03.11. Cold chain accessories****01.03.03.12. Water Tanker/ Container**



## II. Medical Imaging Equipment/Instrument



**Photo 2: Magnetic Resonance Imaging (MRI)**

02 Imaging, lithotripsy, Radiotherapy Equipment & Accessories

### 02.01 Diagnostics Systems

#### **02.01.01.01 Routine radiography (conventional) Small**

Microprocessor based.(optional)

High frequency, 50KW X-Ray generator./describe

500 mA at 100 kv

Anatomical programmed radiography. (optional)

Digital display of all set parameters. (optional)

Rotating anode x-ray tube with dual(Large & small) focus

Anode heat storage capacity of 250 KHU(Heat unit) or more

System with AEC facility.  
Capable of lateral radiography.  
Min of 4-way floating table  
Chest stands with Bucky & Grid  
Auto/manual collimation and Tracking  
Automatic surge voltage, over-load protection device and automatic line compensation.  
1Ø 220 high frequency generator /or 3-phase,  $380 \pm 10\%$  V, 50 Hz

#### **02.01.01.02 Routine Radiography (conventional) Large**

Microprocessor based.(optional)  
Approximately 80KW X-Ray generator./ describe  
Around 800 mA at 100 kV/ describe  
Digital display of all set parameters.  
Rotating anode x-ray tube, with dual focus around 0.6 & 1.2mm  
Anode heat storage capacity of at least 600 kHU or state  
Electronic timer with exposure  
System with AEC facility(optional).  
Capable of lateral radiography.  
floating table top table top movement is required  
Chest stands with Bucky.  
Complete with grid ratio must be specified.  
Automatic over-load protection device and automatic line compensate is required.  
Auto and/or manual collimation and Tracking  
3-phase,  $380 \text{ V} \pm 10\%$ , 50 Hz. Or 1-phase High frequency generator

#### **02.01.01.03 Radiography with Fluoroscopy Small**

**( X-ray unit, for remote control radiography & fluoroscopy system)**

##### **General description:**

The system use to radioscopic and fluoroscopic examination. System should enable to perform all routine diagnostic examinations.

##### **Technical Features:**

The table tilts from the upright vertical position (approx.  $+90^\circ$ ) to the horizontal position ( $0^\circ$ ) to the head-down-tilt position (approx.  $-15^\circ$ ).  
System should have image intensifier of minimum 38 cm.  
Tube column angulation should be minimum  $\pm 40$  degree and from head to foot all the body should be covered.  
There should be a TV system which should be proper for digital studies. There should be automatic brightness and contrast control.  
The table movements should be stated.  
Together with the system there should be given following accessories to be used with the table; pair of shoulder rest, adjustable head clamp, pair of ankle clamp, ratchet compressor, arm support, infusion bottle holder.  
The tube of the system should be rotating anode type. Anode heat capacity and focal spots of the tube should be stated .  
Max time can be 5min, around 50KW X-Ray generator, around 500 mA at 100 kv, single Ø, high frequency generator  $220 \pm 10\%$  and/or 3-phase, 380 V, 50 Hz

#### **02.01.01.04 Radiography with Fluoroscopy Large**

**(X-ray unit, system for Monoplane Cardiovascular examination)**

##### **Required Functional Capabilities:**

The system has to be designed and optimized to the requirements of diagnostic and interventional monoplane procedure in the field of angiocardiology offering the benefits of procedural speed, functional flexibility and exceptional image quality to create the perfect environment for all cardiac applications, from routine diagnostic up to the most demanding interventional procedures.

**Technical Features:**

The system should be designed for maximum patient comfort. Maximum patient weight should be not less than 200kg and additional 100 kg weight for resuscitation should be considered as well.

System should be able to do all the radioscopy and radiographic study with -45 degree Trendelenburg and +90 degree table movements.

System should have image intensifier of minimum 38 cm.

Tube column angulations should be minimum +/- 40 degree and from head to foot all the body should be covered.

There should be a TV system which should be proper for digital studies. There should be automatic brightness and contrast control.

The table movements should be stated.

Together with the system there should be given following accessories to be used with the table; pair of shoulder rest, adjustable head clamp, pair of ankle clamp, ratchet compressor, arm support, infusion bottle holder. which will be able to support minimum two tubes.

The tube of the system should be rotating anode type. Anode heat capacity and focal spots of the tube should be stated.

Max time can be 5min Atleast 80KW X-Ray generator, atleast 800 mA at 100 kV

1Ø high frequency generator 220 ±10% V and/or 3-phase, 380 V, 50 Hz

**02.01.01.05 C-Arm Machine (mono-block/ rotating anode)****General Description**

The system use radioscopy and fluoroscopic examination and monitoring during cardio-vascular surgery, casualty and intensive care applications permitting Fluoroscopy and High Definition Fluoroscopy.

Output Power.....describe

X-Ray Tube.....Stationary/ Rotating Anode

Image Intensifier Size with CCD camera of resolution around 512\*512

Dual-focus small focus: must be stated

Inverter Frequency around 60kHz

Anode thermal Capacity around 600Jk (810kHU) or /describe

Super high-power, micro focus, low radiation.

Microprocessor controlled.

With Monitor describe size and resolution.

Voltage Requirement .....High frequency generator (optional) 220±10% V, 50 Hz

**02.01.01.06 C-arm, digital X-ray machine****General description:**

The system use radioscopy and fluoroscopic examination and monitoring during cardio-vascular surgery, casualty and intensive care applications permitting Fluoroscopy and High Definition Fluoroscopy. The digital capabilities of the system should support intraoperative angiography.

**Technical Features:**

System must be a compact, mobile X-ray imaging system which is suitable for use in surgical suites, intensive care units and other areas that need optimized fluoroscopic images easily and quickly.

System must be flexible, easy to move, light weight, good maneuverability, can be connected to any earthen 220 V±10%, 50 Hz mains socket.

Physical size and weight of the system should be stated.

Maximum mAs value can be 75 mAs, radiography current minimum 20 mA and fluoroscopy current about 6mA.

System should have pulsed fluoroscopy to be used to monitor slow processes and to reduce the radiation dose.

System X-ray tube can be fixed type with dual focus and focal spot sizes should be stated.

Thermal capacity of the tube must be not less than 600 kJ (810kHU).

System Image Intensifier must be minimum around 9"(23 cm) dual format. User selectable field sizes should be minimum 23 cm and 17cm or 13 cm.

System mobile view station must consist of a monitor and digital image processor.

Together with the system laser alignment tool, cassette holder for all standard size

## **02.01.01.07 O-Arm Machine**

### **02.01.01.08 DR (Digital Radiography) X-ray machine**

#### **X-Ray High Frequency Generator**

Short-time ratings: 500mA at 100kV

The output of the X-ray high-voltage generator at least 80 kW.

The X-ray control should use a high-frequency inverter (transformer)

#### **Table**

The tabletop move in the lateral direction and the imaging system move in the longitudinal direction.

The table tilts from the upright vertical position (approx. +90°) to the horizontal position (0°) to the head-down-tilt position (approx. -15°)(optional).

The startup time should be short

Allowable patient mass: Max. 150kg minimum

#### **Radiography tube**

Radiographic tube voltage setting range: 40 kV to 150 kV, in 1-kV increments

Radiographic tube current setting range: 25 mA to 1000 mA

Automatic Exposure Control (AEC): The light intensity that enters the FPD (Flat panel detector)

Should be measured and the X-ray exposure time (radiography time) should be automatically adjusted

Density setting: multi steps with X-Ray detector

Radiographic condition automatic setting: The radiographic conditions should be automatically set

X-ray tube anode heat monitoring and thermal switch controlled

Fluoroscopic tube current setting range: 0.5 mA to 4.0 mA in 0.1-mA increments

Automatic Brightness Control (ABC) function

**DETECTOR can be FLAT PANEL or PMT (Photomultiplier tubes )or XANON or OTHER TYPE :**

Effective number of pixels: around 2840 pixels × 2840 pixels (vertical × horizontal)

Pixel size: 148 μm (non-binning) or better.

Output image format Fluoroscopy: around 3072 × 3072, 16 bits.

#### **DIGITAL IMAGING SYSTEM:**

Basic image processor performance Images from the detector should be input in digital format.

Image storage: at least Capacity of hard disk: 50,000 images for 1024 × 1024 Storage media:(4.7GB), 2-Image display Monitors

a) System monitor display for Playback images, processed images, multi-images, etc.

b) Live monitor 1024 × 1024 pixels for Digital fluoroscopic images, fluorography images, playback images, etc.

Fluoroscopic function Image processing:- Recursive filter with motion detection, Last image hold, Image flipping, Spatial filter (edge enhancement, smoothing) & Digital Compensation Filters.

Recording:- Fluoroscopic image and last-image-hold image can be stored to hard disk.

Fluorography function:- Images should be recorded to hard disk processed, and displayed on the monitor.

Real-time image processing: Digital Compensation Filter and Super Noise Reduction Filter.

Post processing:- Grayscale: Adjustment of contrast and brightness

Provision of DICOM facility

Voltage Requirements:-Line voltage: 3-phase, 380 VAC, 1-phase 220 VAC ±10%, frequency: 50 Hz

### **02.01.01.09 CR (Computer Radiography)**

#### **02.01.01.10 Mammography**

Mammography Machine for Breast X-Rays.

Compatibility of Digital Stereotactic Biopsy Device.

Around 3.5 KW High frequency X-Ray Generator.

Automatic Exposure Control (AEC) Rhodium Filter.

Rotating Anode Dual Focus X-Ray Tube of Focal 0.1/0.3 mm.

Motorized Breast Compression with Digital Display

KV : 22 to 35 KV./ describe

MAS : 1 to 700 MAS./ describe

Power Supply: 220V, AC, 50 Hz., Single Phase

#### **02.01.01.11 Monoblock Dental X-ray**

**General Description:** used to examine the dental

**Technical Specifications:**

X-ray tube : approximately 70KV, 8mA

Power Unit - 1KVA /describe

FSD - approximately 200mm

Focal spot : approximately 0.8mm × 0.8mm /describe

Focus to skin distance : approximately 20cm

Fixed Anode Tube with HTT(High Temperature Tetragonal) in on Block

Filtration : approximately 1.5 Aluminium Focal Spot - <1mm

Radiation Leakage - <1mr/Hr

Exposure Switch - Dead Man Type

Exposure time: approximately 0.01 – 2.99 seconds

Anatomic programmed (optional) : 30 pre-set times with cordless remote

**Power supply:** 1-phase 220V±10%, 50Hz

#### **02.01.01.12 Panoramic Dental X-ray**

**General Description:** Used to Scan the whole teeth for examine the dental

**Technical Specifications:**

X-ray tube: approximately 80 kv , 10mA

Focal spot : 0.8mm × 0.8mm

Rotating Head with 180°

Chin stand with pointer

Hand controlled

Focus to skin distance : around 20cm

Filtration : 1.5 Aluminium

Exposure time: 0.01 – 2.99 seconds

Anatomic programmed (optional) : pre-set times with cordless remote

Power supply: 1-phase 220V±10%, 50Hz

#### **02.01.01.13 Bone Densitometer (dual-energy x-ray absorptiometry)**

Hologic X-ray densitometer

PC/AT Compatible Computer including High Resolution Display.

disk drive, 20 MByte Hard Disk Drive and Keyboard

Video Copy Processor

Anthropomorphic spine phantom

Anthropomorphic femur phantom

40 cm X-ray caliper /describe

Foot brace

Table pad

Chair, adjustable height

Cover for scanner arm and table

Power supply: 1-phase 220V±10%, 50Hz

#### **02.01.01.14 X-RAY MOBILE UNIT**

**Description:** Helps to take X-ray diagnosis for the patient in ICU, CCU (coronary care unit)

**Technical Specification**

High Frequency Transformer, (optional)

Power: 30KW/describe X-Ray Generator.

Anatomical programmed radiography.

Digital display of all set parameters.

Rotating anode x-ray tube, with dual focus / Single Focus

Anode heat storage capacity of at least 100 KHU or more

Electronic timer with exposure time of 1msec.

Automatic over-load protection device and automatic line compensation.

The unit should be battery Operated.

Power Requirement: Voltage  $220 \pm 10\%$  V, 50 Hz.

#### **02.01.01.15 Phantom Portable X-Ray System**

##### **SPECIFICATIONS**

Generator Type: ..... High frequency inverter, around 1.25 kilowatt output.

kVp Range: ..... 0-100 kVp continuously adjustable, with 1 kVp resolution.

mA Range:..... Fixed, 12.5 mA, constant independent of kVp or time settings.

Exposure Time: ..... 0.01 to 4.0 seconds in 96 increments.

Indicators: ..... Ready, x-ray on, digital display of kVp, mAs and time.

Exposure Switch:..... Detachable hand switch, two position, prep and expose.

X-Ray Tube: ..... Stationary anode, around 100 kVp. /describe Kvp

Filtration:..... 2.7 mm of aluminum at 100 kVp(min.).

Target Material: ..... Tungsten.

Anode Capacity:..... 25,000 heat storage capacity.

Focal Spot: ..... 1.0 mm

Beam Angle: .....  $15^\circ$

Collimator: ..... Certified manual.

Lamp Source: ..... with timer.

Inclinometer: ..... For angle measurement.

##### **Electrical**

Requirements: ..... 220 VAC, 50Hz.

Rotation About Horizontal Axis:...  $360^\circ$

Rotation About Tube Axis: .....  $270^\circ$

x-ray Ray Cassettes, Size..... (8 X 10), (10 X 12), (14 X 14), (14 X 17),(6 X 15) inches.  
(1 inch=2.54cm)

#### **02.01.01.16 CATLAB**

**Discription:-** X-ray unit, system for Biplane Cardiovascular examination

##### **Required Functional Capabilities:**

The system has to be designed and optimized to the requirements of diagnostic and interventional procedure in the field of biplane angiocardiology to meet all demands in a digital cardiac Cath lab.

##### **Technical Features:**

High definition digital real-time image acquisition designed for application in biplane angiocardiology and should be fully integrated with generators, the diagnostic units and the image intensifiers.

The system should be able to present lateral and frontal views on either side of the live image, in the same proportions and image quality. All images should be displayed simultaneously. Reference image should stay on a separate monitor, clearly showing the relationship between reference and live images.

Non interlaced monitors to obtain better and flicker free images which provides minimum 70 images/sec will be preferred.

For post processing and review of other patient files during the operation, a second viewing console should be included in the offer.

The system should be designed for maximum patient comfort. Maximum patient weight should be not less than 200kg and additional 100 kg weight for resuscitation should be considered as well.

Isocentre should be fix to keep the region of interest always at the center of monitor to prevent waste of time with the adjustment of table and images on the monitor. Variable isocentred systems will not be preferable.

Working with the Lateral C-arm the images should be always kept upright, cranial caudal projection should be possible.

The system should feature dose reduction as main design A display should continuously indicate the dose. All dose measures taken should be reflected in a display in the Catheterisation room and the total of used dose should be noted in a the patient file. It should be possible selecting variable fluoro flavors instantly at the table side. There should be automatic variable fluoro filters to reduce patient dose, enhance image quality with the same dose.

Automatic wedge filter option should be offered.

Image processing should be made with recursive filtering

Image acquisition with automatic gap filling display on the monitor should be not less than 50 frame/sec in 512x512 matrix.

**Image processing function should include;**

Real time noise reduction without motion blurring

Real time edge enhancement

Real time contrast enhancement

Image magnification(Static and dynamic)

Simultaneous display of live.

Software (measurements and calculations should include;- Determination of stenosis (manual and automatic)

Determination of the vascular diameters and cross sectional area using the catheter size as a reference

Ventricle function evaluation with calculation of:

Cardiac motility (the techniques used should be stated)

Ejection function

Ventriculometry

Biplane ejection fraction is preferred and should be considered as an advantage

All other software available should be listed.

Cine -film camera, projector, film processor and 4 film magazine should be offered.

CD Recorder and duplication system should be offered. CD system should offer direct access to original and there should be no time consuming downloading to a hard disc.

Video recording on S-VHS and video printer should be offered. There should be video outputs for documentation and monitoring. The recorded images to VCR should be visible on the reference monitor at the acquisition room.

Angiographic Injection system with ECG triggering option should be offered.

Lead radiation protector, pieces of lead apron, pieces of thyroid mask, pieces of protective eyeglass, lead glass 80x100 cm should be offered /describe size.

**Technical Performance Parameters**

C-arms parameters, motion limits, table adjustments, minimum table height, patient accessibility, user friendliness; maximum patient weight should be stated.

X-Ray tubes and generator parameters should be stated. Anode heat storage capacity of the tubes should not be less than minimum 2.0 MHu and higher continuous loadability will be preferred. Voltage and current ranges, specific tube preparation time for acquisition should be mentioned.

Image intensifiers parameters, sizes, resolutions should be stated.

Monitor parameters, number of monitors, image rates should be stated, non interlaced flicker free monitors will be preferred. Reference and live images should be able to be displayed simultaneously on different monitors.

**02.01.01.17 Computer tomography system**

**Specifications:**

**Required Functional Capabilities:**

The required Computed Tomography system will be used in the radiology department . System should have 3<sup>rd</sup> generation low-voltage slip ring architecture and should be able to do volume (Spiral) scanning. Offered systems should be of the latest state of the technology having FDA approval and should meet to the specifications mentioned below.

**System Performance**

The system must have full multitasking capabilities to perform image display, analysis, MPR or 3D reconstruction ( if it is installed ) without interference to scan reconstruction in progress at the operators console (without second console)

The system must reconstruct the digital radiograph in real time as the patient moves through the x-ray beam.

The system must have scan cycle times as fast as 8 seconds including scan, reconstruction, display and archive to disk.

**Scanning Parameters**

System must be able to do full 360 degrees scan rotation at least between 2 and 6 seconds, adjustable in 4 steps.

It must be possible to scan with slice thicknesses at least between 2 and 10mm in 4 steps.

The minimum interscan time must be 0 sec.

The system must be able to do 15 scans/minute in dynamic scan mode.

### **Gantry**

The gantry must be able to tilt to both directions at least 25 degrees.

The gantry aperture must be at least 70cm

The system must have 2-way intercom for constant patient monitoring.

The gantry must have a safety ring located within aperture to prevent gantry/patient contact.

The gantry must have positioning lights for precise patient positioning, laser or incandescent

The gantry must have clearly visible led indicators, Readable from the operator's room, on the front of the gantry displaying table height, horizontal position and gantry tilt.

### **Patient Support**

The patient table must lower to 45cm minimum.

The patient table must be able to support 200kgs.

Accuracy must be +0.3mm at 135 kgs or better.

The scannable range must be higher than 110cm.

The patient must be able to scanned from apex of the head to the abdomen without metallic interference without having to move the patient on the table top.

The patient table must have emergency release for quick removal of the patient which will also place back into the same position from which they were removed

### **X-Ray Generation and Detection**

The system must have high frequency inverter with 100% duty cycle X-Ray generator with the following minimum requirements:

Power : approximately 24KW/ describe power

kV Range : approximately 120kV/ describe kv

mA Range : 50 to 200 mA (in 6 steps) /describe MA range

The X-Ray tube must have at least 3.5 MHU anode heat storage capacity with at least 700KHU/min cooling rate.

The X-ray tube should be under warranty for 100.000 slices.

The system must have xenon detector technology. Detector array must have at least 640 channels.

Total detector efficiency must be higher than 60%.

### **Computer System**

The system's computer system must have multiprocessor, multitasking architecture to achieve maximum processing power and streamline operation.

The system reconstruction matrix around 512x512. The reconstruction time of the standard image must be 3 sec or less in 512x512 reconstruction matrix.

The storage capacity of the system around 2GB and 2500 images in 512x512 matrix and it should be able to be expanded to around 4GB.

The system must have an erasable 2.6GB optical drive for storage of images, raw data and software loading.

Interface for laser documentation system should be on the system.

### **Image Review and Presentation**

The system should have image presentation functions such as image rotation, image reversal, multi-image display, image magnification etc.

The system should have image analysis functions such as distance, density profile, region of interest statistics, histogram grid display, CT number display, dynamic scan analysis.

The system should have image reformatting functions such as image subtraction, reconstructive zoom, reconstructive filters, matrix filters, annotation and cine display mode.

### **Volume Scanning**

The system must be able to do volumetric studies at least for 100 seconds continuously with 280 mAs and 120kV.

Table speed should be adjustable at least between 2 and 20mm/sec in 5 steps./describe

Slice thickness should adjustable at least between 2 and 10mm/sec in 4 steps./describe

It must be possible to start another volumetric acquisition without having to wait for the first set of images to complete reconstruction.

The system must be able to reconstruct an image from volume data not later than 8 seconds.



## 02.01.02. CT Scan

### **02.01.02.01 1<sup>st</sup> Generation (One detector, translation- rotation Pencil-beam) CT –Scan**

#### **X-RAY TUBE**

##### **ANODE**

Heat storage, hu (X-ray tube anode) ..... approximately 7,500,000

Heat dissipation rate, hu/min (X-RAY TUBE)..... approximately 1,386,000 max

Tube cooling (X-ray tube anode)..... Oil/air

Tube focal spot, mm (X-ray tube anode)..... 1.6 x 1.4, 0.9 x 0.8 (IEC standard)

POWER NEEDED..... 220 VAC, 50/ single phase

**N0 of slices (X-ray tube anode).....4**

Max scan time, sec (DISPLAY).....100

Max scan volume, cm (DISPLAY).....175

##### **GENERATOR**

Output, kw (X-RAY GENERATORS)..... approximately 60kw

Kvp range (GENERATOR)..... 80,100,120, 135/describe Kvp range

MA range (IMAGING SYSTEM)..... describe MA range

Max. patient weight, (precision), kg (Range of movement)..... approximately 205 (±0.25 mm)

Image enlarging scale (DISPLAY).....approximately Up to 20x/describe image enlargement

Per slice, sec (Reconstruction time).....0.5sec/describe

Hd capacity, GB (IMAGE STORAGE).....18, 36 raw data, max 4,000 rotations

##### **GANTRY**

Geometry (GANTRY).....Rotate-rotate, slip ring, multislice

DETECTOR (SCATTERED LIGHT).....Solid-state

Rows (GANTRY).....4

Rotation times, sec 360 (GANTRY)..... 0.5,0.75,1,1.5,2, 3; optional 0.4/describe

Partial (GANTRY)..... 0.32; optional 0.25

Slice thickness, mm (GANTRY).....0.5,1,2,3,4,5, 8 (all x 4); 10 (x 2)/describe

X-ray fan beam angle, Å° (GANTRY).....49 /describe

Gantry angle deg (GANTRY)..... ±30 /describe

Gantry size, hwxwd,cm (GANTRY)..... approximately 195 x 233 x 96 /describe size

Gantry weight, kg (GANTRY)..... approximately 1750kg/describe kg

Gantry opening, cm (GANTRY)..... approximately 72/describe

### **02.01.02.02 2<sup>nd</sup> Generation (Multiple detectors, translation-rotation Small fan-beam)**

#### **X-RAY TUBE**

##### **X-RAY TUBE ANODE**

Heat storage, hu (X-ray tube anode).....approximately 7,500,000

Heat dissipation rate, hu/min (X-RAY TUBE)..... approximately1,386,000 max

Tube cooling (X-ray tube anode).....Oil/air

Tube focal spot, mm (X-ray tube anode).....1.6 x 1.4, 0.9 x 0.8 (IEC standard)

POWER NEEDED.....220 VAC, 50/60Hz, 1-phase

N0 of slices (X-ray tube anode).....32

Max scan time, sec (DISPLAY).....100

Max scan volume, cm (DISPLAY).....175

##### **GENERATOR**

Output, kw (X-RAY GENERATORS).....60

Kvp range (GENERATOR)..... approximately 80,100,120, 135

Ma range (IMAGING SYSTEM).....1010-50 in 5 mA steps

Max. patient weight, (precision), kg (Range of movement)..... 205 (±0.25 mm)

Image enlarging scale (DISPLAY)..... Max # slices displayed simultaneously  
(DISPLAY).....Up to 20x

16 Per slice, sec (Reconstruction time).....0.5

Hd capacity, gb (IMAGE STORAGE)

18, 36 raw data, max 4,000 rotations

No. online images (IMAGE STORAGE)..... approximately 160,000

Archive (IMAGE STORAGE), DVD-RAM

#### **GANTRY**

Geometry (GANTRY).....Rotate-rotate, slip ring, multi slice

DETECTOR (SCATTERED LIGHT).....Solid-state

Rows (GANTRY).....4

Elements/row (GANTRY)..... approximately 34 x 896

# Detection channels (GANTRY)..... approximately 4 x 896

Rotation times, sec 360 (GANTRY).....0.5,0.75,1,1.5,2, 3; optional 0.4

Partial (GANTRY).....0.32; optional 0.25

Slice thickness, mm (GANTRY).....0.5,1,2,3,4,5, 8 (all x 4); 10 (x 2)

X-ray fan beam angle,  $\hat{A}^{\circ}$  (GANTRY)..... approximately 49.2

Gantry angle deg (GANTRY)..... approximately  $\pm 30$

Gantry size, hxwxd,cm (GANTRY)..... approximately 195 x 233 x 96

Gantry weight, kg (GANTRY)..... approximately 1750kg

Gantry opening, cm (GANTRY)..... approximately 72

### **02.01.02.03 3<sup>rd</sup> Generation (Multiple detectors, rotation- Large fan-beam)**

#### **X-RAY TUBE**

##### **X-RAY TUBE ANODE**

Heat storage, hu (X-ray tube anode)..... approximately 7,500,000

Heat dissipation rate, hu/min (X-RAY TUBE)..... approximately 1,386,000 max

Tube cooling (X-ray tube anode)..... Oil/air

Tube focal spot, mm (X-ray tube anode)..... appr. 1.6 x 1.4, 0.9 x 0.8 (IEC standard)

POWER NEEDED..... 220 VAC, 50/hz, 1-phase

N0 of slices (X-ray tube anode)..... 64

Max scan time, sec (DISPLAY)..... approximately 100

Max scan volume, cm (DISPLAY)..... approximately 175

#### **GENERATOR**

Output, kw (X-RAY GENERATORS)..... approximately 60

Kvp range (GENERATOR)..... approximately 80,100,120, 135

MA range (IMAGING SYSTEM)..... 1010-50 in 5 mA steps

Max. Patient weight,(precision),kg (Range of movement) 205 ( $\pm 0.25$  mm)

Image enlarging scale (DISPLAY)..... Up to 20x

Max # slices displayed simultaneously (DISPLAY)..... 16

Per slice, sec (Reconstruction time)..... 0.5

Hd capacity, gb (IMAGE STORAGE)..... 18, 36 raw data, max 4,000 rotations

No. online images (IMAGE STORAGE)..... approximately 160,000

#### **GANTRY**

Geometry (GANTRY)..... Rotate-rotate, slip ring, multi slice

DETECTOR (SCATTERED LIGHT)..... Solid-state

Rows (GANTRY)..... 4

Elements/row (GANTRY)..... approximately 34 x 896

# Detection channels (GANTRY)..... approximately 4 x 896

Rotation times, sec 360 (GANTRY)..... 0.5,0.75,1,1.5,2, 3; optional 0.4

Partial (GANTRY)..... 0.32; optional 0.25

Slice thickness, mm (GANTRY)..... 0.5,1,2,3,4,5, 8 (all x 4); 10 (x 2)

X-ray fan beam angle,  $\hat{A}^{\circ}$  (GANTRY)..... approximately 49

Gantry angle deg (GANTRY)..... approximately  $\pm 30$

Gantry size, hxwxd,cm (GANTRY)..... approximately 195 x 233 x 96

Gantry weight, kg (GANTRY)..... approximately 1750

Gantry opening, cm (GANTRY)..... approximately 72

### 02.01.03. Magnetic Resonance Imaging

#### **02.01.03.01 MRI, low field 0.1 - 0.3 Tesla**

##### Technical Specifications

- Clinical Application.....Whole Body
- Configuration..... Open MRI
- SurfaceCoils..... Head(Brain),spine,knee,Neck,Extremity,Sholder,Others
- Pulse Sequences:.... SE (Spin Echo ), FSE(Fast Spin Echo), GRE, Multi-ECHO,SE-Half Echo, SE-half Scan, IR, fat/water sat. ,STIR GE-STIR
- Imaging Modes:..... Single, Multi slice, Volume study, Multi angle
- FOv (Field of View).....around 44 cm
- Max Number of slices:.....approximately 128
- Display Matrix:..... approximately 512\*512 Full screen display
- Measuring matrix..... approximately 64\*64 to 512\*512
- Magnet Type..... Permanent
- Magnet Weight..... describe
- Power Requirement..... single phase 220v/50Hz or 3 phase 380v±10%
- Field Strength.....01-0.3T
- Strength..... approximately 15 mT/m
- Slew Rate..... 37.5 T/m/s
- Shimming..... Passive

#### **02.01.03.02 MRI, mid field 0.4 -1.0 Tesla**

**Description:-** MRI System, medium tesla, Open system

Magnetic Resonane imaging system with high mom

Minimum guaranteed and typical field homogeneity

Open magnet with large patient space and high homogeniety

Standard gradients and channel digital Radio Frequency System.

To be capable of routine Neuro, Body, Spine Orthopedic & Perpheral Vascular Imaging.

Minimum guaranteed and typical field homogeneity in ppm. Magnet shielding

##### **RF Coils**

Head

Cervical-thoracic-lumbar spine

Torso (chest, abdomen, pelvis)

Shoulder

Extremity coil for joints

General Purpose Flexible coil

##### **Standard Pulse Sequences**

Spin Echo

Inversion recovery including FLAIR

Fast Spin Echo with advancedMRA soft ware package

Single shot FSE for MRCP(MR cholangiopancreatography)

Gradient Echo

##### **Magnet Cooling system**

water

##### **Patient Table**

Maximum patient weight (specify)

Max - Scan Range (specify)

Vertical and Horizontal (specify)

##### **Computer Subsystem**

State of the art computer (latest operating system),

LCD, RAM, Hard Disk, & Optical disk Capabilities

##### **Standard accessories**

MR chiller, RF cabin, at least one set ofPhantoms, transformer

State of the art work stations

MR Injector, chairs

**Patient comfort facilities & Communications**

Radio Frequency shielding

Frequency range specify

Room shielding

Power requirements (specify)

Space requirements (specify)

**Training package:-** should be included

**Warranty period:-** should be specified

After sale service should be available at home

Film & film printing devices (specify)

Periodic software upgrading

**02.01. Multi Slice whole body Computed Tomography Scanning System**

Helical/ Volume Scanning facility

Multi detectors

Computers and softwares

A powerful and latest computer with at least 19 inch LCD monitor

large hard disk capacity and drives (specify)

Latest software

Work Stations (at least two)

dicom interface (dicom print / store)

3D & SSD software package

MIP / Min IP

couch extension

bolus tracking

Ct perfusion package

pediatric package

automatic injector & injector trigger

barcode reader

virtual endoscopy

calcium scoring

built in remote service software

Gantry

Minimum gantry aperture approximately 70 cm or more

Gantry tilt 30 degree or more

Field of view (specify)

Performance features

Minimum scan time (specify)

Minimum slice thickness (specify)

Maximum scan field (specify)

Specify reconstruction matrix & time

Specify interscan delay

Radiation dose-surface/100 mAs.

Helical scanning specification

Helical/volume/spiral scan (specify)

Specify the maximum possible rotations

Quote further extension of volumetric scanning as options.

Interscan delay in multi helical scan in seconds

Image reconstruction cycle time per image in seconds

Table top movement speed in mm/sec

Option of sub second cardiac scanning

Scanning at optimal contrast and high resolution

All equipment supplied should be capable of working with mains 220/240v and 50 Hz.

Laser imager conectable to the scanner

DICOM compatible printer / storage device

Accessories

Automtic injector, Chairs

Training package

specify waranty period

After sale service (specify)

Film & film processor

## 02.02. Color Doppler US /Ultrasound Machine

Application

Abdominal General

Paediatric

Breast

Obstetric/Gynaecological

Small parts (testis thyroid)

Superficial structures including musculoskeletal

Peripheral vascular

Cardiac

With biometrics for Gyn-Obs, Vessels, Cardiology & Urology

Image Mode

2D & 3D Imaging

Color Doppler

Pulsed Doppler/continuous with automatic tracing functions

TM mode

Power Doppler

Transducers (phased array, convex and linear probes)with multiple frequency options.

high resolution LCD monitor

Video out put

Printer-Thermal Printer CD, Flopy and Video Recording

Accessories (Biopsy set)

Training package

Radiologist

Service engineer

waranty (specify) **After sale service should be available at home**

## **02.03. Portable general Purpose U/S Machine**

**Application**

Abdomen

OBGY

Small parts

Two Transducer ports

Transducers 3-5 & 5-7.5 MHZ

TV Monitor

Video output

Printer-Thermal printer/optional

### 02.01.03.03 MRI, high field 1.0 - 1.5 Tesla

#### Technical Specifications

Clinical Application:.....Whole Body  
Configuration..... Open MRI  
Surface Coils..... Head(Brain), spine, knee, Neck, Extremity, Shoulder, Others  
Pulse Sequences: SE,FSE, GRE, Multi-ECHO,SE-Half Echo, SE-half Scan, IR, fat/water sat., STIR GE-STIR  
Imaging Modes:..... Single, Multi slice, Volume study, Multi angle  
FOv (Field of View)..... around 44 cm/describe size  
Max Number of slices:..... approximately 128  
Display Matrix:..... aproximatly 512\*512 Full screen display  
Measuring matrix..... 64\*64 to 512\*512/describe  
Magnet Type..... Permanent  
Magnet Weight.....approximately 11,000kg /describe  
Power Requirement.....3 phase 380v±10%  
Field Strength.....1.0—1.5T/describe  
Strength.....approximately 15 mT/m  
Slew Rate.....approximately 37T/m/s  
Shimming.....Passive

### 02.01.03.04 MRI, Very high field 1.5 & > Tesla

**Description:** MRI Equipment & Systems, High Field MRI, 1.5T 50Hz The MAGNETOM system is a high-performance MR imaging system. It combines patient-friendly design features with the benefits of 1.5T field strength in terms of short imaging time and high anatomical resolution. Its scale ability covers routine to clinical research MRI.

#### Unique Features:

High Patient Throughput

High Patient Comfort

Scalability from routine to clinical research

High Patient Throughput

The new Integrated Panoramic Array (IPA) coil technology optimizes the entire patient exam process. The need to position or change coils is virtually eliminated. IPA allows you to simultaneously scan with up to four coils.

Moreover, in close to 95% of all studies you do not have to change coils at all.

With Integrated Panoramic Positioning (IPP) you can select coils remotely as well as move the patient table. And to perform multiple exams, you just preprogram a sequence of exam steps.

Increased patient throughput up to 20 % per day compared to non-IPA systems

Optimized patient exam process with IPA coil technology

High patient comfort and acceptance

Ultra-short 1.6 m (5ft.3 inches) magnet bore length with approximately 60 cm (2 ft.) inner diameter and wide, flared approximately 120 cm (4 ft.) bore opening improves patient acceptance.

Floating table and attractive, compact design create a pleasant environment.

**MAGNETOM** Symphony - patient friendly design

Scalability from routine to clinical research

Powerful basic gradient system: Turbo Gradients with max. 20 mT/m and a Slew Rate of up to 25 T/m/s for outstanding clinical routine imaging.

Upgradeable gradient system: To Ultra Gradients with max. 20 mT/m and a Slew Rate of up to 50 T/m/s for 20% faster clinical advanced imaging, or to Quantum Gradients with max. 30 mT/m and a Slew Rate of up to 125 T/m/s enable 30% increased performance for clinical research applications.

Array configuration upgradeable to 8 and 16 simultaneously usable CP elements.

syngo - the comprehensive software solution for all medical imaging tasks and applications - optimizes clinical workflow.

syngo combines the advantages of standardized software with customer-oriented flexible solutions.

The task card concept supports parallel workflow and Scan Programs enable easy "single click exams".

**Coils:** CP Head Array, CP Spine Array, CP Neck Array, CP Body Array, CP Small & Lrg Flex 1.5 Tesla Actively shielded magnet, 20 mT/ m Gradients, Single console, Spin Echo, Turbo Inversion Recovery, 2D & 3D FLASH, 3D

FISP, FAT SAT, MIP & MPR, 2D & 3D Turbo SE, Turbo FLASH, HASTE, Advanced 3D Imaging, Head/ Neck MRA Imaging Software, Phased Array, Ethernet Twisted Pair Connection, Comfort Kit,

#### 02.01.04 MRA

#### 02.01.04.01 Magnetic Resonance Angiography

#### 1.1 ANGIOGRAPHIC C-ARM SUPPORT

##### Specification

System Configuration		
Item	Description	
Catheterization table		
X-ray tube	G-1582BI-W, G-1593 BI-W or equivalent tube	
X-ray image recording unit		
FPD	9 inch, 17 inch	
System	Digitex safire	Heart SPEED 10 (1.1. system)
X-ray high voltage generator		
Digital angography system		
A system to reconfigure 3D image for radiographing blood vessels		

Item	Description
Space required for installation	Specifay (Depth x width x ceiling Height)
Operational service mass	specifay (kg) (not including the base plate)
Power source	Single phase: AC 220v $\pm 10\%$ , 50/Hz with adaptor
Type/degree of protection against electrical shock	Class I, B-type Equipment

Item						Description	
I m a g e  S y s		X-ray image recording unit	1.1.	FPD			
		Type	D242 (9 inch. 1.1.) D310 (12 INCH 1.1.) D395 (16 inch 1.1.) Specifay	260 x 248 (9 inch FPD) /specifay 482 x 452 (17 inch FPD)/specifay			
	Grid	Grid ratio	10:1	10:1	15:1		
		Grid density	44 Lines/cm	44 Lines/cm	80 Lines/cm		
				(9 inch FPD)			
				50Lines/cm			
				17 inch FPD			
		Intermediate material	Fiber (Non-metal)				
		SID	9 inch 1.1.	PA: 90 to 115 cm			
			12 inch 1.1. (Standard)	AP: 90 to 110 cm			
			12 inch 1.1. (with extended SID option)	PA 95 TO 120 cm PA 95 TO 110 cm			
	16 inch 1.1.		PA 99 TO 124 cm AP: 99 to 110 cm				
	9 inch FPD		PA: 90 to 115 cm				

t e m				AP: 90 to 105
			17 inch FPD	PA: 95 to 120 cm AP: 95 to 105 cm
	Distance between focus & center of rotation		73 cm	
	Magnification at the center of C-arm		1.23 to 1.58 (9 inch 1.1./FPD(Flat panel detectors) & 12 inch 1.1. (standard) 1.30 to 1.65 (12 inch 1.1. (with extended SID(source Image distance) option), 17 inch FPD 1.36 to 1.70 (16 inch 1.1.)	
	Travel distance of imge system		approximately 25 cm	
	Travel speed of image		Maximum 8.0 cm/sec Maximum 6.0 cm/sec (1.1.)	

## 1.2. X-Ray High Voltage Generator SPECIFICATION

Unit Name			
Radiography technique			Fluroscope diagnosis DR acquisition
Number of Connectable X-ray tubes			1 tube
Setting range *1 *2	Radiography	Tube voltage	40 to 150 KV 10 to 1000 mA
		Tube Current	any 12 of the following positions permitted by the x-ray tube can be used for each focus: 1000, 900, 800, 710, 630, 560, 500, 450, 400, 360, 320, 280, 250, 220, 200, 180, 160, 140, 125, 110, 100, 90, 80, 71, 63, 56, 50, 40, 36, 32, 25, 22, 20, 18, 16, 14, 12, 11, 10 mA
			0.5 to 800 mAs
		mAs	Set from the following 65 positions. (500 mAs upper limit for AEC radiography) 0.50, 0.56, 0.63, 0.71, 0.80, 0.90, 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12.5, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800 mAs
			0.001 to 10 sec
		Time	Set from the following 81 positions. (can't be set with an mAs value below 0.5 or above 800 mAs. (500 mAs upper limit for AEC radiography) 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 71, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, 400, 450, 500, 560, 630, 710, 800, 900 ms 1.0, 1.1, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.2, 2.5, 2.8, 3.2, 3.6, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10 sec
	Fluoroscopy	Tube Voltage	50 to 125 KV
		Tube current	0.3 to 20 mA
		Time	Total Time 99 min 99 sec
Radiography programs			Advanced anatomical program method, offering up to 400



		types of user-created radiography conditions.
Display method		Liquid-crystal display of radiography condition, etc.
Seeting method		touch panel
Self-diagnostic functions		displayed on touch panel
Nominal supply voltage (50/60 Hz)	400 V System	380 VAC, 3-phase
	200 V System	/220VAC, single –phase
Recommended switchboard transformer capacity		approximately 75 KVA
Rated out		80 KW (100Kv, 800 mA) ( IEC 60601-2-7, 1998) Product of tube voltage and max. current that can flow in 0.1 s at 100 KV tube voltage
Short-time rating *2		150 kV 500 mA, 125 kV 630 mA, 100 kV 800 mA, 80 kV 1000 mA
Nominal max. tube voltage and max. Tube current that can flow at nominal max. tube voltage *2		Short-time rating: 150 kV 500 mA Long-time rating: 125 kV 12 mA
Max. tube current and max. tube voltage to achieve max. tube current *2		Short-time rating: 80 kV 1000 mA Long-time rating: 75 kV 20 mA
Tube voltage and tube current combination for max. electrical output *2		Short-time rating: 80 kV 1000mA, 100 kV, 800mA Long-time rating: 125 kV 12 mA 75 kV 20 mA
Min. tube current time product		0.5 mAs
Nominal min. exposure time (AEC radiography)		3 ms
Long-time rating *2		125 kV 12 mA 75 kV 20 mA
	Operation panel	308 (w) x 345(h) x 82 (D) mm/specifay
	Control cabinet	700 (w) x 1805 (H) x 400 (D) mm/specifay
	operation panel	approximately 2 kg/specifay
	Control cabinet	approximately 250 kg/specifay
Number of connectable X-ray tubes		1 tube

\*1 Setting range differs according to the X-ray tube type

\* 2 Limited according to the X-ray manunty tube type

### High Speed Rotation Starter

#### General

High speed rotation starter is apower supply unit to rotate the anode of rotating anode x-ray tubes of 1.5 MHU, 1.0 MHU, 750 KHU, 600 KHU, and 400 KHU, etc. This unit is of compact design and mountable in a 19-inch rack.

#### Features

This unit has the following features it is:

designed for rotating anode x-ray tubes made by differnt manufacturers

Compatible with Q (Quick) starter that can start up the aonde in much shorter time, in addition to the conventional R (Regular) starter,

Selectable between AC braking and DC braking (In Installation),

Possible to hold high speed and low speed anode rotation with spot fluoroscopy technique, mountable in a floor case (option)

#### Specifications

**Input ratings**

Voltage ..... AC 220  $\pm$  10% Volt

Frequency ..... 50 Hz

Grounding resistance ..... No greater than 100 ohm

**Out put Ratings**

a) High speed rotation:

Voltage 150V, 220V, 275V, 340V, 425V, 500V, 550V, 600V (rectnagular wave out put) Frequency 180 Hz, 220V, 275V, Frequency 50 Hz

Intermittent drive: Power is supplied intermittently with the same specifications as above (a) and **Braking:-**

Ac braking 150V, AC 220V, AC 275 V (rectangular wave output)

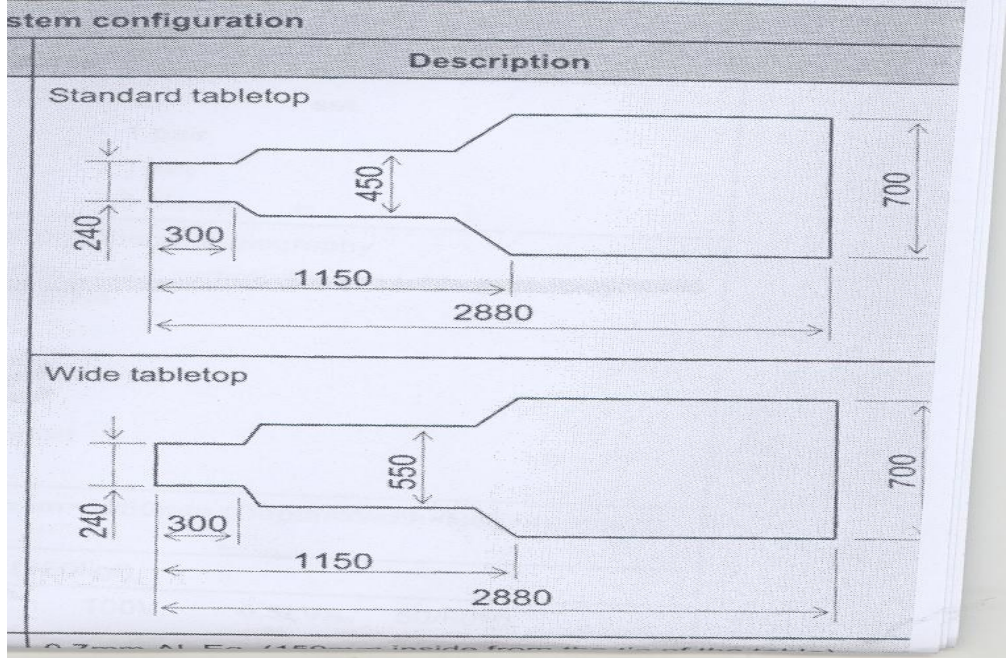
Frequency 50 Hz

Phase shift capacitor: 66  $\mu$ F (Q-stator), 30  $\mu$ F (R-stator)

DC braking DC 140V, DC 210V, Dc 260 V

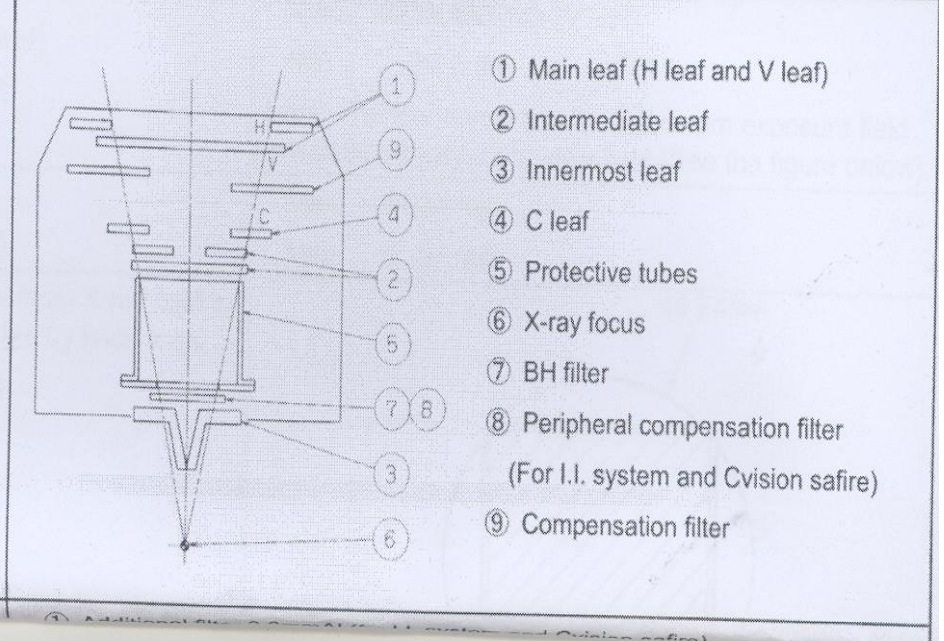
\* The voltages vary within  $\pm$  10% of the above values with the variation of supply voltage.

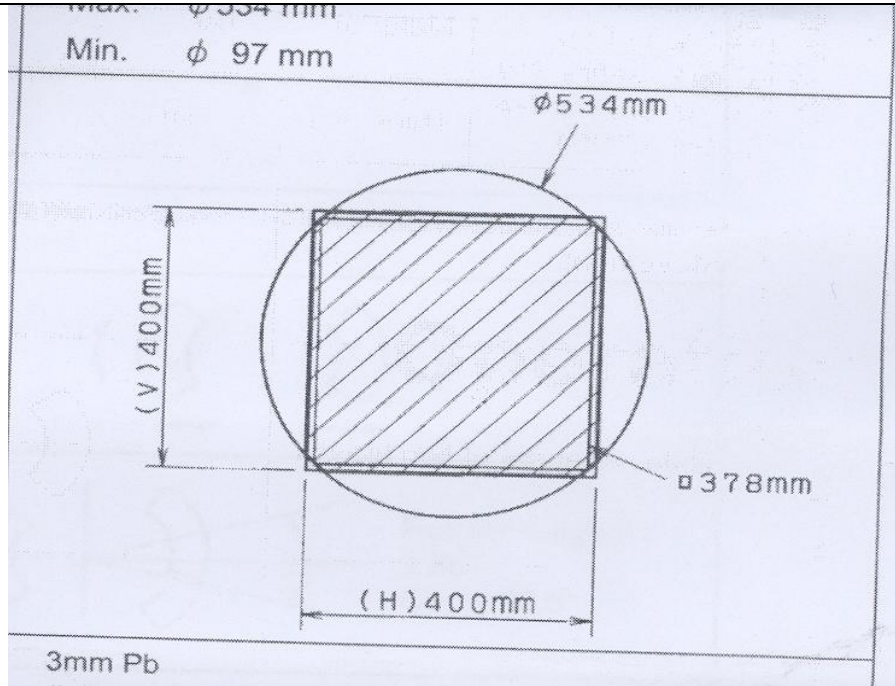
**1.4. Catheterization Table****Specifications**

Item	Description	
Tabletop size		
Distance between tabletop surface and floor	0.7 mm Al. Eq. 9150 mm inside from the tip of the table) 0.8 mm Al. Eq. (800 mm inside from the tip of the table)	
Longitudinal slide of tabletop	Full stroke	approximately 135 cm
	Control	Manual
	Locking system	OFF brake (magnet locking system)
Transversal slide of tabletop	Stroke	$\pm$ 15 cm
	Control	Manual
	Locking system	OFF brake (magnet locking system)
Vertical movement of tabletop	Stroke	approximately 36 cm
	Control	Motor-driven
	Speed	13.2 mm/s (50 Hz), 15.8 mm/s (60 Hz)

Rotation of column	Stroke	CW 90 <sup>0</sup> / CCW 180 <sup>0</sup>
	Control	Manual
	Locking system	OFF brake (solenoid locking system)
Driving unit for peripheral angiography (option)	Number of steps	6 steps maximum saved (for peripheral DSA option)
	step speed	1.6 sec/25 cm
	exposable range	135 cm (at maximum)
	exposure interval	2 sec. (when the step interval is 25 cm)
	stopping accuracy	±1 mm
Allowance load mass (Based on IEC 60601-2-43)	2270N (227 kgf) (Patient must lay on the tabletop) + 1000N (100kgf) (for CPR, at CPR position)	
Standard accessories	Grip switch                      1 set Foot switch                      1 set Tabletop mattress              1 piece Arm support (carbon)        1 Set Arm support                      1 pair Drip stand                        1 set Cable hook                       6 pieces	
Optional accessories (option)	Driving unit peripheral angiography Injector head mount (for catheterization table mounting MARK-V Base plate peri console Arm grip sub rail Radial arm support Full mattress	
	Outline dimensions	(4230 x 1200 x 1250) mm (D x W x H) (KS-70 only)
	Mass	approx. 3500N (350 kgf)
	Power requirements	Single phase 100V, 0.5kVA, 50 Hz/ describe Three Phase 200V, 1KVA, 50 Hz/ describe <b>Note:-</b> power should be supplied from the reinforced insulation transformer
Class/degree of protection against electric shock	Class I, Type B equipment	

## 1.5. Collimator

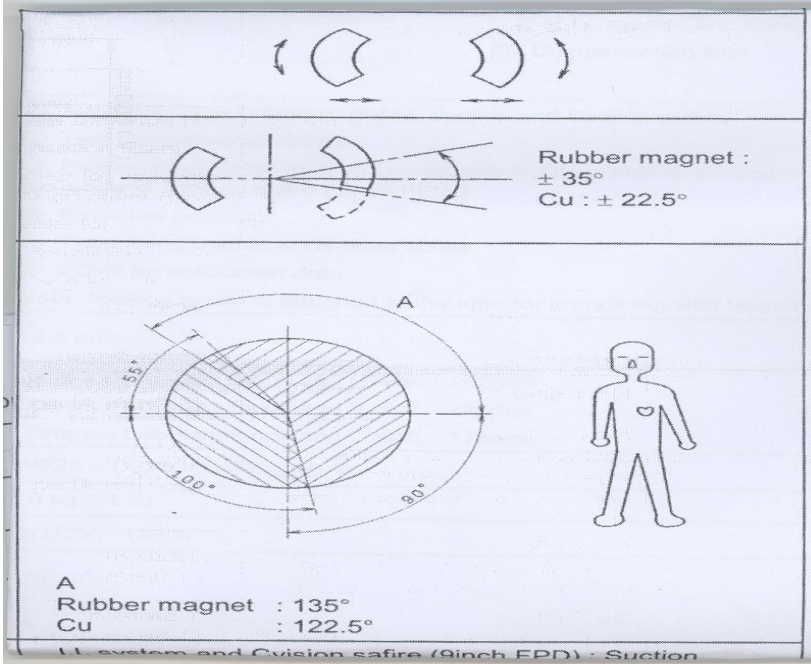
Item	Details
Constitution	 <p>① Main leaf (H leaf and V leaf)  ② Intermediate leaf  ③ Innermost leaf  ④ C leaf  ⑤ Protective tubes  ⑥ X-ray focus  ⑦ BH filter  ⑧ Peripheral compensation filter  (For I.I. system and Cvision safire)  ⑨ Compensation filter</p>
Accessories	Additional filter 0.6 mmAl (for 1.1. system and Cvision safire) Two Compensation filters Rubber magnet for making compensation filter (3 mm in thickness) (for 1.1. system and Cvision safire (9 inch FPD)) /describe size Back leaf protector Tube fixing countersunk head screw CD-R for calibration data Note: Inching screw is attached to the tube for combining with varian.
Distance between focus and fixing surface	64.5 mm/describe size
Distance between focus and each leaf	Distance between focus and H leaf: 252 mm/ describe size Distance between focus and V leaf: 238 mm/ describe size Distance between focus and C leaf: 175 mm /describe size
Dimensions	W225 x D225 x H200 mm/describe
Power supply	DC 12V, 13VA (optinal) describe
Max. applicable X-ray tube voltage	Aproximatly 150 kVP
(Rctangular (H leaf and V leaf) (at SID 100 cm)	Max. 400 x 400 mm (V x H) /describe size Min. 0 x 0 mm Note: The four corners in the maximum exposure field are slightly beyond the view field (see the figure below)
C leaf ( at SID 100 cm)	Max. Ø 534 mm Min. Ø 97 mm

X / r a y  F i e l d		The actual maximum X-ray field is the area encircled by thick lines. (at SID 100 cm)		
Main leaf Pb equivalent		3 mm Pb ( Intermediate leaf and C leaf: 2 mm Pb each)		
Leaf driving system		Motor-driven		
F i l t r a t i o n	B H  F i l t r e r	No. 1 filter	2 mm Al + 0.1 mm CU (5 mm Al eq. at 2.5 mm Al. HVL)	
		No. 2 filter (for 1.1. system, Cvision safire, Digitex safire SP/ BRANSIST safire 17 inch FPD and BRANSIST safire 9 inch FPD	1 mm Al + 10 $\mu$ m Au (2.7 mm, Al eq. at 2.5 mm Al HVL)	
		No. 2 filter (for Digitex safire SP/BRANSIST safire 9 FPD SP except ...	1mm Al (1.0 mm Al eq. at 2.5 mm Al HVL)	
		No. 3 Filter for 1.1. system and Cvision safire)	1.5 mm Al (1.5 mm Al eq. at 2.5 mm Al HVL)	
		No. 3 filter (for Digitex safaire SP/ BRANSIST Safire)	1.5 mm Al + 0.3 mm Cu (9.7 mm Al eq. at 2.5 mm Al. HVL)	
		NO. 4 filter (for Digitex safire SP/BRANSIST Safire)	1.5 mm Al + 0.6 mm Cu (16.0 mm Al eq. at 2.5 mm Al. HVL)	
			0.5 seconds:    No.1 filter $\leftrightarrow$ No. 2 filter No. 2 filter $\leftrightarrow$ No. 3 filter No. 4 Filter $\leftrightarrow$ No.1 filter 0.7 seconds:    No. 1 filter $\leftrightarrow$ No. 3 filter	



			No. 2 filter ↔ No. 4 filter
			1.0 seconds: No. 3 filter ↔ No. 4 filter

### 1.6. Compensation Filter

Item		Details		
C o m p e n s a t i o n  f i l t e r	System Cvision safire (9 inch FPD) Digitex safire SPI BRANSIST safire (9 inch FPD)	Material	Rubber magnet (Approx. 6 – 8 mm Al eq/mm 70 kVp)	
	Cvision safire (17 inch FPD ) Digitex Safire SPI BRANSIST safire ( 17 inch FPD)	Thickness	approximately 3 mm	
		Material	Cu	
		Thickness	1 mm	
	Movement			
	Reliable angle of two leaves			
	Movable range			
	Mounting			i.i. system and Cvision safire (9 inch FPD): Suction derived from magnetic force of filter itself Digitex safire SP/BRANSIST safire and vision safire (17 inch FPD): Fixing by screws
	Peripheral compensation filter (Note)	Material and thickness	Max. 1 mm Cu	
		Fixing of filter	Fixed	
		Application	Both for fluoroscopy and radiography	
Note: For 1.1. System and Cvision safire				

02.01.05 Nuclear Medicine Instrument

**02.01.05.01 PET (Positron Emission Tomography)**

**02.01.05.02 SPECT (Gamma Camera/single photon emission CT)**

**02.01.05.03 Planar nuclear medicine**

**02.01.06. Nuclear Medicine Radiography(**

### 02.01.06.01 CT-PET

PET/CT is an advanced level of nuclear medicine imaging instrument with highest level of sensitivity and resolution compared to the other nuclear medicine imaging instruments indicated earlier. It is extensively used nowadays for organ imaging to precisely diagnose the disease of the organ or tissue or the organ system. It is the nuclear medicine molecular imaging device useful to sort out the abnormality of tissues and organs at cellular or molecular level.

- STORAGE CAPACITY (APERTURE)..... approximately 100 GB HD
- Cooling, btu/hr (WORK AREA REQUIREMENTS).....Water cooled

#### DETECTOR CHARACTERISTICS

- Detector rings (DETECTOR CHARACTERISTICS).....24
- Ring diameter, cm (DETECTOR CHARACTERISTICS)..... approximately 82
- NO of crystals (DETECTOR CHARACTERISTICS)..... approximately 9216
- Crystal size, mm (DETECTOR CHARACTERISTICS)..... approximately 6.45 x 6.45 x 25
- Axial fov, mm (DETECTOR CHARACTERISTICS)..... approximately 162
- No crystals/pmt (DETECTOR CHARACTERISTICS)..... approximately 16

#### IMAGE RECONSTRUCTION

- Image uniformity (IMAGE RECONSTRUCTION).....<10%
- Reconstruction time, sec (IMAGE RECONSTRUCTION).....<3/CT slice; FBP <90/frame  
<300/frame

#### PATIENT TABLE

- Vertical motion, cm (PATIENT TABLE).....48-91 cm
- Horizontal motion, cm (PATIENT TABLE)..... approximately 145 cm
- Patient weight limit kg (lb) (Tabletop)..... 204(450)
- DIMENSIONS (HXWXD) CM, (IN) (DISPLAY)..... App. 188x 288 x 158 (74x 113 x 62)
- Patient port diameter, cm (GANTRY)..... approximately 70
- Patient positioning system (GANTRY).....Triple laser

#### DETECTOR PERFORMANCE

- System sensitivity, cps/ $\mu$ Ci/cc (DETECTOR PERFORMANCE).....999000
- Dispersion fraction (DETECTOR PERFORMANCE).....<35% septa out
- Maximum count rate, cps 50% dead time (DETECTOR

PERFORMANCE)..... .800000

- Resolution, mm Transaxial FWHM 0cm rad, statny (DETECTOR
- PERFORMANCE)..... approximately 6.3
- 10cm rad, statny (DETECTOR PERFORMANCE)..... approximately 6.8
- Axial FWHM 0cm radius (DETECTOR PERFORMANCE)..... approximately 4.7
- 10cm radius (DETECTOR PERFORMANCE)..... approximately 7.1

### 02.01.06.02 CT-SPEC

**Description: SPECT** is the rotating gamma camera. It is the nuclear medicine imaging instrument useful to carry out the scanning procedures for various tissues and organs of our body to diagnose different diseases. It is very useful to conduct the functional or physiologic studies of our body in relation to the disease under examination.

#### Detector and Gantry Physical Specifications

##### Detector Dimensions

Field-of-View (FOV)..... approximately 53.3 x 38.7 cm (21 x 15.25 in.)

Diagonal FOV ..... approximately 63.5 cm (25 in.)

##### Crystal

Size ..... approximately 59.1 x 44.5 cm (23 x 17.4 in.)

##### Photomultiplier Tubes

Total Number.....around 59

##### Detector Shielding

##### Gantry Dimensions (specifay)

Height.....around 225 cm (88.7 in.)/ describe

Width..... around 231 cm (91 in.)/describe  
 Depth ..... around 75.3 cm (29.7 in.)/describe  
 Axis of Rotation (from Floor) ..... 104 cm (40.9 in)/describe  
 Distance  
 between SPECT and CT FOV ..... around 136 cm (53.3 in)/describe

#### **SPECT Motions**

Average Autocontour Distance ..... around 1.1 cm (0.45 in.)/describe  
 Max. Radial & Lateral Speed ..... around 72 cm/min. (28.3 in./min.)/describe  
 Max. Lateral Position Left/Right..... 11.9 cm (4.7 in.)/10.2 cm (4.0 in)/describe  
 Max. CW/CCW Rotation Det 1 ..... 365°/180°  
 Ring Rotation Range ..... 540°  
 Rotational Accuracy..... 0.1°  
 Rotational Speed..... 0.03 - 3.0 RPM  
 Center of Rotation..... ≤ 0.25 pixel (64 x 64 matrix)  
 Max. Caudal Tilt..... ± 16

**Tube Details:** Following parameters should be specified by the buyer based on requirements (non-diagnostic / diagnostic CT)

Tube current: mA  
 Tube Voltage: kV  
 Heat storage capacity: MHU  
 Anode heat storage capacity: MHU  
 Focal spot size: mm  
 Rotational time: Second.  
 Temporal resolution with heart view CT option: micro Second  
 Single continuous spiral scan time: Seconds  
 Power generator: state kW/ describe

#### **Filter Assembly:**

Al-Equivalent: state mm  
 Beam limiting device: state mm

- 02.01.06.03 PET-MRI
- 02.01.06.04 Radio-chromatogram scanner
- 02.01.06.05 Radio isotope dose calibrator
- 02.01.06.06 Whole body scanner
- 02.01.06.07 Rectilinear scanner
- 02.01.06.08 NaI scintillation counter
- 02.01.06.09 Radioisotope hole counter
- 02.01.06.10 Gamma Counter
- 02.01.06.11 Double channel radio isotope uptake machine

#### **02.01.06.12 Gamma spectrometer**

**Description:** Gamma ray spectrometry is an analytical method that allows the identification and quantification of gamma emitting isotopes in a variety of matrices. In one single measurement and with little sample preparation, gamma ray spectrometry allows you to detect several gamma emitting radionuclide in the sample. The measurement gives a spectrum of lines, the amplitude of which is proportional to the activity of the radionuclide and its position on the horizontal axis gives an idea on its energy.

#### **Applications of gamma ray spectrometry include:**

monitoring in nuclear facilities,  
 health physics,  
 nuclear medicine,  
 research in materials,  
 bioscience,



environmental science, and  
industrial uses of radioisotopes.

### **Technical Specifications**

**Resolution:** 3 kilo electron volts (keV) per channel linear response

Gamma energy: nse 20 keV to 3 mega electron volts (MeV) with a cosmic window above 3.5 MeV

Dead time: zero (live time clock adjusts for loss of system measured pile-up rejections to give an apparent dead time ensuring absolute count rate is correct)

**Sampling rate:** per second with capability range of 0.1 to 10 per second

**Count rate:** Up to 250,000 counts per second

**Spectral Stabilization:** Automatic spectral stabilization at approximately every two minutes to maintain the peak position +/- 0.2 percent over 1024 channels

**Detector Unit:** 2" x 2" NaI detector with PM-tube (<7.5% resolution), HV-supply and lead shield container

**Multi-channel Analyzer:** Amplifier, 1024 channel 50 MHz Wilkinson ADC, Discriminator, Microprocessor Card, RS232 Interface and Power Supply. Complies with EMC directives for CE marking.

**Software:** Describe

### **02.01.07 Ultrasound**

#### **02.01.07.01 General purpose ULTRASOUND MACHINE**

Digital Ultrasound scanner with digital beam former System should be capable to handle multi frequency probes from 3.0 MHz to 9.0 MHz or above. Built-in Trolley System.

Multi frequency Convex Probe with center frequency 3 to 5 MHz

Multi frequency Micro Convex Probe with center frequency between 5 to 7.5 MHz

Multi frequency Linear Probe with center frequency between 5 to 7.5 MHz

Biopsy adopter for any probe

Modes: B.M and combination thereof.

M. Mode sweep: 4 speed or more.

Gray scale: approximately 256

Sensitivity time gain: 8-12 steps

Depth: approximately 24 cm or more/describe

Focusing system: 3 steps and dynamic

Adjustable acoustic power

Frame rate: approximately 80 frame / sec or more

Keyboard: Alpha numeric with track ball / Touch pad

Tissue Harmonics: Tissue Harmonic imaging

Cine memory of approximately 64 frames minimum

Post processing: Image inversion, edge/echo enhancement correlation /

Persistence/Dynamic range/Gamma Curve.

Image magnification 4x or more in real time.

Monitor: 12" CRT or LCD / TFT

Two probe connectors or more

#### **Accessories:**

Thermal Printer 256-Gray scale

High Density / High Glossy thermal paper Rolls

Gel: specifay liters

Voltage 220V, 50 Hz

#### **02.01.07.02 GYN/OBS Ultrasound Machine**

**Description:** Ultrasound Machine OB/GYN Vasc Cardiac, with doppler capability

#### **Important features and details.**

Studies performed: Pulsed, CW, Color, Doppler, M Mode, 2D

Ultrasound VCR included

Machine based with sector probe options (software package), frequency 3-5Mhz

Video Printer included Cardiac & Vascular Calculation Packages

Micro fine Grayscale Imaging  
 Adaptive Image Processing  
 Real-time Compound Imaging  
 Integrated Stress Echo Package  
 Color Doppler, Color Angio & Colorization  
 Spectral Steered PW & CW Doppler  
 Tissue Doppler Imaging  
 M-Mode  
 Automated Patient Atomization  
 Cineloop Review & High Definition Zoom  
 ECG  
 High Resolution Non-Interlaced Monitor

**Additional accessories**

Curved Array Convex Transducer  
 Convex abdominal Transducer  
 Curved Array Convex Transducer  
 4V 8-4Mhz Broadband Curved array Endovaginal Transducer  
 0-9.0Mhz Endovaginal Transducer  
 Linear approximately 38mm Transducer, /describe size  
 Linear approximately 38mm Transducer, /describe size  
 Phased Array Cardiac Transducer,  
 Phased Array Cardiac Sector Transducer,  
 General Purpose Sector Transducer,  
 Pediatric Cardiac Sector Transducer,

**02.01.07.03 ECHO-Cardiograph**

**Description/Required Functional Capabilities:**

Ultrasound diagnostic system, convex, linear and sector scanning for routine diagnostics in the field of abdominal, obstetrics/gynecology and also certain cardiology examinations.

**The unit should be equipped as follows:**

**Technical Features and Technical Performance Parameters:**

main system, with 9 inch monitor black and white  
 probe selector  
 gel bottles  
 approximately 3.75 MHz convex transducer for general abdominal application  
 approximately 2.5 MHz convex transducer for general abdominal and gynecology application  
 approximately 3.75 MHz linear array transducer for abdominal investigation  
 approximately 5.0 MHz convex transducer, pediatrics  
 approximately 5.0 MHz trans- esophageal transducer  
 approximately 5.0 MHz trans-rectal transducer  
 video with printer  
 black and white paper  
 complete with manuals, accessories and starting up consumable  
 power requirements: 220 V/50 Hz

**02.01.07.04 Doppler,fetal heart detector,**

**General Description:**

Doppler, fetal heart detector, with accessories

**Technical Specifications:**

Doppler based fetal heart rate detector with amplifier loudspeaker  
 Transducer frequency, approx: 2 MHz  
 Light weight, handheld, easy to operate and carry (pocket size)  
 Transducer probe with fixed wire connection to the main unit, length approx. 35 cm /describe size  
 Detector diameter approx. 20 mm /describe size  
 Large LCD shows foetal heart rate (FHR) in beats per minute (bpm), pulse indicator, sound volume level

Display reports system status, including low battery and malfunctions, with audiovisual alert  
 Built-in loudspeaker with volume adjustment  
 Advanced noise suppression system assures quality diagnostic sound  
 Operates on approximately two 1.5V, AA batteries/Optional  
 Autonomy, approx 1000 one-minute examinations

**Supplied with:**

Tube of ultrasound gel  
 Set of 2 batteries 1.5 V AA / (optional)  
 instructions for use

**Packaging and labelling:**

Product labeling shall meet the essential requirements

**02.01.07.04 Doppler/Vascular Doppler**

**Description:** Fetal Doppler Ultrasound (hand held)

**Applications:** Detect fetal life early in pregnancy.

Assess the rate and rhythm of the fetal heart

**Specification**

integrated speaker

heart rate display

soft carrying case

Ultrasonic Frequency around .... 2.36 MHz

**Power Source** Two AA 1.5V alkaline batteries/ describe

**02.02. Radiotherapy**

02.02.01. Radiotherapy equipment

**02.02.01.01 cobalt 60 tele therapy machine)**

**Description:** COBALT-60 TELETHERAPY MACHINE

External beam radioteraphy using gama ray emeting from radio active Co-60

**Application/Use**

Radiation therapy/radiation oncology - external beam therapy

**Standard Composition**

- Gantry
- Head Assembly
- Control Console
- Treatment Couch/Patient Support Assembly
- Machine Interlock System
- Control Mechanism
- Beam Stopper (optional)
- Machine Installation
- Power Requirement
- Accessories
- Other Requirements
- Other Terms and Conditions

**Technical Specifications**

<b>Gantry</b>	Rotation	0°-360° in either clockwise or counter clockwise direction at a variable speed with the possibility of a small angle of movement using mechanical interlocks and manual controls. Motorized with isocentric set-up.,	
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Head Assembly	Precision	Within $\pm 1^\circ$	
	Rotation and direction	Can be controlled from the pendant	
	Shutter system	Mechanically reliable and fail-safe shutter system (fail-safe source drive)	
	Swiveling	Not less than $\pm 180^\circ$ away from the isocenter by a motor drive	
	With swing movement of source head		
	Radiation source	Loading capacity: not less than 8000 R/hr at 1 m	
		Diameter: not greater than 2 cm	
		Output: not less than 130 R/min at 1 m	
	Protective source Housing (as per Sec. 29 of PNRI CPR Part 12 and ICRP 33)	Beam control mechanism "OFF" position: • maximum exposure rate from leakage radiation at one meter from the source: 10 mR/hr • average exposure rate from leakage radiation at one meter from the source: 2 mR/hr	
		Beam control mechanism "ON" position: • exposure rate from leakage radiation at one meter from the source <b>shall not exceed 1 R/hr or 0.1% of the useful beam exposure rate</b>	
	Collimation system	Manually driven	
		Field size: square or rectangular treatment field of at least 5 cm x 5 cm or smaller to a maximum of 30 cm x 30 cm or bigger at the center of rotation in centimeter scale indicator	
		Equipped with an optical field light indicator for visual indication of field size	
		Equipped with manual distance and optical distance indicator for source-skin distance (SSD) up to 60-120 cm that projects an illumination scale on the patient skin and 80 cm source axis distance (SAD), isocentric with accuracy within $\pm 2$ mm	
		Transmitted exposure rate from defining apparatus must not exceed 5% of the attenuated beam	
		Collimator rotation: preferably manual with rotational range minimum of $180^\circ$ ( $\pm 90^\circ$ ) about the beam axis at a continuously variable speed. If motorized, availability of manual operation in case of motor failure	
		With a motor drive mechanism that provides "ON" and "OFF" motions of source position	
	Source drawer	With signal lamps in both the source head	

	mechanism	and the main control station to indicate that the source is in the “ON” position	
		With capability to draw back automatically into “OFF” position by a spring force in the event of electrical power failure and to stay on the “OFF” position until reactivated from the control panel	
		With manual retraction capability when the source return mechanism fails	
<b>Control Console</b>	Dual timer		
	Power ON-OFF switch		
	Digital timer display and set treatment time display	Either in minutes in scale of 0.01	
	Reset switch to restart System	Must automatically terminate the exposure after a preset time	
	Emergency stop button	Shuts down treatment at any time	
	Treatment technique selector switch for	<ul style="list-style-type: none"> <li>• Fixed therapy</li> <li>• Rotation arc therapy</li> </ul>	
	Ready for irradiation light		
	Irradiation start switch		
	Indicators for	Fault light	
		Wedge	
		Collision	
		Door interlocks	
	With capability to reset all interlocks prior to energizing the machine		
	Gantry angle display	Beam ON position	
	Pilot lamps for	Beam OFF position	
		Source in transit	
	With independent battery in case of power failure for timer display only	(220 VAC +/-15%, 50 Hz )	
<b>Treatment Couch/ Patient Support Assembly</b>	Movement	Vertical (motorized control)	
		<b>Patient Support</b> Lateral (manual control)	
		<b>Assembly</b> Longitudinal (manual control)	
		With variable speed and corresponding	
	Hand-controlled and capable of manual operation in the extent of motor failure with electromagnetic locking device		
	Table top rotation	±180°	
		Manually operated with index marks used to	

		indicate when table top is in central position	
		Provided with speed control	
	Isocentric rotation	$\pm 180^\circ$	
	Must have no rails for posterior oblique field		
	Must have removable plates with clear view for posterior field		
	In case of power failure	Couch shall automatically lock on its current settings (not be free wheeling)	
<b>Machine Interlock System</b>	Locking device during radiation treatment for	Gantry	
	Inclusion of external interlocks, door switches, warning lights and emergency shut-offs in the treatment room	Collimator	
		Field size	
		Patient support assembly	
<b>Control Mechanism</b>	In the "ON" position	The source and beam collimating device be accurately aligned	
	Must be capable of acting in any orientation of the housing		
	When the door to the treatment room is open	The beam control mechanism must automatically and rapidly return to the "OFF" position where it shall remain "OFF" until the door is again closed and the machine is manually reactivated from the control panel	
	It shall not be possible to switch the beam control mechanism to the "ON" position from inside the treatment room		
	Source will remain in the "OFF" position or return to "OFF" position if any emergency control Switches are operated. This is accompanied by		

	an audible alarm both inside and outside the treatment room		
<b>Beam Stopper</b>	Retractable	(option)	
<b>Machine Installation</b>	Warning lights	Automatically switch “ON” when radiation is being produced or even when the machine controls have just been set to produce radiation	
		Designed into a fail safe circuit that is tied into the interlock system so that radiation cannot be produced if any of the warning lights have burned out	
<b>Power Requirement</b>	220 VAC, 50 Hz	All sizes and shapes including lung and kidney blocks, 5 cm thick with insert screws and nuts	
<b>Accessories</b>	Shielding (lead) blocks/ beam shaping blocks		
	Wedge filter	15°, 30°, 45°, 60° for all field sizes available for the above indicated angles	
	Table tray and shadow tray including attachments		
	Patient arm and leg support		
	Penumbra trimmer		
	Mechanical front and back pointers		
	One set cassette holder	Stand type or post assembly	
	Isodose curves data and charts	For various SADs and field sizes, open fields and with various wedge angles	
	Light localizing device (isocentric lights)	Ceiling/sagittal and 2 side/lateral lights; accuracy within $\pm 1$ mm	
	Water phantoms		
	Closed circuit TV monitor	With radio intercom	
	Mechanical and optical distance indicator		
	Three (3) radiation pen Dosimeters (Personal radiation Dosimeters) optional		
	Radiation level monitor		
	One (1) survey meter		
	Radiotherapy dosimeter		
	Standard spare parts for five (5) years of:		

	(Standard spare parts based on company recommendation)		
	one pc barometer		
	One pc Thermometer		
	One (1) pc caliper		
	Patient immobilizing strap		
	Tangential breast device and breast cone		
	Accessory attachment device		
	Head rest		
<b>Other Requirements</b>	air-conditioning unit		
	air-conditioning unit optional	split-type	
		3-ton capacity/describe size	
		220 VAC +/-15%, 50 Hz	
		with automatic voltage stabilizer, 170-260 V voltage range	
	Automatic voltage Stabilizer	60 Hz, 170-260 V voltage range for the whole cobalt-60 machine	
	Dehumidifier	one unit (optional)	
	Two sets each of	operation and instruction manuals	
		service and installation manuals	
		maintenance manuals	
		wiring and schematic diagrams	
		parts listing	
<b>Other Terms and Conditions</b>			
Source Replacement and Maintenance:			
<ul style="list-style-type: none"> <li>• Certification that unit manufacturer also manufactures replacement sources for the bidded cobalt-60 unit.</li> <li>• Certification that the supplier has the capability for corrective and preventive maintenance of the unit</li> <li>• Certificate/s of training for engineers/maintenance service personnel in model offered</li> <li>• Certification of availability of replacement parts and repair services for the next twenty (20) years</li> </ul>			
Equipment must pass the acceptance testing of the based on international or national protocol)			
not less than 2 years warranty for parts and service after passing the acceptance testing of the Radiation Health Service (RHS), Department of Health (DOH)			
Must comply with the applicable requirements for licensing by. Relevant national responsible outhorithy			
Certification of manufacturer guaranteeing delivery of equipment and all Accessories			
The unit should conform to the International Electrotechnical Commission (IEC) standards or its equivalent.			



The supplier must submit the original brochure.	
Supplier to submit cost of service contract for parts and service after the warranty period	

### 02.02.01.02 Linear Accelerator

**Description:** Medical Linear Accelerator used for treating cancer – fast and focused.

#### Technical Specifications

#### Nominal Treatment Beam Energies

Low X-ray (MeV)	High X-ray (MeV)	Electron Energy Range (MeV)
4	10	5 – 15
6	–	6 – 21
6	6 / 7 UF	6 – 21
6	10	6 – 21
6	15	6 – 21
6	18	6 – 21
6	23	6 – 21
6	25*	6 – 21

The energy of the photon beam is defined as the percentage ionization for a 10 cm x 10 cm field with 100 cm Target-to-Surface Distance (TSD) measured on the central axis at 10 cm depth in water, relative to the central axis ionization at the depth of maximum ionization (dmax).

The energy of the electron beam is defined as the depth of the 80% ionization in water on the central axis for a 15 cm x 15 cm fixed electron applicator (95 cm) with 100 cm TSD. Depth values are given as the distance from the water surface to the center of a 0.084 cc thimble ionization chamber.

## 2. X-ray Beam Parameters / Specifications

### 2.1 Maximum Depth and Relative Ionization in Water

dmax measured for a 10 cm x 10 cm field with 100 cm TSD unless another field size is listed in the table. The off-axis ratios at the depth of maximum ionization for each X-ray energy in the table below will not exceed 110%.

#### Low X-ray (MV) Dose Rate for X

Nominal Energy (MV)	dmax (cm)	% Ionization at 10 cm Water
4	1.0 ± 0.2	63 ± 1
6	1.5 ± 0.2	67 ± 1
7 UF	1.7 ± 0.2	64 ± 2
10	2.5 ± 0.2	74 ± 1
15	3.0 ± 0.2	77 ± 1
18	3.2 ± 0.2	78 ± 1
23	3.5 ± 0.2	80 ± 1
25	3.6 ± 0.2	81 ± 1

### 2.2. X-ray Dose Rate

The fixed dose rate available for a 10 cm x 10 cm field, measured at dmax on central axis for 100 cm TSD, is shown in the table below.

Low X-ray (MV MeV) / min)	Dose Rate for X Low (MU MeV / min)	High X-ray (MeV)*	Dose Rate for X-ray High (MU MeV)
4	50 & 200	10	50 & 300
6	50 & 300	–	–

6 /min.	50 & 300	7 UF	up to 2,000 MU MeV
6	50 & 300	10	50 & 500
6	50 & 300	15	50 & 500
6	50 & 300	18	50 & 500
6	50 & 300	23	50 & 500
6	50 & 300	25*	50 & 500

### 2.3 X-ray Flatness and Symmetry

Flatness (%), 4 – 23 MV MeV: 3

Flatness (%), 25 MV MeV : 5

Symmetry, Mean Value (%): 5

#### Measurement conditions:

- 10 cm x 10 cm and greater field size
- 10 cm depth of water (5 cm depth for energies below 6 MV MeV)
- 100 cm Target-to-Axis Distance (TAD)

Flatness specifications do not apply for 7UF Beam energy

### 2.4 X-ray Field Size

System Configuration	Min Field Size at Isocenter (cm x cm)	Max Field Size at Isocenter (cm x cm)
Counterweight	0 x 0	40 x 40
Retractable Beam shield (ONCOR Impression only)	0 x 0	40 x 39.2

#### Over travel (cm)

X-leaves (outer collimators) 10cm/describe size

Y-jaws (inner collimators) 10cm /describe size

Z-jaws (inner collimators) 10cm/describe size

Primary Collimator Circular Field Size	Nominal Size (cm)
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At 100 cm TAD	50
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### 2.5 X-ray Penumbra

Penumbra (mm)/ describe size

Penumbra (mm)/ describe size

#### Measurement conditions:

(Maximum distance along the major axes between the 80% and 20% points) of the absorbed dose

- 10 cm x 10 cm (MLC) / describe size
- 10 cm depth of water (5 cm depth for energies below 6 MeV)
- 100 cm TAD / describe size

### 2.6 Dose Monitor Linearity and Reproducibility

Measurement Conditions	Linearity Dose Rate of	Reproducibility
Over a period of five working days (Eight working hours / day)	50 MU MeV / min (%)	

4 / 10 MeV energy configuration

- Programmed range of 21 MU MeV to 1,000 MU MeV for Monitor 1  $\pm 1 \leq 1$  MU MeV or 2%, whichever is greater

All other energy configurations

- Programmed range of 21 MU MeV to 1,000 MU MeV for Monitor 1  $\pm 1 \leq 1$  MU MeV or 2%, whichever is greater

### 2.7 Beam Formation

Beam Formation Time

Beam stability typically achieved within 250 (msec) ;

Beam Formation 250 msec, whereby mostly might be faster (to 170 msec)

### 2.8 X-ray Arc Therapy

The dose-per-degree (MU MeV / °) for X-ray arc therapy is based on the fixed-beam dose rate.

Beam Formation Time (msec) days (eight working hours / day) MU MeV / min	Dose-per-Degree Range MU MeV / °	Linearity Arcs greater than 60° upon completion	Reproducibility Over a period of five working upon completion
1000	0.67 to 33.0	1 MU MeV or 2%, whichever is greater	2 MU MeV or 3%, whichever is greater
500	0.67 to 10.0	1 MU MeV or 2%, which ever is greater	2 MU MeV or 3%, whichever is greater
300	0.33 to 5.0	1 MU MeV or 2%, whichever is greater	2 MU MeV or 3%, whichever is greater
200	0.33 to 5.0	1 MU MeV or 2%, whichever is greater	2 MU MeV or 3%, whichever is greater

### 3. Electron Beam Parameters / Specifications

The Linear Accelerators come with six use reselectable electron energies (the configuration has five electron energies), unless configured as a photon energy system only. The electron energies are either defined by a package

plastic blocks are used in the buildup region to measure the dose. The values are expressed as a percentage of dmax

Nominal Energy (MeV) Depth (cm)Depth (cm)	Maximum Surface Dose (% dmax)	Relative 30% Ionization Depth (cm)	Relative 80% Ionization Depth (cm)
5	77	2.5	1.7 ± 0.2
6	79	2.8	2.0 ± 0.2
7	81	3.2	2.3 ± 0.2
8	83	3.7	2.7 ± 0.2
9	85	4.1	3.0 ± 0.2
10	87	4.6	3.4 ± 0.2
12	90	5.3	4.0 ± 0.2
14	92	6.0	4.5 ± 0.2
15	93	6.8	5.0 ± 0.2
16	93	7.3	5.3 ± 0.2
18	93	8.2	6.0 ± 0.2
20	93	9.3	6.5 ± 0.2
21	93	9.4	6.7 ± 0.2
5	77	2.5	1.7 ± 0.2
6	79	2.8	2.0 ± 0.2
7	81	3.2	2.3 ± 0.2
8	83	3.7	2.7 ± 0.2
9	85	4.1	3.0 ± 0.2
10	87	4.6	3.4 ± 0.2
12	90	5.3	4.0 ± 0.2
14	92	6.0	4.5 ± 0.2
15	93	6.8	5.0 ± 0.2
16	93	7.3	5.3 ± 0.2
18	93	8.2	6.0 ± 0.2
20	93	9.3	6.5 ± 0.2
21	93	9.4	6.7 ± 0.2

### 3.2 Dose Rate MU / min)

Normal Dose Rate MU MeV / min): 300

High Dose Rate (MU MeV / min): / 900

Measurement conditions:

- 15 cm x 15 cm fixed field applicator
- Measured at central axis at point of maximum ionization
- 100 cm TAD

### 3.3 Flatness and Symmetry

The maximum value of the ratio of the absorbed dose (averaged over not more than 1 cm<sup>2</sup>) anywhere in the radiation field at the depth of 0.5 mm to the maximum absorbed dose on the radiation beam axis does not exceed 109%.

#### Flatness for Fixed Field (%)

Nominal Energy (MeV)

- Two points 1.5 cm inside 50% beam intensity

#### Symmetry (%)

15 cm x 15 cm and greater field measured along central axis at d<sub>max</sub> size

- Relative to the beam intensity on the central axis
- Measured at d<sub>max</sub>
- 100 cm TSD

#### Approximate dimensions

-	10 cm x 10 cm	15 cm x 15 cm	20 cm x 20 cm	25 cm x 25 cm
5	5	6	6	6
6	4	5	5	5
7	4	5	5	5
8	4	5	5	5
9	3	4	4	5
10	3	4	4	4
12	3	3	4	4
14	3	3	3	4
15	3	3	3	4
16	3	3	3	4
18	3	3	3	4
20	3	3	4	4
21	3	3	4	6

### Electron Beam Linearity and Reproducibility

#### Electron Beam Lin MU / min (%)

Linearity Dose Rate of 50 MU MeV / min (%): 2

Reproducibility ≤ 1 MU MeV or 2%, whichever is greater

#### Measurement conditions:

- Over a period of five working days (eight working hours / day)

### 1.6 X-ray Contamination

The X-ray contamination of the electron beam is measured in water (phantom) on the central axis 10 cm beyond the depth at which the electron beam intensity is 10% of the maximum value.

#### Nominal Energy (MeV)

#### X-ray Contamination (Maximum %)

3	0.5
4	0.5
5	1.0
6	1.3
7	1.5
8	1.7
9	2.0
10	2.0
12	2.0
14	3.0
15	3.0
16	3.2
18	3.5

20	4.0
21	4.0

### 3.6 Electron Arc Therapy

The dose-per-degree (MU MeV / °) for electron arc therapy is based on the fixed-beam dose rate.

#### Electron Dose-per-Degree Range (MU / °)

Minimum	Maximum
2	10

#### Electron Arc Linearity and Reproducibility for Arcs Greater than 60°

##### Linearity

MU MeV or 2%, whichever is greater

##### Reproducibility

2 MU MeV or 3%, whichever is greater

### 4. Leakage and Transmission

% of Un-Attenuated Useful Beam

#### Radiation to the patient plane

0.1

- Over a circular area of 2 m radius
- Centered on and perpendicular to the central axis of the beam at isocenter
- Outside the projection of the primary collimator

#### Radiation outside the patient plane

0.1

- 1 m from the path of the accelerated electrons
- Measured with a 30 cm<sup>3</sup> ionization chamber with a 1 cm thick buildup cap

#### Collimator transmission

- Max value measured according to IEC 601-2-1 international standard
- The X-ray transmission through one set of adjustable collimator jaws

1.0

### Dosimeter System

The dual dosimetry system consists of an X-ray dose chamber and a thin-walled electron dose chamber, and is arranged in a primary / secondary combination. Dose monitor readouts display four digits.

The primary dose monitor system terminates the treatment when reaching coincidence with the pre set value. Backup termination is provided by the secondary dose monitor and time interlock systems.

In case of power failure during treatment, MU MeV s, arc, and time values, as well as all other treatment setup parameters, are stored in nonvolatile memory for recovery.

### Mechanical Parameters and Control

#### 6.1 Gantry

-	<b>Resolution (°)</b>	<b>Accuracy (°)</b>
-	0.1	± 0.5

Gantry	Value
Nominal rotation range (°)	± 190
Nominal speed (RPM)	1.0
Nominal speed (° / sec)	6.0
Nominal target-to-isocenter distance (cm)	100

#### Isocenter Information

#### Value

Radiation isocenter to mechanical isocenter maximum distance

The distance does not exceed 1.0 mm, independent of the supported energies, gantry, collimator and table positions, and beam shaping devices.

CAX* maximum deviation	All radiation beams have a central axis, that intersects within a sphere of 1.0 mm radius for all supported energies, gantry, collimator and table positions, and beam shaping devices.
Isocenter height	The nominal distance between floor and isocenter is 130.8 cm.
Nominal target-to-isocenter distance (cm)	100

## 6.2 Field Parameter\*\*

X-ray-to-Light Field Coincidence: 2 mm or 1%, whichever is greater

### Measurement conditions:

- Corresponding X-ray field edge (50% intensity at dmax)
- Visible field edge of light field
- 100 cm TAD
- Field sizes 5 cm x 5 cm to 40 cm x 40 cm/ describe size
- At all gantry positions

### Dimensions and Weights (should be mentioned )

#### 02.02.01.03 Brachytherapy

##### Technical specification

All performance specifications and tests shall confirm to the relevant standards of IEC and ISO. alternatively, the following recommendations made by AAPM (68 – 70) should be used:

Manual emergency source retraction

Automatic source retraction in the event of a power failure

Source position accuracy and reproducibility of +/- 1 mm

A minimum of three source channels for intracavitary and endoluminal treatments with more source channels being highly desirable for breast, prostate, rectal and sarcoma implants

A TPS including optimization and treatment parameter transfer to a treatment unit

Automatic correction for source decay  $^{192}\text{Ir}$  or  $(^{192}\text{Ir})$

Dummy source simulation before treatment

##### Safety Compliance

Compliance with safety requirements is necessary, as described in the BSS and the relevant IEC international standards

##### Accompanying documents

The documentations shall comply with the BSS and IEC international standards:  
performance specifications;

Operating instructions

Installation documents including requirements on shielding, power, ventilation, compressed air or any other items;

Preventive maintenance and service manuals;

source exchange instructions

##### Acceptance tests

Acceptance tests to show compliance with agreed upon specifications will be performed by a medical physics expert, and a satisfactory result is a precondition for payment.

##### Warranty and service

The terms of the warranty and service contract should include:

The warranty should be for two years starting after formal acceptance.

Maintenance and service (preconditions for the purchase of equipment):

Training for in-house engineers, should be included industrial/onsite training .

Training for technologist/appropriate professional onsite .

service by the manufacturer at national or regional level should be available; the address of the nearest

service location, as well as the number and qualifications of the maintenance engineers at that location (second line service), should be indicated.

when the above fails to solve the service request, an engineer from the factory should be available in less than one week (third line service).

permanent service support by an immediate specialized response by telephone and/or by email; consultation for repair and maintenance in a language understandable to the user should be available.

spare parts kit should be included. specify which spare parts needed.

The International Standards Organization (ISO) for radiation sources.

The following features are required:

- (a) A source positioning reproducibility to  $\pm 1$  mm;
- (b) Automatic source retraction in the case of a power failure;
- (c) An intermediate source storage container;
- (d) A minimum of three source channels for intracavitary and endoluminal treatments (but four source channels are highly desirable);
- (e) A remote nurse alarm station.

### AFTERLOADING BRACHYTHERAPY

All performance specifications and tests shall conform to the relevant standards of the IEC [30, 67] and the ISO [33–35]. Alternatively, the following recommendations made by the AAPM [68–70] should be used:

- (a) Manual emergency source retraction;
- (b) Automatic source retraction in the event of a power failure;
- (c) Source positioning accuracy and reproducibility of  $\pm 1$  mm;
- (d) A minimum of three source channels for intracavitary and endoluminal treatments — with more source channels being highly desirable for breast, prostate, rectal and sarcoma implants;
- (e) A TPS including optimization and treatment parameter transfer to a treatment unit;
- (f) Automatic correction for source decay in the case of  $^{192}\text{Ir}$ ;
- (g) Dummy source simulation before treatment.

### General remarks

The equipment will be supplied with all interconnection devices necessary for a correct and total functioning in the country of destination. the minimum level of equipment recommended for HDR brachytherapy is as follows:

an area radiation monitor in the treatment room, connected to the door interlock with an audio signal safe against power failure and independent of treatment equipment.

A portable radiation monitor instrument at the entrance of the treatment room.

Highly recommended: an area radiation monitor with an audio signal at the entrance to the treatment room.

emergency container and emergency source handling devices at the entrance of the treatment room door.

equipment for applicator localization and identification (e.g. an x-ray unit).

Dummy sources for applicator localization.

a treatment couch adapted for HDR brachytherapy: gynaecological and bronchial equipment (leg rests, film cassette holders, anaesthesia requirements. etc.).

A set of applicators for intracavity and endoluminal treatment.

a device for applicator fixation to treatment couch.

The minimum equipment recommended for implementing quality assurance programmes in brachytherapy is given in the table below:

Items of equipment	Types of installation		
	Manual LDR	Remote HDR	Remote HDR
A well type ionization chamber or an isotope calibrator with source holding inserts, Calibrated at a standards laboratory for the clinical sources available	X	x	X

If Cs-127 sources are not available,a long lived reference source for checking the stability of the well chamber	X	x	X
A facility to verify source homogeneity and source position(requires access to film development)	X	x	X
A barometer (minimum scale : 1 mbar or 0.5mmhg);preferably of aneroid type or digital, calibrated or compared at a standards laboratory (if not available in external vradiotherapy)	X	x	X
Calipers and a metal ruler	X	x	X

### Radioactive Sources

The radioactive nuclides used mostly in remote afterloading systems are  $^{60}\text{Co}$ ,  $^{137}\text{Cs}$ , and  $^{192}\text{Ir}$ . The first two offer longer half-lives but lower specific activities than achieved with  $^{192}\text{Ir}$ . Hence,  $^{60}\text{Co}$  and  $^{137}\text{Cs}$  sources are used in LDR, MDR, or HDR devices designed for intracavity treatment with applicators that have larger inner lumens that accommodate the larger diameter (3-to-4-mm). Higher activity  $^{192}\text{Ir}$  sources with smaller diameters (about 1-mm) are best for intraluminal HDR treatment. however, the 73.8-d half – life of  $^{192}\text{Ir}$  necessitates three to four source changes yearly at very high annual cost.

#### 02.02.01.04 Orthovoltage

**Description:-** Treatment machine

#### Technical specification

All performance specifications and tests shall confirm with the standards of IEC for therapy X-ray generators and of the ISO /IAEA for the radiation sources.

#### Support systems

The Ceiling or floor mounted support system for the X-ray tube assembly permit movement in all three orthogonal planes, together with rotation about two orthogonal horizontal axes. If the movement is motorized, provision shall be made for a motion in actuator.

#### Couch tables

There should be a wheeled patient support table (preferably with height adjustment), and the table surface should be non-absorbent.

#### Control consoles

The control console should be included:

A dual timer and a timer/ ionization chamber dose control system;  
selectable Kilovoltage settings interlocked to filter interlocks on the treatment head.

#### X-ray generators

The x-ray generator should include

single phase high frequency generator or A three phase X-ray generator or with a voltage regulator(optional);  
a generator to operate at a range of Kilovolts about 300kV./describe

#### Optional accessories

A range of filters appropriate to the available kilovolts;

A range of applicators

#### Safety Compliance

Compliance with the safety requirements in the BSS and the international standard / IAEA of IEC shall be substantiated by providing the results of type tests according to IEC. international standard /IAEA

#### Accompanying documents

The documentations shall comply with the BSS and IAEA/international standard IEC standards. according to the BSS “performance specifications and operating and maintenance instructions ... should be provided in ENGLISH

#### Acceptance test

A medical physics expert shall perform an acceptance test verifying compliance with the present specifications, and a satisfactory result of the acceptance test

#### Warranty and service



The terms of the warranty and service contract should include:

The warranty should be for two years starting after formal acceptance.

Maintenance and service (preconditions for the purchase of equipment):

Training for in-house engineers, should be included industrial/onsite training .

Training for technologist/appropriate professional onsite .

Service by the manufacturer at national or regional level should be available; the address of the nearest

service location, as well as the number and qualifications of the maintenance engineers at that location (second line service), should be indicated.

When the above fails to solve the service request, an engineer from the factory should be available in less than one week (third line service).

Permanent service support by an immediate specialized response by telephone and/or by email; consultation for repair and maintenance.

Spare parts kit should be included. Specify which spare parts needed.

Users training on the machine should be available

#### **General remarks**

The equipment will be supplied with all interconnection devices necessary for a correct and total functioning in the country of destination.

#### **Considerations in the interpretations of specifications**

##### **Generating potentials and Filters**

The depth dose of an Orthovoltage machine depends on both the generating potential used and the filtration. The penetration is specified in terms of the half-value layer (HVL) of aluminium or relevant material, depending on the energy. For a given Kilo voltage settings, it is possible to have more than one filter yielding more than one HVL..with high energy potential of the HVL filter will increase or vice versa it is advisable to select a small subset from these e.g. 50, 90, 140 and 250 kv and to place the other filters where they can not be used in error.

##### **Applicators**

A range of applicators is usually provided as standard. These are often at two different source-skin distances: a choice of two from 15, 25 and 30, which are common treating distances for generating kilovoltages up to 150 kV, and 50 cm for higher energies. The dose rate from a low kilovoltage machine will be less than that from a high kilovoltage machine, and for this reason shorter applicators of the same size but with different treating distances are not used on the same machine. This is because it is easy to confuse applicators, and treating at 15 cm distance with a dose rate measured at 25 cm will result in a 278% overdose. It is not necessary to have a different applicator for every field size required, as it is possible to use lead cut-outs to reduce the area treated by a particular applicator. Typical applicator requirements are shown in the following table.

**Table:- Typical applicators with their clinical uses**

<b>SSD Of 50 cm</b>	
8 x 20 cm	Spinal and long bone metastases
20 x 20 cm	Brain metastases
20 x 10 cm	Fungating breast lesions
10 x 10 cm	General use
6 x 6 cm	General use
<b>Short SSDs</b>	
2 cm diameter	Skin
4 cm diameter	Skin
4 x 10 cm	keloids, lip

#### **02.02.01.05 Conventional Treatment, Simulators (Treatment planning system)**

##### **TECHNICAL SPECIFICATIONS**

All performance specifications and tests shall confirm with the international standard of IEC for radiotherapy simulators and of the ISO for radiation sources. The specifications given are the minimum acceptable. For more

advanced radiotherapy techniques, higher performance specifications may be desirable, and recommendations or those are given in brackets. It is an essential requirement that a simulator can simulate all the set-ups possible on the treatment machines. Where the rest of the equipment in a department has already been identified, specifications (e.g. the focus isocentre distance) can be tailored to the corresponding therapy equipment.

### **Gantries**

The gantry should have the following characteristics:

motorization of gantry with isocentric design;

A gantry rotation of 0 – 360°;

An x-ray focus to isocentre distance of 80 cm – 120 cm (depending on the local equipment);

An isocentre height above floor level  $\leq 130$  cm;

An isocentre maximum sphere diameter of 3.0 mm (2.0 mm preferred);

Control of parameters inside the treatment room.

### **X-ray housings and collimators**

The X-ray housing and collimators should meet the following requirements

The X-ray tube and housing should be with a rotating anode, even in fluoroscopy. there should be two foci.

The X-ray beam should be collimated by a motorized diaphragm with both local and remote control

The field should be defined by wire, independent of the X-ray beam diaphragm, motorized and with both local and remote control

The projections of the wires should be  $\leq 2.5$  mm at the isocentre./describe size

The collimator rotation limits should be  $\pm 1000$  (manual and/or motorized rotation).

The optical distance indication range – source-axis distance (SAD) should be  $SAD \pm 20$  cm.

The maximum field size at the isocentre should be  $\geq 30$  cm x 30 cm at 100 cm from the focus (40 x 40) cm preferred.

The minimum field size at the isocentre should be  $\leq (5 \times 5)$  cm (3 x 3) cm preferred.

An asymmetric setting of the jaw positions is desirable.

The light/radiation field congruence should be  $\leq 2$  mm.

There should be a transparent shadow tray.

### **Couch tables**

couch tables should meet the following requirements:

X-ray transparency of the table top;

Isocentric rotation limits of  $\pm 900$ ;

A patient lateral motion range of  $\pm 20$  cm;

Motorized vertical movement, with a minimum height of  $\leq 80$  cm not less than 40 cm below the isocentre, and up to at least 3 cm above the isocentre;

A longitudinal range of  $\geq 70$  cm; /describe size

Sag of table top of  $\leq 5$  mm with a patient of 80 kg./ describe size

### **Remote control consoles**

Movement and light controls should be provided together with the appropriate X-ray control switches: gantry, collimator, image intensifier and couch.

### **X-ray generators**

X-ray generators should include:

FLUORO/radiography;

About 30kW high frequency generator; otherwise  $\geq 50$  kW;

Radiography: about 125 kVp and 300 mAs. Fluoroscopy: up to about 15 mA

### **Image systems**

Imaging systems should include;

An image intensifier with a diameter about 23 cm; /describe size

lateral and longitudinal movements of the image intensifier;

A maximum vertical source to input screen distance of  $\geq 175$  cm;

all size cassette film holder, including four cassettes;

monitor TV  $\geq 15''$  /describe size

### **Options and accessories**

Options and accessories include:

Three lasers for patient centrifuge;  
A front pointer;  
anticollision devices

#### **Safety compliance**

Compliance with the safety requirements given in the BSS and the international standards of the IEC shall be substantiated by providing the purchaser of the equipment with a quotation of the results of type tests according to the international standard IEC.

#### **Accompanying Documents**

The accompanying documents shall comply with the BSS and **IEC international** standards. According to the BSS, performance specifications and operating and maintenance instructions shall be provided in a major world language. The users are primarily RTTs and maintenance personnel, but also physicians and radiation oncologists may use the equipment.

#### **Acceptance tests**

An acceptance test to comply with the present specifications will be performed by an expert in medical radiation physics.

#### **Warranty and service**

The terms of the warranty and service contract should include:

The warranty should be for two years starting after formal acceptance.

Maintenance and service (preconditions for the purchase of equipment):

Training for in-house engineers, should be included industrial/onsite training .

Training for technologist/appropriate professional onsite .

Service by the manufacturer at national or regional level should be available; the address of the nearest service location, as well as the number and qualifications of the maintenance engineers at that location (second line service), should be indicated.

When the above fails to solve the service request, an engineer from the factory should be available in less than one week (third line service).

Permanent service support by an immediate specialized response by telephone and/or by email; consultation for repair and maintenance.

Spare parts kit should be included. Specify which spare parts needed.

Users training on the machine should be available.

#### **General remarks**

The equipment will be supplied with all the interconnection devices necessary for a correct and total functioning in the country of destination.

#### **Additional requirements for multileaf collimators**

If a department is equipped with MLCs on its accelerators, it is important that the simulator should be equipped to plan for these devices. Some method of displaying the intended leaf positions superimposed on the radiographic image should be provided. (This can be through computer generated graphics on the monitor). It will also be necessary to have a method of transferring these data electronically to the treatment machine.

### **02.02.01.06 CT-Simulators**

#### **Specification**

##### **CT Scanner**

Whole body spiral, multi-slice (Minimum 16 slices per rotation or more) CT scanner system should have following essential features

##### **Gantry**

Apertures of at least 80 cm/ describe size

Scan field of view of at least 50 cm or more

Extend field of view of minimum 70 cms for radiotherapy should be available.

The gantry must have laser positioning lights with a positioning of  $\pm 1$  mm or better

##### **Couch**

The couch top material must be carbon fibre with minimum dimensions of 235 x 40 cm, having horizontal moving range of 170 cm or more. The speed of horizontal movement must be variable with a maximum speed of at least 100 mm per second. The accuracy (reproducibility) of the table must be better than  $\pm 0.25$  mm. The scannable

horizontal range should be at least 150 cm or more. The couch must meet the following vertical movement ranges: 55 to 95 cm when outside the gantry; within the gantry it must have a moving range of 20 cm; the minimum weight of 180 kg or more without any change in stated performance specifications (like the positioning accuracy).

The couch top must be a carbon fibre, flat bed type. It must be a state-of-the-art, indexed couch top matching the linear accelerators'/cobalt-60 couch tops to facilitate accurate treatment delivery with ease and convenience.

#### **X-ray system**

High frequency generator with power rating of atleast 90 to 140 kw.

The mA range must be from 30 to 400 or better, with step size of 5 mA or better.

peak anode heat dissipation rate of at least 800kHU/min or better

X-ray tube should have dual focal spot. size of the focal spot should be mentioned.

#### **detectors**

The detector system should be a high performance, low noise, high data density, active response data density, acquisition system.

The detectors should be solid state.

It should be free from repeated calibrations

There should be multiple detectors for taking a minimum of sixteen slices at a time

#### **Scan parameters**

Slice thickness should be at least sub-millimeter

Kv: 40 kv– 140 KV

mA: 30 – 400 mA

Scan time of 0.5 second or less for full 360 degree rotation.

retrospective reconstruction should be possible on raw data files with change in parameters such as FOV.

starting with a cold tube, the maximum helical scan distance using a sub-millimeter imaged slice thickness and a pitch of 1.5 should be 1500 mm or more.

The possible Scanning models are ScanoGram, Axial and spiral

The scanogram length should be more than 1500 mm long and the width must be at least 500 mm, and from AP or PA or left to right or viceversa.

The accuracy of slice prescription from the scanogram (taken at isocenter distance) must be better than  $\pm 0.5$  mm or better

The accuracy of distance measurement in the scanogram (taken at isocenter distance) must be better than  $\pm 0.5$  mm or better than twice the pixel dimension.

Reference scan should be possible on an arbitrary slice with the proposed treatment volume.

High contrast spatial resolution : It should be at least 15 lp/cm maximum at 0% MTF.

Low contrast detectability: 5 Cm or less @ 0.3% using 20 cm CATPHAN on sub-millimeter slice thickness.

The CT number accuracy must be better than  $\pm 10$  HU for air.

the necessary phantoms to check the spatial resolution, the electron density for the different body tissues and other important parameters must be provided.

#### **Image Quality**

The reconstruction matrix must be 512 x 512 or higher. The reconstruction time should be as low as possible.

Simultaneous scanning and reconstruction should be possible. It should be possible to do: simultaneous scanning & route analysis.

The system must have automatic mA control software that automatically adjust mA for patient sizes, adjust mA along the z-axis, modulates mA during rotation.

#### **Spiral parameters**

Different selection of pitch should be possible, from 0.5 to 3. in 0.1 increments. The available pitch, single run coverage and the table scannable range should be mentioned. Inter scan delay in different group of spiral should not be more than 5 sec.

Intra-plan delay of 5 sec. or more should be possible on raw files with change in parameters such as FOV

The scanning modes: Scanogram, Axial, Spiral, Cine and biopsy should be possible.

Pilot scan: The pilot scan field size should be more than 1500 mm long. The reconstruction time for pilot scan approximately 3 sec. for a 512 matrix and approximately 5 secs for a matrix of large size.

Reference scan should be possible on an arbitrary slice within the proposed treatment volume.

Specify the table speed to the scan in terms of Z-axis coverage.

**Support for respiratory management system:**

Seamless integration to the interface of the linear accelerator or cobalt-60 respiratory management system. prospective & retrospective 4D CT image acquisition for performing respiratory gated radiotherapy on the high energy linear accelerator available in the department. The vendor should provide one set of hardware of the respiratory management system and the CT scanner firm is required to provide all licenses and necessary interface hardware for seamless integration for the purpose of gated radiotherapy.

**Computer hardware and software****Computer system for the CT Scanner**

State-of-the-art, high end main computer system, must be provided. the system must have two/dual processors (Parallel), RAM size must be at least 4 GB or better. must be two monitors in the console 15" TFT flat screen LCD monitors. one of these will be used for acquisition and the other will be used for review and processing.

The hard disk capacity of the main computer system around 200GB or more. in the hard disk meant for image storage, the number of uncompressed 512 x 512 images that can be stored should be at least 250,000 or more. The maximum possible hard disk capacity must be provided. for archiving, should be provided for providing copies of an average radiology facility for 2 years. all necessary hardware and consumables (DVD/DAT cartridges) to be specified and provided.

The CT-Simulator system should be fully DICOM /HL7 compliant. The DICOM should support the Following: Dicom 3.0 print service class as a user.

dicom 3.0 storage class as a user

dicom 3.0 storage class as a provider

dicom 3.0 send/receive

dicom 3.0 query/retrieve service class as a user

dicom 3.0 query/retrieve service class as a provider

dicom compliance statement should be provided.

a bi-directional speaker (PAS) communication must be provided between the operator and the patient.

Computer system for moving laser system

The laser system provided must be 3 moving lasers for marking the isocenter without moving the table top.

Following the isocenter localization in the CT simulator workstation, the isocenter coordinate will be sent directly to the computer system that is controlling the movements of the lasers point to the isocenter. Complete quality assurance tool (as stated above) must be provided. The control computer system must be windows xp or better version based system with pentium 4 processor or higher.

**Connectivity**

The entire CT simulation system must be interconnected (all the workstations, laser systems, printers etc,) and must be integrated into the department's treatment planning system for smooth transferring of images and DICOM-RT structures. the system should be networking with all radiotherapy treatment planning system in the department.

Software requirement:

Perfusion CT, LUNG CT, Bone CT, virtual endoscopy and CT angiography

**Essential accessories to be included with the unit**

Set of maintenance spares for to be provided (list to be enclosed).

Sets of patient positioning accessories namely head holder, positioning kit, mattresses (for diagnostic procedure) must be provided.

**3a. UPS:** on line ups with MF batteries for the backup of the entire system for at least thirty minutes.

**3b. Laser camera:** Dry laser camera to be provided

**3c. Lead glass:** 100 x 150 cm or more with lead equivalent to meet the local regulatory body's (RPA) radiation safety requirements.

**3d. Pressure Injector:** CT compatible pressure injector with remote console 100 disposable syringes.

**3e. Dose computation & Display:** The system should display CTD<sub>LW</sub> (CTDI<sub>00</sub>), DLP

**3f. Quality assurance accessories and phantom:** The quality assurance tools and phantom for virtual simulation should be included with all details.

**3g. Immobilization system:** Complete set of imported patient immobilization accessories of medical intelligence (head, neck, thorax and pelvis) to be supplied compatible and index-able with the linear accelerator/ cobalt-60 table top.

**3h.** water bath: made of stainless steel digitally controlled (LED) bath to successfully accommodate the different type of thermoplastic sheets, minimum dimension: 600 x 400 x 70 mm, glass wool insulation, digital temperature indicator-cum-thermostat, Heater: At least 1200 watts.

**3i.** Electron styrofoam cutter: low cost counter top hot wire cutter. easy to change Ni-Chrome wire assembly and a large cutting surface of 25x 25 squarecm. Include low melting alloy 25 kg, melting pot with dispenser and cooling plate. styrofoam sheets: 50 sheets.

**3J.** remote diagnostic monitoring: remote diagnostic tool and software should be included along with modem and telephone connection with ISDN line for on-line remote diagnosis. all such running costs will be at suppliers's account for the duration of warranty and CMC.

#### **Training**

For clinical person and Engineers besides that, training in a well-advanced center.

#### **Warranty**

The supplier shall give a comprehensive warranty for five years after installation on the entire CT system including tube principals. There will be no parts/ services excluded.

## **02.03. Image guiding**

### **02.03.01. Microscopy**

#### **02.03.01.01 Surgical Microscope**

##### **Technical Specifications**

Magnifying ratio of objective: .....(0.65X-4.5X) /describe

Magnification of eyepieces: .....state

Magnification: .....6.5X-45X / describe size

Diameter of visual Field:.....  $\Phi$ 112.8- $\Phi$ 16.3mm(optional 0.3X objective) /describe size

Working distance:..... about 278mm /describe

Visual angle of eyepiece: .....45-90 degree

Interpupillary distance adjustment:.....55mm-75mm/ describe size

Light source:.....about 21/150W halogen lamp(optional)

Illumination: Fiber optic illuminator continuously adjustable

Lux on objective plane:.....  $\leq$ 100,000LX

Filter:..... Green and other colour

##### **Moving range of suspension arm**

Vertical:..... around 520mm/ describe size

Horizontal: .....  $\pm$ 520-800mm/ describe size

Forward and backward:.....  $\pm$  520-800mm /describe size

Height of the suspension arm: 650mm-1120mm /describe size

Diameter of chassis: ..... around  $\Phi$ 950mm /describe size

Unique omni-directional mounting system allows an infinite number of viewing angles to examination and surgical procedure in surgery, orthopaedics, neurosurgery, otolaryngology, ophthalmology and gynaecology.

Advanced suspension system keeps the unit stabilized throughout any procedure without adjustment, providing a free working space.

Can be brought to the site easily without any unnecessary shifting of either the patient or physician.

In second, converts to a microscope or procedure scope.

Wide field for initial screening of the entire area, high magnification for diagnosis, and low for aid in biopsy or treatment, for instance: examination for skin disease and swollen, observation of blood capillarity, location foreign objectives in the eye or ear, identifying wounds or examining lesions in body cavities.

Continuous variable magnification 7x-30x, clear image at any magnification, change focus or magnification while continuing with examination or procedure.

Continuous zoom with stereoscope offers utmost flexibility and precision.

With Equipped fabric light source the patient can not feel scorching hot and dry at the examining position of the body.

CE approved.

## 02.03.02. Endoscopy rigid

### 02.03.02.01 Rigid Laparoscope

**Description:** Laparoscope is used for minimal invasive surgery and comprises of telescope and associated instruments.

#### **Specification Laparoscope (single puncture):**

##### 1 Telescope

- a) Telescope zero degree with parallel/straight eye piece, 10 to 12 mm diameter with operating channel for ring applicator
- b) Fibre optic light transmission incorporated, should be compatible with the commonly available light cable (necessary adaptors should be provided)
- c) Can be sterilised by autoclaving, cidex solutions and Formalin Chamber.
- d) Should have 6 mm instrument channel/built in ring applicator for use with 4 silastic rings. Working length of 270-275 mm. /describe size

##### 2. Trocar & Cannula

Cannula size + 1 mm more than the telescope diameter, should have an automatic silicon leaflet valve and stopcock for insufflation length 10-15 cm. Trocar should have pyramidal tip.

##### 3. Ring Applicator

Ring applicator for use with parallel/straight eyepiece telescope compatible with the above telescope, capable of loading four silastic rings

##### 4. Cone and pusher

Suitable cones and pusher for loading rings to the above applicator.

5. Bipolar Grasping forceps rotating with connector pin for bipolar coagulation, size 5mm length 40-45 cm , atraumatic serrations , fenestrated jaws with long flat non retracting jaws with handle with necessary HF bipolar cord, 300mm length with 2 4mm banana plug.(optional approximately)

6. Unipolar Grasping Forceps with connector pin for unipolar coagulation, 5mm, length 40-45 mm, atraumatic double action jaws consisting of insulated handle without ratchet with monopolar high frequency cord 300cm or more length with 4mm plug for HF unit(optional approximately)

7. Suction & irrigation cannula 5mm. 30-36cms. two way stop for single hand control and with handle tubings.(optional)

8. Bipolar coagulating and suction tube 5mm with connector pin with pistol grip handle with trumpet valve and silicon tubings with necessary HF cord to fit into above 6mm working channel(optional)

9. Reducer for using the above instruments through 6mm instrument channel of above operating channel of laparoscope.

10. Verees needle with spring loaded blunt stylet, luer lock size approximately 10 & 15 cm.

##### 11. Essential Spares

- i) Spares Washers Spares washers for trocar and cannula and automatic valve.
- ii) Kits for cleaning- i) Trocar Brush
- iii) Cannula Brush.
- iv) Cleaning Oil.

## **Carbon Dioxide insufflators**

### **Specifications:**

- a) Electronic CO<sub>2</sub> insufflator with pin index connection. Should have an adjustable flow rate of 0 to 30 litres per minute and a pressure range adjustable between 0 - 30 mm Hg.
- b) Pressure and flow rate should be displayed on the front panel with displays of actual and set values.
- c) Provided with silicon autoclavable tubing with luer lock attachment.
- d) Instrument should work on a supply of 220-240 V, with a frequency of 50 HZ single phase.
- d) Optical and acoustic warning signals for pressure exceeding set limits. Constant monitoring of intraabdominal pressure with safety to reduce overpressure
- e) Provision for preheating gas to body temperature.(optional)
- f) Fully automatic gas refill.
- g) High Pressure Hose suitable to connect the insufflator with pin indexed CO<sub>2</sub> cylinder Should be supplied with CO<sub>2</sub> cylinder, connecting pipe, main cord and silicon tubing set
- h.) Autoclavable wrench & CO<sub>2</sub> gas filters disposable

### **02.03.02.02 Rigid Cystscope**

#### **SPECIFICATIONS FOR CYSTOSCOPE AND TURP INSTRUMENTS SET**

Straight Forward Telescope 0°, enlarged view, diameter 4mm, length approximately 30 cm, autoclavable fiber optic light transmission incorporated.

Forward-Oblique Telescope 30°, enlarged view, diameter approximately 4 mm, autoclavable, fiber optic light transmission incorporated

Cystoscope-Urethroscope-Sheath, 22Fr., with obturator

Cystoscope-Urethroscope-Sheath, 22Fr., with obturator

Cystoscope-Urethroscope-Sheath, 19Fr., with obturator

Cystoscope-Urethroscope-Sheath, 17Fr., with obturator.

Telescope Bridge with 1 lockable channel

Telescope Bridge with 2 lockable channels

Catheter Deflecting Mechanism, with 2 instrument channels with ratchet

Rigid Biopsy Forceps, double action jaws

Rigid Grasping Forceps, double action jaws

Rigid Scissors, double action jaws

Grasping Forceps, double action jaws, for stent removal, for use with Telescopes, flexible 7 Fr.

Biopsy Forceps, 7Fr., double action jaws, length approximately 40 cm

Scissors, 7Fr., single action jaws, length approximately 40 cm

Stone Basket, 5 Fr., length 60cm, for use through the lateral irrigation channel

Ball Electrode 5Fr. 7Fr. With unipolar cord

Resectoscope Sheath, including connecting tube for in -and outflow, 26Fr., oblique beak, rotatable inner tube with ceramic insulation, for use with working elements

Working element with cutting loops, coagulating electrode, High Frequency Cords and Protection tube

Inner Tube, rotatable, with ceramic insulation, for use with resectoscope sheath

Schmiedt Visual Obturator with channel for flexible instruments, for use with 24/26 Fr., sheaths.

Cutting Loop, angled, sterile, for single use. Pkt. of approximately 6

Coagulating Electrode, pointed, sterile, for single use. Pkt. of approximately 6

Coagulating Electrode, ball-shaped, diameter 3mm, sterile, for single use. Pkt. of approximately 6

Coagulating Electrode, ball-shaped, diameter 5mm, sterile, for single use. Pkt of approximately 6

Sachse Urethrotome-Sheath, 21Fr., with channel for Filiform-Bougies and 2 Luer-Lock connectors

Obturator for urethrotome sheath 21Fr.

Telescope Bridge, 5Fr. With channel for instruments

supplementary Sheath, sides open, for introduction of a Balloon catheter, to slip on Urethrotome sheath

Supplementary Sheath, for continuous irrigation and suction, to slip on urethrotome sheath.

Stone Crushing Forceps, single action jaws

Adaptor, for use with resectoscope sheaths

Reiner-Alexander Syringe, 75cc

Ellik Evacuator

Patankar's bridge for 25 F cyst scope sheath to facilitate lithotripsy with litho last

### **02.03.02.03 MEDICAL VIDEO CAMERA**

#### **Specification:**

**Description:** Digital Three-Chip Medical-Video-Camera-Color system

#### **Special Features:**

CCD-Chips for separate capture and processing of 3 Primary colors, for unprecedented color reproduction and highest degree of fidelity

Digital Image Processing by means of an integrated Image Processing (DIP) Modules. Multiple settings should allow the user to select the preferred level of image enhancement.

Digital contrast enhancement

Digital anti-moire/anti-grid filter for use with fiberscope

Integrated Zoom Lensing system to produce optimum image sizing for all scopes, alleviating need to refocus when magnifying the image.



Manual/automatic digital exposure control  
 High horizontal image resolution of approximately 750 lines.  
 Automatic white balance with memory functions for two settings.  
 Charter generator  
 Composite, S-VHS and RGB compatibly  
 2 Programmable function keys on the camera head for control of camera functions or video printer /recorder functions & other peripheral units.  
 Special Programmable Digital Data controllable camera head with increased red color sensitivity  
 Adaptable to an operating microscope by means of a special quick adapter.  
 Camera head fully soak able for sterilization & also gas sterilizable

Camera system compatible with Communication Bus system for remote controlled operation of the various features of the camera along with other equipment. This feature allows a surgeon to save the time and control the whole equipment range in a user-friendly manner.

#### **02.03.02.04 Xenon Light or equivalent Source and Light Cable**

##### **Specifications:**

High Intensity Xenon Light Source with spare Xenon Lamp

##### **Special Features:**

High light intensity with approximately 175watt Xenon Lamp.  
 High Colour temperature -more than 6000k corresponds to brightness of sunlight resulting in high visual and photographic clarity for color rendition.  
 Monitoring of lamp function.

##### **Technical Specifications:**

Lamp type: approximately 175watt /state  
 High Colour Temperature: more than 6000  
 Light Outlets: 1  
 Light intensity adjustment: Continuously adjustable from 0 to 100%  
 Fiber Optic Cable Size approximately 4.8mm, length 250cm

#### **02.03.02.05 Ureterorenoscope**

##### **Technical Specification:**

It should have a length more than 41 cm, with an offset eyepiece (10deg with oval irrigation)-  
 Should have an outer diameter at the tip of about 6 F – 8 Fr with a working channel of about 4 F to 5 Fr and  
 It should have two irrigation and preferably 2 instrument ports  
 It should have adaptor to connect the endoscope to light source of any make  
 It should be sterilizable with liquid, gas and autoclaving

#### **Endovision system and PCNL set**

##### **Technical Specification:**

Should have Panoiview operating Telescope parrallel with built in oval probe channel for approximately 4 mm accessory instruments with (25-30)- degree angle view. Its should be capable of using of irrigation or aspiration.  
 Should have operating sheath of 27 fr. With irrigation outlets at the distal end including hollow obturator for use over J- guide wire with rotatable irrigation tip  
 Should have a telescope dialator 9-27 Fr. That can be used over a J - guide wire consisting of one hollow guide rod.  
 Should have a dilator of 30- Fr. To fit over above dialator.  
 Should have stone grasping Forceps rigid with alligator jaws  
 Should have stone grasping Forceps rigid (finely tooth) for soft stones  
 should have three pronged stone grasper rigid self closing .  
 Should have two part puncture needle, sterile .  
 Amplatz sheath 30 fr.  
 should have screw dialator 14 fr, 18 fr, 22 fr., 25 Fr., 28 fr., and 30 fr., sterile 3 each size.  
 Amplatz renal dialator set complete with teflon catheter different dialators amplatz sheath etc.

Single step Percutaneous pigtail nephrostomy catheter  
 Percutaneous pigtail nephrostomy  
 Nephrostomy tract dialator sets  
 should be supplied with a light source with fiber optic cable  
 Colour temperature of light source should be more than 6000 K  
 Power supply: 220-240 VAC  
 It should give monitoring of lamp functioning.  
 Light intensity should be continuously adjustable  
 Fiber optic light cable, size approximately 4.8mm, length approximately 250 cm, heat resistant  
 It should have guarantee of two years with spares

### **Pediatric Endoscope System**

#### **Pediatric Optical Urethrotome**

Urethrotome sheath 10 Fr with fixed tap and obturator with two luerlock  
 Working element for above urethrotome sheath  
 Stricture scalpel straight blade  
 Stricture scalpel hooked blade  
 Hopkins-II 300 lens pediatric for use in resectoscope/urethrotome

#### **Pediatric Resectoscope**

Pediatric Resectoscope sheath, oblique beak with an insulated distal tip with fixed irrigation tap with obturator size – 11.5Fr and 13 Fr.  
 Working element passive cutting action  
 high frequency connecting cable approximately 300cm  
 Cutting loop electrodes for above sheath  
 Ball end coagulation electrode  
 hook electrode  
 Adaptor with one instrument port of 5Fr  
 Telescope Hopkins-II forward/30deg 1.9mm diameter for fibre optic light transmission  
 Lithotrite, incorporating both handle & turning screw action 24  
 Hopkins-II 70 deg lens 30 cm approximately length, diameter approximately 4mm  
 Rigid grasping forceps double action jaw for removing stent 4 Fr  
 Flexible grasping forceps 3 Fr-

### **Pediatric Cystourethroscope**

Compact Universal operating Cystourethroscope sheath of 9.5 Fr with integrated 30° of set Lens working length approximately 1.02mm an instrument channel of 5 Fr.

### **Three Chip Camera**

It should be three chip camera with 3 x 1/4" CCD Image sensor chip.  
 Its resolution should be 700-750 mm horizontal and should have approximately 750-760 (H) x 570-590 (V) pixels per chip.  
 Its diameter should be 30-34mm with length of approximately 125mm.  
 Min sensitivity should be 3 Lux (F=1.4mm with integrated parfocal zoom lens F=14-28 cm).  
 Signal of noise ration of CCU units should be approximately 60 db.  
 CCU unit should be microprocessor controlled with dimension of approximately 300mmx89mmx335mm  
 Programmable control buttons on camera head for controlling, gain white balance shutter speed, video printer.  
 Keyboard input for data entry through built in character generator  
 It should have feature of image enhancement digital, contrast enhancement.  
 Camera should be compatible with FBAS, S-VHS and RGB manual or automatic exposure control (1/50 sec)  
 Should have automatic white balance with storage functions for two white balance values.

### **02.03.02.08 Rigid Rhinoscope**

### 02.03.02.09 Rigid Bronchoscope

A rigid bronchoscope is a straight, hollow, metal tube inserted to examine inside a patient's airway for abnormalities such as foreign bodies, bleeding, tumors, or inflammation.

Bronchoscope tube for use in adult in various standard sizes- approx 6.5 , 7.5 & 8.5 and standard length ( approx 42 cm)

#### Should have the following accessories:

Glass window plug  
Rubber telescope guile  
Sliding adapter for sealing cap and lens  
Injection cannula for positive pressure assisted ventilation system  
Instrument guide for aspiration catheter and pressure tamponade  
Magnifier lens system  
Adapter to respirator with sealing plug.  
Prismatic light deflector with adapter for fiberoptic light cable

### 02.03.02.10 Rigid Protoscope

### 02.03.02.11 Rigid Arthroscope

**General description:** These Instrument Offers ACL JIG and PCL JIG, and are available with curved elevator of 45°. They are also provided with tissue liberator straight & curved and PCL elevator.

#### Technical specifications:

ACL Femoral Reamer Cannulated Flower tip 6, 7,8,9,10,11 & 12 mm  
ACL Tibial Straight Cannulated Reamer 6,7,8,9,10,11 & 12 mm  
Endoscopic Cannulated Reamer  
Graft Master Board Suturewise with Tensiometer tissue Holder Full Length cutting Strip Tension Post  
Endobutton Stand  
Graft Sizer Combined 6 to 12mm  
Beath Pin drill Tip, Diamond Tip  
Depth Gauge  
Screw Driver For Interference Screw  
PCI Femoral Currette PCL Tibial Currette  
Tendon Stripper Close 6, 7 & 8 mm, Open 6, 7 & 8 mm.  
Femoral Aimer with Offset

### 02.03.02.12 Rigid Colposcope

#### Technical Specification Colonoscopy

Binocular Inclined .....45 degree  
Objective..... around F= 300 mm  
Eyepiece..... 12.5 x wide field high eye point  
Magnification..... 2.7x, 4x, 6.7 x, 10.7x & 16x  
Illumination Cold light thr' Fibre Light Source Optic light guide Reflector type  
Halogen lamp Bulb , light intensity around 90,000 lux.  
Voltage supply 220 ±15 v 50Hz single phase AC  
Penta arm adjustment..... approximately 500 mm  
Rotation..... 0 - 360 degree

### 02.03.02.13 Rigid Laryngoscope

#### Main Specifications

Viewing direction..... Direct view ( 0° )  
Field of view..... 90°  
Illumination method ..... Scope-tip LED light  
Imaging method ..... color filter  
Image display..... approximately 2.4-inch color LCD  
External output ..... Composite video signal  
Water-resistance rating..... state

Power supply ..... 3 volts / Two AA batteries (optional)  
Continuous operating time ..... Approx. 60 minutes (when using fresh alkaline batteries)

**Standard accessories**

Carrying case, video output cord, BNC adapter, two AA alkaline batteries

**02.03.02.14 Rigid COLONOSCOPE:**

**SPECIFICATIONS**

Special design for optimal Color insertion flexibility.  
Silicones free Air-Water & Suction Valves for easy maintenance.  
3 or 4 remote switches for maximum control of functions with the user.  
Single action & light weight Light Guide Connector for easy handling.  
Field of view : (140 degree or more)  
Direction of view : 0 degree (Forward viewing).  
Depth of field : 3 mm to 100 mm.  
Distal end outer diameter : 13 mm to 13.2 mm  
Insertion tube outer diameter : 12.6 mm to 12.9 mm or more  
Distal end bending : Up & Down 180 deg. or more.  
Right & Left 100 deg. Or more  
Working length : standard  
Instrument channel diameter : approximately 3.7 mm or more  
One set of accessories should be supplied with colonoscopy.  
It should be accompanied with. Medical Monitor, Trolley, UPS, recording and Printing software with desktop, printer.  
It should be accompanied with xenon/ halogen light source

**02.03.02.15 Hysteroscope**

**Technical Specification**

**I. Hysteroscopy set**

Examination sheath of suitable size with lock adapter.  
Operating sheath with instrument channel for operating hysteroscopy of suitable size.  
Autoclavable telescope 30 deg. Diameter around 4mm, length around 30cm.  
Polypectomy loop unipolar electrode suitable for polyductomy.  
Bipolar Dissection Electrode, semi rigid suitable for hysteroscopy.  
Monopolar High Frequency Cord with approximately 4mm plug for HF unit, length approximately 300cm  
Bipolar High Frequency cord with approximately 4mm plug for HF Unit, length approximately 300 cm  
Unipolar ball electrode suitable with above instruments.  
Flexible scissors single / double action jaws suitable with above instruments.  
Flexible Biopsy and grasping forceps double action jaws.  
Flexible Biopsy and grasping forceps double action jaws.  
Biopsy spoon forceps double action jaws.

**II Irrigation Systems**

Should be fully automatic.  
Should have irrigation capacity of 0 to 500 ml per minute  
Pressure range should be 10 – 200 mmHg  
Should have digital displays like preset pressure and preset flow  
Should be supplied with the accessories like silicon tubing compatible with the instruments supplied, power cord, etc.  
Should work with input 200 to 240Vac 50 Hz supply

**III. Digital endoscopic camera system**

Should be a single chip camera technology.  
Should have one composite video outputs.  
Should have anti-moister filter for fiber scopes.

Should have fully automatic exposure control.  
Should have automatic white balance with memory function.  
Should have horizontal resolution of more than 450 lines.  
Should be supplied with flat LCD TV of suitable size.  
Should work with input 200 to 240Vac 50 Hz supply

#### **IV Light source and fiber optic light cable**

Should be a halogen light source with minimum 250W light output.  
Should have manual light intensity control.  
Should have inbuilt cooling system.  
Should have two lamps of 250W and should have provision to change over in the event of failure from one lamp to another.  
Should be supplied with flexible fiber optic light cable with minimum diameter of approximately 4.5 mm and minimum working length of approximately 300cm.  
Should work with input 200 to 240Vac 50 Hz supply

#### **V. Others**

All equipments 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.

#### **02.03.02.16 CO<sub>2</sub> ENDOFLATOR**

##### **Specifications**

##### **Telescope**

Straight forward telescope 0 degree enlarged view,  
rod lenses system,  
DIA. Around 10 mm/state  
length around 31 cm /state  
Autoclavable

##### **Camera Single Chip Digital Imaging Processor**

Pixels..... approximately 752 (H) x 582 (V) /state  
Resolution ..... approximately 450 Lines Horizontal  
AGC..... Microprocessor based  
Minimum Sensitivity.... 3 Lux (S- 1.4 mm)  
Exposure Control..... 1/50 Sec – 1/10-0-00 Sec  
Freezing Function  
Antimoir Filter  
Programmable Functional Keys for four camera functions

##### **Fiber optic cable**

length around 250 cm /state

##### **Halogen Light Source**

With 2 lamps 24 v, 250 watts(optional)

automatic change over of lamp in case of failure of 1<sup>st</sup> lamp

##### **CO<sub>2</sub> Endoflator Electronic Automatic**

flow approximately 20 litre per minute  
safety system: optical acoustic alarm signal in the event of patient overpressure  
fully automatic, electronically controlled gas refill  
Silicon gas tube approximately (250 cm)

##### **LCD Monitor for Laparoscope**

17 to 21 inch

##### **Bipolar forceps**

With spare inserts and cables - approximately 5mm

##### **Trolley**

Of suitable size to accommodate the equipment along with its accessories. (optional\_)

**Power Supply**

Power input to be 220 - 240VAC, 50Hz fitted with Indian plug

**Standards & Warranty**

Should be FDA , CE, approved product

Supplier should have ISO certification for quality standards.

02.03.03. Endoscope Flexible

**02.03.03.01 FLEXIBLE COLONOSCOPE**

**SPECIFICATION FOR FLEXIBLE COLONOSCOPE**

Polypectomy Snare (4)

Coagulation Electrode (4)

Colonoscopy Biopsy forceps (2)

**Guide Wire**

a. Should have approximately 450 cm length.

b. Should have approximately 50 cm hydrophilic coating.

c. Should have spiral coating and Ring Marking.

**Cannula**

Tapering Tip Type

Distal opening 4.5 Fr.

**Sphincter tome**

Should have triple Lumen

Should have clever cut coating on the cutting wire.

Should have 4.5 Fr. Distal tip diameter.

0.35inch compatibility

**Needle Knife**

Should have triple Lumen type

Should have approximately 5 mm needle length

approximately 0.2 mm core diameter

approximately 0.035 inch GW compatibility

**Basket**

Should have reusable type

approximately 22 mm opening width

hard wire type

Injection Port

Balloon Dilator

**02.03.03.02 Flexible URS**

**FLEXIBLE URETEROSCOPE (WITHOUT VIDEO & OPTICAL SYSTEMS)**

**Technical Specification:**

Two in number, One with Distal Tip size of 5-6 Fr and One with Tip size of around 6.5 Fr for enhanced insertability may have evolution tip.

Distal shaft size of 8.8 Fr. or less.

Active Primary Deflection of 170<sup>0</sup> Up and 170<sup>0</sup> -280<sup>0</sup> Down.

May have Active Secondary Deflection of 130<sup>0</sup> or more

Should have Rotatable Light Post with removable Light Cable for convenience & use with Light Source of any make.

Should have Rotatable Universal Biopsy Port.

Should have a working channel of minimum around 3.5 - 4 Fr.

The outer covering should be lubricious for easy access and minimizing the need for dilation.

Cable compensation system should ensure logical deflection.

Warranty – 2 year against cable breakage and deflection adjustment to be provided.

11. Field of view should be 80° -90°

12. Depth of view should be around 2-50 mm

13. Working length should be around 700 mm
14. Should be supplied with the following accessories:
  1. Adjustable Biopsy Port Seals for Accessories < 6Fr (6/pkg) (For use with Laser) 5 Box
  2. Introducer Snap and Peel Away Sheath 5 Box
  3. Green Silicon seals, for accessories < 7Fr.
  4. Grasping Forceps, 3-prong, 3fr., approximately 115cm.
  5. Stone Basket, 4-wire, 3 fr., approximately 120cm.
  6. Reusable sheath dilator, basket, leakage tester etc.

## **Polyscope**

### **POLYSCOPE FLEXIBLE ENDOSCOPIC SYSTEM TECHNICAL SPECIFICATIONS**

System should be a multipurpose flexible endoscope for Ureterorenoscopy, with steerable tip. It should be modular with separate reusable optical system and disposable endoscopic catheter with handle. These separate units should assemble to form the complete endoscope.

Unit should be provide with disposable, sterile steerable up to 80 degree multilumen endoscopic sheaths/ catheters of length of approximately 70 cm with attached disposable handle. There should be length marking on the catheter.

Catheter should have OD approximately 2.65 mm (8fr) with 1 working channel: 1.20mm – 3.6. Steering mechanism should be provided with handle (Disposable)

Optical system should be long, of 10,000 pixels. Optical combi shifter should be provided for adjustment of optics inside the catheter and length compensation to compensate for length differences when steerable catheter is bent.

Should be provided with Modular Ocular adapted for 10,000 pixel system and Light Adapter for light source should also be provided.

All items should be CE marked, imported equipment.

To also quote unit rates for Disposable catheter sets of 20, 30, 42 and 70 cm lengths.

#### **Optional Accessories to be quoted for:**

Three joint articulated arm with table mounting clamps for mounting of camera, light source cable and video adapter and modular ocular. It should be possible to adjust arm at any angle and should keep camera, ocular, light cable, in non-sterile zone.

Rigid over tube 10 Fr. With soft rounded tongue, atraumatic for accepting 8 Fr Catheters. The tube should have a plunger for pushing the catheter out up to approximately 7 cms out.

Laser Shifter to enable movement of laser fibre inside endoscope catheter.

Modular Basket system with separate basket, sheath and handle. The basket and handle should be autoclavable.

One set perfusion table, One set Y-Adapter with silicone sluice, sterile and one Biopsy Forceps approximately 1 mm, length approximately 120 CM.

#### **02.03.03.04 Gastro scope**

WORKING CHANNELS.....2

Diameter, mm (UMBILICAL CORD)..... aproximatley 2.8, 3.8

REPROCESSING..... Glutaraldehyde, EtO, Cidex OPA

Type (CONFIGURATION).....Video gastroscope

UMBILICAL CORD

Aspiration (UMBILICAL CORD).....Yes

Length, mm (PROBE).....aproximatly 1500

#### **EQUIVALENT ILLUMINATION SOURCES/VIDEO PROCESSOR**

TIP DEFLECTION RANGE, Å° ..... Up 180, down 120, right 120, left 120 OPTICS

Depth of field, mm (OPTICS)..... aproximatly 5

Visual field (OPTICS)..... 120

LENS WASHING (UMBILICAL CORD)..... Yes

#### **INSERTION TUBE**

Length markings (INSERTION TUBE)..... Every 5 cm

Length, mm (PROBE)..... aproximatly 1050

**OUTER DIAMETER, mm**

(DISINFECTION/STERILIZATION).....aproximatly 12

OTHER ATTRIBUTES (Interference compensation)...Rotatable light guide connector; total brushability; water jet.

FDA CLEARANCE (Interference compensation)

CE MARK (MDD) (Interference compensation)

**02.03.03.05 Sigmioscope**

**Sigmoidoscopes**

Sigmoidoscopes with 2.0 X magnification swivel lens

Sigmoidoscope - 12x200 mm with Wolf/Acme adaptor

**02.03.03.06 Bronchoscope**

**Fiberoptic Bronchoscope Adult**

The flexible fiberoptic bronchoscope is a gold standard for difficult intubation. It is also used for diagnostic and therapeutic procedures in critically ill patients.

**Technical Specifications**

Light weight, high resolution bronchoscope with light cable

Field of view 120 degrees or more

Depth of field 3mm to 50 mm or better.

Distal end diameter 5 mm approx.(Should allow 6.5mm endotracheal tube to be mounted easily)

Bending range UP 180 degree or DOWN 130 degree.

Working length 600 mm or more.

Total length 900 mm or more.

Channel dia 2.2 mm or more.

Autoclavable suction valve to avoid risk of cross contamination.

Telescopic eyepiece for direct compatibility to CCTV system

Bending mechanism knob without lock.

Fully immersible in disinfectant solution

Leak testing facility with automatic & pressure regulated air feeding (non-pressure gauge system preferable)

**02.03.03.07 Halogen Light Source or LED light source**

Video Processing System(OPTIONAL)

1.Fully immersible camera head and cable assembly

2.Video processing camera.

3.1/4 inches CCD(Closed circuit display) with 10 bit digital signal processing.

4.In built filter for compatibility with fiberoptic endoscopes.

5.Resolution: 470 horizontal lines approx.

6.Signal to Noise Ratio > 50 dB.

7.Rotatable and detachable coupler(adaptor) with focussing facility.

8. Video output Y/C and composite.

**02.04 Developers room accessories**

02.04.01 Developers manual

**Developing, Fixing and Rising tank**

The tanks are made of stainless steel

The processing unit with tank capacity around 22 liters. The unit consists of inner stainless steel. There shall be 3 numbers of removable containers for developing around or above 22 liters, rising around 13 liters and fixing around 45 liters.

The water temperature shall be around 20 celsion



#### **02.04.01.02 Dark room lamp**

Perfect for the small darkroom, or for safety spot lighting individual work areas.

This compact safelight can be installed wherever it's convenient - freestanding, mounted on the wall, or ceiling.

The orange globe supplied is safe for all black-and-white papers.

The unit comes with around a 15W lamp, 220  $\pm$ 15 % V AC

#### **02.04.01.03 Lead markers R, L, 0-9 and A-Z**

Made from Pb

#### **02.04.01.04 ID printer**

##### **Specification**

Functions: prints patient's data written or typed on the white card which user provides month, date and year

Printing Method..... LED

Power Source.....single phase, AC 220V  $\pm$ 10%, 50hz

#### **02.04.01.05 Hatch Box**

**Description:** Cassette Transfer Cabinets, Double Door

##### **Automatic Interlock Models**

Width: .....around 21" (47.3 cm)/state

Height: .....around 22" (49.6cm) /state

Depth:.....around 19.625"(44.2 cm) /state

#### **02.04.01.06 Film Hanger**

Stainless steel X-Ray film Hanger

different size available

Specifications (inch) 8\*10,10\*12,12\*15,14\*14,14\*17 etc.

(cm)12\*18,20\*25,25\*30.....

#### **02.04.01.07 Stationary Gamma Cameras**

##### **DETECTOR/YOKE MOTION**

Whole-body scan Rate, cm/min..... 5-150

Yoke rotation, deg..... $\pm$ 360

Radius, cm.....around 10

##### **Detector**

PHA window capacity.....4 peaks

Storage..... 1 GB hard disk

POWER REQUIREMENTS..... 220 VAC,

Max count rate, cps..... around and above 200,000

Dead time,  $\mu$ sec..... around 0.7

#### **02.04.01.08 Mobile Gamma Cameras**

##### **DETECTOR ASSEMBLY**

**Crystal thickness, mm (in).....around 6 (0.24) /state**

##### **Lead shield**

thickness, cm (in)..... 0.3 (0.12) /state

##### **SYSTEM PERFORMANCE**

**UFOV, cm (in).....around 21 x 21( 8 x 8)**

Maximum count rate, cps.....>205,000

Energy range, keV.....40-190

##### **DETECTOR/YOKE MOTION**

##### **Rotation, deg**

Collimator..... $\pm$ 360

Detector..... $\pm$ 90

Vertical speed up.....Manual/0-2 cm/sec

Vertical speed down.....Manual/0-2 cm/sec

**Storage**

Hard disk..... approximately 2 GB and above  
power, VAC.....220 VAC

**02.04.01.09 Heater (Film Drier)**

Description: **X Ray Film Dryer**

**Dimensions :..... approximately.... 80x60x60 cm**

**Materials :..... mild steel sheet, stainless steel pipe**

**Finishing : .....epoxy powder coating ( mild steel) , polishing ( stainless steel)**

**Dryer :..... Dry Heater & Fan**

**Power : .....AC 220 Volt/ 50 Hz,**

**02.04.01.10 Hoper (Film storage box)****Specifications**

DESCRIPTION Tab Lock

FILE SIZE FORMAT X-Ray Film Jacket Size

INSIDE DEPTH INCHES (cm).....state

INSIDE HEIGHT INCHES (cm)....state

INSIDE WIDTH INCHES (cm).....state

STRENGTH Basic Strength

**02.04.01.11 Clock**

**Timer.....1- 60min (set value) with alarm**

To be mounted on wall or bench top

**Elapsed time clock****Technical Features:**

Clock measuring elapsed time for periods up to 12 hours

\* Power requirements: 220V/50Hz

**02.04.01.12 Thermometer, bath**

Made of glass/plastic.....up to 50 °c

**02.04.01.13 Developer reagent (Chemical)****02.04.01.14 Fixer reagent (Chemical)****02.04.01.15 X-ray Film**

High definition and strong resolution ratio.

Suitable for different radiography technologies.

Focuses on contrast ratio and balances exposure time.

Specific curve copes with all conditions.

Cartilaginous tissue can be seen clearly, such as the chest abdominal cavity and esophagus.

Adaptable transmitting.

Size: 8" x 10" , 10" x 12" , 11" x 14" , 12"x 15" , 14" x 14" , 14" x 17" ,

**02.04.01.16 Film Cassette with Intensifying Screen**

High speed type

Various sizes

**Sizes:**

8×10 Inch(20\*25)cm

10×12 Inch(25\*30)cm

12×15 Inch(30\*38)cm

14×14 Inch(35\*35)cm

14×17 Inch(35\*43)cm

02.04.02 Developers automatic

#### **02.04.02.01 Developer, automatic**

#### **02.04.02.02 Developer, automatic, dry**

### **02.05 Supporting & diagnostic equipment**

#### **02.05.01 Supporting & diagnostic equipment**

##### **02.05.01.01 Negatoscope (x-ray film Viewer) single(min->=1) field**

###### **Required Functional Capabilities:**

X-ray illuminator/viewer, single field

###### **Technical Features and Technical Performance Parameters:**

- \* Size around 40 x 40 x 12 cm
- \* Housing of synthetic material
- \* Metal back plate
- \* Voltage requirements 220V  $\pm 15$  /50Hz .

##### **02.05.01.02 Negatoscope (x-ray film Viewer) double(medium) field**

###### **Required Functional Capabilities:**

X-ray illuminator/viewer, double field

###### **Technical Features and Performance Parameters:**

- \* Size 80 x 40 x 12 cm
- \* Housing of synthetic material
- \* Metal back plate.
- \* Voltage requirements 220  $\pm 15$  V/50Hz.

##### **02.05.01.03 Negatoscope, (x-ray film Viewer) (max )four fields**

###### **Description/Required Functional Capabilities:**

X-ray illuminator/viewer, single field

###### **Technical Features and Technical Performance Parameters:**

- \* Size **approximately** 120 x 40 x 12 cm
- \* Housing of synthetic material
- \* Metal back plate.
- \* Voltage requirements 220  $\pm 15$  V/50Hz

### **02.06 Personal Protection Equipment (PPE)**

#### **02.06.01 Personal Protection Equipment (PPE)**

##### **02.06.01.01 Gonad shield**

For male protection, made from flexible lead rubber

Lead equivalent ( mm p b ) :

##### **02.06.01.02 Lead glass**

Minimum Density ..... around 4.36 gm/ cm<sup>3</sup>

Refractive Index ( Nd )..... around 1.71

Light Transmission..... Around 87.3%

Thickness..... around 1.8 mm

X-ray Peak Voltage..... around 150 kv

##### **02.06.01.03 Lead apron, small**

Very flexible and comfortable design, Tear Proof edges

The apron can be washed and sterilized.

Complete with breast pocket and cross belt with fastener.

Size... small  
At least 0.5mm thickness

**02.06.01.04 Lead apron, medium**

Very flexible and comfortable design, Tear Proof edges  
The apron can be washed and sterilized.  
Complete with breast pocket and cross belt with fastener.  
Size medium

**02.06.01.05 Leadapron, large**

Very flexible and comfortable design, Tear Proof edges  
The apron can be washed and sterilized.  
Complete with breast pocket and cross belt with fastener.  
Size.... large  
At least 2mm thickness

**02.06.01.06 Lead Glove**

- Lead Equivalent (mm pb): 0.25, 0.35. 0.5

**02.06.01.07 TLD**

**02.06.01.08 Ovary Protection**

For female gonad protection, lead sheets 1 mm. pb in PVC  
Sizes small ,medium or large

### 03. Clinical Laboratory Equipments



**Figure 3: Hot plat, Laboratory centricuge and hotplate shaker**

#### 03.01 Sample collection and transportation

03.01.01 Chair, Sample collection

##### **03.01.01.01 Phlebotomy Chair**

**Description:** Blood collecting chair

**Technical Features:**

Upholstered seat and backrest

With special armrest for veni - puncture procedures.

**Technical Specifications**

**Material:**

Couch surface divided into 3 sections: back, Seat, arms

All sections Fixed

**Material:** epoxy coated tubular steel

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Approx. 550 x 600 x 1200 mm (l x w x h)

Seat Height:around 600mm

Back Support Height:around 600mm

Carrying capacity: approx. 150kg.

03.01.02 Sample collection materials for Sputum, urine, stool and other

**03.01.02.01 For Sputum**

**Technical Specifications**

**Material & Dimension:**

Made of Plastic, wide-mouth, Screw Capped, Round & Transparent

Capacity: 25 to 30 ml

**03.01.02.02 For Urine**

**Technical Specifications**

**Material & Dimension:**

Made of Plastic, wide-mouth, Screw Capped, Round & Transparent

Capacity: 25 to 30 ml

**03.01.02.03 for Stool with spoon**

**Technical Specifications**

**Material & Dimension:**

Made of Plastic, wide-mouth, Screw Capped, Round & Transparent

Capacity: 20 to 25 ml

**03.01.02.04 Applicator**

**Description:** Wood, Non-sterile

**Technical Specifications**

**Material & Dimension:**

Made of wood

Length: 150 to 300mm

Diameter: 2 to 4mm

**03.01.02.05 Swab,**

**Description:** Cotton-tip with Sterile Tube

**Technical Specifications**

**Material & Dimension:**

Made of wood, cotton Tip

Length: 150 to 300mm

Diameter: 2 to 4mm

Diameter (Cotton Tip): 3 to 5mm

Tube: Made of glass, Screw Capped

Dimension (Tube): (10 to 20)mm wide by (160 to 310)mm long

03.01.03 Sample transportation

**03.01.03.01 Box,**

**Description:** Storage, slides

**Technical Specifications**

**Material & Dimension:**

Made of Polystyrene

Slide Arrangement: Flat/Vertical

**03.01.03.02 Box,**

**Description:** Specimen transport, Triple Package

**Trolley**

**Description:** Dressing trolley with two or more shelves.

Heavy carriage mounted on 4 swivel castors, of which two with brakes.

Fit on both sides with push bar-handle.

Top and bottom shelves with guard rails, along one length and both widths.

Protective bumpers at all four corners.

**Materials**

High resistance to corrosion (tropical environment).

Frame and tray: Austenitic stainless steel 18/10.

**Dimensions:**

Overall: approx. 900 x 550 x 1000 mm (l x w x h).

Frame, diameter: approx. 30 mm.

Thickness shelves: approx. 1.5 mm

Swivel castors, diameter: approx. 100 mm.

Carrying capacity: approx. 100 kg.

**Supplied with:**

1 x set of tools required for assembly.

**List of parts.**

Detailed step-by-step line drawing based instructions for assembly and safe use.

## 03.02. Hematology/immunohematology

03.02.01. Hematology automated

**03.02.01.01 Hematology Analyzer,**

**Description:** 8 Parameter, 0 diff

**Technical Specifications**

Determination of 8 parameters, for routine haematology

Open system, automatic

Sample size: approx. 30 ul

Throughput: 20 samples per hour

Determination: Red Blood cell (RBC), White blood cell (WBC), Haemoglobin (HGB), Haematocrit (HCT),

Mean cell volume (MCV, MCH and MCHC), PLT

Method impedance with discrimination based on particle size

Calibration: manual calibration for two test modes minimum

Colorimetric haemoglobin determination with auto zeroing

Number of measuring capillaries: 1

Typical counting time: approx. 6 seconds

With self-test capability

Display: LCD screen

Indication of self-test failures and assistance messages

Sample ID, date and time are reported with test results

Supplied complete with dedicated data analysis and data management software

Results are reported on external inkjet printer

Casing, corrosion proof material such as plastic or epoxy coated steel

With built-in RS232, USB 2.0 or equivalent, allowing data transfer

Ambient temperature: approx. 10 C to 30 C

Voltage requirements: 220 V / 50 Hz, with voltage surge protection

Power consumption: state

Supplied with: UPS of sufficient capacity to ensure uninterrupted finalizing of ongoing testing, in case of power variations or power interruption

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

**03.02.01.02 Hematology Analyzer,**

**Description:** 18 parameter, 3diff

**Technical Specifications**

Determination of 18 parameter, with 3-part differential, for routine haematology

Open system, automatic

Sample volume: approx. 30 ul

Throughput: 50 samples per hour, 24h power on, with dormancy and wake function

**Note:** For detail Specifications refer item number **03.02.01.01**

#### **03.02.01.03 Hematology Analyzer,**

**Description:** 21parameter, 5diff

##### **Technical Specifications**

Determination of 21 parameter, with 5-part differential, for routine haematology

Open system, automatic

Sample volume: approx. 30 ul

Throughput: 60 samples per hour, 24h power on, with dormancy and wake function

**Note:** For detail Specifications refer item number **03.02.01.01**

#### **03.02.01.04 Hematology Analyzer,**

**Description:** 24parameter, 5diff

##### **Technical Specifications**

Determination of 24 parameter, with 5-part differential, for routine haematology

Open system, automatic

Sample volume: approx. 30 ul

Throughput: 60 samples per hour.

**Note:** For detail Specifications refer item number **03.02.01.01**

#### **03.02.01.05 Platelet Aggrigometer**

Detect Platelet Dysfunction

Direct luminescence measurement of ATP secretion

Sensitive Luminescence technique

#### **03.02.01.06 Blood gas analyzer**

##### **Technical Features:**

Functions should be selectable on a one per one basis, as any combination or as a whole all patient results, calibration, maintenance schedule and quality control data are displayed on a CRT-screen.

Compact design, light weight

storage of data of 1000 procedures

rinse procedures and reference measurements performed with each sample

automatic zero calibration within each cycle

trend analyses of all measured parameters

different report lay-outs are selectable and are available as print-out

maintenance signals alert container replacement

Blood Gas / CO-oximetry

Small sample < 100µl

Result should be available < 45 sec

Cycle time < 100 sec.

Electrolytes

Small sample < 100µl

Voltage : 220V / 50Hz

Comprising: Quality control solutions and reagents

#### **03.02.01.07 Coagulation Analyzer**

**Description:** Automatic start

##### **Technical Specifications**

Automatic Start, clot detection and display of results

Pre-programmed and user definable methods

Flexibility: Test parameters can be modified

Built-in Quality Control

Detection: Photo-optical (405nm)

Light Source: Halogen and equivalent

Voltage : 220V, 50Hz



### **03.02.01.08 Plasmatic clotting Analyzer**

**Description:** analyzer for determination of plasma clotting

#### **Technical Data**

Application: coagulometric tests such as PT, aPTT, TZ, fibrinogen, single factors FII-FXII (analyser depending) D-Dimer, derived fibrinogen

Restrictions: only for traditional, coagulation clotting tests (no chromogenic substances)

Operation: semiautomated

Measuring principle: turbodensitometric; opto-mechanical with automatic zero adjustment and magnetic stir bar for homogenizing of the test suspension and increased sensitivity.

Sensitivity: PT > 10 % of norm

Test through put: PT 60/h aPTT 30/h, +/- 20 tests/h

Cuvette volume: min 150ul, max. 300ul (test suspension)

Celebration: manual input of calibration points, method dependent

Software: loaded in memory

Programmed method: PT, in sec, %, Ratio, INR (combinations) aPTT, in sec, and Ratio Fibrinogen, in sec, mg/dl, thrombin T in sec D-Dimer PT/Fib(derived Fibrinogen) internal factor, in external factor, in %

Light source: LED, light emitting diode or equivalent

Display: 2 lines with 20 characters each, liquid crystal display

Processor: single chip microcontroller

Incubation block: controlled at 37°C ± 0.3 °C

Measuring channels: 4

Light protection caps: for yellow tips by eppendorf

Reagent vials: for 4 positions, diameter 32mm

Cuvette positions: 16

Disposables: cuvettes, paper for thermal printer; tips

Measuring timer: max. Approx 420 sec

Voltage: 220 ± 10 % V, 50 hz, power state.

Printer; Internal thermal printer, 26 characters/ line, memory = 10 k Byte

Environmental conditions: operating temperature: +10 °C to +30 °C

Transport/storage = -20 °C to +5 °C

Relative humidity: < 85 % none-condensation

System time: real time clock for time and date

Dimensions/Weight: (W x D x H) = state

### **03.02.01.09 Blood analysis system**

#### **SPECIFICATIONS**

##### **Detection Method**

Conventional Electrochemical Methodologies

##### **Analysis Time**

Approximately 90 seconds following sample injection

##### **Measured Values**

Blood gas cartridge: partial H, pCO<sub>2</sub>, pO<sub>2</sub>

Hematocrit (Hct) + Lytes cartridge: Hct, Na, K<sup>+</sup>, iCa<sup>++</sup>

Combo cartridge: parH, pCO<sub>2</sub>, pO<sub>2</sub>, Hct, Na<sup>+</sup>, K<sup>+</sup>, iCa<sup>++</sup>

##### **Calculated Values**

Blood gas cartridge: HCO<sub>3</sub><sup>-</sup>, Total CO<sub>2</sub>, BEb, BEecf, O<sub>2</sub> SAT,

Hct + Lytez cartridge: tHb

Combo cartridge: HCO<sub>3</sub><sup>-</sup>, TCO<sub>2</sub>, BEb, BElectrofied, O<sub>2</sub>SAT, total hemoglobin (tHb), Ca(7.4)

##### **Measurement temperature**

Blood gas sample measured at 37 °C

##### **Patient Temperature Correction**

Automatic with patient temperature entry

##### **Operating/ storage Conditions**

Analyzer and cartridges

Temperature: 15 – 30 °C, 59 – 86 °F; relative humidity: 0 – 80%

**Operating barometric pressure**

Automatically measures barometric pressure: 350 -900 mmHg, 46.6 – 120.0 Kpa

**Minimum Blood Sample size**

0.125 ml from the IRMA capillary Collection device 0.2 ml from a syringe

**Maximum Blood Sample Size**

5.0 ml

**Display resolution**

PH: 0.001pH units

PCO<sub>2</sub>: 0.1 mmHg            0.01 KPa

PO<sub>2</sub>: 0.1 mmHg            0.01KPa

Na<sup>+</sup> : 0.1mM                0.1 mEq/L

K<sup>+</sup> : 0.01mM               0.01 mEq/L

Ca<sup>++</sup>: 0.01 mM

0.01 mEq/L

0.01 mg/dL

Hct: 0.1 %, 0.001 SI units

HCO<sub>3</sub>: 0.1 mM

TCO<sub>2</sub>: 0.1mM

BEb: 0.1 mM

BEecf: 0.1 mM

O<sub>2</sub> SAT: 0.1%

THb: 0.1 mM

0.1 g/dL

Ca (7.4):        0.01mM

0.01mEq/L

0.01mg/dL

**Display ranges**

	Measured	Calculated
pH:	6.0 – 8.0 pH units	HCO <sub>3</sub> :        0.0 – 99.9 mM
pCO <sub>2</sub> :	4 – 200 mmHg	TCO <sub>2</sub> :        0.0 – 99.9 mM
	0.5 – 26.6 KPa	BEb:           +/- 99.9 mM
pO <sub>2</sub> :	20 – 700 mmHg	BEecf:       +/- 99.9 mM
	2.7 – 93.1 KPa	O <sub>2</sub> SAT:      0.0 – 100.0%
Na <sup>+</sup> :	80 – 200 mM	THb:           3.4 – 27.2 g/dL
	80 – mEq/L	2.1 – 17.0 mM
K <sup>+</sup> :	1.0 – 20.0 mM	Ca (7.4):     0.20 – 5.0 mM
	1.0 – mEq/L	0.40 – 10.0 mEq/L
iCa <sup>++</sup> :	0.20 – 5.0 mM	0.80.0 – 20.0 mg/dL
	0.40 – 10.00 mEq/L	(at pH: 7.2 – 7.6)
	0.80 – 20.0 mg/dL	
Hct:	10.0 – 80.0%	
	0.100 – 0.800 SI Units	

**Calibration**

Calibrating solutions is stored pre-packed over the sensors

**Display**

Liquid Crystal Display 9LCD) touch screen

**Power requirements**

Analyzer: 7.2 V rechargeable, 1Amp or Ac Adaptor/describe

Cartridge and EQC Card: none

Battery charger & power supply: 2 lbs

Rechargeable battery:14 oz

**Dimensions**

Analyzer: 11.5" x 9.5" x 5" (L x W x H)  
Cartridges and EQC card: 3.9" x 2.2" x 0.5" (L x W x H)  
Battery Charger: 7.5" x 3.5" x 3.5" (L x W x H)  
Rechargeable Battery: 6.25" x 2.25" x 1.25" (L x W x H)

**Battery Recharge Cycle**

Two-three hours

**Certifications:**

CE mark for EMC UL544, CSA Class 2, ISO 9001 Certified

03.02.02. Hematology manual/batch

**03.02.02.01. Hematocrit reading Scale****Technical Specifications**

Material: PPE, clear and transparent

Graduation: 0 to 100mm

**03.02.02.02 Hemocytometer**

**Description:** Manual

**Technical Specifications**

For WBC, RBC and Platelet counting set

Material made of: Scratch resistant

Counting chamber and thoma pipette

Pipette fit rubber tube with sucker

Accessories: Plastic case, thoma pipette tubes, cover slips

**03.02.02.03 Hemoglobin meter****Technical Specifications**

Detection: Photometric

Display: LED

Voltage: 220V, 50Hz

Accessories: Case, cuvettes,

**03.02.02.04 Differential Cell Counter**

**Description:** Manual

**Technical Specifications**

Manual counter with push button

8 counting unit and one totalizer

All reset to zero with a single knob

Instrument specification: rust proof, water....

**03.02.02.05 Counter,**

**Description:** mechanical and hand tally,

**Technical Specifications**

- Mechanical hand tally lever

- 3 digit readout

**03.02.02.06 Counter, hand tally, mechanical**

03.02.03 Immunohematology

**03.02.03.01. Flowcytometry, CD4**

**Description:** basic type

**Technical Specifications:**

Bench top flow based fluorescence-activated cell sorter.

Volumetric, provides absolute T-lymphocyte counts per unit of volume.

Enumerates CD3, CD4 and/or CD8 cells: approximately ranges 50 to 2500 cells/ul.

Sample volume, for analysis: approximately 50 ul whole blood.

Fit LCD and built-in b/w thermal printer.

Printed report with: date/time/batch, patient ID, CD3/CD4/CD8 absolute cells/ul and the respective ratios CD3/CD4/CD8

Micro-computer with memory stores/retrieves measured results per patient ID.

Alphanumeric display informs about device status and on-going analysis.

Voltage needed: 220 V

**Supplied with:**

1 x Pre-programmed electronic pipette

1 x Coring station

1 x Protocol disk

1 x Waste reservoir

1 x Set of cleaning tubes

1 x Set of dispensing bottles

1 x Instruction manual (User's Guide) in English.

1 x Service manual in English

1 x UPS of sufficient capacity to ensure uninterrupted finalizing of ongoing testing, in case of power variations or power interruption

1 x CD4% software

**Special note: On-site installation and training are included.**

**03.02.03.02 Flowcytometry, CD4,**

**Description:** advanced type

**03.03 Clinical Chemistry**

03.03.01 Chemistry automated

**03.03.01.01 Spectrophotometer**

**Description:** Semi-automated type

**Technical Specifications**

Batch process determination of routine clinical chemistry parameters

Open system, semi-automatic/optional

Fits with 20 reagent positions of 50 ml

Throughput up to 60 tests per hour

Pre-programmed and user programmable routines and profiles

With self-test capability

Indication of self-test failures and assistance messages

Temperature: 3 thermal zones

Incubation 1 min to 3 hours

Preheated reagent transfer arm

Built-in rinsing and waste reservoirs

Analysis: end point, differential, fixed time, kinetic, multi standard

Curve of calibration: 8 points, linear and logarithmic

Calculation: linear, exponential and polygon

Optical system: interference filter, mono and dichromatic.

Filters up to 8 per wheel with automatic selection

Light Source: halogen (12 V / 20 W) optional

Absorption: -0.200 to 2.500 DO, < 0.0001 D.O. >

Spectrum: 300 to 700 nm

Accuracy: CV <1 % at 2.0 DO

Sample ID, date and time are reported with test results

Supplied complete with dedicated data analysis and data management software on external PC

Results reportable via external printer or internal printer

Casing, corrosion proof material such as plastic or epoxy coated steel

Power requirements: 220 V / 50 Hz, with voltage surge protection  
Supplied with: UPS of sufficient capacity to ensure uninterrupted finalizing of ongoing testing, in case of power variations or power interruption(optional)  
Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

### **03.03.01.02 Spectrophotometer**

**Description:** Fully Automated type

#### **Technical Specifications**

Microprocessor based Spectrophotometer.  
Wavelength range of 190 to 1100nm.  
Double beam measuring system for accurate results.  
Double bulb optical system to cover full range of wave length  
Optical bandwidth of approx 5nm.  
Wave length accuracy of +1.0nm.  
Graphic display for display of measured value in terms of table and graphs.  
Fully Programmable.  
Automatic adjustment of maximum sensitivity.  
Self Test and Calibration.  
Auto Lamp and Filter Selection by changing the wavelength setting.  
Multi-Wavelength Assays facility.  
Integral printer.(optional)  
RS232 interface  
Supply with spare lamps, fuses, dust cover and two quartz cells.  
Voltage 220V, 50 Hz.

### 03.03.02 Electrolyte analyzer

#### **03.03.02.01 Ion Selective Electrode**

##### **Technical Specifications:**

Measure Electrolyte levels in all kinds of samples type (whole Blood, Serum, Plasma & Diluted Urine)  
Analysis Time: Less than 40 seconds  
Reagent utilization: Open system /(closed optional)  
Electrodes: Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>, Ca<sup>++</sup>, Mg<sup>++</sup>, Li<sup>3+</sup>  
Electrodes life: Minimum 2 years.  
Warranty for electrodes: At least one year.  
With built-in Thermal Printer  
Power: 220V, 50Hz

##### **Supplied With**

Internal Quality control and calibration system and control material

### 03.03.03 Glucose meter

#### **03.03.03.01 Photometer, Glucose**

**Description:** for glucose measurement

##### **Technical Specifications:**

Hand-held device, easy transportation and set-up.  
Provides direct reflectance reading of inserted cuvette.  
Wavelength: 660 nm (maxi absorbance point) and 840 nm (turbidity compensation)  
Factory calibrated and built-in self test (when device is switched-on).  
Automatic zero setting between measurements.  
Sample size in cuvette approx: 5 to 10 uL (capillary, venous or arterial whole blood).  
Uses dedicated single-use micro-cuvette (closed system).  
Cuvette allows collecting blood from patient's skin by capillary action.  
Measuring range, approx: 0-400 mg/dL.  
Reading time, approx: 10 sec to 5 min.  
Read-out, re-settable in: mg/dL or mmol/L.  
Display informs: glucose reading, reading errors, systems errors, battery status.

Interfaces: RS 232 to printer or computer.

Power supply: 220V, 50 Hz.

**Supplied as set containing:**

1x Hand-held glucose measuring device.

1 x Set of micro-cuvette.

1 x Box of 200 lancets (sterile single-use, auto-disable, incision 2.2mm)

1 x Set of cleaners.

1 x CD, user training and trouble shooting in English.

1 x Instruction manual English

**Accessories/Spare parts/Consumable:**

Microcuvette

leaner for photometer

Lancet,safety,sterile,single-use

**Instructions for use:**

Near-patient (point-of-care) assessment of capillary blood haemoglobin.

03.03.04 Urinalysis

**03.03.04.01 Urine Chemistry Analyzer**

**Description:** for Urine analysis

**Technical features:**

LCD Display

Hand held barcode reader

Power: 220V, 50Hz/ with appropriate adopter

Operating Temperature Range: 180C to 300C

Auto calibration with power ON

## 03.04 Serology

03.04.01. Serology automated, ELISA

**03.04.01.01 Microplate ELISA Reader,**

**Description:** Reader with 8 channel

Microplate reader and evaluation unit for ELISA evaluation.

Multi channel auto reader with on-board data reduction and reporting.

For kinetics, endpoint and scanning read modes. Shaking mode.

**Technical features:**

Wavelength range of approx 300-900 nm.

Absorbency ranges 0.000-4.000 O.D.

Serial and parallel interfaces.

Accommodates all 96-well micro plates.

Six filter capacity. Filters supplied: 405nm, 450nm, 490nm, 630 nm.

**03.04.01.02 Micro plate ELISA Washer,**

**Description:** Washer with 8 channel

**Technical Specifications**

8-channel strip manifold

Open system, automatic

Automatic rinse & prime programme

75 user-definable protocols

Wash parameters include: 16-character assay name, number of cycles, wash volume, flow rate and variable soak times

Dispense only and aspirate only modes for reagent addition and removal

Built-in multi-speed shaker for improved CVs and reduced assay backgrounds

Crosswise aspiration/double aspiration of flat bottom micro-plates for reduced residual liquid

Bottom wash mode for rapid dilution of reagent

Built-in vacuum & pressure pump assembly  
 Bottles for waste rinse and wash  
 Accommodates flat, U or V-shaped bottom plates  
 Between 1 - 10 wash cycles  
 Dispensing volumes from 25 to 3000 ul  
 Soak time: 1- 600 seconds  
 Fluid flow rate in 150 to 1000 ul / well / sec to accommodate cellular assays  
 Spill-over protection & electronics isolated from fluidics  
 Optional automatic buffer switching  
 Flip out aerosol cover or similar  
 Power requirements: 220 V / 50 Hz, with voltage surge protection  
 Supplied with: UPS of sufficient capacity to ensure uninterrupted finalizing of ongoing testing, in case of power variations or power interruption  
 Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.04.01.03 ELISA, Incubator,**

**Description:** Oven with 4 plates

##### **Technical Specifications**

Micro plate shaker / incubator suitable for all standard depth 96-well plates  
 Heated lid and base cover the plate entirely  
 Positions to accommodate 4 plates  
 Continuous or timed operation, with alarm buzzer and automatic switch-off  
 Temperature range: ambient plus 5 C to 60 C  
 Temperature stability: approx. 0.1 C, uniformity approx. 0.2 C  
 Shaking speed: 250 to 1200 rpm, adjustable in steps of 10 rpm  
 Orbit, approx. 2 mm  
 LCD displays time set and elapsed, temperature set and actual  
 Power requirements: 220 V / 50 Hz, with voltage surge protection  
 Supplied with: UPS of sufficient capacity to ensure uninterrupted finalizing of ongoing testing, in case of power variations or power interruption  
 Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

### **03.05 Microbiology**

#### **03.05.01 Incubators**

##### **03.05.01.01 Incubator,**

**Description:** Basic type

##### **Technical Specifications**

Double door: outside metal, inside made of tempered glass providing viewing of content  
 Micro-processor controlled stable temperature for culturing of media  
 Temperature range: 20 °C to 60 °C  
 Temperature variation: approx. 0.5 °C at 37 °C  
 Digital temperature display  
 Capacity 30 L, with natural air circulation  
 Double wall construction for temperature insulation  
 User setting of temperature and time  
 Electronic on-off control, as well as a safety device against overheating  
 Unit fit with 2 shelves, adjustable height  
 Inner chamber, stainless steel  
 Outer cabinet, epoxy coated steel  
 Power requirements: 220 V / 50 Hz, with voltage surge protection  
 Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.05.01.02 Incubator,**

**Description:** CO<sub>2</sub> Incubator

##### **Technical Specifications**

Proven thermo conductivity CO<sub>2</sub> regulation

Heating Laboratory Incubator

Digital display

Size: To be stated

#### **03.05.01.03 Incubator,**

**Decsription:** CO<sub>2</sub> Incubator,

**Description:** Dual chamber

##### **Technical Specifications**

Temperature range: 30 °C (at least 5 °C above ambient) to 70 °C

Temperature variation (time): < ±0.05 °C at 37 °C

Triple over temperature protection:

If the electronic heating control should fail, heating is switched off at a fixed level of 3 °C above the set point.

An adjustable over temperature controller TWW protection class 3.1 (optional adjustable electronic temperature limiter TWB protection class 2) takes over control at a preset temperature in case of failure.

In addition a mechanical temperature limiter, TB, switches off heating permanently if the maximum permitted oven temperature is exceeded by approx. 10 °C.

2 high-grade platinum temperature sensors Pt 100 in a 4-wire circuit (for stable long-term transmission of measurement signals) with mutual sensor monitoring and operation transfer at same working temperature

Programmable digital timer (1 min. to 999 hrs) and weekly programmer for temperature control profile with a maximum of 4 segments: Switch on with time delay, heat up, retain set temperature (dependent on set point, if required) and defined cooling down

Loop (repeat function)

Manually adjustable air flap for fresh air intake

Speed of fan can be controlled at 10% intervals, or shut down (IF)

Simultaneous display of all parameters, such as temperature, weekday, time, fan speed (IF) and ramp segment information

Visual alarm if temperature is exceeded

Function signals for stand-by, operating mode, heating and over temperature

Internal log memory with 1024kB to save temperature and error states, with timestamp to the minute

Serial RS-232 communication interface (option: USB) and software Celsius to control the appliance and to read out the appliance's internal log memory

#### 03.05.02 Culture

##### **03.05.02.01 Dispenser,**

**Description:** Drug sensitivity Disc

##### **Technical Specifications**

Multichannel

Dispensing more than six discs at a time

Option to dispense desired discs only

Size: To be stated

##### **03.05.02.02 Bunsen burner**

##### **Technical Specifications**

Fuel: Natural Gas

Housing: heat resistive material

Burner Head: heat resistive material

Burner shaft with drain: To be stated

Dimension : To be stated



### **03.05.02.03 Colony counter**

#### **Technical Specifications**

Manual counting with pen

LED Display

Refresh switch for re-counting

Wolffhuegel glass grid with focusing facility

Range: 0 to 9999

Dish Size: state

Power: 220V, 50Hz

### **03.05.02.04 Reading Lamp,**

**Description:** Table Top

#### **Technical Specifications**

White Light

Adjustable Stem

Power: 220V, 50Hz

Power Rating: Not less than 100W

### **03.06 Molecular Biology**

#### **03.06.01 Detection/sample application**

##### **03.06.01.01 Fast Protein Liquid Chromatography System (Electrophoresis)**

**Description:** Electrophoresis equipment with densitometer, Composed of:

#### **Densitometer:**

high performing software

dialogue through function keys

10 pre-set scanning programs including 3 free programs

automatic or manual identification of the fractions

quality control program

automatic selection of wavelengths

flat back-lit LCD screen

bi-directional RS232 connection

external keyboard

external printer connection

Electrophoresis chamber, designed for low voltage routine electrophoresis

with gel holder for cellulose acetate membranes and agarose gels

two rows of brackets on each side

security lock to prevent opening during operation

**Hydro gel accessories kit:** includes vessels, incubation boxes, holders

microprocessor controlled

digital display shows voltage, current or volt-hours

to supply either stabilized voltage or stabilized programmable current (0 to approx 300 V, 0 to approx 200 mA)

automatic stop with built-in timer

power requirements 220 V, 50Hz

#### **Incubator-dryer for electrophoresis**

3 preset temperatures:  $\pm 35^{\circ}\text{C}$   $\pm 50^{\circ}\text{C}$   $\pm 80^{\circ}\text{C}$

drying at fixed controlled temperature

equipped with ventilator for tangential airflow

power requirements: 220V, 50 Hz

It should also Includes:

electrophoresis tank

reagents and consumable for 1000 tests/describe

### **03.06.01.02 Thermal Cycler (PCR)**

#### **Technical Specifications**

Micro well plate for PCR cycles

Fits all standard thermo-cyclers, real-time PCR systems and DNA sequencers

Individually wrapped sterile, RNase and DNase free

Accommodates content of 0.2 ml PCR tubes

Contains 96 slightly opaque white wells, alphanumerically identified

Well edges slightly raised facilitate plate sealing

Thin walls for optimal thermal transfer

Well shape: U-bottom

Material: polypropylene, autoclavable

Supplied with: 1 x Set of pierceable sealing films, aluminium-based, self-adhesive

### **03.07 Histopathology**

#### **03.07.01 Sample processing machine**

##### **03.07.01.01 Microtom rotating, Cryostat Frozen Section Machine**

**Description:** Paraffin & CO<sub>2</sub>, Freezing

Complete rotating Microtome for work with paraffin blocs and also in frozen technique

#### **Technical features**

Microtome w/o accessories

1 universal knife holder base

1 disp. blade holder

disposable blades 75 x 8 mm.

1 standard knife holder N, w/o base

1 Knife, 16 cm, profile c, steel

1 knife, 22 cm., profile d. steel

1 specimen orientation device

1 stand spec. clamp, orient

1 cooling stage, 40 mm. diam. w/CO<sub>2</sub> hose, 150 cm.

1 trolley stand, CO<sub>2</sub> bottle

1 quick-freezing nozzle with hose for CO<sub>2</sub> freezing

##### **03.07.01.02 Microtom knife sharpner**

**Description:** Knife Sharpener

Automatic Microtome knife sharpener with high performance cutting edge procedures.

#### **Technical features:**

2 glass hone plates

2 bottle coarse abrasive

2 bottle hone glass compound

wood inspection block

power requirements: 220V/50Hz

##### **03.07.01.03 Microtom Kinfe with Maintenance Kit**

#### **Technical features**

stropping back 16 cm c & b knife

stropping back 16 cm d knife

knife handle

1 honing stone fine yellow, 25 x 5 cm

1 honing stone, blue-green, 25 x 5 cm.

Metal case for 2 honing stones, block strop, table clamp, strop paste.

1 strop block, Heidelberg type

1 table clamp f. strop block Heidelberg

1 strop paste,

03.07.02. Tissue processor

#### **03.07.02.01 Automatic Tissue Processor**

**Description:** Automatic tissue-processor for 12 processing stations with transport and agitation mechanism

**Technical Features:**

24 specimen containers  
tissue basket  
wax bath  
glass beakers  
beaker carriers  
2 timing discs  
notching pliers  
program control clock  
several special tissue containers and dividers

#### **03.07.02.02 Tissue embedding centre**

**Description:** Tissue/wax embedding center, complete work station, consisting of:

**Technical features:**

wax storage reservoir of 5 liter capacity, which is thermostatically controlled  
foot switch  
hot and cold plate area  
tissue storage compartment  
warming compartment  
forceps warmer  
magnifying glass  
Power requirements: 220V/50Hz.

#### **03.07.02.03 Dissecting Instruments Set**

**Description:** Dissecting instruments set, consisting of:

2 dissecting knives, long  
2 post mortem knives  
2 scalpels stain steel for heavy duty work  
2 razor blade knives  
2 scalpel handles no.4 and 2 handles no. 4 L  
4 standard surgical scissors straight  
4 ditto, curved  
2 iris scissors  
2 Metzenbaum scissors, str.17 cm  
2 enterotomy scissors  
4 forceps, tissue  
2 Adson forceps  
2 rochester-ochsner forceps  
2 mosquito forceps  
1 liston bone cutting forceps  
2 grooved directors

#### **03.07.02.04 Paraffin Dispenser, 6liter**

**Description:** The paraffin dispenser for the pathology lab

**Technical features:**

Capacity 6 l or approx 6 kg melted paraffin  
Complete with:  
Thermostat, adjustable up to 70 C.  
valve by foot-switch, can also be operated by hand  
heating elements  
mains cable

power requirements: 220V/50Hz

#### **03.07.02.05 Paraffin Cooling Plate**

**Description:** Cooling plate, table top model, low working height: 3 cm

**Technical features:**

Cooling by a service free cooling aggregate

Temperature range +5 °C to -20 °C.

Working area: approx 40 x 32 cm

Built-in sensor

Power requirements: 220V/50Hz

#### **03.07.02.06 Automatic Tissue Slide Stainer**

**Description:** Automatic stainer, easily programmable for histology and cytology

**Technical features**

immersion timer from 1 second up to 59 minutes

rotating turn-table

programmable agitation

water wash, flow rate up to 750 ml per minute reproducible conditions

built-in alarm in case of power failure

**Supplied with:**

slide holders, 64 slides capacity

4 water wash troughs

24 staining troughs

water inlet and outlet tubing

power requirements: 220V/50Hz

#### **03.07.02.07 Cabinet, Storage, Slides & wax Block**

**Description:** Cabinet for storage of approx 2000 paraffin blocks 13 x 35 x 32 mm.

**Technical features:**

14-drawer unit, 1", 6000 slides, 76 x 26 mm.

base for storage drawers, approx 110 mm. high

cover for storage drawers, approx 25 mm. high

#### **03.07.02.08 Slide warming Table**

**Description:** Slide warming or stretching table with constant temperature, exact temperature control by thermostat.

**Technical features**

The working plate is black anodized

Dimensions, approx 60 x 8 x 25 cm (w x h x d)

Heating surface, approx. 645 cm<sup>2</sup>

Power requirements: 220V/50Hz

### **03.08 General laboratory equipment**

#### **03.08.01 Water distiler**

##### **03.08.01.01 Distiller, water, with tank**

**Technical Specification:**

Automatic water stills

Improved safety to BSI and IEC1010 standards

Pyrex double pitch coil condenser that gives low temperature distillate

Cut out in the event of feed water failure

Output:- approx 2liter in per hr

Power supply:- 220V, 50Hz

Supplied With:- Pyrex reservoir complete.

Operating and technical manual in English

#### **03.08.01.02     Distiller, water, 4 l/hr, with tank**

##### **Technical Specification:**

Automatic water stills

Improved safety to BSI and IEC1010 standards

Pyrex double pitch coil condenser that gives low temperature distillate

Cut out in the event of feed water failure

Output:- aprox 4l/hr

Power supply:- 220V, 50Hz

Supplied With:- Pyrex reservoir complete.

Operating and technical manual in English

#### **03.08.01.03     Distiller, water, 8 l/hr, with tank**

##### **Technical Specification:**

Automatic water stills

Improved safety to BSI and IEC1010 standards

Pyrex double pitch coil condenser that gives low temperature distillate

Cut out in the event of feed water failure

Output:- aprox 8l/hr

Power supply:- 220V, 50Hz

Supplied With:- Pyrex reservoir complete.

Operating and technical manual in English

#### **03.08.01.04     Distiller, water, 12 l/hr, with tank**

##### **Technical Specification:**

Automatic water stills

Improved safety to BSI and IEC1010 standards

Pyrex double pitch coil condenser that gives low temperature distillate

Cut out in the event of feed water failure

Output:- aprox 12l/hr

Power supply:- 220V, 50Hz

Supplied With:- Pyrex reservoir complete.

Operating and technical manual in English

#### **03.08.02 Sterilization**

##### **03.08.02.01     Sterilizer, steam, 5 liter**

##### **Technical Specifications**

Stand-alone table top steam sterilizer with drying cycle

Internal chamber size diameter: approx. 30 cm

Internal chamber volume: aprox 5 L

Interior chamber: stainless steel

With 1 removable shelves

Two automatic programs: approx. 2.2 bar at 134 C, and 1.1 bar at 121 C

Power returns to standby mode upon completion of cycle

Single door, self-sealing with high-quality silicone gasket

Epoxy coated metal housing, interior chamber of stainless steel

Soft-touch control panel allow easy cleaning

Panel reports operating temperature, pressure and time, low-water level, as well as system errors (e.g. door)

Safety feature protect against over-pressure and over-temperature

Audio visual alarm at cycle end and in case of failure or potential danger

Power requirements: 220 V / 50 Hz, with voltage surge protection

Supplied with: 2 x Gaskets (spare)

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.08.02.02 Sterilizer, steam, around 20 liter**

##### **Technical Specifications**

Stand-alone table top steam sterilizer with drying cycle

Internal chamber size diameter: approx. 30 cm

Internal chamber volume: approx 20 L

Interior chamber: stainless steel

With 3 removable shelves

Two automatic programs: approx. 2.2 bar at 134 C, and 1.1 bar at 121 C

Power returns to standby mode upon completion of cycle

Single door, self-sealing with high-quality silicone gasket

Epoxy coated metal housing, interior chamber of stainless steel

Fit with 5 L water reservoir, auto-fill and autonomy for approx. 10 cycles

Water circuit with high-efficiency bacteriological filter

Soft-touch control panel allow easy cleaning

Panel reports operating temperature, pressure and time, low-water level, as well as system errors (e.g. door)

Safety feature protect against over-pressure and over-temperature

Audio visual alarm at cycle end and in case of failure or potential danger

Power requirements: 220 V / 50 Hz, with voltage surge protection

Supplied with: Bacteriological air filters (spare), Gaskets (spare)

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

#### **03.08.02.03 Sterilizer, steam, 40 liter**

##### **Technical Specifications**

Stand-alone table top steam sterilizer with drying cycle

Internal chamber size diameter: approx. 30 cm

Internal chamber volume: approx. 40 L

Interior chamber: stainless steel

With 4 removable shelves

Two automatic programs: approx. 2.2 bar at 134 C, and 1.1 bar at 121 C

Single door, self-sealing with high-quality silicone gasket

Epoxy coated metal housing, interior chamber of stainless steel

Water circuit with high-efficiency bacteriological filter

Soft-touch control panel allow easy cleaning

Panel reports operating temperature, pressure and time, low-water level, as well as system errors (e.g. door)

Safety feature protect against over-pressure and over-temperature

Audio visual alarm at cycle end and in case of failure or potential danger

Power requirements: 220 V / 50 Hz, with voltage surge protection

Supplied with: Bacteriological air filters (spare), Gaskets (spare)

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

#### **03.08.02.04 Sterilizer, steam**

##### **Technical Specifications**

Stand-alone table top steam sterilizer with drying cycle

Internal chamber size diameter: approx. 30 cm

Internal chamber volume: approx 80 L

Interior chamber: stainless steel

With removable shelves

Two automatic programs: approx. 2.2 bar at 134 C, and 1.1 bar at 121 C

Single door, self-sealing with high-quality silicone gasket

Epoxy coated metal housing, interior chamber of stainless steel

Water circuit with high-efficiency bacteriological filter

Soft-touch control panel allow easy cleaning

Panel reports operating temperature, pressure and time, low-water level, as well as system errors (e.g. door)

Safety feature protect against over-pressure and over-temperature  
Audio visual alarm at cycle end and in case of failure or potential danger  
Power requirements: 220 V / 50 Hz, with voltage surge protection  
Supplied with: Bacteriological air filters (spare), Gaskets (spare)  
Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

#### **03.08.02.05 Sterilizer, dry heat**

**Description:** Hot air sterilizer, with automatic sterilization process with timer.

**Technical Features:**

Temperature range: 60 °C to 250 °C

Operating time: state min.

Sterilization at 180°C for: instruments, syringes, etc.

internal dimensions: state

external dimensions: state

approx 20 liter

With thermostat and ventilator

Including instrument trays

Power requirements: 220V/50Hz.

Power consumption: describe

#### **03.08.02.06 Sterilizer, dry heat, around 40 liter**

**Description:** Hot air sterilizer, with automatic sterilization process with timer.

**Technical Features:**

Temperature range: 60 °C - 200 °C

Operating time: state min.

Sterilization at 180 °C for: instruments, syringes, etc.

internal dimensions Approx. state

external dimensions: state (w x d x h)

approx 40 liter

With thermostat and ventilator

Including instrument trays

Power requirements: 220V/50Hz.

Power consumption: describe

#### **03.08.03 Refrigerator**

##### **03.08.03.01 Refrigerator, lab**

**Description:** Upright refrigerator for storage of chemicals and reagents in clinical laboratory

**Technical Specifications**

Compression type, CFC-free refrigerant, with spark free ignition

Fan-cooled for even distribution of air in the cabinet

Stainless steel structure

Internal gross volume: 110 to 120 L

Easily adjustable shelves

Insulation material: polyurethane, CFC-free

Lockable door, solid

Electronic temperature control: 2 °C to 8 °C

Accuracy, whatever the load: +/- 1 °C

Ambient operating temperature, range: 10 °C to 43 °C

Temperature monitoring:

External digital display with actual interior temperature, minimal graduation 0.1 °C

Electronic temperature recording device

Audio and visual alarm system indicates unsafe temperatures

Battery back-up for audio and visual alarm system, and temperature recording device

Fitted with integrated castors

Minimum compressor starting voltage: 22 % below nominal voltage

Meeting quality standard ISO 8187 / EN 28187  
 Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1  
 Power requirements: 220 V / 50 Hz  
 Power consumption: approx. 250 W/ describe  
 Supplied with automatic voltage regulator:  
 Microprocessor controlled spike and surge protection, and protection against disturbances  
 Nominal output voltage: 220 V / 50 Hz, single phase  
 Accepted input range: -30 % to +20 %  
 Output accuracy: +/- 4 %  
 Correction speed: 1250 V/s  
 Response time: <15 ms  
 Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation  
 And load as % of nominal current  
 Permissible overload: 1000 % during 100 ms  
 Electronic fuse disconnects and reconnects automatically  
 KVA rating matches power consumption of the refrigerator  
 Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

### **03.08.03.02 Refrigerator, lab around , 250L**

**Description:** Upright refrigerator for storage of chemicals and reagents in clinical laboratory

#### **Technical Specifications**

Internal gross volume: 240 to 260 L  
 Power consumption: approx. 500 W/ describe

**For detail specifications refer Item Item number 03.08.03.01**

### **03.08.03.03 Refrigerator/freezer**

**Description:** Upright refrigerator freezer combination for storage/conservation of chemicals/reagents in clinical laboratory

#### **Technical Specifications**

Compression type, CFC-free refrigerant, with spark free ignition  
 Fan-cooled for even distribution of air in the cabinet  
 Stainless steel structure  
 Refrigerator, internal gross volume: 170 to 200 L  
 Freezer, internal gross volume: 30 to 50 L  
 Easily adjustable shelves  
 Insulation material: polyurethane, CFC-free  
 Lockable door, solid  
 Refrigerator, electronic temperature control: 0 °C to 8 °C  
 Freezer, electronic temperature control: up to -20 °C  
 Accuracy for both, whatever the load: +/- 1 °C  
 Ambient operating temperature, range: 10 °C to 43 °C

#### **Temperature monitoring:**

External digital displays with actual interior temperatures, minimal graduation 0.1 °C  
 Electronic temperature recording devices  
 Audio and visual alarm system indicates unsafe temperatures  
 Battery back-up for audio and visual alarm system, and temperature recording device  
 Fitted with integrated castors

Minimum compressor starting voltage: 22 % below nominal voltage  
 Meeting quality standard ISO 8187 / EN 28187  
 Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1  
 Power requirements: 220 V / 50 Hz  
 Power consumption: approx. 500 W / describe  
 Supplied with automatic voltage regulator: (optional)  
 Microprocessor controlled spike and surge protection, and protection against disturbances



Nominal output voltage: 220 V / 50 Hz, single phase  
 Accepted input range: -30 % to +20 %  
 Output accuracy: +/- 4 %  
 Correction speed: 1250 V/s  
 Response time: <15 ms  
 Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation  
 And load as % of nominal current  
 Permissible overload: 1000 % during 100 ms  
 Electronic fuse disconnects and reconnects automatically  
 KVA rating matches power consumption of the refrigerator freezer combination  
 Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

#### **03.08.03.04 Freezer, lab**

**Description:** Upright freezer for storage/conservation of chemicals/reagents in clinical laboratory

##### **Technical Specifications**

Internal gross volume: 130 to 160 L  
 Electronic temperature control: up to -20 °C  
 Accuracy, whatever the load: +/- 1 °C

##### **Temperature monitoring:**

Power consumption: approx. 300 W/ describe

**For detail specifications refer Item Item number 03.08.03.03**

#### **03.08.04 Waterbath**

##### **03.08.04.01 Water bath, basic around 4 liters**

##### **Technical Specifications**

- Temperature range: from 3 °C above ambient to 100 °C
- Variations within the bath: approx. 0.1 °C
- Equipped with micro agitator homogenizing bath temperature
- Stainless steel bath interior and exterior
- With overheating protection
- Low water level warning
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Power consumption: approx. 1200 W/ describe
- Supplied with: Stainless steel test tubes rack and cover lid
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

##### **03.08.04.02 Water bath, basic around 8 liters**

##### **Technical Specifications**

For detail sopecifications refer item number 03.08.04.01

##### **03.08.04.03 Water bath, basic around , 14 liters**

For detail sopecifications refer item number 03.08.04.01

##### **03.08.04.04 Water bath, basic around 22 liters**

##### **Technical Specifications**

For detail sopecifications refer item number 03.08.04.01

##### **03.08.04.05 Water bath, with shaker, around 4 liters**

##### **Technical Specifications**

For detail sopecifications refer item number 03.08.04.01

##### **03.08.04.06 Water bath, with shaker, around 8 liters**

##### **Technical Specifications**

For detail sopecifications refer item number 03.08.04.01

##### **03.08.04.07 Water bath, with shaker,around 14 liters**

##### **Technical Specifications**

For detail specifications refer item number 03.08.04.01

#### **03.08.04.08 Water bath, with shaker around 22 liters**

##### **Technical Specifications**

For detail specifications refer item number 03.08.04.01

#### **03.08.05 Pipettes**

##### **03.08.05.01 Pipette Stand**

##### **Technical Specifications**

- Bench top stand holding 4 automatic pipettes
- Made of chemical resistant material
- Rotating
- Accommodates wide range of automatic single channel pipettes
- Sturdy construction for optimal stability

##### **03.08.05.02 Pipette, digital 2-20 ul**

##### **Technical Specifications**

- Automatic air displacement micro pipette
- Made of sturdy chemical resistant material
- Accommodates detachable disposable tips, ranging 2-20 ul
- Handle with digital setting and read-out of delivered volume
- Push button tip ejecting system
- Can be steam autoclaved

##### **03.08.05.03 Pipette, digital 10-100ul**

##### **Technical Specifications**

- Automatic air displacement micro pipette
- Made of sturdy chemical resistant material
- Accommodates detachable disposable tips, ranging 10-100 ul
- Handle with digital setting and read-out of delivered volume
- Push button tip ejecting system
- Can be steam autoclaved

##### **03.08.05.04 Pipette, digital 20-200ul**

##### **Technical Specifications**

- Automatic air displacement micro pipette
- Made of sturdy chemical resistant material.
- Accommodates detachable disposable tips, ranging 20-200 ul
- Handle with digital setting and read-out of delivered volume
- Push button tip ejecting system
- Can be steam autoclaved

##### **03.08.05.05 Pipette, digital 100-1000ul**

##### **Technical Specifications**

- Automatic air displacement micro pipette
- Made of sturdy chemical resistant material
- Accommodates detachable disposable tips, ranging 100-1000 ul
- Handle with digital setting and read-out of delivered volume.
- Push button tip ejecting system
- Can be steam autoclaved

##### **03.08.05.06 Multi-channel Pipette, 5-50ul**

##### **Technical Specifications**

- Automatic air displacement micro pipette

- Made of sturdy chemical resistant material
- Accommodates detachable 8 disposable tips, ranging 5-50 ul
- Handle with digital setting and read-out of delivered volume
- Push button tip ejecting system

### **03.08.05.07 Multi-channel Pipette, 8 channel, 20-200ul**

#### **Technical Specifications**

- Automatic air displacement micro pipette
- Made of sturdy chemical resistant material
- Accommodates detachable 8 disposable tips, ranging 20-200 ul
- Handle with digital setting and read-out of delivered volume
- Push button tip ejecting system

### **03.08.06 Microscopes**

#### **03.08.06.01 Monocular**

##### **Technical Specifications**

Microscope frame with revolving, 30 degree inclined Monocular tube

Fixed graduated mechanical stage approx. 200 x 150 mm, travelling approx. 80 x 50 mm

Double slide holder

Coarse focusing: approx. 3 mm per rotation

Fine focusing: approx. 0.3 mm per rotation

Range of total magnification: 40 to 1000x

Reverse angle quadruple revolving nose-piece, with distinct click-stop, with rubber grip for easy handling

Objectives, full plan achromatic: 4x (0.10 NA), 10x (0.25 NA), 40x (0.65 NA), 100x (1.25 NA, oil)

Condenser: Abbe with iris diaphragm aperture, 1.25 NA

Eyepieces: Focusable pair, 10x (FN 20), with inter-pupillary distance- and dioptre adjustment

Retractable eye guards

Filter: blue

All optics anti-fungus treated

Halogen bulb 6 V / 20 W (optional)

Brightness control: 0 to 100 % (linear)

Detachable plano-concave mirror unit with adjustable convex and concave mirror on alternate side

Power requirement: 220 V / 50 Hz, with voltage surge protection

Power Consumption: approx. 30 W/ describe

Supplied with:

- 1 x Plano-concave mirror attachment
- 1 x Pair eye shades
- 1 x Pair of tube caps
- 1 x Oil, immersion
- 1 x Lens cleaning kit consisting of lens cleaning tissue, 100 ml cleaning solution, dust blower
- 2 x Spare halogen bulb and equivalent
- 2 x Fuse
- 1 x Power cord
- 1 x Dust cover

Supplied with: Instructions for use, for preventive maintenance and troubleshooting in English.

#### **03.08.06.02 Binocular**

##### **Technical Specifications**

Microscope frame with revolving, 30 degree inclined binocular tube

For detail specifications refer item number **03.08.06.01**

#### **03.08.06.03 Trinocular**

##### **Technical Specifications**

Microscope frame with 360 degree revolving, 30 degree inclined binocular tube

Third ocular allows for integration of camera via C-mount, with 0.5x reduction  
 Fixed graduated mechanical stage approx. 200 x 150 mm, travelling approx. 80 x 50 mm  
 Double slide holder  
 Coarse focusing: approx. 3 mm per rotation  
 Fine focusing: approx. 0.03 mm per rotation  
 Tension Adjustable Coarse Focusing  
 Rack and Pinion Steel Gears  
 Range of magnification: 40 to 1000x  
 Eyepieces: Focusable Wide field 10x and 16x (FN 20), with inter-pupillary distance- and dioptic adjustment  
 Retractable eye guards  
 Reverse angle quadruple revolving nose-piece, with distinct click-stop, with rubber grip for easy handling  
 Objectives, full plan achromatic: 4x (0.10 NA), 10x (0.25 NA), 40x (0.65 NA), 100x (1.25 NA, oil)  
 Condenser: Abbe with iris diaphragm aperture, 1.25 NA  
 Eyepieces: pair, 10x (FN 20), with inter-pupillary distance- and diopter adjustment  
 Filter: Blue, green and equivalent  
 All optics anti-fungus treated

**Illumination:**  
 Koehler illumination with center alignment and adjustable field diaphragm  
 Halogen bulb 6 V / 30 W (optional)  
 Brightness control: 0 to 100 % (linear)  
 Camera with software:  
 Digital still image and video capturing, processing and storage/retrieve software  
 Sensor, 1/3 inch CMOS  
 Light sensitivity down to 3 lux  
 Exposure time, automatic / manual: 2 s to 0.1 ms  
 Video imaging up to approx. 20 frames per second  
 Controls: automatic and manual white balance, RGB, camera sensitivity / gain  
 Resolution still image: approx. 1024 x 600 pixels, effective size approx. 3 MB  
 Provided with USB 2.0 power- and data connection to external computer  
 Plug-and-play Windows XP compatible  
 Formats supported: mpeg, avi, jpg, jpeg, bmp and tiff  
 Real time features: capture real time still and video, pointer arrow, reticule overlay, zoom and pan, freeze function, positive negative image, store and retrieve still and streaming video  
 Post processing features: adjust brightness, contrast and color, onscreen annotation of date/time, distance 2 circles, circle 3 points, 3 points angle, perpendiculars, polygon area, boundary length and counting, combine and compare images  
 Power requirement: 220 V / 50 Hz, with voltage surge protection  
 Power Consumption: approx. 80 W  
 Supplied with:

- 1 x Standard phototube
- 1 x C-mount for attaching external camera equipment
- 1 x USB
- 1 x measuring objective
- 1x Lens cleaning kit consisting of lens cleaning tissue, 100 ml cleaning solution, dust blower
- 1 x Pair eye shades
- 1 x Pair of tube caps
- 1 x Oil, immersion
- 2 x Fuse
- 1 x Power cord
- 1 x Dust cover
- 1 x Coarse Focusing Adjustment Wrench
- 2 x Spare halogen bulb

Supplied with: Instructions for use, for preventive maintenance and troubleshooting in English

### 03.08.07 Centrifuges

#### **03.08.07.01 Centrifuge,**

**Description:** General purpose, around 1500rpm

#### **Technical Specifications**

table top

With microprocessor control,

7, 15 and 50 ml and induction drive, 1500 rpm max.

#### **Supplied with:**

sealed rotor 4 x 150 ml, including buckets (optional)

4 tube racks for sealed rotor, 20 x 7 ml (optional)

4 tube racks for sealed rotor, 12 x 15 ml (optional)

4 tube racks for sealed rotor, 2 x 50 ml (optional)

swing out rotor, 4 x 400 ml (optional)

buckets for swing out rotor, 4 x (10 x 15 ml) (optional)

4 tube racks for swing out rotor, 10 x 15 ml (optional)

power requirements: 220V/50Hz

#### **03.08.07.02 Centrifuge,**

**Description:** General purpose, around 6000rpm

#### **Technical Specifications**

- Bench top type
- Adjustable speed: up to 6000 rpm
- Timer: 1 - 60 minutes
- Lid locking and holding, emergency lid lock release
- Casting stainless steel or coated steel
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Power consumption: approx. 250 W
- Supplied with: 1 x Swing-out rotor, 24 x 5 ml,
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.0.07.03 Centrifuge, Ultra**

Max Speed: 100000 rpm

Force: approx 543 000 G

Cooling: Air Cooled

Single Tube Volume: 0.2-5.1 ml

Refrigeration: Solid State

Temperature: 2 to 40 degrees °C in 1 degree increments

User Programs: 10

Acceleration: 10 acceleration and 10 deceleration profiles

Sound: less than 60 dbA

Power: 220V, 50Hz

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.08.07.04 Centrifuge, Manual**

#### **Technical Specifications**

- Hand operated
- Metal or fiberglass base
- Metal dismountable gear support structure
- Shaft maximum speed up to 1500 rpm
- Bench clamp with adaptable screw (0 to 40 mm)
- 4 Aluminium buckets for test tubes
- Supplied with: 24 x Glass, conical bottom tubes fitting the buckets

#### **03.08.07.04 Centrifuge, Hematocrit**

High performance centrifuge designed for precise determination of haematocrit values

Maximum speed around 12000 rpm

##### **To be supplied with:**

haematocrit rotor for tubes

##### **Technical features:**

around 15 minute timer

automatic brake and lid interlock

with reader

200 capillaries (heparinized) and sealing material

power requirements: 220 V/50 Hz

03.08.08 Shaker

#### **03.08.08.01 Rotary, blood specimen**

##### **Technical Specifications**

- Rotator for blood collection tubes.
- With rocking motion and rotation around horizontal axis
- With timer
- Speed: approx. around 30 rpm
- Capacity: approx. 20 blood tubes of 15 mm diameter
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.08.08.02 Rotary, agglutination test**

##### **Technical Specifications**

- Orbital rotator for agglutination tests on cards or glass plates
- Adjustable speed: 40 to 100 rpm
- Platform: 20 x 30 cm with rubber mat
- Amplitude: 40 mm
- Integrated timer, range: up to around 1 hour
- Audio signal indicates end of timed rotation
- Adjustable feet allow levelling on workbench
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Supplied with: Plastic cover

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.08.08.03 Vortex, Test tube**

##### **Technical Specifications**

- Compact design shaker / vibrator of a single test tube
- Rubber top cavity caters for tubes up to 20 mm diameter
- Operates continuous or starts mixing when rubber top is pressed-down with test tube
- Continuous adjustable speed, up to around 2500 rpm
- Circular horizontal orbit of aprox 5 mm
- Non-skid feet prevent shaker from sliding
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

03.08.09 Hot plates

#### **03.08.09.01 Hot plate**

##### **Technical Specifications**

- Bench top heater
- Ceramic glass heating surface and synthetic lower base
- Temperature control, adjustable to around 450 C

- Heating power approx. 500 W/ describe
- Power requirements: 220 V / 50 Hz, with voltage surge protection
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

### **03.08.09.02 Hot plates with stirrer**

#### **Technical Specifications**

- Bench top heater with magnetic stirrer
  - Single stirring place
  - Ceramic glass heating surface and synthetic lower base
  - Maximum Stirring capacity: around 15 L
  - Temperature control, adjustable to around 450 C
  - Heating power approx. 500 W / describe
  - Electronically controlled motor with infinitely variable speed
  - Maximum speed: approx. 2000 rpm
  - Power requirements: 220 V / 50 Hz, with voltage surge protection
  - Supplied with: 1 x Set of 3 coated stirring bars
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

### **03.08.10 Balances/Scale**

#### **03.08.10.01 Top load,**

**Description:** 500g, 0.01g

#### **Technical Specifications**

- Top loading type precision balance
- Readability: 10 mg (0.01 g)
- Pan diameter size: approx. 200 mm
- Response time: < 1 second
- Reproducibility:  $\leq 0.01$  g
- Linearity:  $\leq 0.02$  g
- Backlit LCD with large digits
- Levelling feet and level indicator
- One tare key
- User data input via positive action touch keys
- Automatic calibration using external weight
- Built-in programs for net total, weighing in percentage, counting, and 18 weighing units
- Overload (overweight) protection
- Power requirements: 220 V / 50 Hz, with voltage surge protection or battery
- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

#### **03.08.10.02 Top load,**

**Description:** 1500g, 0.1g

#### **Technical Specifications**

- Top loading type balance
- Readability: 100 mg (0.1 g)
- Pan diameter size: approx. 200 mm
- Response time: < 1 second
- Reproducibility:  $\leq 0.1$  g
- Linearity:  $\leq 0.1$  g
- Backlit LCD with large digits
- Levelling feet and level indicator
- One tare key
- User data input via positive action touch keys
- Automatic calibration using external standard reference weight
- Built-in programs for net total, weighing in percentage and 18 weighing units
- Overload (overweight) protection
- Power requirements: 220 V / 50 Hz, with voltage surge protection or battery

- Supplied with: Instructions for use, preventive maintenance and troubleshooting in English

### **03.08.10.03 Analytical,**

**Description:** 220g, 0.1mg

#### **Technical Specification**

With glass draft shield for precise weighing even in unstable environment.

With fully automatic adjustment using internal weight

With built-in level sensor, illuminated level indicator and levelling assistant for fast and easy levelling.

With built-in applications for normal weighing, statistics, percent weight, etc.

Maximum Load:aprox	220g
Readability:	0.1mg
Repeatability (measured at):	0.015mg (10g)
Linearity:	0.1mg
Eccentric load deviation (measured at):	0.2mg(100g)
Balance dimension, Approx:	(260 x 490 x 320) mm (w x d x h)
Usable height of draft shield, Approx. :	235mm
Weighing pan dimension, Approx.:	(78 x 73) mm, (w x d) or state
Power supply, with AC/DC adaptor:	12 VDC $\pm$ 5%, (optional)

### **03.08.11 Glassware, beakers**

#### **03.08.11.01 Beakers,**

**Description:** Glass, 50ml

#### **Technical Specifications**

- Heat-resistant glass beaker
- With spout for easy pouring
- Height: approx. 60 mm
- Capacity: 50 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 10.0 ml

#### **03.08.11.02 Beakers,**

**Description:** Glass, 100 ml

#### **Technical Specifications**

- Heat-resistant glass beaker
- With spout for easy pouring
- Height: approx. 70 mm
- Capacity: 100 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 10.0 ml

#### **03.08.11.03 Beakers,**

**Description:** Glass, 250ml

#### **Technical Specifications**

- Heat-resistant glass beaker
- With spout for easy pouring
- Height: approx. 95 mm
- Capacity: 250 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 25.0 ml



#### **03.08.11.04 Beakers,**

**Description:** Glass, 1000 ml

##### **Technical Specifications**

- Heat-resistant glass beaker
- With spout for easy pouring
- Height: approx. 200 mm
- Capacity: 1000 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 100 ml

#### **03.08.12 Glassware, cylinder**

##### **03.08.12.01 Cylinder, Measuring,**

**Description:** Glass, 10ml

##### **Technical Specifications**

- Heat-resistant glass cylinder
- With spout for easy pouring
- Height: approx. 130 mm
- Capacity: 10 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 0.1 ml

##### **03.08.12.02 Cylinder, Measuring,**

**Description:** Glass, 100 ml

##### **Technical Specifications**

- Heat-resistant glass cylinder.
- With spout for easy pouring
- Height: approx. 250 mm
- Capacity: 100 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 1.0 ml

##### **03.08.12.03 Cylinder, Measuring,**

**Description:** Glass, 500 ml

##### **Technical Specifications**

- Heat-resistant glass cylinder
- With spout for easy pouring
- Height: approx. 380 mm
- Capacity: 500 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 5.0 ml

##### **03.08.12.04 Cylinder, Measuring,**

**Description:** Glass, 1000 ml

##### **Technical Specifications**

- Heat-resistant glass cylinder
- With spout for easy pouring
- Height: approx. 470 mm
- Capacity: 1000 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 10.0 ml
- Wide hexagonal base

03.08.13 Glassware, flasks

**03.08.13.01 Flask, Erlenmeyer,**

**Description:** Glass, 50ml

**Technical Specifications**

- Heat-resistant glass Erlenmeyer flask.
- Height: approx. 100 mm
- Capacity: 50 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 10.0 ml
- Flat Bottom

**03.08.13.02 Flask, Erlenmeyer,**

**Description:** Glass, 500ml

**Technical Specifications**

- Heat-resistant glass Erlenmeyer flask
- Height: approx. 200 mm
- Capacity: 500 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 50.0 ml
- Flat Bottom

**03.08.13.03 Flask, Erlenmeyer,**

**Description:** Glass, 1000ml

**Technical Specifications**

- Heat-resistant glass Erlenmeyer flask
- Height: approx. 300 mm
- Capacity: 500 ml
- Material: clear borosilicate
- Embossed, minimal graduation: 100.0 ml
- Flat Bottom

03.08.14 Glassware, pipettes

**03.08.14.01 Pipette,**

**Description:** Glass, graduated, 2ml

**Technical Specifications**

- Glass pipette, class A tolerance
- Material: clear borosilicate
- Capacity: 2 ml
- Embossed, minimal graduation: 0.02ml

**03.08.14.02 Pipette,**

**Description:** Glass, graduated, 5ml

**Technical Specifications**

- Glass pipette, class A tolerance
- Material: clear borosilicate
- Capacity: 5 ml
- Embossed, minimal graduation: 0.1ml

**03.08.14.03 Pipette,**

**Description:** Glass, graduated, 10ml

**Technical Specifications**

- Glass pipette, class A tolerance
- Material: clear borosilicate
- Capacity: 10 ml

- Embossed, minimal graduation: 0.1ml

#### **03.08.14.04 Pipette,**

**Description:** Plastic, graduated, 2ml

##### **Technical Specifications**

- Plastic pipette, class B tolerance
- Material: PP
- Capacity: 2 ml
- Embossed, minimal graduation: 0.02ml

#### **03.08.14.05 Pipette,**

**Description:** Plastic, graduated, 5ml

##### **Technical Specifications**

- Plastic pipette
- Material: clear borosilicate
- Capacity: 5 ml
- Embossed, minimal graduation: 0.1ml

#### **03.08.14.06 Pipette,**

**Description:** For ESR (Erythrocyte Sedimentation Rate) measurement

##### **Technical Specifications**

- Erythrocyte sedimentation rate measuring pipette
- Material: clear borosilicate
- Diameter: approx. 1 to 2 mm
- Graduated from 0 - 180 mm

#### **03.08.14.07 Pipette**

**Description:** WBC (Thoma Pipette)

##### **Technical Specifications**

- White blood cells pipette
- Material: clear borosilicate
- Centre part with white bead
- White background, blue graduation, subdivided in 10 parts
- Suitable for leucocytes examination, dilution ratio 1:10.

#### **03.08.15 Bottles**

##### **03.08.15.01 Bottle**

**Description:** amber, dropper, 30ml

##### **Technical Specifications**

- Amber colored glass dropper bottle
- Cap with integrated glass dropper pipette and vinyl rubber teat
- Capacity: approx. 30 ml
- Material: borosilicate

##### **03.08.15.02 Bottle**

**Description:** amber, Screw Cap, 100ml

##### **Technical Specifications**

- Amber colored glass bottle, with screw cap
- With narrow mouth
- Height: approx. 100 mm
- Capacity: 100 ml
- Material bottle: borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

#### **03.08.15.03 Bottle**

**Description:** amber, Screw Cap, 250ml

##### **Technical Specifications**

- Amber colored glass bottle, with screw cap
- With narrow mouth
- Height: approx. 140 mm
- Capacity: 250 ml
- Material bottle: borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

#### **03.08.15.04 Bottle**

**Description:** amber, Screw Cap, 1000ml

##### **Technical Specifications**

- Amber colored glass bottle, with screw cap
- With narrow mouth
- Height: approx. 230 mm
- Capacity: 1000 ml
- Material: amber borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

#### **03.08.15.05 Bottle**

**Description:** Clear, Screw Cap, 100ml

##### **Technical Specifications**

- Clear & color less glass bottle, with screw cap
- With narrow mouth
- Height: approx. 100 mm
- Capacity: 100 ml
- Material bottle: borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

#### **03.08.15.06 Bottle**

**Description:** Clear, Screw Cap, 250ml

##### **Technical Specifications**

- Clear & color less glass bottle, with screw cap
- With narrow mouth
- Height: approx. 140 mm
- Capacity: 250 ml
- Material bottle: borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

#### **03.08.15.07 Bottle**

**Description:** Clear, Screw Cap, 1000ml

##### **Technical Specifications**

- Clear & color less glass bottle, with screw cap
- With narrow mouth
- Height: approx. 230 mm
- Capacity: 1000 ml
- Material: amber borosilicate
- Material screw-cap: polypropylene, with welded-in coated silicone seal

03.08.16 Glassware, others

#### **03.08.16.01 Jar**

**Description:** Coplain, staining

##### **Technical Specifications**

- Fits slide of 26 x 76 mm
- Capacity: 10 slides
- Slides extend above the opening, allowing manipulation without using forceps.
- Glass cover withstanding stain and organic solvents.

#### **03.08.16.04 Slides**

**Description:** Frosted

##### **Technical Specifications**

- Microscopy slide
- Thickness: 1.0 to 1.2 mm
- Size: aprox 76 x 26 mm
- Material: colorless glass
- Ground edge
- One side frosted allowing pen writing
- Clinical grade, non-corrosive, clean washed and polished
- Free from nicks and scratches
- Packed fibre-free

#### **03.08.16.05 Slides,**

**Description:** Non-Frosted

##### **Technical Specifications**

- Microscopy slide
- Thickness: aprox 1.0 to 1.2 mm
- Size: aprox 76 x 26 mm
- Material: colourless glass
- Ground edge
- Clinical grade, non-corrosive, clean washed and polished
- Free from nicks and scratches
- Packed fibre-free

#### **03.08.16.06 Cover glass,**

**Description:** Slide, 20mm x 22mm

##### **Technical Specifications**

- Microscopy slide cover
- Thickness: aprox 0.17 mm
- Size: aprox 20 x 22 mm
- Material: colourless glass
- Clinical grade, non-corrosive, clean washed and polished
- Free from nicks and scratches
- Packed fibre-free

#### **03.08.16.07 Cover glass**

**Description:** Slide, 22mm x 22mm

##### **Technical Specifications**

- Microscopy slide cover
- Thickness: aprox 0.17 mm
- Size: aprox 22 x 22 mm
- Material: colourless glass
- Clinical grade, non-corrosive, clean washed and polished
- Free from nicks and scratches
- Packed fibre-free

#### **03.08.16.08 Petri Dish**

**Description:** Glass, with lid

##### **Technical Specifications**

- Material: colourless glass
- Diameter: approx. 90 mm
- With lid

#### **03.08.16.09 Petri Dish**

**Description:** Plastic, with lid

##### **Technical Specifications**

- Material: Plastic
- Diameter: approx. 90 mm
- With lid

#### **03.08.16.10 Rod, Glass**

##### **Technical Specifications**

- Material: colorless glass
- Length: approx. 150 mm
- Diameter: approx. 6 mm

#### **03.08.16.11 Mortar & Pestle, Small**

##### **Technical Specifications**

Material: Made of Porcelain

Grinding Surface: Unglazed

Dimension: Mortar diameter: approx. 60 – mm, Capacity: about 70 ml

Pestle Length: about 115mm, Head diameter: about 25 – 50 mm

#### **03.08.16.12 Mortar & Pestle, Medium & large**

##### **Technical Specifications**

Mortar diameter: approx. > 60 - 125 mm, Capacity: about > 70 - 400ml

Pestle Length: about 150 – 185 mm, Head diameter: about 40 -50 mm

**For detail specifications refer item number 03.08.16.11**

03.08.17 Glassware, brushes

#### **03.08.17.01 Brushes, bottle & flask**

##### **Technical Specifications**

- Washing bottles and flasks
- Overall length: approx. 35 cm
- Length brushing part: approx. 10 cm

#### **03.08.17.02 Brushes, Test Tube**

##### **Technical Specifications**

- Washing tubes
- Overall length: approx. 25 cm.
- Length brushing part: approx. 8 cm

03.08.18 Racks

#### **03.08.18.01 Racks**

**Description:** Test Tube

##### **Technical Specifications**

- Provides positions to hold 24 test tubes
- Diameter holes: approx. 17 mm
- Made of stainless steel

#### **03.08.18.02 Racks**

**Description:** Drying glass & plastic ware

##### **Technical Specifications**

- Free-standing or wall mount
- Material: plastic-coated wire
- Dimensions: approx. 50 x 40 x 16 cm (w x d x h)
- Supplied with: 1 x Set fixing materials for wall mount (optional)

#### **03.08.18.03 Racks**

**Description:** Drying slides

##### **Technical Specifications**

- Self-supporting rack for drying microscopy slides
- Provides vertical position for 12 microscopy slides
- Material: stainless steel
- Sturdy base provides optimal stability

#### **03.08.18.04 Racks**

**Description:** Staining slide, horizontal

##### **Technical Specifications**

- Self-supporting rack for staining microscopy slides
- Provides horizontal position for microscopy 12 slides
- Material: stainless steel
- Sturdy base provides optimal stability

#### **03.08.18.05 Racks Drying**

**Description:** DBS cards

##### **Technical Specifications**

- Self-supporting vertical rack for drying dry blood spot filter cards
- Provides horizontal position for at least 10 cards
- Single use
- Material: chemical resistant plastic or card board
- Sturdy base provides optimal stability

#### **03.08.19 ESR Stand**

##### **03.08.19.01 ESR Stand**

**Description:** 20minute

ESR(Erythrocyte Sedimentation rate)

##### **Technical Specifications**

With key pad for data entry & retrieve  
Sample Position: 16 to 20 tubes  
Test Time: around 20minutes

##### **03.08.19.02 ESR Stand**

**Description:** 30 minute

##### **Technical Specifications**

- Complete set-up to measure erythrocyte sedimentation rate
  - Provides positions to hold 10 test tubes
  - Stand made of stainless steel or plastic
- Test Time: 30minutes

##### **03.08.19.03 ESR Stand,**

**Description:** 60 minute

##### **Technical Specifications**

- Complete set-up to measure erythrocyte sedimentation rate

- Stand with valves to hold pipettes
- Provides positions to hold Pipettes
- Stand made of stainless steel or plastic

#### 03.08.20 Thermometer

##### **03.08.20.01 Environmental,**

**Description:** Max./Min., -30<sup>0</sup>C / 60<sup>0</sup>C

##### **Technical Specifications**

- Thermometer to measure ambient temperature
- None-mercury filled
- Double easy to read scale, min and max
- With reset button
- Range: approx. -30 <sup>0</sup>C to 60 <sup>0</sup>C
- Minimal graduation: 1 <sup>0</sup>C
- Housing sturdy plastic or wood, with provision for wall mounting
- Dimensions: state

##### **03.08.20.02 Thermometer,**

**Description:** Glass, -80<sup>0</sup>C/100<sup>0</sup>C

##### **Technical Specifications**

- Measuring of processes in clinical laboratory setting
- None-mercury filled
- Range: approx. -80 <sup>0</sup>C to 100 <sup>0</sup>C
- Large easy to read scale
- Minimal graduation: 1<sup>0</sup>C
- Dimensions: state
- Supplied with: 1 x Tube-shaped durable protective cover

#### 03.08.21 Safety Cabinet

##### **03.08.21.01 General Purpose Fume Hood**

**Description:** Fume cabinet, complete with all services

##### **Technical specifications:**

Free standing fume cupboard with extraction fan

Hood with tiled working place

Equipment fittings water, built-in sink, gas, 2 electricity sockets, light

Solid and safe construction

Air is introduced from laboratory room

Pipe and tube material for connection of fume cupboard to radial fan

With radial fan, 2 m flexible tube, 2 elbows, 1 weather cowl

Power requirements: 220V/50Hz

Power consumption: aprox 1 kW/ describe

**Material:** Metal sheeting

**Packaging and labeling:**

Refer General requirement

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

estimated weight: state

estimated volume: state

**Instructions for use:** Fume-cabinet is to be installed in the clinical laboratory.

##### **03.08.21.02 Bio-safety Cabinet,**

**Description:** Class II

##### **Technical Specifications**

Standalone class II type A1 biosafety cabinet

Air supply is HEPA filtered

In-flow air velocity and minimum face velocity: approx. 0.40 m/s



Air is introduced from laboratory room  
 Recirculates 70 % of air, and exhaust 30 % back into the laboratory through HEPA filter  
 Sash type: vertical sliding  
 Built-in electricity sockets and light  
 Rear wall made of powder coated steel, side panels with tempered safety glass  
 Seated work space, height of bench: approx. 0.70 m  
 Power requirements: 220 V / 50 Hz  
 Supplied with: 2 x Spare HEPA filter  
 Supplied with: Instructions for use, for preventive maintenance and troubleshooting in English  
 03.08.22 Safety Equipment

#### **03.08.22.01 Eye wash station**

##### **Technical Specifications**

Wash station for emergency eye flush in cases of chemical or blood contamination of the eyes.  
 With 2 squeeze bottles saline solution: approx. 1000 ml each  
 Portable, bench top or wall mount  
 Supplied with: 1 x Poster, with picture illustrated instructions for use  
 1 x Set necessary materials for wall-mount

#### **03.08.22.02 First Aid Kit**

**Description:-** First aid kit is a collection of instrument and medical supplies which is used in the provision of initial care for an illness or injury

##### **Specifications**

It may include the following, but not limited:

Triple antibiotic ointment packs, 0.5g each  
 4 Antiseptic cleansing wipes (sting free)  
 1 Hydrocortisone pack, 0.9g  
 2 Hand sanitizer packs, 0.9g each  
 2 chewable aspirin tablets, 81 mg each  
 20 Plastic adhesive bandages, 3/4" x 3"  
 10 Plastic adhesive bandages, 1" x 3"  
 2 Elbow and knee plastic bandages, 2" x 4"  
 5 Junior plastic bandages, 3/8" x 1-1/2"  
 1 Knuckle fabric bandage  
 1 Fingertip fabric bandage  
 3 Patch bandages, 1-1/2" x 1-1/2"  
 1 Instant cold compress  
 1 Triangular sling/bandage  
 1 Trauma pad, 5" x 9"  
 4 Gauze dressing pads, 3" x 3"  
 2 Gauze dressing pads, 4" x 4"  
 1 First aid tape roll, 3/4" x 5 yds  
 1 Gauze roll bandage, 3"  
 1 CPR one-way valve face shield, latex-free  
 1 Thermometer, one time use  
 2 Latex-free exam-quality vinyl gloves  
 Scissors, 1 pair  
 Plastic tweezers, 1 pair  
 1 American Red Cross Emergency First Aid Guide  
 1 Zippered clear-pocket soft

**03.08.22.03 Spill Kit**

03.08.23 Other lab equipment

**03.08.23.01 Inoculation loop**

**Description:** Plastic

**Technical Specifications**

Flexible handle

Loop volume: approx. 10 ul

Material: chemically resistant plastic

Individually wrapped sterile

**03.08.23.02 Inoculation loop**

**Description:** Wire

**Technical Specifications**

Flexible handle

Loop volume: approx. 10 ul

Material: Stainless steel

Individually wrapped sterile

**03.08.23.03 Clamp, Test Tube**

**Description:** Chrom plated

**Technical Specifications**

Accommodates wide range of test tubes

Made of Chromplated Metal

**03.08.23.04 Blower, Hot Air****03.08.23.05 Stop watch,**

**Description:** Digital/analog

**Technical Specification:**

Electronic stop watch (Digital)(optional)

Rounded metal case

Durable watch glass

Main dial with division to read; 1 sec.

Subsidiary dial 0 .30 min.

Start, stop and reset by crown control.

**03.08.23.06 Spatula**

**Description:** Stainless steel/wood

**Technical Specifications**

Scoop and dose chemicals

Highly corrosion resistant

Made of stainless steel/wood

Size: To be stated

**03.08.23.07 Forceps**

**Description:** Plastic

**Technical Specifications**

Straight, fine point

Made of chemical resistant plastic

Made of Plastic

Size: To be stated

**03.08.23.08 Forceps**

**Description:** Stainless Steel

**Technical Specifications**

Straight, fine point

Highly corrosion resistant

Made of Stainless Steel

Size: To be stated

**03.08.23.09 Wash bottle**

**Description:** 100ml

**Technical Specifications**

Round, narrow mouth, with screw closure and riser tube

Capacity: 100 ml

Made of chemical resistant plastic, suitable for storing disinfection and staining solutions in hospital environment.

Bottle supplied assembled

**03.08.23.10 Wash bottle**

**Description:** 250ml

**Technical Specifications**

Round, narrow mouth, with screw closure and riser tube

Capacity: 250 ml

Made of chemical resistant plastic, suitable for storing disinfection and staining solutions in hospital environment.

Bottle supplied assembled

**03.08.23.12 Lab Coat****Technical Specifications**

Standard laboratory coat, long sleeves, notched lapel collar

Left breast pocket

Left and right lower side pockets

Front button closure

Color: white (optional)

Lint free

Material: cotton, non-shrink (less than 5%)

Size: medium

**03.09 Supplies/renewable**

03.09.01 Micropipette, Tips

**03.09.01.01 white**

**Description:** 2-20 ul

**Technical Specifications**

Capacity: 2 to 20ul

Material: polypropylene

Standard color: clear

Compatible with all standard automatic pipettes

**03.09.01.02 Yellow**

**Description:** 10-100ul

**Technical Specifications**

Capacity: 10 to 100ul

Material: polypropylene  
Standard color: yellow  
Compatible with all standard automatic pipettes

#### **03.09.01.03 Yellow**

**Description:** 20-200ul

##### **Technical Specifications**

Capacity: 20 to 200 ul  
Material: polypropylene  
Standard color: yellow  
Compatible with all standard automatic pipettes

#### **03.09.01.04 Blue**

**Description:** 100 -1000ul

##### **Technical Specifications**

Capacity: 100 to 1000 ul  
Sterile, RNase and DNase free  
Material: polypropylene, blue  
With built-in filter aerosol barrier  
Compatible with all standard automatic pipett

#### **03.09.02 Marker Pen**

##### **03.09.02.01 Marker Pen**

**Description:** Permanent/Temporary

##### **Technical Specifications**

Pre-filled pen  
Permanent, Quick drying  
Ethanol based  
Color: To be Stated  
Tip size: To be Stated

#### **03.09.03 Punch**

##### **03.09.03.01 Punch,**

**Description:** DBS, 3.0mm

##### **Technical Specifications**

Punches samples from filter paper i.e. Dry Blood Spot  
Punching diameter: approx. 3.0 mm  
Reusable, can be autoclaved

#### **03.09.04 Safety Box**

##### **03.09.04.01 Safety Box,**

**Description:** Puncture resistant

##### **Technical Specifications**

Puncture resistant container for collecting and disposing of used disposable and auto-disable syringes, needles  
Complies with WHO Performance Specification E10/IC.2  
Capacity: To be Stated

#### **03.09.05 Personal Protective Equipment (PPE)**

##### **03.09.05.01 Gloves,**

**Description:** Latex, Small

##### **Technical Specifications**

Glove for clinical examinations and routine clinical laboratory work  
Contains of 5 fingers, palm and a sleeve  
Material: natural latex  
Non-sterile  
Single-use disposable powdered or non powdered  
Size: small (6 to 7)  
Fits either hand

Internally powdered (maize starch)

#### **03.09.05.02 Gloves**

**Description:** Latex, Medium

##### **Technical Specifications**

Glove for clinical examinations and routine clinical laboratory work

Contains of 5 fingers, palm and a sleeve

Material: natural latex

Non-sterile

Single-use disposable powdered or non powdered

Size: medium (7 to 8)

Fits either hand

Internally powdered (maize starch)

#### **03.09.05.03 Gloves**

**Description:** Latex, Large

##### **Technical Specifications**

Glove for clinical examinations and routine clinical laboratory work

Consists of 5 fingers, palm and a sleeve

Material: natural latex

Non-sterile

Single-use disposable powdered or non powdered

Size: large (8.5 to 9.5)

Fits either hand

Internally powdered (maize starch)

#### **03.09.05.04 Gloves,**

**Description:** Heavy Duty

##### **Technical Specifications**

High resistance liquid chemicals

Long cuff

Tear resistant

Comfortable lining

Size: To be stated

#### **03.09.05.05 Eye Goggle**

##### **Technical Specifications**

Safety goggle, model for spectacle wearer

Adjustable headband

Material, frame: translucent soft PVC

Material, lens part: polycarbonate

Indirect side vents

Compliant with safety standard CE EN 166 (or equivalent)

#### **03.09.05.06 Face shield**

##### **Technical Specifications**

Fully adjustable head harness

with an elasticised nape strap and a front comfort band

Give protection from impact, chemical splash

Dimension: To be stated

#### **03.09.05.07 Mouth & Nose Mask**

##### **Technical Specifications**

Provide protection against fine dusts and water based mists

Adjustable head band

Dimension: To be stated

#### **03.09.05.08 Apron**

##### **Technical Specifications**

Provide extra protection against minor chemicals/ body fluid splashes

Made of fabric/ water proof material

Dimension: To be stated

#### **03.09.05.09 Laboratory shoes**

##### **Technical Specifications**

Covering entire feet

None porous, flat & puncture resistant

Size: To be stated

#### **03.09.06 Tubes**

##### **03.09.06.01 Tube**

**Description:** capillary, heparinised

##### **Technical Specifications**

Capillary glass tube

Heparin coated

Diameter: approx. 1.2 mm

Length: approx. 75 mm

Seal-packed

##### **03.09.06.02 Tube**

**Description:** Capillary, EDTA

##### **Technical Specifications**

Capillary glass tube

EDTA coated

Diameter: approx. 1.2 mm

Length: approx. 75 mm

Seal-packed

##### **03.09.06.03 Tube**

**Description:** 4.0ml EDTA

##### **Technical Specifications**

Blood collection tube

Capped with vacuum seal

EDTA coated

Capacity: 4.0 ml

Material: plastic /glass

##### **03.09.06.04 Tube**

**Description:** 4.5ml Sodium Citrated

##### **Technical Specifications**

Blood collection tube

Capped with vacuum seal

Sodium Citrated

Capacity: 4.5 ml

Material: plastic /glass

##### **03.09.06.05 Tube**

**Description:** Serum gel, 5ml

##### **Technical Specifications**

Serum collection tube

Capped  
Capacity: 5.0 ml  
Material: plastic /glass

**03.09.06.06 Tube**

**Description:** Plain, 10ml

**Technical Specifications**

Serum collection tube

Capped

Capacity: 10 ml

Material: plastic /glass

**03.09.06.07 Tube**

**Description:** Conical (optional)

**Technical Specifications**

Test tube for routine centrifugation

Material: polyethylene tetraphthalate

Conical bottom

Wide neck

Graduated

Capacity: To be stated

With screw cap

**03.09.06.08 Tube**

**Description:** Nunc

**Technical Specifications**

Leak Proof, with cap

Material: Polypropylene/Plastic

Capacity: To be stated

03.09.07 Blood Collection

**03.09.07.01 Needle Holder**

**Technical Specifications**

Blood collection needle holder, fits vacuum tube needle

Fits all standard vacuum tubes: diameter 13 to 16 mm

**03.09.07.02 Blood Lancet**

**Technical Specifications**

Individually packed, sterile blood lancet

Material: stainless steel

Single-use disposable

Length: approx. 40 mm

Width at piercing edge: To be stated

Width: approx. 6 mm

**03.09.07.03 Needle, vacutainer**

03.09.08 Funnels

**03.09.08.01 Funnel,**

**Description:** Glass made

**Technical Specifications**

Material: clear borosilicate

Dimension: To be stated

**03.09.08.02 Funnel,**

**Description:** Plastic made

**Technical Specifications**

Material: polypropylene

Dimension: To be stated

03.09.09 Other lab supplies

**03.09.09.01 Paper, lens****03.09.09.02 Paper, PH indicator**

**Description:** 2.0 to 9.0 unit

**Technical Specifications**

pH indicator strip

Accuracy: approx. 0.5

Pack Size: To be stated

**03.09.09.03 Paper,**

**Description:** Filter #1

**Technical Specifications**

Grade 1 paper

Porosity: medium

Flow rate: medium

Particle retention: approx. 10 µm

Diameter: approx. 12 cm

**03.09.09.04 Paper, weighing****Technical Specifications**

Glossy glassine surface, non-absorbent paper

Size: To be stated

**03.09.09.05 Sealant,**

**Description:** Compound (Clay sealer)

**Technical Specifications**

Sealant for capillary tubes

With slot tray for holding capillary tubes

Pack Size: To be stated

**03.09.09.06 Microplate, PCR****Technical Specifications**

Micro well plate for PCR cycles

Fits all standard thermo-cyclers, real-time PCR systems and DNA sequencers

Individually wrapped sterile, RNase and DNase free

Accommodates content of 0.2 ml PCR tubes

Contains slightly opaque white wells, alphanumerically identified

Well edges slightly raised facilitate plate sealing

Thin walls for optimal thermal transfer

Well shape: U-bottom

Material: polypropylene, autoclavable

Supplied with: 1 x Set of pierceable sealing films, aluminium-based, self-adhesive

**03.09.09.07 Microplate,**

**Description:** ELISA

**Technical Specifications**

Micro well plate for ELISA tests



Plate is neither sterile nor coated  
Contains wells  
Well shape: U-bottom  
Material: polypropylene, autoclavable  
Each plate provided with its individual cover

#### **03.09.09.08 Applicator**

**Description:** Wood, Non-sterile

##### **Technical Specifications**

Flat-sided/round  
Non-sterile  
Material: bleached wood  
Length: approx. 12 cm

#### **03.09.09.09 Swab**

**Description:** Cotton-tip, Sterile Tube

##### **Technical Specifications**

Cotton-tipped swab  
Plastic/wood handle stick  
Sterile  
Individually packed in tube  
Tube material: low density polyethylene (LDPE)  
Length: approx. 12 cm

#### **03.09.09.10 Sheet Absorbent,**

**Description:** Bench protection

##### **Technical Specifications**

Protective pad for laboratory workbench surface, absorbs spillage  
Material: thick cotton lining on polyethylene base  
Size: To be stated  
Disposable

#### **03.09.09.11 Bag**

**Description:** Biohazard

##### **Technical Specifications**

Plastic storage and transportation bag for potential bio-hazardous waste  
With metal closure strip, one per bag  
Capacity: indicate  
Can be autoclaved, prior to its disposal

#### **03.09.09.12 Aluminium Foil**

##### **Technical Specifications**

Material: Aluminium Sheet  
Thickness: Not less than 12um  
Roll width: To be stated  
Roll Length: To be stated

#### **03.09.09.13 Label**

**Description:** Self adhesive

##### **Technical Specifications**

Self-adhesive bandage  
Adhesive is hypoallergenic and water resistant  
Central non-stick pad  
Flexible perforated non-woven tissue  
Length: To be stated

Individually peel-packed

#### **03.09.09.14 Dispenser**

**Description:** Diluter, manual set

Precision instruments,

piston-type,

for serial diluting, comprising of:

1 pipettor, 0.4 - 2 ml

1 pipettor, 2 - 10 ml

2 glass-bottles 500 ml

#### **03.09.09.15 Oil, Immersion**

#### **03.09.09.16 Surgical Blade**

**Description:** Surgical knife, scalpel

##### **Technical Specifications**

Material: carbon steel / stainless steel

Specifications: 11# - 36# (10, 11, 12, 12B, 13, 14, 15, 15C, 16 - 25 and 36)

No. 10, 10A, 11, 11P, 12, 12B/ 12D, 14, 15, 15T, 15C & 16 fit handle numbers 3,3L, 5,7 & 9.

Numbers 18, 19, 20, 21, 22, 23, 24 & 25 fit handle numbers 4, 4L & 6

Sterilization method: sterilized by gamma radiation

Packing: In composition aluminum foil each, sterile,

Certificate: CE

## 4.0. Sterilization and disinfection Equipment/materials

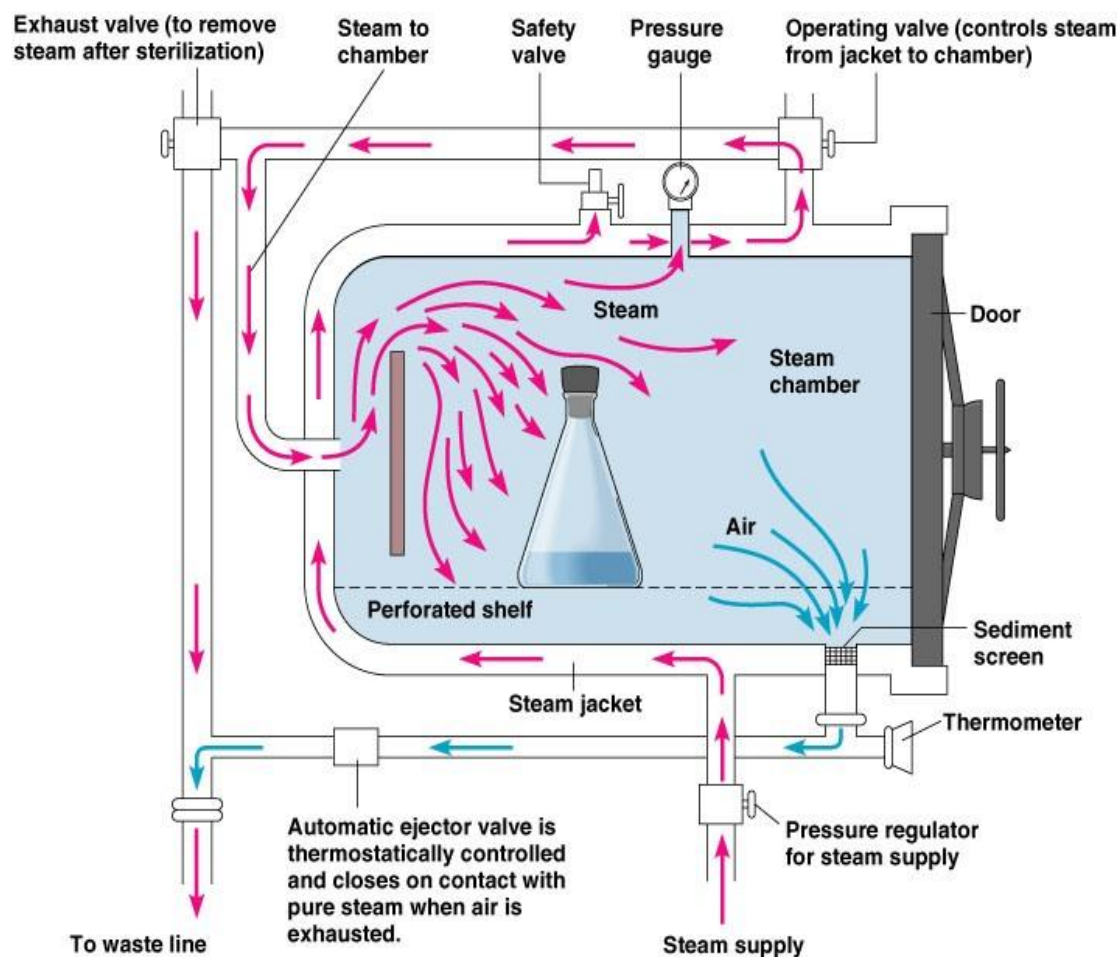


Figure 4: Schematic diagram of an autoclave

### 4.01. Steam Sterilizer

#### 4.01.01. Horizontal front loading/Autoclave

##### 4.01.01.01. High pressure steam Autoclave

**Description:** Sterilizer, steam, 1 door, 0.40 x 0.40 x 0.60, w generator

**General Description:** Single door fully automatic freestanding steam sterilizer for processing health facility items.

##### **Technical description:**

Provides programmable sterilization sequences, typically for surgical instruments.

Automatic, programmable controller of the sterilizer cycle. Capable of the following pre-programmed cycles:

Wrapped, Unwrapped, Rubber/Plastic, Air Drying.

Minimum cycle time of approx 28 minutes for complete cycle.

With automatic cycle shut-off.

Sterilization temperature range: 120~134°C with integrated overheat shutoff.

Air removal from chamber by gravity, purge or vacuum method.

Chamber size describe

Instrumentation should include indicate pressure, temperature, and cycle status.

Built-in safety features to include door cycle/pressure interlocks, low water level.

Integral recorder of Integrated ticket, thermal printer or other permanent process-recording device.

With built-in steam generator.

Cold water hardness: 7° German, maximum

Pressure vessel shall be approved.

Overall Dimensions (h x w x d), describe

Operator safety and system performance should not be adversely affected by fluid spills.

Unit shall operate of three phase power 380 V

**Material:**

Durable metal construction with adequate heat proofing of cabinet.

Chamber material of stainless steel.

**Packaging and labeling:**

Refer General requirement

Accessories/Spare parts/Consumables:

Sterile packing materials

Sterilizer trays

Quality assurance indicators

**Weight/Volume/Dimensions:**

- estimated weight: 250 kg /describe

- estimated volume: 1200 cdm /describe

**Instructions for use :**

Unit used to sterilize instruments and surgical packs in the sterilization department.

Should be used by a trained person.

**4.01.01.02 Steam Sterilizer**

**Description:** heavy duty, Programmable

**SPECIFICATIONS**

High pressure Steam Sterilizer each with built in Electric Steam Generator and connection for external steam supply.

Fully automatic, programmable, microprocessor type.

Automatic one door/Manual.

Time cycled, working pressure 32 psi.

Safety interlock.

Temperature & Pressure recorder.

Chamber pressure indicator.

Cycle indicator to determine the phase of sterilization cycle.

Program/Cycle selection.

Complete with standard accessories and removable shelves, capable of taking both packets and containers of all standard sizes.

Chamber volume describe.

**4.01.01.03 Autoclave**

**Description:** Double Wall with Vacuum

**Technical Specification**

Unique double wall design

Heavy duty jacket

Fully automatic operation

PID controller with dual display for Temp. & Time

Pre & Post Vacuum available

Excellent performance in drying

Reduced loading height

Operating pressure..... 1.2 - 2.1 kg/cm<sup>2</sup>

Operating Temperature ..... 121 °C – 134 °C  
 Digital Control  
 Power Consumption..... 2 - 6 KW /describe  
 Voltage..... 220/230 V  
 Capacity (Lit.)..... 35 ltrs - 111 ltrs

#### **04.01.01.04 Autoclave, double door, with formaldehyde program**

**Description:** Fully automatic autoclave, high pressure model, for sterilization of instruments, glassware, rubber articles, bowls

##### **Technical Specifications:**

Double door model for central sterilization  
 With extra program for formaldehyde sterilization  
 Double wall rectangular stainless steel chamber and panel construction  
 Chamber dimensions: 66 x 66 x 90 cm /describe  
 Model for general house steam supply  
 Power requirements; 220/380V ± 15%, 3 phases, 50 Hz  
 Power consumption: approx 10 KW / describe  
 Cold water hardness: 7 degree (max)  
 Sterilizing temperature 134 degree Centigrade, service pressure: 2.2 bar,  
 Sterilizing chamber, 90 liters, internal dimension: discibe; design air-tight, pressure proof, sealing accomplished by silicon gasket.  
 The apparatus is encased in stainless steel with a silky mat finish, timer 0-60 minutes.  
 Vacuum pump  
 Exhaust steam condenser device  
 Timer 0-60 min. and temperature probe  
 To be supplied with 2 x wire baskets  
 List of fast moving accessories and spares deliverable as well as optional  
 Documentation:- Both service and operating manuals in English language should be provided  
 Name of manufacturer, Country of origin and model should be mentioned  
 Contact details of local supplier should be mentioned .

#### **04.01.01.05 Table top Autoclave**

##### **SPECIFICATIONS**

Semi automatic operation  
 Pressure switch control  
 High pressure high vacuum option  
 Low water level cutoff  
 Operating Pressure : ..... 1.2 - 2.1 kg/cm<sup>2</sup>  
 Operating Temperature : ..... 121°C - 134°C  
 Control : Pressure Switch  
 Capacity(Lt.)..... 150 - 430 kg /describe  
 Power Consumption..... 9 -18 kW /describe  
 Voltage..... 380V/400V

#### **04.01.01.06 Sterilizer, table top,**

**Description:** Sterilizer table top model, 23 x 45 cm, with drying cycle

##### **Technical Features:**

Autoclave for the sterilization of instruments, glassware rubber articles,  
 At least 5 fully automatic programs are provided with one drying phase per cycle.  
 Equipped with a bacteriological filter and a water reservoir, which makes it independent for approx. 10 cycles  
 Dimensions: approx. 23 cm x 45 cm (diam. x length) With 3 shelves  
 Operating pressure: 2,2 bar = 134<sup>0</sup>C, 1,1 bar= 120<sup>0</sup>C  
 Washable plastic film keyboard for selecting and starting the cycle.  
 Digital display of temperature, pressure and time.

Any temperature fault detected sets off a visual and audible alarm.

Voltage 220 V $\pm$  15, single phase, 50 Hz

Power consumption approx. 1.5 Kw /describe

**Delivery should include:**

3 aluminum trays

1 stainless steel support for 2 trays

1 handle for handling the trays

**04.01.01.07 Portable Autoclave**

**Description:** The unit is a single walled

Argon welded finish.

Has steam exhaust valve, safety valve and handle and can withstand a pressure of 15 Lbs/Square inch.

**Power:** 220/230 V, 50 Hz., single phase supply

**Size:** 30 cm. Diameter x 30 cm. Ht. Volume: 21 Ltr

**Rating:** 2.0 Kw. Operating Temperature: 121 degree C The whole unit is fitted with a silicon/neoprene gasket to make it leak-proof.

**04.01.01.08 Instrument Sterilizer/disinfector**

**Description:** Washing machine, for surgical instruments, Compact disinfector, for cleaning and drying of Surgical instruments on 2 levels

**Technical Features:**

- \* Freshwater circulating system
- \* heating up to 95 degrees C.
- \* Electronically controlled
- \* 2 automatic dosing systems for liquid and powder cleaning substances
- \* Interior parts of stainless steel, 2 shelves
- \* Machine is insulated against noise and works also with low-water-pressure of 0.5 bar.
- \* With specially selected insert and baskets for cleaning surgical instruments.
- \* Power requirements: 220V/380V/50Hz
- \* Power consumption: aprox 9 kW/ describe

**4.01.02. Verticality built /top loading Autoclave**

**4.01.02.01. Single chamber autoclave**

**Description:** Autoclave, vertical, laboratory, with vacuum pump

High pressure steam vertical sterilizer

- \* operating panel with tip-touch controls
- \* Electronically operating device
- \* Built-in three stage centrifugal pump
- \* max. Pressure aprox 2.5 bar
- \* Steam generator with a capacity of 4.5 kW and dry running security
- \* Every single program sequence to be programmable
- \* Automatic stop of the program with indication of fault and door locking system
- \* provided with safety lock during operation.
- \* Power consumption: aprox 6 kW/describe
- \* Power requirements: 220V/380V/50Hz.

**4.01.02.02. Portable Autoclave/pressure cooker**

**Description:** Stainless steel Pressure Cooker

**Specifications**

All Stainless steel shell

Pressure Gauge for measurement of pressure

Temperature measurement gauge

Safety Valve

Elegant shape, safe operation.

**Dimensions**

Size 515 x 490 x 560mm  
Capacity ≈ 51L  
Pressure ≈ 0.04 MPa

#### **4.01.02.03. Sterilizer, Steam, 14L, electric**

##### **General Description:**

Electric steam sterilizer, pressure type, capacity 14 litres.

##### **Technical Specifications:**

For sterilizing medical materials such as dressings and surgical instruments.

Metal vessel with high-pressure seal suitable for sterilisation under superheated steam.

Maximum pressure: 21 PSI / 1.5 bar.

Maximum temperature: 259°F / 126°C.

Made of heavy cast aluminium.

Cover and bottom made of heavy cast aluminium.

Aluminium alloy seamless inset container.

Metal to metal seal (no rubber gaskets).

Safety clamping locks: retaining bayonet clamp and (6) bakelite

Wing nuts to prevent displacement of cover while sterilizer is under pressure.

##### **Inner Chamber equipped with:**

Aluminium container: plain basket with handles.

Aluminium inner container rack.

Heating element.

Stainless steel support/stand protecting the heating element.

Scored water level mark.

##### **Inner Chamber dimensions:**

Chamber, approx: diameter 315 mm x height 290 mm. /describe

Aluminium container, approx: diameter 285 mm x height 216 mm. /describe

Sterilization capacity, approx: 14 Litres. /describe

##### **Removable cover equipped with:**

Bakelite handle.

Dial type geared steam gauge graduated in kg / cm<sup>2</sup>, PSI and degrees Fahrenheit, and with colour-coding showing sterilizing zone (green) and caution zone (red).

Control valve and flexible metal exhaust tube.

Excess pressure relief valve and over-pressure rubber plug.

##### **Power supply, electric:**

240 V/4.5A, 50 / 60 Hz.

Heating element, approx: 1050 Watt. /describe

With on-off toggle switch.

Thermo control: thermostatic heat control knob ranging 0 to 8, with red indicator light.

Power supply cord (with earth-wire) and plug (type B).

##### **Supplied with:**

1 x spare over pressure rubber plug

1 x spare heating element (240 V/1050 Watt)

Instructions for use and cleaning/maintenance and with diagrams for assembly/disassembly; in 3 languages (English)

Listing of parts, accessories and spare parts.

##### **Packaging and labelling:**

Refer General requirement

**Accessories/Spare parts/Consumables:** should be described

##### **Weight/Volume/Dimensions:**

Estimated weight: 16 kg /describe

Estimated volume: 112 cdm /describe

##### **Instructions for use:**

Basic sterilising device to be used in health centres and various departments in hospitals.

Provides comprehensive and stand alone sterilization facility.

Steam sterilizer should only be operated by staff who received adequate training on the device and on steam sterilisation processes.

**Important:** To carry out sterilizations the following items must also be operational on site:

- Drum, sterilizing, 165 mm diameter.
- Drum, sterilizing, 260 mm diameter.
- Drum, sterilizing, 290 mm diameter.
- Timer, 60 min.
- Indicator TST controls spot /PAC-300.

#### **4.01.02.04. Sterilizer, steam, around 40L**

##### **General Description:**

Steam sterilizer, kerosene heated, pressure type, capacity around 39 litres.

##### **Technical Specifications:**

For sterilizing medical materials such as dressings and surgical instruments.

Metal vessel with high-pressure seal suitable for sterilisation under superheated steam.

Maximum pressure: 21 PSI / 1.5 bar.

Maximum temperature: 259°F / 126°C.

Made of heavy cast aluminium.

Cover and bottom made of heavy cast aluminium.

Aluminium alloy seamless inset container.

Metal to metal seal (rubber gaskets).

Safety clamping locks: retaining bayonet clamp and (6) bakelite wing nuts to prevent displacement of cover while sterilizer is under pressure.

##### **Chamber equipped with:**

Aluminium container: plain basket with handles.

Aluminium inner container rack.

Scored water level mark inside chamber.

Bakelite side handles.

##### **Inner Chamber dimensions:**

Chamber, approx: diameter 385 mm x height 350 mm. /describe

Aluminium container, approx: diameter 355 mm x height 330 mm. /describe

Sterilization capacity, approx: 39 Litres. /describe

##### **Removable cover equipped with:**

Bakelite handle.

Dial type geared steam gauge graduated in kg / cm<sup>2</sup>, PSI and degrees Fahrenheit, and with colour-coding showing sterilizing zone (green) and caution zone (red).

Control valve and flexible metal exhaust tube.

Excess pressure relief valve and over-pressure rubber plug.

##### **Steam sterilizer supplied with:**

Instructions for use and cleaning/maintenance and with diagrams for assembly/disassembly; languages (in English)

Listing of parts, accessories and spare parts.

##### **Packaging and labelling:**

Refer General requirement

**Accessories/Spare parts/Consumables:** should be described

##### **Weight/Volume/Dimensions:**

Estimated weight: describe

Instructions for use:

Comprehensive though basic sterilising device to be used in health centres and/or emergency situations.

Steam sterilizer should only be operated by staff who received adequate training on the device and on steam sterilisation processes..

Important: To carry out sterilizations the following items must also be operational on site: Stove, kerosene, single-burner, pressure.



**Safety precautions:**

Always place the steam sterilizer on a stable surface (i.e.: use a strong iron tripod with retaining lugs supporting the sterilizer).

Never heat the steam sterilizer unless there is water in it.

It is recommended to use low mineral containing water (e.g. rain water deionised or distilled water).

The steam sterilizers must be cleaned and maintained properly according to manufacturer's instructions.

**4.01.02.05. Sterilizer, steam, 24L****General Description:**

Steam sterilizer, pressure type, Kerosene heated, capacity 24 litres.

**Technical Specifications:**

For sterilizing medical materials such as dressings and surgical instruments.

Metal vessel with high-pressure seal suitable for sterilisation under superheated steam.

Maximum pressure: 21 PSI / 1.5 bar.

Maximum temperature: 259°F / 126°C.

Made of heavy cast aluminium.

Cover and bottom made of heavy cast aluminium.

Aluminium alloy seamless inset container.

Metal to metal seal or (rubber gaskets).

Safety clamping locks: retaining bayonet clamp and (6) bakelite wing nuts to prevent displacement of cover while sterilizer is under pressure.

Chamber equipped with:

Aluminium container: plain basket with handles.

Aluminium inner container rack.

Scored water level mark inside chamber.

Bakelite side handles.

**Inner Chamber dimensions:**

Chamber, approx: diameter 315 mm x height 290 mm. /describe

Aluminium container, approx: diameter 285 mm x height 250 mm. /describe

Sterilization capacity, approx: 24 Litres. /describe

**Removable cover equipped with:**

Bakelite handle.

Dial type geared steam gauge graduated in kg / cm<sup>2</sup>, PSI and degrees Fahrenheit, and with colour-coding showing sterilizing zone (green) and caution zone (red).

Control valve and flexible metal exhaust tube.

Excess pressure relief valve and over-pressure rubber plug.

**Steam sterilizer supplied with:**

Instructions for use and cleaning/maintenance and with diagrams for assembly/disassembly; in English languages.

Listing of parts, accessories and spare parts.

**Packaging and labelling:**

Refer General requirement

**Accessories/Spare parts/Consumables:** Should be described

**Weight/Volume/Dimensions:**

Estimated weight: describe

estimated volume: 75 cdm (Cubical deci meter)

**Instructions for use:**

Comprehensive though basic sterilising device to be used in health centres and/or emergency situations.

Requires a powerful heating source (kerosene stove, charcoal fire or electric plate 15000 W min.).

Steam sterilizer should only be operated by staff who received adequate training on the device and on steam sterilisation processes.

Important: It is recommended to follow manufacturer's instruction manual for use and maintenance at all times.

Important: To carry out sterilizations the following items must also be operational on site:- Stove, kerosene, single-burner, pressure.

Kindly refer also to others steam sterilizer models available:- Sterilizer, steam, approx 39 Litres.

## 4.02. Dry heat Sterilization

### 4.02.01. Dry oven

#### 4.02.01.01. Dry heat sterilizer/medium volume

##### Description:

Sterilizer, hot air, 15 L and above, Hot air sterilizer, with automatic sterilization process with timer.

##### Technical Features:

- \* temp. range: 60 degr.C. - 250 degr.C.
- \* operating time: 45 min – 2 hrs.
- \* sterilization at 180 degr.C. for: instruments, syringes, etc.
- \* internal dimensions: aprox 36 x 20 x 21 cm (w x d x h)
- \* external dimensions: aprox 60 x 34 x 36 cm (w x d x h)
- \* aprox 15 liter /describe
- \* with thermostat and ventilator
- \* including 3 instrument trays
- \* power requirements: 220V/50Hz.
- \* power consumption: aprox 850 W. /describe
- \* cold water hardness: 7 degr.German (max)

#### 04.02.01.02 Dry heat sterilizer, High Temperature & Volume

##### Description: Oven, dry sterilizer

##### Technical features:

- \* universal heating cabinet for use as drying oven or hot-air sterilizer
- \* temperature range up to approx. 300 °C.
- \* electronically controlled
- \* content, approx. 53 liters /describe
- \* power requirements: 240 V/50 Hz
- \* power consumption: aprox 1400 W /describe
- \* internal dimensions: indicate (w x h x d)

#### 4.02.01.03. Flame sterilization

##### Description: Burner, flameless sterilizing

Electric sterilizer for bacteriology loops, needles and test tube rims (instead of Bunsen burner)

##### Technical features:

Internal temperature of ceramic funnels 850<sup>0</sup>C resulting in a sterilization time of 5 - 8 sec.

Prevents aerosol formation and so reduces bacterial contamination which is associated with flame sterilization methods

Protected by cage guard

With stand for loop handle storage and spare heater

## 4.04. Cold sterilization

### 4.04.01 Radiation sterilization

#### 4.04.01.01 Gamma radiation

#### 4.04.01.02 UV light source

#### 4.04.01.03. Ultrasonic cleaner

Description: Table top model, capacity approx. 18 liters.

##### Technical Features:

- \* Stainless steel cleaning tank,
- \* Enameled sheet steel casing,
- \* drain cock,
- \* Vibration element working at approx. 40 kHz.
- \* Tank dimensions, indicate

- \* Power requirement: 220V, 50Hz,
- \* Power consumption: aprox 350 W. /describe

## 4.05. Drums

### 4.05.01 Containers

#### 4.05.01.01 Metallic containers

##### **General Description:**

Drum, sterilizing, around 165 mm diameter.

##### **Technical Specifications:**

Cylindrical container used to sterilize dressing materials (gauze compress or cotton etc.) in a steam sterilizer (autoclave), and to keep them as "sterile" dressing materials for medical activities (i.e: dressing, injection etc.). Drum should have an effective closing lid with a clip lock, a carrying handle, air vents system to allow steam to circulate freely during the sterilization cycle. Vents to be manually closed after sterilization.

Air vent system (opening and closure mechanism) must be efficient and easy to operate.

Lateral air vents system is preferable to top and bottom air vents.

**Material:** Austenitic stainless steel, smooth surface. Austenitic stainless steel composition: approx. 8 to 10 % nickel, 18 to 20 % chromium.

External diameter: approx. 150 to 165 mm.

Height: approx. 100 to 120 mm.

Thickness: approx. 0.6 to 0.7 mm.

##### **Packaging and labeling:**

Refer General requirement

##### **Weight/Volume/Dimensions:**

Estimated weight: describe

Estimated volume: 2.8 cdm

##### **Instructions for use:**

Cylindrical container used to sterilize dressing materials (gauze compress or cotton etc.) in a steam sterilizer (autoclave), and to keep them as "sterile" dressing materials for medical activities (i.e: dressing, injection etc.). Open air vents system for sterilization process.

When the sterilization cycle is completed, close air vents system immediately when the drum is removed from the autoclave.

#### 4.05.01.02 PVC Containers

### 4.05.02. Packing and wrapping materials

#### 4.05.02.01 Fabric

##### **General Description: Used for packing and wrapping instruments to be sterilized**

**Material made of :** Muslin cloth (140 thread count), thin cotton fabrics,

Use **two** double thickness wraps (four layers in all), as this is the least effective of the materials used for wrapping.

Use for both steam and dry heat sterilization.

#### 4.05.02.02 Aluminum Foils

#### 4.05.02.03 Paper:

**General Description:** Used for packing and wrapping instruments to be sterilized,

Double wrapping (two layers) recommended,

Use for steam sterilization **only** and **not reuse**.

## 4.06 Sterilize Testing Materials

### 4.06.01 Sterilization Indicators

#### 4.06.01.01. Plasters/masking tape

**General Description:** Masking tape, for sterilization pack

**Technical Specifications:**

Paper based adhesive tape,  
plain (without sterilization indicators),  
used to close paper crepe packs for steam sterilization.  
Resistant to humidity during the steam sterilization cycle and drying temperatures.  
Easy released pressure sensitive adhesive, easy to tear paper,  
easy to remove without leaving residue or damaging the surface to which it is applied.  
Approximate size: width 19mm x length 50m

**Packaging and labelling:**

Refer General requirement

**Instructions for use:**

The masking tape is used to close paper crepe packs prepared for steam sterilization of medical devices.

**Storage:**

Avoid storage at extreme temperatures and humidity levels; store in a clean and safe environment and avoid dust and other environmental risk of damage.

#### 4.06.01.02 Timers

**General Description:**

Timer, 60 minutes.

**Technical Specifications:**

Ring or dial, easy to read, graduated 0 - 60 minutes, in 5 and 1 minute intervals.  
Loud long ring-alert at time elapse.  
Robust construction, housing, spring and gears: shock resistant.  
Stable setup on workbench or table.  
Smooth surface easy to clean.  
Easy to transport (could fit in a pocket).(optional)

**Materials:**

Gear-work, internal: rustproof metal or stainless steel only.  
Housing: stainless steel, chrome plated or powder coated steel only.

#### 4.06.01.03 Biological indicators

#### 4.06.01.04. Paper sheet

**General Description:** Paper sheet, crepe, for sterilization pack

**Technical Specifications:**

Crepe paper sheet for packing (wrapping) medical devices for sterilization with steam.  
Combining excellent steam penetration and fluids regulation, with optimal protection of the sterile products.  
Permitting safe sterilization and storage of sterile medical devices.  
Compliant with EN ISO 11607-1&2 (EN 868-1&2)  
Medical grade paper, creped, cellulose based, with 60 g/m2.  
Controlled porosity.  
Bacterial barrier.  
Tensile strength and drapeability.  
Paper sheet size: approx. 1 x 1 m.  
Single-use, Non sterile.

**Packaging and labelling:**

Primary packaging: One hundred (100) paper sheets in a plastic bag.

**Labelling on the primary packaging:**

Refer general Requirements

**Accessories/Spare parts/Consumable:**

**Weight/Volume/Dimensions:**

- estimated weight: should be described
- estimated volume: should be described

**Instructions for use:** should be written clearly

**Conditions for stock:**

Avoid storage at high temperatures and humidity levels.

Store in a clean and safe environment: avoid dust, risk of punctures or other environmental risk of damage.

#### **4.06.01.05 Chemical indicator/TST Control**

**General Description:** Indicator TST control spot is to monitor for steam sterilization process

**Technical Specifications:**

TST stands for Temperature, Steam & Time.

TST control spot is a device in the form of a self-adhesive colored spot which can be attached to sterilizing drum, or others steam sterilizing containers.

TST control spot is for use in portable steam sterilizers working at 121°C for 15 minutes.

The coloured spot is a chemical formula which is designed to detect when it has been in contact with the conditions, necessary, to secure effective sterilization. A chemical reaction takes place and the spot changes colour irreversibly from yellow to blue when the correct sterilization conditions of 121°C (temperature) for 15 minutes (time) in steam which is free of air, have been met.

It is delivered as a pack, contents of 1 pack: 300 TST control spot plus 1 record sheet.

It is supplied with clear Manufacturer's instructions for use in English.

**Packaging and labelling:**

Refer general Requirements

**Extra information required:**

Number of units per secondary packaging.

Over packaging: Packaging unit.

Weight/Volume/Dimensions: Estimated weight: describe , Estimated volume: 0.172 cdm

**Instructions for use:**

The use of TST control spot gives an immediate indication to the person in charge on successful sterilization cycle or not.

TST control spot must be used systematically for each steam sterilization cycle.

TST control spot must be attached to the lid of drum (or other steam sterilizing container), TST control spot must be checked when the sterilizing cycle is finished.

TST control spots are delivered with 1 record sheet to retain 300 TST control spots and to be used to record the results of all sterilizing cycles, pass or fail, remedial action taken to remedy failed cycles.

### **4.07. Transporting equipment**

#### **4.07.01 Trolley**

##### **4.07.01.01 Metallic trolley for soiled linen**

**Description:** Trolley, aluminum, for soiled linen, e.g Drapes, with front hinged lid.

Aluminum trolley, for transport of soiled linen, with hinged lid in the front of the trolley.

**Technical Features:**

- \* Aluminum construction with 1 front lid
- \* 4 Heavy-duty castors, 2 swivel
- \* Dimensions: approximately. 120 x 60 x 150 cm. (l x w x h) /describe

#### **04.07.01.02 metallic trolley for instrument processing**

**Description:** Trolley, instrument, stainless steel, 60 x 40 x 85 cm/describe  
Instrument trolley, sturdy stainless steel construction

##### **Technical Features:**

- \* With solid upper and lower stainless steel shelf
- \* Mounted on 80 mm anti-static castors
- \* Dimensions: state (w x d x h)

#### **04.07.01.03 PVC Trolley**

#### **04.07.01.04 Trolley, linen distribution**

##### **Required Functional Capabilities:**

Distribution trolley for folded linen chromium steel construction with cover and zip.

##### **Technical Features and Technical Performance Parameters**

mounted on 4 swivel wheels

wall bumpers

with 4 chromium wire mesh shelves

nylon or plastic cover

dimensions, approximately: approx 90 x 50 x 185 cm (w x d x h) /describe

#### **04.07.01.05 Trolley for loading & unloading**

**Description:** Trolley, loading, with transfer carriage for autoclaves, stainless steel construction, with sliding transfer section

##### **Technical Features:**

To load and unload baskets and trays from autoclaves with chamber size tuned to the specified sterilizer chamber dimensions in the project.

#### **04.07.01.06. Tray for Surgical Instruments**

1. Tray, stainless steel, for surgical instruments, large

2. Tray, stainless steel, for surgical instruments, small

Stainless steel surgical instrument tray

wire mesh

Dimensions: approx 24 x 24 x 5 cm (w x d x h) /describe

#### **04.07.01.07 Collecting baskets**

##### **1. Basket, stainless steel, wire mesh, large**

Stainless steel wire basket for central sterilization

Dimensions: approx 57 x 28 x 26 cm (w x d x h) /describe

##### **2. Basket, stainless steel, wire mesh, small**

Stainless steel wire basket for central sterilization

Dimensions: approx 57 x 28 x 13 cm (w x d x h) /describe

### **4.08. Supply**

#### **4.08.01. PPE**

##### **4.08.01.01. Body cover/Apron/**

**General Description:** Apron, protection, plastic, disposable, pack of 100

##### **Technical Specifications:**

Apron, protection, plastic, disposable, to be used in healthcare facilities; Resistant to abrasions, chemicals, and puncture from needles and other medical sharps, and moisture proof.

Cover upper body from waist to neck, lower body from waist to below knees, coupled in back

Should have cotton ties and neck loop for easy on/off

Straight apron with bib, back fastening and neckband

Material: Made of heavy-duty neoprene, latex, nitrile, or other water-impervious materials, Opaque or translucent plastic material, preferably polyethylene (PE).

Blood, water and chemical resistant

Size selected: Standard adult size.

Length: 95-110 cm (from top of the bib to lower edge of the apron).

Width: approx. 80 cm.

Medium size= approximately 35 x 45 in, large size approximately 35 x 55 in

Thickness: 20-30 microns (minimum of 0.5 mm).

Single use, Non-sterile

**Packaging and labeling:**

Primary packaging: One (1) pack of 100 aprons

**Labeling on the primary packaging:**

Refer general Requirements

**Over packaging:** Packaging unit

X packs of 100 aprons in a box

**Labelling on the packaging unit:**

Labelling to be the same as primary packaging

Extra information required: Number of units per box

**Weight and Volume:**

Estimated weight: describe

Estimated volume: 4cdm

**Instructions for use:**

Apron to be used in healthcare facilities by personnel performing medical / obstetrical / surgical procedures with high risk of contamination by body fluids projection.

The size has been chosen as the most commonly used.

**Safety process:**

The protection apron is single use only.

After use, dispose used aprons in waste container.

Collect and destroy them either by incineration in controlled surroundings or dispose of them in a safe burial pit in compliance with national laws and regulation on health care waste management.

**4.08.01.02. Medical gown with mouth cover**

**Description:** PP Surgical Gown, with woven cuffs

It is most important to minimize cross-infection during surgery. The surgeon gown are designed and manufactured with highest aim of protection, safety and comfort for both patient and surgeon.

The non-woven materials are carefully studied and chose to create the best barriers, blood and other fluids and this in combination with a major concern for comfort and performance.

**Specification:**

Certificates: CE/ISO/FDA

Material: PP/PP+PE/SMS/SMMS/Spun lace non-woven

Cuffs: Elastic or knitted

Color: White, blue, yellow

Packing: 10pcs/bag, 5bag/CTNS

Size: aprox S (115x127cm), M (115x137cm), L (120x140cm), XL (130x150cm)

Material or other specifications according to customers' requirement.

Characteristics: Soft, light, non-toxic, durable, eco-friendly.

Usage: Hospital, house and other working/living and studying place where high request has on environments.

**Safety:**

Choice of best non-woven providing reliable and selective barriers to bacteria, blood and other fluids.

Our OTM gowns provide different levels of protection adapted to match the risks posed from different procedures and how wet they are.

Aiming for increased theatre air cleanliness and reducing the bacterial loads on the wound.

**Comfort:**

Choice of non-woven providing softness

Being light and air-permeable  
Showing low resistance to water vapor permeability

**Feature:**

Waterproof, 100% biodegrade.  
being light and air-permeable  
Non-sticking  
Especially designed to allow comfort during long duration surgery

**4.08.01.03. Mouth cover**

**Specifications**

The most fashion and secure medical mouth cover.  
Type: Mask  
Size: ... should be described as small, medium and Large,  
Packing: custom packing acceptable or your requirement  
Environmentally Friendly

**4.08.02.04. Head/Mouth cover**

**Nonwoven face Mask Anti/Dust/Virus:**

**Features:**

1. Perfect fitting, easy breathing, non-irritating
2. High filtration capacity
3. Latex and fiberglass free

**Specifications:**

Materials: Nonwoven Fabric  
Capability: Disposable, Soft, Lightweight, Breathable  
Style: Ear-loop, Tie-on  
Size: 17.5x9.5cm (for adult) / 14.5x9cm (for children) / 12x7cm (for baby)  
Color: White /Blue /Green /Pink /Yellow and so on  
Packing: 50pieces /box, 2000pieces /carton  
Filter pollen, dust and bacteria

**4.08.01.05. Shoe cover**

**General Description:**

Overshoes for use in the theatre, clean protective overshoes that are worn over foot wear.

**Technical Specifications:**

Fabric overshoes  
Elasticated ankle  
Durable and strong sole made of fabric  
Can stand repeated washings.

**Material**

Polyester/Cotton 67%: 33 %, Green.

**Packaging and labelling:**

Refer general Requirements

**Extra information required:** Number of units per secondary packaging.

Information for particular storage conditions (temperature, pressure, light, humidity, etc.), as appropriate (or equivalent harmonised symbol).

Information for handling, if applicable (or equivalent harmonised symbol).

Manufacturer's instruction for use.

Alternatively, the instruction for use can be indicated on a separate insert.

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

Estimated weight: /describe

Estimated volume: 1 cdm

**Instructions for use:**



Overshoes are worn over footwear in the operating theatre and other sterile areas of the hospital.

#### **4.08.01.06. Eye cover, Safety glasses**

**General Description:** Glasses, safety, regular size, disposable.

**Technical Specifications:**

Safety glasses, panoramic lenses lightweight and comfortable.

Easy to combine with the wearing of protective masks (surgical/respiratory masks) and over eyeglasses. Adapted to the shape of the face.

Clear polycarbonate lens, UV coated, anti-mist, anti-scratch.

Flat side arms offering good sideways protection, temple length preferably adjustable.

The safety glasses are available in standard size and are disposable.

**Packaging and labelling:**

**Primary packaging:** unit of use One (1) Pair of glasses in a plastic bag.

**Labelling on the primary packaging:**

Refer general Requirements.

Over packaging: Packaging unit.

**Weight/Volume/Dimensions:**

- estimated weight: 0.060 kg /describe

- estimated volume: 0.52 cdm /describe

**Instructions for use:**

Security glasses used to protect the eyes against blood exposure or exposure to other human fluids during medical and surgical procedures.

**Safety process**

Disposable glasses: to be destroyed if they are soiled or damaged, otherwise they could be reused after cleaning with water and soap.

Never use solvent.

#### **4.08.01.07. Hand cover**

#### **4.08.01.08. Disposable beard cover**

**Specifications**

Color: white

Size : 18-24cm /describe

Material: nonwoven

Application: lab clean room

Material: 10-16g/m2 spun bonded polypropylene

Single or double elastic

Size: aprox 18"\*10",9"\*12"

Color: White, green, blue, red, pink, black, etc

Package: 100pcs/bag, 2000pcs/ctn

Size: state

## 05. Rehabilitasion And Physiotherapy



**Photo 05: Physiotherapy & Rehabilitation equipment**

## 05. Rehabilitation & Physiotherapy Instruments

### 05.01. Exercise

#### 05.01.01. Physical Exercise

##### **05.01.01.01. Bicycle, exercise**

###### **General Description:**

Exercise bicycle for rehabilitation and exercising of patients in the physical therapy gymnasium.

###### **Technical Specifications:**

Stationary exercise bike

With pedal resistance adjustment

Display of:

Actual speed; 0 to 30 km/h

Average speed

Revolution counter; pedal runs/min

Maximum speed

Total distance

Elapsed time  
Alarms for patient control  
Load range: 50 to 250 W at 50 rpm  
Seat and handle bar height adjustable  
Dimensions approximately: 1.50 x 0.50 x 0.80 m (w x d x h)  
Power requirements: 220 V / 50 Hz  
Power consumption: 500 W/ describe

**Material:**

Metal construction

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Exercise bicycle with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

**Weight/Volume/Dimensions :**

- estimated weight: describe kg
- estimated volume: 5 cdm

**Instructions for use :**

Locate the exercise bicycle on a stable and flat area and exercise under supervision in the gymnasium or rehabilitation area.

**Safety procedure : Describe**

**05.01.01.02. Balancing board**

**05.01.01.03. Wheel, shoulder**

**General Description:**

Shoulder wheel for shoulder exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Rotary arm with adjustable length.

All steel constructed, 100 cm. Diameter wheel is fitted with calibrated sensitive resistance mechanism.

Resistance is controllable from zero to maximum.

The 360 degree scale, enables degree of revolution to be read from either direction.

Arc of motion can be varied.

Fitted with attachment to raise or lower the wheel at the desired height for each patient, 1.00 to 2.00 m

**Material:**

Chrome plated steel construction

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Shoulder wheel with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Supplied with 2 chrome plated boltable weights of 1 kg

**Weight/Volume/Dimensions :**

- estimated weight: describe
- estimated volume: describe

**Instructions for use :**

Mount the shoulder wheel securely on a wall of the gymnasium. Exercise under supervision in the gymnasium or rehabilitation area.

#### **05.01.01.04. Mirror, correcting, 1 or 3 sections, mobile**

##### **General Description:**

A mobile, 3 section mirror for use with exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

##### **Technical Specifications:**

Mobile 1 or 3 section mirror on casters.

Caster legs widely positioned for stability.

Mirror sections can be angulated to ensure the optimum display.

Overall size (l x h), m of each section: 0.71 x 1.90

##### **Material :**

Frame: Wooden, varnished on casters.

Mirror: Glass, shatterproof.

##### **Packaging and labeling:**

Primary packaging : Unit of use

One (1) Correcting mirror in box with manufacturer's instruction for use, spare parts and accessories.

##### **Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :** N/A

##### **Weight/Volume/Dimensions :**

- estimated weight: describe kg

- estimated volume: 50 cdm / describe

##### **Instructions for use :**

Position the mirror on a flat surface of the gymnasium so that posture and gait can be examined. Exercise under supervision in the gymnasium or rehabilitation area.

**Safety procedure :** Describe

#### **05.01.01.05. Parallel bar**

##### **General Description:**

A set of parallel bars, 4.00 m in length, for use with physical therapy and rehabilitation of patients during walking exercises in the gymnasium.

##### **Technical Specifications:**

Base plate to be executed with sloping edges

Base plate to be executed with sloping edges

Bars independently height adjustable: 0.70 to 1.00 m

Width adjustable to maximum: 0.60 m

Length, approximately: 4.00 m

##### **Material:**

Cast metal frame.

Upholstery: tear proof and durable vinyl, washable.

##### **Packaging and labeling :**

Primary packaging : Unit of use

One (1) ENT chair in protective plastic with manufacturer's instruction for use, spare parts and accessories.

##### **Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

##### **Weight/Volume/Dimensions :**

- estimated weight: 0.50 kg / describe

- estimated volume: 50 cdm

##### **Instructions for use :**

Parallel bars for support of upper body whilst performing walking exercises in the gymnasium.

**Safety procedure:** describe

#### **05.01.01.06. Up down stair**

##### **General Description:**

Exercise stairs for use in the rehabilitation and exercising of patients in the physical therapy gymnasium.

##### **Technical Specifications:**

Two section right angle stairs that can fit in a corner.

One side with 4 treads (0.15 m high and 0.20 m deep)

First step able to move into second to make a bus step of 0.30 m

The other side with 8 steps (0.75 m high and 0.20 m deep)

The treads and the platform are covered with durable anti slip cork linoleum

Fitted with two sets of handrails to accomodate adults and children

Dimensions approximately: 0.60 x 0.70 x 0.60 m (w x d x h)

##### **Material :**

Stairs: Wooden construction, polished natural wood finish

##### **Packaging and labelling :**

Refer General requirements

##### **Accessories/Spare parts/Consumables :**

##### **Weight/Volume/Dimensions :**

- estimated weight: 50 kg / describe

- estimated volume: 250 cdm

##### **Instructions for use :**

Locate the stairs on a stable and flat area and exercise under supervision in the gymnasium or rehabilitation area.

#### **05.01.01.07. Quadriceps bench**

#### **05.01.01.08. Bars, wall**

##### **General Description:**

Wall bars for use with exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

##### **Technical Specifications:**

Top quality varnished wooden wall bar unit.

Sides of varnished wood.

16 oval section beech bars.

Metal fastenings to screw to the wall included.

Overall size (h x w),m: 2.60 x 1.00

##### **Material :**

Frame: Wooden, quality pine, varnished.

Bars: Beech, varnished.

##### **Packaging and labelling :**

Primary packaging : Unit of use

One (1) Wall bar unit in protective packaging with manufacturer's instruction for use, spare parts and accessories.

##### **Labelling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

##### **Weight/Volume/Dimensions:**

- estimated weight: 42 kg / describe

- estimated volume: 150 cdm

##### **Instructions for use :**

Mount the wall bar unit securely to a wall of the gymnasium for exercise. Exercise under supervision in the gymnasium or rehabilitation area.

##### **Safety procedure :**

#### **05.01.01.09. Bed mattress**

#### **05.01.01.10. Cervical, thoracic & lumbar traction with bed**

#### **05.01.01.11. Tilting bed**

**05.01.01.12. Balloon****05.01.01.13. Walking stick/Crutches, elbow type, pair****General Description:**

Crutches with elbow support, ambulation aid for patients with plaster casts, sprains and walking difficulty.

**Technical Specifications:**

Walking crutch with elbow support.

Weight is borne on the hand pieces with arms straightened and positioned along sides.

Lightweight and strong construction

Crutch design should be adjustable to patient height.

Distance from Hand grip to elbow support length should be adjustable

Distance from Hand grip to distal end should be adjustable.

Crutch distal end has a durable, non-slip rubber end cap.

Hand grip has a soft rubber covering for comfort and load bearing.

Overall dimensions, (l x diameter), m: 1.20 x 0.02

**Material :** Aluminium alloy, powder coated.

**Packaging and labelling :**

**Primary packaging :** Unit of use

One (1) Elbow crutch in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :** Supplied with spare rubber heel cups.

**Weight/Volume/Dimensions :**

- estimated weight: 0.30 kg

- estimated volume: 2 cdm

**Instructions for use :**

Crutches for use by patients as ambulatory aids.

**Safety procedure:** describe

**05.01.01.14. Roller, wrist****General Description:**

Wrist roller for wrist, hand and forearm exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

One piece wrist roll bar fitted in a rigid frame.

Roll bar in three different diameters i.e. 30 mm., 40 mm. and 50 mm.

Fitted to a wall board.

Adjustable friction control mechanism, controllable from zero to maximum for flexion and extension exercises of wrist and forearm.

Overall dimensions, ( w x d x h), m: 0.85 x 0.10 x 0.20

**Material:**

Chrome plated steel.

Wooden parts finished natural.

**Packaging and labelling :**

**Primary packaging :** Unit of use

One (1) Wrist roller in box with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Supplied with weights of 1 kg

Rope for pulley.

**Weight/Volume/Dimensions:**

- estimated weight: 5 kg / describe

- estimated volume: 25 cdm

**Instructions for use :** Mount the wrist roller securely on a wall of the gymnasium. Exercise under supervision in

the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.01.01.15. Bench, Swedish**

**General Description:** Swedish bench for use of exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Wooden bench with one-piece top.

Reinforced with metal angle plates.

Includes fastener/hook for wall bars.

Non-slip blocks on bases.

A balance bar is located beneath the bench top.

The bench has overall dimensions, Seat. 0.28 m width, Base. 0.28 m width, Bench height 0.35 m, Length 1.80m

**Material :**

Top quality varnished wood.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Swedish bench in box with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions :**

- estimated weight: 45 kg / describe

- estimated volume: 25 cdm

**Instructions for use :**

Place the Swedish bench on a flat surface and ensure that it is stable prior to use. Exercise under supervision in the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.0101.16. Mat, exercise, gymnasium**

**General Description:** Exercise mat for use with exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Shock absorbent mat suitable for use in gymnasium.

Mats made for heavy use.

Mats can lock together.

Mats have hard wearing covers

Complete with handles for transport.

Possibility of including non-slip base and/or reinforcement corner pieces.

Overall size (h x d x l),m: 0.05 x 1.00 x 1.80

**Material :**

Plasticised canvas covers

Zip-fastening. Polyurethane sheet.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Exercise mat in protective packaging with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables : N/A**

**Weight/Volume/Dimensions :**

- estimated weight: 2 kg / describe

- estimated volume: 10 cdm

**Instructions for use :**

Place mats on the floor area where required whilst exercising. Exercise under supervision in the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.01.01.17. Dumb bells, set, iron, and 1 to 5 kg**

**General Description:** Set of dumb bell weights for use with exercise for rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Ruggedly built and safe.

Solid cast iron dumb bells feature a flanged steel bar locked into the solid end during the molding process.

The solid dumbbells are available in 1 kg increments from 1 to 5 kg.

Finished in black.

Overall size (diameter x l),m: 0. 10 x 0. 25

**Material :**

Weights: Solid cast iron

Handle: Steel

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Set of dumb bells in protective packaging with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions :**

- estimated weight: 15 kg / describe

- estimated volume: 10 cdm

**Instructions for use :**

Use weights to exercise in gymnasium. Exercise under supervision in the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.01.01.18. Exerciser, grip**

Grip exerciser, plastic, each exerciser with 5 exchangeable springs, set of 2

#### **05.01.01.19. Pedal apparatus**

**Description:** Pedal apparatus for reactivation and mobilization of the joints, and for strengthening the leg muscles

**Technical features**

\* provided with adjustable resistance and revolution counter

\* suitable for sitting or recumbent patients.

#### **05.01.01.20. Set, Measuring Instruments,**

**General Description:**

Set of measuring and examination instruments for physiotherapy consisting of the following items and quantities.

**Technical Specifications:**

The set consists of the following items:

1 x Aesthesiometer

1 x timing fork

1 x reflex hammer

1 x goniometer

1 x sensibility meter

1 dermatographic pencil

1 x storage case.

Overall dimensions (w x d x h), m: 0.50 x 0.25 x 0.25

**Material:**

Metal parts of anodized finish.

Plastic



**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Set, measuring instruments in protective packaging with manufacturer's instruction for use, spare parts and accessories.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :****Weight/Volume/Dimensions :**

- estimated weight: 2 kg / describe

- estimated volume: 20 cdm

**Instructions for use :**

Instruments for use when performing physiotherapy evaluations on patients.

**Safety procedure :** describe**05.01.01.21. Treadmill, rehabilitation****General Description:**

Treadmill provides safe and effective walking and running exercise under the supervision of therapists in the physical therapy gymnasium.

**Technical Specifications:**

Treadmill with variable speed and incline

Treadmill belt runs across a phenolic deck providing low friction and noise when in use.

The treadmill should have programmable exercise sessions, at least 4 different programs are required.

A LCD screen should displays the programme settings.

Heart rate monitoring should be possible using a wireless system

The patients heart rate should be seen on the screen

An emergency stop button should be mounted on the control panel, it should be visible and easy to reach.

The treadmill shall be provided with side-rails.

Power requirements 100/240 V, 50/60Hz

Treadmill running surface (l x w), m: 1.50 x 0.50

**Material:**

Epoxy coated aluminium, plastic

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Treadmill in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** To be supplied with wireless heart rate monitor and heart rate detector on a lightweight material that can be worn by the patient.

**Weight/Volume/Dimensions:**

- estimated weight: 100 kg / describe

- estimated volume: 50 cdm

**Instructions for use :**

Place the treadmill on a flat surface where there is sufficient space surrounding for the therapist to observe the patient. Use under supervision of a qualified person in the gymnasium or rehabilitation area.

**05.01.01.22. Ball, exercise, physio**

**General Description:** Exercise therapy ball used by therapists for exercises of movement and equilibrium with rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Moulded brightly coloured inflatable vinyl balls.

Can support weight of up to 180 kg/ describe

Outer surface is covered with a non-slip finish.

Inflation pressure of the ball can be adjusted according to requirements.

Balls are available in various sizes from diameter 0.20, 0.30, 0.42, 0.53, 0.65, 0.75 m

**Material :** Vinyl

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Exercise ball in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :** To be supplied hand pump and filler nozzle.

**Weight/Volume/Dimensions :**

- estimated weight: 0.20 kg / describe

- estimated volume: 1 cdm

**Instructions for use :**

Use the exercise ball when performing evaluations and exercise of patients under supervision of a qualified person in the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.01.01.23. Pulley exercise, station**

**General Description:** Wall mounted pulley exercise station for use in the rehabilitation and exercising of patients in the physical therapy gymnasium.

**Technical Specifications:**

Wall mount type exercise station with dual operation, two arms or legs can be exercised simultaneously

Traction weight can be set on both sides from 0.5 to 10 kg/ describe

Traction height can be selected between 0.15 and 2.00 m

Dimensions approximately: 0.20 x .20 x 0.60 m (w x d x h)

**Material :** Pulley: Metal construction, powder coated finish.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Wall pulley in box with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

To be supplied with straps and exercise stool

To be supplied with 2 handles and 20 weights of 0.5 kg each/ describe

**Weight/Volume/Dimensions:**

- estimated weight: 10 kg / describe

- estimated volume: 12 cdm

**Instructions for use :**

Fix the exercise pulley securely to a wall. Use the pulley system to exercise arms and legs under supervision of a qualified person in the gymnasium or rehabilitation area.

**Safety procedure:** describe

#### **05.01.01.24. Hoist, patient**

**General Description:** Patient hoist for lifting heavy patients safely.

**Technical Specifications:**

Hydraulic hoist capable of lifting patients from various positions

Unit comprises stable three point base with extended legs for stability when lifting

Hydraulically powered lift arm suspended from a secure centre post.

Lifting powered by hand powered jack

Optional: battery powered hydraulic jack

Unit mounted on casters for mobility.

Size of unit allows it to enter a lift

**Material :** Enameled steel construction

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Patient hoist in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Supplied with a set of slings for lifting patients.

**Weight/Volume/Dimensions :**

- estimated weight: 25 kg / describe

- estimated volume: 20 cdm

**Instructions for use :**

Place patient hoist close to patient, ensure that base legs are extended and that the casters are locked. Secure patient comfortably in sling, and lift carefully till the patient weight is taken up by the hoist. Manoeuvre the hoist to the desired position for lowering the patient. Used by nursing staff in the facility.

**05.01.01.25. Walker, adult**

**General Description:**

Adult walker for support of patients needing stable support.

**Technical Specifications:**

Wide frame with 4 stable leg supports

Adjustable height to accommodate patients.

Braced for stiffness and stability

Equipped with handgrips for improved grip and comfort.

Overall dimensions, (l x w x h), m: 0.80 x 0.70 x 1.20

**Material :** Aluminium alloy, powder coated.

**Packaging and labeling :**

Primary packaging : Unit of use

One (1) Adult walker in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** Supplied with spare rubber heel cups.

**Weight/Volume/Dimensions :**

- estimated weight: 0.30 kg / describe

- estimated volume: 2 cdm

**Instructions for use :**

Walker for use by adult patients as ambulatory aids.

**Safety procedure :** should be described

**05.01.01.26. Walker, child**

**General Description:** Child walker for support of patients needing stable support.

**Technical Specifications:**

Wide frame with 4 stable leg supports

Adjustable height to accommodate patients.

Braced for stiffness and stability

Equipped with handgrips for improved grip and comfort.

Overall dimensions, (l x w x h), m: 0.80 x 0.70 x 1.00

**Material :** Aluminium alloy, powder coated.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Child walker in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :** Supplied with spare rubber heel cups.

**Weight/Volume/Dimensions:**

- estimated weight: 0.30 kg / describe

- estimated volume: 2 cdm

**Instructions for use:**

Walker for use by child patients as ambulatory aids.

**Safety procedure:** should be described

**05.01.01.27. Walking stick****General Description:**

Walking stick for support of patients needing additional support when walking.

**Technical Specifications:**

Walking stick with length adjustment to suit patient height.

Strong and lightweight.

Walking stick tip fitted with a durable rubber non-slip ferrule.

Ergonomically shaped handle for comfort when load bearing.

Length adjustable, m: 0.78 – 0.99

**Material :** Aluminum alloy, powder coated.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Walking stick in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :** Supplied with spare rubber ferrules.

**Weight/Volume/Dimensions :**

- estimated weight: 0.30 kg / describe

- estimated volume: 2 cdm

**Instructions for use :**

Walking stick for use by patients as ambulatory aids.

**Safety procedure:** should be described

**05.02. Physiotherapy****05.02.01. Therapy, dry/Electrotherapy/****05.02.01.01. Physiotherapy, Treatment Table**

**General Description:** Universal couch on chromium frame with an adjustable head, leg and trunk section for massage procedures in physiotherapy

**Technical Specifications:**

Should have a trunk section adjustable up to 40 °

Extendable head support and two extendable handgrips

Table feet finished with rubber caps

Section tops are upholstered in washable plastic covered foam

Surface should be free from the supporting frame for strapping the patient for manual or exercise therapy

Overall dimensions approximately: 2.00 x 0.65 x 0.80 m (w x d x h)

**Material :** Chromed steel construction, corrosion proofed

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Massage couch in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

**Weight/Volume/Dimensions :**

- estimated weight: 20 kg / describe

- estimated volume: 100 cdm

**Instructions for use :**

Massage couch for manipulation and massage of patients to improve articulation of joints and rehabilitate muscles and movement in the physiotherapy section of the facility.

**Safety procedure:** should be described

#### **05.02.01.02. Shortwave therapy, pulsed and continuous**

**Description:** Therapy unit complete with 2 fully adjustable flex arms and set of standard accessories.

##### **Technical features**

Continuously variable intensity and frequency. Including:

- 2 x disc (Schliephake) electrode, diam. 130 mm.
- 4 x cable clamp
- 2 x extra insulated short-wave electrode cables, length 110 cm
- 1 x neon check light
- 2 x pipe wrench: 10 mm
- 1 x crosshead screwdriver

Power consumption: around 1000 W. max.

Power requirements: 220V $\pm$  15% /50Hz.

#### **05.02.01.03. Microwave, therapy unit**

**Description:** Pulsed and continuous microwave therapy unit, complete with standard accessories.

##### **Technical features**

- \* 1 x self-retaining radiator-arm
- \* 1 x HF-cable 1.8 meter, 250 W
- \* 1 x large field radiator
- \* 1 x crosshead screwdriver
- \* Power consumption: around max. 1600 W/ describe
- \* Power requirements: 220V $\pm$  15%/50Hz.

#### **05.02.01.04. Electrotherapy**

**Description:** Electrotherapy unit, low frequency, Unit for electrotherapy and electro diagnosis.

##### **Technical features**

- \* Continuous galvanic current.
- \* Currents with variable pulse duration and interval.
- \* Faradic surge currents, with variable pulse duration, plus interval and surges per minute.
- \* 5 diam dynamic currents according to Bernard.
- \* Constant current output.
- \* Solid-state technology.
- \* Built-in microprocessor monitors and controls all function, and carries out self test.
- \* Unit complete with 2 treatment heads and standard set of accessories.
- \* Power requirements: 220V/50Hz
- \* Power consumption: around 300 W/ describe

##### **GENERAL DESCRIPTION:**

Complex therapeutically system for interferential electrotherapy and vacuum therapy

##### **TECHNICAL CHARACTERISTICS**

A. electro – therapy APPARATUS

- 2 independent programmable channels (A, B), electric mode and voltage mode, curb I/t only on channel A
- Maximum amplitude 140 mA, according to the type of the electric settings
- 0 – 19,9 mA step of 0,1 mA/V
- 20 – 90 mA step of 1 mA/V
- Chronometer 0 – 60 min. step of 30 sec.
- Electrical types
  - Galvanic
  - Trabert
  - Faradic rectangular
  - Neo-faradic
  - dia-dynamics
  - Rectangular impulses, triangle and exponential
  - Measuring I/t curve and muscular behaviour

- Kotz
- 4 pole interference
- 2 pole interference
- Vector zone field
- Vector zone bi-pole
- TENS – electrical neurone-stimulation

#### **PROGRAMMABLE SEQUENCES**

- Maximum 10 types in one sequence
- Maximum 30 sequences
- Maximum 60 minutes for one sequence

#### **PROGRAMMABLE PULSES**

- Triangle
- Rectangular
- Duration 1 – 60 sec.
- Break between pulses of 1 – 2500 ms

#### **POWER**

- 230 V/50 Hz

#### **WEIGHT**

- Maximum 5 Kg/ describe

#### **SAFETY CLASS**

- Class I, tip BF
- EN 60 6601 – 1
- IEC 601 – 2 – 10

#### **ACCESSORIES**

- Rubber flexible electrodes, 6 x 8 cm, 2 per.
- Sponge protection for electrodes, 6 x 8 cm, 2 per.
- Flexible fixation belt, 1 set of 4 pieces
- Patient cable

#### **05.02.01.05. IR therapy**

**Description:** Interferential therapy unit with medium frequency alternating currents for treatment of deeper lying tissues

##### **Technical features**

- \* the modulation frequency should be adjustable between 0 and 150 Hz.
- \* the unit should include four-pole interferential therapy with vector scan and three spectrum programs.
- \* two carrier frequencies: 4000 Hz and 2000 Hz.
- \* complete with set of standard accessories:
  - \* operating instructions
  - \* 4 core electrode cable
  - \* point electrode 5 \* 2 sets of 2 flexible rubber electrodes
  - \* 2 sets of 4 moist pads
  - \* 2 sets of 2 fixation straps
- \* power requirements: 220V/50Hz
- \* power consumption: around 500 W/ describe

#### **05.02.01.06. Table, traction**

**General Description:** Traction table for use in the rehabilitation and exercising of patients in the physical therapy gymnasium.

##### **Technical Specifications:**

Set-up consists of the following items and quantities:

Traction table

Traction unit for continuous and intermittent operation with a timer

Indicator showing traction weight.

A hand control is standard.

Lumbar section separates smoothly reducing friction during lumbar traction

Extension shelf

Mounting plate

Adjustable traction guide

Dimensions approximately: 0.60 x 2.0 x 0.60 m (w x d x h)

**Material :** Stairs: Wooden construction, polished natural wood finish

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Exercise stair with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Thorax belt

Pelvic belt

2 x Quick fasteners

Clamp for fixation shapes

Padded neck harness

Flex stool

**Weight/Volume/Dimensions:**

- estimated weight: 50 kg / describe

- estimated volume: 100 cdm

**Instructions for use :**

Traction table is used to position the patient securely and for controlled traction to be applied to an area of treatment. Used supervision in the gymnasium or rehabilitation area.

**Safety procedure:** should be described

#### **05.02.01.07 Lamp Phototherapy, mobile**

Phototherapy unit, specially designed for the neonatal treatment

**Technical features**

- \* mobile, height adjustable frame, with a pivoting diffusing hood with six blue treatment tubes.
- \* timer permitting to program the exposure time between 0 and 12 hours
- \* totalizer hour time counter for using time of tubes
- \* rolling support for electric wire
- \* unit mounted on 3 swivel castors.
- \* overall dimension: 1570 x 620 x 1030 mm(h x w x d)
- \* power requirements: 220V/50Hz
- \* power consumption: describe

#### **05.02.01.08. Ultrasonic therapy apparatus**

**Description:** Unit designed for continuous and pulsed therapy, for treatment of muscle strain

**Technical features**

- \* Table-top model
- \* With contact control device
- \* Functional treatment heads to be waterproof and electrically safe for under water treatment
- \* Unit executed with digital timer, recorder and warning buzzer
- \* Supply to include standard set of accessories

#### **05.02.01.09 High frequency Ultrasound machine (Tens)**

**Description:-** Digital Ultrasound scanner with digital beam former System should be capable to handle multi frequency probes from 3.0 MHz to 9.0 MHz or above. Built-in Trolley System.

**Technical Specifications**

Multi frequency Convex Probe with center frequency 3 to 5 MHz

Multi frequency Micro Convex Probe with center frequency between 5 to 7.5 MHz

Multi frequency Linear Probe with center frequency between 5 to 7.5 MHz

Biopsy adopter for any probe  
 Modes: B.M and combination thereof.  
 M. Mode sweep: 4 speed or more.  
 Gray scale: 256  
 Sensitivity time gain: 8-12 steps  
 Depth: 24 cm or more  
 Focusing system: 3 steps and dynamic  
 Adjustable acoustic power  
 Frame rate: 80 frame / sec or more  
 Keyboard: Alpha numeric with track ball / Touch pad  
 Tissue Harmonics: Tissue Harmonic imaging  
 Cine memory of 64 frames minimum  
 Post processing: Image inversion, edge/echo enhancement correlation /  
 persistence/Dynamic range/Gamma Curve.  
 Image magnification 4x or more in real time.  
 Monitor: 12" CRT or LCD / TFT  
 Two probe connectors or more

**Accessories:**

1. Thermal Printer 256-Gray scale (Sony, Mitsubishi)
  3. UPS: on line with sine waves 2 KVA (imported)
  3. 50 High Density / High Glossy thermal paper Rolls
  4. Gel: 20 liters
- Voltage 220 V  $\pm$ 10%, 50 Hz

**05.02.01.10 Special Traction Couch**

**Description:** The traction couch is fully equipped for cervical and lumber traction. the rolable surface prevents friction to hip and legs during treatment.

**Features**

Free rollable table top sections (that can be fixed when required)  
 Fixation rails for belts and straps  
 Hydraulic height adjustment, 45 – 95 cm  
 Sitting and lying positions  
 Easy to move with retractable castors (H/L model)  
 High durable grey PUR-coated frame  
 comfortable padding, also at the side of the table top  
 Durable, hygenic and washable upholstery  
 upholstery available in 18 colors  
 Standard with breathing hole and plug

**Technical Specification**

Size of table approx.: ..... (L x W) 203 x 67 cm  
 Height adjustment approx.: ..... 45 – 95 cm  
 Fixed height type: ..... approx. 83 cm  
 Lifting tme (minimum – maximum) ..... approx. 25 sec.  
 Lifting capacity: ..... approx. 150 kg  
 Force hydraulic pump: .....  $\geq$  10,000 N  
 Power supply: ..... 220  $\pm$  10 % VAC, 50 Hz  
 Current consumption: ..... 1.0 A max.  
 Mositure resistance: ..... according to IP 44  
 Upholstrery: ..... different colors  
 Color code frame: ..... Grey = RAL 7035, White= RAL 9010  
 Classification: ..... Medical Device Directive 93/42/EEC, class I  
 Optional accessories  
 Traction frame for the Eltrac  
 Thoracic and Pelvic fixation belts



Paper roll holders (Mountable or stand alone)  
a number of rolls, cushions and pillows for optional support of patient/client

#### **05.02.01.11. Traction unit for lumbar and cervical traction**

**Description:** a unique combination of computer technology, ideal for lumbar and cervical traction

##### **Features**

Continuous and intermittent traction  
Traction forces up to 900 N (approx. 90 kg)  
safety control for traction forces above 200 N (approx. 20 kg)  
constant electronic monitoring of the traction force

##### **Technical specification**

Types of therapy: ..... static traction, intermittent traction  
Mains voltage: ..... 230 V  $\pm$  115 %, 50 Hz  
Volt..... 220v  
Dimensions: ..... describe  
weight: ..... 12 kg/ describe

#### **05.02.01.12. Complete Unit for ultrasound-and combination therapy**

**Description:** it is possible to generate three different applications at the same time: Current over channel 1 & 2, Ultrasound

##### **Features of multi-frequency treatment head**

1 and 3 Mhz  
Contact control  
Combination Therapy  
17 current forms for electrotherapy  
10 free programmable memory positions for simple protocols  
9 treatment suggestions for ultrasound  
51 treatment suggestions for electrotherapy

##### **Technical Specifications**

Current channels: ..... 2, independent  
Ultrasound: ..... 1  
Ultrasound frequencies: ..... 1 and 3 MHz  
Ultrasound: ..... continuous and pulsed  
Pulse frequency: ..... 100 Hz  
Duty cycle: ..... 5,10,20,50%  
Number of connections: ..... 1  
Intensity: ..... 0 – 2 w/cm<sup>2</sup>, Continuous, 0 – 3 w/cm<sup>2</sup>, pulsed  
Programmable positions: ..... 10 single, 10 sequential  
Pre-programmed: ..... 50  
Type mains adaptor: ..... ENA- 1550  
Mains voltage: ..... 220  $\pm$  10% , 50 Hz  
out put: ..... 15 VDC/ 3.3 A  
Dimensions: ..... 29 x 28 x 11 cm (W X D X H)  
Weight: ..... approx. 4 kg/ describe

#### **05.02.01.13. Vacuum Unit, 2 Channel**

**Description:-** The application of this electro-therapy is easier when positioning of rubber electrode in the body is not possible, in such condition patient treatment is easier using this vacuum unit.

##### **Features**

Can be used in combination with other pre-modulate and tens currents.  
Continuous and intermittent suction strength  
Accurate adjustment of the suction strength  
Unique cable connection for fast application of rubber electrodes  
Can only be used as table top model or on the trolley

**Technical specifications**

Vaccum: ..... Continuous and pulsed  
Power supply: ..... 15V DC/optional  
current consumption: ..... 1.0 A/ describe  
Dimensions: ..... around 24,5 x 21 x 9 cm

05.02.02. Therapy, wet/Hydrotherapy/

**05.02.02.01. Arm Bath, contrast**

**Description:** The arm contrast bath for the treatment of the upper extremities

**Technical specifications**

- \* the unit to be designed as a freestanding base unit
- \* the bath consists of two separate tubs mounted on a pedestal
- \* the bath has a double-walled stainless steel construction throughout (AISI 316)
- \* it comprises filling taps and taps for the "Spritz effect" as well as stand-pipe overflows
- \* dimensions: 80 x 73 x 92 cm(l x w x h)

**05.02.02.02. Bath, contrast bath, leg**

**Description:** Leg contrast bath, Free standing leg contrast bath for the treatment of the lower extremities and consists of two separate bath tubs.

**Technical specifications**

- \* The bath to be executed with double-walled stainless steel construction throughout (AISI 316)
- \* It comprises filling taps and taps for the "Spritz effect" as well as stand-pipe overflows
- \* Dimensions: 80 x 73 x 92 cm(l x w x h)

**05.02.02.03. Paraffin bath, mobile**

**Description:** Working on the "Bain Marie" principle, i.e. the paraffin to be heated indirectly by the heat transferred from the liquid (water).

**Technical specifications**

- \* The bath should be mobile with stainless steel inner tank.
- \* Tank capacity: 30 liter
- \* Heat transfer liquid(water): 10 liter
- \* Temperature range: 30 - 90 degr.C.
- \* Dimensions: 56 x 36 x 45 cm.
- \* power requirements: 220 V/50 Hz
- \* power consumption: 2000 W/describe

**05.02.02.04. Whirlpool, full body**

**Description:** Bath of stationary stainless steel construction

**Technical specifications**

- \* with electric turbine ejector aerator and spring balanced elevator
- \* 3 1/2 " diam thermometer
- \* complete with thermostatic mixing valve
- \* 350 liter capacity tank

**05.02.02.05. Hoist, patient, bath****Specification**

Patient hoist, to be designed as a reliable and sturdy lifting hoist for the efficient and safe transfer of patients  
To fit into all lifts and  
Simple to operate  
Fitted with an adjustable heavy duty lifting straps

**05.02.02.06. Butterfly bath, Hubbart type, st. st. hoist and jet**

Full body Hubbart tank

**Technical specifications**

- \* overall dimensions: 250 x 180 x 85 cm
- \* constructed of heavy gauge stainless steel, butterfly shaped
- \* equipped with 2 turbine ejectors and elevators on ball bearing carriages, 3 1/2 " dial thermometer, one water inlet, two drains, and two overflow pipes
- \* thermostatic water mixing valve assembly, all necessary pipe work and fittings to be included.
- \* executed with fixed patient hoist.
- \* power requirements: 220/380V/50Hz/3 Ph.
- \* power consumption: around 6 KW/ describe

## 05.03. Physical Rehabilitation



### 05.03.01 Prosthetics and Orthotics

#### 05.03.01.01 COACH

##### **General description**

Assessment and casting coach used to examine and assess patients with neuro-muscle-skeletal problems, and plaster casting of knee ankle foot orthosis and foot orthosis. used while the patient is lying in prone, or in back, or in side position.

##### **Technical specification**

four wheel  
adjustable height  
adjustable back rest  
washable

##### **Material**

galvanized stainless steel tubes  
bonded foam with synthetic cover

#### 05.03.01.02 SIT Casting apparatus

##### **General description**

SIT casting apparatus with stand and wide base provide functional casting of ischial containment and quadrilateral sockets for Trans Femoral amputees .Can also be used for Trans tibial brim casting

##### **Technical specification**

adjustable height  
includes asset of wrings for child and adult stump size  
allowing quqe adjustment of the hip joint in saggital and frontal plans  
used with Ischial containment ( IC ),Quadrilateral, and patellar tendon bearing (PTB ) socket plastic brims  
washable

##### **Material**

the base cold be light weight laminated wood  
galvanized stainless steel stand  
washable

#### 05.03.01.03 Casting chair

##### **General description**

Casting chairs for Trans Tibial, Ankle Foot Orthosis and Foot Orthosis hand casting.used while the patient seating comfortably putting his forearms in the arm rest his back perpendicular to the seat.

##### **Technical specification**

the back rest built is 90 degree to the seat  
arm support in both right and left sides  
the foot support built 350 mm clearance from the floor

the foot support moves back and forth to align the knee joint and the ankle during plaster casting  
the seat 500 mm wide and -----mm in depth  
height from the floor to the seat ----- mm

**Material**

galvanized stainless steel square tubs  
the back rest and the seat –high density foam covered with synthetic  
foot support –laminated strong play wood 25 mm thick

**05.03.01.04 Modular spinal Casting apparatus**

Modular spinal casting apparatus for plaster casting of patients with deformed spinal cord (scoliosis, kyphosis, and hyperlordosis), cervical casting is also possible with the modular traction unit.

**Technical specification**

Casting frames allows positioning of patients as required for full body casting (adjustable in height )  
the modular traction unit, to stabilize the patients head and for casting cervical area .  
adjustable foot plate  
adjustable and cushion padded knee support  
adjustable hand grips  
600 x 850 mm space required

**Material**

galvanized stainless steel tubs with quick acting screw clamps  
foot plat laminated wood

**05.03.01.05 Mirror**

**General description**

Mirror with frame fixed on the wheel stand used in prosthetic & orthotic clinics for gait training and assessment of patients with musculoskeletal problems

**Technical specification**

stands with adjustment mechanism to let the mirror play to different angle at the saggital plane  
mirror----- mm x----- mm in size and 4 mm thick  
pair of wheel fixed on the stand  
frames secured strongly in the stand

**Material**

stand - coated stainless steel  
frame – wood  
quality 4 mm thick mirror

**05.03.01.06 Cast brims**

**General description**

Casting brims for shaping and casting of trans femoral and transe tibial amputee.plastic casting brims are available for ischial containment ,quadrilateral and patellar tendon bearing ( PTB ) socket designs.

**Technical specification**

A set of PTB brims 12 in number for both left and right side  
A set of ischial containment ( IC) brims 12 in number for both left and right side  
A set of quadrilateral brims 12 in number for both left and right side

**Material:** made out of polypropylene and polyethylene plastics

05.03.02 Measuring devices

**05.03.02.01 Ruler**

**Description**

1 mm spacing,  
Length mm 2,000

**Material**

Wood,Light alloy,  
Polyamide

#### **05.03.02.02 Tape Measure**

**Description:**

Made of Steel,  
return run by pressing a button,  
1 mm spacing,  
Length 2,000 mm

#### **05.03.02.03 Flexible Measure**

**Description:**

Made of Spring band steel,  
1 mm spacing,  
Length mm 150 ,200 ,300 ,500 ,1,000 mm

#### **05.03.02.04 Steel Square 90°**

**Description:**

Made from Steel, galvanized,  
Side piece length mm 150 x 100 ,  
200 x 130,150 x 100 , 200 x 130 mm

#### **05.03.02.05 Hip leveling guide**

**General description**

Used to check leg length and alignment of the pelvic bone . the two ends of the tool placed in the left and right side of the iliach crest.

**Technical specification**

330 mm length  
0.26 mm height

**Material:** aluminum with plastic thigh

#### **05.03.02.06 Foot blocks**

**General description**

Used for leg length comparison.

**Technical specification**

six parts-5,10,15,20,25, and 30 mm thickness

**Material**

play wood, or Aluminium, or polypropylene plastic

#### **05.03.02.07 Inside funnel measuring device**

**General description:**

Used to measure inside circumference of negative plaster models and prosthesis socket

**Technical specification**

40 mm to 660 mm

**Material**

Galvanized steel

#### **05.03.02.08 Goniometry**

**General description**

Used to assess the angel of body joints, knee, hip, ankle, wrist, elbow and shoulder

**Technical specification**

350 mm long  
0 to 180 degree measurement range

**Material**

Plastic

#### **05.03.02.09 Body calipers**

##### **General description**

For measuring body segments

##### **Technical specification**

Measurement range 400 to 600 mm

##### **Material**

Aluminum and plastic

#### **05.03.02.10 Water level**

##### **General description**

To check vertical and/or horizontal alignment of the prosthetic or orthotic during assembly

##### **Technical specification**

Aluminum alloy, with horizontal and vertical level made of Plexiglas

#### **05.03.02.11 Clipper gauge**

##### **General description**

Universal measuring tool to measure positive plaster models of prosthetic and orthotic legs and hands

##### **Technical specifications**

Clipper gauge 150 mm maximum measuring range

Clipper gauge 250 mm maximum measuring range with long jaws inside depth measuring gauge

##### **Material**

Stainless steel

#### **05.03.03 Compasses and Scribing Tools**

##### **05.03.03.01 Precision Spring Divider**

##### **Technical Description**

Made from Hardened steel tips

Length 150- 175 mm

##### **05.03.03.02 Bow Compass**

##### **Technical Description**

Made from Forged steel,  
hardened steel tips, without scale, with lock.

Length 150 - 200 mm

##### **05.03.03.03 Scriber**

##### **Technical Description**

Made from Hardened steel,

one straight tip,

one bent tip 90°.

Length mm 250

##### **05.03.03.04 Marking Gauge**

##### **Technical Description**

Made from Wood,

In cm spacing

Scribing height max. 1,000 mm

#### **05.03.04. Cutting tools**

**General description :** Used to cut plastics, plaster casts, leather and plaster bandages.

##### **Technical specification**

Made from Forged steel,

bent, with toothed blade,

painted handle,

Used in the clinics as well as workshops

##### **05.03.04.01 Shoemaker's Knife**

**Description:** Knife for removing plaster cast from the patient

Length mm 230

Weight kg 0.060/ describe

**05.03.04.02 Plaster Knife****Technical description**

Made from Stainless steel.

Length mm 180

**05.03.04.03 Plaster cast shear/scissor:-****Technical specification**

Made from stainless steel

Toothed,

Length 210 mm

**05.03.04.04 Trimming scissor****Description**

Made from stainless steel

Tailor scissor,

Length 235 mm

**05.03.04.05 Leather trimming shears****Technical Description**

Made from stainless steel

curved blade,

Length 180 mm

**05.03.04.06 Leather Cutter****Technical description**

Made from Forged steel,

bent, with toothed blade,

painted handle,

length 230 mm

**05.03.04.07 Bandage cutting scissor****Description**

Made from stainless steel

Luster (smoothed surface),

length 130 mm

**05.03.04.08 General purpose light shears:-****Description**

plastic handle

Length 180 mm

**05.03.04.09 Otto Bock Cutter****Technical Description**

The cutter is suitable for cutting silicon and polyurethane liners.

This feature is highlighted by the rounded cutting edges.

It prevents the cutting edge tearing the liner.

Assembly on workbenches with a top thickness of up to 50 mm using a T-screw.

**Dimensions**

Cutting width 50 mm

Cutting height 6 mm

Weight approximately 1,560 kg/ describe



#### 05.03.04.10 Special Twist Drill Set

##### Technical Description

Made from High speed steel (HSS): a type of tool steel with high cutting speed potential, DIN 338,  
right cutting with cylindrical shaft,  
50 parts, in steel box  
Ø in mm: 1 - 5.9 in increments of 0.1  
Approximate Weight in kg: 0.850/ describe

#### Forstner Drill Set

**Description:** Knothole Cutter Set, Tool steel, for wood,  
right cutting,  
15 parts,  
in wooden stand ø 10, 12, 14, 16, 18, 20, 22, 24, 25, 26, 28, 30, 32, 35 and 40 mm.

#### Conical Drill

**Description:** Made from HSS, for plastic

##### Approximate dimensions:

Ø	mm	14	20	30
Shaft Ø	mm	6	8	9
Weight	kg	0.021	0.052	0.109

#### 05.03.04.13 Tap and Thread-cutter Set

##### Description

Made From HSS, with saddle bar and tap holder, in steel box.  
Approximate dimensions mm 255 x 105 x 30  
Thread Cutter HSS , DIN 223  
Tap Holder DIN 223

#### 05.03.04.14 Countersink, 90°

**Description:** made from HSS, for lowering oval head screws in the laminated sockets.

##### Approximate dimensions:

Shaft Ø	mm	8
External Ø	mm	12.5
Weight	kg	0.026 / describe

#### 05.03.04.15 De-burring Knife-

**Technical Description:** For plastic and metals,  
movable and replaceable blade,  
plastic handle with storage compartment,  
blade holder extends up to 100 mm.  
Replacement blades.

05.03.05 Tool kit per work benches

##### General description

Tool kit consists of a Variety of tools used for assembling prosthetic and orthotic device  
Standard kit consists of the following tools

#### 05.03.05.01 Screw driver

##### Technical description

Phillips head 2\*100 mm blade,  
made of high-alloy vanadium-steel,  
with plastic handle.

#### **05.03.05.02 Screw driver**

##### **Technical description**

Phillips head 3\*100 mm blade  
made of high-alloy vanadium-steel,  
with plastic handle.

#### **05.03.05.03 Phillips Angled Screwdriver .**

##### **Technical Description:**

Made from Vanadium molybdenum steel blades,  
Approximate sizes 1 and 2,  
Phillips recess,  
shiny nickel-plated,  
100 mm total length,  
impact-resistant plastic handle.

#### **05.03.05.04 Net driver 5.5,**

for hexagonal nut diameter 3

#### **05.03.05.05 Net driver 10,**

for hexagonal nut diameter 6

#### **05.03.05.06 Allen Wrench,**

Symmetrical

Allen key set hexagonal 1.5 to 8

#### **05.03.05.07 Allen key spherical end, 1.5 to 10**

#### **05.03.05.08 Pin Wrench,**

##### **Technical description:**

Made from Hardened steel tips,  
with wooden handle,  
for Pin width mm 7 8

#### **05.03.05.09 Double Open-end Wrench Set,**

##### **Technical description:**

Made from Chrome-vanadium steel,  
chromium plated,  
eight parts, in holder,  
wrench sizes: 6×7 / 8×9 / 10×11 / 12×13 / 14×15 / 16×17 / 18×19 / 20×22 mm Weight 0.825 kg/ describe

#### **05.03.05.10 Ring Wrench Set,**

##### **Technical description:**

Made from Chrome-vanadium steel,  
chromium plated,  
deep offset,  
eight parts in box,  
wrench sizes: 6×7 / 8×9 / 10×11 / 12×13 / 14×15 / 16×17 / 18×19 / 20×22 mm

#### **05.03.05.11 Ring Open-end Wrench Set,**

##### **Technical description:**

Made from Chrome-vanadium steel,  
short design,  
ring head angled at 15°,  
17 parts in transparent bag,  
from 6 to 22 in 1 mm increments.

#### **05.03.05.12 Pliers, universal,**

##### **Technical description:**

Made from Special tool steel,  
side piece with PVC coating.,  
Length 160/5 mm

#### **05.03.05.13 Langbeck, Flat Nose Pliers**

##### **Technical description:**

Made from Chrome-vanadium,  
oil hardened,  
side piece with PVC coating,  
polished Cantilever Action End Cutting Pliers Special steel,  
oil hardened,  
inductively hardened cutting,  
painted sidepiece, for hard wire.

#### **05.03.05.14 Revolving hole punch pliers,**

##### **Technical description:**

made from Forged steel,  
with six punching tubes  $\varnothing$  2 / 2.5 / 3 / 3.5 / 4 and 5 mm.

#### **05.03.05.15 Hammers**

##### **Technical description:**

Hammer standard,  
hard ended steel  
wood/plastic handle 200 gram

**Rubber Mallet**, with shaft, total weight 0.3 kg / describe

**Shoemaker's Hammer** with, shaft ,weight 0.350 kg/ describe

#### **05.03.06 Contouring, Parallel Alignment Devices and riveting tools**

##### **General description**

These tools are used to shape orthotic side bars according to the body counter of the patient on the positive plaster mold

#### **05.03.06.01 Bending Irons**

##### **Technical specification**

Countering instrument round beak, 4+6 mm, 265 mm

Countering instrument round beak, 7+9 mm, 265 mm

Countering instrument, flat countering, 500 mm

Countering instrument, square beak, 4+6, 265 mm

Countering instrument, square beak, 7+9, 265 mm

#### **05.03.06.02 Bending bar**

##### **Technical specification**

Made from Tool steel, high-alloy, used to shape the upper edge of bars, concave half round, shaped jaws.

For bar width           mm 4 and 6

Length                   mm 500

Weight                   kg 1.420/ describe

Rivet Rail / Riveting bar with rivet hole, 680 mm, Weight 3.6 kg/ describe

#### **05.03.06.03 Rivet Extractor**

##### **Technical specification**

Made from Chrome-vanadium steel, octagonal shaft, painted

Rivet setter, steel, coated, for 3 mm diameter rivets

Rivet setter, steel, coated, for 4 mm diameter rivets

#### 05.03.06.04 Rivet Header

##### Technical specification

Made from Chrome-vanadium steel, octagonal shaft, painted, flat head shape

Rivet header, steel, burnished, for 3 mm diameter rivets

Rivet header, steel, burnished, for 4 mm diameter rivets

#### 05.03.07 Plaster molding tools

##### General description

These tools are used in plaster molding and rectification activities to shape the plaster model of human body segment according to physiological and biomechanical principles

##### Technical specifications

Plaster mixing bowl, flexible rubber, capable of holding 0.5 kg of plaster powder,

Plaster spatula, double end, rectangular at one end and conical at the other end

Scrap knife, plaster molding tool set of 4 pcs

Draw knife, 250mm, 2 wood handles

Wire brush, stainless steel wires, 3 raw for cleaning plaster molding tools

Stanley surform, round blade, 250mm

Stanley surform, flat blade, 250mm

Stanley surform, half round blade, 250mm

#### 05.03.07.01 Plastic Basin

##### Technical specifications

Dimensions      LXWXH    840x580x410 mm

Type	Weight
------	--------

Chassis with 4 wheels	≈ 10.5 kg
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Without chassis	≈ 6.0 kg
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#### 05.03.07.02 Exhaust Tube Support

##### General description

To be set on the Plastic Basin, to hold exhaust tubes while filling plaster casts, complete with two clamps and four angle joints, dimensions LxWxH 780x470x810 mm, weight 4.6 kg/ describe

#### 05.03.07.03 Trash Container

##### Technical specifications

Plastic, round, Ø x height 650 x 390 mm

Type	Weight
------	--------

1 chassis with 3 wheels	≈ 6.5 kg
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2 without chassis	≈ 3.5 kg
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#### 05.03.07.04 Workbench

##### General description

##### Technical specifications

Workbench top of banqueted red beech wood, 50 mm thick, 700 mm deep. Lower support frame made of square section steel 40 x 40 x 2 mm.

Drawers made of red beech. Left drawer 150 mm high, two right-side drawers 55 mm high. Recessed shelf.

Work surface height 850 mm.

Color preferably : light gray

<u>Bench top length</u>	<u>Weight</u>
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≈ 1500 mm	≈ 85 kg
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≈ 2000 mm	≈ 100 kg
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#### 05.03.07.05 Storage Cabinet

##### Technical specifications

Sheet metal. Double-winged door with safety lock.

Four height adjustable shelves.

**Dimensions:** WxH 950x1950 mm

<u>Depth</u>	<u>Color</u>	<u>Weight</u>
≈ 400 mm	light gray	≈ 75 kg
≈ 500 mm	light gray	≈ 85 kg

#### **05.03.07.06 Bench Vise**

##### **General description**

Fixed on the workbench, used to handle grip different work pieces during fabricating, aligning and adjusting prosthetic and orthotic devices

##### **Technical specifications**

Made from Forged steel, front opening, surface hardened jaws, adjustable, hardened guide rail, hardened anvil, holder for jaw protectors, scale for quickly setting the span width, round stable forged vise base, color blue

##### **Approximate dimensions**

<u>Jaw width</u>	<u>Jaw opening</u>	<u>Weight</u>
100 mm	125 mm	≈ 6 kg
120 mm	150 mm	≈ 10 kg
140 mm	200 mm	≈ 18 kg
160 mm	225 mm	≈ 25 kg

#### **05.03.07.07 Heating chamber for thermoplastic sheets**

##### **General description**

The heating chamber / oven / used for heating of thermoplastics .The plastics / polypropylene, polyethylene and ethyle venile asetat ( EVA ) / melted in this machine to certain degree centigrade to be molded over plaster models to make parts of prosthesis or orthosis devices .

##### **Technical specification**

tension : 400V 3phase, 5 wire

frequency : 50 Hz

nominal power : 5 KW / describe

temperature range : 30 - 300 °C

to be installed in an even surface

the safety device protects the heating chamber ;its environment and the charging material against impermissible excess temperature

the safety device is functionally and electrically independent of the temperature control device

ventilation speed 0 -100%

exterior dimension - width ≈ 1630 mm

Height ≈ 500 mm

Depth ≈ 1280 mm

interior dimensions - width ≈ 1400 mm

Height ≈ 305 mm

Depth ≈ 1100 mm

#### **05.03.07.08 Welding hot air gun**

##### **General description**

Welding gun used to weld prosthetic components/parts together. The machine changes the electrical energy into heat. The hot air generated reaches up to - 0c which could melt plastics.

##### **Technical specifications**

Welding hot air 'leister triac' 220 volt ±15%

frequency :50 Hz

power :1600 w/ describe

temperature : 20-600 °C

dimensions L x Ø: 340 mm X 90 mm, handle Ø 56

protection glass double insulated

noise level : 65 dB

Welding nozzle, 4mm diameter

Welding nozzle, 3,4, and 5mm diameter

### **05.03.07.09 Oscillating saw**

#### **General description**

Used for opening of plaster or synthetic casts and polypropylene models from plaster models .

#### **Technical specifications**

power supply: 220 -240 Volt, 50 Hz

power rating: 180 Watt/ describe

Rotations: approximate 12000-21000 min-1

weight:  $\approx$  1.4 Kg

noise level(A-rated): typically 75 dB (A).The noise level can exceed 85 dB during usage

Hand- arm-vibration: typically lower than 2.5 m/s<sup>2</sup> . Measuring values per EN 50 144.

Should be available with

round saw blade,  $\varnothing$  44 mm , plaster casts

Round saw blade,  $\varnothing$  50 mm plaster casts

Round saw blade ,  $\varnothing$  65 mm plaster casts

Segment saw blade,  $\varnothing$  65 mm plaster casts

waisted saw blade,  $\varnothing$  65 mm plaster casts

Deep saw blade,  $\varnothing$  70mm plaster casts

Round saw blade,  $\varnothing$  44 mm , synthetic

Round saw blade,  $\varnothing$  50 mm synthetic

Round saw blade,  $\varnothing$  65 mm synthetic

Segment saw blade,  $\varnothing$  65 mm coated surface

waisted saw blade,  $\varnothing$  65 mm coated surface

Deep saw blade,  $\varnothing$  70mm coated surface

Patent screw

Transportation case with insert

### **05.03.07.10 Socket Router**

#### **General description**

Used for cuing, grinding smoothing and shaping of materials or components during fabrication of prosthesis and orthosis devices .

For connecting to a central chipping suction-exhaust system with a minimum air velocity of 20 m/s and a negative pressure of 703 Pa., exhaust connection piece  $\varnothing$  125 mm. Steel machine body, continuous electronic speed control, electronically controlled exhaust brake and skid controlled router motor, halogen light 12 V/20 W with flexible mount. The ball and socket joint with mounting and flexible hose,  $\varnothing$  25 mm, provides optimal positioning of the dust extraction shroud. Protective shaft housing , two lengths. Shaft thread 5/8" inner.

#### **Technical specifications**

Noise level dB(A) 75

Shaft length mm 460

Working height mm approx. 1,000

Weight (net/gross) kg 120/215

Colour light grey (RAL 7035)

#### **Accessories and Service Parts**

High-performance cutter

For processing wood and Pedilen, double-edged, HSS knife, replaceable

Fir cone miller

HSS, fine rasp stroke, length 75 mm, largest  $\varnothing$  28 mm, for processing plastics.

Rasp milling tool

WS, for processing wood, Pedilen and foam, medium rasp stroke

Rasp milling tool

For processing Pedilen rigid foams, foams and thermoplastics

Fir cone miller

HSS, spiral-toothed, length 75 mm, largest  $\varnothing$  28 mm, for processing light metals and plastics.

Sanding drum

Made of integral foam, with conical attachment device, for sliding on to the shaft of the socket router, with a sanding sleeve, grain size 80.

cleaner

Holder WS, grinder made of rubber, with a sanding sleeve

Habermann fine cleaner, small, long and normal

With a sanding belt, grain 100.

Sanding drum

With rubber tensioner, length 45 mm,  $\varnothing$  25 mm, with a sanding sleeve, grain 150

Sanding cone

With rubber body, length 60 mm,  $\varnothing$  36/22 mm, with a sanding sleeve, grain 80.

Polishing/buffing cleaner

For finely grinding and polishing painted surfaces of prostheses shafts as well as all plastics. Linen sanding belt, grain 120.

Buffing wheel

Cotton wool, for polishing work, with 16 mm bore, fitting on threaded connector.

Polishing wheel

Untreated cotton cloth folded in waves, for working plastics, with 16 mm bore, fitting on threaded connector

Polishing sanding drum. For grinding plastics.

#### **05.03.07.11 Combination disk sander and belt sander**

##### **General description**

With two speeds, floor model, face plate with 350 mm  $\varnothing$  on left, with support table; on right contact disk and belt tensioning arm, O of collection system mount 100 mm.

##### **Technical specifications**

Electrical equipment:

Motor protection switch,

speed selection switch,

Standard equipment includes:

pc. 649G14=250×120 Sasanding belt, LxW 2500×50 mm, grain size 120

1 pc. 649P8=350×40 sand paper disk, self-adhesive,  $\varnothing$  350 mm, grain size 40

1 pc. 709S15=8 Hollow hexagon wrench, 8 mm

Dimensions W x D x H mm 820 x 700 x 2,000

Space requirements W x D mm approx. 1,400/1,700

Belt width mm 50

Sanding plate  $\varnothing$  mm 350

Belt speed m/sec 15/30

#### **05.03.07.12 Vertical belt sanders**

##### **General description**

With 2 speeds, for accurate sanding of flat surfaces, floor model. Guide rails to attach the socket, knee and foot supports of the alignment apparatus, support table with guide rails, adjustable slope angle. O of collection system mounts 100 mm, for use with a central dust collection system with a minimum air velocity of 20 m/s.

##### **Technical specifications**

Electrical equipment:

Motor protection switch, under-voltage trip, speed selector switch

Standard equipment includes:

200×25×40 linen sanding belt, for working wood and plastic, grain size 40, L×W 2000×250 mm, grain size 40

6 hexagon screwdrivers

8 hexagon screwdrivers

fastening set Socket Router >>Electronic<<

Dimensions WxDxH  $\approx$  ( 800 x 850 x 1,520) mm

Space requirements W x D mm approx. 1,400/1,800

Belt width mm 250

Belt speed m/sec 15/30  
Power requirements 3 phase, 400 V, 50Hz, 3 kW  
Power cord 2 m power cord with CEE plug 5×16 A and CEE socket 5×16 A  
Speed per minute = 1,500/3,000  
Weight kg ≈ 107/155

#### **05.03.07.13 Dust Collector**

##### **General description**

Mobile dust collector, designed to capture, transport and separate dry materials such as wood and plastic dust and shavings. Connection of several machines is possible, provided the sum of collection system mount O of the machines to be simultaneously connected to the Dust Collector is less than the exhaust connection piece O of the Dust Collector. In addition, the whole operation must be supervised by electronic locking of the pneumatic gate slides.

##### **Features:**

Solid compact design, optimal dust collection achieved by pre-separation and effective filtration, high level of efficiency achieved by means of a ventilating fan placed at the clean-gas side, superior dust collection performance, durable, long-life filter. Easy to handle and operate.

##### **Technical specifications**

This Dust Collector is suitable for connecting 2 machines simultaneously.

Electrical equipment:

Switch box with main switch and integrated restart inhibit, volume flow monitor with signal lamp, gate slide control and automatic start-up for 8 machines.

Dimensions (W x D x H) mm ≈ (1,620 x 820 x 1,880)

Exhaust connection piece Ø mm 180

Volume flow m<sup>3</sup>/h minimum 1,832 and maximum 2,300

Nominal volume flow m<sup>3</sup>/h 2,300

Nominal negative pressure Pa 2,300

Minimum volume flow m<sup>3</sup>/h 1,832

Under pressure at Minimum volume flow Pa 2,600

Filter surface area m<sup>2</sup> 10.6

Residual dust content mg/m<sup>3</sup> H 3 < 0.1 is reliably maintained

Dust collection volume Liters 180

Power requirements 400V, 50 Hz, 3kW, 3phase

Power cord 3 m power cord with CEE plug 5 × 16 A and CEE socket 5 × 16 A

Sound intensity level dB(A) < 68

Weight kg ≈ 410

#### **05.03.07.14 Universal band saw**

##### **General description**

For working with wood, plastics and non-ferrous metals,

- Warp resistant sheet steel construction
- Stable, warp resistant gray cast iron saw table, tilting up to 20° for high precision according to DIN EN 1807
- Large, balanced band saw wheels, rubber-covered
- Precision three-roller guide on ball bearings for precise cutting
- 4 speeds can be pre-set
- With limit switch for prevention of accidents
- Easy to operate tension setting of the saw blade for increased service life of the saw blades
- Precisely adjustable parallel stop with eccentric clamp and exact scale can be used both on the left and right side of the saw blade and reaches up to rear edge
- Has the GS-mark 'dust tested' to protect your health against fine, hazardous wood dust
- Collection system mount, O 100 mm

##### **Technical specifications**

Electrical equipment: Motor protection switch, safety limit switch, electronic motor brake

Standard equipment includes 1 pc. 708 B 4=3380 saw blade for wood



Dimensions W x D x H mm 830 x 760 x 1,900  
Table size W x D mm 640 x 536  
Working height mm 925  
Cutting height mm 280  
Passing width mm 440  
Saw table, tilting up to 20°  
Cutting speed m/min 68, 176, 375 and 967  
Saw blade width mm 6 - 25  
Saw blade length mm 3,380

#### **05.03.07.15 Bench-model drilling machine**

##### **General description**

Speed continuously adjustable, usable bench area 220 x 300 mm; drilling head height adjustable via a floating adjustable gas-pressure spring, drill depth stop quickly adjustable by means of a stop ring, drill depth display along a mm scale on the stop ring. Including quick chuck 1-13 mm, B 16.

##### **Technical specifications**

Electrical equipment: ON/OFF button and under voltage trip  
Drilling capacity in steel  $\approx$  15 mm  
Spindle B 16; DIN 238  
Drilling depth mm 60  
Working radius mm 185  
Column diameter mm 60  
Distance spindle to table mm 160 - 360  
Spindle speed continuously adjustable  $\text{min}^{-1}$  400 - 4,500  
Power requirements single Phase 230V, 50 Hz, 1.1 kW  
Power cord 1.2 m with grounded plug  
Net to Weight  $\approx$  55 kg/ describe

#### **05.03.07.16 Vacuum Pump with Tank**

##### **General description**

The high-performance Vacuum Pump is suitable for precise vacuum forming of thermoplastic sheet materials and for prepreg manufacture. In combination with the Outer Ring, Frame Plate, Vacuum Pipe, and Vacuum Pipe with disk (disk diameter 180, 260 or 360 mm), diverse prosthetic and orthotic components can be fabricated.

- A water trap is included as standard equipment. This trap prevents water from penetrating into the vacuum pump during vacuum forming.
- The vacuum pump has circular oil lubrication, back flow seal, oil mist trap, ball valve G  $\frac{3}{4}$ ", and a vacuum meter.
- The evacuation is switchable through a 3-way ball valve either to direct pump evacuation or evacuation through vacuum tank provided with adjustable automatic pressure control via contact pressure gauge.
- The vacuum pump is air cooled and mounted on a mobile base.

##### **Technical specifications**

Rated intake volume 40  $\text{m}^3/\text{h}$   
End pressure 20 mbar  
Tank volume 50 l  
Power requirements 3phase 5 wire 400 V, 50 Hz, 1.1 kW  
Hose connection 25 mm  
Electrical equipment: 4 m power cord with CEE plug & socket 5x16A, motor protection switch, on/off switch, contact pressure gauge  
Vacuum Hose for Vacuum Pumps, with spiral wire, inner  $\varnothing$ 25 mm,

#### **05.03.07.17 Mobile Air Compressor**

##### **General description**

Piston compressor with two cylinders, fully automatic operation via pressure regulator, with neutral safety starter switch and motor circuit breaker as well as an on/off switch. Pressure gauge, self-adjusting hose coupling with

safety and back flow valve. Tank water drain valve, wheels, push handle. Two pressure gauges for tank and operating pressure.

#### **Technical specifications**

Electrical equipment: 3 m power cord with grounded plug.

Could be available with: 10 m air pressure hose, Ø 9 mm, with quick-acting coupling and male connector.

Dimensions

L: 870 - 1120 mm

W: 370 – 480 mm

H: 710 - 890 mm

Intake volume 390 - 470 l/min

Effective delivery volume 285 - 370 l/min

Max. rated operating pressure 10 bar

Pressure tank volume 50 l - 90 l

Power requirements single phase 220 V ± 15%; 50 Hz; 2.2 kW Or 3 phase, 400V; 50Hz; 3.0kW/ describe

Weight 50 - 81 kg / describe

Sound intensity level 70 - 76 dB(A)

#### **05.03.07.18 Double Bench Grinder**

##### **General description**

With two corundum wheels each with different grit, protective shield, spark guard and tools rests.

##### **Technical specifications**

Electrical equipment: 3 m power cord with CEE plug 5wire 16 A or US plug.

RPM 2800 1/min

Power requirements 3phase, 380V ± 15% ; 50Hz

<u>Wheel Ø</u>	<u>Power</u>	<u>Weight</u>
150 mm	0.75 kW	8.3 kg
150 mm	0.75 kW	8.3 kg
200 mm	1.00 kW	13.0 kg
200 mm	1.00 kW	13.0 k

#### **05.03.07.19 Engine Lathe**

##### **General description**

Bench model, gray cast iron prism type lath bed, inductively hardened and precision ground, with leading spindle for thread cutting or automatic plain turning. Transversally adjustable tailstock for taper turning, adjustable tapered guiding gibs, hardened main spindle, adjustable tapered roller bearings. Easy and quick change of speed.

High performance, maintenance-free motor.

##### **Technical specifications**

Standard equipment includes: Three-jaw chucks with flange, 4-fold tool holder, gear wheel set, two lathe centers (MK2/ MK3).

Electrical equipment: Easy-to-operate German safety switch according to IP54, with under-voltage release, lockable emergency power shut-off, reversible drilling directions, 2 m power cord with grounded plug.

Center height 125 mm

Max. turning diameter 250 mm

Center width 550 mm

Spindle hole mm 21

Spindle cone MK3

Spindle speed 125-2000 1/min

Lead – metric 0.4-3 mm

Lead – inch 10-44 G/Zoll

Tailstock cone MK2

Cross feed 0.1-0.2 mm

Top slide stroke 70 mm

Cross slide stroke 110 mm

Tailstock spindle sleeve stroke 65 mm  
Power requirements single phase, 220V $\pm$  15%; 50Hz; 0.56kW  
Dimensions: (WxDxH) approximately (1015x500x500) mm  
Weight approx.  $\approx$ 125 kg

#### **05.03.07.20 Zigzag Sewing Machine**

##### **General description**

For general use on light to medium-weight materials, bottom feed of sewing material by means of a horizontal rotary hook, zigzag stitch adjustable left, middle and right, pressure foot lifted by knee lever, operation through motor stand.

##### **Technical specifications**

Electrical equipment: Alternating current motor starter, approx. 2 m power cord with grounded plug  
Standard equipment includes: 1 roll 624Z7=W60 Serafil Sewing Thread  
Sewing speed, max., 9 mm  
zigzag stitch 2000 min<sup>-1</sup>  
Zigzag width, max. 9 mm  
Stitch length, max. 5 mm  
Max. height below pressure foot 6 mm  
Dimensions of upper part of machine WxDxH 450x210x440 mm  
Space requirement WxD 1060x500 mm  
Height including motor stand 1215 mm  
Weight net/gross 80/94 kg

##### **Power requirements**

Single phase, 220V $\pm$ 15%; 50Hz; 0.25kW or  
Single phase 3 wire, 110V; 60Hz; 0.25kW (together with a 220 V out put transformer)

#### **05.03.07.21 Shoe Patching Machine**

##### **General description**

Operation through foot pedal; for sewing all kinds of leather articles, shoes, leather sleeves, etc. Top feed of sewing material which is rotatable in all directions. The upper part is provided with a multiple thread holder.

##### **Technical specifications**

Standard equipment includes: 1 roll 624Z6=S50 Rasant Sewing Thread.  
Stitch length (infinitely adjustable) 1.5–5.1 mm  
Sewing thickness, max. 10.5 mm  
Clearance (right of the needle) about 445 mm  
Dimensions of cylinder bed (at the needle) WxH $\approx$  (25.4x22) mm  
Dimensions upper part WxDxH  $\approx$  (750x300x530) mm  
Space requirement WxD  $\approx$  (850x500) mm  
Height 1350 mm  
Weight net/gross  $\approx$  125/185 kg

#### **05.03.07.22 Finishing and Trimming Machine**

##### **General description**

With integrated pressurized dust collection system and horizontally adjustable pumice motor. Cotton filter cleaning, dust flap opening and belt tensioning are operated mechanically.

Twin cutters: heel trimmer above, sole trimmer below. Heel front cone Ø 90 mm with bayonet lock, one 40 mm wide sanding belt, one 100 mm wide sanding belt; each belt is 1480 mm long. Contact wheel Ø 175 mm with aluminum core and rubber coating. Turret polishing section with 3 reversible shafts and 6 polishing sets. The six polishing sets with Ø 240 mm and width 60 mm, each consist of a horsehair brush and a lapping wheel in the colors natural, brown and black.

Straight single-panel suction wall, coarse dust precipitator with removable coarse dust container and fine dust container, the latter being frontally removable.

##### **Technical specifications**

Electrical equipment: Cam switch, emergency power shut-off push-button, and drive motors with thermal protection, 2 m power cord with CEE plug16A.

Dimensions WxDxH ≈ (1.170 x 780 x 1.530) mm

Collection filter surface area 2.4 m<sup>2</sup>

Dust collection capacity 1,200 m<sup>3</sup>/h

Power requirements 3phase 400V± 15%; 50 Hz; 3.75kW

Weight net/gross ≈360 - 407 kg

#### **05.03.07.23 Cordless Hand Drill**

##### **Technical description**

Low-noise two-speed planetary gear, continuously adjustable rotation speed electronics, 5 torque moment levels, reversible drilling directions, QUICK STOP.

**Delivery should includes:** Quick-acting drill chuck, storage hook, bit storage, safety loop, 1-hour quick battery charger with 2 batteries.

##### **Technical Data**

Idling speed(1st speed) 0-300 1/min (2nd speed) 0-900 1/min

Drilling capacity in steel 10 mm in wood 16 mm

Maximum torque moment 14 Nm

Battery voltage 9.6 / 1.7 V/Ah

Spindle receptacle 1/2" x 20 UNF

Weight with battery 1.4 kg

#### **05.03.07.24 Electrical Jig Saw**

##### **Technical specifications**

Base plate of diecast aluminum, cutting angle lock up to 45°, four stroke setting for high cutting capacity, 4 m power cord with grounded plug.

Delivery includes: Additional base plate insert made of plastic, 5 saw blades, 3 chip protector inserts, 1 exhaust connection stud, transport case.

##### **Technical Data**

Idling speed 580-3100 1/min

Cutting depth in wood 85 mm in steel 10 mm

Power requirements single Phase 3 wire, 230V; 50Hz; 0.55kW

Weight 2.3 kg/ describe

Jig Saw Blades

Package contains 5 pieces

<u>For</u>	<u>Length</u>	<u>Teeth</u>	<u>Weight/Pack.</u>
Wood	75 mm	3.0 mm	0.04 kg
Plastics	50 mm	2.0 mm	0.03 kg
Stainless steel	50 mm	1.2 mm	0.03 kg

Sheet

05.03.09 Other supplies and raw materials

#### **05.03.08.01 Velcro strap hook and Loop, 20 mm, 30 mm & 50 mm.**

**Description:-** This strap is fixed to perlon webbing or Cotton webbing strap to maintain the body in side orthotic device. Straps can play corrective (built as part of 3 point pressure) and stabilizing role in orthotics

#### **05.03.08.02 Cotton (prostheses)**

**Description:-** Straps can play corrective (built as part of 3 point pressure) and stabilizing role in orthotics, webbing strap 25 and 45 mm

#### **05.03.08.03 Combination roller buckle:**

**Description:** roller buckle fixed to prosthesis or orthosis belts to secure the device in the on the body, 18 mm, 20 mm

#### **05.03.08.04 Ring half round /D-ring /**

**Description:** fixed to especially above knee prosthesis belts to secure the device on the body

**Iron rivet** Iron rivets are special nails to fix steel made orthosis parts together. These rivets are mainly used in the fabrication of conventional knee ankle foot orthosis /KAFO / , 3 x 20, 4 x 20 ,5 x 20 mm

#### 05.03.08.06 Copper rivet flat head

Copper rivets are special nails to fix steel made orthotic side bars or joints with plastics. These rivets are mainly used in the fabrication of thermoplastic knee ankle foot orthosis /KAFO, 3 x 20, 4 x 20 ,5 x 20 mm

#### 05.03.08.07 Foot ankle flexure joint /Tamarack with pairs of molding dummy.

This Ankle joint which could be available in child and adult size incorporated in thermoplastic knee ankle foot orthosis / KAFO/ and ankle foot orthosis /AFO/

#### 05.03.08.08 Orthotic side bar, 16 mm child, 20 mm adult drop lock /ring lock

#### 05.03.08.09 Orthotic side bar , 16mm child, 20 mm adult Swiss l

#### 05.03.08.10 EVA foam

##### Technical specification

2 mm x 0.95 m x 0.95 m olive/terra

6 mm x 0.95 m x 0.95 m olive/terra

12 mm x 1.10 m x 1.10 m olive/terra

#### 05.03.08.11 Homopolymer:

**Description:** polypropylene, to make the prosthetic socket and cosmetic finish after heated in the oven at 180 -200 °c for 10-20 min.

##### Technical Dimension

3mm x 1m x 2m = ( 5.5 kg )

4mm x 1m x 2m = ( 7.5 kg )

mm x 1 m x 2 m = ( 9.5 kg )

#### 05.03.08.12 PPCAS-Trans Tibial alignment system

**Description:** Consist of, Cylindrical TT cup, Convex disc, Two concave cylinders, Flat steel washer and countersunk head bolt

PPCAS-Trans Tibial alignment system is important component in production of below knee prosthesis; it incorporates most parts to build prosthetic shank

##### Technical specifications

<u>Description adult</u>	<u>Specification</u>	<u>Unit of Measure</u> module, adult
Countersunk head bolt	M10 x 60 mm	1 piece
Flat washer, steel	D44 x d15 x H3 mm	1 piece
Trans-tibial cup	D70 x H26 mm	1 piece
Convex disc	dia. 25 mm	1 piece
Concave cylinder with T-nut M8	dia. 25 mm	2 piece
Convex ankle	dia. 25 mm	1 piece

#### 05.03.08.13 Trans Femoral alignment system

**Technical Description:** consist of, 1 socket cup, 1 cylindrical concave extension cup, 2 convex disk .

Trans Femoral alignment system is important component in production of above knee prosthesis. It serve as fixing and aligning mechanism between prosthesis knee joint and prosthesis socket

#### 05.03.08.14 Prosthesis foot -Solid ankle cushion heel / SACH /

**Technical Description:** made of Polyurethane, must be available with Hexagonal head bolt and lock washer.

Prosthesis foot is a key component in fabrication of lower limb prosthesis. Could be available in different size that can much with the sound foot of the patient

Foot 22 – 28 cm, left and right,

olive and terra colours

**05.03.08.15 Micro rubber soft density/MCR/ and Micro rubber medium density**

**Description:** Used mainly in the production orthopedic shoe. also used in compensating leg length discrepancy in orthotics.

**05.03.08.16 Rubber end tips**

**Description:** To be fixed at the end of walking aids, like crutches walking frames and sticks

18 plaster of paris bandages / POP /

internal diameter 16 mm or 17 mm, 20 mm, 28 mm

Used to cast the model of body part or a limb of patients to be duplicated later in the fabrication room to make orthosis or prosthesis



## 06. Life supporting & monitoring devices



Photo: ICU Room



## 06. 01 Ventilator/resuscitators

### 06.01.01 Manual Ventilators

#### **06.01.01.01 Paediatric Intensive care Ventilator**

**General Description:** Ventilator, medical, adult-child, with accessories

**Technical Specifications:**

Basic automatic ventilator for all patient categories

Sturdy and stable constructed on antistatic bal-bearing swivel castors, with breaks

Construction allows frequent dismantling for cleaning and disinfection

Handle facilitates positioning of the device

Integrated electronically controlled electrically powered compressor

With air-oxygen mixer

Humidifier for extended ventilation, provided with fixation for bottle

Patient selection: Pediatric - Adult

Breath types: Volume Control (VC)

Pressure Control (PC)

Volume Target Pressure Control (VTPC)

**Modes of operation:** Controlled Mandatory Ventilation (CMV)

Synchronized Intermittent Mandatory Ventilation (SIMV)

Continuous Positive Airway Pressure (CPAP)

Positive End Expiration Pressure (PEEP)

**Controls and settings:**

Pressure support, approx: 0 - 80 mbar

Expiratory threshold, approx: 5 - 50 %

Tidal volume, approx: 20 - 1000 ml (ped), 100 - 3000 ml (adult)

Frequency, approx: 1 - 120 cycles/min (ped), 1 - 80 cycles/min (adult)

Inspiratory flow, approx: 1 - 100 L/min (ped), 1 - 180 L/min (adult)

Inspiratory time, approx: 0.1 - 3.0 sec (ped), 0.1 - 5.0 sec (adult)

I:E ratio maximum approx: 4:1

Pressure trigger sensitivity, approx: 0 to -5.0 mbar

Volume trigger sensitivity, approx: 0.1 - 2.0 L/min (ped), 0.6 - 2.0 sec (adult)

FiO<sub>2</sub> from approx: 0.21 - 1.00

PEEP/CPAP approx: 0 - 30 mbar (ped), 0 - 45 mbar (adult)

Air filter capacity at inlet: 99 % (for > 0.5 µm)

**Audible visual alarms for:**

High/low airway pressure

High/low inspiratory minute volume

High/low respiration frequency

Power failure (battery)

Silencing feature for audio alarms

Large back-lite display shows operation with set and measured values

Self diagnosis with each start-up and integrity testing of all system parameters every 5 minutes

Front panel reports systems errors and status of built-in battery

With adjustable patient-circuit support arm

**Power requirements:**

Built-in rechargeable battery, autonomy approx 2 hrs

Automatic switch to battery in case of power failure, automatic recharge when connected to mains

220 V ± 10%, 50 Hz and rechargeable battery

**Supplied with:**

1 x Accessory storage basket fixed to the unit

1 x Paediatric reusable breathing circuit (tubes / balloons / valves / masks)

1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)

1 x Spare humidifier bottle

1 x Spare parts/maintenance kit (air filters, tubing, O-rings)

1 x Spare rechargeable battery pack

1 x Set of spare fuses

Clear instructions for use / diagrams for assembly in English languages, list of accessories / parts

#### **6.01.01.02 Ventilator Resuscitator, hand-operated, neonate, set**

**General Description:** Manual Resuscitator ventilate neonate with a body weight below 7 kg.

##### **Features**

Ventilation can be done with ambient air or with oxygen.

Resuscitator can be totally disassembled, easy to clean, disinfect.

All parts must be manufactured from high-strength, long-life materials and require no special maintenance or storage conditions.

##### **Resuscitator supplied as a complete set with the following Technical specifications:**

Non-rebreathing patient valve with pressure limiting valve.

Compressible self-refilling ventilation bag, capacity approx.: 250 ml

Intake valve with nipple for O<sub>2</sub> tubing.

Oxygen reservoir bag complete, capacity approx.: 600 - 1000 ml.

Masks, translucent, in 2 different sizes:

1 mask, 1 piece, round type, size neonate

1 mask, 1 piece, round type, size infant.

Airways Guedel, translucent, in 2 different sizes:

1 airway Guedel, size 00 approx.: 40 mm.

1 airway Guedel, size 0 approx.: 50 mm.

##### **accessories:**

Non-rebreathing patient valve with pressure limiting valve: polycarbonate/polysulfone

Compressible self-refilling ventilation bag: silicone rubber.

Intake valve with nipple for O<sub>2</sub> tubing: polycarbonate/polysulfone

Oxygen reservoir bag: translucent plastic.

Masks, 2 different sizes: silicone rubber.

Airways Guedel, 2 different sizes: translucent plastic.

#### **6.01.01.03 Manual Patient Ventilator for adult**

**General Description:** Manual Resuscitator ventilate neonate with a body weight below 7 kg.

Ventilation can be done with ambient air or with oxygen.

Resuscitator can be totally disassembled, easy to clean, disinfect.

All parts must be manufactured from high-strength, long-life materials and require no special maintenance or storage conditions.

##### **Resuscitator supplied as a complete set with Technical specifications:**

Non-rebreathing patient valve with pressure limiting valve.

Compressible self-refilling ventilation bag, capacity approx.: 250 ml

Intake valve with nipple for O<sub>2</sub> tubing.

Oxygen reservoir bag complete, capacity approx.: 600 - 1000 ml.

Masks, translucent, in 2 different sizes:

1 mask, 1 piece, round type, size neonate

1 mask, 1 piece, round type, size infant.

Airways Guedel, translucent, in 2 different sizes:

1 airway Guedel, size 00 approx.: 40 mm.

1 airway Guedel, size 0 approx.: 50 mm.

##### **accessories:**

Non-rebreathing patient valve with pressure limiting valve.: polycarbonate/polysulfone

Compressible self-refilling ventilation bag: silicone rubber.

Intake valve with nipple for O<sub>2</sub> tubing: polycarbonate/polysulfone

Oxygen reservoir bag: translucent plastic.

Masks, 2 different sizes: silicone rubber.

Airways Guedel, 2 different sizes: translucent plastic.

#### **06.01.01.04 Emergency Ventilator**

Pneumatically driven microprocessor controlled: designed for use in adult and paediatric applications.

Operation mode: Volume controlled, pressure controlled, and manual.

Manual mode: pressure measurement and alarms; display of expiratory volume.

Measurement and display of expiratory volume. Peak/Plate pressure display.

Operational range approx. Adult 360 - 1500 ml; Pediatric: 40 - 360 ml. Respiratory rate: 6 - 60 bpm.

Expiratory volume control function.

Driven gas: Air, oxygen.

Integrated regulation and monitoring functions for all essential parameters, including humidifying functions, adjustable volumes and rates with upper and lower limits.

Alarms: airway pressure, expired minute volume upper and lower limits, gas deficiency, battery and power failure

**Power Supply:** 220 V  $\pm$  10%, 50 Hz

**Internal:** rechargeable battery 12V, 1.2 Ah. Back-up.

**Conformity:** CE marked or Equivalent International standard

06.01.02. Resuscitator

#### **06.01.02.01 Manual resuscitator**

**General Description:** Resuscitator, Complete for adults, children and neonates.

##### **Technical Specifications:**

One reanimation bag for manual respiration of children and adults.

Bag self expandable/inflatable and made from pure, durable Silicon or rubber, Unidirectional valve, 1 PEEP valve adjustable 10 mbar

Transparent face masks each of 4 different sizes (2, 3, 4 and 5),

All parts autoclavable at 134°C

2-One reanimation bag for manual respiration of premature and neonates and made from pure, durable Silicon or rubber With extra small compression chamber, to reach very fast at a high oxygen concentration maximum 300 ml, 100% O<sub>2</sub> supply

Pediatric non re-breathing valve, O<sub>2</sub> reservoir, 1 PEEP valve adjustable, 2 face masks, all parts autoclavable at 134°C

**Conformity:** ISO/EC or equivalent international standard

Supplied with: Carrying bag

#### **6.02.01.01 Patient monitor with ECG and Respiration**

**General Description:** Patient monitor with ECG, Pulse oximeter and ventilator for adult and infant

##### **Technical Specifications:**

Basic automatic ventilator for all patient categories

Sturdy and stable constructed on antistatic ball-bearing swivel castors, with breaks

Construction allows frequent dismantling for cleaning and disinfection

Handle facilitates positioning of the device

Integrated electronically controlled electrically powered compressor

With air-oxygen mixer

Humidifier for extended ventilation, provided with fixation for bottle

Patient selection: Pediatric – Adult

##### **Breathe types:**

Volume Control (VC)

Pressure Control (PC)

Volume Target Pressure Control (VTPC)

##### **Modes of operation:**

Controlled Mandatory Ventilation (CMV)

Synchronised Intermittent Mandatory Ventilation (SIMV)

Continuous Positive Airway Pressure (CPAP)

Positive End Expiration Pressure (PEEP)

##### **Controls and settings:**

Pressure support, approx: 0 - 80 mbar

Expiratory threshold, approx: 5 - 50 %  
 Tidal volume, approx: 20 - 1000 ml (ped), 100 - 3000 ml (adult)  
 Frequency, approx: 1 - 120 cycles/min (ped), 1 - 80 cycles/min (adult)  
 Inspiratory flow, approx: 1 - 100 L/min (ped), 1 - 180 L/min (adult)  
 Inspiratory time, approx: 0.1 - 3.0 sec (ped), 0.1 - 5.0 sec (adult)  
 I:E ratio maximum approx: 4:1  
 Pressure trigger sensitivity, approx: 0 to -5.0 mbar  
 Volume trigger sensitivity, approx: 0.1 - 2.0 L/min (ped), 0.6 - 2.0 sec (adult)  
 FiO<sub>2</sub> from approx: 0.21 - 1.00  
 PEEP/CPAP approx: 0 - 30 mbar (ped), 0 - 45 mbar (adult)  
 Air filter capacity at inlet: 99 % (for > 0.5 µm)  
 Audible visual alarms for:  
 High/low airway pressure  
 High/low inspiratory minute volume  
 High/low respiration frequency  
 Power failure (battery)  
 Silencing feature for audio alarms  
 Large back-lite display shows operation with set and measured values  
 Self diagnosis with each start-up and integrity testing of all system parameters every 5 minutes  
 Front panel reports systems errors and status of built-in battery  
 With adjustable patient-circuit support arm  
 Built-in rechargeable battery, autonomy approx 2 hrs  
 Automatic switch to battery in case of power failure, automatic recharge when connected to mains  
**Power requirements:** 220 V / 50 Hz and rechargeable battery  
**Supplied with:**  
 1 x Accessory storage basket fixed to the unit  
 1 x Paediatric reusable breathing circuit (tubes / balloons / valves / masks)  
 1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)  
 1 x Spare humidifier bottle  
 1 x Spare parts/maintenance kit (air filters, tubing, O-rings)  
 1 x Spare rechargeable battery pack  
 1 x Set of spare fuses  
 Clear instructions for use / diagrams for assembly in English. list of accessories / parts

#### **6.02.01.02 Pulse Oximeter**

**General Description:** Non-invasive measurement of oxygen saturation and pulse rate with colour graphic screen for adult and infants.

##### **Technical Specifications:**

Display of oxygen saturation and pulse rate.  
 Oxygen saturation measurement range from 0 -100%.  
 Pulse strength perfusion indication  
 Capability of Plethysmography.  
 Pulse rate measurement from 20-250 bpm.  
 Visual and audible indication of alarms.  
 High and low alarms settings.  
 Adult finger and pediatric sensor, reusable type

##### **Power requirements:**

Power of 220 V ± 10%, 50 Hz.  
 Built-in re-chargeable battery

#### **6.02.01.03 Digital Blood Pressure Monitor Machine**

**General Description:** Digital Blood Pressure Monitor with One-touch operation

##### **Technical Specifications:**

Blood pressure and pulse measurements  
 Fully automatic inflation and deflation

Memory  
Error Code indicator  
Jumbo display  
Automatic Switch off  
Battery check  
Oscillometric measuring method  
High accuracy

**Power requirements:**

Power of 220 V  $\pm$  10%, 50 Hz.  
Built-in re-chargeable battery

**6.02.01.04 Capnography with all accessories**

**General Description:** Adult, Pediatric and neonatal

**Technical Specifications:**

**Display :** 12.1" color active matrix TFT  
Resolution: 800x600  
Trace: 7 waveforms  
Sweep Speed: 12.5,25,50mm/s  
Alarm indicator light  
Power indicator light  
Audio Indicators for QRS beep and alarm sound  
Interface: Networking  
Battery: Rechargeable  
Trend time: 1~72 hours  
Alarm: 3-level audible and visual alarm  
Recorder: Built-in, thermal array,3channels

**ECG**

Lead Type: 5-lead  
Input: 5-lead(RA; LA; RL; LL; V)  
Lead Selection : 5-Lead; I; II; III  
ECG Waveform: 1 channel  
Gain Selection : x0.5, x1 & x2,auto  
Sweep Speed: 12.5mm/, 25mm/s  
Heart rate range: 25~200 BPM

**Accuracy: 1BPM**

Anti-electrosurgical interference and defibrillation  
Standard Configuration  
ECG, RESP,NIBP,TEMP,SPO<sub>2</sub>  
EtCO<sub>2</sub> Micro Stream Latest Technology Modular Cassette.  
IBP,FHR Module, Thermal, Recorder Battery, Wall Mounting, Trolley  
CMRR: Diagnostic mode:>60db  
Monitor mode: >60db  
S-T detection  
Measurement range:- 20mV-2.0mV  
Arrhythmia analysis  
Alarm audible and visual alarm, alarm events recallable

**Respiration**

Method: RA-LL impedance  
Measurement Range: 20~250BrPM  
Resolution: 1BrPM  
**Accuracy:** 2% or 2BrPM, whichever is greater  
Apnea Alarm , and apnea delay:10~40seconds  
**NIBP** ( Noninvasive blood pressure monitoring system)  
Method: Oscillometric

Operation Modes : Manual /Automatic  
Measurement Unit : mmHg/kPa selectable  
Measurement Typ: Systolic pressure Diastolic pressure and Mean Pressure  
Measurement Range:  
Systolic Pressure: 50-24 mmHg  
Diastolic Pressure: 25~180mmHg  
Mean Pressure: 30~200mmHg

**Over-pressure Protection**

Resolution: 1mmHg  
Alarm: Systolic, Diastolic and Mean

**Temperature**

Scale: C and F Selectable  
Measurement Range: 27°C ~ 45C  
Resolution: 0.1 or  
Channel: 1 Channel

**SPO<sub>2</sub>**

Range: 0~100%  
Accuracy: 70% ~100 % ( +2%)  
0%~69% : unspecified

**Pulse Rate**

Range: 20~254BPM  
Accuracy: 3 BPM

**Safety:** Meet requirement of IEC 60601-1

**Power requirements:**

Power Source : AC mains power AND Internal battery power  
Power Requirements : AC 220V  
Line Frequency : 50 Hz

**Battery Power:**

The maximum number of installed battery: 1  
Operating time: 180 minutes under the normal use and full charge

**Operation Environment**

Temperature: 10C to 30°C (50F to 86F)  
Humidity: 15% to 70%, non-condensing

6.03 Diagnostic equipment

6.03.01 BP apparatus

**6.03.01.01 BP apparatus Digital**

**6.03.01.02 Mercury BP/sphygmomanometer**

**General Description:** Mercury sphygmomanometer

**Technical Specifications:**

Portable/ desk,  
with oversize, metal housing  
colors (red, blue, green, yellow, black and silver),  
with chromed metal air release valve, bulb and cuff with 2-tube latex bladder  
precision glass tube with inside diameter not less than 3.5 mm  
Graduated scale to 300 mmHg, through clear and accurate scale markings  
Mercury lock  
Accuracy +/- 3 mm Hg  
Certificate: CE-mark

**6.03.01.03 Aneroid sphygmomanometer**

**General Description:** Aneroid sphygmomanometer

**Technical Specifications:**

300mm aneroid model,

complete with Velcro cuff, bulb and valve, In vinyl case.

#### **6.03.01.04 Doppler Fetal heart beat detector**

**General Description:** Foetal monitor Doppler to detect foetal heart beat

**Technical Specifications:**

Doppler based fetal heart rate detector with amplifier loudspeaker

Transducer frequency, approx: 2 MHz

Light weight, handheld, easy to operate and carry (pocket size)

Transducer probe with fixed wire connection to the main unit, length approx 35 cm.

Detector diameter approx. 20 mm.

Self test is performed each time the device is switched on.

Large LCD shows fetal heart rate (FHR) in beats per minute (bpm), pulse indicator, sound volume level.

Display reports system status, including low battery and malfunctions, with audiovisual alert.

Built-in loudspeaker with volume adjustment.

Advanced noise suppression system assures quality diagnostic sound.

**Power requirements:**

Operates on two 1.5V AA / LR6 batteries.

Autonomy, approx 1000 one-minute examinations.

**Supplied with:**

2 x Tubes of ultrasound gel, approx 350 ml

2 x Set of 2 batteries 1.5 V AA / LR6 (separately packed)

1 x Soft carry bag easy to clean

Clear instructions for use / diagrams for assembly in English languages, list of accessories / parts.

#### **06.03.01.05 Fetal Monitor**

**Description:** Maternal/Fetal Monitor

**SPECIFICATIONS**

Designed for the application in the antepartum, intrapartum and postpartum applications.

Suitable for private obstetrician office, antepartum clinic, moving situation or home monitoring situation. It offers most advanced integrated monitoring of fetus and mother.

Twins monitoring capability

Thermal printer or inkjet printer

Support external thermal printer or inkJet printer

Built-in rechargeable battery, DC/AC power supply

Built-in network capability

Large color TFT screen display waveforms and digitals

Maternal Parameters: ECG, SPO2, NIBP, RESP, TEMP

Automatic Fetal Movement Detection, AFM waveform display

24 hours monitoring data storage and reload

Acceleration and Deceleration measurement ability

Baseline, acceleration and deceleration analysis capability

Easy operation by with shortcut key and rotary knob

Super printing functions

Automatic monitoring mode, parameters configurable

Clinical data management, can be reload, reanalysis, reprint

Visual and audio alarm, comply with international standard

2 MHz pulse wave

Precision:  $\pm 1-2$  bpm

Electric specification: 220/230 V AC: 50Hz

Record differentiated: 30bpm/cm

Temperature: 5°C-40°C

Brightness LED power supply indicator light

audible and visual alarm

Alarm: upper and lower limit alarm

## 06.04 Treatment Equipment

### 6.04.01 Defibrillators

#### **6.04.01.01 Defibrillator, basic**

**General Description:** Defibrillator, basic, w/access

**Technical Specifications:**

Basic portable defibrillator with monitor and printer

Synchronized and direct defibrillation

Biphasic energy waveform, adjustable output, from approx 5 up to 300 J

Load compensation circuit allows precise delivery of selected energy based on patients' impedance

Shock resistant housing allows system to function in demanding environment

Integrated carry handle facilitates transport

Splash-resistant alphanumeric function keys

Bright back-lit alphanumeric LCD, approx: 8 x 6 cm

Display shows ECG, Heart rate, Battery status and Energy output preset

Heart rate range, approx: 20 to 300 beats per minute (bpm)

ECG circuit protected from defibrillator operation

Self test is performed each time the device is switched on

System reports status, operation, malfunctions (electrodes), out-of-paper and low battery, with audiovisual alert

Continuous check on the quality of electrodes connection, audio visual alert on loss of signal

External flat paddles, color coded, with manual recording buttons, 2 m power cord

Internal safety discharge upon 40 sec non-delivery of accumulated energy, switch-off and technical failure

Standard 1 mV signal for approximation of wave amplitude is continuously displayed

With internal memory capable of recording events and ECG

Data communication interface: RS232, BNC, USB or equivalent

Built-in high-resolution 200 dpi thermal printer, width approx 6 cm

Printer has manual and automatic mode, and records displayed parameters and ECG

Paper speed, adjustable: 5, 25 and 50 mm/sec

Sensitivity, adjustable: 5, 10 and 20 mm/mV

Transformer and charger are integrated in the device

Rechargeable battery is removable/replaceable by the operator

Battery capacity, approx 50 shocks of 300 J with 2 hours continuous monitoring

Recharge time max 10 sec

Charge/ready is indicated via audio/visual indicator

**Supplied with:**

1 x Patient cable

1 x Pair of adults paddles

1 x Pair of paediatric paddles

1 x Pack of 100 single use electrodes

1 x Set of 10 rolls thermal paper, 50 m

2 x Bottles of electrode gel, approx 350 ml

1 x Spare rechargeable battery pack (removable/replaceable by the operator)

1 x Set of spare fuses

1 x Plastic protective dustcover

Clear instructions for use / diagrams for assembly in English language, list of accessories / parts

**Power requirements:** 220 V / 50 Hz and internal rechargeable battery



#### **6.04.01.02 Defibrillator, monitor**

**Description:** Defibrillator with AUTO and MANUAL mode.

Monitor: .....LCD

##### **Indication:**

Heart Rate: .....30-300 per min.

Manual override

Asystole threshold .....< 0.2 mV

6-Channel ECG: ..... I, II, III, aVR, aVL, aVI

Filter: Connectable .....50/60 Hz

Energy supply: .....One 10.6 V NiCD rechargeable battery. Charging time about 3 hrs.

Power Line: .....One Power line for direct main connection 90-264 V, 50/60 Hz. Patient

information: Heart Rate, number of defibrillations, ECG curve, number of identified VF/VT, total resuscitation time, Save Pads AED (one set)

#### **6.04.01.03 Automatic external Defibrillator**

##### **General Description:**

Automated External Defibrillator (AED), with accessories

##### **Technical Specifications:**

Basic portable Automated External Defibrillator (AED)

Operation is immediate, self-explanatory and based on intuitively understood design features

Shock and splash resistant housing allows functioning in demanding environment

Self test is performed upon each switched on: Ready-For-Use is indicated

Automated assessment and analysis adequately sensitive and specific for children and adults

Step-by-step guidance from large pictograms on the device: On, Analyse, Shock

With self adhesive external pads, colour coded, with pictogram

Automated direct defibrillation, energy waveform, biphasic max approx 250 J

Built-in load compensation algorithm adjusts energy delivery according patient's impedance

Standard pads fit for children (> 8 yr or > 25 kg) and adults

For infants (> 1 yr or > 6 kg) attenuation pads are provided, reduction to max approx 50J

Pads with plug and power cord, length approx: 100 cm

Built-in audible metronome assists Cardiac Pulmonary Resuscitation (CPR)

Audiovisual alerts on operational status, malfunctions (electrodes) and low battery

Internal discharge of accumulated energy upon: 40 sec non-delivery, switch-off or malfunction

##### **Power requirements:**

Operates on set of replaceable batteries,

Battery capacity, approx: 50 shocks of 250 J/ describe

Power requirements: internal batteries

##### **Supplied with:**

1 x Set of children / adult self adhesive external pads, colour coded, with pictogram

1 x Set of infant attenuated adhesive external pads, colour coded, with pictogram

1 x Plastic-sealed Quick Reference Guide covering step-by-step AED as well as CPR

1 x CD containing training material

1 x Set of batteries 9 V PP3 / 6LR61 (separately packed)

1 x Carry case with storage pocket for leads and other accessories

Clear instructions for use / diagrams for assembly in English languages, list of accessories / parts

## 6.04.02 Kidney treatment

### 6.04.02.01 Hemodialysis system, complete

#### General Description:

#### Technical Specifications:

Acetate & Bicarbonate Dialysis.

Large colour display

Sodium & UF profiles

Dialysate flow 0-300-500-800ml/min

Hot cleaning, disinfection up to 85 degrees C/450ml/min

Built in battery back up

Diasafe of dialysate filters for less induction and release of vasoactive cytokines.

Non-invasive blood pressure monitoring with systolic, diastolic, mean arterial pressure and pulse rate.

Online Clearance Monitor for delivery of dialysis dose.

Continuous and real time estimate of Plasma Sodium concentration.

Monitoring of Urea Clearance

Blood flow range 15-600ml/min

UF rate 0-4 lit/hr

Bicarbonate dry concentrate facility

Self adjustable blood pump segment diameter.

Intelligent blood leak system to distinguish between blood and air bubbles.

Disinfection programme with no additional operator handling.

Automatic monitoring and low level alarm of disinfectant consumption to improve and avoids interrupted disinfection cycles.

Large choice of pre set concentrate mixing ratios or free entry of mixing ratios.

Citrosteril one 5 lit can along with machine to supply.

0.5 micron filters 10" with casing to supply and fix before water in let with necessary fittings.

Necessary plumbing work includes laying CPVC pipe lines, valves and bends etc., with the help of mason and plumber to be carried out from R.O. plant to all Dialysis

Machines and also up to Re-use washing sink with multiple valves & connections.

Power requirements: 220 V  $\pm$  15%, 50 HZ

### 06.04.02.02 Lithotripter/shock wave

**Description:** Kidney stone remover by inserting in human body

#### TECHNICAL SPECIFICATIONS

##### X-RAY UNIT

Image intensifier; 6 or 9 inches

4 – image store

##### ULTRASOUND UNIT

##### Localization ARM

Rotation around vertical axis: 240 degree

Rotation around horizontal axis: 88 degree

Transversal motion: 140 mm/5.5 inches

##### SHOCK WAVE PARAMETERS

Principle: electromagnetic

Aperture: 52<sup>0</sup>

Penetration depth/focus position: 150 mm/ 5.9 inches

Triggering: ECG, 60, 70, 80, 90, 100, 110, 120 Additionally, at energy levels A, B, C 150, 180 shock waves/min

##### Focus size (axial/lateral)

Energy level C 90/9.0 mm/ 3.54/0.35 inches

Energy level 4 57/4.7 mm/2.24/0.19 inches

Energy level 6 78/7.5 mm/ 3.07/0.30 inches

**Energy Levels**

Low energy levels A, B, C are designed especially for surface-adjacent applications such as indurations penis plastica.

Energy Level	Maximum Pressure P+ (MPa)	Flux density ED ( mJ/mm <sup>2</sup> )	Energy E 912 mm) (mJ)
A	6.7 MPa	0.03mJ/mm <sup>2</sup>	2.5 mJ
B	10.5 MPa	0.07 mJ/ mm <sup>2</sup>	3.7 mJ
C	16.0 MPa	0.11 mJ/ mm <sup>2</sup>	7.0 mJ
1	21.0 MPa	0.15 mJ/ mm <sup>2</sup>	11.0 mJ
2	31.5 MPa	0.28mJ/ mm <sup>2</sup>	20.0 mJ
3	42.0 MPa	0.44mJ/ mm <sup>2</sup>	29.00mJ
4	48.0 MPa	0.59mJ/ mm <sup>2</sup>	39.0mJ
5	52.0 MPa	0.72 mJ/ mm <sup>2</sup>	52.0 mJ
6	55.0 MPa	0.96 mJ/ mm <sup>2</sup>	70.0mJ

**Patient stretcher****Environment****Room temperature**

During therapy	10 <sup>0</sup> c to 32 <sup>0</sup> c / 50 <sup>0</sup> F to 90 <sup>0</sup> F
In storage (Without water)	-10 <sup>0</sup> c to 70 <sup>0</sup> c / 14 <sup>0</sup> c F to 158 <sup>0</sup> c
In storage (with water)	1 <sup>0</sup> c to 70 <sup>0</sup> c / 34 <sup>0</sup> c F to 158 <sup>0</sup> c

**Relative humidity**

during therapy	30 to 85 % ( non – condensing)
in storage	10 to 98% (non-condensing)

**Atmospheric pressure**

during therapy	700 to 1060 mbar
in storage	500 to 1060 mbar

**Noise Level**

Evaluation level during shock – wave release

Operator is near patient stretcher < 83 dB (A)

**Power supply**

ESWL Unit Voltage 200 – 240 V ± 10 %, 50 Hz

**Power Consumption**

ESWL Unit 2.0 KVA / describe

**Dimensions**

ESWL Unit  
Weight 550 kg / 1210 lbs

**Floor space (w x D x H)**

Therapy 200 x 76 Cm / 79 x 30 Inches  
Transport 120 x 76 Cm / 47 x 30 inches  
height 165 x 185 Cm / 65 – 73 inches

**X – Ray Unit**

Weight (Incl. 2 monitors) 180 kg / 396 lbs  
Floor space ( W x D x H) 62 x 96 cm / 24.4 x 37.8 inches  
Height 180 cm / 71 inches

**06.04.02.03 Lithotripter / intracorporeal/**

**Description:** Kidney stone remover by inserting in human body

**Technical Data**

Pulse selection: single or continuous pulse

Intensity pre-selection: continuously adjustable  
displacement: 2 mm maximum

Impact energy: 1.5 ws maximum

Power supply voltage: 230/240V ±10%, 50 HZ, Fuse rate 2xT 0.125A, Power 26VA/ describe

Overload cut out: 1xT 0.5 A (SB)

Compressed air feed: 3.5 bar-5bar  
Compressed air output: 2.5 bar max.  
SCB: 6 pin mini-DIN socket for connection to an optional SCB interface  
Operating temperature: 10 °C – 40 °C  
Storage temperature: -40 °C - +60 °C  
Dimensions (Wxhxd): (305 x 164 x 260) mm

#### **Weight**

Control unit: 5.0 Kg  
handle: 0.2 kg

#### **Standard Compliance**

Type of protection against electric shocks: protection class I  
degree of protection against electric shocks: applied part of type BE  
Type of protection against moisture: drip-water protection as per IPX 1

#### **Directive compliance**

This medical product bears the CE mark in accordance with the medical device directive (MDD) 93/42/EEC A code number after the CE mark indicates the responsible notified body.

### **06.04.02.04 Light Source for laparoscopy, Urology & Lithotripter**

#### **TECHNICAL DATA**

Power supply Voltage: 230/240 V, 50 Hz, Lamp voltage 24 v, lamp power rate 250 w, Power consumption 340 watt, power fuse 2 x 2.0 A (SB) for 220-240V/ describe  
Operating temperature: 10 – 40 °C  
Storing temperature 0 – 60 °C  
Dimensions (w x h x d) (303 x 165 x 235) mm

#### **Equipment Classification**

According MDD: This instrument belongs to class IIb  
Type of Moisture proof: protected against dripping water per IPX 1  
Type of protection against electric shocks: protection Class I  
degree of protection against electric shocks: applied part of type BF

#### **Equipment test certificates**

The instrument has a CE label in accordance with MDD 93/42/EEC

### **06.04.02.05 Carbon Dioxide (CO<sub>2</sub>) Supply machine for Laparoscopy**

#### **TECHNICAL DATA**

Line voltage: 100 – 240V AC, 50 Hz, Power consumption 180VA, Power fuse 2 x 12AL 250V/ describe

#### **Gas supply**

Pressure minimum 5 bar, max. 160 bar  
Gas type CO<sub>2</sub> liquid  
gas flow 0 – 20 l/min  
insufflation pressure 0 – 30mmHg  
Operating temperature 10 – 40 °C  
storage temperature 0 – 60 °C  
Air humidity (RH, non-condensing) 5 % - 95 %  
Dimensions (W x H x D) (305 x 155 x 233) mm

#### **Standard Compliance, according to IEC 60601 – 1, UL 2601:**

Type of protection against electric shocks: protection Class I  
Degree of protection against electric shocks: applied part of type BF  
Type of protection against moisture: drip-water protection as per IPX 1

#### **Compliance, According to medical device directive (MDD)**

This medical device product belongs to Class II b  
This medical product bears the CE mark in accordance with MDD 93/42/EEC  
A code number after the CE mark indicates the responsible notified body

#### 06.04.02.06 Pump for laparoscopy and Lithotripter

##### TECHNICAL DATA

Line Voltage: 100 -240 VAC, 50 Hz, Power consumption 50 VA/ describe

Pressure head: 0 – 200 mmHg

Flow rate 0 – 1000 ml/min

Suction pressure: (-) 0.75 bar

Operating temperature: 10 – 40 °C

Storage temperature: 0 – 60 °C

Air humidity (non-condensing): 5% - 95%

Dimensions (W x H x D) (305 x 164 x 260) mm

##### Standard Compliance According to IEC 601 – 1

Type of protection against electric shocks: protection Class I

degree of protection against electric shocks: Applied part of type BF

Type of protection against moisture: drip-water protection as per IPX 1

##### Directive Compliance

This medical product bears the CE mark in accordance with the medical Device directive (MDD) 93/42/EEC.

#### 06.04.02.07 Blood Heater, Cooler

##### TECHNICAL DATA

##### Temperature regulation:

Regulating area: + 3 °C until + 41 °C

brake up 9decimal) : 0.1 °C

Efficiency/accuracy: ± 0.3 °C

##### Cooling Unit

Cooling System: Compressor cooling

cooling medium 9liquid or material: R-22

Water tanker capacity: 33.4 liter

Indicating (measuring) area on water temperature: 0 °C until 50 °C

Temperature on cold water: + 2 °C until +3 °C

Initial cooling capacity: 2100 KJ (500 K cal/h)

Continuous Cooling capacity: 2800 KJ (670 K cal/h)

Time for cooling from 20 °C till 10 °C: 26 minutes

Time for cooling from 20 °C till 20 °C : 50 minutes

##### Heater

Method : Electric heater

capacity: 2250 watt, 10 A

Protected : Against empty water

**Water quality:** Soft tap water

##### Circulation

Method: pressure /suck  
Pump

Flow capacity in liter/min: 20 LPM

Maximum pressure: 0.8 bar

flow regulating :

Coupling to till heat (gear) regulator

Coupling to Cooling materials

Pressure  
Self Sucking

35 LPM

1.5 bar

cranes

Couplings MD-012

Couplings MD-012

##### Power supply

source voltage: 220v/50 Hz

Main fuse : 16 a automatic thermal fuse

Other fuse: automatic fuse

Power consumption: 3200 watt, 16 A/ describe

**Dimension (L x H x D):** (415 x 895 x 535) mm

**Weight (Empty):** 83 kg

#### 06.04.03 Water treatment

##### **06.04.03.01 Water treatment unit for reverse osmosis to serve 8 to 12 dialysis units**

**General Description:** Provide complete industrial-type packaged reverse osmosis (RO) water treatment system producing high purity water by removal of dissolved minerals, bacteria, particles and organic impurities. Designed for continuous automatic operation. The system shall include pre-filter, product storage tank and all devices necessary for fully operational system. RO system operation will be controlled by the water level in the product storage tank.

##### **Technical Specifications:**

Initial Production Capacity

SDI < 5 . . . . . > 96,000 GPD (66.66 GPM)

System capacity based on operating with a feed of 500 ppm NaCl at 110 psig, 77°F, and pH 7.5

Max Operating Pressure . . . . . 225 psig

System Projected Rejection Rates . . . . . >95%

Recovery Rate . . . . . 65% (Min) / 75% (Max)

Higher recovery rates are achieved with reject recirculation.

Maximum Allowable SDI . . . . . 5 (SDI)

Maximum LSI (reject side) . . . . . < 0

Maximum Free Chlorine . . . . . 0.0 ppm

Operating Temperature . . . . . 33°F - 113°F

Operating pH . . . . . 6 – 11

##### **PLUMBING REQUIREMENTS**

Inlet Pipe Size . . . . . > 2-1/2 inches

Inlet Pipe Materials . . . . . PVC

Inlet Required Flow Rate . . . 130 GPM (Max)

Minimum Inlet Dynamic Pressure . . . 20 psig

Maximum Inlet Pressure . . . . . 100 psig

Required Pressure and Flow Rates will Vary Dependent on flux and percent recovery.

Inlet Required Pressure . . . . . 20 - 100 psig

Drain Pipe Requirement . . . . . > 2 inch

Recommended Drain Pipe Material. . . PVC

Drain Flow Capacity . . . . . 65 GPM

Permeate Pipe Size . . . . . > 1-1/2 inch

Permeate Pipe Material. PVC or Compatible

Power requirements: 230 / 380 VAC, 3-Phase 50 Hz

##### **6.04.03.02 Reverse osmoses system (water purification)**

**General Description:** Provide complete small packaged reverse osmosis (RO) water treatment system producing high purity water by removal of dissolved minerals, bacteria, particles and organic impurities.

Designed for continuous automatic operation. The system shall include pre-filter, product storage tank and all devices necessary for fully operational system. RO system operation will be controlled by the water level in the product storage tank.

##### **Technical Specifications:**

Membrane Gallons per day1 Liters per day

Water Pressure 30 -100 Min. -Max.

Water Temperature Degrees, F 40 -113 Min.-Max.

Chlorine Tolerance 0 ppm

Max. Hardness 10 Gr. pg

Max. Iron <0.1 ppm

Max. Mang. <0.05 ppm

pH Limit 6.0 -11.0

Max.TDS Limit            2000 ppm  
 Hydrogen Sulfide        0.00 ppm  
 Max. Turbidity 1.0 NTU  
 Typical Rejection WQA Rejection 97%-98% @ 60 psi 89% @ 50 psi  
 Storage 3.1 Gal.  
 Water Supply    Municipal, Well, Non-Chlorinated  
 Treatment Stages        5 Stage  
 Prefiltration    1 Mic. Sediment / Carbon Block  
 PCF    Standard  
 Postfilter        GAC  
 Height (inches) 16-3/4  
 Width (inches) 14-1/2  
 Depth (inches) 7  
 Weight aprox 35 lbs.  
 Power requirements: 230 / 380 VAC, 3-Phase 50 Hz

#### 06.04.04 Detoxification machine

##### **06.04.04.01 Electrolytic detoxification machine**

###### **Technical data**

The ion detox electrolysis system consists of the following elements  
 Treatment basin with integrated control component  
 converter for approximately 80 standard treatment (at 30 minutes each)  
 power adaptor (120-240 VAC, 20V/ 2.7A or 12V/3.8A), power cord/ describe  
 plastic liners  
 Converter cleaning agents and disinfectants  
 container of purified salt  
 dimensions: 47 x 40 x 15 cm  
 Electronics: 240Vac, 50 Hz, reduced to 12 or 24 v Direct Current (DC), Maximum Current 2.7 A  
 Capacity: 6 liters maximum 5 liters recommended  
 Controls: CE certification for EMC and technical health product  
 Warranty: minimum 2 years

## 6.05 Implants

#### 6.05.01 Pace maker

##### **6.05.01.01 Temporary Pace maker**

**Description:** Temporary pacemaker for cardiac pacing, single chamber

###### **Specification**

Asynchronous and demand moded operation  
 Sensing: light indication  
 Pacing: light indication  
 Calibrated rate, output and sensitivity controls  
 Defibrillator protected

###### **PARAMETERS:**

Stimulation control of current output upto 20mA  
 Pulsing rate control adjustment upto 150 ppm/ 320  
 Sensitivity control upto 8mV  
 Pulse width 1.5 m sec  
 Asynchronous and demand mode switch

###### **INDICATORS:**

Battery status light indication

###### **OTHER FEATURES:**

Portable  
 Accessories including case and cables

#### OPERATING REQUIREMENTS:

Standard alkaline battery operation

Backup operation during battery change

#### **06.05.01.02 Permanent pacemaker**

##### **SPECIFICATIONS**

###### **Key features**

Rate response: Automatically adjusts heart rate to match your level of activity.

Special sensors detect changes in your body other than heart rate and increase or decrease heart rate

###### **Managed Ventricular pacing**

Provides the best pacing therapy available to reduce unnecessary right ventricle pacing.

MVP allows the heart to naturally on its own

###### **Cardiac Compass**

Provides 14 months of data about heart function to physician. these data let the doctor see how well the device and medications are working together and understand how the heart function may change over time

###### **Device Size**

The device is not only one size. Other sizes are also available

(H x W x D) aprox = (1.76" x 1.89" x 0.30")

###### **Safety Information**

An implantable pacemaker system relieves symptoms of heart rhythm disturbances. They do this by restoring normal heart rates. A normal heart rate provides your body with the proper amount of blood circulation. The pacemaker system is intended for patients who need rate-adaptive pacing or chronic pacing or for patients who may benefit from synchronizing the pumping of the heart chambers.

Risks associated with pacemaker system implant include, but are not limited to, infection at the surgical site and/or sensitivity to the device material, failure to deliver therapy when it is needed, or receiving extra therapy when it is not needed. After receiving an implantable pacemaker system, you will have limitations with magnetic and electromagnetic radiation, electric or gas powered appliances, and tools with which you are allowed to be in contact.

This treatment is prescribed by the physician. This treatment is not for everyone. Please talk to your doctor to see if it is right for you. Your physician should discuss all potential benefits and risks with you. Although many patients benefit from the use of this treatment, results may vary.

#### **B. Pacemaker**

##### **Overview**

It is a pacemaker that delivers therapies to treat irregular, interrupted, or slow heart rhythms.

##### **Features**

**Atrial Capture Management (ACM)** – Adjusts the pacing pulses in the upper chamber of the heart automatically, reducing the need for the physician to do so in the office and thereby simplifying your follow-up care.

**Rate Response** – Automatically adjusts your heart rate to match your level of activity. Special sensors detect changes in your body other than heart rate and increase or decrease your heart rate accordingly.

**Cardiac Compass®** – Provides 14 months of data about your heart function to your doctor. These data let your doctor see how well your device and medications are working together and understand how your heart function may change over time.

##### **Size and Placement**

The heart device is surgically placed under the skin, typically below the collarbone. The electrical lead(s) are threaded through a blood vessel into your heart.

Height: 1.76" / 44.7 mm

Width: 1.89" / 47.95 mm

Depth: 0.30" / 7.5 mm





## 07 Surgical And ICU Instruments



Figure 6: Photographic view of Some Surgical Instrument

## 07.01 OR and Surgery equipment

### 07.01.01. Operating table

#### **07.01.01.01 Operating table, multiple sections, hydraulic**

##### **Technical Specifications**

General purpose operating table, 4 sections.

Mobile stainless steel base on castors with central brake.

Base is fit with earth connection.

Manual operated auto-locking gear mechanisms and crank handles.

Radiolucent table top with integrated standard size x-ray cassette channels.

All sections fit with mattress, detachable for easy cleaning.

Mattresses are integrated moulded, core and surface joined.

Adjustable to all essential positions.

Height adjustable with foot-pedal via hydraulic lever system.

Factory filled hydraulic oil.

Three sections adjustable via manual crank: back, pelvic, legs.

Independent adjustable head section: approx. +20 to -90 degrees.

Head and legs sections can be removed.

Trendelenburg and reverse Trendelenburg: at least 25 degrees.

Lateral tilting, both sides: approx. 20 degrees.

Accessories on both sides clamp on standard stainless steel medical rail.

When elevated and fully extended, all sections align to perfectly flat surface.

##### **Materials:**

High resistance to corrosion (tropical environment).

Frame: Austenitic stainless steel 18/10.

Table top: radiolucent epoxy resin.

Sliders/fixtures rail for accessories: Austenitic stainless steel 18/10

Mattress: high-density foam, highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

##### **Dimensions:**

Overall: approx. 2000 x 500 x 700-950 mm (l x w x h).

Height adjustment: approx. 700 to 950 mm.

Mattress: approx. 50 mm (h)

Carrying capacity: approx. 150kg.

##### **Supplied with:**

1 x set of tools required for assembly.

1 x spare set of 4 fixation clamps.

1 x set fitting mattresses.

Set of accessories, each with fixation clamp:

1 x anaesthesia screen

2 x shoulder support

2 x thigh support

2 x arm board, with arm strap

2 x knee support, lithotomy crutch, with strap

1 x body strap

List of parts.

Detailed step-by-step line drawing based instructions for assembly and safe use.

#### **07.01.01.02 Operating table, multiple sections, electro-hydraulic**

##### **Technical Specifications**

General purpose operating table, Multiple sections.  
Mobile stainless steel base on castors with central brake.  
Base is fit with earth connection.  
Electrical operated auto-locking gear mechanisms and crank handles.  
Radiolucent table top with integrated standard size x-ray cassette channels.  
All sections fit with mattress, detachable for easy cleaning.  
Mattresses are integrated moulded, core and surface joined.  
Adjustable to all essential positions.  
Height adjustable with foot-pedal via hydraulic lever system.  
Factory filled hydraulic oil.  
Three sections adjustable via manual crank: back, pelvic, legs.  
Independent adjustable head section: approx. +20 to -90 degrees.  
Head and legs sections can be removed.  
Trendelenburg and reverse Trendelenburg: at least 25 degrees.  
Lateral tilting, both sides: approx. 20 degrees.  
Accessories on both sides clamp on standard stainless steel medical rail.  
When elevated and fully extended, all sections align to perfectly flat surface.  
Including remote control for all models  
Power:- 220V  $\pm$ 15%, 50 Hz

##### **Materials:**

High resistance to corrosion (tropical environment).  
Frame: Austenitic stainless steel 18/10.  
Table top: radiolucent epoxy resin.  
Sliders/fixtures rail for accessories: Austenitic stainless steel 18/10  
Mattress: high-density foam, highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

##### **Dimensions:**

Overall: approx. 2000 x 500 x 700-950 mm (l x w x h).  
Height adjustment: approx. 700 to 950 mm.  
Mattress: approx. 50 mm (h)  
Carrying capacity: approx. 150kg.  
Supplied with:  
1 x set of tools required for assembly.  
1 x spare set of 4 fixation clamps.  
1 x set fitting mattresses.  
Set of accessories, each with fixation clamp:  
1 x anaesthesia screen  
2 x shoulder support  
2 x thigh support  
2 x arm board, with arm strap  
2 x knee support, lithotomy crutch, with strap  
1 x body strap  
List of parts.  
Detailed step-by-step line drawing based instructions for assembly and safe use.

#### **07.01.01.03 Operating table, multiple sections, electro-hydraulic/ophthalmic/neuro**

##### **Technical Specifications**

Ophthalmic/neuro /ENT surgery operating table, multiple sections.  
Mobile stainless steel base on castors with central brake.  
Base is fit with earth connection.  
Electrical operated auto-locking gear mechanisms and crank handles.  
Radiolucent table top with integrated standard size x-ray cassette channels.

All sections fit with mattress, detachable for easy cleaning.  
 Mattresses are integrated moulded, core and surface joined.  
 Adjustable to all essential positions.  
 Height adjustable with foot-pedal via hydraulic lever system.  
 Factory filled hydraulic oil.  
 Three sections adjustable via manual crank: back, pelvic, legs.  
 Independent adjustable head section: approx. +20 to -90 degrees.  
 Head and legs sections can be removed.  
 Trendelenburg and reverse Trendelenburg: at least 25 degrees.  
 Lateral tilting, both sides: approx. 20 degrees.  
 Accessories on both sides clamp on standard stainless steel medical rail.  
 When elevated and fully extended, all sections align to perfectly flat surface.  
 Including remote control for all models  
 Power:- 220V  $\pm$ 15%, 50 Hz

**Materials:**

High resistance to corrosion (tropical environment).  
 Frame: Austenitic stainless steel 18/10.  
 Table top: radiolucent epoxy resin.  
 Sliders/fixtures rail for accessories: Austenitic stainless steel 18/10  
 Mattress: high-density foam, highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Overall: approx. 2000 x 500 x 700-950 mm (l x w x h).  
 Height adjustment: approx. 700 to 950 mm.  
 Mattress: approx. 50 mm (h)  
 Carrying capacity: approx. 150kg.

**Supplied with:**

Complete accessories for Ophthalmic/Neuro/ENT surgery  
 1 x set of tools required for assembly.  
 1 x spare set of 4 fixation clamps.  
 1 x set fitting mattresses.  
 Set of accessories, each with fixation clamp:  
 1 x anaesthesia screen  
 2 x shoulder support  
 2 x thigh support  
 2 x arm board, with arm strap  
 2 x knee support, lithotomy crutch, with strap  
 1 x body strap  
 List of parts.  
 Detailed step-by-step line drawing based instructions for assembly and safe use.

**07.01.01.04 Operating table, multiple sections, electro-hydraulic/orthopedic with accessories**  
**Technical Specifications**

Orthopaedic special operating table, 8 sections.  
 Mobile stainless steel base on castors with central brake.  
 Base is fit with earth connection.  
 Electrical operated auto-locking gear mechanisms and crank handles.  
 Radiolucent table top with integrated standard size x-ray cassette channels.  
 All sections fit with mattress, detachable for easy cleaning.  
 Mattresses are integrated moulded, core and surface joined.  
 Adjustable to all essential positions.  
 Height adjustable with foot-pedal via hydraulic lever system.  
 Factory filled hydraulic oil.  
 Three sections adjustable via manual crank: back, pelvic, legs.

Independent adjustable head section: approx. +20 to -90 degrees.  
Head and legs sections can be removed.  
Trendelenburg and reverse Trendelenburg: at least 25 degrees.  
Lateral tilting, both sides: approx. 20 degrees.  
Accessories on both sides clamp on standard stainless steel medical rail.  
When elevated and fully extended, all sections align to perfectly flat surface.  
Including remote control for all models  
Power:- 220V  $\pm$ 15%, 50 Hz

**Materials:**

High resistance to corrosion (tropical environment).  
Frame: Austenitic stainless steel 18/10.  
Table top: radiolucent epoxy resin.  
Sliders/fixtures rail for accessories: Austenitic stainless steel 18/10  
Mattress: high-density foam, highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

**Dimensions:**

Overall: approx. 2000 x 500 x 700-950 mm (l x w x h).  
Height adjustment: approx. 700 to 950 mm.  
Mattress: approx. 50 mm (h)  
Carrying capacity: approx. 150kg.

**Supplied with:**

Complete accessories for Orthopaedic (extensions and Traction)

1 x set of tools required for assembly.

1 x spare set of 4 fixation clamps.

1 x set fitting mattresses.

Set of accessories, each with fixation clamp:

1 x anaesthesia screen

2 x shoulder support

2 x thigh support

2 x arm board, with arm strap

2 x knee support, lithotomy crutch, with strap

1 x body strap

List of parts.

Detailed step-by-step line drawing based instructions for assembly and safe use.

07.01.02 Anaesthesia machines

**07.01.02.01 Anaesthesia machine, with vent., mon., 2 vap. Closed**

**General Description:** Anaesthesia machine 2, with accessories

**Technical Specifications:**

Anaesthesia machine closed breathing circuit configuration

Suitable for all patient categories: paediatric and adult

Stable sturdy construction on 4 antistatic ball-bearing swivel castors, 2 with breaks

Trolley with upper shelf and medical utility rail

Handles facilitate positioning of the device

Integrated support for two 10 L anaesthetic gas bottles (O<sub>2</sub>-N<sub>2</sub>O)

Gas supply input: 2 to 6 bar

Rota-meter tubes 0 - 10 L/min for O<sub>2</sub> and N<sub>2</sub>O

Mixer secures a minimum of 25 % oxygen

With two vaporizers, Selectatec mounting compatible, with Interlock fixation system

Possibility to mount a second vaporizer

Soda lime absorber, with 2.5 kg reservoir and adjustable pressure limiting valve

Non-return and three way valve, with connecting tube

**Ventilator:**

Modes: Automatic Volumetric (IPPV) and Manual

Electrically powered compressor, minute volume: 2 to 25 L/min

Tidal volume: 20 - 1500 ml  
 Respiratory rate: 5 to 70 cycles/min  
 I/E ratio: 2/1 to 1/4  
 Inspiration pressure: 0 to 80 mbar  
 Peak inspiratory flow: 0 to 60 L/min  
 Trigger sensitivity: 0 to -20 mbar  
 Display fit with broncho manometer, range approx: -10 to 100 mbar  
 Front panel shows status, errors and sensors failure (low/high pressure, power failure)  
 Audio-visual alert on low/high pressure, apnoea, power failure  
 Display of operational status, with set and measured values  
 Front panel shows status and errors (low/high pressure, power failure, battery status)  
 Safety features for: hypoxic mixtures, oxygen failure (emergency O2 bypass), overpressures  
 Self diagnosis with each start-up and integrity testing of all system parameters  
 With adjustable patient-circuit support arm  
 Built-in rechargeable battery, autonomy approx 2 hrs  
 Automatic switch to battery in case of power failure, automatic recharge when connected to mains  
 Power requirements: 220 V  $\pm$ 15%, 50 Hz and rechargeable battery  
 Power consumption, approx: 800 W

**Supplied with:**

1 x Pediatric reusable breathing circuit (tubes / balloons / valves / masks)  
 1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)  
 1 x Spare parts/maintenance kit (air filters, tubing, O-rings)  
 1 x Set of spare fuses  
 Clear instructions for use, diagrams for assembly and list of accessories / parts in English language.

**07.01.02.02 Anaesthesia machine, with vent., 2 vap. Open**

**General Description:**

Anaesthesia system, free-standing, with accessories

**Technical Specifications:**

Autonomous system integrates an anaesthesia machine, a ventilator and an oxygen concentrator  
 Suitable for all patient categories: paediatric and adult  
 Sturdy and stable construction on 4 antistatic ball-bearing swivel castors, 2 with breaks  
 Trolley with upper shelf and medical utility rail

**Anaesthesia machine**

Open circuit configuration  
 Selectatec vaporising system  
 With two vaporizers for Selectatec vaporising system, with interlock fixation system  
 Gas mixing unit uses ventilator compressor (ambient air) or oxygen concentrator (ambient air/O2)  
 Mixer secures a minimum of 25 % oxygen in gas mix  
 Non-return and three way valve, with connecting tube

**Ventilator:**

Volumetric ventilator  
 Built-in electrically powered compressor: 0 to 25 L/min  
 Ventilation modes: SV, MV, CV, ACV  
 Tidal volume: 30 - 1000 ml  
 Respiratory rate: 8 to 40 cycles/min  
 Fi O<sub>2</sub>: 0.21 - 0.90  
 I/E ratio: 1/3 to 1/1  
 Inspiration pressure: 0 to 80 mbar  
 Trigger sensitivity: 0 to -20 mbar  
 Minimum pressure alarm: 0 to 60 mbar  
 Front panel shows system status, errors and failure (low oxygen concentration, low/high pressure, power failure)  
 Audio-visual alert on low/high pressure, power failure

**Oxygen concentrator set:**

Integrated oxygen sensing device (OSD)

Output measured via integrated flow meter

Operating temperature: 10 to 35 C

Operating relative humidity: max 75 %

Output pressure, approx: 620 mbar

Flow range adjustable: 0.5 to 5 L/min

Concentration at 5 L/min: 93%  $\pm$  3%

Sound level: max 40 to 50 dB(A)

Display shows system status, errors and failure (low oxygen concentration, low/high pressure, power failure)

Audio-visual alert on low oxygen concentration and power failure

Power requirement: 220V  $\pm$  15%, 50 Hz

Power consumption, system approx: 800 W/ describe

**Supplied with:**

1 x Medical rail to mount second vaporizer

1 x Paediatric reusable breathing circuit (tubes / balloons / valves / masks)

1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)

1 x Spare parts/maintenance kit (air filters, tubing, O-rings) for oxygen concentrator and ventilator

1 x Set of spare fuses

Clear instructions for use, diagrams for assembly and list of accessories / parts in English language.

**07.01.02.03 Anaesthesia machine, with vent. 1 vap. Closed**

**General Description:** Anaesthesia machine, with accessories

**Technical Specifications:**

Anaesthesia machine closed breathing circuit configuration

Suitable for all patient categories: paediatric and adult

Stable sturdy construction on 4 antistatic bal-bearing swivel castors, 2 with breaks

Trolley with upper shelf and medical utility rail

Handles facilitate positioning of the device

Integrated support for two 10 L anaesthetic gas bottles (O<sub>2</sub>-N<sub>2</sub>O)

Gas supply input: 2 to 6 bar

Rota-meter tubes 0 - 10 L/min for O<sub>2</sub> and N<sub>2</sub>O

Mixer secures a minimum of 25 % oxygen

With halothane vaporizer, Selectatec mounting compatible, with Interlock fixation system

Possibility to mount a second vaporizer

Soda lime absorber, with 2.5 kg reservoir and adjustable pressure limiting valve

Non-return and three way valve, with connecting tube

**Ventilator:**

Modes: Automatic Volumetric (IPPV) and Manual

Electrically powered compressor, minute volume: 2 to 25 L/min

Tidal volume: 20 - 1500 ml

Respiratory rate: 5 to 70 cycles/min

I/E ratio: 2/1 to 1/4

Inspiration pressure: 0 to 80 mbar

Peak inspiratory flow: 0 to 60 L/min

Trigger sensitivity: 0 to -20 mbar

Display fit with broncho manometer, range approx: -10 to 100 mbar

Front panel shows status, errors and sensors failure (low/high pressure, power failure)

Audio-visual alert on low/high pressure, apnoea, power failure

Display of operational status, with set and measured values

Front panel shows status and errors (low/high pressure, power failure, battery status)

Safety features for: hypoxic mixtures, oxygen failure (emergency O<sub>2</sub> bypass), overpressures

Self diagnosis with each start-up and integrity testing of all system parameters



With adjustable patient-circuit support arm  
Built-in rechargeable battery, autonomy approx 2 hrs  
Automatic switch to battery in case of power failure, automatic recharge when connected to mains  
Power requirements: 220 V  $\pm$ 15%, 50 Hz and rechargeable battery  
Power consumption, approx: 800 W/ describe

**Supplied with:**

x Paediatric reusable breathing circuit (tubes / balloons / valves / masks)  
1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)  
1 x Spare parts/maintenance kit (air filters, tubing, O-rings)  
1 x Set of spare fuses  
Clear instructions for use, diagrams for assembly and list of accessories / parts in English language.

**07.01.02.04 Anaesthesia machine, with vent., 1 vap. Open**

**General Description:** Anaesthesia machine 1, with accessories

**Technical Specifications:**

Anaesthesia machine open breathing circuit configuration  
Suitable for all patient categories: paediatric and adult  
Stable sturdy construction on 4 antistatic bal-bearing swivel castors, 2 with breaks  
Trolley with upper shelf and medical utility rail  
Handles facilitate positioning of the device  
Integrated support for two 10 L anaesthetic gas bottles (O<sub>2</sub>-N<sub>2</sub>O)  
Gas supply input: 2 to 6 bar  
Rota-meter tubes 0 - 10 L/min for O<sub>2</sub> and N<sub>2</sub>O  
Mixer secures a minimum of 25 % oxygen  
With halothane vaporizer, Selectatec mounting compatible, with Interlock fixation system  
Possibility to mount a second vaporizer  
Non-return and three way valve, with connecting tube

**Ventilator:**

Modes: Automatic Volumetric (IPPV) and Manual  
Electrically powered compressor, minute volume: 2 to 25 L/min  
Tidal volume: 20 - 1500 ml  
Respiratory rate: 5 to 70 cycles/min  
I/E ratio: 2/1 to 1/4  
Inspiration pressure: 0 to 80 mbar  
Peak inspiratory flow: 0 to 60 L/min  
Trigger sensitivity: 0 to -20 mbar  
Display fit with broncho manometer, range approx: -10 to 100 mbar  
Front panel shows status, errors and sensors failure (low/high pressure, power failure)  
Audio-visual alert on low/high pressure, apnoea, power failure  
Display of operational status, with set and measured values  
Front panel shows status and errors (low/high pressure, power failure, battery status)  
Safety features for: hypoxic mixtures, oxygen failure (emergency O<sub>2</sub> bypass), overpressures  
Self diagnosis with each start-up and integrity testing of all system parameters  
With adjustable patient-circuit support arm  
Built-in rechargeable battery, autonomy approx 2 hrs  
Automatic switch to battery in case of power failure, automatic recharge when connected to mains  
Power requirements: 220 V  $\pm$ 15%, 50 Hz and rechargeable battery  
Power consumption, approx: 800 W/ describe

**Supplied with:**

1 x Paediatric reusable breathing circuit (tubes / balloons / valves / masks)  
1 x Adult reusable breathing circuits (tubes / balloons / valves / masks)  
1 x Spare parts/maintenance kit (air filters, tubing, O-rings)  
1 x Set of spare fuses  
Clear instructions for use, diagrams for assembly and list of accessories / parts in English language.

#### **07.01.02.05 Endotracheal Tube**

**Description:-** Endotracheal tube, disposable

**Specifications** endo tracheal tube and Reinforced endotracheal tube made from non-toxic transparent PVC, with radio-opaque line.

**Size:**

Without cuff, F10, F12, F14, F16, F18, F20, F22, F24, F26, F28, F30, F32, F34, F36, F38, F40

With cuff, F18, F20, F22, F24, F26, F28, F30, F32, F34, F36, F38, F40

Individual sterile blister pack

sterilized by ethylene oxide gas

#### **07.01.02.06 Endotracheal tube with cuff without cuff**

**Description:-** Endotracheal tube with cuff without cuff,

**Specifications**

**Category:-** Surgical Instruments

**Properties:** The Basis of Surgical Instruments

Made from non-toxic PVC, transparent soft and smooth;

cuffed: 2.0-11.0

uncuffed: 3.0-11.0

The tracheal tubes have such good performances as the tubes with appropriate hardness, the cuff with excellent biocompatibility;

Intended use: The tracheal tube is intended for respiration in combination with respiratory system during operation for patients who lose active breath ability;

#### **07.01.02.07 Endotracheal Tube**

**Description:** Endotube, tracheal tube, endotracheal

**Category:** Ears, Eyes, Nose and Throat Surgical Instruments

**Specifications**

Made of clear, non toxic PVC

Semi-seated 15mm standard connector

X-ray opaque line throughout the length of the **tube**

Latex free and sterile

Size; I. D. 2.5-10

#### **07.01.02.08 Endotracheal Tube with cuff**

**Description:** reinforced endotracheal **tube, tracheal** tube

**Category:** Emergency & Clinics Apparatus

**Material:** PVC

**Tip:** Better rounded beveled tip enables a traumatic intubation

**Size:** ID3.0 - ID10.0

**Technical Specifications**

Designed to establish and maintain an airway in case of an emergency;

Made from non-toxic, clear, kink-resistant medical-grade PVC material to protect delicate mucosal tissue;

Smooth **rounded bevelled tip** or bevelled tip is available and enables atraumatic intubation;

Smooth Murphy eye can effectively prevents respiratory obstruction.

Full-length Radio-opaque line aids the assessment of exact location of the tube;

Soft, thin-walled cuff ensures effective sealing and atraumatic intubation and extubation;

Check valve can be efficient and easy for cuff inflation and deflation;

Tube with rounded bevelled tip or bevelled tip is available;

Tube with cuff or without cuff is available.

#### 07.01.02.09. Reinforced Endotracheal tube

**Description:-**

**Category:** Surgical Instruments

**Properties:** The Basis of Surgical Instruments

##### **Specifications**

Made of non-toxic PVC, transparent soft and smooth, uncuffed & cuffed

Made of non-toxic PVC, transparent soft and smooth for medical use

Endotracheal Tube -uncuffed & cuffed size: 2.0#-11.0

Brief introduction: the tracheal tubes made from the raw material of PVC for medical use, with component of connector and valve, the tracheal tubes have such good performances as the tube with appropriate hardness, the cuff with big capacity and low pressure, smooth tube and excellent biocompatibility;

Intended Use: the tracheal tube is intended for respiration in combination with respiratory system during operation for patients who lose active breath ability

#### 07.01.02.10 Gudel Airway

**Description:** Berman Airways, Airway, Medical Supply

**Category:** Disposable Medical Supplies

**Type:** Surgical Supplies Materials

**Size:** 40mm, 50mm, 60mm, 70mm, 80mm, 90mm, 100mm, 110mm, 120mm,

##### **Specification**

Guedel Airway used to make a better breath for the Non-Breather or patient who have respiratory difficulties.

Description Airway Guedel	material	carton size
40MM	LDPE	single packing, 1000pcs/ctn
50MM	LDPE	Single packing, 1000pcs/ctn
60MM	LDPE	Single packing, 1000pcs/ctn
70MM	LDPE	Single packing, 800pcs/ctn
80MM	LDPE	Single packing, 800pcs/ctn
90MM	LDPE	Single packing, 800pcs/ctn
100MM	LDPE	Single packing, 500pcs/ctn
110MM	LDPE	Single packing, 500pcs/ctn
120MM	LDPE	Single packing, 500pcs/ctn

**Note:- LDPE:-** Low-density polyethylene is a thermoplastic made from the monomer ethylene

#### 07.01.02.11 Nasopharyngeal airway/Naso airway/nasal airway

**Description/Category:** Medical Implement

##### **Specification**

**Nasopharyngeal airway**, naso **airway**, nasal airway, orsal airway, gudel airway, oropharyngeal airway, Disposable Endotracheal Tube, Disposable

Laryngeal Mask Airway.

Quality certificate: ISO9001, ISO13485, CE, FDA

material: PVC, Synthetic Rubber, Latex-Free, Sterile, Kink-Resistant

Type: Flange, Interface. Disposable use and re-use

Size: 10Fr-40Fr

Packing: 50pcs/carton

#### **07.01.02.12 Reusable Silicone Laryngeal Mask Airway**

**Description:-** laryngeal mask airway

**Category:-** Emergency & Clinics Apparatus

**Certificate:** CE/FDA/ISO9001/ISO13485

**Type:** General Medical Supplies

**Properties:** Medical Polymer Materials & Product...

##### **Specification**

100% silicone.

The **mask** has mirror effect; designed with aperture bars.

Can be autoclaved repeatedly at 134

#### **07.01.02.13. Disposable laryngeal mask airway**

**Description:-** Disposable laryngeal mask airway

**Category:-** Medical Consumables

**Disposable Silicone laryngeal mask airway**, Disposable silicone LMA, Disposable LMA

**Type:** Dressings and Care for Materials

**Properties:-** Medical Materials & Accessories

##### **Specification**

\*Made from 100% medical-grade silicone.

\*Smooth, transparent and kink-resistant tube

##### **Use:**

Establishing clinical artificial airway in general anesthesia and resuscitation to eliminate obstruction in respiratory tract

\*Suitable for adult, children, infant and newborn use

#### **07.01.02.14. Laryngeal Mask Airway**

**Description:-** Laryngeal mask airway, laryngeal, airway, first aid

**Category:-** Disposable Medical Supplies

##### **Specification**

##### **Features:**

- 1) Minor irritancy, little mechanical obstruction of respiratory tract, acceptability, which are compared with tracheal tube
- 2) Cardiovascular system response is petty when insert or pull out and post-operation throat discomfort has little possibility to happen
- 3) Easy to control, insert directly, no need to use laryngoscope
- 4) The new type is inserted into respiratory tract quickly in nature, and no need using other aid means
- 5) Repeatable to use

##### **Applications:**

- 1) Can be applied to first-aid, ICU and any acute disease treatment
- 2) For those patients to whom intubation is difficult
- 3) Patients who need special position of operation on head or back
- 4) Examination tracheal, **laryngeal** and elimination of impurities
- 5) Patients who do not want to use tracheal tube

#### **07.01.02.15. Disposable ALL Silicone Laryngeal Mask Airway**

**Description:-** Laryngeal mask airway, anaesthesia, medical supply

**Category:-** Medical Consumables

**Type:-** Dressings and Care for Materials

**Properties:-** Medical Materials & Accessories

##### **Specification**

Single-Use Silicone **laryngeal mask airway**

1. Made of medical-grade silicone.
2. Seven size.
3. CE Approved

Single-Use Silicone Laryngeal **mask airway**

1. made of medical-grade silicone.
2. Its specially designed shape coincides with the laryngopharynx well, reducing stimulation to patient body and improving the cuff seal.
3. Suitable for adult, children and infant use
4. Both single hole and aperture types available

#### **07.01.02.16. Combined Epidural /Spinal Anesthesia Kit**

**Description:-** Anesthesia kit,spinal anesthesia kit,Epidural anesthesia Kit

**Category:** Surgical Instruments:

**Type:** Needle,Hook

##### **Specification**

Joint centesis improve the efficiency of **anesthesia**.

##### **Combined Epidural /spinal anesthesia kit**

Joint centesis improve the efficiency of anesthesia.

The pen-point makes minimal invasion and reduce the headache after spinal anesthesia, which is safer for patient.

Non-penetration X-ray epidural catheter is used to relieve pain after operation and fix the location. **Anesthesia Set:**

Epidural **anesthesia kit** (AS-E), Spinal Anesthesia Kit (AS-S), Nerve Blocking Kit (AS-N), Epidural and Spinal Anesthesia Kit (AS-E/S)

#### **07.01.02.17. Disposable Epidural-Spinal Combined Anesthesia Kit**

**Description:-** Epidural Kit,Anesthesia

**Category:-** Surgical Instruments

Disposable Epidural-Spinal **combined anesthesia kit**,

**Type:-** Needle, Hook

**Properties:** The Basis of Surgical Instruments

##### **Specification**

Disposable Epidural-Spinal **combined anesthesia kit**

Quality epidural **needle** and spinal needle with pen point tip

Disposable Epidural-Spinal Combined **anesthesia kit**

Kit components (Special sizes and catheters on request)

The 16G epidural needle (8cm) .....	1
The 25G spinal needle (11cm) .....	1
The epidural catheter (90cm).....	1
The Luer-lock adapter.....	1
The 10ml loss-of -resistance syringe....	1
The 5ml disposable syringe.....	1
The 20ml disposable syringe.....	1
Air filter (flat and small).....	1
Solution filter (big).....	1
The 22G syringe needle.....	1
The 25G syringe needle.....	1
The 2.5ml syringe needle.....	1
The paper towel.....	1
The paper towel with a hole.....	1
The dressing.....	3
The brush.....	3
The PP cup.....	1
The adhesive tape.....	1
The glove.....	1
The PE tape.....	1

### **The epidural needle**

The specially processed needlepoint makes the puncture smoother and the handle feeling better. It does not cause epidural damages, has smooth interiors and is easy for tube placement.

### **2. The spinal needle**

The 25G pen-point type spinal needle cause less epidural damage and minimizes the possibility of leakage of CSF. The fully transparent needle handle makes it easy to observe the backflow of the Cerebrospinal fluid.

### **3. The epidural catheter**

Made of a polyamide material, produced with closed tip and lateral openings or alternatively with a central opening, offers a high degree of tensile strength.

### **4. The luer-lock adapter**

Ensures a sound and reliable connection

### **5. The 0.2-um flat filter**

Effectively prevents the passage of particles and micro-organisms

### **6. The Loss-of-resistance injection**

Processes an extremely smooth-running piston, thus enabling the epidural space to be found easily and reliably both with air as well as with a saline solution

### **07.01.02.18 Epidural puncture kit**

**Description:** Disposable **anesthesia** puncture kit, **epidural anesthesia kit**, **spinal anesthesia kit**

**Category:** Surgical Instruments

**Type:** Disposable anesthesia puncture kit

**Properties:** The Basis of Surgical Instruments

#### **Specification**

**Epidural anesthesia kit** can improve the efficiency of **anesthesia**.

The joint centesis technique of combined epidural **anesthesia kit** and spinal anesthesia kit can improve the efficiency of anesthesia.

The pen-point makes minimal invasion and reduce the headache after spinal anesthesia, which is safer for patients.

Non-penetration X-ray epidural catheter is used to relieve pain after operation and fix the location of the catheter.

Anesthesia set includes:

1. Epidural anesthesia kit
2. Spinal Anesthesia kit
3. Nerve blocking kit
4. Combined epidural anesthesia kit and spinal anesthesia kit

### **07.01.02.19 Spinal Anesthesia Kit**

#### **Description:**

**Basic Configuration:** Single-use spinal puncture needle type I and type II, liquid filters, air filters, anesthesia catheter, catheter connector;

**Optional Accessories:** Sterile syringes, needles, glass syringes, guide pin, suction pipe, disinfectant brushes, rubber surgical gloves, dressing pad, towels, surgical towels, gauze, infusion paste, band-aid, breathable tape, catheter positioning frame, suction cups, cotton balls, etc.;

**Packing:** 30 sets/carton

#### **How to use:**

1. Check packaging is intact, check sterilization signs, check for sterilization within the validity period, open the package after confirmation;
2. After confirm the sterilizing, put package placed in the central bench;
3. Wear sterile medical gloves, to operate it according to the sterile procedures;
4. Make sure the puncture site, disinfected first and then proceed to puncture;
5. After completed, should be focused on destruction;

#### **Note:**

1. This product is a one-time use only and destroyed after use;
2. Prohibition of use with damaged package;
3. The asepsis term of validity is two years, prohibit the use of expired products;

4. Should be stored in a dry, ventilated environment;
5. Configuration devices anesthetic liquid residues <5%;
6. Anesthesia catheter must not be pulled out when the Anesthetic needle in a puncture state or the catheter may be cut off; the needle and the catheter should be pulled out at the same time.

**Applicable Scope:** Suitable for the anesthesia of puncture and injection on the human body;

**Related Product Name:**

Disposable Spinal Anesthesia Kit;  
Single-Use Spinal Anesthesia Kit;  
Spinal Anesthesia Set;  
Spinal Anesthesia Package;  
Spinal Anesthesia Bag;  
Sterile Spinal Anesthesia Set;

**07.01.02.20 Manual Ventilators**

**Description:-** Paediatric Ventilator

For detail specifications Refer Item no. **06.01.01.01 Paediatric Intensive care Ventilator** Under the Category **Life Supporting and Monitoring device**

**07.01.02.21 Ventilator Resuscitator, hand-operated, neonate, set**

For detail specifications Refer Item no. 06.01.01.02 Under the Category Life Supporting and Monitoring device

**07.01.02.22 Resuscitator**

**Description:-** Manual resuscitator

For detail specifications Refer Item no. **06.01.02.01** Under the category Life Supporting and Monitoring device

**07.01.02.23 Patient monitor with ECG and Respiration**

For detail specifications Refer Item no. **6.02.01.01** Under the category Life Supporting and Monitoring device

**07.01.02.24 Pulse oximetry**

For detail specifications refer item No. **6.02.01.02** Under the category **Life Supporting and Monitoring device**

**07.01.02.25 Digital Blood Pressure Monitor Machine**

For detail specifications refer item No. **06.02.01.03** Under the category Life Supporting and Monitoring device

**07.01.02.26 Capnography**

For detail Specifications refer Item No. **6.02.01.04** under the category Life Supporting and Monitoring device

**07.01.02.27 Non-Invasive Blood Pressure (NIBP) Monitoring**

Method : Oscillometric

Operation Modes : Manual /Automatic

Measurement Unit : mmHg/kPa selectable

Measurement Type : Systolic pressure Diastolic pressure and Mean Pressure

Measurement Range :

Systolic Pressure: 50-24 mmHg

Diastolic Pressure: 25~180mmHg

Mean Pressure: 30~200mmHg

**Over-pressure Protection**

Resolution : 1mmHg

Alarm: Systolic, Diastolic and Mean

**Temperature**

Scale : C and F Selectable

Measurement Range : 27°C ~45C

Resolution : 0.1 or

Channel : 1 Channel

**SPO<sub>2</sub>**

Range 0~100%

Accuracy: 70% ~100 % ( +2%)

0%~69% : unspecified

**Pulse Rate**

Range: 20~254BPM

Accuracy: 3 BPM

**Safety:** Meet requirement of IEC60601-1

**Power requirements:**

Power Source : AC mains power AND Internal battery power

Power Requirements : AC 220V

Line Frequency : 50 Hz

Battery Power

The maximum number of installed battery: 1

Operating time: 180 minutes under the normal use and full charge

**Operation Environment**

Temperature: 10C to 30°C (50F to 86F)

Humidity: 15% to 70%, non-condensing

**07.01.02.28 Mercury BP/sphygmomanometer**

For detail Specifications refer Item No. **6.03.01.02** under the category **Life Supporting and Monitoring device**

**07.01.02.29 Aneroid sphygmomanometer**

For detail Specifications refer Item No. **6.03.01.03** under the category **Life Supporting and Monitoring device**

**07.01.02.30 Defibrillator, basic**

For detail Specifications refer Item No. **6.04.01.01** under the category **Life Supporting and Monitoring device** in sub category Treatment Equipment

**07.01.02.31 Defibrillator, monitor**

For detail Specifications refer Item No. **6.04.01.02** under the category **Life Supporting and Monitoring device** in sub category Treatment Equipment

**07.01.02.32 Automatic external Defibrillator**

For detail Specifications refer Item No. **6.04.01.03** under the category **Life Supporting and Monitoring device** in sub category Treatment Equipment

**07.01.02.33 Electrocardiography/digital**

For detail Specifications refer Item No. **09.05.01.03** under the category **OPD** in sub category of Cardiology examination instruments

**07.01.02.34 Electrocardiography/6 channel**

For detail Specifications refer Item No. **09.05.01.04** under the category **OPD** in sub category of Cardiology examination instruments

**07.01.02.35 Sphygmomanometer, infant**

For detail Specifications refer Item No. **09.07.01.02** under the category **OPD** in sub category of Paediatrics examination instruments.



**07.01.02.36 Pediatrics Stethoscope**

**General Description:** Stethoscope, foetal, Pinard.

**Technical Specifications:**

Foetal heart stethoscope, model Pinard.

Monaural.

Made of unbreakable plastic or aluminium.

Earpiece, diameter approx 5 cm.

Length, approx 15 cm.

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) foetal stethoscope in a plastic bag. with manufacturer's instruction for use (when applicable).

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 0.040 kg

- estimated volume: 0.480 cdm

**Instructions for use:**

Diagnosis of foetal heart sounds as part of antenatal care services.

**07.01.02.37 Digital Thermometer**

For detail Specifications refer Item No. **09.07.01.05** under the category **OPD** in sub category of Paediatrics examination instruments.

**07.01.02.38 Thermometer**

For detail Specifications refer Item No. **09.07.01.06** under the category **OPD** in sub category of Paediatrics examination instruments.

**07.01.02.39 ECG**

For detail Specifications refer Item No. **12.01.01.01 ECG recorder, 3-channel, trolley** under the category Clinical Physiology.

**07.01.02.40 ECG recorder, 6-channel,trolley**

For detail Specifications refer Item No. **12.01.01.02 ECG recorder, 6-channel, trolley** under the category Clinical Physiology.

**07.01.02.41 ECG recorder, 12-channel,trolley**

For detail Specifications refer Item No. **12.01.01.03 ECG recorder, 12-channel, trolley** under the category Clinical Physiology.

**07.01.02.42 Ventilators**

For detail Specifications refer Item No. **12.03.04.01 Mechanical Patient Ventilator for adult** under the category of Clinical Physiology.

**07.01.02.43 Electrical Patient Ventilator**

For detail Specifications refer Item No. **12.03.04.02** under the category of Clinical Physiology and sub category of Ventilators.

**07.01.02.44 Microprocessor Controlled Ventilator, infant**

For detail Specifications refer Item No. **12.03.04.03 PEDIATRIC VENTILATOR** under the category of Clinical Physiology and sub category of Ventilators.

**07.01.02.45 Ventilator, infants and premature newborn babies**

For detail Specifications refer Item No. **12.03.04.04 PEDIATRIC VENTILATOR** under the category of Clinical Physiology and sub category of Ventilators.

**07.01.02.46 Patient Monitors, vital sign**

For detail Specifications refer Item No. **07.02.01.02** under the category of **Surgical and ICU Instruments** and sub category of **ICU, NICU, CCU Equipment**.

**07.01.02.47 Central monitor**

For detail Specifications refer Item No. **07.02.01.05** under the category of **Surgical and ICU Instruments** and sub category of **ICU, NICU, CCU Equipment**.

**07.01.02.48 Laryngoscope, set**

For detail Specifications refer Item No. **07.02.02.09** under the category of **Surgical and ICU Instruments** and sub category of **ICU, NICU, CCU Equipment**.

07.01.03           Electrosurgery cutting and coagulation unit

**07.01.03.01 Electrosurgical cutting and coagulation unit, 300W, mobile**

**General Description:** Electrosurgical unit, with accessories

**Technical Specifications:**

Electro surgical coagulation unit, for general surgery

Microprocessor controlled generator provides mono-polar and bi-polar output

Output frequency: approx 400 kHz

Max output power, mono-polar: up to 80 W (cutting),

Max output power, bi-polar: up to 45 W (coagulation)

Modes: cutting (pure, blend and haemostasis) and coagulating (soft, force, spray and bi-polar)

Double function foot switch (mono and bi-polar), with yellow pedal cutting and blue pedal coagulation

Hand switch mode when button-activated probes are connected

Return circuit sensing monitors and deactivates generator in case patient plate fails

Front panel allows control of: power cutting, power coagulation, on/off

Display reports: output power, system errors and electrode failure

Power requirements: 220 V  $\pm$  15, 50 Hz

**Supplied with:**

1 x Foot switch, two pedals, yellow and blue, with connecting cable

2 x Patient plate, reusable, with 3m connecting cable (adult & child)

2 x Mono-polar electrode handle, reusable, foot switch controlled, with connecting cable

2 x Mono-polar electrode handle, reusable, finger switch controlled, with connecting cable

1 x Set different mono-polar reusable electrodes (needle, blade, ball and loop)

2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (short, straight, tip-angled)

2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (long, straight, tip-angled)

Clear instructions for use, diagrams for assembly and list of accessories / parts in English language.

**Supplied accessories:**

1 x Sturdy trolley on 4 antistatic bal-bearing swivel castors, 2 with breaks

Trolley fit with one drawer and storage for foot pedal/switch

**07.01.03.02 Electro surgery cutting and coagulation unit, 200W, mobile**

**General Description:** Electrosurgical unit, with accessories

**Technical Specifications:**

Electro surgical coagulation unit, for general surgery

Microprocessor controlled generator provides mono-polar and bi-polar output

Output frequency: approx 400 kHz

Max output power, mono-polar: up to 200 W (cutting), up to 100 W (coagulation)

Max output power, bi-polar: up to 45 W (coagulation)

Modes: cutting (pure, blend and haemostasis) and coagulating (soft, force, spray and bi-polar)

Double function foot switch (mono and bi-polar), with yellow pedal cutting and blue pedal coagulation

Hand switch mode when button-activated probes are connected

Return circuit sensing monitors and deactivates generator in case patient plate fails

Front panel allows control of: power cutting, power coagulation, on/off

Display reports: output power, system errors and electrode failure

Power requirements: 220 V / 50 Hz

Power consumption, approx: 300 W

**Supplied with part:**

- 1 x Foot switch, two pedals, yellow and bleu, with connecting cable
- 2 x Patient plate, reusable, with 3m connecting cable (adult & child)
- 2 x Mono-polar electrode handle, reusable, foot switch controlled, with connecting cable
- 2 x Mono-polar electrode handle, reusable, finger switch controlled, with connecting cable
- 1 x Set different mono-polar reusable electrodes (needle, blade, ball and loop)
- 2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (short, straight, tip-angled)
- 2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (long, straight, tip-angled)
- Clear instructions for use / diagrams for assembly in English
- list of accessories / parts.

**Supplied accesories:**

- 1 x Sturdy trolley on 4 antistatic bal-bearing swivel castors, 2 with breaks
- Trolley fit with one drawer and storage for foot pedal/switch

**07.01.03.03 Electrosurgical cutting and coagulation unit, 300W, mobile**

**General Description:** Electrosurgical unit, with accessories

**Technical Specifications:**

Electro surgical coagulation unit, for general surgery

Microprocessor controlled generator provides mono-polar and bi-polar output

Output frequency: approx 400 kHz

Max output power, mono-polar: up to 300 W (cutting), up to 200 W (coagulation)

Max output power, bi-polar: up to 45 W (coagulation)

Modes: cutting (pure, blend and haemostasis) and coagulating (soft, force, spray and bi-polar)

Double function foot switch (mono and bi-polar), with yellow pedal cutting and blue pedal coagulation

Hand switch mode when button-activated probes are connected

Return circuit sensing monitors and deactivates generator in case patient plate fails

Front panel allows control of: power cutting, power coagulation, on/off

Display reports: output power, system errors and electrode failure

Power requirements: 220 V / 50 Hz

Power consumption, approx: 300 W/ describe

**Supplied with:**

- 1 x Foot switch, two pedals, yellow and bleu, with connecting cable
- 2 x Patient plate, reusable, with 3m connecting cable (adult & child)
- 2 x Mono-polar electrode handle, reusable, foot switch controlled, with connecting cable
- 2 x Mono-polar electrode handle, reusable, finger switch controlled, with connecting cable
- 1 x Set different mono-polar reusable electrodes (needle, blade, ball and loop)
- 2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (short, straight, tip-angled)
- 2 x Bi-polar forceps, reusable, foot switch controlled, with connecting cable (long, straight, tip-angled)
- Clear instructions for use / diagrams for assembly in 3 languages English
- list of accessories / parts.

**Supplied with part:**

- 1 x Sturdy trolley on 4 antistatic bal-bearing swivel castors, 2 with breaks
- Trolley fit with one drawer and storage for foot pedal/switch

**07.01.03.04 Argon gas electrosurgery unit, 300 watt, mobile Gas Flow Range**

StandarMode: 0.5 – 12 standard litre/minute  $\pm 15\%$  full scale

Low flow Mode: 0.5 – 4 standard liter/minute  $\pm 15\%$  full scale

Gas Filtration System: 0.1 micron internal filter, 1.2 micron external filter

**Over pressure Monitor:**

- Audio and Visual alarm accessible to user selectable set point

- Active in Low Flow Mode

Power Source: 220 V  $\pm$ 15%, 50 Hz.

**Technical Specification:**

Portable argon gas delivery system, including over pressure monitor and one gas regulator electrosurgical generator and argon gas tanks separately ---- 1 each

Microcontroller based isolated electrosurgical generator designed for all general surgical procedures, unit should include Valleylab autoranging REM and instant response system --- 1 each

Single use argon gas hand set for delivery of standard or argon enhance electrosurgery including single use holster and retractable 2.5 blade electrode. Requires supply with adopter suitable to argon enhanced electrosurgical unit ----- 10/case

Argon gas hand set ---- 1 each

Argon gas regulator for second argon tank hook-up ---- 1 each

Argon gas tank hook-up G-size for surgical unit --- 1 each

Base cart ---- 1 each

Sterile single use argon gas electrode

7.6 cm flexible coagulation only electrode ----- 10/case

15 cm flexible coagulation only electrode ----- 10/case

28 cm flexible coagulation only electrode ----- 10/case

28 cm, 5 mm laparoscopic extender with blade electrode ---- 10/case

28 cm, 5 mm laparoscopic extender with modified flat L electrode ---- 10/case

28 cm, 5mm laparoscopic extender with tungsten sharp needle electrode ---- 10/case

28 cm, 5 mm laparoscopic extender with tungsten blunt needle electrode ----- 10/case

2.5 cm tungsten sharp needle electrode ----- 15/case

2.5 cm tungsten blunt needle electrode ----- 15/case

07.01.04 OR lights

**07.01.04.01 Headlight, fiber light**

**General Description:** Fiber-optic headlight system

**Technical Specifications:**

Light Source: 150 W

Mounted on stable 5 castor mobile stand

With built in back-up bulb

Dimensions, unit: 0.30 x 0.40 x 0.20 m

Dimensions, stand: diameter 0.50, height 70 m

Power requirements: 220 V / 50 Hz

Power consumption: 250 W/ describe

Optical system concentrating and focusing bright white light

Shadow free beam

Light transmission with coaxial fiber optic cable

Fixed light spot 80 mm at 0.4 m and 100 mm at 0.5 m of distance

Variable light spot: 10 to 80mm

Headlight adjustment from side to side and from straight down and upward position

Removable autoclavable headlight repositioning joystick

**Material :**

Heavy duty plastic and steel

**Packaging and labelling :**

Primary packaging: Unit of use

One (1) head-light system with stand in boxes, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer general requirements

**Accessories/Spare parts/Consumables:**

Light source bulb

Headlight bulb

Fiber optic cable

**Weight/Volume/Dimensions :**

- estimated weight: 5kg
- estimated volume: 30 cdm

**Instructions for use :**

Headlight system to be used during for different procedures at in- and outpatient department of a hospital. For example ENT examinations.

**07.01.04.02 Light, examination**

**General Description:** Light, examination, mobile, with accessories.

**Technical Specifications:**

Mobile examination light on heavy sturdy stand, height approx 1.60 m

On 5 (4) antistatic bal-bearing swivel castors

Spring loaded articulating arm

Arm with on/off switch and incorporated electronic transformer

Single lamp with halogen bulb: 12V / 20W

Maximum illumination approx: 20.000 lux (at 40 cm)

Colour temperature, approx: 4000 K

Reflector adjustable for positioning

Power supply: 220 V $\pm$  10%, 50 Hz

Power consumption: approx: 25 W/ describe

**Supplied with parts:**

1 x Spare halogen bulb

1 x Spare fuse

Clear instructions for use / diagrams for assembly in English

list of accessories / parts.

**07.01.04.03 Operating light, mobile, with battery**

**General Description:** Light, operating theater, mobile, with accessories.

**Technical Specifications:**

Mobile operating light on heavy sturdy stand, height approx 1.60 m

On 4 antistatic bal-bearing swivel castors, 2 with breaks

Spring balanced articulating arm, length approx. 1.00 m

Low centre of gravity for optimal stability and reach

Maximum height setting, approx: 2.30 m

Diameter copula, approx: 0.45 m

Horizontal turning, approx: 100 degrees

Single copula with halogen bulbs: 4 x 24V / 70W or 5 x 24V / 50W

Maximum illumination approx: 50.000 lux (at 1.00 m)

Colour temperature, approx: 4000 K

Field of view diameter, approx: 0.30 m (at 1.00 m), with focus control

Transformer, battery and charger integrated in base

With battery status indicator

Automatic switch from mains to batteries in case of power failure

Removable autoclavable handle

Power supply: 220 V $\pm$ 10%, 50 Hz and internal re-chargeable battery (autonomy 3 hours, automatic recharge)

Power consumption, approx: 350 W/ describe

**Supplied parts:**

1 x Set of spare halogen bulbs (5 or 6 as per copula)

1 x Spare handle

1 x Set of spare fuses

Clear instructions for use / diagrams for assembly in English

list of accessories / parts.

#### **07.01.04.04 Operating light, 1 large copula, ceiling**

**General Description:** Light, operating theatre, ceiling, with accessories.

**Technical Specifications:**

Operating light, ceiling mount, one large copula

Spring balanced articulating arm, two sections approx 0.80 m + 1.00 m

Minimum air resistance

Vertical adjustment, approx 1.00m

Focusable distance, approx 0.70 to 1.40 m

Diameter copula, approx 0.80 m

Horizontal turning, approx 100 degrees

Single copula with halogen bulbs: 5 x 24V / 70W or 6 x 24V / 50W

Maximum illumination, approx : 100.000 lux (at 1.00 m)

Colour temperature, approx: 4000 K

Field of view diameter, approx: 0.40 m (at 1.00 m), with focus control

Removable autoclavable handle

Power supply: 220 V  $\pm$  15, 50 Hz, with integrated transformer

Power consumption, approx: 400 W

**Supplied with parts:**

1 x Ceiling anchoring ring, extension and fixation material

1 x Integrated transformer, 220/24V

1 x Set of spare halogen bulbs (5 or 6 as per copula)

1 x Spare handle

1 x Set of spare fuses

Clear instructions for use / diagrams for assembly in English, list of accessories / parts.

#### **07.01.04.05 Operating light, 2 large copula, ceiling**

**General Description:** Light, operating theatre, ceiling, with accessories.

**Technical Specifications:**

Operating light, ceiling mount, two large copula

Spring balanced articulating arm, two sections approx 0.80 m + 1.00 m

Minimum air resistance

Vertical adjustment, approx 1.00m

Focusable distance, approx 0.70 to 1.40 m

Diameter copula, approx 0.80 m

Horizontal turning, approx 100 degrees

Single copula with halogen bulbs: 5 x 24V / 70W or 6 x 24V / 50W

Maximum illumination, approx : 100.000 lux (at 1.00 m)

Colour temperature, approx: 4000 K

Field of view diameter, approx: 0.40 m (at 1.00 m), with focus control

Removable autoclavable handle

Power supply: 220 V  $\pm$  15, 50 Hz, with integrated transformer

Power consumption, approx: 400 W/

**Supplied with parts:**

1 x Ceiling anchoring ring, extension and fixation material

1 x Integrated transformer, 220/24V

1 x Set of spare halogen bulbs (5 or 6 as per copula)

1 x Spare handle

1 x Set of spare fuses

Clear instructions for use / diagrams for assembly in English, list of accessories / parts.

#### **07.01.04.06 Operating light, 2 large copulas, with video camera**

**General Description:** Operating light, large copula, including video camera mounted in the main lamp Special streamlined operating light system of two large copula light, specially designed, for cardio-vascular surgery, deep trauma and multiple-trauma surgery, combined with video camera mounted in the main lamp.

**Technical specification:**

minimum air resistance

complete with video camera mounted in the large copula lamp, to be supplied with separate mobile monitor

field size: 20 - 35 cm

focusable distance of 70 - 140 cm

unlimited angle of rotation

halogen lights with special low temperature at 130.000 lux for the main light and 100.000 for the satellite light at a color temperature of 4.300 K.

power consumption: 300 and 200 Watt for the per surgical lights

Connecting voltage: 24 V.AC/ describe

To supply with step-down transformer, automatic switch-over relay and ceiling anchoring ring.

#### **07.01.05 OR Microscopes**

##### **07.01.05.01 Operating microscope, basic**

**General Description:** Microscope, operating, basic, on mobile

**Technical Specifications:**

Mobile base pillar stand with swivel arm

balance arm mechanism

Wide field and high-resolution microscope with built-in three-step magnification changer approximately: 4 x, 7 x and 12 x

Cold light coaxial illumination with 150 W halogen lamp and built-in filters

With cobalt blue filter and green filter

Standard: straight binocular or 45° inclined tube with converging optics

Objectives: f = 175 mm

Dimensions WxDxH approx 0.5 x 0.6 x 1.2m

**Material made of:**

Stainless Steel and rubber materials

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) unit in crate, packed with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Spare halogen lamp 10x

**Weight/Volume/Dimensions :**

- estimated weight: 75 kg

- estimated volume: 700 cdm

**Instructions for use :**

Basic mobile operating microscope for ophthalmic and diagnostic work in operating theatre environment

##### **07.01.05.02 Operating microscope, zoom, for microsurgery, mobile**

**General Description:**

Microscope, stereoscopic, zoom

**Technical Specifications:**

Microscope, stereoscopic, low magnification zooms, with built-in halogen illumination.

**Body:**

Microscope mounted on stand with 30 degree rotatable inclined binocular tube

Height adjustable binocular head, maximal clearance: 92mm

Coarse (height adjustment) and fine focusing.

**Optics:**

Range of magnification, zoom: 8 to 32x (factor 1:4)  
Object field coverage: 25 to 6.3mm  
Eyepieces: with inter-pupillary distance- and dioptre adjustment  
Anti-fungus treated.

**Illumination:**

Incident light: Halogen bulb 12V/20W  
Transillumination: Halogen bulb 12V/10W  
Switch between incident light, transillumination and mixed light.  
Light intensity adjustable.

**Power Supply:** 220V  $\pm$  10%, 50 Hz, transformer built in base  
Device is compliant with CE-mark, international standard for electrical safety.

**Supplied accessories:**

1 x Spare halogen bulb 12V/10W  
1 x Spare halogen bulb 12V/20W  
1 x Power cord.  
1 x Dust cover.  
1 x User's manual in English.  
1 x Transport receptacle with handle, foamed insert and film cover.

**07.01.05.03 Microscope, operating, micro, with video, on mobile stand**

**Technical features:**

Special streamlined operating light system of one large copula light and one satellite, specially designed, for cardio-vascular surgery, deep trauma and multiple-trauma surgery, combined with video camera mounted in the main lamp.

**Technical Specifications**

minimum air resistance  
complete with video camera mounted in the large copula lamp, to be supplied with separate mobile monitor  
field size: 20 - 35 cm  
focusable distance of 70 - 140 cm  
unlimited angle of rotation  
halogen lights with special low temperature at 130.000 lux for the main light and 100.000 for the satellite light at a color temperature of 4.300 K.  
power consumption: 300 and 200 Watt for the per surgical lights  
connecting voltage: 24 V.AC/ describe  
to supply with step-down transformer, automatic switch-over relay and ceiling anchoring ring.

**07.01.06 Surgical suction machine**

**07.01.06.01 Suction machine, FOOT OPERATED**

**General Description:** Pump, suction, foot-operated.

**Technical Specifications:**

Pump, suction, hand or foot-operated.  
High performance suction pump for pharyngeal and tracheal suction.  
Double piston provides rapid build-up of vacuum and generates stable flow.  
Can be foot or hand operated.  
Seesaw movement of the pedal generates suction every time one side is depressed.  
Pump can be disassembled entirely, is easy to clean, disinfect and sterilize. (All parts can be autoclaved at 121°C).  
All parts are manufactured from high-strength, durable material, that does not require specific maintenance or storage conditions.  
Knock-down construction.  
Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.  
Pump chassis is complete with valve diaphragms, manifold pipe, bottom cover, cylinder with draw link and valve diaphragm,



piston ring, O-ring, pedal with retaining springs.

Vacuum, maximum: approx. 80 kPa (-800 mbar / -600 mmHg).

Airflow: approx. 30 - 40 L/min (at two pumping strokes per second).

Capacity of collection container: approx. 1000 ml

Volume : 3-5 liters with two bottles( optional)

Aspirating tube: 10 mm (internal diameter), 135 cm (length).

Supplied with angled connector and combination suction tip.

Operating temperature range: -20 °C to +50 °C.

**Material/accessories:**

Transparent plastic: polycarbonate.

Bottom cover: thermoplastic rubber.

Manifold pipe: polypropylene.

Gasket, O-rings and valve diaphragm: silicone rubber.

Piston rings: teflon.

Foot pedal: aluminium.

Other metal parts: nickel plated brass and stainless steel.

Suction tip: acetal.

Aspirating tube: silicone rubber.

Approx. pump overall dimensions (without aspirating tube):

206 (L) x 96 (W) x 146 (H) mm.

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) suction pump in a plastic bag + box with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General Requirements

**Accessories/spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 1 kg

- estimated volume: 5.040 cdm

- estimated dimensions: Box: 14 x 23.5 x 15.5 cm

**Instructions for use:**

Basic hospital equipment for health structures and emergency situations in wards, emergency room, operating theater, delivery room, intensive care unit, ambulance, etc.

High performance suction pump, hand or foot-operated for pharyngeal and tracheal suction.

Supplied with instruction manual and diagrams covering the function of the pump, how to use it, dismantle and assemble it, to clean, disinfect and sterilize it, its maintenance and spare-parts.

The suction pump should be operated only by a person who has received adequate training in pharyngeal and tracheal suction technique.

**Recommendation:**

Use suction tubes (sterile and disposable) for pharyngeal and tracheal suction.

These suction tubes fit with the aspirating tube of the suction pump with combination suction tip (narrow nozzle).

**Most commonly used sizes are:**

0374010 - Tube, suction, CH08, L50 cm, sterile, disposable.

0374015 - Tube, suction, CH10, L50 cm, sterile, disposable.

0374025 - Tube, suction, CH14, L50 cm, sterile, disposable.

**Important:**

The aspirating tube of the suction pump, hand or foot-operated, must be supplied with a combination suction tip.

This combination suction tip is made of two nozzles.

The narrow nozzle can be used directly or can be connected to a suction cannula (see suction tubes, sterile, disposable).

If large amounts of liquids or solid particles have to be aspirated, e.g. vomit, the narrow nozzle can easily be removed and the large nozzle (with an aperture of 10 mm) can be used directly.

**Safety procedure:**

The suction pump and the aspirating tube must be cleaned and disinfected after each use.

All parts can be sterilized in a steam sterilizer.

**Important:**

After dismantling and cleaning, the pump must be reassembled and tested to make sure that it works correctly.

In view of its use, the item is considered an "emergency resuscitation item".

This means that it must always be readily available and in a good working condition.

It is recommended to closely follow manufacturer's instruction manual.

**07.01.06.02 Suction machine, ELEC, SMALL**

Electro-suction unit on 4 anti-static castors,

**Technical features**

Silent diaphragm-aggregate with 35 liter/min. suction capacity

two graduated 3 liter secretion glasses each with sterilizable suction lid and overflow safety device.

Bacterium filter with exchangeable filter plates

Easy-to-control vacuum meter

Turning knob for vacuum adjustment

On/off switch for foot operation

Rounded and easy-to-clean Polyamide casing. Aluminum handle, anodized.

**Technical Data:**

Dimensions: H x W x D (820 x 470 x 360) mm

Weight 15 kgs

Power requirements: 220V/50Hz

Power consumption: 700 W/ describe

Suction capacity: 35 liter/min.

Max. Vacuum: - 0.85 bar, (630 mm mercury)

Suction lid: sterilizable, self-sealed

Suction tubing: 2 meter., anti-static, 0 7 mm, sterilizable.

**07.01.06.03 Surgical suction machine, ELEC, 1 Bottle****General Description:**

Pump, suction, surgical, 1 bottle, with accessories

**Technical Specifications:**

Electrical suction pump for use during medical interventions such as resuscitation, minor surgery

With graduated plastic jar autoclavable, capacity 1 L

Jar is covered and fitted with overflow valve and antibacterial filter

Suction flow maximum, approx: 17 L/min

Vacuum adjustable from 0 to approx: - 800 mmHg

Vacuum control button and on/off-switch

Light anti-shock case easy to carry and easy to clean

Silent operation

Power requirements: 220 V / 50 Hz

Power consumption, approx: 85 W/ describe

**Supplied with parts:**

2 x Set of silicone tube (diam: 8 x 14 mm – length approx: 1.5 m) with bi-conical connector

1 x Spare jar of 1 L with cover, gasket and overflow valve

1 x Set of spare antibacterial filters

1 x Set of spare fuses

Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.

**07.01.06.04 Surgical suction machine, ELEC, 2 Bottle****General Description:**

Pump, suction, surgical, 2 bottles, with accessories

**Technical Specifications:**

Electrical suction pump for use during surgical interventions

With 2 graduated plastic jars autoclavable, each with a capacity of 2 L

On 4 antistatic bal-bearing swivel castors, 2 with breaks

Jars are covered and fitted with overflow valves and antibacterial filters

Suction flow maximum, approx: 60 L/min

Vacuum adjustable from 0 to approx: - 900 mmHg

Control panel fit with analogue vacuum meter, vacuum control button and on/off-switch

Foot switch activates actual suction

Provided with handle for easy moving

Rounded design and easy-to-clean casing

Silent operation

Power requirements: 220 V / 50 Hz

Power consumption, approx: 500 W/ describe

**Supplied with parts:**

3 x Set of silicone tubes (diam: 8 x 14 mm– length approx: 2.5 m) and bi-conical connectors

1 x Spare jar of 2 L with cover, gasket and overflow valve

1 x Set of spare antibacterial filters

1 x Set of spare fuses

Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.

**Surgical suction machine, CENTRAL, VAC, 1 BOTT**

Suction unit, electric, with 1 bottle of 1000 cc, for ward use i.e. secretion suction.

**Technical features**

power requirement 220V/50 Hz

power consumption: around 500W/ describe

**07.01.06.06 Surgical suction machine, CENTRAL, VAC, 2 Bottle**

**Description:** Suction surgical machine, mobile, with 2 jars (each 2 Liter capacity)

**Technical Specifications****Features:**

Mobile on 4 castors

High suction

Provided with over flow safety valve

Control panel with on/off switch, lamp indicator pressure /vacuum gauge .etc.

Pump (compressor): Rotary vane

**Collection jar:**

Capacity 2 Litre

Two jars

Autoclavable

Vacuum range (adjustable): 0 to 635 mmHg.

Flow rate: not less than 30 L./ min

Pressure range: 84 l (kPa) kilopascal

To be supplied complete with all its standard accessories (eg. hoses, tubes, suction handle. .etc.)

Power supply:

220 ± 10% VAC, 50 Hz.

#### 07.01.07 Other OR equipment

##### **07.01.07.01 syringe pump**

**General Description:** F pump, with accessories

**Technical Specifications:**

Volume controlled portable syringe pump for precise administration of fluids

Unit can be mounted on standard bed/wall rail or mobile pole/stand

Suitable for syringes: 10, 20, 30 and 50 ml

Continuous delivery, linear piston driven

Programmable, user entry: syringe size, injection volume, time or flow rate – calculates automatically

Flow rate, adjustable from: 0.1 ml/h (10 ml syringe) to 999.9 ml/h (50 ml syringe), in steps of 0.1 ml/h

Accuracy, approx:  $\pm 2\%$  of volume delivered

Free flow protection, occlusion detection

Pressure limit, approx: 10 kPa

Open system, compatible with all standard brands of syringes

Bright display shows: start/stop, volume limit, flow rate and volume delivered

Reporting of low/high flow, occlusion, syringe position, end-of-injection and built-in battery status

Audio visual alarm with silencing feature

Autonomy of built-in battery approx 8 hrs, automatic recharge when connected to mains

Automatic switch from mains to battery in case of power failure

Auto-off when not in use

Robust design allows use in demanding environments

Dimensions, describe

Power requirements: 220 V / 50 Hz and/or internal re-chargeable battery

Power consumption, approx: 50 W/ describe

**Material:** Aluminium reinforced plastic housing

**Supplied with parts:**

1 x Mounting bracket for fixation to standard bed/wall rail or mobile pole/stand

1 x Start-up set of 10 syringes with tubing

1 x Spare battery pack

1 x Set of spare fuses

Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.

##### **07.01.07.02 Infusion pump**

**General Description:** Infusion pump, with accessories

**Technical Specifications:**

Volume controlled portable infusion pump

Unit can be mounted on standard bed/wall rail or mobile pole/stand

Suitable for all intravenous infusions of fluids

Continuous delivery, linear peristaltic driven

Programmable, user entry: infusion volume, time or flow rate – calculates automatically

Flow rate, adjustable: 1 to 999 ml/h in steps of 1 ml/h

Accuracy, approx:  $\pm 5\%$  of volume delivered

Free flow protection, occlusion detection, air-in-line detection

Open system, compatible with all standard brands of giving sets

Bright display shows: start/stop, volume limit, flow rate and volume delivered

Reporting of low/high flow, occlusion, open door, end-of-infusion and built-in battery status

Audio visual alarm with silencing feature

Autonomy of built-in battery approx 8 hrs, automatic recharge when connected to mains

Automatic switch from mains to battery in case of power failure

Auto-off when not in use

Robust design allow use in demanding environments

Dimensions, approx: 0.15 x 0.15 x 0.25 m (w x d x h)

Power requirements: 220 V / 50 Hz and/or internal re-chargeable battery

Power consumption, approx: 50 W/ describe

**Material:** Aluminium reinforced plastic housing

**Supplied with parts:**

1 x Start-up set of 10 giving sets

1 x Spare battery pack

1 x Mounting bracket for fixation to standard bed/wall rail or mobile pole/stand

1 x Set of spare fuses

Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.

### **07.01.07.03 Patient warmer**

**General Description:** Warmer system, radiant, infant, with accessories

**Technical Specifications:**

Mobile freestanding fixed-height overhead radiant warmer

Can be used in combination with a newborn and infant bed

Sturdy and stable construction on 4 antistatic bal-bearing swivel castors, 2 with breaks

Side handles facilitate positioning

Hood integrates heating element and light

Vertical column integrates controls and displays

Overhead examination light: 2 x 40 W halogen spot, with dimming function

Heating element: emitter with parabolic reflector protected by metal grid

Preset skin temperature, range approx: 34 to 38 C, increments 0.1 C

Temperature preset drives heater output in servo mode

Easy switch between servo and manual mode

Skin temperature monitoring via sensor, range: 30 to 42 C (sensitivity 0.2 C)

Sensor thermistor based and factory calibrated

Preset heater output: 0 to 100 %, in 10 % increments

Integrated timer, preset: 1 to 59 min with up/down count feature, increments 1 min

Auto-off at time elapse

Audiovisual alarm on skin temperature (+/- 0.1 C of preset value) and time (elapse)

Large LED display shows: Heater output preset in Watt Mode (servo or manual), Preset skin temperature, Actual skin temperature, Air temperature & Elapsed or remaining time

Display reports system errors such: sensor malfunction, timer failure, low/high temperature

Dimensions, approx: 0.90 x 0.80 x 1.90 m (l x w x h)

Power requirement: 220 V / 50 Hz

Power consumption, approx: 800 W / describe

**Material made of:** Plastic reinforced steel

**Supplied with parts:**

1 x Reusable skin temperature probe, incl. connection cable and plug

2 x Spare reusable skin temperature probes, incl. connection cable and plug

1 x Spare heating element

1 x Set of spare fuses

Supplied with clear instructions / diagrams for use and assembly in English language, and with a list of accessories / parts.

### **07.01.07.04 Phacoemulsification set with accessories**

**Technical Specifications**

Combined unit for phaco-emulsification, anterior chamber and pars plana vitrectomy in ophthalmology

**Overall System Features:**

Pneumo- electromagnetic phaco module:

Piezo-based ultrasonic handpiece, frequency 28 kHz

Constant, linear and pulsed phaco

Display for relative and absolute ultrasonic time and dose

To be supplied with:

Handpiece  
Titanium tips  
Pars-plana titanium tips  
Pneumatic vitrectome 20 G  
Electromagnetic vitrectome  
Phaco-keratome

**Aspiration/irrigation unit:**

Constant anterior chamber volume by means of micro-processor controlled venting-pressure equalization system  
Maximum vacuum 500 mmHg  
Linear regulation of vacuum or ultrasonic power possible  
Re-usable silicone hose system  
To be supplied with:  
Foot switch  
Handles  
Irrigation cannula  
Special trolley for both units  
Motor driven infusion stand.  
Power requirements: 220 V  $\pm$  10% / 50 Hz  
Power consumption: 800 W / describe

**07.01.07.05 Heart-lung machine**

**Technical Specifications**

20 x bubble oxygenator, adult  
20 x cardiectomy reservoirs  
2 x holder bubble oxygenator  
2 x holder cardiectomy reservoirs  
10 x diffusion membrane oxygenator, infant  
10 x venous soft bag reservoirs  
1 x holder for membrane oxygenator  
1 x holder for venous soft bag reservoirs  
20 x heart lung tubing sets, adult  
20 x heart lung tubing sets, pediatric  
10 x heart lung tubing sets, infant  
20 x gas filters

**5-PUMP CONSOLE**

The unit should have 5-pump console compactly arranged with separate power supply and control modules.

Should have easy access connectors for interchanging the pump.

Each individual roller pump should be capable of running independently on 180-270 V/50- 60 Hz supply.

Should have a spill proof base.

The unit should be supplied with a **Battery backup** for all five pumps, all safety systems and accessories for a minimum of 60 minutes. Switch over from main power to battery backup should be automatic and immediate.

The battery unit should be built in to the pump base and it should be recharged automatically when the system is operating with main power supply.

Individual pump heads should have Harvey Roller pumps with facility for tubing to be used, adjustable from 1/4" to 5/8" through 3/8" and 1/2" including 1/16" for cardioplegia by easily changeable mechanism.

At least **two pumps should be able to deliver pulsatile flow**.

Individual pump heads should have digital display of the total infusion volume in litres and delivery time, the flow rates in LPM and in RPM

Each Pump should have easy mechanism for occlusion setting for different thickness of tubes available in the market, 1/32" to 3/32".

Should have unidirectional hand crank facility as a critical safety feature. Hand crank loading should be from top for faster access.

The Console should have a compact base mount for the entire pump heads together, with poles and handles.

Should have variable, changeable tubing holders in each pump head: 1/4", 3/8", 1/2", 5/8" and double 1/4".

Should have movable oxygenator holder.

Roller pump should have a self diagnostic circuit with provision to detect and display critical alarm conditions.

Should have a venous control module with single pole mast with electronic venous line occluder.

Should have a monitor mount with adjustable monitoring arm

Instrument tray positionable with long monitoring arm

Lightweight surface table; writing surface.

## **2. MONITORS**

**PRESSURE MONITOR:** Facility to monitor **one arterial line pressure and one cardioplegia line pressures (total 2)**; along with necessary pressure transducers, cables six ( $2 \times 3 = 6$ ) and domes (reusable), with accurate digital display and alarm facilities audio and visual.

**TIME MONITOR:** Facility for 4 time displays -- 2 for arterial and 2 for cardioplegia delivery. With stop, reset and start function.

**TEMPERATURE MONITOR:** 6 temperature displays for patient monitoring and for cardioplegia monitoring with digital display in Celsius with 6 necessary compatible temperature 6 probes and 6 additional probes ( $6 \times 2 = 12$  probes) with  $3 \times 2 = 6$  of them for nasal, rectal and esophageal use

## **3. AIR- OXYGEN BLENDER**

To work at 50-60 PSI for membrane oxygenator with water trap attached with necessary hoses and connections of minimum of 5 meters length and with triple flow glass flow meters.

## **4. SAFETY DEVICES**

Safety monitor should have optional capability for computer interface to retrieve perfusion data.

**ULTRASONIC AIR SENSOR:** Ultra sonic air sensor to detect bubbles to work equally well with crystalloid and blood; should be possible to fit anywhere in the circuit easily.

**LEVEL SENSOR SYSTEM:** Ultrasonic transducers to work well with crystalloid and blood with adhesive pads, with alarm settings.

## **5. ACCESSORIES**

LED lamp with flexible arm

**Stainless steel line clamps** for cardio pulmonary bypass **12** nos.

**Instrument tray with mounting arm**

**At least one thermal blanket.**

**On-line measurement of PH , PCO<sub>2</sub> & Hb for neonatal cardiac surgery (optional)**

## **8. POWER SUPPLY**

Power input to be 180-270VAC, 50-60 Hz,/440 V 3 Phase as appropriate fitted with special imported plug dedicated to the unit.

Resettable over current breaker shall be fitted for protection

Suitable Servo controlled Stabilizer/CVT (Optional)

UPS of suitable rating with voltage regulation and spike protection for 60 minutes back up.(Optional Accessory)

### **07.01.07.06 x-ray viewer, one field**

X-ray illuminator/viewer, single field

Size 40 x 40 x 12 cm

Housing of synthetic material

Metal back plate

Acryl front plate

4 TL x 15 W.

Power requirements 220V  $\pm$  10%, 50Hz

Power consumptions: around 100 W.

### **07.01.07.07 x-ray viewer, two field**

#### **Technical Specifications**

X-ray illuminator/viewer, double field

Size 80 x 40 x 12 cm

Housing of synthetic material

Metal back plate

Acryl front plate

4 TL x 15 W.  
Power requirements 220V  $\pm$ 10%, 50Hz  
Power consumptions: around 100 W.

#### **07.01.07.08 X-ray view, four field**

##### **Technical Specifications**

X-ray illuminator/viewer, four field  
Size 120 x 40 x 12 cm  
Housing of synthetic material  
Metal back plate  
Acryl front plate  
4 x 3 TL x 15 W.  
Power requirements 220 V  $\pm$ 10 %, 50Hz  
Power consumptions: around 200 W.

#### **07.01.07.09 Resuscitator, manual, adult and child**

Adult and child resuscitator

##### **Technical features:**

Complete with mask pliable thin walled construction for exceptional lung compliance sensitivity, for emergency patients. Providing limitless atmospheric air to which oxygen may be added to achieve concentrations up to 95%. Adult and child execution with storage case.

#### **07.01.07.10. Hemotherm, Sub-Zero**

**Description:-** Dual Reservoir Cooler/Heater, Precise blood temperature control without ice; blood temperature management control during cardiopulmonary by-pass and other related cardiovascular procedures.

##### **SPECIFICATIONS**

##### **Physical Dimensions:-**

22" W x 22" D x 32" H (55.9 cm wide x 55.9 cm deep x 81.3 cm high)

Floor space consumed 484 sq. in. (3.123 cm<sup>2</sup>)

Weight 198 lbs. (89.8 kg)

Cabinet construction 16 gauge steel

Warm air flow Bottom (downward) Circulating system

Reservoir capacity:-

Cool – 8 qts (7.6 L)

Heat – 6 qts (5.7 L)

Reservoir construction Plastic

##### **Flow rate:-**

13 L/min through self-sealing Hansen fittings

15 L/min with flow through Hansen fittings

Maximum pressure 13 PSI (0.914 kg/cm<sup>2</sup>) – heat exchanger connection 10 PSI (0.703 kg/cm<sup>2</sup>) – blanket connection

##### **Connections:-**

12.5 PSI – blanket connection quick disconnect fittings

1 set 1/2" Hansen fittings for heat exchanger

1 set 1/8" Hansen fittings for blanket

1 additional set 1/2" Hansen fittings included for tubing

##### **Electrical:-**

Electrical characteristic 230 V, 50/60 Hz, 10.9 A, 240 V, 50/60 Hz, 10.5 A

Outlets required 230 VAC units: 15 A, AC grounded with no plug,

**Power cord** 240 VAC units: 15 A, AC grounded with no plug,

power cord Current leakage Under 500  $\mu$ A (230/240 V)

Circuit breaker In power switch

##### **Safety**



Hi limit thermostat  $44^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$   
 Low limit thermostat  $2^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$   
 Operating instructions on unit

07.01.08 Major surgical sets

**General Technical data for Items No. 08.01 – 08.55**

**All metallic instrument should:**

Made of stainless steel which is comply to ISO 7153-1 : (1991) E  
 Autoclavable in a high steam and high temperature Sterilizers  
 Withstand corrosion and rust and comply with ISO 13402: 1995 (E)  
 not be easily brittle/breakable  
 not to be too stiff/ too hard  
 not be fast blunt  
 blades can be repairable  
 Resist moisture  
 All plastic parts, cables and other electronic parts of the instrument:  
 are not heat resistant; therefore they are:  
 Ethylene Oxide/gas sterilized

**07.01.08.01. Infant laparotomy set**

**Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Forceps sponge holding straight 18 cm	3
Clamp, towel, Backhaus, 9 cm	6
Scalpel handle No. 3	2
Scissors Metzenbaum, curved, 14 cm.	1
Scissors Metzenbaum, curved, 18 cm.	1
Scissors, standard, straight, bl/bl, 14.5 cm	1
Forceps dressing Adson, 12 cm	1
Forceps tissue, Adson, toothed, 12 cm	1
Forceps, dressing, Semkin, 12.5 cm	1
Forceps, dissecting, Semkin, 1x2 teeth, 12.5 cm	1
Forceps, intestinal, tissue, Babcock, 16 cm	2
Forceps, intestinal, tissue, Allis-Baby, 14 cm	4
Forceps, artery, Halsted-Mosquito, 12.5 cm, straight	6
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	6
Retractor, Farabeuf, small, 12 cm, set of 2	1
Retractor, Deaver, 19 mm width, 18 cm	2
Retractor, self-retaining, abdominal, Balfour-Baby, 90 mm opening	1
Spatula, abdominal, malleable, 17 mm, 20 cm	1
Probe with eye, 2 mm, 13 cm	1
Needle, ligature, Kronecker, left, 15 cm	1
Suction nozzle, Yankauer, 27 cm	1
Needle holder, Mayo-Hegar, 16 cm	1
Scissors, iris, straight, 12cm	1
Forceps, occlusion, Baby-Doyen, straight, 18 cm	2
Forceps, occlusion, Baby-Doyen, curved, 18 cm	2
Forceps, crushing, Rochester-Pean, large, 18 cm	2
Forceps, crushing, Rochester-Pean, small, 16 cm	2
Bowl, stainless steel, 15 cm, 600 ml	2
Gallipot, diam. 10 cm, S/S	2
Kidney dishes, stainless steel, 20 cm	2

**07.01.08.02 Plastic repair instrument set****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Gallipot, diam. 10 cm, S/S	2
Kidney dishes, stainless steel, 20 cm	1
Forceps, sponge holding, Foerster, 25 cm	4
Clamp, towel, Backhaus, 11 cm	6
Scalpel handle No. 3	2
Scissors, iris, straight, 12cm	1
Scissors, iris, curved, 12cm	1
Scissors, standard, bl/bl, 14.5 cm	1
Forceps, dressing, standard, straight, 14.5 cm	1
Forceps, tissue, standard, 1x2 teeth, straight, 14.5 cm	1
Forceps dressing Adson, 12 cm	1
Forceps tissue, Adson, toothed, 12 cm	1
Forceps, artery, Halsted-Mosquito, 12.5 cm, straight	6
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	6
Forceps, artery, Crile-Rankin, 16 cm, straight	4
Forceps, artery, Kocher, 16 cm, 1x2 teeth, straight	2
Forceps, tissue, Allis, 15 cm	6
Retractor, Weitlaner, 10.5 cm, 2x3 prongs sharp	1
Retractor, Farabeuf, double end, pair, baby, 12 cm	1
Retractor, Rollet ,delicate, 4 teeth, sharp, 13 cm	2
Retractor, Cushing, 10 mm width, 20 cm	2
Retractor, small, Senn-Mueller, 16 cm	2
Retractor, tracheal, 2 prongs, sharp, 16 cm	2
Retractor, hook, Gillies,	2
Probe with eye, 2 mm, 13 cm	1
Needle, ligature, Kronecker, left, 15 cm	1
Needle, ligature, Deschamps, left, blunt, medium, 20 cm	1
Needle, ligature, Deschamps, right, blunt, medium, 20 cm	1
Needle holder, Crile-Wood, 15 cm, delicate	2
Suction tube, Frazier, 6 Fr	1
Scissors, Brophy, straight, 14.5 cm	1
Scissors, dissecting, Reynolds, curved, sharp, 16 cm	1
Bowl, stainless steel, 15 cm, 600 ml	1
Gallipot, diam. 10 cm, S/S	2
Kidney dish, stainless steel, 20 cm	1

**07.01.08.03 Gallbladder & bile duct set****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Moynihan hysterectomy fcp, 23 cm.	2
Moynihan hysterectomy fcp, 24 cm.	2
Lahey kidney pedicle clamp fcp, 19 cm.	1
Gall duct forceps, Kantrowitz, 24 cm	1
Desjardins gall stone fcp, 23 cm.	1
Desjardins gall stone fcp, 23 cm.	1
Moynihan gall. stone probe, 34 cm.	1
Ochsner trocar. for gall bladder, 12 ch.	1
Bakes gall duct dilators	1

Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1
Bakes gall duct dilators	1

#### **07.01.08.04 Pancreatectomy & Splenectomy set**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Forceps, Kidney pedicle clamp, Guyon, 24 cm	2
Forceps, De Bakey, atraumatic jaws, 25 cm	2

#### **07.01.08.05 Pancreatoduodenectomy set (wipple procedure)**

##### **Technical Specifications**

##### **Pancreatectomy & Splenectomy set (in combination with Laparotomy set)**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Forceps, Kidney pedicle clamp, Guyon, 24 cm	2
Forceps, De Bakey, atraumatic jaws, 25 cm	2

##### **Set, surgical instruments, pancreatectomy and splenectomy**

Mayo scissors, straight, 23 cm	1
Mayo scissors, curved, 23 cm	1
Dressing forceps, standard, 20 cm	2
Tissue forceps, 1 x 2 teeth, 20 cm	2
Allis tissue forceps, 5 x 6 teeth, 19 cm	6
Babcock tissue forceps, 24 cm	3
Crile haemostatic forceps, curved, 14 cm	18
Rochester-Pean haemostatic forceps, curved, 20 cm	6
Mixter artery forceps, 19 cm	6
Mixter forceps, fine, 23 cm	3
Doyen intestinal forceps, straight, 23 cm	4
Wertheim-Cullen clamp, 21.5 cm	2
Atraumatic forceps De Bakey, 60 degrees curved, 25 cm	2
Harrington retractor, 62 x 127 mm, 32 cm	2
Mayo-Hegar needle holder, 24 cm, TC	1
Suction tube Yankauer, 27 cm	1
Sterilization container, alu, 46.5 x 28.0 x 13.5 cm	1
Wire mesh basket	1
Identification labels, red	2

#### **07.01.08.06 Gastrointestinal instrument set**

##### **Technical Specifications**

Set, surgical instruments, gastro-intestinal surgery	
Foerster sponge forceps, serrated, straight, 25 cm	1
Dissecting scissors, Mayo, curved, 17 cm	1
Dissecting scissors, Nelson-Metzenbaum, curved, 24 cm	1
Dissecting scissors, Nelson-Metzenbaum, curved, 18 cm	1
Dissecting scissors, Nelson-Metzenbaum, curved, 14 cm	1
Gillies forceps, 1 x 2 teeth, 15 cm	1
Mc. Indoe dissecting forceps, 15 cm	1
Judd Allis tissue forceps, 3 x 4 teeth, 20 cm	4

Babcock intestinal forceps, 15.5 cm	2
Halstead haemostatic forceps, curved, 12.5 cm	12
Halstead haemostatic forceps, straight, 12.5 cm	12
Crile haemostatic forceps, curved, 14 cm	12
Crile-Rankin haemostatic forceps, curved, 16 cm	4
Crile-Rankin haemostatic forceps, straight, 16 cm	4
Lahey gall duct forceps, 19 cm	1
Payr intestinal clamp, for children, 15 cm	2
Payr intestinal clamp, large pattern, 28 cm	2
Lane gastro intestinal twin clamp, curved, 30 cm	1
Lane gastro intestinal twin clamp, straight, 30 cm	1
Parker Kerr intestinal clamp, curved	1
Kocher intestinal forceps, straight, 21.5 cm	2
Doyen intestinal forceps, straight, 23 cm	2
Doyen intestinal forceps, curved, 23 cm	2
Mayer polypus forceps, with ratchet, straight, 20 cm	1
Syme aneurysm needle, curved laterally, 17 cm	1
Yankauer suction tube, 27 cm	1
Gallipot, stainless steel, 10 cm diameter	2
Bowl, stainless steel, 600 ml, 12 cm diameter	1
Kidney dish, stainless steel, 25 cm	2
Sterilization container, alu 46.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

#### **07.01.08.07 Abdominalperineal resection set**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Clamp, towel, Backhaus, 11 cm	4
Forceps, artery, Bengolea, 20 cm, curved	4
Forceps, artery, Crafoord, 24 cm, curved	2
Forceps, artery, Kelly, 14 cm, curved	10
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	6
Forceps, artery, Kocher, 14 cm, 1x2 teeth, curved	2
Forceps, artery, Kocher, 14 cm, 1x2 teeth, straight	2
Forceps, artery, Mixter, 23 cm, delicate	2
Forceps, dressing, standard, straight 14.5 cm	1
Forceps, dressing, standard, straight 25 cm	1
Forceps, intestinal, Doyen, 23 cm, curved	2
Forceps, peritoneal, Faure, 21 cm, slightly curved	2
Forceps, tissue grasping, Duval, 23 cm, jaws 27 mm	2
Forceps, tissue, standard, 1x2 teeth, straight 14.5 cm	1
Forceps, tissue, standard, 1x2 teeth, straight 25 cm	1
Galipot, stainless steel, 500 ml, 12 cm	1
Needle holder, Mayo-Hegar, 18 cm, standard pattern	1
Retractor, abdominal Gosset, 2 blades 58 mm + central blade	1
Retractor, abdominal Rochard, 120x60 mm	1
Fixation unit for Rochard	1
Retractor, Farabeuf, double end. Pair, 15 cm	1
Scalpel handle, no 4, standard	1
Scissors, Metzenbaum, curved, 18 cm	1
Scissors, Nelson (Metzenbaum), curved, 23 cm	1

Scissors, Mayo, curved, 17 cm	1
Scissors, Mayo, curved, 23 cm	1
Spatula, Ribbon retractor, malleable, 27 mm x 25 cm	2
Tube, suction, 28 cm Yankauer, chrome plated	1

#### **07.01.08.08 Major rectal instrument set**

##### **Technical Specifications**

##### **Rectal and Haemorrhoidal set**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	2
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	2
Clamp, towel, Backhaus, 11 cm	4
Scalpel handle No. 3	1
Forceps, tissue, standard, 1x2 teeth, straight, 14.5 cm	1
Forceps, artery, Kocher, 140 mm, str	4
Scissors, Mayo, curved, 14 cm	1
Needle holder, Mayo-Hegar, 16 cm	1
Speculum rectal, Sims, 80 mm	1
Tube, Sphincteroscope, Kelly, 27 x 50 mm	1
Ligator, Haemorrhoidal, Mc Givney, complete	1
Rubber rings, for ligator Pack of 100	1
Forceps, ligator, Mc Givney, double curved, 19 cm	1
Probe Brodie, 18 cm	1
Forceps, Angiotribes, Fergusson, 20 cm	1

#### **07.01.08.09 Fistulectomy set**

##### **Technical Specifications**

Set, surgical instruments, Fistulectomy	
Foerster sponge forceps, serrated, straight, 18 cm	2
Clamp, towel, Backhaus, 11 cm	4
Handle, scalpel, nr. 3	1
Dressing forceps, 20 cm	1
Potts-Smith forceps, straight, 21cm	2
Retractor Kocher, 40 x 12 mm	2
Kelly fistula scissors, straight, 16cm	1
Kelly fistula scissors, curved, 16cm	1
Mikulicz peritoneum forceps, 20cm	4
Needle holder, Crile-Wood, 15 cm, TC	1
Needle holder, Mayo-Hagar, 18 cm, TC	1
Gallipot, stainless steel, 10 cm diameter	2
Sterilization container, alu, 28.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

**07.01.08.10 Vaginal hysterectomy set****Technical Specification**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Handle, scalpel, nr. 3	1
Handle, scalpel, nr. 4	1
Clamp, towel, Backhaus, 11 cm	2
Suction nozzle, Yankauer, 27 cm	1
Needle holder, Wertheim, 20 cm	2
Needle holder, Mayo-Hegar, 18 cm	1
Forceps, sponge holding, Foerster, straight, 25 cm	2
Forceps, artery, Spencer Wells, straight, 20 cm	4
Forceps, artery, Spencer Wells, curved, 20 cm	4
Forceps, artery, Kocher, curved, 22 cm	6
Forceps, artery, Kocher, straight, 22 cm	6
Forceps, hysterectomy, Maingot, curved, 24 cm	6
Forceps, dissecting, 1 x 2 teeth, 18 cm	1
Scissors, dissecting, Metzenbaum, curved, 23 cm	1
Mayo safety pin	1

**07.01.08.11 Abdominal gynecological instrument set****Technical Specifications****Abdominal Hysterectomy set, Extras (in combination with Laparotomy set)**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Forceps, artery, Kocher, curved, 26 cm	6
Forceps, hysterectomy, Maingot, curved, 24 cm	6
Abdominal Retractor, Doyen, 120 x 45 mm	1
Mayo safety pin	
Towel Clip	3

**07.01.08.12 Open thoracostomy set (Thoracotomy set (Optional))****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	2
Kidney dishes, stainless steel, 20 cm	2
Gallipot, diam. 10 cm, S/S	1
Forceps, dressing, Potts-Smith, straight, 25 cm	1
Forceps, tissue, Potts-Smith, straight, 25 cm	1
Scissors, Metzenbaum-Nelson, curved, 28 cm	1
Spatula, lung, Allison, 32 cm	1
Forceps, Mixer, curved, 22 cm	2
Shears, Rib, Giertz-Stille, 27 cm	1
Raspatory, Rib, Doyen, adult, left, 17 cm	1
Raspatory, Rib, Doyen, adult, right, 17 cm	1
Raspatory, bone, Lambotte, 15 mm, 21 cm	1
Rongeurs, bone, Stille-Luer, curved, 22 cm	1
Spreader Rib, Finocchietto, blades 45 x 65 mm, open 200 mm	1
Contractor, Rib, Sellors, 19 cm	1
Forceps, Price-Thomas, 22 cm	1
Clamps, Brochus, Semb, strongly curved, 24 cm	1
Forceps, grasping, Nelson, 23 cm	1
Forceps, intestinal, Duval, large, 23 cm	2
Chisel, Lebsche, 24.5 cm	1

Needle holder, Masson, 27 cm	1
Mallet, steel solid, 42/30 mm, 530 gr, 26.5 cm	1

#### **07.01.08.13 Closed thoracostomy set**

##### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Dilator, tracheal, Trousseau, 14 cm, adult	1
Forceps, artery, Kelly, 14 cm, curved	3
Forceps, artery, Crile, 14 cm, straight	2
Forceps, dressing, standard, straight, 14.5 cm	1
Forceps, tissue, standard, 1x2 teeth, straight, 14.5 cm	1
Needle holder, Crile-Wood, 15 cm, delicate	1
Scalpel handle, no. 4, standard	1
Scissors, Metzenbaum (Lahey), curved, 14 cm	1

#### **07.01.08.14 Diaphragmatic hernia repair set**

##### **Technical Specifications**

##### **Diaphragmatic Hernia repair set (in combination with Laparotomy set )**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	2
Kidney dishes, stainless steel, 20 cm	2
Gallipot, diam. 10 cm, S/S	1
Forceps, dressing, standard, straight, 14.5 cm	2
Forceps, dissecting, tissue, 1x2 teeth, 20 cm	1
Forceps, artery, Halsted-Mosquito, 12.5 cm, straight	6
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	6
Retractor set Roux,	1
Retractor, Deaver, 50 mm, 30 cm	2
Retractor, set, US Army	1
Spatula, Abdominal, malleable, 30 mm, 33 cm	1
Spatula, Abdominal, malleable, 40 mm, 33 cm	2
Conductor, ligature, König, 3 mm, 19.5 cm	1
Needle, ligature, Deschamps, left, blunt, medium, 20 cm	1
Needle, ligature, Deschamps, right, blunt, medium, 20 cm	1
Scissors, Metzenbaum, curved, 23 cm	1
Forceps, dressing, Potts-Smith, straight, 21 cm	1
Forceps, dressing, Potts-Smith, straight, 25 cm	1
Needle holder, Mayo-Hegar, 24 cm	1
Forceps, tissue, Potts-Smith, straight, 25 cm	1
Scissors, Mayo, straight, 23 cm	1
Forceps, tissue, Allis, 19 cm	4
Forceps, Pean, curved, 16 cm	4
Forceps, Mixter, curved, 22 cm	4
Forceps, tissue, Babcock, 24 cm	2
Spreader Rib, Tuffier, blades 50 x45 mm, open 165 mm	2
Spreader Rib, Finocchietto, blades 45 x65 mm, open 200 mm	1
Contractor, Rib, Bailey-Baby, 16 cm	1
Shears, Rib, Bethune, 34 cm	1
Raspatory, periostal, Farabeuf, straight, 15 cm	1
Raspatory, Rib, Doyen, adult, left, 17 cm	1
Raspatory, Rib, Doyen, adult, right, 17 cm	1
Rongeurs, bone, Stille-Luer, curved, 22 cm	1
Pin, instrument holder, Mayo, 14 cm	3

#### **07.01.08.15 basic cardiovascular set**

##### **Technical Specifications**

##### **Each set consisting of:**

8 Foerster forceps, str., serr., 25 cm  
6 Kocher retractor, bl., 22 cm  
6 Backhaus towel clamp, 13 cm  
3 Scalpel handle, no.3  
1 scalpel handle, no. 3L  
1 Metzenbaum scissors, cvd., 20 cm  
1 Kelly fistula scissors, cvd., 16 cm  
1 Potts Smith scissors, 25 ats, 19 cm  
1 Potts Smith scissors, 45 ats, 19 cm  
1 Adson forceps, serr., 12 cm  
2 Adson forceps, 12.5 cm  
3 Potts Smith forceps, str., 18 cm  
4 DeBakey DST-2.0 mm, forceps, str., 19 cm  
4 DeBakey DST-2.0 mm, forceps, str., 30 cm  
2 Tissue forceps, 1x2T., 16 cm  
6 Allis tissue forceps, 5x6T., 15 cm  
3 Allis tissue forceps, 5x6T., 20 cm  
4 Allis Adair tissue forceps, 15.5 cm  
2 Russian forceps, 15 cm  
2 Russian forceps, 20 cm  
4 Babcock tissue forceps, 16 cm  
2 Halstead mosquito forceps, str., 12.5 cm  
2 Halstead mosquito forceps, cvd., 12.5 cm  
2 Rochester Pean forceps, cvd., 20 cm  
10 Carmalt forceps, str., 16 cm  
10 Ochsner forceps, str., 16 cm  
6 Mixter forceps, 19 cm  
10 Lahey thyroid forceps, 3x3T, 15 cm  
3 Craford forceps, cvd., 24 cm  
3 Heiss forceps, cvd., 20 cm  
4 Senn Miller retractor, 16 cm  
4 Love uvula retractor 18 cm  
2 Weitlaner retractor, sharp, 13 cm  
2 Gelpi retractor, 18 cm  
2 Cushing nerve hook small, 19 cm  
2 Jefferson brain retractor, right  
1 DeBakey Cooley retractor, 127x180 mm  
1 Deaver retractor, 25 mm, 30 cm  
1 Deaver retractor, 38 mm, 30 cm  
1 Deaver retractor, 50 mm, 30 cm  
1 Deaver retractor, 75 mm, 30 cm  
2 Richardson retractor, 28x20 mm, 24 cm  
2 Richardson retractor, 36x28 mm, 24 cm  
2 Richardson retractor, 44x38 mm, 24 cm  
2 Richardson retractor, 52x22 mm, 24 cm  
2 Green thyroid retractor, 17 mm, 22 cm  
1 Recamier curette, sharp (3), 31 cm  
1 Recamier curette, sharp (4), 31 cm  
1 Recamier curette, sharp (5), 31 cm  
1 Krayenbuhl nerve hook, sharp, no.1, 19 cm



1 Krayenbuhl nerve hook, blunt, no.2, 19 cm  
 1 Pool suction tube, 23 Fg, cvd.  
 2 Yankauer suction tube, 34 cm  
 1 Frazier suction tube, 10Fg, 17 cm  
 1 Lebsche sternum cutter, 26 cm  
 1 Guilford Wright curette set of 4  
 2 Mayo scissors, flat str., 17 cm  
 2 Mayo scissors, flat cvd., 17 cm  
 1 Metzenbaum scissors, cvd., 18 cm  
 2 Wire suture scissors, 12 cm  
 3 TC Mayo-Hegar needle holder 15 cm  
 3 TC Mayo-Hegar needle holder 18 cm  
 3 TC Mayo-Hegar needle holder 20 cm  
 1 TC Crilewood needle holder, str., 18 cm  
 2 DeBakey forceps, DST-1.5mm, str., 20 cm  
 1 Cushing bayonet forceps, 18 cm  
 4 mosquito forceps, cvd., 12,5 cm  
 1 Derra anastomosis clamp. no.1, 18 cm  
 1 Derra anastomosis clamp. no.2, 18 cm  
 2 DeBakey forceps, DSV, str., 12.5 cm  
 2 DeBakey forceps, DSV, cvd., 19.5 cm  
 2 DeBakey forceps, DSV, cvd., 12.5 cm  
 1 Wilson tonsil forceps, 19 cm  
 1 Potts DSV forceps, str., 21 cm  
 1 DeBakey DSV forceps, str., 19.5 cm  
 1 Rowbotham trephine, 25 mm  
 1 Rowbotham trephine, 19 mm  
 2 Freer septum elevator, sharp/blunt  
 1 Castroveyo needle holder, 14 cm

#### **07.01.08.16 Coronary set**

##### **Technical Specifications**

Micro forceps round handle, as Scanlan 3003-160	2	
Micro forceps, light weight, round , as Scanlan 4004-230	2	2
Micro needle holder, as Scanlan 6006-120	2	
Jacson needle holder, as Scanlan 6006-310	1	
Dietrich scissors, 25 , as Scanlan 7007-40	1	
Dietrich scissors, 90 , as Scanlan 7007-46	1	
Dietrich scissors, 125 , as Scanlan 7007-48	1	
Garrett vascular dilator, 1mm, as Scanlan 9009-52	1	
Garrett vascular dilator, 1.5 mm, as Scanlan 9009-54	1	
Garrett vascular dilator, 2 mm, as Scanlan 9009-56	1	
Garrett vascular dilator, 2.5 mm, as Scanlan 9009-58	1	
Garrett vascular dilator, 3 mm, as Scanlan 9009-60	1	
Ochsner double ended dissector, as Scanlan 3003-160	2	
Micro forceps, light weight, round , as Scanlan 9009-146	1	1
Coronary knife handle, 8 KL	1	
I.M.A. Epicardial retractor (gold coated), as Pill.80.1864	1	
I.M.A. Epicardial retractor (gold coated), as Pill.80.1861	1	
I.M.A. Epicardial retractor (gold coated), as Pill.80.1862	1	

**07.01.08.17 Cardiovascular baby set****Technical Specifications**

1x M.65.22 lung resection set  
 1 x M.65.28 basic vascular surgery set  
 1 x M.65.40 cardiovascular set, child  
 1 x M.65.54 dialyze shunt set

**(Optional) Each set consisting of:**

- \* 1 Finochietto 15x15 mm rib spreader
- \* 1 Metzenbaum Lahey scissors, cvd., 14 cm
- \* 2 DeBakey forceps, DSV - 45 deg., AOS 15 cm
- \* 1 Castrovyo needle holder, str., 13 cm
- \* 1 Johns Hopkins aorta clamp, small

**07.01.08.18 Thoracotomy set (for closed heart procedures)****Technical Specifications****Thoracotomy set (Optional)**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	2
Kidney dishes, stainless steel, 20 cm	2
Gallipot, diam. 10 cm, S/S	1
Forceps, dressing, Potts-Smith, straight, 25 cm	1
Forceps, tissue, Potts-Smith, straight, 25 cm	1
Scissors, Metzenbaum-Nelson, curved, 28 cm	1
Spatula, lung, Allison, 32 cm	1
Forceps, Mixer, curved, 22 cm	2
Shears, Rib, Giertz-Stille, 27 cm	1
Raspatory, Rib, Doyen, adult, left, 17 cm	1
Raspatory, Rib, Doyen, adult, right, 17 cm	1
Raspatory, bone, Lambotte, 15 mm, 21 cm	1
Rongeurs, bone, Stille-Luer, curved, 22 cm	1
Spreader Rib, Finocchietto, blades 45 x 65 mm, open 200 mm	1
Contractor, Rib, Sellors, 19 cm	1
Forceps, Price-Thomas, 22 cm	1
Clamps, Brochus, Semb, strongly curved, 24 cm	1
Forceps, grasping, Nelson, 23 cm	1
Forceps, intestinal, Duval, large, 23 cm	2
Chisel, Lebsche, 24.5 cm	1
Needle holder, Masson, 27 cm	1
Mallet, steel solid, 42/30 mm, 530 gr, 26.5 cm	1

**07.01.08.19 Coarctation of aorta set (closed heart procedures)****Technical Specifications**

2 DeBakey "AT" coarctation clamp, str., 21.5 cm  
 2 DeBakey "AT" coarctation clamp, angled, 21.5 cm  
 2 DeBakey bulldog clamp, str., 10.5 cm  
 2 DeBakey bulldog clamp, cvd., 10.5 cm

**07.01.08.20 Endarterectomy set****Technical Specifications**

Tying Micro Tissue Forceps : 180 mm - Jaws 0.4 x 6 mm, With Plateform - Diamonite - 180 gr  
 Micro Tissue Forceps L : 180 mm - Ring Tip 1 mm  
 Tissue Forceps L : 200 mm - Jaws : 1.5 mm 200 gr - Titanium

Tissue Forceps L : 200 mm - Jaws : 1.0 mm 200 gr  
 Tissue Forceps L : 200 mm - Jaws : 2.0 mm 200 gr - Titanium  
 Scissors L : 165 mm - 45° Angled Blunt tip  
 Scissors L : 180 mm - 60° Angled  
 Scissors L : 180 mm - Curved  
 Scissors L : 180 mm - Curved  
 Dissector Curved L : 240 mm Jaws : 4.5 mm  
 Dissector Curved L : 200 mm Jaws : 1 mm  
 needle Holder L : 230 mm – Straight With Ratchet -- Titanium  
 Vascular Clamp L : 110 mm Curved Shanks 60° jaws : 14 mm - Titanium  
 Vascular Clamp L : 110 mm Curved Shanks 90°  
 Bulldog Clamp L : 115 mm  
 Double Curved Right - Soft  
 Bulldog Clamp L : 115 mm Double Curved Left - Soft  
 carotid Bulldog Clamp L : 80 mm Angulated  
 Bulldog Clamp L : 125 mm Angulated Jaws - Titanium  
 Cone Retractor L : 140 mm 3 x 4 Blunt Teeth D : 14 mm  
 Retractor L : 105 mm 2 x 3 Sharp Teeth D : 14 mm  
 Retractor L : 150 mm w : 6 mm  
 Retractor L : 150 mm w : 8 mm  
 Dissector L : 190 mm Ø : 2.8 mm

#### **07.01.08.21 basic neurosurgical set**

##### **Technical Specifications**

##### **Neuro surgery brain set**

Each set consisting of:

2 Raney clip applying forceps, 16.5 cm  
 3 Raney scalp clips packet-12  
 24 Cairns forceps CTS, 14.5 cm  
 2 Hudson brace standard, 27 cm  
 2 Hudson extension piece, 10 cm  
 2 Hudson conical bur, 9 mm, 10 cm  
 2 Hudson conical bur, 14 mm, 10 cm  
 2 Hudson conical bur, 16 mm, 10 cm  
 2 Hudson spherical bur, 22 mm, 10 cm  
 1 Rowbotham trephine, 19 mm  
 1 skull flap twist drill 70 mm  
 1 Adson skull drill guide, 15 cm  
 1 Winslow Anderson rongeur, 21.5 cm  
 1 Falconer rongeur, 6 mm, 19 cm  
 2 Olivecrona rongeur, 6 mm, 23 cm  
 1 Sargent rongeur, 10 mm, cvd., 23 cm  
 1 DeVilbiss cranial rongeur, 20.5 cm  
 1 Horsley dura mater elevator, 18 cm  
 1 Gigli saw guide and protector, 19 cm  
 12 Gigli saw, 30 cm  
 12 Gigli saw, 50 cm  
 1 Gigli saw handle, 50 mm (pairs)  
 2 Cairns scalp retractor, 14 cm  
 1 Cushing Soh-08mm retractor, 20 cm  
 1 Cushing Soh-10mm retractor, 20 cm  
 1 Cushing Soh-12mm retractor, 20 cm  
 1 Cushing Soh-14mm retractor, 20 cm  
 1 Cushing Soh-16mm retractor, 20 cm

1 Adson elevator, 6 mm, cvd., no.2, 17 cm  
 1 Adson elevator, 6 mm, cvd., no.4, 17 cm  
 1 Adson suction tube, 15Fg, cvd., 15 cm  
 1 Adson suction tube, 10Fg, cvd., 15 cm  
 1 Frazier suction tube, 06Fg, 17 cm  
 1 Frazier suction tube, 08Fg, 17 cm  
 1 Frazier suction tube, 10Fg, 17 cm  
 1 Julian Taylor suction tube, 15Fg  
 1 Frazier 3.0mm exp.-gr cannula, 12 cm  
 1 Dott Cushing 2 mm cannula 70 mm  
 1 Adson 5 mm nerve hook sharp, 19.5 cm  
 1 Adson 5 mm nerve hook blunt, 19.5 cm  
 1 Cairns fine dural hook sharp, 12.5 cm  
 1 Adson trigeminal knife, 20 cm  
 2 Adson aneurism needle, 21.5 cm  
 1 Swedish D/E dissector, heavy, 18 cm  
 1 Seletz ventricular cannula 3.33mm  
 1 Metzenbaum McIndoe scissors, cvd., 18 cm  
 1 Schmieden scissors, angled, 14.5 cm  
 1 Dandy trigeminal scissors, 17 cm  
 2 McKenzie brain clamp, 15 cm  
 2 McKenzie brain clamp, 19 cm  
 1 Olivecrona Toennis clip forceps, 14 cm  
 10 McKenzie brain clips, pkt-100  
 2 McKenzie clip magazine  
 2 Adson Frazer forceps, str., 18 cm  
 2 Adson Frazer forceps, cvd., 18 cm  
 2 TC Mayo-Hegar needle holder, 18 cm  
 1 Batman pituitary forceps, 15 cm  
 1 Pennybacker CR-3mm rongeur, str., 20 cm  
 1 Cone wire twisting forceps, 18 cm  
 1 Olivecrona clips 6 mm narrow, pkt-100  
 1 Cushing periosteal elevator, 20 cm  
 1 McKissock periosteal elevator, 20 cm  
 2 Penfield D/E dissector, no.1, 18.4 cm  
 2 Penfield D/E dissector, no.2, 18.0 cm  
 2 Penfield D/E dissector, no.3, 20 cm  
 2 Penfield D/E dissector, no.4, 21.5 cm  
 1 brain retractor with light fitting  
 1 Jefferson brain retractor, right  
 1 Jefferson brain retractor, left  
 1 National Hospital retractor, 13 cm  
 1 National Hospital retractor, 16 cm  
 1 Olivecrona spatula, cvd., no.2, 18 cm  
 2 Adson forceps, 1x2T, 12 cm  
 2 Adson forceps, serrated, 12 cm  
 3 Dott dural forceps, 1x2T., fine, 17.5 cm  
 3 Dott dural forceps, serrated, fine, 17.5 cm  
 1 Adson bayonet forceps, 1x2T., 19 cm  
 1 Crutchfield 130mm tongs  
 1 Crutchfield 3.5 mm drill point  
 1 Crutchfield 5.0 mm drill point  
 1 Stille hand drill, 25.5 cm  
 2 Hibb retractor, 25x70 mm, 20 cm

- 2 Hibb retractor, 16x54 mm, 20 cm
- 2 Hibb retractor, 10x38 mm, 20 cm
- 1 Mayo-Adson retractor, S/R, 29 cm
- 1 Charnley retractor, horizontal, 31 cm
- 1 Charnley retractor, vertical, 31 cm
- 1 Love nerve retractor, str., 19 cm
- 1 Love nerve retractor, 90 deg., 19 cm
- 1 Love nerve retractor, 45 deg., 19 cm
- 1 Kerrison rongeur, 4 mm, str-upC, 20 cm
- 1 Kerrison rongeur, 5 mm, str-upC, 20 cm
- 1 Kerrison rongeur, 3 mm, str-upC, 20 cm
- 1 Cushing rongeur, 3 mm, ang-up, 13 cm
- 1 Cushing rongeur, 3 mm, ang-do, 13 cm
- 1 Stille gouge, 10 mm, 20 cm
- 1 Lambotte osteotome, 13 mm, 23 cm
- 1 S-Peterson osteotome, 13 mm, 20 cm
- 1 S-Peterson osteotome, 6 mm, 20 cm
- 1 Oswestry curette, size 1
- 1 Oswestry curette, size 2
- 1 Oswestry curette, size 3
- 1 Oswestry curette, size 4
- 1 Oswestry curette, size 5
- 1 Oswestry curette, size 6
- 1 American spinal curette, 000, str., 20 cm
- 1 American spinal curette, 00, str., 20 cm
- 1 American spinal curette, 0, str., 20 cm
- 1 American spinal curette, 1, str., 20 cm
- 1 Jacobs's chuck and T-handle, 14 cm
- 1 Clarke clip applying forceps, 12 cm
- 1 Brodie probe and director, malleable
- 1 bayonet bipolar forceps, fine, 20 cm

### **Basic Neurosurgical instrument set**

Each set consisting of:

- 3 Ballinger sponge forceps, 18 cm, str.
- 30 Backhaus towel clamp, 8 cm
- 2 Scalpel handle, no.3
- 2 Scalpel handle, no.4
- 2 Scalpel handle, no.7
- 1 Mayo scissors, str. 17 cm
- 1 Mayo scissors, cvd. 17 cm
- 1 Metzenbaum scissors, cvd, 18 cm
- 1 Gerald dressing forceps, 18 cm
- 1 Gerald tissue forceps, 18 cm
- 2 Potts-Smith dressing forceps, 18 cm
- 2 Potts-Smith tissue forceps, 18 cm
- 2 Brown tissue forceps, 15 cm
- 12 Allis tissue forceps, 15 cm, 5x6t
- 12 Halstead mosquito forceps, 12 cm, str.
- 3 Kocher forceps, 14 cm
- 30 Dandy haemostatic forceps, 14 cm, curved sideways
- 1 Zaufle-Jansen bone rongeur, 18 cm, cvd
- 1 Leksell rongeur, 8 mm jaw
- 1 Leksell rongeur, 5 mm jaw

- 1 Spurling-Kerrison rongeur, 15 cm, 3 mm up
- 1 Spurling-Kerrison rongeur, 15 cm, 3 mm down
- 1 Schlesinger laminectomy rongeur, 15 cm, 3 mm up
- 1 Schlesinger laminectomy rongeur, 15 cm, 3 mm down
- 1 Love-Gruenwald rongeur, 13 cm, 3x10 mm str.
- 1 Love-Gruenwald rongeur, 13 cm, 3x10 mm up
- 1 Love-Gruenwald rongeur, 13 cm, 3x10 mm down
- 2 Weitlaner retractor sharp, prong, 16.5 cm
- 2 Weitlaner-Beckmann retractor, blunt, 13 cm
- 2 Cushing decompression retractor
- 1 Copper spatula malleable, 6x200 mm
- 1 Copper spatula malleable, 12x200 mm
- 1 Copper spatula malleable, 17x200 mm
- 1 Copper spatula malleable, 25x200 mm
- 1 Copper spatula malleable, 27x250 mm
- 1 Copper spatula malleable, 35x250 mm
- 1 Freer periosteal elevator, sh/bl
- 1 Olivecrona dissector, 18 cm, 2+3 mm
- 1 Olivecrona dissector, 24 cm, 2+3 mm
- 1 Olivecrona dissector, 24 cm, 4+5 mm
- 1 Adson periosteal elevator, 6 mm, cvd.blunt
- 2 Gigli wire saw handle
- 3 DeMartel wire saw guide
- 1 Olivecrona wire saw 30 cm
- 1 Straight skin hook, 13 cm
- 1 Dandy nerve hook, str.
- 1 Frazier suction tube, angled, Fr. 8
- 1 Frazier ventricular needle, 2mmx10cm
- 1 Grooved director, 14.5 cm
- 4 Crile-Wood needle holder, 18 cm, TC
- 4 Ryder (French Eye) needle holder, 18 cm, TC

#### **07.01.08.22 laminectomy set (1)**

##### **Technical Specifications**

##### **Each set consisting of:**

- 1 cranial rongeur and two blades, 20 cm
- 1 Luer bone rongeur, str., 17 cm
- 1 Stille-Luer CA rongeur, cvd., 22 cm
- 1 Leksell Stille CA-8mm rongeur, 24 cm
- 1 Fergusson bone forceps, 21 cm
- 1 Passow mastoid chisel, no.2, 12 cm
- 1 Williger OS-Soh curette, 00, 17.5 cm
- 1 Williger OS-Soh curette, 0, 17.5 cm
- 1 Williger OS-Soh curette, 1, 17.5 cm
- 1 Williger RoS-Soh curette, 00, 17.5 cm
- 1 Williger RoS-Soh curette, 0, 17.5 cm
- 1 Williger RoS-Soh curette, 1, 17.5 cm
- 3 Lane bone holding forceps, W/R, 33 cm
- 2 Weitlaner, retractor, 13 cm
- 1 Harris laminectomy retractor
- 1 Cairns scalp retractor, 4 prong, 21 cm
- 9 Cushing Soh-10mm retractor, 20 cm
- 9 Cushing Soh-12mm retractor, 20 cm
- 9 Cushing Soh-14mm retractor, 20 cm

8 Cushing Soh-16mm retractor, 20 cm  
 8 Cushing Soh-18mm retractor, 20 cm  
 8 Cushing Soh-08mm retractor, 24 cm  
 1 Hartmann bone rongeur, 18.5 cm  
 1 Ferris Smith forceps, up cut  
 10 Michel clips 12x3 mm, pkt-100  
 10 Michel clips 14x3 mm, pkt-100  
 1 Michel clip combined forceps, 12 cm  
 1 Michel clip applying, 12 cm  
 1 Hudson 16 mm Cushing perforator 10 cm  
 1 universal (wire) scissors, 12 cm  
 1 operating scissors, cvd., bl/bl, 13 cm  
 2 McKenzie brain clamp, 15 cm  
 2 McKenzie brain clamp, 19 cm  
 1 blade removing forceps, 15 cm

#### **07.01.08.23 sympathectomy set**

##### **Technical Specifications**

##### **Sympathectomy set, (optional)**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Gallipot, diam. 10 cm, S/S	2
Kidney dish, stainless steel, 20 cm	1
Forceps, sponge holding, Foerster, 25 cm	2
Clamp, towel, Backhaus, 11 cm	8
Scalpel handle No. 3	2
Scissors, Metzenbaum-Nelson, curved, 28 cm	1
Scissors, Metzenbaum-Nelson, curved, BL/BL. 18 cm	1
Forceps, dressing, standard, 20 cm	2
Forceps, dressing, standard, 30 cm	2
Forceps, artery, Kocher, straight, 16 cm	4
Retractor, Deaver, 38 mm width, 30 cm	2
Retractor, Deaver, 75 mm width, 30 cm	2
Forceps, artery, Rochester-Carmalt, curved, 20 cm	6
Forceps, artery, Rochester-Pean, curved, 24 cm	1
Hook, delicate, Cushing, 28 cm	1
Forceps, dissecting, Zenker, slightly curved, 29.5 cm	1
Needle holder, Mayo-Hegar, 16 cm	1
Needle holder, Mayo-Hegar, 24 cm	2

#### **07.01.08.24 basic orthopaedic set**

##### **Technical Specifications**

##### **Amputation set**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Clamp, towel, Backhaus, 11 cm	6
Curette, bone, Volkmann, 17 cm, 8.5 mm,	1
Curette, bone, Volkmann, 17 cm, 10 mm,	1
Forceps, artery, Kelly, 14 cm, curved	4
Forceps, artery, Kocher, 14 cm, 1x2 teeth, curved	4
Forceps, artery, Kocher, 14 cm, 1x2 teeth, straight	4
Forceps, tissue, standard, 1x2 teeth, straight 14.5 cm	2
Needle holder, Crile-Wood, 15 cm, delicate	1
Needle holder, Mayo-Hegar, 18 cm, standard pattern	1

Raspatory, Lambotte, 21 cm sharp, curved, 10 mm	1
Raspatory, Lambotte, 21 cm sharp, curved, 20 mm	1
Retractor, Farabeuf, double end, pair, baby, 12 cm	1
Retractor, Farabeuf, double end, pair, 15 cm	1
Retractor, Percy, trad. pattern, folding handles	1
Rongeur, bone , Luer, light curved jaws, 5 mm, 15 cm	1
Gigli saw handle (one pair), solid	1
Wire, Gigli saw 50 cm	12
Scalpel handle, no 4, standard	1
Scissors, Metzenbaum (Lahey), curved 14 cm	1
Scissors, Mayo, curved 17 cm	1

#### **24.1. Bone set I (Inferior limbs) large bones**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Chisel, Stille, 20 cm, straight, 20 cm	1
Clamp, towel, Backhaus, 11 cm	6
Curette, bone, Volkmann, 17 cm, 8.5 mm,	1
Curette, bone, Volkmann, 17 cm, 10 mm,	1
Curette, bone, Volkmann, 17 cm, 13 mm,	1
Forceps, artery, Kelly, 14 cm, curved	6
Forceps, artery, Kocher, 14 cm, 1x2 teeth, curved	2
Forceps, bone cutting, Liston-Stille, 27 cm, angled	1
Forceps, dressing, standard, straight, 25 cm	1
Forceps, tissue, standard, 1x2 teeth, straight, 25 cm	1
Forceps, bone holding, Verbrugge, 25 cm	2
Galipot, stainless steel, 500 ml, 12 cm	1
Mallet, bone, Bergmann, 300 g., 45 mm, 24.5 cm, solid	1
Needle holder, Crile-Wood, 15 cm, delicate	1
Needle holder, Mayo-Hegar, 18 cm, standard patern	1
Osteotome, Stille, 20 cm, straight, 25 mm	1
Raspatory, Lambotte, 21 cm sharp, curved, 20 mm	1
Reamer, square, 15 cm	1
Retractor, bone, Lange Hohmann, 33 mm, 29 cm	2
Retractor, Farabeuf, double end. Pair, 15 cm	1
Retractor, Weitlaner, 24 cm, 5x6 blunt prongs, 25 mm	2
Rongeur, bone, Stille-Luer, curved jaws, 9 mm, 22 cm	1
Scalpel handle, no 4, standard	2
Scissors, Mayo, curved 17 cm	1

#### **24.2. Bone set II (Superior limbs) small bones**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Chisel, Stille, 20 cm, straight, 20 cm	1
Clamp, towel, Backhaus, 11 cm	6
Curette, bone, Volkmann, 17 cm, 2.8 mm,	1
Curette, bone, Volkmann, 17 cm, 4.4 mm,	1
Curette, bone, Volkmann, 17 cm, 6.8 mm,	1
Forceps, artery, Kelly, 14 cm, curved	6
Forceps, artery, Kocher, 14 cm, 1x2 teeth, curved	2
Forceps, bone cutting, Ruskin-Liston, 18 cm, angled	1
Forceps, dressing, standard, straight, 14.5 cm	1
Forceps, tissue, standard, 1x2 teeth, straight, 14.5 cm	1
Forceps, bone holding, Verbrugge, 25 cm	2
Galipot, stainless steel, 500 ml, 12 cm	1



Mallet, bone, Bergmann, 300 g., 45 mm, 24.5 cm, solid	1
Needle holder, Crile-Wood, 15 cm, delicate	1
Needle holder, Mayo-Hegar, 18 cm, standard patern	1
Osteotome, Stille, 20 cm, straight, 10 mm	1
Raspatory, Lambotte, 21 cm sharp, curved, 10 mm	1
Reamer, square, 15 cm	1
Retractor, bone, Hohmann, 18 mm, 24 cm	2
Retractor, Farabeuf, double end, pair, baby, 12 cm	1
Retractor, Weitlaner, 20 cm, 3x4 blunt prongs, 20 mm	2
Rongeur, bone , Luer, light curved jaws, 5 mm, 15 cm	1
Scalpel handle, no 4, standard	2
Scissors, Mayo, curved 17 cm	1

### **24.3. External Fixator, complete, adult**

Articulation, notched, single, diam. 18 mm	1
Brace, without head system, diam. 18/12	1
Clamp, double notched, for fixator, diam. 18 mm	5
Clamp, single notched, for fixator, diam. 18 mm	16
Collar, for simple notched clamp, diam. 18 cm	4
Drill, diam. 12 mm, long	1
Drill, diam. 12 mm, short	1
Drill, diam. 18 mm, long	3
Guide, for long drill, diam. 18 mm	3
Head for pins, diam. 12 mm	1
Head for pins, diam. 18 mm	2
Perforator, for fixator, diam. 18 mm	1
Pin, diam. 4 mm, L.90 mm, (for fixator, diam. 12 mm)	15
Pin, diam. 5 mm, L.120 mm, (for fixator, diam. 18 mm)	52
Pin, diam. 5 mm, L.170 mm, (for fixator, diam. 18 mm)	20
Plate, bone, for Tibia, 6 holes	2
Rod, connecting, (diam. 4mm, L.80 mm) ext. Fix. diam. 12 mm	2
Rod, connecting, (diam. 8mm, L.100 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.150 mm) ext. Fix. diam. 18 mm	4
Rod, connecting, (diam. 8mm, L.200 mm) ext. Fix. diam. 18 mm	4
Rod, connecting, (diam. 8mm, L.250 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.300 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.350 mm) ext. Fix. diam. 18 mm	2
Screw driver, hex., for 4/5 mm pins, 18/12 mm tubes	1
Screw, hex. For 5 mm pins + ext. Fix. 18 mm	1
Spanner, hex., notched artic./clamps, tubes 12/18 mm	1
Spanner, hex., for screws, tubes 12-18 mm	1
Tube, diam. 12 mm, L.215 mm, 14 trous	3
Tube, diam. 18 mm, L.150 mm	1
Tube, diam. 18 mm, L.250 mm	3
Tube, diam. 18 mm, L.300 mm	4
Tube, diam. 18 mm, L.350 mm	2
Tube, diam. 18 mm, L.400 mm	2
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1

**24.4. External Fixator, complete, pediatric**

Articulation, notched, double, diam. 12 mm	1
Articulation, notched, single, diam. 12 mm	2
Brace, without head system, diam. 18/12	1
Clamp, double notched, for fixator, diam. 12 mm	4
Clamp, single notched, for fixator, diam. 12 mm	8
Drill, diam. 12 mm, long	2
Guide, for long drill, diam. 12 mm	2
Head for pins, diam. 12 mm	1
Perforator, for fixator, diam. 12 mm	1
Pin, diam. 4 mm, L.120 mm, (for fixator, diam. 12 mm)	20
Pin, diam. 4 mm, L.150 mm, (for fixator, diam. 12 mm)	10
Pin, diam. 4 mm, L.90 mm, (for fixator, diam. 12 mm)	30
Rod, connecting, (diam. 4mm, L.80 mm) ext. fix. diam. 12 mm	2
Rod, connecting, (diam. 4mm, L.100 mm) ext. fix. diam. 12 mm	4
Rod, connecting, (diam. 4mm, L.120 mm) ext. fix. diam. 12 mm	4
Rod, connecting, (diam. 4mm, L.160 mm) ext. fix. diam. 12 mm	2
Rod, connecting, (diam. 4mm, L.180 mm) ext. fix. diam. 12 mm	2
Rod, connecting, (diam. 4mm, L.210 mm) ext. fix. diam. 12 mm	2
Screw driver, hex., for 4/5 mm pins, 18/12 mm tubes	1
Screw, hex. For 4 mm pins + ext. fix. 12 mm	1
Spanner, hex., notched artic./clamps, tubes 12/18 mm	
Spanner, hex., for screws, tubes 12-18 mm	
Tube, 12 mm, compression, asymmetrical	
Tube, 12 mm, L.50 mm, 3 holes	
Tube, 12 mm, L.65 mm, 4 holes	
Tube, 12 mm, L.80 mm, 5 holes	
Tube, 12 mm, L.100 mm, 6 holes	
Tube, 12 mm, L.110 mm, 7 holes	
Tube, 12 mm, L.125 mm, 8 holes	
Tube, 12 mm, L.155 mm, 10 holes	
Tube, 12 mm, L.185 mm, 12 holes	
Tube, 12 mm, L.215 mm, 14 holes	
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	

**07.01.08.25 Basic eye surgery set****Technical Specifications**

1 x M.75.10 cataract, extracapsular, lens implantation, phaco micro set	
1 x M.75.13 foreign body extraction set	
1 x M.75.12 glaucoma-trabeculectomy micro surgery set	
1 x M.75.18 keratoplasty set	
1 x M.75.19 stich removal micro surgery set	
1 x M.75.30 strabismus set	
1 x M.75.34 chalazion set	

**07.01.08.26 Tonsillectomy and adenoidectomy set****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Yankauer suction tube	1
Davis-Boyle mouth gags complete	1
Henke tonsil separation and dissector	1
Metzenbaum scissors curved, 18 cm	1
Mayo scissors, curved, 15 cm	1

Waugh tissue forceps, 1x2T., 20 cm	1
Scalpel handle no.3	1
Hegar-Mayo needle holder, 18 cm	1
Backhaus Towel forceps 9 cm	4
Foerster tumor forceps 18 cm serr.str.	1
Schmidt artery fcps. 19 cm slightly CVD.	2
Wieder Tongue depressor 14,5 cm	1
Sluder-Ballenger Amygdalotomes complete	1
Blohmke tonsil holding forceps, curved, 20 cm	1
Beckmann adenoid curette,	1
Beckmann adenoid curette,	1
Beckmann adenoid curette,	1
Beckmann adenoid curette,	1
Beckmann adenoid curette,	1

#### **07.01.08.27 Tracheostomy set**

##### **Technical Specifications**

- 1 x Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S
- 1 x Dilator, tracheal, Trousseau, 14 cm, adult
- 3 x Forceps, artery, Kelly, 14 cm, curved
- 2 x Forceps, artery, Crile, 14 cm, straight
- 1 x Forceps, dressing, standard, straight, 14.5 cm
- 1 x Forceps, tissue, standard, 1x2 teeth, straight, 14.5 cm
- 1 x Needle holder, Crile-Wood, 15 cm, delicate
- 1 x Scalpel handle, no. 4, standard
- 1 x Scissors, Metzenbaum (Lahey), curved, 14 cm,

#### **07.01.08.28 Laryngectomy set**

**General Description:** Laryngoscopy set, paediatric in case

##### **Technical Specifications:**

Set consists of: fiber optic handle and 3 paediatric fiber optic blades

Miller type blade in sizes 0 and 1, Mac type blade in size 2.

Handle with rechargeable battery, 2.5 V

To be supplied with:     Battery charger  
                                   Spare bulb  
                                   Storage and carriage case

Dimensions, approximately: 0.10 x 0.25 x 0.35 m

**Material:** Heavy duty plastic and steel clamp

##### **Packaging and labelling:**

Primary packaging: Unit of use

One (1) laryngoscopy set in case, with manufacturer's instruction for use.

##### **Labelling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

Light bulb  
 Rechargeable battery

##### **Weight/Volume/Dimensions:**

- estimated weight: 1.5 kg
- estimated volume: 3 cdm

##### **Instructions for use:**

Paediatric laryngoscopy set to be used in the surgical suite to assist intubation of infant patients.

##### **Safety procedure:**

**07.01.08.29 Dental set**  
**Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Curette, Gracey, scaler, double end,	1
Curette, Hemingway, double end, 18 cm	1
Elevator, root, Apical,	1
Elevator, root, Apical,	1
Elevator, root, Apical,	1
Forceps, dental, upper incisors & bicuspid	1
Forceps, dental, upper molars right	1
Forceps, dental, upper molars left	1
Forceps, dental, upper roots	1
Forceps, dental, lower molars	1
Forceps, dental, lower roots, incisors & bic	1
Forceps, dental, lower molars	1
Forceps, Meriam, 16 cm, double bent, serrated	1
Handle, for dental mirror, straight	1
Mirror, dental, plane, without handle, 24 mm	1
Probe, periodontal, pocket gauge	1
Probe, dental, 15 cm, fig. 2	1
Syringe, dental, for cartridge, 1.8 ml	1
Syndesmote, Chrompret, straight,	1
Syndesmote, Chrompret, sickle,	1

**07.01.08.30 Prostatectomy set**  
**Technical Specifications**

**Prostatectomy supplementary set**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Needle holder, Young-Hryntschak, with one needle, 24 cm	1
Needle, spare, medium	2
Needle, spare, large	2
Instrument, prostatectomy, Millin, 24 cm	1
Forceps, prostatectomy instrument, Millin, 23 cm	1
Forceps, tissue, standard, 1x2 teeth, 25 cm	2
Forceps, atraumatic, De Bakey, straight, 2.0mm jaws, 20 cm	2
Forceps, atraumatic, De Bakey, straight, 2.0mm jaws, 24 cm	2
Scissors, Metzenbaum, curved, 20 cm	1
Scissors, Metzenbaum, curved, 23 cm	1
Retractor, Fritsch, 45 x60 mm, 24 cm	2
Retractor, prostatic, Young, 22 cm	1
Clamp, meatus, Millin, 28.5 cm	1

**07.01.08.31 Craniotomy set**  
**Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Gallipot, diam. 10 cm, S/S	2
Kidney dish, stainless steel, 20 cm	1
Forceps, sponge holding, Foerster, 25 cm	2
Clamp, towel, Backhaus, 11 cm	8
Scalpel handle No. 3	1
Scalpel handle no.4	1

Scalpel handle no.4L	1
Scissors, Metzenbaum-Nelson, curved, BL/BL. 18 cm	1
Scissors, Toennis-Adson, curved, 17 cm	1
Scissors, standard, straight, SH/BL 14.5 cm	1
Scissors, Mayo, straight, 15 cm	1
Scissors, Mayo, curved, 15 cm	1
Scissors, Metzenbaum, curved, 14 cm	1
Forceps, dressing, narrow, 14.5 cm	2
Forceps, tissue, Potts-Smith, straight, 20 cm	1
Forceps, dressing, Potts-Smith, straight, 21 cm	1
Forceps, tissue, Gillies, toothed, 15 cm	1
Forceps, tissue, McIndoe, non toothed, 15 cm	1
Forceps, Gruenwald, 20 cm	2
Forceps, tissue, narrow, 1x2 teeth, 16 cm	2
Forceps, dressing, Gerald, straight, 18 cm	1
Forceps, tissue, 1x2 teeth, Gerald, straight, 17 cm	1
Forceps, dressing, standard, straight, 18 cm	1
Forceps, artery, Halsted-Mosquito, 12.5 cm, straight	10
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	10
Forceps, artery, Rochester-Pean, straight, 16 cm	6
Needle holder, Mayo-Hegar, 16 cm	2
Needle holder, Mayo-Hegar, 18 cm	2
Needle, ligature, Deschamps, left, blunt, small, 20 cm	1
Needle, ligature, Deschamps, left, blunt, medium, 20 cm	1
Conductor, ligature, König, 5 mm, 19.5 cm	1
Probe Nelaton, 16 cm	1
Probe, director, 1mm, 14.5 cm	1
Probe, director, 2mm, 14.5 cm	1
Retractor, Mollison, sharp, 15 cm	2
Retractor, Volkmann, sharp, 2 prongs, 21.5 cm	2
Retractor, self-retaining, Weitlaner, sharp, 16.5 cm	2
Elevator, Adson, round, slightly curved, 17 cm	1
Elevator, Adson, round, straight, 17 cm	1
Elevator, periostal, Langenbeck, small, 20 cm	1
Raspatory, Lambotte, 15 mm, 21 cm	1
Raspatory, Farabeuf, curved, 15 cm	1
Dissector, Davis, 24.5 cm	1
Elevator, septum, Freer, sharp/blunt, 18 cm	1
Suction tube, Frazier, 6 Fr.	1
Curette, bone, Volkmann, 17 cm	1
Hook, nerve, Frazier, sharp, 13 cm	2
Hook, nerve, Cushing, 19 cm	1
Retractor, tracheal, 1 prong, sharp, 16 cm	2
Drill, cranial, Hudson + extension + 4 burrs	1
Wire, Gigli, 50 cm	6
Handle for wire saw (one pair), solid	1
Guide DeMartel for wire saw, flexible, 33 cm	1
Clip, Cologne	10
Forceps, applicator, McKenzie, 19 cm	1
Rack, clip carrier, brain clips McKenzie	1
Clips, McKenzie, silver, 100 pieces	1

**07.01.08.32 Laminectomy set (2)****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Gallipot, diam. 10 cm, S/S	2
Kidney dish, stainless steel, 20 cm	1
Forceps, sponge holding, Foerster, 25 cm	2
Clamp, towel, Backhaus, 11 cm	8
Scalpel handle no.4	2
Forceps, artery, Crile-Rankin, straight, 16 cm	3
Forceps, artery, Crile-Rankin, curved, 16 cm	6
Forceps, artery, Leriche, curved, 1x2 T 15 cm	3
Retractor, Volkmann, sharp, 6 prongs, 21.5 cm	2
Hook, nerve, Cushing, delicate, 19 cm	1
Love Nerve root retractor 19 cm,	1
Love Nerve root retractor 19 cm,	1
Forceps, Gruenwald, 20 cm	1
Forceps, tissue, standard, 1x2 T straight 16 cm	1
Forceps, dressing, Potts-Smith, straight 21 cm	1
Scissors, standard, straight, SH/BL 14.5 cm	1
Scissors, Metzenbaum-Nelson, curved, BL/BL. 23 cm	1
Scissors, Strully, curved 17 cm	1
Needle Holder Mayo-Hegar, 20 cm	2
Rongeur, bone, Stille, 23 cm	1
Rongeur, bone, Luer, curved, 17 cm	1
Retractor, Beckmann, sharp, 4x4 prongs, 31 cm	1
Spreader, lamina, Inge, 16.5 cm	1
Raspatory, Lambotte, 15 mm, 21 cm	1
Elevator, Langenbeck, 8 mm, 20 cm	2
Rongeur, Kerrison, working length 18 cm, 40° up biting, 3 mm	1
Rongeur, Kerrison, working length 18 cm, down biting, 3 mm	1
Rongeur, Kerrison, working length 18 cm, 40° up biting, 5 mm	1
Rongeur, Kerrison, working length 18 cm, down biting, 5 mm	1
Forceps, nasal cutting, Weil-Blakesley,	1
Forceps, cup, Spurling, working length 13 cm, straight, 4x10mm	1
Forceps, cup, Love-Gruenwald, working length, 18cm, straight, 3x10mm	1
Forceps, cup, Love-Gruenwald, working length, 18cm, up biting, 3x10mm	1
Curette, laminectomy, curved, 5,2mm, 25 cm	1
Curette, laminectomy, straight, 3,6mm, 25 cm	1
Curette, laminectomy, straight, 5.2mm, 25 cm	1
Curette, laminectomy, curved, 3,6mm, 25 cm	1
Curette, Hatfield, 3x5mm, 28 cm	1
Rongeur, Kerrison, working length 18 cm, up biting, 2 mm	1
Rongeur, Kerrison, working length 18 cm, up biting, 3 mm	1
Rongeur, Kerrison, working length 18 cm, up biting, 5 mm	1
Rongeur, Kerrison, working length 18 cm, down biting, 2 mm	1
Rongeur, Kerrison, working length 18 cm, 40° up biting, 2 mm	1
Rongeur, cup, Spurling working length 13 cm, up biting, 4x10mm	1
Rongeur, cup, Spurling working length 13 cm, down biting, 4x10mm	1

Rongeur, cup, Spurling working length 18 cm, straight, 4x10mm	1
Rongeur, cup, Spurling working length 18 cm, up biting, 4x10mm	1
Rongeur, cup, Spurling working length 18 cm, down biting, 4x10mm	1
Scalpel handle no.7	1
Scissors, Metzenbaum-Nelson, curved, BL/BL. 18 cm	2
Scissors, standard, straight, SH/BL 16.5 cm	1
Retractor, laminectomy, Adson, sharp, 6x6 teeth, right short, 26.5 cm	2
Retractor, laminectomy, Adson, sharp, 6x6 teeth, left short, 26.5 cm	2

#### **07.01.08.33 Micro surgical instruments neuro**

Operating microscope, with varioscope autofocus and superlux illumination on mobile floor stand for neurosurgery.

##### **Technical Data:**

operating microscope on Contraves type suspension

inclinable 180 degree binocular tube

12.5x/18 B screw-type, wide field eye-piece

varioscope; comprising an objective lens and an illumination module including automatic focusing in the range from 200 to 400 mm. Focusing can be triggered using the foot control panel.

power unit

foot switch

dust cover

retrofitting connecting kit for connecting varioscope with autofocus

floor stand for neurosurgery prepared for retrofitting of an automatic three-point leveling system.

all electrical supplies integrated in the stand. Semi-automatic balancing of the microscope between 7 and 14 kg.

power requirements: 220V/50Hz

power consumption: 800 VA/ describe

300 superlux high-intensity light source with xenon lamp with light guide and connector

#### **07.01.08.34 Paediatric shunt set**

##### **Technical Specifications**

2 Rampley sponge forceps, 25 cm

5 Backhaus towel clamp, 13 cm

10 mosquito forceps, str., 12.5 cm

10 mosquito forceps, cvd., 12.5 cm

2 Allis tissue forceps, 4x5T., 15 cm

2 Gillies forceps, 1x2T., 15 cm

2 Lane dissecting forceps, 15 cm

2 Bonney serrated forceps, 18 cm

2 Mayo scissors, chamfered, str., 16.5 cm

1 Kocher retractor, 40x15 mm, 22 cm

2 Gillies skin hook, 18 cm

2 tracheal double hook, sharp/blunt

2 Syme aneurysm needle, 16 cm

1 Michel clip applying forceps

#### **07.01.08.35 Cataract set**

##### **Technical Specifications**

**Description:** Cataract, Extracapsular, Lens Implanation, Phaco micro surgical set

Each set consisting of:

1 Elschmig forceps for superior rectus fixation

1 Bonn-Moria forceps, micro-teeth

1 Bonn-Moria forceps, platform, straight

1 Paufigue forceps

1 Barraquer spatula, very thin and delicate  
 1 Barraquer-Troutman bulbous cannula, very delicate  
 1 Rycroft injection cannula  
 1 Charleux cannula  
 1 Barraquer speculum, adult size  
 2 De Wecker forceps  
 1 syringe 3 cc luer lock  
 1 Troutman micro-scissors, very thin and blunt  
 1 Troutman micro-scissors, very thin and blunt  
 1 Vannas micro-scissors, curved, blunt  
 1 Halstead forceps, straight, with teeth  
 1 Castroviejo needle holder, curved  
 1 Castroviejo-Westcott scissors, curved, blunt  
 1 Culler iris spatula  
 1 Barraquer fixation forceps  
 1 Troutman blade holder, straight  
 1 Kratz aspiration cannula  
 1 double way cannula  
 1 viscoelastic cannula  
 1 Brinkhorst aspiration cannula  
 1 Troutman- O'brein needle holder  
 1 Troutman tying forceps  
 1 Mac Pherson forceps  
 1 Corydon capsulorhexis forceps  
 1 sterilization box stainless steel with lid

#### **07.01.08.36 Cholecystectomy set**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Moynihan hysterectomy fcp, 23 cm.	2
Moynihan hysterectomy fcp, 24 cm.	2
Lahey kidney pedicle clamp fcp, 19 cm.	1
Gall duct forceps, Kantrowitz, 24 cm	1
Desjardins gall stone fcp, 23 cm.	1
Desjardins gall stone fcp, 23 cm.	1
Moynihan gall. stone probe, 34 cm.	1
Ochsner trocar. for gall bladder, 12 ch.	1
Bakes gall duct dilators	9

#### **07.01.08.37 Haemorrhoidectomy set**

##### **Technical Specifications**

Set, surgical instruments, haemorrhoidal surgery	1
Foerster sponge holding forceps, serrated, 18 cm	2
Backhaus towel forceps, 9 cm	4
Scalpel handle no.3	1
Mayo dissection scissors, curved, 14.5 cm	1
Tissue forceps Gillies, 1 x 2 teeth, 15 cm	1
Mc Givney forceps 19.0 cm	1
Leriche haemostatic forceps, straight, 1 x 2 teeth, 15 cm	4
Sims rectal specula, 90 mm blade, 15 cm	1
Kelly sphincteroscope with obturator, 27 x 50 mm diameter	1
Brodie probe, 20 cm	1
Fergusson angiotribe, curved, 20 cm	1



MC Givney haemorrhoidal ligator complete	1
Ligator rings Pack of 100	1
Mayo-Hegar needle holder, 16 cm, TC	1
Gallipot, stainless steel, 10 cm diameter	2
Kidney dish, stainless steel, 25 cm	1
Sterilization container, alu, 28.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

#### **07.01.08.38 Rhinoplasty set**

##### **General:** Rhinoplasty set

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	1
Clamp, towel, Backhaus, 9 cm	4
Scalpel handle No. 3	2
Knife, nasal, Joseph, sharp, straight,	1
Knife, Cottle, 15 cm	1
Knife, septum, swivel, Ballenger, straight, 3 mm	1
Knife, septum, swivel, Ballenger, straight, 4 mm	1
Knife, septum, Freer, 15 cm	1
Scissors, nasal, Heymann, 18 cm	1
Scissors, dissecting, Mayo, straight, 15 cm	1
Scissors, nasal, Cottle, 16 cm	1
Scissors, plastic surgery, Joseph, curved, sharp, 14 cm	1
Forceps, dressing, Semkin, 12.5 cm	1
Forceps, tissue, 1x2 teeth, Semkin, 12.5 cm	1
Forceps, nose dressing, Lucae, bayonet, 14 cm	2
Forceps, tissue, Adson-Braun, 12 cm	2
Forceps, tissue, Allis, 15 cm	2
Artery forceps Halstaed-Mosquito 12.5 cm, straight	2
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	4
Retractor, nasal, Aufricht, 19 cm	1
Specula, nasal, Cottle, 75 mm, 15 cm	1
Hook, delicate, Fomon, blunt, 17 cm	1
Forceps, septum straightening, Ash, curved, 23 cm	1
Forceps, septum, Knight, 18 cm	1
Elevator, septum, Joseph, 4mm, 16 cm	1
Elevator, septum, Mc Kenty, 4mm, 15 cm	1
Chisel, Cottle, 4 mm, 18 cm	1
Chisel, Cottle, 7 mm, 18 cm	1
Saw, nasal, Joseph, bayonet, left, 19 cm	1
Saw, nasal, Joseph, bayonet, right, 19 cm	1
Hook, Joseph, delicate, 2 teeth, sharp, 5 mm, 16 cm	1
Hook, Joseph, delicate, 1 teeth, sharp, 16 cm	1
Suction tube, Frazier, 10 Fr.	1
Mallet, Cottle, 250 gram, 19 cm	1
Scalpel handle, no. 7K	1
Scissors, standard, straight, sharp, 11.5 cm	1
Needle holder, Kilner, S-shape, 13 cm	1

Elevator, septum, Freer, sharp/blunt, 18 cm	1
<b>Submucous resection of Nasal septum</b>	
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	1
Clamp, towel, Backhaus, 9 cm	4
Forceps, nasal tampon, Gruenwald, bayonet, 20 cm	1
Speculum, nasal, Killian, 35 mm, 13 cm	1
Speculum, nasal, Killian, 50 mm, 13 cm	1
Speculum, nasal, Killian, 75 mm, 13 cm	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Elevator, septum, Howarth, 21 cm	1
Elevator, septum, Freer, sharp/blunt, 18 cm	1
Knife, septum, swivel, Ballenger, bayonet, 4 mm	1
Knife, septum, swivel, Ballenger, bayonet, 5 mm	1
Forceps, ear polypus, Hartmann, standard, 14 cm	1
Gouge, rhinoplasty, Killian-Claus, bayonet, 5 mm, 16 cm	1
Forceps, septum, Luc, 20 cm	1
Forceps, septum, Luc, 20 cm	1
Scissors, nasal, Heymann, 18 cm	1
Forceps, nasal-septum, Middleton-Jansen, 5x15 mm jaw, 19 cm	1
Suction tube, Frazier, 6 Fr.	1
Knife, septum, Freer, small, 15 cm	1
Chisel, Freer, straight, 4 mm, 16 cm	1
Forceps, tissue, Allis, 15 cm	2
Scissors, standard, straight, sharp, 11.5 cm	1
Needle holder, Kilner, S-shape, 13 cm	1

### **07.01.08.39 Hand & tendon microsurgery**

#### **General: Hand surgery set**

#### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps sponge holding, straight, 18 cm	1
Clamp, towel, Backhaus, 9 cm	4
Osteotome, min-Lambotte, straight, 4 mm, 12.5 cm	1
Osteotome, min-Lambotte, straight, 6 mm, 12.5 cm	1
Osteotome, min-Lambotte, straight, 8 mm, 12.5 cm	1
Osteotome, min-Lambotte, straight, 10 mm, 12.5 cm	1
Osteotome, min-Lambotte, straight, 12 mm, 12.5 cm	1
Gouge, bone, Partsch, 4 mm, 13.5 cm	1
Gouge, bone, Partsch, 6 mm, 13.5 cm	1
Gouge, bone, Partsch, 8 mm, 13.5 cm	1
Osteotome, 10 mm, 13.5 cm	1
Osteotome, 12 mm, 13.5 cm	1
Mallet, Partsch, lead filled, 200 gr, 18 cm	1

Rasp, nasal, Joseph, fine, 16 cm	1
Elevator, septum, Joseph, extra curved, 16 cm	1
Rongeur, bone, Friedmann, 14 cm	1
Forceps, bone cutting, Boehler, curved, 15 cm	1
Forceps, bone holding, 5mm, 20 cm	1
Curette, bone, Martini, double, 13.5 cm	1
Tamper, 3 mm, 15.5 cm	1
Forceps, bone holding, straight, 20 cm	1
Measure, stainless steel, 15 cm	1
Forceps, wire, flat nose, 16 cm	1

#### **Tendon supplementary set**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps sponge holding, straight, 18 cm	1
Clamp, towel, Backhaus, 9 cm	4
Forceps, serrated, without pin, straight, 11.5 cm	1
Forceps, atraumatic, De Bakey, 1.5mm, 16 cm	1
Stripper, tendon, Bunnel, malleable, 23 cm	1
Forceps, tendon seizing, Brand, 15 cm	1
Forceps, tendon seizing, Brand, 19 cm	1
Forceps, tissue, Allis, 15 cm	2
Reamer, Perthes, 21 cm	1
Forceps, wire cutting, curved, double working, 18 cm	1

#### **07.01.08.40 Ureter dilation set**

**General:** Urethral dilatation set

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bougie, Clutton, curved, 10 Fr	1
Bougie, Clutton, curved, 12 Fr	1
Bougie, Clutton, curved, 14 Fr	1
Bougie, Clutton, curved, 16 Fr	1
Bougie, Clutton, curved, 18 Fr	1
Bougie, Clutton, curved, 20 Fr	1
Bougie, Clutton, curved, 22 Fr	1
Bougie, Clutton, curved, 24 Fr	1
Bougie, Dittel, straight, short, 10 Fr	1
Bougie, Dittel, straight, short, 12 Fr	1
Bougie, Dittel, straight, short, 14 Fr	1
Bougie, Dittel, straight, short, 16 Fr	1
Bougie, Dittel, straight, short, 18 Fr	1
Bougie, Dittel, straight, short, 20 Fr	1
Bougie, Dittel, straight, short, 22 Fr	1
Bougie, Dittel, straight, short, 24 Fr	1
Bougie, filiform, olive tip, 33 cm length, 2 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 3 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 4 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 5 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 6 Fr., male metric thread	1
Bougie, Guyon, for use as Filiform guide, 12 Fr	2

Penile clamp, soft, medium size	2
Kidney dish 20cm S/S	1

#### **General Technical data for Items No. 41 - 55**

##### **All metallic instrument should:**

Made of stainless steel which is comply to ISO 7153-1 : (1991) E  
Autoclavable in a high steam and high temprature Sterilizers  
Withstand corrosion and rust and comply with ISO 13402: 1995 (E)  
Not be easily brittle/brakable  
Not to be too stiff/ too hard  
Not be fast blunt  
Blades can be reparable  
Resist moisture

##### **All plastic parts, cables and other electronic parts of the instrument:**

are not heat resistant; therefore they are:

Ethyline Oxide/gas sterilized

- 07.01.08.41 Vagotomy set**
- 07.01.08.42 Ophorectomy & oophorocystectomy set**
- 07.01.08.43 Lobectomy & segmental lung resection set**
- 07.01.08.44 Oesophagectomy & oesophagus replacement**
- 07.01.08.45 Tetralogy of fallot set (babcock-taussig procedure)**
- 07.01.08.46 Saphenous vein ligation set**
- 07.01.08.47 carotid artery ligation set**
- 07.01.08.48 prefrontal lobotomy set**
- 07.01.08.49 hydrocephalus shunt operation set**
- 07.01.08.50 Cordotomy & Rhizotomy set**
- 07.01.08.51 radical neck dissection set**
- 07.01.08.52 Charnley hip replacement**
- 07.01.08.53 burr-hole set**
- 07.01.08.54 Cholecystectomy set**

##### **07.01.08.55 Tympanoplasty set (1)**

##### **Description:** These set contains:

Mixer gall forceps, slightly curved end, stopage of handle	4
Disjardine gall Stone forceps, ringed end,	1
Blake jall stone forceps,	2
Thumb dressing forceps	1
tissue forceps	1
russian tissue forceps	1
Mayo cysto stone scoop	1
Sawtel hemostas fully curved	2
Shindir hemostats slightly curved	2
Ochsner torcar 18 French	1
Ochsner torcar 16 French	1
Ochsner torcar 14 French	1
Bakes Dilators	5
Lathy gall duct forceps	2
Nelson Scissor	1
Instrument container	1
Kidney stone forceps	2
Ochsner gall stone prob	9

#### 07.01.09 Minor Surgical set

##### **General Technical data for Items No. 09.01 – 09.34**

##### **All metallic instrument should:**

Made of stainless steel which is comply to ISO 7153-1 : (1991) E

Autoclavable in a high steam and high temperature Sterilizers

Withstand corrosion and rust and comply with ISO 13402: 1995 (E)

not be easily brittle/breakable

not to be too stiff/ too hard

not be fast blunt

blades can be repairable

Resist moisture

##### **All plastic parts, cables and other electronic parts of the instrument:**

are not heat resistant; therefore they are:

Ethylene Oxide/gas sterilized

#### **07.01.09.01 Simple mastectomy set**

**General:** Simple Mastectomy set

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Gallipot, diam. 10 cm, S/S	2
Bowl, stainless steel, 15 cm, 600 ml	2
Kidney dishes, stainless steel, 20 cm	1
Forceps, sponge holding, Foerster, 25 cm	4
Clamp, towel, Backhaus, 11 cm	6
Scalpel handle No. 3	1
Scalpel handle, no 4, standard	1
Scalpel handle, no 7	1
Scissors, dissecting, Mayo, straight, 15 cm	1
Scissors, dissecting, Mayo, curved, 15 cm	1
Scissors, Metzenbaum, curved, 18 cm	2
Scissors, standard, straight, bl/bl, 14.5 cm	1
Forceps, dressing, standard, straight, 14.5 cm	2
Forceps, dressing, standard, straight, 20 cm	1
Forceps, tissue, standard, 1x2 teeth, straight 14.5 cm	2
Forceps, tissue, standard, 1x2 teeth, straight 20 cm	1
Forceps, tissue, Allis, 15 cm	4
Forceps, intestinal, tissue, Babcock, 16 cm	2
Forceps, artery, Halsted-Mosquito, 12.5 cm, straight	10
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	10
Forceps, artery, Crile-Rankin, 16 cm, straight	4
Forceps, artery, Crile-Rankin, 16 cm, curved	4
Forceps, artery, Kocher, 16 cm, 1x2 teeth, straight	4
Retractors, Richardson, 28x20 mm, 24 cm	2
Retractors, Richardson, 36x28 mm, 24 cm	2
Retractor, Roux, set of 3	1
Retractor, Deaver, 50 mm, 30 cm	2
Retractor, Volkmann, semi-sharp, 4 prongs, 21.5 cm	2
Retractor, Volkmann, semi-sharp, 6 prongs, 21.5 cm	2
Retractor, Cushing, 10 mm width, 20 cm	2
Retractor, US Army, set of 2	1
Spatula, abdominal, malleable, 30 mm. 33 cm	1
Spatula, abdominal, malleable, 40 mm. 33 cm	2
Probe with eye, 2 mm, 13 cm	1

Conductor, ligature, König, 3 mm, 19.5 cm	1
Needle, ligature, Deschamps, left, blunt, medium, 20 cm	1
Needle, ligature, Deschamps, right, blunt, medium, 20 cm	1
Needle holder, Mayo-Hegar, 16 cm	1
Needle holder, Mayo-Hegar, 18 cm	2
Tube, suction, Yankauer, 28 cm	1
Scissors, Nelson (Metzenbaum), curved, 23 cm	1
Forceps, dressing, Potts-Smith, straight, 21 cm	1
Forceps, dressing, Potts-Smith, straight, 25 cm	1
Needle holder, Mayo-Hegar, 24 cm	1

#### **07.01.09.02 Radical mastectomy set**

**General:** Radical Mastectomy set ( in combination with Basic surgical set)

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Clamp, towel, Backhaus, 11 cm	4
Forceps, dissecting, Zenker, slightly curved, 29.5 cm	2
Forceps, dissecting and ligating, Gemini, curved, 28 cm	2
Forceps, vulsellum, Pratt, 4x4 teeth, 26 cm	1
Forceps, tenaculum, Schroeder, 25 cm	2

#### **07.01.09.03 Foreign body removal set**

**General:** Ear- foreign body removal set

##### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Ear syringe, metal, 100 ml, complete with 2 nozzles and plate	1
Forceps, ear dressing, Troeltsch, 12 cm	1
Forceps, polypus, Littauer, 12 cm	1
Hartmann ear specula, set of 4, 4.5, 5.5, 6.5 and 7.5 mm dia.	1
Ear hook, Lucae, 14 cm	1
Ear hook, Lucae, 14 cm	1
Ear curette, Buck, sharp,	1
Ear curette, Buck, sharp,	1
Quire foreign body lever	1

##### **Nasal- foreign body removal set**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Thudichum nasal specula	1
Thudichum nasal specula	1
Thudichum nasal specula	1
Thudichum nasal specula	1
Troeltsch nasal tampon forceps 15 cm	1
Ear hook, Lucae, 14 cm	1
Suction nozzle, Fergusson, 8 Fr, 17 cm	1

##### **Eye-foreign body removal set**

Instrument box with silicone mat, 12 x20 x 2.5 cm	1
Curette, foreign body, Borsch	1
Needle, foreign body, Dupuytren, delicate	2
Probe, eye, magnetic	1
Speculum, ophthalmic	1

**07.01.09.04 Epispadias (hypospadias )repair set****General:** Set, surgical instruments, hypospadias repair**Technical Specification**

Foerster sponge forceps, serrated, straight, 18 cm	1
Clamp, towel, Backhaus, 9 cm	4
Scalpel handle no. 3	1
Mayo scissors, straight, 14 cm	1
Scissors Metzenbaum, curved, 18 cm	1
Scissors, strabismus, blunt, curved, 11.5 cm	1
Scissors, iris, sharp, straight, 11.5 cm	1
Scissors, iris, sharp, curved, 11.5 cm	1
Allis tissue forceps, 4 x 5 teeth, 15 cm	2
Adson dressing forceps, 12 cm	2
Adson dissection forceps, 1 x 2 teeth, 12 cm	2
Halstead-Mosquito haemostatic forceps, straight, 12.5 cm	6
Halstead-Mosquito haemostatic forceps, curved, 12.5 cm	6
Crile-Rankin haemostatic forceps, curved, 16 cm	2
Retractor tracheal, sharp, 1 tooth, 16 cm	2
Retractor Senn-Muller, sharp, 16 cm	2
Nerve retractor Cushing, 19 cm	2
Retractor Alm, sharp, 4 x 4 teeth, 7 cm	1
Probe double, 1.5 mm diameter, 16 cm	1
Needle holder Crile-Wood, 15 cm, TC	2
Suction tube Frazier, 10 ch	2
Gallipot, stainless steel, 10 cm diameter	2
Bowl, stainless steel, 600 ml, 12 cm diameter	1
Sterilization container, alu, 28.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

**07.01.09.05 Urethral dilatation & internal urethrotomy set****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bougie, Clutton, curved, 10 Fr	1
Bougie, Clutton, curved, 12 Fr	1
Bougie, Clutton, curved, 14 Fr	1
Bougie, Clutton, curved, 16 Fr	1
Bougie, Clutton, curved, 18 Fr	1
Bougie, Clutton, curved, 20 Fr	1
Bougie, Clutton, curved, 22 Fr	1
Bougie, Clutton, curved, 24 Fr	1
Bougie, Dittel, straight, short, 10 Fr	1
Bougie, Dittel, straight, short, 12 Fr	1
Bougie, Dittel, straight, short, 14 Fr	1
Bougie, Dittel, straight, short, 16 Fr	1
Bougie, Dittel, straight, short, 18 Fr	1
Bougie, Dittel, straight, short, 20 Fr	1
Bougie, Dittel, straight, short, 22 Fr	1
Bougie, Dittel, straight, short, 24 Fr	1
Bougie, filiform, olive tip, 33 cm length, 2 Fr., male metric thread	1

Bougie, filiform, olive tip, 33 cm length, 3 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 4 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 5 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 6 Fr., male metric thread	1
Bougie, Guyon, for use as Filiform guide, 12 Fr	2
Penile clamp, soft, medium size	2
Kidney dish 20cm S/S	1

#### **07.01.09.06 Suprapubic & retropubic prostatectomy set**

##### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	
Kidney dish, 20 cm, stainless steel	1
Suprapubic trocar and cannula, Hurwitz, 18 Fr, 20 cm	1
Handle, scalpel, nr. 3	1
Needle holder, Mayo-Hegar, 16 cm	1
Scissors, standard, bl/bl, 14.5 cm	1
Catheter introducer	1

#### **07.01.09.07 Nephrotomy, Nephrostomy, Nephrolithotomy, pyelotomy**

**General:** Nephrectomy set (in combination with Laparotomy set) Optional

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Scalpel handle, no. 3L	1
Scissors, Metzenbaum, curved, 18 cm	1
Forceps, dressing, standard, straight 14.5 cm	2
Forceps, tissue, standard, 1x2 teeth, straight, 20 cm	1
Forceps, tissue, Allis, 15 cm	2
Artery forceps Halstaed-Mosquito 12.5 cm, straight	10
Forceps, artery, Halsted-Mosquito, 12.5 cm, curved	10
Forceps, artery, Kocher, 16 cm, 1x2 teeth, straight	4
Retractor, Richardson, blade 28 x 20 mm, 24 cm	2
Retractor, Richardson, blade 36 x 28 mm, 24 cm	2
Retractor set, Roux,	1
Retractor, Deaver, 50 mm width, 30 cm	2
Retractor, Volkmann, semi-sharp, 4 prongs, 21.5 cm	2
Retractor, Volkmann, semi-sharp, 6 prongs, 21.5 cm	2
Retractor, Cushing, 10 mm width, 20 cm	2
Retractor, US Army, set of 2	1
Spatula, abdominal, malleable, 30 mm. 33 cm	1
Probe with eye, 2 mm, 13 cm	1
Conductor, ligature, König, 3 mm, 19.5 cm	1
Needle, ligature, Deschamps, left, blunt, medium, 20 cm	1
Needle, ligature, Deschamps, right, blunt, medium, 20 cm	1
Needle holder, Mayo-Hegar, 16 cm	1
Needle holder, Mayo-Hegar, 18 cm	2
Scissors, Nelson (Metzenbaum), curved, 23 cm	2
Forceps, dressing, Potts-Smith, straight, 21 cm	1
Forceps, dressing, Potts-Smith, straight, 25 cm	1
Needle holder, Mayo-Hegar, 24 cm	1
Forceps, artery, Kocher, 16 cm, 1x2 teeth, straight	8
Forceps, artery, Mixer, curved, 19 cm	2
Forceps, intestinal, tissue, Allis, 25 cm	4
Forceps, kidney pedicle, Guyon, 24 cm	2



Forceps, kidney pedicle, Herrick, 23 cm	2
Forceps, clamp, Wertheim-Cullen, 21.5 cm	2
Forceps, gall duct, Lahey, 23 cm	2
Retractor, Richardson, 52 x22 mm, 24 cm	2
Retractor, Richardson, 65 x50 mm, 26 cm	2
Needle holder, Masson, 27 cm	1
Rongeur, bone, Stille-Luer, curved, 22 cm	1
Raspatory, Rib, Doyen, adult, left, 17 cm	1
Raspatory, Rib, Doyen, adult, right, 17 cm	1
Raspatory, Alexander, 20 cm	1
Forceps, bone cutting, Horsley, 27 cm	1
Forceps, bone holding, Semb, with ratchet, 20 cm	1
Shears, Rib, Giertz-Stille, 27 cm	1
Forceps, dressing, standard, 25 cm	2
Forceps, tissue, standard, 1x2 teeth, 25 cm	2
Forceps, tissue, Potts-Smith, straight, 25 cm	2
Scissors, Mayo, straight, 23 cm	1
Scissors, Mayo, curved, 23 cm	1
Pin, instrument holder, Mayo, 14 cm	4

#### **07.01.09.08 Cystectomy set**

**General:** Set, surgical instruments, cystectomy

##### **Technical Specifications**

Foerster sponge forceps, serrated, straight, 25 cm	1
Clamp, towel, Backhaus, 11 cm	6
Scalpel handle no. 3L	1
Scissors Mayo, straight, 23 cm	1
Scissors Mayo, curved, 23 cm	1
Scissors Metzenbaum, curved, 20 cm	1
Dressing forceps, standard, straight, 25 cm	2
Atraumatic forceps DeBakey, 2.0 mm width, 20 cm	2
Allis tissue forceps, 5 x 6 teeth, 19 cm	6
Crile-Rankin haemostatic forceps, curved, 16 cm	12
Rochester-Pean forceps, curved, 20 cm	6
Kocher forceps, straight, 20 cm	4
Doyen intestinal forceps, straight, 23 cm	2
Allen intestinal forceps, 20 cm	4
Mixter gall duct forceps, 19 cm	4
Kidney pedicle clamp Mayo-Guyon. 23 cm	2
Retractor Richardson, 28 x 20 mm, 24 cm	2
Retractor Kelly, 65 x 75 mm	2
Retractor Deaver, 25 mm, 30 cm	1
Retractor Deaver, 75 mm, 30 cm	1
Bladder Retractor Judd-Masson	1
Bougie van Buren, 16 ch	1
Bougie van Buren, 18 ch	1
Bougie van Buren, 20 ch	1
Catheter introducer Guyon, straight	1
Needle holder Crile-Wood, 15 cm, TC	2
Needle holder Mayo-Hegar, 26 cm, TC	2
Gallipot, stainless steel, 10 cm diameter	2

Bowl, stainless steel, 600 ml, 12 cm diameter	1
Kidney dish, stainless steel, 25 cm	2
Sterilization container, alu, 46.5 x 28.0 x 13.5 cm	1
Wire mesh basket	1
Identification labels, red	2

#### **07.01.09.09 ureterotomy & ureterostomy set(Urethral dilatation set)**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bougie, Clutton, curved, 10 Fr	1
Bougie, Clutton, curved, 12 Fr	1
Bougie, Clutton, curved, 14 Fr	1
Bougie, Clutton, curved, 16 Fr	1
Bougie, Clutton, curved, 18 Fr	1
Bougie, Clutton, curved, 20 Fr	1
Bougie, Clutton, curved, 22 Fr	1
Bougie, Clutton, curved, 24 Fr	1
Bougie, Dittel, straight, short, 10 Fr	1
Bougie, Dittel, straight, short, 12 Fr	1
Bougie, Dittel, straight, short, 14 Fr	1
Bougie, Dittel, straight, short, 16 Fr	1
Bougie, Dittel, straight, short, 18 Fr	1
Bougie, Dittel, straight, short, 20 Fr	1
Bougie, Dittel, straight, short, 22 Fr	1
Bougie, Dittel, straight, short, 24 Fr	1
Bougie, filiform, olive tip, 33 cm length, 2 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 3 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 4 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 5 Fr., male metric thread	1
Bougie, filiform, olive tip, 33 cm length, 6 Fr., male metric thread	1
Bougie, Guyon, for use as Filiform guide, 12 Fr	2
Penile clamp, soft, medium size	2
Kidney dish 20cm S/S	1

#### **07.01.09.10 Ureterolithotomy (urological surgery) set**

**General:** Set, surgical instruments, urological surgery, basic

##### **Technical Specifications**

Foerster sponge forceps, serrated, straight, 25 cm	2
Clamp, towel, Backhaus, 11 cm	6
Scalpel handle no. 4	1
Scalpel handle no. 3	1
Scalpel handle no. 7	1
Mayo scissors, straight, 15 cm	1
Mayo scissors, curved, 15 cm	2
Metzenbaum scissors, curved, 18cm	2
Iris scissors, curved, sharp, 11.5 cm	1
Vascular scissors Potts-Smith, 45 degrees, 19 cm	1
Scissors, standard, sharp / blunt, straight, 14.5 cm	1
McIndoe forceps, serrated, 15 cm	1
Gillies dissecting forceps, 1 x 2 teeth, 15 cm	1
Waugh forceps, serrated, 20 cm	1
Waugh dissecting forceps, 1 x 2 teeth, 20 cm	1

Adson dissecting forceps, 1 x 2 teeth, 12 cm	1
Dressing forceps, 20 cm	2
Tissue forceps, atraumatic, de Bakey, 2.0 mm, 20 cm	2
Tissue forceps, atraumatic, de Bakey, 2.7 mm, 20 cm	2
Allis tissue forceps, 4 x 5 teeth, 15 cm	2
Allis tissue forceps, 5 x 6 teeth, 19 cm	2
Babcock tissue forceps, 16 cm	2
Halsted Mosquito haemostatic forceps, curved, 12.5 cm	10
Crile-Rankin haemostatic forceps, curved, 14 cm	10
Rochester-Pean forceps, straight, 20 cm	6
Kocher forceps, curved, 18 cm	6
Roberts forceps, straight, 22 cm	6
Moynihan cholecystectomy forceps, 23 cm	2
Overholt-Geissendoerfer forceps, 21 cm	2
O'Shaughnessy forceps, curved, 23 cm	2
DeBakey bulldog clamp, straight, 8 cm	2
Satinsky anastomosis forceps, atraumatic, 26.5 cm	1
Randall kidney stone forceps, 23cm	1
Randall kidney stone forceps, 23cm	1
Randall kidney stone forceps, 23cm	1
Randall kidney stone forceps, 23cm	1
Volkman retractor, sharp, 2 teeth, 21.5 cm	2
Volkman retractor, sharp, 4 teeth, 21.5 cm	2
Retractor Richardson, 36 x 28 mm, 24 cm	2
Retractor Richardson, 44 x 38 mm, 24 cm	2
Retractor Richardson, 52 x 22 mm, 24 cm	2
Retractor Kelly, 65 x 50 mm, 26 cm	2
Deaver retractor, 25mm width, 30 cm	1
Deaver retractor, 50mm width, 30 cm	1
Balfour abdominal retractor, with third blade, adult	1
Mc Donald dissector	1
Grooved director and probe, 14 cm	1
Probe, double ended, 13cm	1
Syme aneurysm needle, curved laterally, 17 cm	1
Volkman bone curette, double, oval / round, 20 cm	1
Poole suction tube, 10 mm diameter, 22 cm	1
Mayo-Hegar needle holder, 16 cm, TC	2
Crile-Wood needle holder, 20 cm, TC	1
Gallipot, stainless steel, 10 cm diameter	2
Bowl, stainless steel, 600 ml, 12 cm diameter	1
Kidney dish, stainless steel, 25 cm	1
Sterilization container, alu, 46.5 x 28.0 x 15.0 cm	1
Wire mesh basket	1
Identification labels, red	2
<b>07.01.09.11 Anoplasty set</b>	
<b>General:</b> Set, surgical instruments, anoplasty	
<b>Technical Specifications</b>	
Foerster sponge holding forceps, serrated, 18 cm	2
Backhaus towel forceps, 9 cm	4
Scalpel handle no.3	1

Metzenbaum scissors, curved, 14 cm	1
Mc Indoe forceps, 15 cm	1
Tissue forceps Gillies, 1 x 2 teeth, 15 cm	1
Allis tissue forceps, 4 x 5 teeth, 15 cm	2
Halsted Mosquito haemostatic forceps, straight, 12.5 cm	2
Crile Rankin haemostatic forceps, curved, 16 cm	2
Volkman retractor, sharp, 3 prongs, 21.5 cm	2
Gillies skin retractor, large	2
Sims rectal specula, 90 mm blade, 15 cm	1
Mayo-Hegar needle holder, 16 cm, TC	1
Gallipot, stainless steel, 10 cm diameter	2
Kidney dish, stainless steel, 25 cm	1
Sterilization container, alu, 28.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

#### **07.01.09.12 Posterior proctotomy set(Prostatectomy supplementary set)**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Needle holder, Young-Hryntschak, with one needle, 24 cm	1
Needle, spare, medium	2
Needle, spare, large	2
Instrument, prostatectomy, Millin, 24 cm	1
Forceps, prostatectomy instrument, Millin, 23 cm	1
Forceps, tissue, standard, 1x2 teeth, 25 cm	2
Forceps, atraumatic, De Bakey, straight, 2.0mm jaws, 20 cm	2
Forceps, atraumatic, De Bakey, straight, 2.0mm jaws, 24 cm	2
Scissors, Metzenbaum, curved, 20 cm	1
Scissors, Metzenbaum, curved, 23 cm	1
Retractor, Fritsch, 45 x60 mm, 24 cm	2
Retractor, prostatic, Young, 22 cm	1
Clamp, meatus, Millin, 28.5 cm	1

#### **07.01.09.13 Gynecology/Obstetrics: (dilatation & curettage set)**

##### **Technical Specifications**

4 x M.60.10 dilatation and curettage set
2 x M.60.12 abdominal/vaginal uterus set
2 x M.60.22 sectio caesarian set
2 x M.60.30 vaginal repair set
2 x M.60.31 vaginal packing set
4 x M.60.36 episiotomy set
10 x M.60.20 delivery set

#### **07.01.09.14 Cervical biopsy set**

##### **Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	2
Specula set, vaginal, Kristeller,	1
Forceps, cervical biopsy and specimen, Faure, 24 cm	1
Forceps, dressing, standard, straight, 20 cm	1
Scissors standard 14.5 cm, straight, bl/bl	1

**07.01.09.15 Basic vaginal instrument set**

**Description:** Uterine aspirator, complete with suction curettes.  
Gynecological suction pump for vaginal and intrauterine suction

**Technical Features:**

Pump to include two 1000mls polycarbonate flasks

Overflow safety device

Vacuum control: max. 750mm Hg

Flow rate of 25L/minute, minimum

Mounted on a mobile stand with anti-static castors

Foot switch

Power requirement: 220/240V, 50Hz,

Accessories

Complete set of tubing and connectors x 3 sets

Vacuum aspiration cannula/ curette (set of large, medium and small) x 3 sets, stainless steel

Pack of 20 bacterial filters for suction unit x 5

**07.01.09.16 Major vaginal repair set**

**General:** Vaginal repair set

**Technical Specifications****Each set consisting of:**

1 Mayo's scissors, st, b/b, 165 mm

1 Mayo's scissors, c.o.f., b/b, 165 mm

1 Metzenbaum scissors, c.o.f., b/b, 178 mm

1 Dissecting forceps, b.e., serrated, 203 mm

2 Dissecting forceps, b.e., serrated, 152 mm

2 Mc. Indoe dissecting forceps, 1 x 2 teeth, 152 mm

12 Rochester Pean artery forceps, cvd, 160 mm

12 Kelly's artery forceps, straight, 140 mm

12 Kelly's artery forceps, straight, 160 mm

12 Allis' tissue forceps, 5 x 6 teeth, 152 mm

4 Ochsner (Kocher) artery forceps, st, 1x2 t, 200 mm

2 Gelpi retractor, self retaining

1 TC Mayo needle holder, 165 mm

1 TC Mayo needle holder, 191 mm

**07.01.09.17 Vesicovaginal fistula repair set**

Vaginal repair set, Each set consisting of:

\* 1 Mayo's scissors, st, b/b, 165 mm

\* 1 Mayo's scissors, c.o.f., b/b, 165 mm

\* 1 Metzenbaum scissors, c.o.f., b/b, 178 mm

\* 1 Dissecting forceps, b.e., serrated, 203 mm

\* 2 Dissecting forceps, b.e., serrated, 152 mm

\* 2 Mc. Indoe dissecting forceps, 1 x 2 teeth, 152 mm

\* 12 Rochester Pean artery forceps, cvd, 160 mm

\* 12 Kelly's artery forceps, straight, 140 mm

\* 12 Kelly's artery forceps, straight, 160 mm

\* 12 Allis' tissue forceps, 5 x 6 teeth, 152 mm

\* 4 Ochsner (Kocher) artery forceps, st, 1x2 t, 200 mm

\* 2 Gelpi retractor, self retaining

\* 1 TC Mayo needle holder, 165 mm

\* 1 TC Mayo needle holder, 191 mm

**07.01.09.18 Colostomy set****General:** Set, surgical instruments, Colostomy**Technical Specifications**

For complete set add the following instruments to laparotomy set M.30.17.000

Lahey's cholecystectomy forceps	2
Ochsner Kocher artery forceps straight 16cm	4
DeBakey acutely curved clamp 25cm	1
Resano rectal excision clamp angled jaws 30.5cm	2
Fehland rectal/colon excision clamp 24cm	2
Haye's low anterior resection clamp small jaws	1
Haye's low anterior resection clamp large jaws	1
Stone Watt intestinal anastomosis clamp w/lock 7cm	1
Stone Watt intestinal anastomosis clamp w/lock 10cm	1
Clamp holding and closing forceps	1
Heaney needle holder, 20cm, TC	1
Gallipot, stainless steel, 10 cm diameter	2
Bowl, stainless steel, 600 ml, 12 cm diameter	1
Kidney dish, stainless steel, 25 cm	1
Sterilization container, alu, 46.5 x 28.0 x 10.0 cm	1
Wire mesh basket	1
Identification labels, red	2

**07.01.09.19 Vaginal closure set**

Vaginal packing set, Each set consisting of:

- \* 1 Sims vaginal speculum, double ended, medium
- \* 1 Cusco vaginal speculum, large, heavy pattern
- \* 1 Female catheter, metal, fr. 15
- \* 2 Rampley sponge forceps, straight, box joint, 240 mm

**07.01.09.20 Obstetrical instruments ( forceps operation)**

Forceps, obstetric, Wrigley, 23 cm 1

**07.01.09.21 Episiotomy or laceration repair, Delivery pack****Technical Specifications****Each set consisting of:**

- 2 stainless steel kidney dishes, 25 cm
- 1 st.st. Triangular dish (placenta dish)
- 1 st.st. Bowl, 6"
- 1 Mayo scissors, straight, 15 cm
- 2 Spencer Well's artery forceps, straight, 20 cm
- 1 Sponge holder, 25 cm
- 1 Cord scissors
- 1 Episiotomy scissors
- 2 Female catheter

**07.01.09.22 Caesarean section set****General:** Caesarean Section (in combination with Laparotomy set)**Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Forceps, uterine haemostasis, Green-Armytage	8
Forceps, obstetric, Wrigley, 23 cm	1
Forceps, obstetric, Simpson-Braun, 33 cm	1
Speculum, vaginal, Graves, medium	1

**07.01.09.23 Thoactomy set (boitepou-thorax)****General:** Adult pneumothorax set**Technical Specifications****Each set consisting of:**

- 1 st.st. instrument tray, 24 x 24 x 5 cm
- 2 st.st. gallipot, 6 oz
- 2 st.st. gallipot, 4 oz
- 1 Sponge holder, 17 cm
- 1 Toothed dissecting forceps, Treves
- 1 Scalpel handle, no. 3
- 1 Mayo scissors, 15 cm
- 2 Spencer Well's artery forceps, 17 cm, straight
- 1 TC needle holder, 15 cm, Mayo\*Hegar
- 2 Nelson tracer and cannulae
- 1 Set foster Carter \* shield and tracer with angled adapter
- 1 20 cc syringe, luer lock
- 1 2 cc syringe, luer lock
- 1 doz. hypodermic needles, luer lock, 21 G x 1½"
- 1 doz. hypodermic needles, luer lock, 23 G x 1"

**Child pneumothorax set**

Each set consisting of:

- 1 tray, 12" 9" 2"
- 1 gallipot, 6 oz
- 1 gallipot, 4 oz
- 1 Porte gallipot, 6 oz
- 1 Sponge holding forceps, 7"
- 1 Toothed dissecting forceps, 5", Treves
- 1 Handle, no. 3
- 1 Mayo scissors, 5"
- 2 Spencer Well's artery forceps, straight, 7"
- 1 TC needle holder, 6", Crile wood
- 2 pneumothorax tracer + cannulae, size 8 FG or 9 mm + 6 mm
- 1 Aspiration needle, no. 17G 4"
- 1 Set foster Carter, shield + tracer with angled adapter
- 1 10 cc syringe, luer lock
- 1 2 cc syringe, luer lock
- 2 Rubber tubing's, which fit the cannulae
- 1 Cutting needle, size 14
- 2 Black silk, 3/0, 24"
- 1 Needles, luer lock, 23 G x 1"
- 1 Needles, luer lock, 21 G x 1½"

**07.01.09.24 Nasal fracture reduction set (Submucous resection of Nasal septum)****Technical Specifications**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	1
Clamp, towel, Backhaus, 9 cm	4
Forceps, nasal tampon, Gruenwald, bayonet, 20 cm	1
Speculum, nasal, Killian, 35 mm, 13 cm	1
Speculum, nasal, Killian, 50 mm, 13 cm	1

Speculum, nasal, Killian, 75 mm, 13 cm	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Elevator, septum, Howarth, 21 cm	1
Elevator, septum, Freer, sharp/blunt, 18 cm	1
Knife, septum, swivel, Ballenger, bayonet, 4 mm	1
Knife, septum, swivel, Ballenger, bayonet, 5 mm	1
Forceps, ear polypus, Hartmann, standard, 14 cm	1
Gouge, rhinoplasty, Killian-Claus, bayonet, 5 mm, 16 cm	1
Forceps, septum, Luc, 20 cm	1
Forceps, septum, Luc, 20 cm	1
Scissors, nasal, Heymann, 18 cm	1
Forceps, nasal-septum, Middleton-Jansen, 5x15 mm jaw, 19 cm	1
Suction tube, Frazier, 6 Fr.	1
Knife, septum, Freer, small, 15 cm	1
Chisel, Freer, straight, 4 mm, 16 cm	1
Forceps, tissue, Allis, 15 cm	2
Scissors, standard, straight, sharp, 11.5 cm	1
Needle holder, Kilner, S-shape, 13 cm	1
<b>07.01.09.25 Nasal cysts excision set</b>	
<b>General:</b> Submucous resection of Nasal septum	
<b>Technical Specifications</b>	
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Bowl, stainless steel, 15 cm, 600 ml	1
Kidney dishes, stainless steel, 20 cm	1
Gallipot, diam. 10 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	1
Clamp, towel, Backhaus, 9 cm	4
Forceps, nasal tampon, Gruenwald, bayonet, 20 cm	1
Speculum, nasal, Killian, 35 mm, 13 cm	1
Speculum, nasal, Killian, 50 mm, 13 cm	1
Speculum, nasal, Killian, 75 mm, 13 cm	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Speculum, nasal, Thudichum,	1
Elevator, septum, Howarth, 21 cm	1
Elevator, septum, Freer, sharp/blunt, 18 cm	1
Knife, septum, swivel, Ballenger, bayonet, 4 mm	1
Knife, septum, swivel, Ballenger, bayonet, 5 mm	1
Forceps, ear polypus, Hartmann, standard, 14 cm	1
Gouge, rhinoplasty, Killian-Claus, bayonet, 5 mm, 16 cm	1
Forceps, septum, Luc, 20 cm	1
Forceps, septum, Luc, 20 cm	1
Scissors, nasal, Heymann, 18 cm	1
Forceps, nasal-septum, Middleton-Jansen, 5x15 mm jaw, 19 cm	1
Suction tube, Frazier, 6 Fr.	1
Knife, septum, Freer, small, 15 cm	1
Chisel, Freer, straight, 4 mm, 16 cm	1
Forceps, tissue, Allis, 15 cm	2
Scissors, standard, straight, sharp, 11.5 cm	1



Needle holder, Kilner, S-shape, 13 cm

1

#### **07.01.09.26 Peritonsillar abscess incision & drainage set**

##### **Technical Specifications**

1 stainless steel instrument tray, 24 x 24 x 5 cm

2 set straight gallipot, 3 oz

1 Sponge holder, 17 cm

1 Scalpel handle, no. 3

1 Dissecting forceps, plain, 15 cm

1 Dissecting forceps, toothed, 15 cm

1 Lister's sinus forceps, 15 cm

2 Bryant dressing forceps

2 Corrugated drain (rubber)

1 TC Mayo Hegar needle holder, 15 cm

1 Stich scissors, 13 cm

#### **07.01.09.27 Dental extraction forceps**

**General:** Dental, forceps and elevators

##### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S 1

Forceps 3e Molar Upper no 67<sup>a</sup> 1

Forceps upper Molar R no 17 1

Forceps Upper Molar L no 18 1

Forceps Bicuspid upper no 7 1

Forceps Anterior upper no 2 1

Forceps root upper no 51A 1

Forceps Cuspid Upper no 1 1

Forceps Molar Lower no 22 1

Forceps Biscuspid/cups/inc Lower no 13 1

Forceps root lower no 33A 1

Elevator straight small no 34 1

Elevator straight wide no 34S 1

Elevator Cryer no 39, small 1

Elevator Cryer no 40, small 1

Elevator Apical no 302 1

Elevator Apical no 303 1

#### **07.01.09.28 Incision & Drainage set**

**General:** Set, surgical instruments, incision and drainage

##### **Technical Specifications**

Foerster sponge forceps, serrated, straight, 18 cm 1

Clamp, towel, Backhaus, 9 cm 2

Scalpel handle no. 3 1

Mayo scissors, straight, 14 cm 1

Forceps, dressing, 14.5 cm 1

Tissue forceps, 1 x 2 teeth, 14.5 cm 1

Pean forceps, straight, 16 cm 2

Retractor tracheal, sharp, 2 teeth, 16 cm 2

Retractor tracheal, blunt, 2 teeth, 16 cm 2

Schmid irrigation cannula, luer lock, 5 1

Needle holder Mayo-Hegar, 16 cm, TC 1

Gallipot, stainless steel, 10 cm diameter 2

Kidney dish, stainless steel, 25 cm 1

Sterilization container, alu, 28.5 x 28.0 x 10.0 cm 1

Wire mesh basket 1

Identification labels, red2

**07.01.09.29 Cut down set**

**Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Gallipot 8 cm diam. S/S	1
Sponge holder, 15 cm	1
Forceps dressing Adson, 12 cm	1
Forceps tissue, Adson, toothed, 12 cm	1
Scalpel handle No. 3	1
Scissors, iris, straight, 12cm	1
Scissors, standard, bl/bl, 14.5 cm	1
Artery forceps Halsted-Mosquito 12.5 cm, curved	2
Artery forceps Halsted-Mosquito 12.5 cm, straight	2
Aneurysm needle, small	1
Needle holder Crile-Wood, 15 cm	1
Retractor, tracheal, blunt, 1 tooth	1
Retractor, Joseph, 2 teeth, sharp	2

**07.01.09.30 Vascular set**

**Technical Specifications**

8 x Foerster forceps, serrated, str. 25 cm	
6 x Kocher retractor, blunt, 22 cm	
6 x Backhaus towel clamp, 13 cm	
3 x scalpel handle no.3	
1 x scalpel handle no. 3L	
1 x Metzenbaum scissors, cvd, 20 cm	
1 x Kelly Fistula scissors, cvd, 16 cm	
1 x Potts-Smith scissors, 25 ats, 19 cm	
1 x Potts-Smith scissors, 45 ats, 19 cm	
1 x Adson forceps, serrated, 12 cm	
2 x Adson Brown forceps, 12,5 cm	
3 x Potts Smith forceps, str, 18 cm	
4 x DeBakey DST 2,0mm forceps, 19 cm	
2 x DeBakey DST 2,0mm forceps, 30 cm	
2 x tissue forceps, 2x1 t, 16 cm	
6 x Allis tissue forceps, 5x6 t, 15 cm	
3 x Allis tissue forceps, 5x6 t, 20 cm	
4 x Allis Adair tissue forceps, 15,5 cm	
2 x Russian forceps, 15 cm	
2 x Russian forceps, 20 cm	
4 x Babcock tissue forceps, 16 cm	
1 x Mosquito forceps, str, 12,5 cm	
1 x Mosquito forceps, cvd, 12,5 cm	
2 x Crile forceps, str, 14 cm	
2 x Crile forceps, cvd, 14 cm	
1 x Rochester Pean forceps, cvd, 20 cm	
10 x Carmalt forceps, str, 16 cm	
10 x Ochsner Kocher forceps, str, 16 cm	
6 x Mixer forceps, 19 cm	
10 x Lahey 3x3 thyroid forceps, 15 cm	
3 x Craford forceps, cvd, 24 cm	
3 x Heiss forceps, small, cvd, 20 cm	
4 x Senn Miller retractor, 16 cm	

4 x Love Uvula retractor, 18 cm  
 2 x Weitlaner retractor, sh, 13 cm  
 2 x Gilpi, s/r, retractor, 18 cm  
 2 x Cushing nerve hook retractor small, 19 cm  
 2 x Jefferson brain retractor, right  
 1 x DeBakey-Cooley 127 x 180 cm retractor  
 2 x Deaver 25 mm retractor, 30 cm  
 2 x Deaver 38 mm retractor, 30 cm  
 2 x Deaver 50 mm retractor, 30 cm  
 2 x Deaver 75 mm retractor, 30 cm  
 2 x Richardson retractor, 28x20mm, 24 cm  
 2 x Richardson retractor, 36x28mm, 24 cm  
 2 x Richardson retractor, 44x38mm, 24 cm  
 2 x Richardson retractor, 52x22mm, 24 cm  
 2 x Green thyroid 17 mm retractor, 22 cm  
 1 x Recamier curette, sharp, 3, 31 cm  
 1 x Recamier curette, sharp, 4, 31 cm  
 1 x Recamier curette, sharp, 5, 31 cm  
 2 x Kraysenbuhl nerve hook, sh, 19 cm, no.1  
 1 x Kraysenbuhl nerve hook, bl, 19 cm, no.2  
 1 x Pool 23 Fg suction tube, cvd, c/p  
 2 x Yankauer suction tube, c/p, 23 cm  
 2 x Yankauer suction tube, c/p, 34,5 cm  
 1 x Frazier 10 Fg suction tube, 17 cm  
 1 x Lebsche sternum cutter, 26 cm  
 1 x Guilford Wright curette, set of 4  
 2 x Mayo scissors, flat, str, 17 cm  
 2 x Mayo scissors, flat, cvd, 17 cm  
 1 x Metzenbaum scissors, cvd, 18 cm  
 1 x Nelson scissors, cvd, 25 cm  
 2 x wire suture scissors, 12 cm  
 2 x Mayo Hegar TC needle holder, 15 cm  
 2 x Mayo Hegar TC needle holder, 18 cm  
 2 x Mayo Hegar TC needle holder, 20 cm  
 1 x Crile Wood TC needle holder, str, 18 cm

#### **07.01.09.31 Chest aspiration set**

##### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Forceps, sponge holding, Foerster, 25 cm	4
Forceps, artery, Pean, curved, 20 cm	1
Forceps, artery, Pean, straight, 20 cm	1
Forceps, artery, Kelly, curved, 14 cm	3
Handle, scalpel, nr. 4	1
Needle holder, Mayo-Hegar, 16 cm	1
Scissors, standard, bl/bl, 14.5 cm	1
Forceps, dissecting, 1x2 teeth, 14.5 cm	1
Gallipot, 10 cm diam., S/S	1
Kidney dish, 20 cm, stainless steel	1

### **07.01.09.32 Suture set**

#### **Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Gallipot diam 10cm S/S	1
Forceps sponge holding straight 18 cm	1
Forceps, dressing, standard, straight 14.5 cm	1
Forceps, dissecting, tissue, 1x2 teeth, 14.5 cm	1
Scalpel handle No. 3	1
Needle holder Mayo-Hegar 16 cm	1

### **07.01.09.33 Endoscopic diagnosis surgery**

**General:** Endoscopic video camera system, mobile, complete

#### **Technical Specifications**

Video Camera System, consisting of:

cold light fountain, automatic adjustment by the camera video output signal, with main cord and connecting cable beam splitter

2 fiber optic light cables, 3,8 mm diameter, 180 cm length

video camera unit, PAL, with camera head, mains cord, camera control unit, connecting cables and adaptor to the cold light fountain

color monitor, PAL/SECAM/NTSC

VHS video recorder

connecting cable

video color printer, PAL

adaptors for connection of video camera to fiberscopes from other manufacturers

mobile storage cart on 4 heavy duty castors

### **07.01.09.34 Cystoscope-urethroscope**

**General:** Cysto-urethroscopy instrument set, adult

#### **Technical Specifications**

Cysto-urethroscopy instrument set, adult, consisting of:

1 x cystoscope-urethroscope sheath 22 ch

1 x ditto, 20 ch

1 x ditto, 19 ch

1 x ditto, 17 ch

1 x sheath with obturator dia 25 ch

1 x lateral telescope, 70 degree. O.D. 4 mm

2 x catheter deflecting mechanism

1 x forward oblique telescope 30 degree. O.D. 4 mm

2 x telescope bridges

1 x cystoscopy adapter

2 x grasping forceps

2 x biopsy forceps

1 x stone crushing forceps

1 x bladder syringe, 100 cc

2 x ball electrodes

1 x loop electrode

1 x high frequency cord

4 x stone baskets

1 x catheter adapter

**07.01.09.35 Cystoscope-urethroscope****General:-** Compact cystoscope, for Paediatric

7° direction of view

7.9 Fr. x 160 mm

4.2 Fr. channel

straight ocular

telescopic dilatation set

hallow obturator

**Specification:**

Name	Specification
Ureterorenoscope	7.5Fr
Manipulators	
Wire	
Grasping forceps, rigid	4.5Fr
Biopsy forceps, rigid	4.5Fr
Grasping forceps, flexible	4.5Fr
Biopsy forceps, flexible	4.5Fr
Dilator	13Fr
Dilator	11Fr
Dilator	9Fr
Adaptor	
Light guide cable	Φ 4.5× 2000mm
Sealing cap	
<b>other set</b>	
Grasping forceps, rigid	5Fr
Biopsy forceps, rigid	5Fr
Grasping forceps, flexible	5Fr
Biopsy forceps, flexible	5Fr
Grasping forceps, rigid	4Fr
Biopsy forceps, rigid	4Fr
Grasping forceps, flexible	4Fr
Biopsy forceps, flexible	4Fr

**General Technical data for Items No. 36 - 58****All metallic instrument should:**

Made of stainless steel which is comply to ISO 7153-1 : (1991) E

Autoclavable in a high steam and high temprature Sterilizers

Withstand corrosion and rust and the test must be comply with ISO 13402: 1995 (E)

not be easily brittle/brakable

not to be too stiff/ too hard

not be fast blunt

blades can be reparable

Resist moisture

**All plastic parts, cables and other electronic parts of the instrument:**

are not heat resistant; therefore they are:

Ethyline Oxide/gas sterilized

**07.01.09.36      excision of skin growth set****07.01.09.37      Orchidectomy set****07.01.09.38      Meatotomy set****07.01.09.39      Perineal prostatectomy set**

07.01.09.40	Kidney transplant set
07.01.09.41	Pyeloplasty & ureteroplasty set
07.01.09.42	cystolithotomy set
07.01.09.43	Ischiorectal abscess set
07.01.09.44	Pilonidal cyst excision set
07.01.09.45	Hymenectomy set
07.01.09.46	B Bartholin cyst excision set
07.01.09.47	Simple vulvectomy set
07.01.09.48	Radical vulvectomy & Groin lymphadenectomy set
07.01.09.49	Anterior & posterior colporrhaphy set
07.01.09.50	Salpingostomy set
07.01.09.51	salivary glands incision set
07.01.09.52	Parametrial fixation set (manchester operation)
07.01.09.53	Vaginal construction set
07.01.09.54	Salpingostomy set
07.01.09.55	Salivary glands incision set
07.01.09.56	a.v. fistula set
07.01.09.57	vascular instrument separate pkts
07.01.09.58	hollow mills for bone biopsy

07.01.10          Protectives clothing

#### **07.01.10.01 Examination gloves**

**General Description:** Gloves, examination, latex, nitrile, disposable.

##### **Technical Specifications:**

A powder-free glove made up of 5 fingers, a palm and a sleeve.

Fits either hand.

Waterproof

Tear Resistant.

**Material:** Natural latex, nitrile (For Latex allergy individuals)

**Size selected:** Examination gloves, Small, Medium and Large.

Total length: approx. 230 mm.

Width: approx. 95 mm ± 10 mm.

Thickness: fingers: approx. 0.12 mm; palm: approx. 0.8 mm.

Single-use (Non sterile)

##### **Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: "Labelling for Medical devices (including In Vitro Diagnostic Devices)"

#### **07.01.10.02 Surgical gloves**

**General Description:** Gloves, surgical, sterile, disposable, pair.

##### **Technical Specifications:**

One pair of powder-free gloves: 1 right-handed, 1 left-handed.

Waterproof

Stretch proof

Appropriate extension to rupture

Straight sleeved with reinforced hem (rolled or ending in a reinforced band).

Suppleness: Closely fits the morphology of the hand and minimally impairs the wearer's sense of touch.

The shape of the glove faithfully accommodates the anatomy of the hand, the thumb offset from the palm and set forward of the index finger.

The interior surfaces of the gloves must be finely coated.

**Material:** Latex, Nitrile (for Latex allergic individuals), Powder-free

**Size selected:** Surgical gloves, size: 6, 6.5, 7, 7.5, & 8

Total length: approx. 270 mm.

Width: approx. 89 ±5 mm.

Thickness: approx. 0.12 mm.

Single-use, Sterile

Initial sterilisation method: Ethylene oxide gas or Gamma radiation.

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”

**07.01.10.03 Gynecology (Elbow-length) gloves,**

**General Description:** Elbow length Gloves , sterile, disposable, pair.

**Technical Specifications:**

One pair of powder-free gloves: 1 right-handed, 1 left-handed.

Water proof, Stretch proof, Appropriate extension to rupture.

Straight sleeved with reinforced hem (rolled or ending in a reinforced band).

Suppleness: Closely fits the morphology of the hand and minimally impairs the wearers’ sense of touch.

The shape of the glove faithfully accommodates the anatomy of the hand, the thumb offset from the palm and set forward of the index finger.

The interior surfaces of the gloves must be finely coated.

**Material:** Latex, Nitrile (for Latex allergic individuals), Powder-free.

**Size selected:** Gynaecological gloves, size: small, medium (7.5-8).

Total length: approx. 400 mm.

Width: approx.  $95 \pm 5$  mm.

Thickness: approx. 0.17 mm.

Single-use, Sterile.

Initial sterilisation method: Ethylene oxide gas or Gamma radiation.

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”

**07.01.10.04 Aprons, plastic**

**General Description:** Apron, protection, plastic, reusable.

**Technical Specifications:**

Straight apron with bib, back fastening and neckband.

Moisture -proof and stain resistant.

Medium to eavy-duty splash protection

Resistant to abrasions, chemicals, and puncture from needles and other medical sharps

Cover upper body from waist to neck, lower body from waist to below knees, coupled in back

Should have cotton ties and neck loop for easy on/off

Should be strong and not detachable.

**Material:** Made of heavy-duty neoprene, latex, nitrile, or other water-impervious material

Opaque or translucent high quality plastic material.

Blood, water,chemical and heat resistant.

**Size selected:**

Standard adult size.

Length: approx. 120 cm.(from top of the bib to lower edge of the apron)

Width: approx. 90 cm.

Thickness: approx. 0.15 - 0.30 mm.

Reusable, Non-sterile.

**07.01.10.05 Apron, plastic, disposable**

**General Description:** Apron, protection, plastic, disposable.

**Technical Specifications:**

Straight apron with bib, back fastening and neck-band.

**Material:**

Opaque or translucent plastic: preferably polyethylene (PE)

Blood, water and chemical resistant

**Size selected:**

Standard adult size.

- Length: approx. 120 cm

- Width: approx. 75 cm

- Thickness: approx. 25 microns

Single use, Non-sterile.

**07.01.10.06 Gown, surgical, woven**

**General Description:** Gown, surgical, woven, medium size

**Technical Specifications:**

Surgical gown

Colour preferably: blue or green

Raglan long sleeves, non-deforming cuffs in jersey (approximately:12 cm)

Finished length of the gown: approximately: 130 cm (mid calf)

Closed by three tie back's at the back of the gown

**Material:** preferably polyester/cotton: 50% polyester - 50% cotton fabric, heat-set

Number of threads: warp: 24, weft: 22

Metric count: warp: 28, weft: 28

Weight per m<sup>2</sup>: 175 g

Washing: normal; withstands boiling and autoclaving; resists to chlorine 0.5%

**Size selected:** Adult model medium size

**07.01.10.07 Trousers, surgical, woven**

**General Description:** Trousers, surgical, woven, medium size

**Technical Specifications:** Trousers with a string in the waistband, Easy fastening

**Material:** preferably polyester/cotton: 50% polyester - 50% cotton fabric, heat-set

Number of threads: warp: 24, weft: 22

Metric count: warp: 28, weft: 28

Weight per m<sup>2</sup>: 175 g

Washing: normal; withstands boiling and autoclaving; resists to chlorine 0.5%

**Size selected:** Adult model medium size

**Multiple use**

**07.01.10.08 Tunic, surgical, woven**

**General Description:** Tunic, surgical, woven, medium size

**Technical Specifications:**

Tunic: "V-shaped" tunic

Easy to slip

Short sleeves

One pocket

**Material:** preferably polyester/cotton: 50% polyester - 50% cotton fabric, heat-set

Number of threads: warp: 24, weft: 22

Metric count: warp: 28, weft: 28

Weight per m<sup>2</sup>: 175 g

Washing: normal; withstands boiling and autoclaving; resists to chlorine 0.5%

**Size selected:** Adult model medium size



**07.01.10.09 Surgeon hand brushes, box**

**Brush, hand, scrubbing, plastic**

**General Description:** Brush, hand, scrubbing, plastic.

**Technical Specifications:**

Brush, nylon bristles, plastic block.

To be used for scrubbing hand prior to surgical intervention.

**Soft bristles:** Minimum 5 rows.

**Material:** Head: Polypropylene. Bristles: Nylon.

**Length:** head approx. 8 - 10 cm.

**Width:** approx. 3 - 5 cm.

**Height:** approx. 1 cm.

Reusable

Non-sterile.

**Packaging and labeling:**

Secondary packaging: Protected unit

Ten (10) scrubbing brushes in a box. with manufacturer's instruction for use (when applicable).

Alternatively, the instruction for use can be indicated on a separate insert.

**Labelling on the secondary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions:**

- estimated weight: 0.049 kg

- estimated volume: 0.146 cdm

**Instructions for use:**

Basic item of medical equipment.

Plastic brush for scrubbing hands in general, and specifically prior to surgery.

This brush must be a plastic type that can be autoclaved after cleaning and disinfection.

DO NOT USE a brush with WOODEN HEAD as cracks in the wood may harbour contamination.

The size has been chosen as being the most commonly used.

**Safety process:**

This item is used as a «clean» or «sterile» item.

The item must be cleaned, disinfected and sterilized in a steam sterilizer as often as necessary.

**Protection of users:**

WASHING HANDS before and after each medical act is extremely important to limit the risk of cross contamination. Wash hands as often as necessary.

**Prior to any medical act:**

Use water and soap.

Time approx. 3 minutes.

**Prior to surgical purpose:**

Use distilled water and soap or disinfectant.

Time approx. 8 minutes.

**07.01.10.10 Surgeon-mask dispenser**

**07.01.10.11 Glove dispenser**

**07.01.10.12 Set, operating room utensils, for 150 bed hosp.**

**General:** Set, patient utensils, small

**Technical Specifications**

Small set patient utensils, consisting of the following items and quantities.

15 x air cushions, round

15 x rubber balloon inflator for air cushions

30 x ice collar

30 x ice bags, round

30 x hot water bottle bags

15 x sets irrigator tubing and canulae

15 x Esmarch rubber tourniquets

**07.01.10.13 Set, operating room utensils, for 360 bed hosp.**

Set, patient utensils, large

Large set patient utensils, consisting of the following items and quantities.

15 x air cushions, round

15 x rubber balloon inflator for air cushions

30 x ice collar

30 x ice bags, round

30 x hot water bottle bags

15 x sets irrigator tubing and canulae

15 x Esmarch rubber tourniquets

**07.01.10.14 Shoe conductivity tester****07.01.10.13 Surgeon gloves, medium, non-sterile (p/100)****07.01.10.15 Mask****General Description:**

Cover-all gown, sterile, which is worn over clean attire (shirt, trousers) in order to carry out aseptic medical/surgical activities.

Long sleeved gown with non-deforming cuffs

Orthopaedic gown

**Technical Specifications:**

Adult model, "standard" size (X)

Colour preferably: blue or green

Raglan sleeves, non-deforming cuffs in jersey (12 cm)

Finished length of the gown: about 130 cm (mid calf)

Back closing and covering back panel with braided side fastening (orthopaedic type gown)

Unit presentation, non-sterile, multiple use

**Material**

Woven cotton 100%:

Designation: 100 %cotton cretonne fabric

Number of threads: warp: 24, weft: 24

Metric count: warp: 28, weft: 28

Weight per m<sup>2</sup>: 180 g

Washing: normal; withstands boiling and autoclaving; resists to chlorine 0.5%

**Packaging and labelling:**

Primary packaging: Unit of use. One un-sterile gown

**Labelling on the primary packaging:**

Refer General Requirements

**Accessories/Spare parts/Consumables:**

To be worn over clean surgical attire

**Weight/Volume/Dimensions:**

Estimated weight: 0.7 Kg

Estimated volume: 3.8 cdm

**Instructions for use:**

Anticipate different sizes

Specific article, used after sterilization in operating theatres by the surgical staff, in order to perform aseptic medical/surgical activities: surgical interventions, (deliveries).

The orthopaedic style surgical gown with the extra panel completely covering the surgeon is preferable to a simple surgical gown which does not protect the back of the surgeon.

**Attire should be properly managed:**

Minimum and maximum stock levels

Articles should be well kept, not damaged

Regular changes, surgical articles

#### **07.01.10.16 Goggles**

**General Description:** Glasses, safety, regular size, disposable

**Technical Specifications:**

Panoramic lenses with nasal ridge, can be worn alone or over normal eyeglasses

Distortion-free and anti-fog

Adjustable sides

Anti-blur lateral ventilation

Clear lens

U.V. filter

**Material:** preferably Polycarbonate

**Standard size, Disposable**

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”

#### **07.01.10.17 Head cover**

**General Description:**

Cap, surgical, non-woven, single use

**Technical Specifications:**

Surgical cap

Fastening strips of polyurethane

Paper towel backing for absorbing sweat

Colours: blue or green.

**Material:** preferably Polypropylene spun bond fabric.

**Size selected:** Adult model, standard size

**Single use, Non-sterile**

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”

#### **07.01.10.18 Shoe**

**General Description:** Clogs, plastic medium size

**Technical Specifications:**

Plastic protection shoes

One-piece moulded

Non-perforated

Light, flexible, stable, non-slipping (even on humid floor), strong, indeformable, silent

With or without back strap

Washable

**Material:** Plastic: waterproof, antistatic polyurethane

**Size selected:** Adult model medium size

**Multiple use**

07.01.11 Endoscopic Surgery

07.01.11.01 Optical urethrotomy

07.01.11.02 Ureterorenoscopy

07.01.11.03 Transurethral resection

07.01.11.04 Percutaneous nephrolithotom

07.01.11.05 Laparoscopy

07.01.12 Male Circumcision tools

07.01.12.01 Mogen

07.01.12.02 Gomco

### **07.01.12.03     Plastibell**

#### **Description**

Circumcision procedure requiring no special post-operative care or dressing means a significant savings in both time and money. The disposable PlastiBell Circumcision Device eliminates the need for repetitive and costly sterilization required of stainless steel clamps. No chance of lost or mismatched parts that often render other clamps unsafe or unusable.

#### **Specification**

Clear, Plastic construction provides visual access at all times

A clean line of excision; helps to promote rapid healing

No special dressings required

Unique shaped handles for easy size identification

Sterile, individually packaged

Available in six sizes or in assortment packs

Quality Process Certifications : CE/ISO

### **07.02 ICU, NICU, CCU Equipment**

#### **07.02.01 Monitoring**

##### **07.02.01.01 Portable Pulse Oximeter**

**General Description:** Pulse oximeter, portable, with accessories

##### **Technical Specifications:**

Compact portable pulse oximeter

Robust design allow use in demanding environments

Suitable for all patient categories: neonate, infant, adult

Monitors arterial blood oxygen saturation (SpO<sub>2</sub>), pulse rate (HR) and signal strength

Measuring range:

SpO<sub>2</sub>: 30 to 100 % (min graduation 1%)

HR: 20 to 250 bpm (min graduation 1 bpm)

Accuracy SpO<sub>2</sub>: ± 3% (30 to 69 %) and ± 2% (70 to 100%)

Large LCD has protective cover and allows distant reading

Continuous display of SpO<sub>2</sub> (%), HR (bpm), signal strength and battery status

Reporting of system errors such as probe malfunction, loss of signal and power failure

User pre-settable low and high alarms for SpO<sub>2</sub> and HR

Auditable pulse rate

Alarms audio-visual with silencing feature

Automatic switch from mains to batteries in case of power failure

Auto-off when not in use

Dimensions, describe

Power requirements: 220 V / 50 Hz and internal battery (autonomy approx 6 hrs, automatic recharge)

Power consumption, approx: 50 W/ describe

##### **Supplied with:**

2 x Reusable adult size clip-on type SpO<sub>2</sub> sensors (with cable and plug)

2 x Reusable infant size clip-on type SpO<sub>2</sub> sensors (with cable and plug)

3 x Reusable newborn size wrap-around type SpO<sub>2</sub> sensors (with cable and plug)

10 x Single use newborn size wrap-around type SpO<sub>2</sub> sensors (with cable and plug)

1 x Spare rechargeable battery pack

1 x Set of spare fuses

Clear instructions for use / diagrams for assembly in English

list of accessories / parts.

##### **Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: "Labelling for Medical devices (including In Vitro Diagnostic Devices)".

#### **07.02.01.02 Patient Monitors, vital sign**

**General Description:** Monitor, patient, portable, with accessories

**Technical Specifications:**

Portable vital sign monitor, suitable for all patient categories: neonatal, infant and adult

Bedside unit can be mounted on standard bed/wall rail and mobile pole/stand

Robust design allows use in demanding environments

Soft touch keys, durable and easy to clean

Parameters monitored: ECG, Heart Rate (HR), Respiration Rate (RR), SpO<sub>2</sub>, NIBP and Temperature

Measurements, ranges:

ECG: leads 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 %>

RR (ECG derived): approx 6 to 180 bpm < 1 bpm >

Temperature: approx 10 to 45 C <0.1 C>

NIBP oscillometric step deflation, manual/automatic, initial inflation pressure user selectable

Bright 4-channel TFT colour display, approx 7 inch

Sweep, adjustable: 12.5, 25 or 50 mm/s

Sensitivity (amplitude) of all signals user adjustable

Standardising 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

Data interface (for ECG): RS232, BNC or equivalent

Defibrillator sync and protection during defibrillation

Pacemaker detection/rejection

Display reports system errors, leads and sensors failure and built-in battery status

Autonomy of built-in rechargeable battery approx 3 hrs, automatic recharge when connected to mains

Automatic switch to batteries in case of power failure

Power requirements: 220 V / 50 Hz and rechargeable battery

Power consumption, approx: 150 W

**Supplied with:**

1 x Mounting bracket for fixation to standard bed/wall rail and mobile pole/stand

1 x Spare rechargeable battery pack

1 x Set of spare fuses

NIBP accessories:

3 x NIBP hose (1 x neonate, 1 x infant, 1 x adult)

3 x Blood pressure cuff (1 x infant, 1 x child, 1 x adult)

ECG accessories:

2 x Patient cable extremities (1x neonate/paediatric, 1 x adult)

2 x Set of electrodes (1x neonate/paediatric, 1 x adult)

1 x Electrode gel, 350 ml

Temperature accessories:

2 x Skin temperature probes (including connection cable)

Pulse Oximetry (SpO<sub>2</sub>) sensors with cable and plug:

2 x Adult size, reusable clip-on type

2 x Infant size, reusable clip-on type

3 x Newborn size, reusable clip-on type

10 x Newborn size, single use wrap-around type

Clear instructions for use / diagrams for assembly in English

list of accessories / parts.

#### **07.02.01.03 Capnography**

For detail Specifications refer Item No. **6.02.01.04** under the category **Life Supporting and Monitoring device**

#### **07.02.01.04 Advanced Monitor**

#### **07.02.01.05 Central monitor**

**General:** Central monitor station, for ICU

#### **Technical Specifications**

Central Station should consist of:

Monochrome display, minimum 12 inch diagonal.

Each of the channels shall be user selectable to display any selected parameter from any bed in the system.

Trend information from the bedside monitor shall be available at the central station in the same format as the bedside monitor.

The central station shall permit automatic display and control of any alarm parameter waveform from any bedside in the system. This display shall not interrupt the viewing of any normal parameter display on the central monitor if necessary.

The central station shall use the same display and parameter menu as the bedside monitor.

The central monitor shall have the capability to act as a bedside monitor if necessary.

Dual channel printer module.

To be supplied with:

- 2 pressure transducers

- 1 general-purpose temperature probe

- 1 surface temperature probe

- 1 box thermal paper

#### **07.02.01.06 ABGA machine**

07.02.02 Therapy/treatment

#### **07.02.02.01 Bed ICU**

**General Description:** Bed, hospital, Intensive Care Unit, with mattress.

#### **Technical Specifications:**

Hospital bed, intensive care, 4 sections.

Mounted on 4 swivel castors, of which two with brakes.

Protective bumpers at all four corners.

Bed-ends, finished with panels or equivalent.

Four section platform, epoxy-painted steel mesh with side supports to immobilise mattress.

Mattress cover removable via side zipper.

Manually adjustable backrest (to approx. 80 degrees), leg section and foot section.

With adjustable and removable folding side rails.

#### **Materials:**

High resistance to corrosion (tropical environment).

Frame: epoxy coated tubular steel.

Mattress: high-density polyurethane foam, density approx. 30 kg/m<sup>3</sup>.

Cover: plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.

#### **Dimensions:**

Sleeping surface: approx. 2000 x 900 mm (l x w).

Height of surface: approx. 550 mm.

Mattress: approx. 120 mm (h)

Frame, diameter: approx. 30 mm.

Swivel castors, diameter: approx. 120 mm.

Carrying capacity: approx. 150 kg.

Knockdown construction: yes

#### **Supplied with:**

- 1 x set of tools required for assembly.

- 1 x fitting mattress with cover.

List of parts

Detailed step-by-step line drawing based instructions for assembly and safe use.

**Packaging and labelling:**

Refer the general requirements

**Weight/Volume:**

Estimated Weight: (in Kg)

Estimated Volume: (in CDM or M3)

**Accessories/spare parts/Consumables:** N/A

**Instructions for use:**

Basic four-section adjustable hospital bed for intensive care units in health care facilities. Must be cleaned after each use.

**07.02.02.02 Incubator, automatic, basic, thermo control only, no control of RH or O2)**

**General Description:** Incubator, automatic, basic, with accessories

**Technical Specifications:**

Basic automatic double wall incubator for neonatal care

Sturdy and stable construction on 4 antistatic bal-bearing swivel castors, 2 with breaks

Integrated base cabinet with 2 drawers

Fit with canopy, approx: 90 x 55 x 45 cm (l x w x h)

Front panel: inclined side, with large door, with 2 port holes

Rear: 2 port holes

Apertures for tubes: 4

Silent window panel rotation and closing system

Fixed tray with tilt position, approx: +/- 10 degree

Moulded corrosion resistant under-deck

Construction allows frequent dismantling for cleaning and disinfection

Side handle facilitates positioning

Protection rail and accessories support on 4 sides

Monitor console/platform provision to fit vital monitor or pulse oximeter

Fit with support for 10 L oxygen cylinder

Incubator performance characteristics:

Servo temperature control: electronic (thermistor based)

Temperature control modes: air and skin

Air temperature setting, approx: 28.0 to 39.0 C, increments 0.5 C

Accuracy air temperature monitoring sensor:  $\pm 0.1$  C

Skin temperature setting, approx: 35.0 to 38.0 C, increments 0.5 C

Accuracy skin temperature monitoring sensor:  $\pm 0.1$  C

Warm-up time to 37°C and stabilize, approx: 20 min (starting at 20 C)

Sound level inside incubator: < 45 dB(A)

Air velocity over the bed: < 25 cm/sec

Air filter capacity at inlet: 99 % (for > 0.5  $\mu$ m)

Incubator performance monitoring:

Self diagnosis with each start-up

Integrity testing of all system parameters every 5 minutes

Large display shows operation with set and measured values

Permanent automatic verification of temperature probes and heating devices

Audible visual alarms for: skin temperature low and high, air temperature low and high, air failure (fan), heater failure, failure air and skin probe, temperature > 39 C in any mode, power failure, canopy open, control module open and circuit fault, safety availability testing

Power requirements: 220 V / 50 Hz

Power consumption, approx: 800 W / describe

**Supplied with:**

1 x Spare set of skin probes

1 x IV pole with rail fixation clamp

3 x Spare set of air filters  
1 x Set of spare fuses  
Clear instructions for use / diagrams for assembly in English  
list of accessories / parts.

#### **07.02.02.03 Table, resusc, newborn (open care system, cradle, radiant warmer, drawers)**

**General Description:** Table, resuscitation, newborn, with accessories

**Technical Specifications:**

Mobile newborn resuscitation table with radiant warmer  
Sturdy and stable construction on 4 antistatic ball-bearing swivel castors, 2 with breaks  
Two side handles facilitate positioning  
Table surface, approx: 0.60 x 0.90 m (w x l)  
Side panels in transparent acrylic, drop down and lockable  
With one storage drawer, under table surface  
Integrated support for two 10 L oxygen bottles  
Side rails to the table surface allows for mounting of accessories  
Fixed-height hood above the table integrates heating element and overhead light  
Vertical column integrates controls and displays  
Overhead examination light: 2 x 40 W halogen spot  
Heating element: emitter with parabolic reflector and protected by metal grid  
Preset skin temperature, range approx: 34 to 38 C, increments 0.1 C  
Temperature preset drives heater output in servo mode  
Easy switch between servo and manual mode  
Skin temperature monitoring via sensor, range: 30 to 42 C (sensitivity 0.2 C)  
Sensor thermistor based and factory calibrated  
Preset heater output: 0 to 100 %, in 10 % increments  
Integrated timer, preset: 1 to 59 min with up/down count feature, increments 1 min  
Auto-off at time elapse  
Audiovisual alarm on skin temperature (+/- 0.1 C of preset value) and time (elapse)  
**Large LED display shows:** Heater output preset in Watt  
Mode (servo or manual)  
Preset skin temperature  
Actual skin temperature  
Air temperature  
Elapsed or remaining time  
Display reports system errors such: sensor malfunction, timer failure, low/high temperature  
Mattress covering entire table surface, thickness 5 cm  
Cover is waterproof, flame retardant and resistant to common disinfection and cleaning solutions

**Dimensions,** approx: 0.90 x 0.80 x 1.90 m (l x w x h)

**Power requirement:** 220 V / 50 Hz

**Power consumption:** approx: 800 W / describe

**Supplied with:**

1 x Mattress  
1 x Reusable skin temperature probe, incl. connection cable and plug  
2 x Spare reusable skin temperature probes, incl. connection cable and plug  
1 x Spare heating element  
1 x Set of spare fuses  
Clear instructions for use / diagrams for assembly in English  
list of accessories / parts.

#### **07.02.02.04 Bassinet on trolley, neonatal, with mattress**

**Description:** Bassinet (baby crib), of clear plexi glass, mounted on a mobile trolley

**Technical Features:**

Dimensions, approx.: 82 x 53 x 90 cm  
Complete with mattress



#### **07.02.02.05 Radiant warmer, fixed height stand**

**General Description:** Warmer system, radiant, infant, with accessories

**Technical Specifications:**

Mobile freestanding fixed-height overhead radiant warmer  
Can be used in combination with a newborn and infant bed  
Sturdy and stable construction on 4 antistatic bal-bearing swivel castors, 2 with breaks  
Side handles facilitate positioning  
Hood integrates heating element and light  
Vertical column integrates controls and displays  
Overhead examination light: 2 x 40 W halogen spot, with dimming function  
Heating element: emitter with parabolic reflector protected by metal grid  
Preset skin temperature, range approx: 34 to 38 C, increments 0.1 C  
Temperature preset drives heater output in servo mode  
Easy switch between servo and manual mode  
Skin temperature monitoring via sensor, range: 30 to 42 C (sensitivity 0.2 C)  
Sensor thermistor based and factory calibrated  
Preset heater output: 0 to 100 %, in 10 % increments  
Integrated timer, preset: 1 to 59 min with up/down count feature, increments 1 min  
Auto-off at time elapse  
Audiovisual alarm on skin temperature (+/- 0.1 C of preset value) and time (elapse)  
Large LED display shows: Heater output preset in Watt  
Mode (servo or manual)  
Preset skin temperature  
Actual skin temperature  
Air temperature  
Elapsed or remaining time  
Display reports system errors such: sensor malfunction, timer failure, low/high temperature  
Dimensions, approx: 0.90 x 0.80 x 1.90 m (l x w x h)  
Power requirement: 220 V / 50 Hz  
Power consumption, approx: 800 W / describe  
**Material:** Plastic reinforced steel  
**Supplied with:**  
1 x Reusable skin temperature probe, incl. connection cable and plug  
2 x Spare reusable skin temperature probes, incl. connection cable and plug  
1 x Spare heating element  
1 x Set of spare fuses  
Clear instructions for use / diagrams for assembly in English  
list of accessories / parts.

#### **07.02.02.06 Phototherapy unit, single head, with counter, height and angle adjustable**

**General Description:** Phototherapy irradiance meter

**Technical Specifications:**

Measures the output of conventional tube-based neonatal phototherapy devices  
Portable handheld with carry strap  
Band pass filter, transmission only from 425 to 475 nm  
Total block for infrared and ultraviolet light  
Detector range, approx: 1 to 100 uW/cm<sup>2</sup>/nm  
Minimal graduation: 1 uW/cm<sup>2</sup>/nm  
Accuracy: ± 3 % of full scale  
Automatic zero setting between measurements  
Measuring time, approx: 5 sec  
Large LCD shows irradiance measurement in uW/cm<sup>2</sup>/nm  
Display also reports on system malfunction and battery status  
On switch and auto-off

Power requirements: 2 batteries 1.5 V, AAA / LR3/ describe  
Power consumption, approx: 1 W (battery life, approx 72 hours measuring time)

**Material:**

Reinforced plastic

**Supplied with:**

1 x Protective cap for light sensor  
1 x Set of batteries 1.5 V, AAA / LR3 (separately packed)  
1 x Storage and transportation pouch  
Clear instructions for use / diagrams for assembly in 3 languages English  
list of accessories / parts.

**07.02.02.07 Humidifier**

**Technical Specifications**

Respirator, multipurpose ventilator, for operation theatre complete unit consisting of humidifier, soda lime canister, manual rebreathing bag and tubing, convolute patient and small bore patient tubing, Positive and expiratory pressure control, expiratory resistance valve, Patient air intake valve, reversible transparent 0,9 kg. Soda lime canister with Pillar Mount, Wrights respirometer, ventilation failure alarm. The ventilation should be fully flame proof (except the humidifier) and in the event of power failure the unit can be manually operated.

**07.02.02.08 Patient heater**

**07.02.02.09 Laryngoscope, set**

**General Description:** Laryngoscope set, 4 blades.

**Technical Specifications:**

Laryngoscope set composed of blade-shape depressors to be fit via pivoting stud contact to the handle.  
Cylindrical handle made of stainless steel, or chromed brass, with ribbed finishing.  
Battery compartment is integrated in the handle and accessible via thread sealed closure.  
Stud contact attaches depressor blade, and switches-on halogen bulb.

Laryngoscope works with 2 AA-batteries (1.5 V / LR6 alkaline).

Set of 4 stainless steel, or chromed brass, depressors each have an integrated white light 2.5 V halogen bulb:

1 x straight depressor, Miller type: No. 0 (length approx 53 mm).

3 x curved depressors, Mc Intosh type: No. 1 (length approx 68 mm), No. 2 (length approx 93 mm) and No. 3 (length approx 113 mm).

With suitable protective plastic box, or vinyl case, with pre-shaped padding.

**Supplied with:**

1 x handle.

4 x depressors blades.

1 x spare 2.5 V halogen bulb for each depressor blade (total four spare bulbs).

Supplied with clear instructions for use, diagrams for assembly in English language and , list of accessories / parts.

Supplied with or with out batteries.

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) laryngoscope set in a plastic bag + box with manufacturer's instruction for use (when applicable).

Alternatively, the instruction for use can be indicated on a separate insert.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

The following item should be ordered separately:

1802209 - Battery,drycell,alkaline,'AA',1.5V/PAC-4

**Weight/Volume/Dimensions:**

- estimated weight: 0.792 kg

- estimated volume: 1.760 cdm

**Instructions for use:**

Assisting endotracheal intubation during anesthesia / resuscitation.

**Note:** Batteries left in the handle are likely to deteriorate during disinfection and sterilisation. It is also recommended to remove the batteries if the instrument is to be stored for either prolonged period or under moist conditions.

**Safety Process:**

Depressor blade and its bulb must be carefully washed and decontaminated after each used.

The metal parts can be autoclaved after removing the light bulb.

**07.02.03 Supporting equipment****07.02.03.01 Boiler**

Steam boiler of capacity 60 kg/hr

**07.02.03.02 Steriliser, steam 10L****Technical Specifications**

Table top steam sterilizer with cylindrical chamber in horizontal position

Manual door with safety device and heat insulation

Built in stainless steel

Manometer with process temperature indicator

**07.02.03.03 Refrigerator**

**General:** Refrigerator, floor model, 200 liters

**Technical Specifications**

Capacity 20 liters, with table top,

a hermetically sealed compressor,

a full-width 2-star large capacity froster,

automatic defrosting, tropic cold regulator,

5 mesh-shelves, 1 glass shelf,

2 transparent containers,

1 icetray and interior light.

Door with 4 shelves and 1 closed compartment.

Dimensions 550 x 600 x 1050 mm.

Power: For 220 V, 50 Hz, 110 W.

**07.02.03.04 Trolley, emergency**

**General Description:** Trolley, emergency, with drawers.

**Technical Specifications:**

Emergency response trolley with work surface and storage.

Heavy carriage mounted on 4 swivel castors, of which two with brakes and two anti-static.

Work surface with elevated edges, finished with anti-slip layer.

Four side-to-side drawers for storage of medicine, renewable and equipment.

One central lock to secure all drawers.

Inside of drawers is customizable, with organizer dividers.

Front of each drawer fit with prefixed content identification strips.

Integrated fitting for waste basket and sharps container.

Lateral positioned lift-up worktop extends work surface.

Fit with push bar-handle.

Protective bumpers at all four corners.

**Materials:**

High resistance to corrosion (tropical environment).

Frame, side panels, base and drawers: epoxy coated steel plate, ABS or equivalent polymer.

Push handle: Austenitic stainless steel 18/10.

Worktop: ABS or equivalent polymer.

**Dimensions:**

Overall: approx. 800 x 600 x 1000 mm (l x w x h).

Worktop extension: approx. 400 x 500 mm (l x w).

Height upper drawers: approx. 100 mm.

Height middle drawer: approx. 200 mm.

Height base drawer: approx. 400 mm.

Swivel castors, diameter: approx. 100 mm.

Carrying capacity: approx. 100 kg.

Knockdown construction: yes

**Supplied with:**

1 x set of tools required for assembly.

1 x set of organisers for each drawer.

List of parts.

Detailed step-by-step line drawing based instructions for assembly and safe use.

**Weight/Volume:**

Estimated Weight: (in Kg)

Estimated Volume: (in CDM or M3)

**Accessories/spare parts/Consumables:** N/A

**Instructions for use:**

Basic lockable trolley for storage and transport of emergency medicines, medical devices and renewable, and resuscitation equipment in health care facilities. Must be cleaned after each use.

**07.02.03.05 Trolley, medication**

**Description:** Medicine distribution trolley, epoxy-coated metal

**Technical Features:**

Basic trolley with laminated shelf

Disposal bin

Lockable cabinet

Medicine glass rack, dispensing tray, push handle

Dimensions, approx.: 60 x 50 x 100 cm (w x d x h)

**07.02.03.06 Trolley for medicine Transport**

**General Description:**

Trolley for medicine, specially designed transport and storage medication trolley in polymer, non-rust material, multi drawer system

**Technical Specifications:**

Trolley is equipped with:

Hand grips

12,5 cm non-marking poly casters, 2 with brakes

Equipped with 4 drawers 7,5 cm, 1 drawer 15 cm and 1 drawer 22,5 cm high

All drawers lockable by security seal or pad lock

Over bridge with 2 hanger rails

One universal clamp

Label and tape dispenser

Wire supply basket

Utility bin

4 drawers divider kits

Dimensions, approx.: 86 x 56 x 104 cm (w x d x h)

**Material:** Polymer, stainless steel

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) trolley, medicine distribution in box, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Instructions for use:** Trolley, medicine distribution is used on the patient wards to store and distribute the medicine for every patient.

#### **07.02.03.07. mattress, decubitus**

07.03. Pediatric section

07.03.01. Pediatric Instrument

##### **Pediatric Esophagoscope**

###### **Technical**

Esophagoscope tube, size 6, outer diameter 8.2 mm, inner diameter 7.5 mm, Length 30 cm,

Size 5, Outer diameter 7.7 mm, Inner diameter 7.2 mm

Size 4, outer diameter 6.7 mm, inner diameter 5.1 mm, length 18.5 cm

Prismatic light reflector, with connection to fiber optic light cable, autoclavable

Rubber telescope guide

Telescope bridge

Straight forward telescope 00, diameter 2.9 mm, length 30 cm, autoclavable, fiber optic light transmission incorporated

#### **07.03.01.02 Neonatal bronchoscope**

###### **Technical**

DOESEL-HUZLY Bronchoscope, size 2.5, outer diameter 4.2 mm, length 18.5 cm

Prismatic light deflector, with connection to fiber optic light cable, autoclavable

straight forward telescope 00, diameter 1.9/2.1 mm, length 18 cm, autoclavable, fibre optic light transmission incorporated

Telescope bridge

Injection canula

Instrument guide for suction catheter

Adaptor, for respirator

Sealing plug

Injection canula, for positive pressure assisted ventilation system, LEUR lock outer diameter 2.7 mm

Alligator forceps, single action jaws, semiflexible. diameter 1 mm, length 35 cm

Suction catheter, 7 Fr with adaptor

Suction catheter, 6 Fr with adaptor

Suction catheter, 5 Fr with adaptor

#### **07.03.01.03 Pediatric laparoscope**

###### **Technical**

For hernia repair (size 2 mm)

Forward oblique telescope 30°, diameter 3.3 mm, length 25 cm, autoclavable

Trocar, 3.9 mm, with pyramidal tip

Canula, without valve, with insufflation stopcock, length 5 cm

Automatic valve

CLICK 'line' METEZENBAUM scissors, size 2 mm, length 20 cm, curved double action jaws

Palpation probe, with cm-markings, size 2 mm, length 20 cm

Needle holder, handle with ratchet, size 2 mm, length 20 cm

Size 3 mm (appendectomy, cholecystectomy, fundoplication, pyloromyotomy)

Straight forward telescope 00, diameter 5 mm, length 24 cm, autoclavable

Trocar, canula, silicon leaflet valve

Scissors, size 3 mm, length 20 cm, with serrated jaws, curved, conical, double action jaws

Micro hook Scissors, size 3 mm, length 20 cm, single action jaw

dissecting and grasping forceps, size 3 mm, length 20 cm, double action jaws

REDDIC-OLSEN Dissecting and grasping forceps, size 3 mm, length 20 cm, double action jaws.

Dissecting and grasping forceps size 3 mm, length 20 cm, with, ratchet single action jaw, with a traumatic fine serrations

coagulation and dissecting electrode, size 3 mm, length 20 cm, L-shaped, insulated, with connector pin for unipolar coagulation

palpation probe, distensible, size 3 mm, length 20 cm

KOH ultramicro needle holder, handle with ratchet size 3 mm, length 20 cm

irrigation and suction vannula, for use with two way stop cock or modular handles.

ALAIN-GROUSSEAU pylorotome, size 2mm, length 20 cm, distensible

#### **Accessories and units**

18 “ flat screen monitor

Camera system

Cold light fountain

Fiber optic cable, length 250 cm

pump system

insuflator

VERESS pnemoperitoneum needle

High frequency generator AUTOCON II 200

Neutral electrode

Connecting cord for neutral electrode

High frequency cord, unipolar

high frequency cord, bipolar

foot switch

Mobile videocart

#### **07.03.01.04 Neonatal cytoscope-urethroscope**

##### **Technical**

Size 7 and 9 Fr

Straight forward telescope 00 , diameter 1.19 mm, autoclavable, fiber optic light transmission incorporated

Oblique –forward telescope 30 0 , diameter 1.19 mm, autoclavable, fiber optic light transmission incorporated

Grasping forceps, 3 Fr, double action jaws, flexible, length 28 cm

Biopsy forceps, 3 fr, double action jaws, flexible, length 28 cm

ball electrodode, 3 Fr, length 53 cm

#### **07.03.01.05 Pediatric Operating cystoscope-urethroscope**

##### **Technical**

Size 7.5, 8.5 and 9.5 Fr, 8°

Autoclavable, graduated, length 13 cm

Fiberoptic light transmission incorporated

Central 3.5 Fr instrument channel for use with operating instruments, separate irrigation channel on the right and left

2 LUER-lock connectors

Forward telescope 300 , 9.5 Fr, Fiberoptic light transmission incorporated, instrument channel 3Fr and 2 LUER-Lock connectors

Grasping forceps, 3Fr, double action jaws, flexible, length 28 cm

Biopsy forceps, 3Fr, double action jaws, flexible, length 28 cm

Coagulation electrode, hook shaped 3Fr, single use only, package of 6

Ball electrode, 3 Fr, length 53 cm

Knife, triangular tip, 3Fr, single use, package of 6

Injection needle, rigid, 3Fr, single use only, package of 6

##### **Other sizes**

10 Fr, 80, 13 cm, 5.5. Fr instruments channel

12 Fr, 80, 13 cm, 7.5 Fr instrument channel

Grasping forceps

5 Fr, 30 cm

biopsy forceps 5 Fr, 30 cm

Needle electrode 3Fr and 5 fr

Ball electrode 3Fr, Fr, 5 Fr

#### **07.03.01.06 Pediatric Optical Urethrotome**

Urethrotome sheath, with LUER-Lock stopcock, 10 Fr, with obturator and 2 LUER-Lock connectors

Telescope bridge

cold Knife, straight

Cold knife, round

Cold Knife, Sickle-shaped

Cold knife, hook shaped

Protection tube, for sterilization and storage of electrode, currettts, and knives

#### **07.03.01.07 Resectoscope**

##### **Technical pecifications**

11 Fr cystoscope, with telescope bridge

Straight forward telescope

Electrotome consisting of:

Working element

Cutting loop

Cutting loop, angled

blunt, angled

Hook shaped, ball-end

Hook Shaped, without ball end

angled, pointed

Coagulating electrode

High frequency cords, unipolar, with 4 mm, 5 mm and 8 mm plug for HF unit

Protection tube

#### **07.03.01.08 Pediatric percutaneous nephrolithotomy**

Wide abgle straight forward telescope 60, with angled eye piece, autoclavable, with instrument channel 5 Fr, fiber optic light transmission incorporated

Telescoping dialation set, set of 3 dialators, sizes 9, 12, and 15 fr, with two rigid and two flexible guide rods.

**Operating sheath**, 17 fr

Hollow obturator and fascial dialator

Grasping forceps, for **stone fragments**, double action jaws, 5 Fr, length 30 cm

Grasping forceps for **larger stones**, double action jaws, 5 Fr, length 30 cm

biopsy forceps, double action jaws, 5 Fr, lengthy 30 cm.

**Ultrasonic lithotripsy probe**, with oscillating tip and suction channel diameter 1.8 mm, length 32 cm

**Calculusplit wire probe**, diameter 0.8 mm, 1 mm, and 1.6 mm, length 26.7 cm, to use with telescope and working sheath.

probe, for electrohydraulic lithotropsy, 4.5 Fr, sterile, disposable, length 80 cm, package of 10

#### **07.03.01.09 Basic set for rectoscopes and proctoscopes**

rectosigmoidoscope, 16 mm x 200 mm, and 18 mm x 250 mm with obtutator

Illumination head unit, rectoscope with fiberoptic light transmission, LUER-Lock hubb for rubber insulation bulb and fenstrated glass window plug

Rubber Insulation bulb

Sponge forceps, working length 30 Cm

Suction tube, with cut-off hole, diameter 5.5 mm, working length 30 Cm.

Biopsy Forceps, small jaws, rotaing, single action jaw, insulated 36 cm, with LUER-Lock connector for cleaning consisting of:

Metal handle, insulated without ratchet

metal outer tube, insulated

Working insert, biopsy forcep

pediatric proctoscope; 11 x 110 mm and 13 x 110 mm, with obturator or fiber optic light carrier, with fiberoptic light cable connector

Swab forceps, length 20 cm

ARNOLD fistula hook

Illumination

Cold light fountain, halogen 150, power supply: 220  $\pm$ 10% VAC, 50 Hz, Including 400 mA, / describe  
halogen spare lamps, 150 watts, 15 Volt

Fiberoptic light cable, diameter 3.5 mm, length 180 cm

#### **07.03.01.10 Pediatric Urethral dialation set**

Bougies 6 Fr, 8 Fr, 10 Fr, 10 Fr, 12 Fr, 14 Fr, 16 Fr

#### **07.03.01.11 Pediatric tracheostomy set**

1 x instrument tray, wire mesh, 24 x 24 x 5 cm

1 x tracheal diameter, trousseau, 8 cm

4 x curved mosquito forceps

2 x small straight arteries

1 x tissue forceps toothed, straight arteries

1 x tissue forceps non-toothed, straight, small

1 x needle holder, small

1 x scalpel handle, no. 3

1 x Scissors, stich, small

1 x Scissors, stitch, small

#### **07.03.01.12 Pediatric thoracotomy set**

1 x instrumentbtray, wire mesh, 48 x 24 x 5 cm

2 x Bowl, stainless steel, 15 cm. 600 ml

2 x Kidney dish, stainless steel, 20 cm

1 x Galli pot, diameter 10 cm

1 x forceps, dressing, straight, 14.5 cm

1 x forceps, dissecting, straight, 20 cm

1 x Scissors, Metzenbaum-Nelson, curved, 18 cm

1 x Spatula, lung, Allison, small

2 x Forceps, mixter, curved, small

1 x shears, Rib, Giertz-stille, small

1 x raspatory, rib, Doyen, pediatric, left, 12 cm

1 x raspatory, rib, Doyen, pediatric, right, 12 cm

1 x raspatory, lambotte, pediatric

1 x rongers, bone, stille-Luer, curved, small

1 x Spreader, rib, finochietto, blades, pediatric, open

1 x contractor rib, smaller

1 x forceps price-thomas, small

1 x clamps, brochus, semb, strongly curved, small

1 x forceps. grasping, Neslson, small

2 x forceps, Intestinal, Dual, small

1 x chiesel, lebsche, small

1 x needle holder, 14 cm

1 x mallet, steel solid, smaller



**07.03.01.13 Others**

Pena stimulator for imperforated anus surgery  
 magnifying loop for hypospadias repair  
 Infant warmer blanket

**7.04 Orthopedic Surgery**

07.04.01 Instrument sets for plats and screw

**7.04.01.01 Small fragment set**

<b>Description</b>	<b>Deimensions</b>	<b>Qty</b>
Drill Bit	2.5mmx140	2
Drill Bit	3.5mmx150	2
Tap, Quick Coupling	3.5mm	1
Neutral/load Drill Guide	2.5mm	1
Drill Tap sleeve	2.5/3.5mm	1
Drill Sleeve	2.5mm	1
Hexagonal Screwdriver Shaft, Quick Coupling	W2.5	1
Countersink Drill bit, Quick Coupling	6mm	1
Extraction Screw, Conical, Quick Coupling	W2.5	1
Extraction Bolt, Quick Coupling For broken screws	3.5mm	1
Straight Handle, Quick Coupling	4.5mm	1
T handle, Quick Coupling	4.5mm	1
Depth Gauge	60	1
Periosteum Stripper, round	6	1
Periosteum Stripper, Flat	10	1
Bone Lever small		2
Plate bender, small		2
Bone Holding Forceps, small		2
Plate template	10*152	1
Plate template	12*152	1
Plate template	14*242	1
Tap with T handle	3.5mm	1
Hexagonal screwdriver with Holding Sleeve	W2.5	1
Redaction Hook	3.5mm	2
Instrument Box with 3 trays and 1 Screw box		1

**7.04.01.02 Large fragment set**

<b>Description</b>	<b>Dimensions</b>	<b>Qty</b>
Drill Bit	3.2x150mm	2
Drill Bit	4.5x150mm	2
Tap, Quick Coupling	4.5mm	1
Tap, Quick Coupling	6.5mm	1
Neutral/load Drill Guide	3.2mm	1
Drill/ Tap sleeve	3.2mm/4.5mm	1
Drill /Tap sleeve	4.5/6.5mm	1
Drill Sleeve	3.2mm	1
Hexagonal Screwdriver	W3.5	1
Countersink Drill bit, Quick Coupling	8	1
Extraction Screw, Conical, Quick Coupling	W3.5	1
Extraction Bolt, Quick Coupling	4.5mm	1
Straight Handle, Quick Coupling	4.5mm	1
T handle, Quick Coupling	4.5mm	1

Depth Gauge	100mm	1
Periosteum Stripper, round	6.5mm	1
Periosteum Stripper, Flat	14mm	1
Plate bender, large		2
Bone Holding Forceps, large		2
Plate template	14mm*242	1
Plate template	18mm*278	1
Tap with T handle	4.5mm	1
Tap with T handle	4.6mm	1
Redaction Hook	5.0mm	1
Hexgonal screwdriver with Holding Sleeve	W3.5	1
Instrument Box with 3 trays and 1 Screw box		1

#### 7.04.01.03 Combined set for small & large fragments

Description	Dimensions	Qty
Dill Bit	2.5x140mm	2
Drill Bit	3.2x150mm	2
Tap, with T handle	3.5x150mm	1
Tap, with T handle	4.5x180mm	1
Drill Tap Sleeve	2.5mm/3.5mm	1
Drill Tap Sleeve	3.2/4.5mm	1
Neutral/load Drill Guide	2.5mm	1
Neutral/load Drill Guide	3.2mm	1
Hexgonal Screwdriver	W2.5	1
Screw head holding sleeve	5.8x80mm	1
Hexgonal Screwdriver	W3.5	1
Screw head holding sleeve	7.8x80mm	1
Countersink Drill bit, Quick Coupling	6mm	1
Countersink Drill bit, Quick Coupling	8mm	1
Extraction Screw, Conical, Quick Coupling for screws with damaged recess	W2.5	1
Extraction Screw, Conical, Quick Coupling for screws with damaged recess	W3.5	1
Extraction Bolt, Quick Coupling For broken screws	3.6mm	1
Extraction Bolt, Quick Coupling For broken screws	4.6mm	2
Straight Handle, Quick Coupling	4.5mm	2
T handle, Quick Coupling	4.5mm	1
Depth Gauge	60mm	1
Depth Gauge	100mm	1
Plate bender	220mm	1
Screw Holding Forceps	3.5~4.5mm	1
Instrument Box		1

#### 7.04.01.04 Mini fragment set

Description	Dimensions	Qty
Dill Bit	1.1x80mm	5
Dill Bit	1.5x80mm	5
Dill Bit	2.0x80mm	5
Bone Tap	1.5mm	1
Bone Tap	2.0mm	1
Bone Tap	2.7mm	1
Screwdriver	2.0/1.5mm	1

Screw Holder	1.5	1
Screwdriver	2.6/2.0mm	1
Screw Holder	2.0mm	1
Screwdriver	3.0/2.7mm	1
Screw Holder	2.7mm	1
Drill Guide	1.1/1.5mm	1
Drill Guide	1.5/2.0mm	1
Drill Guide	2.0/2.7mm	1
Countersink Drill	4.0mm	1
Quick-release Strait Handle	4.5mm	1
Quick-release T Handle	4.5mm	1
Screwdriver with handle	2.6mm	1
Depth gauge	40mm	1
Drag Hook		2
Sharp Hook		1
Periosteum Stripper	3mm	1
Periosteum Stripper	5mm	1
Screw Holding Forceps		1
Plate Holding Forceps		1
Plate Bender	2x1	1
Plate Bending Pliers		1
Bone Lever	3x1	1
Curved Reduction Forceps		1
Sharp Reduction Forceps		1
Plate Cutting Pliers		1
Combination Pliers		1
Plate & Screw Box	1.5mm	1
Plate & Screw Box	2.0mm	1
Plate & Screw Box		1
Instrument Box	2.7mm	1

#### 7.04.01.05 Reconstruction Plates set

Description	Dimensions	Qty
Drill Bit	2.5x140mm	2
T-shape Cancellouse Bone Tap	3.5x150mm	1
Drill Sleeve	4.0x180mm	1
Drill Sleeve	2.5/3/5mm	1
Combination Drill Guide	2.5/4.0	1
Screwdriver	W2.5	1
Holding Sleeve for Screwdriver	5.8x80mm	1
Polyaxial Hex Screwdriver	W2.5	1
Depth gauge	60mm	1
Reduction Rod	8x300mm	2
Small Bone Holding Forceps		1
Large Bone Holding Forceps		1
Stright Reduction Forceps		1
Curved Reduction Forceps-Long		1
Curved Reduction Forceps-Short		1
Double-prong Reduction Forceps	410mm	1
Unsymmetric Double-prong Reduction Forceps	410mm	1
3-prong Reduction Forceps	410mm	1

Curved Pliers		1
Flat Pliers		1
Acetabular Reduction Forceps-Short	340mm	1
Plate Bender	200m	1
Plate Bender Pliers	10mm/11mm	1
Soft Drill	2.5x70mm	1
Drill Guide	2.5mm	1
Drag Hook		1
T-type Drag Hook		1
Sciatic nerve Retractor		1
Screw Holding Forceps	3.5~4.5mm	1
Instrument Box		1

#### 7.04.01.06 Locking Compression plates set

Description	Dimensions	Qty
Guide pin, with trocar tip	1.5mm, 150mm length	5
Threaded Drill Guide, with 1.5 Cannulation, for 1.5mm Guide pin		2
Tightening Wrench for Threaded Drill Guides	4.5mm	1
Drill Bit	2.8mm	2
Drill Stop, for Drill Bit 2.8mm		2
Threaded Drill Guide with 2.8mm Cannulation, for Drill Bit 2.8mm		1
Reduction Drill	2.8mm	2
Tap, Quick Coupling for 3.5mm Locking Screws		2
T Handle, Quick Coupling	5.5mm	1
Screwdriver, Hexagonal for picking up & holding #.5mm Locking screws	W2.5	1
Torque Wrench Handle for 3.5mm locking screws	5.5mm/1.5N.M	1
Screwdriver Shaft, Hexagonal for 3.5mm locking screws	SW2.5/5.5mm	2
Neural/Load Drill Sleeve	2.5mm	
Tightening Wrench for Drill Stops	W2.5	
Guide pin, with trocar tip	2.0mm, 200mm length	5
Threaded Drill Guide, for 2.0 Guide pin	With 2.mm cannulation	2
Tightening wrench for Threaded Drill Guides	.5mm	1
Drill Bit	4.3mm	2
Drill Stop, for Drill bit 4.3mm		2
Threaded Drill Guide with 4.3mm cannulation for Drill Bit 4.3mm		1
Reduction Drill	4.0mm	2
Tap, Quick Coupling, for 5.0mm locking screw		1
T Handle, Quick Coupling	5.5mm	1
Screwdriver, Hexagonal, for picking up & holding 5.0mm locking screws	W3.5	1
Neural/Load Drill Sleeve	3.2mm	2
Tightening Wrench for Drill Stops	W2.5	1
Guide pin, Threaded	2.5mm, 235mm length	4
Drill Sleeve, with 2.7mm cannulation, for 2.5mm Threaded Guide pin		1
Drill Bit, Cannulated	5.5mm, 240mm	1

	length	
Drill Stop, for Drill Bit 5.5mm		2
Threaded Drill Guide, with 5.5mm cannulation, for cannulated Drill Bit 5.5mm		2
Screwdriver, Hexagonal, for picking up & holding 7.0mm locking Screws	W3.5	1
Screwdriver, Hexagonal, Cannulated, Quick coupling, for holding 7.0mm locking Screws	W4	1
Screwdriver Shaft, Hexagonal, for 7.0mm locking Lag Screws	W4	2
Instrument Box, with 2 trays		1

#### 7.04.01.07 DHS/DCS set

Description & Dimensions	Qty
3.3mm Drill Bit, 3.2x150mm	2
4.5mm Drill Bit, 4.5x150mm	2
4.5mm Tap, for 4.5 Cortical Screw, Quick Coupling	1
6.5mm Tap, for 6.5mm Cancellous Screw, Quick Coupling	1
Drill/Tap Sleeve, No 3.2/4.5	1
Drill/Tap Sleeve, No 4.5/6.5	1
Neutral/Load Drill Guide, No 3.2	1
Hexagonal Screwdriver Shaft, w3.5, Quick Coupling	2
DHS Angle Guide, 135°, Quick Coupling	1
DCS Angle Guide, 95°, Quick Coupling	1
Depth Gauge, 100mm	1
DHS/DCS Guide Pin, No 2.5x235mm	2
Direct Measuring Device, No 2.6x200mm	1
DHS/DCS Double Reamer Shaft, No 8.5x240mm, Quick Coupling	2
DHS Reamer Head, No 12.5	1
DCS Reamer Head, No 12.5	1
12mm Tap, For, for DHS/DCS Lag Screw, Quick Coupling	1
Short Centering Sleeve, 95mm	1
DHS/DCS Plate Impactor	1
DHS/DCS Wrench, with T handle	1
Long Centering Sleeve	1
DHS/DCS Guide Shaft	1
Coupling Screw Cannulated, for Long Screw Insertion	1
Coupling Screw Solid, for Long Screw Insertion	1
Coupling Screw Long, for Long Screw Removing	1
T handle, No 5.5 Quick Coupling	1
T handle, No 4.5 Quick Coupling	1
Straight Handle, No 5.5 Quick Coupling	1
Straight Handle, No 4.5 Quick Coupling	1
Instrument Box	1

#### 7.04.01.08 Cannulated screws set (No 3.5, 4.0, & 4.5)

Description	Dimensions	Qty
Guide Pin	No 1.0x120	3
Threaded Guide Pin	No 1.0x120	3
Cannulated Drill	NO 2.5/ 1.5x130	1

Cannulated Drill Stop	NO 2.5	1
Cannulated Drill	No 3.2/1.2x150	1
Cannulated Drill Stop	No 3.2	1
Drill Stop Wrench	W2.5	1
T Shape Cannulated Countersink Drill	No 6/1.2	1
Drill Sleeve for Guide Pin	No 1.2/2.5	1
Drill Sleeve for Guide Pin	No 1.2/3.2	1
Drill Sleeve	No 2.5	1
Drill Sleeve	No 3.2	1
Depth Gauge	No 1.2x120	1
T Shape Bone Tap	HB3.5/No 1.2	1
T Shape Bone Tap	HB4.0/No 1.2	1
T Shape Bone Tap	HB4.5/No 1.6	1
Cleaning Guide Pin	No 1.0x150	1
Cannulated Hex Screwdriver	W2.5	1
Screwdriver	W2.5	1
T Shape Sliding Screw Extractor	W2.5	1
Screw Holding Forceps	No 3.5~4.5	1
Instrument Box		1

#### 7.04.01.09 Cannulated screws set (No 7.3)

Description	Dimensions	Qty
Guide Pin	No 2.5x235	3
Threaded Guide Pin	No 2.5x235No	3
Depth Gauge	No 2.5x235	1
Cannulated Reamer	No 5.5/2.5x220	1
Drill Stop	No 5.5/w3	1
Drill Stop Wrench	W3	1
Cannulated Countersink Drill	No 9/2.5x220-T	1
Sliding Screw Extractor	W4-T	1
Drill Sleeve	No 5.5/10	1
Expander	No 2.5/10	1
Drill Sleeve Holder	No 10	1
Double-hole Drill Guide	No 2.5	1
Multi- hole Drill Guide	No 2.5	1
Drill Sleeve for Guide Pin	No 2.5/5.5	1
Cannulated Bone Tap	No 7.3/2.5T	1
Cleaning Guide Pin	No 2.5x250	1
Cannulated Hex Screwdriver	W4.0	1
Holding Sleeve for Hex Screwdriver	W4.0	1
Hex Screwdriver	W4.0	1
Instrument Box		1

#### 7.04.01.10 Broken screws set

Description	Dimensions	Qty
Sharp Hook, Straight,	165mm	1
Sharp Hook, Bent	156mm	1
Extractor Screw, Conical	W2.5	1
Extractor Screw, Conical	W2.5 Thin	1
Extractor Screw, Conical	W3.5,	1
Extractor Screw, Bolt	No 3.5	1
Extractor Screw, Bolt	No 4.5	1

Extractor Screw, Bolt	No 6.5	1
Hexagonal Screwdriver Shaft, Quick Coupling	W2.5	1
Hexagonal Screwdriver Shaft, Quick Coupling	W3.5	1
Hexagonal Screwdriver Shaft, Quick Coupling	W4.0	1
Hollow Reamer Tube, for No 3.5 Screws		1
Hollow Reamer Shaft, for No 3.5 Screws		1
Centering Pin for Hollow Reamer, for No 3.5 Screws		1
Hollow Reamer Tube, for No 4.5 Screws		1
Hollow Reamer Shaft, for No 4.5 Screws		1
Centering Pin for Hollow Reamer, for No 4.5 Screws		1
Hollow Reamer Tube, for No 6.5 Screws		1
Hollow Reamer Shaft, for No 6.5 Screws		1
Centering Pin for Hollow Reamer, for No 6.5 Screws		1
Pliers for Screw Removal	205mm length	1
Gouge	190mm	1
Straight Handle, Quick Coupling	150mm	1
T Handle, Quick Coupling,	150mm	1
Beoken Screw Extractor		1
HSS Drill Bit	No 4.0	2
HSS Drill Bit	No 6.0	2
Instrument Box		1

#### 07.04.02 Sets for Intramedullary Nails

##### 07.04.02.02 PFNA Nail

Description	Dimensions	Qty
Awl	17.5	1
Protection Sleeve	No 20/17	1
Drill Sleeve	No 17/2.8	1
Drill Guide	No 2.8	1
Guide Pin	No 3.0	3
Cleaning Guide Pin	No 2.4x358	1
Drill Bit	No 11	1
Drill Bit	No 17/3.3	1
T Shape Drill Clamp		1
Handle		1
Target Device		1
Screw for Target Device		1
Connection Screw	M12	1
Polyaxial Hex Wrench	SW10	1
Sliding Mass for Targeting Bar	M12x1	1
Targeting Bar	M12x1	1
Guide Bar	M8	1
Small Wrench	NO 4.5	1
Sliding Hammer	W10	1
Protection Sleeve	No 11/8 Green	1
Protection Sleeve	No 8/ 4 Green	1
Drill Guide	No 4 Green	1
Drill Bit	No 4	2
Locking Nut	M16x1.5Left	1
Protection Sleeve	No 16/11 Golden	1
Drill Sleeve	No 11/3.2 Golden	1
Drill Guide	No 3.2 Golden	1

Cleaning Guide Pin	No 2.8x454	1
Step Drill	No 11/6	1
Drill Stop	No 11	1
Depth Gauge	No 3.5	1
Periosteum Protection Plate		1
Hammer	No 30	1
Lag Screw Inserter	SW4.5/M7x1 Left	1
Cannulated Screwdriver	SW4 NO 3	1
Solid Screwdriver	SW3.5	1
Lag Screw Extractor	SW4.5/M7x1 Left	1
Depth Gauge	100mm	1
Hex Screwdriver Shaft	SW11	1
Instrument Box		1

#### 07.04.02.03 Proximal Femoral Nail (long)/Antegrade femoral nail

Description	Dimensions	Qty
Targeting Device Handle		1
Guide Bar		1
Distal Target Device		1
U-shape Fixture Block		1
Locking Rod		1
Locking Screw for Guide Bar		2
Screw for Distal Targeting Device		1
Locking Bolt Inserter		1
Quick Release T Handle	No 5	1
Reamer	No 9.4x470	1
Reamer	No 10.4x470	1
Reamer	No 11.4x470	1
Reamer	No 12.4x470	1
Reamer	No 12.5.4x470	1
Reamer	No 13.5.x470	1
L- shape Alignment Rod		1
Locking Bolt Extractor		1
Bone Tap		1
T-shape Hex Wrench	W3.5	1
Depth Gauge		1
Nail Impactor Handle		1
Wrench for Polyaxial Handle	W12	1
Polyaxial Handle	M12	1
Cannulated Sliding Hammer		1
L-shaped Hex Wrench	W5	1
L-shaped Hex Wrench	W3	1
Awl		1
Outer Drill Sleeve	No 10/8x120	3
Outer Drill Sleeve	No 10/8x155	2
Inner Drill Sleeve	No 4.0	2
Inner Drill Sleeve	No 6.5	1
Drill Sleeve for Guide Pin	No 2.5	1
Bone Marker		1
Drill Bit	No 4.0x300	2
Step Drill		1
Drill Stop	No 4.0	1



Guide Pin	No 2.5x660	1
Guide Pin	No 2.5x320	2
Threaded Guide Pin	No 2.5x320	2
Depth Gauge for Guide Pin		1
Long Bone Marker		1
Drill Bit	No 6x300	1
Drill Sleeve	No 6/8	1
T-shape Flat Drill	No 6x220	1
Alignment Rod		1
End Cap Holder		1
Instrument Box		1
Implant Tray		1

#### **07.04.02.04 Proximal Femoral Nail (Standard)/ Retrograde femoral nail**

<b>Description</b>	<b>Dimensions</b>	<b>Qty</b>
Targeting Device Handle		1
Locking Rod		1
Guide Bar		1
Locking Screw for Guide Bar		1
L-shape Hex Wrench	W5	1
Outer Drill Sleeve	No 10/8x155	2
Inner Drill Sleeve	No 6.5x175	1
Drill Sleeve for Guide Pin	No 2.5x175	1
Outer Drill Sleeve	No 10/8x120	2
Inner Drill Sleeve	No 4.5x175	2
Bone Marker		1
Long Bone Marker		1
Guide Pin	No 2.5x320	2
Threaded Guide Pin	No 2.5x320	2
Depth Gauge for Guide Pin		1
Step Drill	No 4.5/6.5x320	1
Locking Bolt Inserter		1
L- shape Alignment Rod		1
Cannulated Sliding Hammer		1
Polyaxial Handle	M10x1	1
Wrench for Polyaxial Handle	W12	1
Awl		1
Reamer	No 9.4x450	1
Reamer	No 10.4x450	1
Reamer	No 11x450	1
Reamer	No 12x450	1
Quick Release Reamer	No 13.5x200	1
Quick Release T-Handle (Triangle Hole)	No 5	1
Bone Tap	M6x2	1
T-shape Hex Wrench	W3.555	1
Screw Extractor		1
Drill Bit	No 4.5x300	2
Drill Stop	No 4.5	1
L-shaped Hex Wrench	W3	1
Guide Pin	No 2.5x660	1
Depth Gauge	90mm	1

Impactor Handle	M10x1	1
End Cap Holder	W3.5	1
Implant Tray		1

#### 07.04.02.05 Tibial Nail set

Description	Dimensions	Qty
Targeting Device Handle		1
Locking Rod		1
Guide Bar		1
Locking Screw for Guide Bar		1
Proximal Targeting Device		1
Distal Targeting Device		1
Screw for Distal Targeting Device		1
U-shape Fixture Block		1
L-shape Hex Wrench	W5	1
Outer Drill Sleeve	No 10/8x120	2
Inner Drill Sleeve	No 4.5x140	2
Bone Marker		1
T- shape Alignment Rod		1
L- shape Alignment Rod		1
Sliding Hammer	M10	1
Polyaxial Handle	M6	1
Wrench for Polyaxial Handle	W12	1
Awl		1
Reamer	No 8x450	1
Reamer	No 9.4x450	1
Reamer	No 10x450	1
Reamer	No 11x450	1
Quick Release T-Handle	No 5	1
Bone Tap	M6x2	1
T-shape Hex Wrench	W3.5	1
Locking Bolt Extractor		1
T-Drill	No 4.0x220	1
Drill Bit	No 4.0x300	2
Drill Stop	No 4.0	1
L-shaped Hex Wrench	W3	1
Depth Gauge	90mm	1
End Cap Holder	W3.5	1
Implant Tray		1

#### 07.04.02.06 Sign Nail set

#### 07.04.02.07 Set for Hip prosthesis

**Description:** made from stainless steel

#### Specification

- L-handle
- Locking Bolt - (2) one is extra
- Target Arm (Proximal Target Arm, Distal Target Arm)
- Short Target Arm (for use with nails shorter than 280mm)
- Distal Cap Screws, Distal Arm - (4) two are extra
- Shoulder Cap Screw - (2) one is extra

- Combination Hex Wrench - (2) one end fits the Locking Bolt, Shoulder Cap Screw and Distal Cap ---Screws. The other end fits the interlocking screws.
- Cannula
- Alignment Pin - (2)
- Drill Guides - (2) (one large for large drill bits) (one small for small drill bits)
- Drill Bits
  - o Large (2) (6.3mm) for near cortex
  - o Small (2) (3.5mm) for both near & far cortex
- Screw Caddy and SIGN Interlocking screw assortment
- SIGN IM nail assortment
- Hex Driver (3.5mm)
- Extractor/Compressor Set
  - o Extractor Rod Connector
  - o Extractor-Compressor Rod
  - o Slap Hammer Weight
- Slot Finders; Cannulated, Solid and Curved (one of each)
- Tissue Protector - (2) one is extra (**these are reusable**)
- Depth Gauge
- Step Drill
- Screw Hole Broach

07.04.03 Set for Hip Prosthesis

**07.04.03.01 Diamond Hip system Box No. 1**

Description	dimensions	Qty
Acetabular Reamer	N0 38	1
Acetabular Reamer	N0 40	1
Acetabular Reamer	N0 42	1
Acetabular Reamer	N0 44	1
Acetabular Reamer	N0 46	1
Acetabular Reamer	N0 48	1
Acetabular Reamer	N0 50	1
Acetabular Reamer	N0 52	1
Acetabular Reamer	N0 54	1
Acetabular Reamer	N0 56	1
Acetabular Reamer	N0 58	1
Acetabular Reamer	N0 60	1
Acetabular Reamer	N0 62	1
Acetabular Reamer Handle		1
Acetabular Reamer Shell	N0 44	1
Acetabular Reamer Shell	N0 46	1
Acetabular Reamer Shell	N0 48	1
Acetabular Reamer Shell	N0 50	1
Acetabular Reamer Shell	N0 52	1
Acetabular Reamer Shell	N0 54	1
Acetabular Reamer Shell	N0 56	1
Acetabular Reamer Shell	N0 58	1
Acetabular Reamer Shell	N0 60	1
Acetabular Reamer Shell	N0 62	1
Acetabular Reamer Liner	N0 44	1
Acetabular Reamer Liner	N0 46	1
Acetabular Reamer Liner	N0 48	1
Acetabular Reamer Liner	N0 50	1
Acetabular Reamer Liner	N0 52	1

Acetabular Reamer Liner	N0 54	1
Acetabular Reamer Liner	N0 56	1
Acetabular Reamer Liner	N0 58	1
Acetabular Reamer Liner	N0 60	1
Acetabular Reamer Liner	N0 62	1
Femoral Head Impactor		1
Acetabular Head Impactor		1
Acetabular Liner Impactor-Cap	N0 24	1
Acetabular Liner Impactor-Cap	N0 28	1
Acetabular Cup Positioner		1
Cemented Acetabular Cup Positioner	M8	1
Cemented Acetabular Cup Positioner-Cap	N0 24	1
Cemented Acetabular Cup Positioner-Cap	N0 28	1
Acetabular Soft Drill Shaft		1
Acetabular Drill Bit	N0 3.2x37	1
Acetabular Drill Bit	N0 3.2x45	1
Acetabular Soft Drill Bit	N0 3.2x32x183	1
Drill Guide	N0 3.2x290	1
Acetabular Drill	N0 5	1
Drill Guide		1
Acetabular Depth Gauge		1
Polyaxial Screwdriver	W3.2	1
Standard Screwdriver	W3.5	1
Screw Holder	N0 5.2	1
Tray	3-tray	1
Instrument Box		1

#### 07.04.03.02 Diamond Hip system Box No. 2

Description	Dimensions	Qty
Neck Resection Guide		1
Femoral Head Extractor		1
Box Osteotome		1
Tepered Cana Probe		1
Trochanteric Reamer		1
Tapered Reamer	0-1	1
Tapered Reamer	2-3	1
Tapered Reamer	4-5	1
Tapered Reamer	6-7	1
Tapered Reamer	8-9	1
Broach for Cementless Stem	1#	1
Broach for Cementless Stem	2#	1
Broach for Cementless Stem	3#	1
Broach for Cementless Stem	4#	1
Broach for Cementless Stem	5#	1
Broach for Cementless Stem	6#	1
Broach for Cementless Stem	7#	1
Broach for Cementless Stem	8#	1
Broach for Cemented Stem	1#	1
Broach for Cemented Stem	2#	1
Broach for Cemented Stem	3#	1
Broach for Cemented Stem	4#	1
Bone Cement Embolus Inserter	M5	1

Broach Handle		1
Calcar Planer		1
Medullary Cavity Trimming Reamer		1
Stem Inserter-Handle		1
Trial Neck	2#-3#	1
Trial Neck	#3-5#	1
Trial Neck	6#-7#	1
Trial Neck	8#-9#	1
Trial Femoral Head	24+0	1
Trial Femoral Head	24+3.5	1
Trial Femoral Head	28+1.5	1
Trial Femoral Head	28+5	1
Trial Femoral Head	28+8.5	1
Trial Femoral Head	28+12	1
Trial Femoral Head	28+15.5	1
Trial Bipolar Head	39#	1
Trial Bipolar Head	41#	1
Trial Bipolar Head	43#	1
Trial Bipolar Head	45#	1
Trial Bipolar Head	47#	1
Trial Bipolar Head	49#	1
Trial Bipolar Head	51#	1
Trial Bipolar Head	53#	1
Trial Bipolar Head	55#	1
Femoral Head Impactor		1
Cling Ring Forceps		1
Universal T-Handle		1
Hammer		1
Tray	3-Tray	1
Instrument Box		1

07.04.04 Total knee replacement component (Sets)

**07.04.04.01 Test prostheses**

femoral component without stem( Left and Right)

femoral component with stem,80 mm( Left and Right)

tibial component, constrained

tibial component, less constrained

tibial metal back

standard anchorage stem for tibia, 50 mm and 80 mm

patellar component

condylar anchoring peg

**07.04.04.02 Mixed tray**

clamp for femoral component

Impactor for femoral component

Impactor for tibial metal backs

Impactor for tibial component

Tibial assembly puller

Tibial assembly nut tightener

Driver for pe anchorage pegs

Driver for ti anchorage pegs

Pin insert /extract device

Pins

Tommy bar

Handle

Glass sheet

#### **07.04.04.03 Femur cutting instruments**

Femur cutting guide

Distal femoral cutting guide

Chamfer cutting guide

#### **07.04.04.04 Tibial cutting guide**

Cutting guide

Extension

Distal fixation Stylus

#### **07.04.04.05 Alignment instrument**

Tenser

Intramedullary rod

Angle alignment par

Distal condyle feeler

Extramedullary alignment tower

Telescopic bar

Hip finder for x-ray

Hip finder intra operative

#### **07.04.04.06 Drilling and reaming instruments**

Femoral drill guide(Left and Right)

Femoral canal reamer

Tibial drill guide

Tibial canal reamer

Drill for ti anchorage peg

Drill for pe anchorage pegs

Stem pre-drill

Drill bush

Plug for ti anchorage pegs

Plug for stem hole

#### **07.04.04.07 Patella instrument**

Patella clamp

Insert for patella clamp

Drill bush for patella clamp

Patella trephine

patella cutter

patella test prostheses

#### **07.04.04.08 Tray**

Mixed tray

Upper mixed tray

Femur tray

Femur test tray right

Femur test tray left

Tibial tray

#### **07.04.04.09 Self Compression Holes Plates**

**Description:** CLass Narrow

1 Specs : 4 holes

2 Specs : 5 holes

3 Specs : 6 holes

4 Specs : 7 holes

5 Specs : 8 holes

6 Specs : 9 holes

7 Specs : 10 holes

8 Specs : 12holes

**07.04.04.10 Self Compression Holes Plates**

**Description:** CLass Broad

1 Specs : 6 holes

2 Specs : 7 holes

3 Specs : 8 holes

4 Specs : 9 holes

5 Specs : 10 holes

6 Specs : 12 holes

7 Specs : 14 holes

8 Specs : 16 holes

9 Specs : 18 holes

**07.04.04.11 Low Contact Self Compression Hole Plates**

**Description:** (LCDCP.) (4.5) Narrow

1 Specs : 4 holes narrow.

2 Specs : 5 holes narrow.

3 Specs : 6 holes narrow.

4 Specs : 7 holes narrow.

5 Specs : 8 holes narrow.

6 Specs : 9 holes narrow.

7 Specs : 10 holes narrow.

8 Specs : 12holes narrow.

9 Specs : 14holes narrow.

**07.04.04.12 Low Contact Self Compression Hole Plates**

**Description:** (LCDCP.) (4.5) Broad

1 Specs : 6 holes broad.

2 Specs : 7 holes broad.

3 Specs : 8 holes broad.

4 Specs : 9 holes broad.

5 Specs : 10 holes broad

6 Specs : 12 holes broad

7 Specs : 14 holes broad.

8 Specs : 16 holes broad.

9 Specs : 17 holes broad.

10 Specs : 18 holes broad.

**07.04.04.13 Semi Tubular Plates**

1 Specs : 3 holes.

2 Specs : 4 holes.

3 Specs : 5 holes.

4 Specs : 6 holes.

5 Specs : 7 holes.

6 Specs : 8 holes.

7 Specs : 9 holes.

8 Specs : 10 holes

9 Specs : 11 holes.

10 Specs : 12 holes

**07.04.04.14 Self Compression Holes Plates 3.5 mm.**

1 Specs : 3 holes.

2 Specs : 4 holes.

3 Specs : 5 holes.

4 Specs : 6 holes.

5 Specs : 7 holes.

6 Specs : 8 holes.

7 Specs : 9 holes.

- Specs : 10 holes.
- 9 Specs : 11 holes.
- 10 Specs : 12 holes.

**07.04.04.15 T Buttress Plates**

**Description:** (3.5) for distal radius

- 1 Specs : 4 holes.
- 2 Specs : 5 holes.
- 3 Specs : 6 holes.
- 4 Specs : 7 holes.

**07.04.04.16 L Buttress Plates Right**

- 1 Specs : 4 holes.
- 2 Specs : 5 holes.
- 3 Specs : 6 holes.
- 4 Specs : 7 holes.

**07.04.04.17 L Buttress Plates Left**

- 1 Specs : 4 holes.
- 2 Specs : 5 holes.
- 3 Specs : 6 holes.
- 4 Specs : 7 holes.

**07.04.04.18 Lateral Tibial Head Buttress Plate left**

- 1 Specs : 5 holes.
- 2 Specs : 7 holes.
- 3 Specs : 9 holes.
- 4 Specs : 11 holes.
- 5 Specs : 13 holes

**07.04.04.19 Lateral Tibial Head Buttress Plate right**

- 1 Specs : 5 holes.
- 2 Specs : 7 holes.
- 3 Specs : 9 holes.
- 4 Specs : 11 holes.
- 5 Specs : 13 holes

**07.04.04.20 Condylar buttress plates with Self compression holes**

- 1 Specs : 6 Holes
- 2 Specs : 7 Holes
- 3 Specs : 8 Holes
- 4 Specs : 9 Holes
- 5 Specs : 10 Holes
- 6 Specs : 11 Holes
- 7 Specs : 12 Holes

**07.04.04.21 Condylar Blade Plate with Self Compression holes 95 deg**

- 1 5 hole x 60mm
- 2 5 hole x 70mm
- 3 5 hole x 75mm
- 4 5 hole x 80mm
- 5 7 hole x 50mm
- 6 7 hole x 60mm
- 7 7 hole x 70mm
- 8 7 hole x 80mm
- 9 9 hole x 50mm
- 10 9 hole x 60mm
- 1 9 hole x 80mm
- 12 11 hole x 60mm
- 13 11 hole x 70mm



- 14 11 hole x 80mm
- 15 14 hole x 60mm
- 16 14 hole x 70mm
- 17 14 hole x 75mm
- 18 K-WIRES 4" (PLAIN / THREADED)
- 19 K-WIRES 4" X 1.5MM (PLAIN / THREADED)
- 20 K-WIRES 4" X 1.8MM (PLAIN / THREADED)
- 21 K-WIRES 4" X 2.0MM (PLAIN / THREADED)
- 22 K-WIRES 6" (PLAIN / THREADED)
- 23 K-WIRES 6" X 1.5MM (PLAIN / THREADED)
- 24 K-WIRES 6" X 1.8MM (PLAIN / THREADED)
- 25 K-WIRES 6" X 2.0MM (PLAIN / THREADED)
- 26 K-WIRES 6" X 2.5MM (PLAIN / THREADED)
- 27 K-WIRES 6" X 3.0MM (PLAIN / THREADED)
- 28 K-WIRES 12" (PLAIN / THREADED)
- 29 K-WIRES 12" X 1.5MM (PLAIN / THREADED)
- 30 K-WIRES 12" X 1.8MM (PLAIN / THREADED)
- 31 K-WIRES 12" X 2.0MM (PLAIN / THREADED)
- 32 K-WIRES 12" X 2.5MM (PLAIN / THREADED)
- 33 K-WIRES 12" X 3.0MM (PLAIN / THREADED)
- 34 S. S Wire Reels (diameter from 18-30swg @ diff of 2)
- 07.04.04.22 RUSH NAIL FOR HUMERUS DIAMETER : 3.5MM**
- 1 length in cm 20
- 2 length in cm 21
- 3 length in cm 22
- 4 length in cm 23
- 5 length in cm 24
- 6 length in cm 25
- 7 length in cm 26
- 8 length in cm 27
- 9 length in cm 28
- 10 length in cm 29
- 11 length in cm 30
- 07.04.04.23 SCHANZ PIN**
- 1 SCHANZ PIN: 2.0MM X inch 4
- 2 SCHANZ PIN: 2.0MM X inch 5
- 3 SCHANZ PIN: 2.0MM X inch 6
- 4 SCHANZ PIN: 2.5MM X inch 4
- 5 SCHANZ PIN: 2.5MM X inch 5
- 6 SCHANZ PIN: 2.5MM X inch 6
- 7 SCHANZ PIN: 3.0MM X inch 4
- 8 SCHANZ PIN: 3.0MM X inch 5
- 9 SCHANZ PIN: 3.0MM X inch 6
- 10 SCHANZ PIN: 4.5MM X 6"
- 11 SCHANZ PIN: 5.0MM X 6"
- 12 COVENTRY STAPLES
- 13 Washer for 6.5 scrow
- 14 Thompson hip endoprosthesis Diameter of 41
- 15 Thompson hip endoprosthesis Diameter of 42
- 16 Thompson hip endoprosthesis Diameter of 43
- 17 Thompson hip endoprosthesis Diameter of 44
- 18 Thompson hip endoprosthesis Diameter of 45
- 19 Thompson hip endoprosthesis Diameter of 46

20 Thompson hip endoprosthesis Diameter of 47  
 21 Thompson hip endoprosthesis Diameter of 48  
 22 Thompson hip endoprosthesis Diameter of 49  
 23 Thompson hip endoprosthesis Diameter of 50  
 24 Thompson hip endoprosthesis Diameter of 52  
 25 Thompson hip endoprosthesis Diameter of 54  
 26 Thompson hip endoprosthesis Diameter of 56  
 27 Amputation knife 6 INCH  
 28 Steinman Pins 3mm, length 8"  
 29 Steinman Pins 3.5mm, length 9"  
 30 Steinman Pins 4 mm, length 8  
 Steinman Pins 4.5mm Length 9"

#### **07.04.04.24 Automatic Tourniquet**

**Description:** PTS ii Portable Tourniquet Twin System

##### **Specification**

With Limb protection sleeves

With Different Size of Cuff (Adult & Pedi Size)

**Height:** 180 mm (7.0 inches)

**Width:** 120 mm (4.7 inches)

**Depth:** 110 mm (4.3 inches)

**Weight:** 1.08 kg (38.0 oz)

**Cuff Pressure Range:** 50 - 475 mmHg, adjustable in 5 mmHg increments, automatically regulated to within +/- 10 mmHg of the selected pressure

**Extended Pressure Range:** 475 - 600 mmHg

**Time Alarm Range:** 0-240 minutes, adjustable in 5 minute increments

**Inflation Speed:** inflates a typical 34" thigh cuff within 5 seconds

**Integrated Tourniquet Cuff Testing:** 30 seconds

#### **07.04.04.25 Amputation Set**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1
Clamp, towel, Backhaus, 11 cm	6
Curette, bone, Volkmann, 17 cm, 8.5 mm,	1
Curette, bone, Volkmann, 17 cm, 10 mm,	1
Forceps, artery, Kelly, 14 cm, curved	4
Forceps, artery, Kocher, 14 cm, 1x2 teeth, curved	4
Forceps, artery, Kocher, 14 cm, 1x2 teeth, straight	4
Forceps, tissue, standard, 1x2 teeth, straight 14.5 cm	2
Needle holder, Crile-Wood, 15 cm, delicate	1
Needle holder, Mayo-Hegar, 18 cm, standard pattern	1
Raspatory, Lambotte, 21 cm sharp, curved, 10 mm	1
Raspatory, Lambotte, 21 cm sharp, curved, 20 mm	1
Retractor, Farabeuf, double end, pair, baby, 12 cm	1
Retractor, Farabeuf, double end, pair, 15 cm	1
Retractor, Percy, trad. pattern, folding handles	1
Rongeur, bone, Luer, light curved jaws, 5 mm, 15 cm	1
Gigli saw handle (one pair), solid	1
Wire, Gigli saw 50 cm	12
Scalpel handle, no 4, standard	1
Forceps, tissue, standard, non-toothed, straight 14.5 cm	1
Forceps, tissue, small, 1x2 teeth, 12 cm	1
Scissors, Metzenbaum (Lahey), curved 14 cm	1
Scissors, Mayo, curved 17 cm	
Manoul bone saw (Charrire 27cm)	1
Rercy Retractor	1

**07.04.04.26 External Fixator Set (large)**

Articulation, notched, single, diam. 18 mm	1
Brace, without head system, diam. 18/12	1
Clamp, double notched, for fixator, diam. 18 mm	5
Clamp, single notched, for fixator, diam. 18 mm	16
Collar, for simple notched clamp, diam. 18 cm	4
Drill, diam. 12 mm, long	1
Drill, diam. 12 mm, short	1
Drill, diam. 18 mm, long	3
Guide, for long drill, diam. 18 mm	3
Head for pins, diam. 12 mm	1
Head for pins, diam. 18 mm	2
Perforator, for fixator, diam. 18 mm	1
Pin, diam. 4 mm, L.90 mm, (for fixator, diam. 12 mm)	15
Pin, diam. 5 mm, L.120 mm, (for fixator, diam. 18 mm)	52
Pin, diam. 5 mm, L.170 mm, (for fixator, diam. 18 mm)	20
Plate, bone, for Tibia, 6 holes	2
Rod, connecting, (diam. 4mm, L.80 mm) ext. Fix. diam. 12 mm	2
Rod, connecting, (diam. 8mm, L.100 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.150 mm) ext. Fix. diam. 18 mm	4
Rod, connecting, (diam. 8mm, L.200 mm) ext. Fix. diam. 18 mm	4
Rod, connecting, (diam. 8mm, L.250 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.300 mm) ext. Fix. diam. 18 mm	2
Rod, connecting, (diam. 8mm, L.350 mm) ext. Fix. diam. 18 mm	2
Screw driver, hex., for 4/5 mm pins, 18/12 mm tubes	1
Screw, hex. For 5 mm pins + ext. Fix. 18 mm	1
Spanner, hex., notched artic./clamps, tubes 12/18 mm	1
Spanner, hex., for screws, tubes 12-18 mm	1
Tube, diam. 12 mm, L.215 mm, 14 trous	3
Tube, diam. 18 mm, L.150 mm	1
Tube, diam. 18 mm, L.250 mm	3
Tube, diam. 18 mm, L.300 mm	4
Tube, diam. 18 mm, L.350 mm	2
Tube, diam. 18 mm, L.400 mm	2
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	1

**07.04.04.27 External Fixator Set (small)**

Articulation, notched, double, diam. 12 mm	1
Articulation, notched, single, diam. 12 mm	2
Brace, without head system, diam. 18/12	1
Clamp, double notched, for fixator, diam. 12 mm	4
Clamp, single notched, for fixator, diam. 12 mm	8
Drill, diam. 12 mm, long	2
Guide, for long drill, diam. 12 mm	2
Head for pins, diam. 12 mm	1
Perforator, for fixator, diam. 12 mm	1
Pin, diam. 4 mm, L.120 mm, (for fixator, diam. 12 mm)	20
Pin, diam. 4 mm, L.150 mm, (for fixator, diam. 12 mm)	10
Pin, diam. 4 mm, L.90 mm, (for fixator, diam. 12 mm)	30
Rod, connecting, (diam. 4mm, L.80 mm) ext. fix. diam. 12 mm	2
Rod, connecting, (diam. 4mm, L.100 mm) ext. fix. diam. 12 mm	4
Rod, connecting, (diam. 4mm, L.120 mm) ext. fix. diam. 12 mm	4
Rod, connecting, (diam. 4mm, L.160 mm) ext. fix. diam. 12 mm	2
Rod, connecting, (diam. 4mm, L.180 mm) ext. fix. diam. 12 mm	2

Rod, connecting, (diam. 4mm, L.210 mm) ext. fix. diam. 12 mm	2
Screw driver, hex., for 4/5 mm pins, 18/12 mm tubes	1
Screw, hex. For 4 mm pins + ext. fix. 12 mm	1
Spanner, hex., notched artic./clamps, tubes 12/18 mm	
Spanner, hex., for screws, tubes 12-18 mm	
Tube, 12 mm, compression, asymmetrical	
Tube, 12 mm, L.50 mm, 3 holes	
Tube, 12 mm, L.65 mm, 4 holes	
Tube, 12 mm, L.80 mm, 5 holes	
Tube, 12 mm, L.100 mm, 6 holes	
Tube, 12 mm, L.110 mm, 7 holes	
Tube, 12 mm, L.125 mm, 8 holes	
Tube, 12 mm, L.155 mm, 10 holes	
Tube, 12 mm, L.185 mm, 12 holes	
Tube, 12 mm, L.215 mm, 14 holes	
Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S	

#### **07.04.04.28 Power Drill set**

07.04.05 Screws, Pines, and Wires

#### **07.04.05.01 Cortical Screws**

**Description:** 3.5 mm Hex thread ground Classic

- 1 Length : 10 mm
- 2 Length : 12 mm
- 3 Length : 14 mm
- 4 Length : 16 mm
- 5 Length : 18 mm
- 6 Length : 20 mm
- 7 Length : 22 mm
- 8 Length : 24 mm
- 9 Length : 26 mm
- 10 Length : 28 mm
- 11 Length : 30 mm
- 12 Length : 32 mm
- 13 Length : 34 mm
- 14 Length : 36 mm
- 15 Length : 38 mm
- 16 Length : 40 mm

#### **07.04.05.02 Cortical Screws**

**Description:** 4.5 mm hex thread ground classic

- 1 Length : 12 mm
- 2 Length : 14 mm
- 3 Length : 16 mm
- 4 Length : 18 mm
- 5 Length : 20 mm
- 6 Length : 22 mm
- 7 Length : 24 mm
- 8 Length : 26 mm
- 9 Length : 28 mm
- 10 Length : 30 mm
- 11 Length : 32 mm
- 12 Length : 34 mm
- 13 Length : 36 mm
- 14 Length : 38 mm

- 15 Length : 40 mm
- 16 Length : 42 mm
- 17 Length : 44 mm
- 18 Length : 46 mm
- 19 Length : 48 mm
- 20 Length : 50 mm
- 21 Length : 52 mm
- 22 Length : 54 mm
- 23 Length : 56 mm
- 24 Length : 58 mm
- 25 Length : 60 mm
- 26 Length : 62 mm
- 27 Length : 64 mm
- 28 Length : 66 mm
- 29 Length : 68 mm
- 30 Length : 70 mm

**07.04.05.02 Malleolar screw**

**Description: hexagonal head**

- 1 Length : 25 mm
- 2 Length : 30 mm
- 3 Length : 35 mm
- 4 Length : 40 mm
- 5 Length : 45 mm
- 6 Length : 50 mm
- 7 Length : 55 mm
- 8 Length : 60 mm

**07.04.05.03 Cancellous screws**

**Description: 6.5 mm half Threaded**

- 1 Length : 20 mm
- 2 Length : 25 mm
- 3 Length : 30 mm
- 4 Length : 35 mm
- 5 Length : 40 mm
- 6 Length : 45 mm
- 7 Length : 50 mm
- 8 Length : 55 mm
- 9 Length : 60 mm
- 10 Length : 65 mm
- 11 Length : 70 mm
- 12 Length : 75 mm
- 13 Length : 80 mm
- 14 Length : 85 mm
- 15 Length : 90 mm
- 16 Length : 95 mm
- 17 Length : 100 mm
- 18 Length : 105 mm
- 19 Length : 110 mm

## 08. Dental Instruments



**Photo: Dental Unit**

## 08.01 Dental units,

### 08.01.01 Dental units, Outpatient/OR

#### **08.01.01.01 Dental unit, basic complete**

Multi-Programmable Dental Chair

Under hanging Trolley for comfort working

High Speed Air Turbine points - 2 Nos.

Electric & Pneumatic High-Low Suction & Saliva Ejector

Dental halogen Light with High-Low intensity (sensor optional)

Cuspidor having toughened Glass Bowl

Automatic Cup Filler

Water Purified System

Doctor Stool

Voltage 220/230 V 50 HZ

Compressor

Straight hand piece and contra Angle hand piece, autoclaveable.

#### **08.01.01.02 Dental unit, advanced complete**

##### **Technical Specification**

##### **Dental Chair:**

Microprocessor controlled programmable dental chair with different programs.

Adjustable Height.

Backrest should be slim and adjustable between 90 deg. to 120 deg.

Headrest should be adjustable upward backward and forward.

The movements are controlled through digital panel with touch panel.

Foot switch.

Swivel arm.

Pediatric Headrest.

##### **Light**

Adjustable to different heights with variable, horizontal and inverse movements.

Illumination of 20,000 Lux incidents in rectangular shape.

Color temperature of 4000 deg Kelvin  $\pm 5\%$

Dual intensity control switch.

##### **Water unit**

Automatic flush Bowl.

Automatic Cup filler.

Water bottle with switch.

##### **Doctor's Side**

Push button fiber optic Air turbine, 4 holes individual control of water and air, autoclave able.

Fiber optic electric Motor with rotation of bur clockwise and anticlockwise, autoclave able.

Straight hand piece and contra Angle hand piece, autoclave able.

Triple syringe with removable nozzle, autoclave able.

Instrument Tray.

Dental X-ray film viewer.

##### **Assistant's Side**

Triple syringe with removable nozzle, autoclave able.

Sliva ejector.

Light control.

Spray.

Instrument Tray.

##### **Ultrasonic cleaner**

Scalar with Ultrasonic

Ultrasonic vibration between 25,000- 35,000 per second.

Micro processor based.

Auto calibration and power control  
Auto fault diagnosis.  
Water shall be heated at the hand piece.  
The output power and water to be adjustable by controls on the front panel.  
Complete with 4 different types of tips.  
Sterilizable hand piece, tips holder and torque tools.  
Sterilization box.

**Light curing**

Base unit with holder for hand piece.  
Hand piece  
Digital Timer for adjusting of different time settings.  
Standard cable operation  
Standard light probe.

**Tooth polishing unit**

Flexible air polishing unit.  
For tooth cleaning and polishing.  
Interior and posterior teeth application.  
Twin flow system.  
Complete with powder holder and jet polishing/cleaning powder.

**Suction aspirator**

High electric dry suction aspirator.

**Doctor's and assistant's stool**

Operating stool with anatomically shape seat.  
Adjustable height.  
Gas spring mechanism for adjustments.  
Revolving on 5 castors.  
Arm support and adjustable backrest.

**Compressor**

The compressor should supply medical dry air.  
Maintenance free type covered in a cabinet.  
Noise level should not more than 60 dB.  
Compressed air supply of 100 L/m.  
Tank capacity of 15L or more.

**Power requirement**

Mains operated, 220V, 50 Hz.

**08.01.01.03 Dental Treatment unit**

**General Description:** Treatment unit, dental, complete, mobile, for operating theatre

**Technical Specifications:**

Portable cart.F  
Unit includes: one high speed, one low speed hand piece control,  
High and low suction,  
Built-in water supply and air supply and air/water syringe.  
Connect to air source  
Dimensions approx: 500 x 500 x 1200 mm

**Packaging and labelling :**

Primary packaging : Unit of use  
One (1) unit in crate, packed with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Low cost extension sets with or without bubble traps, with luer lock connectors and roller



**Weight/Volume/Dimensions :**

- estimated weight: 75 kg
- estimated volume: 500cdm

**Instructions for use :**

Mobile dental treatment unit for use in operating theatre environment

**08.01.01.04 Dental instrument cabinet, mobile**

**General Description:** Dental instrument cabinet, mobile

**Technical Specifications:**

Slide able work top to serve as working space  
 Recessed equipment storage area under top  
 At least 2 Drawers to store dental instruments  
 At least 2 Drawers to provide storage space for larger dental supplies  
 Easy to clean and disinfect  
 Stands on 4 swiveling castors, antistatic, non marking, 2 with brake  
 Dimensions approx: 600 x 500 x 850 mm H to fit under bench top

**Material :****Packaging and labelling :**

Primary packaging : Unit of use  
 One (1) unit in crate, packed with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Dividers to be placed in drawers

**Weight/Volume/Dimensions :**

- estimated weight: 45 kg
- estimated volume: 400cdmer

**Instructions for use :**

Mobile dental cabinets are used to store dental instruments and materials, the top of the cabinet serves as a working surface

**08.01.02 Dental X-ray****08.01.02.01 Monoblock Dental X-ray**

**General Description:** used to examine the dental

**Technical Specifications:**

For Technical specification refer item number 02.01.01.10 under the title Medical Imaging

**08.01.02.02 Panoramic Dental X-ray**

**General Description:** Used to Scan the whole teeth for examine the dental

**Technical Specifications:**

For Technical specification refer item number 02.01.01.11 under the title Medical Imaging

**08.01.03 Dental set****08.01.03.01 Examination Dental set****Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Curette, Gracey, scaler, double end	1
Curette, Hemingway, double end, 18 cm	1
Handle, for dental mirror, straight	1
Mirror, dental, plane, without handle, 24 mm	1
Probe, periodontal, pocket gauge	1
Probe, dental, 15 cm, fig. 2	1

**08.01.03.02 Dental Surgical set****General:** Dental, forceps, elevators and syringes**Technical Specifications**

Instrument tray, wire mesh, 24 x 24 x 5 cm, S/S	1
Forceps 3e Molar Upper no 67	1
Forceps upper Molar R no 17	1
Forceps Upper Molar L no 18	1
Forceps Bicuspid upper no 7	1
Forceps Anterior upper no 2	1
Forceps root upper no 51A	1
Forceps Cuspid Upper no 1	1
Forceps Molar Lower no 22	1
Forceps Biscuspid/cups/inc Lower no 13	1
Forceps root lower no 33A	1
Elevator straight small no 34	1
Elevator straight wide no 34S	1
Elevator Cryer no 39, small	1
Elevator Cryer no 40, small	1
Elevator Apical no 302	1
Syringe, dental, for cartridge, 1.8 ml	1
Syndesmotome, Chrompret, straight,	1
Syndesmotome, Chrompret, sickle,	1

## 09 Out Patient Department Instruments



Photo: ENT Unit

### 09.01. ENT Instruments

#### 09.01.01. Work Station

##### **09.01.01.01. ENT Work station/ basic**

**General Description:** A patient chair with adjustable position suitable for ENT procedures.

**Technical Specifications:**

Hydraulically adjusted ENT chair.

Vertical adjustment approximately 20 cm

Swivel and lockable upper part,

Armrests made of integral foam

Backrest adjustable forward to approximately 10 ° beyond vertical position and backwards to as far as horizontal position,

Steel parts are chrome plated

With foot and headrest

Dimensions approximately: 0.60 x 0.70 x 0.60 m (w x d x h)

**Material :**

Cast metal frame.

Upholstery: tear proof and durable vinyl, washable.

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) ENT chair in protective plastic with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions:**

- estimated weight: 50 kg
- estimated volume: 5 cdm

**Instructions for use:** ENT chair for the seating of patients during ENT procedures in the hospital.

**Safety procedure:**

**09.01.01.02. ENT workstation/advanced**

**Description:** Set E.N.T. examination/treatment instrument, consisting of:

- 1 x headlight, Clar, complete
- 1 x transilluminator, Coakly, single
- 2 x set of 4 ear speculum, Hartmann,
- 2 x set of 4 ear speculum, Troelsch,
- 1 x stand for ear specula
- 2 x power spray, Kabierki met 3 canulae
- 1 x liquid spray, deVilbiss
- 1 x set of 4 laryngeal mirrors, with handle
- 2 x double curette, sharp
- 1 x forceps, aural, Troeltsch
- 1 x forceps, aural, Tilley
- 1 x syringe, aural, 50 cc
- 1 x set of 3 tuning forks, 128/256/512
- 1 x nose speculum, Tudichem, medium
- 2 x Politzer balloon with cone
- 2 x catheter, metal, ear, medium
- 2 x scissor, blunt/sharp
- 2 x forceps, dressing
- 2 x cotton carrier
- 2 x ear hook ,metal
- 2 x tympano perforator, bayonet
- 1 x nasal speculum, Hartmann
- 1 x foreign body forceps
- 1 x nasal cannula

**09.01.01.03. ENT workstation/mobile**

**General Description:** Mobile ENT treatment unit for surgical suite

**Technical Specifications:**

Mobile treatment and dressing cabinet for operating theatre based ENT procedures

Mounted on four anti-static castors

Stainless steel and enamel finishing.

With instrument tray on two levels, which can be covered by an acrylic cover.

With spacious storage area, writing leaf, 4 drawers, receptacle and self-closing waste-bin.

Swivelling function console for water/air handpiece and suction hose.

Noiseless, high-performing suction unit, with collection funnel

Compressed air system with 3 spray bottles, warm water system

Provisions for connection of cold light source and electro cautery

Preheated endoscope quivers, disinfection and neutralization quivers.

To be supplied with: Probes

Accessories for air and water Bottles

Power requirements: 220 V / 50 Hz

Power consumption: 550 W/ describe

**Material:** Heavy duty synthetics and steel

**Packaging and labelling :**

Primary packaging: Unit of use

One (1) ENT treatment unit in boxes, with manufacturer's instruction for use.

**Labeling on the primary packaging :**

Refer general requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions :**

- estimated weight: 55kg

- estimated volume: 30 cdm

**Instructions for use :** Compact mobile treatment unit for operating theatre based ENT procedures in the hospital.

**Safety procedure:**

09.01.02. Otoscope

**09.01.02.01. Otoscope, handheld set.**

**Description:** A hand held diagnostic set for examination of the eyes, ears and throat.

**Technical Specifications:**

Diagnostic set comprises ophthalmoscope, otoscope/throat illuminator and rechargeable handle as well as nasal illuminator and a range of specula and mirrors to aid the examination.

**Ophthalmoscope (-30 up to + 40 D)**

High intensity halogen illumination

28 lenses with illuminated lens dial

Apertures for all diagnostic applications

Microspot

Small spot

Large spot

Fixation

Red-free

Slit

**Otoscope**

High intensity halogen illumination with true tissue colour

Wide angle viewing lens

Sealed system to allow pneumatic otoscopy

Supplied with a range of specula (2,3,4,5 mm)

Otoscope can be used for throat illumination

Tongue depressor

Straight laryngeal mirror

Nasal illuminator with speculum

**Rechargeable instrument handle**

Handle provides 3.5 V output to illuminators.

Rheostat control of lighting intensity.

Battery: rechargeable nickel-cadmium.

Durable and strong construction.

Supplied with a mains charger unit.

Typical dimensions : (W x D x H) m : 0.15 x 0.15 x 0.04

Typical Weight : 0.30 kg

Charger power requirements: /240 V, 50Hz

**Material:**

Illuminators: Optical glass encased with break proof and lightweight plastic.

Handle: Chromed steel

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) diagnostic set in box with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables : N/A**

Spare lamps, 3.5 V Halogen

Nickel Cadmium battery for handle.

Case

Specula

Carrying case

Insufflators bulb and tube with tip for pneumatic otoscopy

**Weight/Volume/Dimensions:**

- estimated weight: 0.5 kg

- estimated volume: 60 cdm

**Instructions for use:**

Ensure that the hand piece is charged before using. Couple the desired illuminator to the hand piece and perform the examination. Adjust illumination intensity to suit requirements.

**Safety procedure:****09.01.02.02. Otoscope, instruments**

**GENERAL DESCRIPTION:** Consultation instrument for ENT

**TECHNICAL CHARACTERISTICS**

- Pneumatic consultation otoscope

Metallic construction

Integrated Halogen bulb 3.50 V

Fiber optic transmission

Ear insufflating system

Rotating lens with 10D minimum magnification and sealing system

- Otoscope handle

Metallic construction

Rheostat light intensity control

Rechargeable battery included

Convertible to normal batteries

- Otoscope accessories

Set of reusable sterilizable specula

Battery charger 220 V ac / 50 Hz

Case / bag for storage and transport

**CONFIGURATION**

- Basic structure

1 pneumatic consultation otoscope head with 10D minimum magnifying lens

1 otoscope handles with rechargeable battery, convertible to normal batteries

- Accessories

1 insufflating system for otoscope

1 set ear specula for otoscope

1 otoscope battery charger

1 case / bag for otoscope storage and transportation

- Consumables and spare parts

2 Halogen bulbs for otoscope

**STANDARDS**

- ISO Certificate

• CE Mark or FDA Approval

09.01.03. Audiometer

**09.01.03.01. Audiometer/basic/2 channel**

**Description:** Thorough audio logic examination procedures in E.N.T. offices in hospitals and clinics

**TECHNICAL CHARACTERISTICS**

**Pure tone audiometric**

- 2 channels pure tone audiometer
- Air conduction frequency range up to 12,000 Hz
- High frequency range up to 20,000 Hz
- Bone conduction frequency range up to 8,000 Hz
- Sound field frequency range up to 12,000 Hz
- Pure tone masking

#### **Speech audiometry**

- 2 channels speech audiometry
- Air conduction intensity range up to 100 dB HL
- Bone conduction intensity range up to 60 dB HL
- Sound field intensity range up to 90 dB HL
- Speech masking

#### **Special tests capabilities (minimal):**

- ABLB (Fowler / ALT) Test
- SISI Test
- High Frequency Test
- Tone Decay Test (TDT)

#### **Other characteristics and features**

- Signal format: steady / pulsed / frequency modulated
- Communications and monitoring capabilities
- LCD screen to display curves and summary information related to the test performed for both Channels in the same time
- Interfaces for connection to PC / printer
- Data store / erase
- Timer / scorer
- Transducers' direct calibration
- Signal mixing / routing capabilities
- Power supply:  $220 \pm 15\%$  V ac / 50 Hz, 1 phase with Earthling

#### **Printer**

- A4 paper format
- Inkjet or laser technology

### **09.01.03.02. Audiometer, Advanced, computerized**

**Descriptions:** Thorough audio logic examination procedures in E.N.T. offices in hospitals and clinics

#### **TECHNICAL CHARACTERISTICS**

##### **Pure tone audiometric**

- 2 channels pure tone audiometer
- Air conduction frequency range up to 12,000 Hz
- High frequency range up to 20,000 Hz
- Bone conduction frequency range up to 8,000 Hz
- Sound field frequency range up to 12,000 Hz
- Pure tone masking

##### **Speech audiometry**

- 2 channels speech audiometry
- Air conduction intensity range up to 100 dB HL
- Bone conduction intensity range up to 60 dB HL
- Sound field intensity range up to 90 dB HL
- Speech masking

##### **Special tests capabilities (minimal):**

- ABLB (Fowler / ALT) Test
- SISI Test
- High Frequency Test
- Tone Decay Test (TDT)

**Other characteristics and features**

- Signal format: steady / pulsed / frequency modulated
- Communications and monitoring capabilities
- LCD screen to display curves and summary information related to the test performed for Both channels in the same time
- Interfaces for connection to PC / printer
- Data store / erase
- Timer / scorer
- Transducers' direct calibration
- Signal mixing / routing capabilities
- power supply:  $220 \pm 15\%$  V ac / 50 Hz, 1 phase with Earthling

**Printer**

- A4 paper format
- Inkjet or laser technology

**CONFIGURATION****Basic structure**

- 1 clinical 2-channel audiometer (pure tone, speech, bone conduction), high frequency audiometry, supraliminary tests and free-field capabilities.
- 1 A4 printer (including connection cable)

**Accessories**

- 1 audiometry test headset
- 1 high frequency headset
- 1 bone transducer
- 1 patient response hand switch
- 1 test microphone / monitor headset
- 1 talk back microphone
- 2 free-field speakers
- 1 dust cover
- 1 patch cords set
- 1 audiometric booth connecting panel

**09.01.03.03 Tuning fork**

Set of tuning forks,

Made of steel in wooden

Packed in wooden case

8 pieces in one pack

**09.01.04. Laryngoscopes****09.01.04.01. Laryngoscope set**

**General Description:** Laryngoscope set, 4 blades.

**Technical Specifications:**

Laryngoscope set composed of blade-shape depressors to be fit via pivoting stud contact to the handle.

Cylindrical handle made of stainless steel, or chromed brass, with ribbed finishing.

Battery compartment is integrated in the handle and accessible via thread sealed closure.

Stud contact attaches depressor blade, and switches-on halogen bulb.

Laryngoscope works with 2 AA-batteries (1.5 V / LR6 alkaline).

Set of 4 stainless steel, or chromed brass, depressors each have an integrated white light 2.5 V halogen bulb:

1 x straight depressor, Miller type: No. 0 (length approx 53 mm).

3 x curved depressors, Mc Intosh type: No. 1 (length approx 68 mm), No. 2 (length approx 93 mm) and No. 3 (length approx 113 mm).

With suitable protective plastic box, or vinyl case, with pre-shaped padding.

**Supplied with:**

1 x handle.

4 x depressors blades.

1 x spare 2.5 V halogen bulb for each depressor blade (total four spare bulbs).



Supplied with clear instructions for use / diagrams for assembly in English  
list of accessories / parts.

Supplied with or without batteries.

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) laryngoscope set in a plastic bag + box with manufacturer's instruction for use (when applicable).

Alternatively, the instruction for use can be indicated on a separate insert.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

The following item should be ordered separately:

1802209 - Battery,drycell,alkaline,'AA',1.5V/PAC-4

**Weight/Volume/Dimensions:**

- estimated weight: 0.792 kg

- estimated volume: 1.760 cdm

**Instructions for use:**

Assisting endotracheal intubation during anesthesia / resuscitation.

**Note:** Batteries left in the handle are likely to deteriorate during disinfection and sterilisation. It is also recommended to remove the batteries if the instrument is to be stored for either prolonged period or under moist conditions.

Safety Process:

Depressor blade and its bulb must be carefully washed and decontaminated after each used.

The metal parts can be autoclaved after removing the light bulb.

**09.01.05. Examination Instrument**

**09.01.05.01. E.N.T. Examination/treatment instrument set**

**Description:** Set E.N.T. examination/treatment instrument, consisting of:

- 1 x transilluminator, Coakly, single
- 2 x set of 4 ear speculum,
- 2 x set of 4 ear speculum,
- 1 x stand for ear specula
- 2 x power spray, Kabierki met 3 canulae
- 1 x liquid spray,
- 1 x set of 4 laryngeal mirrors, with handle
- 2 x double curette, sharp
- 1 x forceps, aural,
- 1 x forceps, aural,
- 1 x syringe, aural, 50 cc
- 1 x set of 3 tuning forks, 128/256/512
- 1 x nose speculum, medium
- 2 x Politzer balloon with cone
- 2 x catheter, metal, ear, medium
- 2 x scissor, blunt/sharp
- 2 x forceps, dressing
- 2 x cotton carrier
- 2 x ear hook ,metal
- 2 x tympano perforator, bayonet
- 1 x nasal speculum,
- 1 x foreign body forceps
- 1 x nasal cannula

**09.01.05.02 Head Light/non sterilized**

with adjustable joint

with plastic head band & cord

with plugs for transformer rated 220V, 50 HZ ,bulb 6 Volt(optional)

**09.01.05.03 Head Light**

with fiber optic light transmission  
brilliant illumination

Light weight

can be sterilized in autoclave or gas sterilizer

**09.01.05.04 Ear hooks**

All metal chromium plated with the following sizes:

probe ended 140mm 5 ½, b)150 6", c)Silver 100 mm 4",

**09.01.05.05 Cerumen & Blunt hook**

Cerumen pick and wool carrier

All metal chromium plated with the following sizes: 180 mm, 7"

Metal chromium plated with the following size: a) 143mm, 5 ½", b)180 mm, 7"

**09.01.05.06 Ear & Nasal Speculum**

curved side wards, 150 mm, 6"

**09.01.05.07 Tracheostomy set****09.01.05.08 septum straightining forceps (walsham )****09.01,05.09 elevator cottle****09.01.05.10 Antrum trocar needle & cannula****09.02. Ophthalmology**

09.02.01. Ophthalmic Workstations

**09.02.01.01. Workstations/basic**

Chair, examination, ophthalmology

\* With electrically powered elevation, controlled by foot-switch

\* Complete with backrest

\* Power requirements: 220V/50Hz.

\* Power consumption: 220v ± 15% V, 50 Hz, 0.8 Kw/ describe

**09.02.01.02. Workstations/advanced**

Ophthalmology examination chair

**Technical Specifications:**

Electrically powered elevation and inclination

Controlled by foot-switch

With backrest and headrest

Power requirements: 220 V / 50 Hz

Power consumption: 150 W/ describe

**Material:** Heavy duty synthetics and steel

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) ophthalmology examination chair in boxes, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:****Weight/Volume/Dimensions:**

- estimated weight: 55kg

- estimated volume: 30 cdm

**Instructions for use :** Ophthalmology chair to be used for routine examination of the eyes at outpatient department of a hospital.

09.02.02 Diopters

#### **09.02.02.01 Diopters manual**

<b>Specification Name</b>	<b>Value</b>
Lens Size	7" X 4-1/2"
Tilt/Swivel Lens	Yes
Base Type	Clamp Base
Arm Type	Articulating Arm
Arm Reach	47"
Lighting Type	Fluorescent
Color Beige Magnification	3 Diopter
<b>Other Information</b>	<b>Value</b>
Estimated Weight (lbs)	8.2
Standard Carton Qty	2
GSA/NSN Number	N/A

#### **09.02.02.02 Diopters automatic**

##### **09.02.03 Slit lamps**

#### **09.02.03.01. Slit lamp/basic**

##### **Technical specifications**

##### **Illumination unit**

Halogen or tungsten lamp illumination  
Adjustable Slit width (continuous) of at least 0-8mm  
Adjustable Slit length (continuous) of at least 1-8 mm  
Heat absorbing, cobalt blue and green filter

##### **Microscope:**

Convergent stereo view microscope  
Magnification: 10x, 16 x,  
Eyepieces 10x,  
PD adjustment 50mm-75 mm  
Diopter adjustment of at least +/- 6 D

##### **Range of movement:**

Back –forth, sideways ~80-100mm  
Vertical adjustments ~30mm (finer adjustments with joy stick)  
Tilting facility should be available  
Voltage 100-240V, 50/60 Hz  
Motorized table with foot switch control  
ISO and/or CE certified models

#### **09.02.03.02 Slit lamp/Automatic**

##### **General Description:** Slit lamp

##### **Technical Specifications:**

##### **Binocular Microscope:**

Eyepieces, 10X (15X optional)  
Field of view, approximately: 40 to 7 mm  
Objectives, 1X and 1.6X  
Straight binocular tube f=125  
Total Magnifications, 10X, 16 X (15X and 24X with 15X magnification)  
I.P.D. Adjustment. 52mm to 90mm

##### **Illumination Unit:**

Light source, adjustable  
lit height adjustable in steps  
Slit Image Rotation, 0° to 180°  
Tilting illumination, 5, 10, 15 and 20  
Filter disc, one cobalt blue and one green filter  
Up and down control, coaxial with joystick control

Halogen lamp pre-focused, 12 V, 50 W

**Instrument base:**

Range of movements (X, Y, Z-coordinates): 110, 90 and 30 mm

Fixation: for X/Y movement, angle between lamp and microscope

Single hand slit controls

Base with 3-D joystick and fast brake

To be supplied with height adjustable table and chair

Power consumption: 250 W/ describe

Power requirements: 220 V $\pm$  10%, 50 Hz

**Material:** Heavy duty synthetics and steel

**Packaging and labeling :**

Primary packaging: Unit of use

One (1) slit lamp assembly in boxes, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Light source bulb

15X magnification

**Weight/Volume/Dimensions:**

- estimated weight: 55kg

- estimated volume: 30 cdm

**Instructions for use :** Slit lamp unit to be used for routine observation of the cornea and the eye fundus (retina).

**Safety:** Don't touch the lens and lamps with bare hand

**09.02.03.03 Visuals yag III Laser slit lamp**

**Specifications**

Motion range of instrument base

Lateral 110 mm

Horizontal 90mm

Vertical 30 mm

Slit lamp

12 v 30 w halogen lamp, adjustable

Slit length variable in steps of: 1/3/5/9/14mm;

Slit width continuously adjustable: 0 to 14mm

Slit image rotation : 0 °,+/-45°,90 °

Corneal microscope

Magnification with magnification changer: 5\*,8\*,12\*,20\*,32\* with 10 x eyepieces and f=140 mm Tube.

Straight binocular tube, f= 140mm with PD adjustment from 55 to 78 mm.

Optional: convergence tube

Optional: 12.5 x eyepieces

Dimensions (Incl. Laser head = (H x W x D) = (625 x 300 x 450) mm

Weight (Incl. Laser head, tube and eyepieces): 11 Kg

Electrical Power supply: Electrical Power is supplied by Visulas YAG III Laser console

Protection type: IP 20

Accessories: Accento eyepiece, tonometer, co-observer tube, video Documentation, etc. from the range of accessories for the SL 120 And SL 130 slit lamps.

**Safety:** Don't touch the lens and lamps with bare hand

**09.02.03.04 Visuals Sign, Slit lamp**

**Specifications**

Laser treatment spot size: continuously adjustable from 50 to 100 micrometer (without Contact lens ) par focal , larger spot sizes depending on contact Lens used

Laser beam delivery: interlaced with slit illumination system

Illumination: 12V, 30 W brightness continuously adjustable

Slit adjustment:

slit length variable in steps of: 1/3/5/9/14 mm

Slit width continuously adjustable: 0 to 14mm

Slit image rotation: 0°, +/-45°, 90°

Magnification: 5 magnifications, in steps of 5x, 8x, 12x, 20x, 32x

Electrical power supply: 220 ±10% v

Accessories: tonometer, assistant's scope, video documentation equipment etc

### **09.02.03.05 Laser Slit Lamp**

#### **Specification**

##### **Laser beam guide unit**

Focusing method.....parfocal

Emission range.....50 to 100 micro meter ,continuously variable

Aiming method..... Coaxial with treatment laser

Safety unit .....protect filter (Emission switch or foot-switch interlock type)

##### **Observation unit**

Type.....Galileo magnification changer with converging binocular tubes

Magnification selection .....5 steps by drum rotation

Observation magnification..... 6, 10, 16, 25, 40x

Eyepiece.....12.5X

Inter-pupillary distance adjustment range..... 55 - 75

Diopters adjacent range..... -5D - +5D

##### **Illumination unit**

Slit width.....0 to 8 mm ,continuously variable

Slit length.....stepped changed 0.3, 1, 3, 5 and 8 mm; Continuous change 1 to 8 mm

Filter ..... built-in color temperature changing filter ,red-free filter and heat absorption filter

Slit rotation angle.....±90 °

Illumination lamp.....6v 20 W halogen lamp

##### **Base Unit**

Base movement (back and forth)..... 90 mm

Base movement (lateral) ..... 100mm

Base fine movement 9back and forth/lateral..... 12 mm

Base movement (vertical) ..... 30mm

##### **Chinrest fixation display unit**

Chinrest movement (vertical) ..... 80 mm

Light source for fixation target ..... Red LED

##### **Electrical Rating**

Power supply ..... AC 220V ±10%, 50 Hz

Power input ..... 40 VA/ describe

##### **Classification of Instrument**

Protection level against electric shock ..... Type B

Protection type against electric shock ..... Class I

##### **Dimensions and Weight**

Size..... (W x L x H) = (550 x 407 x 708) mm

Weight ..... 21 Kg

##### **Purpose of use**

Used for laser delivery by combining with the laser photo-coagulator

### **09.02.04 Cornea**

#### **09.02.04.01. Corneal Topography**

**General Description:** Ophthalmometer, Javal (keratometer) for measuring patient's corneal radius in the ophthalmology department of the hospital.

##### **Technical Specifications:**

Capable of performing the following measurements;

Radius of curvature of the cornea  
 Refractive power of the cornea  
 Extent of astigmatism in the cornea  
 Longitudinal axis of the corneal astigmatism  
 Convex and concave radii of hard and soft contact lenses  
 Sagittal radii at 30 degrees.  
 Test types: Interchangeable Javal and Cross mark  
 Integrated Sagittal Radial Measurement: 20, 25, 30 degrees  
 Integrated Meridional Radial Measurement: 30 degrees  
 User Calibration: Eliminates subjective measurement errors  
 Radius of curvature: 4.5 – 10 mm  
 Measurement accuracy, Radius of curvature: 0.01 mm  
 Corneal Refraction values: 33.75 – 73.25 D  
 Measurement Accuracy, Corneal Refractive Values: 0.125 D  
 Magnification: 30 x  
 Illumination: LED  
 Typical dimensions (W x D x H) cm: 3.3 x 10.4 cm x 6.8 cm  
 Typical weight : 5.5 kg

**Material:** Precision cast metal, powder coated

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Ophthalmometer in protective wrapping with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Supplied with javal mark and cross mark

Contact lens holder

**Weight/Volume/Dimensions:**

- estimated weight: 0.01kg

- estimated volume: 1 cdm

**Instructions for use :**

Ophthalmometer for measuring and examining the cornea of patients in the ophthalmology department of the hospital.

**Safety:** Don't touch the lens and lamps with bare hand

**09.02.04.02 Pachymeter**

**Description:** Pachymeter Accutome has Digital Signal Analysis, which offers outstanding accuracy and repeatability. The built in IOP conversion makes calculating IOP quick and easy. The voice output allows the operator to focus completely on the patient as the AccuPach VI verifies the measurements out loud.

**Features:**

65 MHz Probe (sampling)

Range of 300 to 999 microns

Accuracy of +/-5 microns

Resolution of +/-1 micron

Compact and lightweight (10" x 10" x 2.5", 3.1 lb.)

Universal Power supply (100-240 VAC 47-63 Hz)

Adjustable Speed of Sound

Automatic Gain Control

**Technical**

- Easy-to-use - User-friendly touch-tone screen allows the user to master it within minutes.

- Patients are #1 - Revolutionary voice output feature calls out readings, allowing the user to concentrate more on the cornea.

- Superior Accuracy - State-of-the-art digital technology (Accutome's Digital Signal Analysis), combined with a probe sampling of 65 MHz, ensures precise readings.
- USB Interface – Link to computer or printer via USB Memory Stick.
- Confidence - Digital waveform analysis helps to ensure measurements are properly aligned.
- IOP Correction Calculation - Converts IOP measurements in seconds.
- Portable - The Accutome is desktop, slit lamp or wall mountable.
- Adjustable handle/stand allows viewing on different angles.

#### 09.02.05. Retina

##### **09.02.05.01. Fundoscope**

##### **GENERAL DESCRIPTION**

The equipment provides high quality pictures of retina, color photography, red free photography and fluoresceinic angiography, for observation and documentation.

##### **TECHNICAL SPECIFICATIONS**

##### **Digital fundus camera**

- Possibility of providing patients with immediate diagnostic
- Image which verifies diagnosis and can be used for legal cover
- High-resolution optic system for fields angles: 35°, 45°.
- Capture modes: color photography, red-free photography and fluoresce in angiography, blue photos, continuous recording (video)
- No eyepiece necessary, physician's monitor for observation
- Horizontal movement range
- Wheel for vertical movement
- Short frontal distance to the patient's eye
- Internal fixation mechanism
- Minimal pupil measurement : 4 mm
- Motorized filters: red-free, blue, red, fluoresce in angiography
- Joystick command of movement
- Special optic system for low exposure of the eye to the light
- Safety stop when light intensity more than limit value
- Optimized illuminated area on the eye, for safety
- No flash necessary
- Angiography time controlled via software
- Capture date and time of angiography contained in every image

##### **PC Workstation**

- 15 " LCD monitor for optimum focusing
- Windows 98, 128 MB RAM, 20 GB hard-disk
- CD Writer
  - Color printer for image documentation
  - Image format JPEG, Bitmap, DICOM
  - USB network connection

##### **CONFIGURATION**

##### **Main Components**

- Digital Fundus Camera
- PC workstation
- Software
- Color printer
- CD writer
- Asymmetric motorized table

##### **Accessories**

- Dust cover

##### **Consumables**

- Halogen lamp, 3 pcs.

##### **STANDARDS**

- ISO Certificate
- CE Mark or FDA Approval

#### **WARRANTY AND SERVICE**

- Warranty service
  - Warranty period 12 months
  - Maximum intervention time: 48 hours
- Post-warranty service
  - Service contract or at beneficiary's request
  - Response time max 48 hours from receiving a request from beneficiary
- Installation and Commissioning
  - Done by the supplier
  - Room's refurbishment and specific condition required
- Spares and consumables availability for 10 years from delivery
- Training at installation
  - Medical staff: no. of persons, duration, place
  - Technical staff: no. of persons, duration, place

#### **09.02.05.02. Ophthalmoscope /funduscopy set**

**General Description:** Ophthalmoscope set.

##### **Technical Specifications:**

Ophthalmoscope set composed of diagnostic head threaded on a handle.

Head contains wheel with lens dioptries (0 to +20 and 0 to -20), apertures small, large and semi-circle, fixation star and green filter.

Halogen bulb, 2.5 V provides with bright white light.

Handle with on/off switch.

Ophthalmoscope works with 2 AA-batteries (1.5 V / LR6 alkaline).

Set contained in storage case.

##### **Supplied with:**

- 1 x spare 2.5 V halogen bulb.

Supplied with clear instructions for use / diagrams for assembly in english languages and list of accessories / parts.

##### **Supplied with or without batteries.**

##### **Packaging and labelling:**

Primary packaging: Unit of use

One (1) ophthalmoscope set in a storage case.

##### **Labelling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

The following item should be ordered separately:

Battery, drycell, alkaline, 'AA', 1.5V/PACe-4

##### **Weight/Volume/Dimensions:**

- estimated weight: 0.220 kg
- estimated volume: 0.532 cdm

##### **Instructions for use:**

Examination of frontal part of the eye and the retina. Batteries should be ordered separately.

6A/3A single phase.

#### **09.02.05.03. Retinoscope/Streak**

##### **General Description:**

Streak-retinoscope used for measuring the refractive qualities of the patient lens. Used in the ophthalmology department of the hospital.

##### **Technical Specifications:**

Hand held device that emits a beam of light that is used to observe the refractive qualities of the patients eyes.

High quality, precision optics



Illumination using halogen bulb

Streak revolves 360° without stops

Width of streak is controlled by a movable slide

Polarizing filter available to reduce reflections

The units dimensions shall be typically (H x w x d) m: 0.15 x 0.02 x 0.02

**Material:** Precision cast metal, powder coated

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) Streak-retinoscope in protective wrapping with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** Supplied with a spare bulb.

**Weight/Volume/Dimensions:**

- estimated weight: 0.05 kg

- estimated volume: 1 cdm

**Instructions for use :** Streak-retinoscope is used to examine the quality of the refractive properties of the patient's eyes. Used in the ophthalmology department in the hospital.

**Safety:** Don't touch the lens and lamps in bare hand

09.02.06. Lasers

**09.02.06.01. NdYAG laser**

**Description:** Laser, combined Argon/Q-Nd:YAG, with slit lamp, ophthalmology

Combined Argon/YAG laser for ophthalmological procedures

**Overall System Features:**

**Q-Nd:YAG laser:**

Super Gaussian mode

Wavelength: 1064 nm

At least 9 attenuation levels

Four-point He-Ne aiming beam, coaxial to Nd: YAG beam

Maximum energy in single pulse: 10 mJ

Maximum energy in double pulse: 25 mJ

Maximum energy in triple pulse: 40 mJ

**Slit lamp:**

12V, 30W halogen lamp

Adjustable slit height

Continuously adjustable slit width

Straight binocular tube with eyepieces

**Argon laser:**

Should run on self-contained aircooling

Wavelengths: 488/514/529 nm

Power total spectrum: 50 mW to 2.5 W

Power green spectrum: 50 mW to 1.1 W

Red diode aiming beam with adjustable setting

**Modes of operation:**

Single pulse with adjustable power and duration

Auto repeat in steps up to maximum of 6 Hz

Continuous wave

To be supplied with instrument table, safety eyeglasses for YAG and Argon, contact lenses, laser indirect ophthalmoscope and enoprobe

### 09.02.06.02. Argon Laser

**Description:** Argon laser system for vascular and tumoural skin therapy

The argon laser unit should be designed for treating vascular as well as non-vascular skin pathology.

#### Technical features:

Mobile argon laser photo coagulator, with:

- \* argon laser tube with 5 W output power
- \* power output at standard hand piece: 5.0W all line mode resp. 2.0W green mode
- \* aiming beam, 1 mW for 635 nm (laser diode) visible through protection glasses
- \* printer interphase
- \* water-cooling, length water hose: 2 x 5 m, pressure: 2-6 bar), consumption: 2-6 liter depending on power output
- \* footswitch
- \* remote control
- \* safety goggles
- \* focussing hand piece
- \* hand piece rest
- \* set documentation

Power requirements: 3 phase, 380V/16A, 50/60Hz/ describe

### 09.02.06.03 Visual Yag III Laser System

**Description:** Laser class: IV (CFR 21, Par 1040, sec. 1040.10), 49DIN EN 60825 – 1: 2003

Wave length of therapy beam: 1064 nm

Mode: supergaussian

Pulse length: Type 4 ns

#### Tecchnical Specifications

Pulse mode	Energy (Typical)	Max. Pulse repetition rate	Burst frequency
Single pulse	10 mj	2.5 Hz (5 Pulse / 2s)	-
double pulse	23 mj	1 Hz (1 Pulse / s)	33 KHz
Triple pulse	35 mj	0.5 hz (1 pulse / 2s)	33 KHz

**Energy attenuation:** 22 levels: 2, 4,6, 8,10,12, 16, 20, 24, 28, 32, 36, 40, 42, 48, 56, 60, 64, 70, 80, 100% transmission

Beam diameter at the focus: 10  $\mu$ m in air (1/e<sup>2</sup>)

Angle of exit aperture (divergence): 16 ° (Round angle)

#### Aiming beam:

Wave length: 660 to 680 nm

Power output: max. 150  $\mu$ w

4-point aiming beam system for focusing

NOHD: 2m

#### Power supply:

Rated voltage 240 V  $\pm$  10%, 50 Hz,

Rated current: max. 1.4 A to 0.7 A / E, 5 x 20 nm in acc. with IEC 60127

Electrical protection class; SK I

Protection Type: IP 20

Instrument type: B (in acc. with IEC 60601-1)

Earth conductor: The instrument should only be connected to properly earthed power outlets.

Control unit dimensions: (H X W X D)=(135 x 210 x 330)

Control unit weight: 4 Kg

#### Ambient conditions for overall system

Ambient temperature:.....10° to 40°

Relative humidity.....0 to 90 % ( non-condensing)

Air pressure.....700 to 1060 hpa

#### 09.02.06.04 Laser Photo coagulator

**Description:** Laser unit, Treatment laser

##### Technical Specification

Type.....diode pumped solid-state laser  
Mode of operation.....true continuous wave  
Oscillation wavelength .....532nm  
Laser emission output (on cornea) When connecting the laser slit lamp.....50 to 1000mw  
When connected the slit lamp attachment for laser photocoagulates ....50 – 1000 mw  
When connecting end probe 50 – 50 – 1500 mw  
Cooling..... forced air-cooling  
Emission time.....0.02,0.05,0.1,0.15,0.2,0.25,0.3,0.35,0.4,0.45,0.5.....3.0 sec & cont.  
Emission interval:.....0.05,0.1,0.2,0.3.....1.0 sec and single

##### Aiming laser

Type:.....Diode laser  
Mode of operation:.....true continuous wave  
Wavelength.....635 nm  
Output.....0.9mw or less

##### Electrical Rating

Power supply Voltage ..... AC 220V  $\pm$ 10%, 50 Hz  
Power Supply Input ..... Normal 150 VA, Max. 550 VA

##### Classification of Instrument

Class of laser ..... Class 4  
Protection level against electric shock .....Type B  
Protection type against electric shock .....Class I

##### Dimensions and weight

Size: ..... (W x D x H) = 345 x 467 x 187  
Weight ..... 18 Kg

##### Safety Unit

Fiber detection  
Emission switch detection  
Beam shutter operation detection  
Protect filter operation detection  
Emergency stop switch  
Remote interlock connector  
Purpose of use  
applied to treatment of eye disease such as eye ground disease, glaucoma, etc

#### 09.02.06.05 ACCESSORIES

##### 5.1 Slit lamp Attachment for Laser Photo-coagulator

###### Specification

Focusing method.....parfocal  
Emission range..... $\varnothing$ 50 to  $\varnothing$ 500 micro meter ,continuously variable  
Emission method..... Coaxial with treatment laser  
Safety unit .....protect filter (interlock with opening/closing of attachment arm)

###### Dimensions and weight

Size..... (W x L x H)aprox = (120 x 130 x 250) mm  
Weight ..... state

###### Purpose of use

Used for laser delivery by combining with the laser photo-coagulator and the slit lamp bio-microscope

##### 5.2. Protection filter

###### Specification

Mount type ..... Z type  
Applicable laser ..... LD excitation Nd

Filter operation..... Movable type

#### **Remote control**

##### **Specification**

Setting function, Emission output of treatment laser, Emission time, Emission interval, Output of aiming laser, standby/ready selection, repeat mode, count reset. etc each setting is the same as the laser photo-coagulator.

Adjustment angle (panel inclination):  $0^{\circ} - 60^{\circ}$

##### **Dimensions and Weight**

Size..... (W x D x H) = 160 x 102 x 125) mm

Weight ..... 0.8 Kg

Cable length ..... 3m

##### **Purpose of use**

Used for setting the laser emission for treat/aiming by combining with the laser photo-coagulator.

##### **Cable support specification**

##### **Dimensions and weight**

Size..... (W x D x H) = (30 x 60 x 850)

Weight ..... 0.4 Kg

##### **Purpose of use**

Used as a support to hold the fiber from the laser photo-coagulator

##### **Extension Shaft Specification**

##### **Dimensions and Weight**

Outside diameter.....  $\varnothing 22 \times 44$  mm

Weight ..... 0.04 Kg

##### **Purpose of use**

Used to extend the magnification selection knob of slit lamp when combining the Topcon photo slit lamp with the attachment for laser photo-coagulator.

##### **Foot switch Specifications**

Size..... (W x D x H) = (184 x 153 x 115)

Weight..... 1.6 Kg

Cable length ..... 5 m

##### **Purpose of use**

Used as a laser emission switch by combining with laser photo-coagulator

09.02.07. Vision test

#### **09.02.07.01. Vision chart**

**General Description:** Chart, vision testing.

##### **Technical Specifications:**

A vision testing chart, Snellen type, illiterate.

Printed on one side with illiterate E.

White washable vinyl plastic card, with eyelet on top for hanging.

Dimensions: approx. 300 x 550 mm

##### **Labelling on the packaging unit:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

##### **Weight/Volume/Dimensions:**

- estimated weight: 0.093 kg

- estimated volume: 1.412 cdm

**Instructions for use:** For eye and vision testing.

#### **09.02.07.02. Near vision test**

**Description:** Vision test for illiterates

Test for near vision by Rossano-Weiss, E, numbers, and symbols

\* Photographed on plastic

\* Wooden frame with handle.

### **09.02.07.03. Vision Test automatic**

#### **Color vision charts, Ishihara, 38 plates**

Complete book of 38 plates, which present to the patient a different design in numerals or winding lines.

- \* Formed in colored dots,
- \* Superimposed on background of colored dots.

### **09.02.07.04 Auto Chart Projector**

#### **Specifications**

Refracting distance: 2.9 to 6.1 m

Projection distance: 2.9 to 6.1m

Projection size: 330 x 270 mm,  $\varnothing$ 300mm (at 5m refraction)

Numbers of charts: 30

Chart change-over: 1 frame / 0.03sec

Number of masks: open 1, Horizontal line 5, vertical line 8, single isolation 21, R and G1

Program step: max. of 30 steps are available x 2 type

Tilt range:  $\pm 10^\circ$  upward/downward tilt from horizontal line of projection

Projection lamp: 12 V, 50 w (halogen lamp)

Automatic shut-off mechanism: after 10 minutes

Electrical power supply: 220  $\pm$ 10% V, 50 Hz

### **09.02.08. Ophthalmoscopes**

#### **09.02.08.01 Ophthalmoscope, Direct**

corrective lenses: -35 to + 40 dipoters

Apertures: large and small circle, semi circle, fixation star, slit & grid

filters: green, blue and polarizing

plastic tube containing 4 reusable rear specula 2, 3, 4 and 5 mm black and

5 each disposable specula 2.5 & 4 mm grey

metal connector for pneumatic otoscopy

power supply 2 dry cell/battery

in plastic case

#### **09.02.08.02. Ophthalmoscope, indirect**

##### **General Description:**

Head mounted binocular inverted image indirect ophthalmoscope, for observing patients fundus of the eye in the ophthalmology department of the hospital.

##### **Technical Specifications:**

Binocular indirect ophthalmoscope mounted on a head band.

Illumination by halogen lamp

Built in interference red-free filter

Adjustable light beam.

Stereoscopic examination of the fundus

Adjustable inter-pupillary distance, m: 0.054 – 0.074

Multi-coated precision optics

Construction:

Dustproof housing for low maintenance

Optics mounted on rigid metal chassis for durability

Ergonomic design

The units' dimensions shall be typically (H x w x d) m: 0.15 x 0.20 x 0.20

**Material:** Precision cast metal, powder coated

**Packaging and labeling:** Primary packaging: Unit of use

One (1) indirect ophthalmoscope in protective wrapping with manufacturer's instruction for use, spare parts and accessories.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Supplied with spare bulb

**Weight/Volume/Dimensions:**

- estimated weight: 0.10 kg

- estimated volume: 1 cdm

**Instructions for use :** Ophthalmoscope for observation of the retina of patients eyes in the ophthalmology department in the hospital..

**Safety:** Don't touch the lens and lamp with bare hand

**09.02.08.03. Ophthalmoscope, indirect, Coaxial**

Wavelength .....532 nm, 561 nm, 659 nm

Aiming Beam.....Red 635 nm

Indirect Ophthalmoscope .....Coaxial Multicolor LIO

Working Distance .....356 mm

Cooling Requirements .....Ambient Air

User Selectable Filters .....Yellow, Cobalt Blue and Red Free

Indirect Ophthalmoscope Headset .....Heine model Omega 180®

Headset Dimensions.....7.5" x 9" x 12" (19 cm x 23 cm x 31 cm)

Headset Weight .....1.5 lb (680 g)

Input Power Requirement.....220 VAC  $\pm$  15%; 50 Hz,

**09.02.09. Tonometers****09.02.09.01. Contact tonometer**

**General Description:** Tonometer used for measuring the intra-ocular pressure of patient's eyes. Used in the ophthalmology department of the hospital.

**Technical Specifications:**

Hand held device that measures the intra-ocular pressure of the patients eye.

Application prism: doubling prism, interchangeable

Pressure range, mm Hg: 0 – 60

Eyepiece magnification: 6 X

Head rest: movable

Illumination by bulb

Battery powered

The units dimensions shall be typically (H x w x d) m: 0.29 x 0.03 x 0.03

**Material:** Casing: plastic.

**Packaging and labelling:** Primary packaging : Unit of use

One (1) Tonometer in protective wrapping with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** Supplied with a spare bulb.

**Weight/Volume/Dimensions:**

- estimated weight: 0.05 kg

- estimated volume: 1 cdm

**Instructions for use :** Tonometer is applied close to the eye of the patient and the intra-ocular pressure is measured. Used in the ophthalmology department in the hospital.

**Safety:** Don't touch the lens and lamp with bare hand

**09.02.09.02. Non Contact Tonometer****Specification**

Non contact tonometer with:

\* footplate and holder

\* jewelled pointer action

- \* hardened pointer hand
- \* inclined scale,
- \* 5.5, 7.5 and 10 g weights,
- \* complete with calibration plate.

### 09.02.09.03 Computerized Tonometer

#### Specification

Measuring range.....	0 to 60 mm
Working distance.....	11 mm
Measuring display.....	monitor screen (with average value )
Measurement recording .....	built-in printer (with average value)
Alignment display .....	monitor screen
Monitor screen.....	5 in
Power saving.....	power save system
Power supply.....	220 +/- 10 % v 50 hz
Operating temperature .....	10 to 40 ‘
Body movement, back & forth.....	44 mm
Body movement, right & left.....	44 mm
Body movement, up & down.....	44 mm
Chinrest adjustment .....	68 mm
Dimensions.....	(W x D x H)= (272 x 505 x 458) mm

### 09.02.10. Ophthalmometer

#### 09.02.10.01. keratometer

**General Description:** Ophthalmometer, Javal (keratometer) for measuring patients corneal radius in the ophthalmology department of the hospital.

#### Technical Specifications:

Ophthalmometer for use in a hospital.

Capable of performing the following measurements;

Radius of curvature of the cornea

Refractive power of the cornea

Extent of astigmatism in the cornea

Longitudinal axis of the corneal astigmatism

Convex and concave radii of hard and soft contact lenses

Sagittal radii at 30 degrees.

Test types: Interchangeable Javal and Cross mark

Integrated Sagittal Radial Measurement: 20, 25, 30 degrees

Integrated Meridional Radial Measurement: 30 degrees

User Calibration: Eliminates subjective measurement errors

Radius of curvature: 4.5 – 10 mm

Measurement accuracy, Radius of curvature: 0.01 mm

Corneal Refraction values: 33.75 – 73.25 D

Measurement Accuracy, Corneal Refractive Values: 0.125 D

Magnification: 30 x

Illumination: LED

Typical dimensions (W x D x H) cm: 3.3 x 10.4 cm x 6.8 cm

Typical weight : 5.5 kg

**Material :** Precision cast metal, powder coated

**Packaging and labelling:** Primary packaging: Unit of use

One (1) Ophthalmometer in protective wrapping with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Supplied with javal mark and cross mark  
Contact lens holder

**Weight/Volume/Dimensions:**

- estimated weight: 0.01kg
- estimated volume: 1 cdm

**Instructions for use:**

Ophthalmometer for measuring and examining the cornea of patients in the ophthalmology department of the hospital..

**09.02.10.02 Synoptophores**

**Description:** Synoptophore can be applied in inspecting and treating various binocular functions, such as strabismus, amblyopia, diplopia,etc

**Technical features:**

With functions of diagnosis, treatment, simultaneous viewing, syncretic viewing, solid viewing, and afterimage. Equipped with a pair of Haidingers Brush and 20 pairs of pictures with different angle. Advanced semi-transparent and semi- reflecting viewfinder is convenient for the surgeon to observe. Advanced LED luminophor has even illumination, low heat and long service life. Pictures designed by new technology are anti-broken and has long service life. Manual or automatic coruscation with accurate frequency are at surgeon's option. Optional pictures for quantitative measuring of solid acutance (40"~1000")

**Specifications:**

Magnification	1.65×
Diameter of Field	≥56mm
Red light	λ=640nm coruscation system
Left and right tubes rotate around erect axis	converging 50°, diverging 40°
Left and right tubes rotate around horizontal axis	±30°
Pictures of left and right can be moved up and down according optical axis	±10
Pictures of left and right rotate around optical axis	±20°
Adjustable range of interpupillary distance:	45~75mm
Darkroom illumination	LED bulb with symmetry design
Adjustable Haidingers Brush	50-100round/ minute
Coruscation form	manual or automatic

09.02.11. Lenses

**09.02.11.01 Trial Lenses set**

**General Description:**

Set of trial lenses with frame in case

**Technical Specifications:**

Set includes at least 218 lenses and accessories  
Bi-convex as well as bi-concave  
Complete with, at least: 136 spheres - 76 cylinders - 10 prisms  
With trial frame  
To be supplied with:  
Maddox multiple rod  
Blank  
Pinhole  
Stenopaic  
Discs



Red glass  
Green glass  
Frosted glass cross-line  
Plane glass discs  
Case for storage/carriage  
**Material :** Heavy duty synthetics  
**Packaging and labelling :**  
Primary packaging: Unit of use  
One (1) lens meter in box, with manufacturer's instruction for use.

**Labelling on the primary packaging:**  
Refer General requirements  
**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions :**

estimated weight: 0.5kg  
estimated volume: 1 cdm

**Instructions for use :**

Set of trial lens , large diaphragmated, for adults and children at outpatient department of a hospital.

**Safety:** Don't touch the lens with bare hand

**09.02.11.02 Lens, Meter**

**General Description:** Lens meter

**Technical Specifications:**

Measurement of vertex power: 25 dioptries by increments of 0.25 dioptre  
Prism power: 5 prism dioptries by increments of 1 prism dioptre  
Cylinder axis: 0° to 180° lens (with a diameter between 15 up to 82 mm)  
Wide non-slip base  
To be supplied with prism compensator

**Material :**

Heavy duty synthetics

**Packaging and labelling :**

Primary packaging: Unit of use  
One (1) lens meter in box, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Instructions for use :**

Instrument used for precise determination of the power of a lens

**Safety:** Don't touch the lens and lamp with bare hand

**09.02.11.03 Computerized lens meter**

**Technical Specification**

Measurable scopes: 0 to +/- 25 D, C:0 to +/- 10D, ADD: 0 to +/- 10D(0.01/0.12/0.25) P: 0 to 10 (0.01/0.12/0.25), A: 1 to 180 '(1')

Cylinder mode: MIX/-/+

Prism mode: no display /X-Y (Rectangular coordinates)/ P-B (polar coordinates) / mm

Contact lens: contact lenses are measurable.

Progressive focal lens: single focal /progressive lens recognition, distance vision detection. ADD power bar-meter display

Compensating e-line: setting is no necessary

d-line :compensation of a lens different in abbe number

Display screen: color LCD 320x240 dots S,C,A,P,ADD,ADD R/L display, Enlarged SCA display

Frame: Auto R/L function

Menu screen: Easy to watch screen with icon display

Lens diameter: 5 to 100mm

Power supply: 220 +/- 10 % v 50 hz

#### **09.02.11.04 Perimeters**

09.02.12 Refractometer

#### **09.02.12.01 Eye Refractometer**

### **09.03. Gynecology and obstetrics**

09.03.01. Gynecology examination instruments

#### **09.03.01.01. Pinard fetoscope**

**General Description:** Stethoscope foetal Pinard.

**Technical Specifications:**

Foetal heart stethoscope, Monaural.

Made of unbreakable plastic or aluminium.

Earpiece, diameter approx 5 cm.

Length, approx 15 cm.

**Packaging and labeling:**

Primary packaging: Unit of use One (1) fetal stethoscope

in a plastic bag. With manufacturer's instruction for use (when applicable).

**Labeling on the primary packaging:**

Refer General Requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

estimated weight: 0.040 kg

estimated volume: 0.480 cdm

**Instructions for use:** Diagnosis of fetal heart sounds as part of antenatal care services.

#### **09.03.01.02 Speculum**

**Technical Specification**

Vaginal specula, straight - 105 x 35mm

Vaginal specula, straight - 115 x 40mm

Vaginal specula, straight - 95 x 18mm

Vaginal specula - 105 x 43 - 40mm

#### **09.03.01.03 Cervical biopsy set**

**Technical Specification**

Instrument tray, wire mesh, 48 x 24 x 5 cm, S/S

Bowl, stainless steel, 15 cm, 600 ml

Kidney dishes, stainless steel, 20 cm

Gallipot, diam. 10 cm, S/S

Forceps, sponge holding, Foerster, 25 cm

Specula set, vaginal, Kristeller,

Forceps, cervical biopsy and specimen, Faure, 24 cm

Forceps, dressing, standard, straight, 20 cm

Scissors standard 14.5 cm, straight, bl/bl

#### **09.03.01.04 Gynecology examination instrument set**

**Description:** Set, surgical instruments for gynaecological examination

**Overall System Features:**

1 x Cusco vaginal speculum, large,

1 x Cusco vaginal speculum, medium,

1 x Cusco vaginal speculum, small, c/s

1 x Sims vaginal speculum, small,

- 1 x Sims vaginal speculum, medium,
- 1 x Sims vaginal speculum, large,
- 1 x Sponge holding forceps
- 2 x Female catheters
- 2 x Tissue forceps, 25 cm
- 2 x Dressing forceps, 25 cm

#### **09.03.01.05 Weighing scale/digital**

##### **General Description:**

Digital adult weighing scale

##### **Technical Specifications:**

Easy to read large digital display 1½ inch LCD display

Weighing range: 0 up to 150 kg

Scale accurately reads weight in 500 g increments

Extra wide base with non-slip foot guides

Easy cleaning and disinfection

Springless technology, electronic measuring.

Turns on instantly when you step on

Recalibrates automatically to zero when you step off

Operates on one 9 volt battery

Low battery indicator

**Material :** Heavy duty plastic or synthetics

**Packaging and labeling :** Primary packaging: Unit of use One (1) digital adult scale in box, with manufacturer's instruction for use.

##### **Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** 9V batteries

##### **Weight/Volume/Dimensions :**

estimated weight: 2.5kg

estimated volume: 3 cdm

**Instructions for use :** Weighing scale to be used in context of adult medical examination at different in- and outpatient department of a hospital.

#### **09.03.01.06 Weighing scale /Stadiometer**

##### **Description:**

Personal weighing scale with column linking the weighting platform with the display dial scale and with height measure, for adults

##### **Technical Features: -**

- Mobile
- Persons / patients on scale can easily weigh themselves.
- Platform weighing unit :
  - . Platform and base made of steel painted
  - . Dimensions (approx.) 30 x 35 cm.

Covered with or made of anti-slip material

- Reading dial:
  - . Large with pointer in a strong steel casing
  - . Dial housing of diameter (approx.) 180 mm.

Reading in large numerical figures.

- Capacity: 150 kg (preferably more)
- Division: 1 kg (preferably 500 g)
- Height measuring unit:
  - . Telescopic type steel rod or stick fixed to the column scale
  - . Calibrated in metric units

Height measuring range up to 220 cm (approx.)

#### **09.03.01.07. Ultrasonography**

##### **General Description:**

Mobile ultrasound system with 2 probes for obstetrics and gynaecology

##### **Technical Specifications:**

Operating modes B- mode with two convex scanning probes

Frequency, abdominal probe, at least: 3.5 MHz,

Transvaginal probe, at least: 5.0 MHz

High resolution black/white monitor, screen size at least 15 inch

Image up-date rate at least: 20 image/s

Frame freeze capability

Measurement computations, at least: Distance, Time, Curved lines, Areas, Gestation reference tables and calculations

Operation and data entry keyboard

Including thermal paper printer

Dimensions, approximately: 0.90 x 0.10 x 0.60 m

Power requirements: 220 V / 50 Hz

Power consumption, approximately: 600W

**Material :** Heavy duty plastic and steel

**Packaging and labelling :** Primary packaging : Unit of use

One (1) ultrasound unit in box, with manufacturer's instruction for use.

##### **Labelling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

Gel, Thermal printing paper & Condoms for transvaginal probe.

##### **Weight/Volume/Dimensions :**

estimated weight: 55 kg

estimated volume: 150 cdm

**Instructions for use :** Mobile ultrasound scanner with two sector scanning probes for abdominal and transvaginal examination and diagnosis at outpatient department of hospital.

#### **09.03.01.08 Stand light/Examination Light**

For detail specification refer item number **09.07.01.09**, under the category of Out Patient department (OPD)

#### **09.03.01.09 VITAL sign equipment**

##### **09.03.01.10 colposcopy**

##### **09.03.01.11 E & C set**

##### **09.03.01.12 Vacuum Extractor, Manual**

##### **Technical Specifications**

Complete with interior cups 40,50 & 60mm

Bottom plates and one traction handles

With all tubing and accessories

##### **09.03.01.13 Vacuum extractor, Electrical**

##### **Technical Specifications**

A complete Vacuum Delivery System (includes cup, traction and vacuum pump) for **ALL** presentations.

Vacuum Cup: Modified Bird Cup, 60mm across the widest Part, 50mm at opening.

Foam filter

Vacuum Cup Depth: 20mm

Presentation: Sterile, single use, latex free, presented in a peel pouch, 5 units per case

Indicators: Flexion point markings at 6cm and 11cm

Integral vacuum release button

Integral Palm Pump

Power demand: 220V  $\pm$  10%,

Certification: CE & FDA certified2.

#### 09.03.02. Doppler

##### **09.03.02.01 Doppler, handheld**

**General Description:** Doppler, foetal heart rate detector.

**Technical Specifications:**

Doppler based foetal heart rate detector for use throughout pregnancy and labour.

Single piece, light weight, handheld, easy to use and carry (pocket size).

Large display shows the foetal heart rate in bpm and visual pulse indication of it.

Built-in loudspeaker with volume adjustment.

Advanced noise suppression system assures quality diagnostic sound.

With customer replaceable 1.5V AA type batteries.

One set of batteries cover approximately 1000 one-minute examinations.

Doppler foetal heart rate detector conforms to Council Directive 93/42/EEC on medical devices and has a CE marking.

Supplied with clear instructions / diagrams for operation and maintenance in English

list of accessories/spare parts.

**To be Supplied set components:**

Detector is supplied as a complete set comprising:

1 x Doppler, foetal heart rate detector.

1 x Tube of ultrasound gel.

4 x AA batteries.

1 x Soft bag.

**Packaging and labelling:**

Primary packaging: Unit of use One (1) foetal Doppler wrapped in a plastic film with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Ultrasound gel, AA batteries, and if necessary, the soft carry bag.

**Weight/Volume/Dimensions:**

estimated weight: 0.520 kg

estimated volume: 2 cdm

estimated dimensions: 24 x 12 x 6 cm

**Instructions for use:**

Doppler foetal heart rate detector for routine examinations of foetal life, from about 10-12 weeks gestation through to delivery.

Device should be operated by an adequately trained person only.

**Important:** It is recommended to follow manufacturer's instruction manual for use and maintenance at all times.

The Doppler foetal heart detector must be cleaned and disinfected after each use.

##### **09.03.02.02 CTG monitor**

**General Description:** Trolley mounted cardio-toco-graphy unit

**Technical Specifications:**

Measures time interval between fetal heartbeats and computes fetal-heart rate

Display n beats per minute on front panel leds.

FHR and uterine activity are recorded with a 3 speed chart recorder.

Direct fetal scalp ECG and intra uterine pressure measurement.

To be supplied with:

1 x Contraction transducer

1 x Wide angle ultrasound transducer

1 x Mobile trolley

1 x Elastic transducer belting (100m)

1 x Coupling gel (pack of 6)

1 x Twin transducer

1 x Fetal scalp electrodes (box of 25)

1 x Chart paper(pack of 6 roll)

Power requirements: 220 V  $\pm$ 15%, 50 Hz

Power consumption: 500 W/describe

**Material :** Heavy duty plastic or synthetics. Trolley coated steel

**Packaging and labeling:**

Primary packaging: Unit of use One (1) trolley mounted cardio-toco-graphy unit in boxes, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General Requirements

**Accessories/Spare parts/Consumables:**

Coupling gel

Foetal scalp electrodes

Chart paper

**Weight/Volume/Dimensions :**

estimated weight: 12kg

estimated volume: 50 cdm

**Instructions for use :**

Comprehensive cardio-tocography monitoring through all stages of labor to delivery, for measuring fetal heart rate and uterus contraction. With the graphic recording of the data, it is possible to evaluate fetal well-being in risk pregnancies involving hypertensive, pre-eclamptic and diabetic women, among others. It may also be used for monitoring during delivery.

09.03.03 Gynecology examination couch

**09.03.03.01. Delivery table/bed, with mattress**

**Description:** Delivery table/bed, consisting of a stationary body section and a sliding leg section

**Technical Features:**

Central locking device

perforated steel mattress base

Aluminum alloy frame

Adjustable backrest

Trendelenburg mattress base position

Complete with: mattress, knee crutches, straps, clamps and plastic basin.

Dimensions: 200 x 90 x 65 cm.(l x w x h)

09.04. Neurology

09.04.01. Neurology examination instruments

**09.04.01.01 Reflex hammer**

**General Description:** Hammer, reflex testing,

**Features:**

Taylor type or similar

Percussion for Neurology examination

Complete with;

Two rubber heads, small and large Metal handle (approx.) 18 cm.

Brush screw into the end of the handle

Needle screws at the top of the handle

**Technical Specifications:**

Hammer, reflex testing, Taylor type, regular size, approx: 18 cm.

Solid metal handle, chrome plated, solid rubber head.

**Packaging and labeling:**

Primary packaging: Unit of use One (1) reflex testing hammer in a plastic bag.

**Labelling on the packaging unit:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

estimated weight: 0.060 kg

estimated volume: 0.147 cdm

**Instructions for use:** Reflex diagnosis.

#### **09.04.01.02. Neurostimulator**

**Technical Specifications:**

Delivers very precise constant microprocessor controlled current

Alphanumeric LCD display

Actual current flowing through patient is monitored and reported on LCD panel.

Dual isolated channels, two leads per channel.

Pulse amplitude (constant current), adjustable: 0.05 - 7 mA.

Pulse frequency, adjustable: 2 - 150Hz.

Pulse width, adjustable: 60 – 250  $\mu$ s.

Wave form: asymmetrical, bi-Phase and square pulse.

With battery testing function.

Audio and visual warnings to alert a disrupted circuit.

Audio tone emits with each stimulation impulse sent.

Auto shut off after 20 minutes idle time.

**To be supplied with:** storage/carry case

2 dual channel 360 degrees swivel lead wires

9 V batteries

4 reusable electrodes

**Material:** Heavy duty plastic

**Packaging and labeling:**

Primary packaging: Unit of use One (1) nerve stimulator in box, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions :**

estimated weight: 0.4kg

estimated volume: 5 cdm

**Instructions for use :** Nerve stimulator to be used in operating theatre of surgical suite for examination of patient's vital neurological functions.

#### **09.04.01.03. Reflex meter**

#### **09.04.01.04. Pain stimulus measurement device**

### **09.05 Cardiology**

#### **09.05.01 Cardiology examination instruments**

##### **09.05.01.01 Stethoscope**

**General Description:** An acoustic medical device for auscultation, or listening to the internal sounds of an animal or human body. binaural, complete.

**Technical Specifications:**

Stethoscope has stainless steel, or chromed brass, double-bell chest piece (dual-use adult and paediatric auscultation).

Adult diaphragm: approx 43 mm.

Paediatric diaphragm: approx 28 mm.

Sensitivity, 50 to 500 Hz: 3.2 dB (cardiology).

Sensitivity, 600 to 1500 Hz, 8.1 dB (pneumology).

Single tube in treated rubber, lumen diameter: approx 10 mm.

Y-part is reinforced with stainless steel spring attached to the rigid ear tubes.

Spring is treated to give long lasting rebound and comfort.

Ear tubes are made of stainless steel or chromed brass.  
Ear-pieces are made of plastic and are removable.  
Total length, approx 70 cm.

**Supplied with:**

1 x spare diaphragm  
1 x spare pair of ear-pieces

**Packaging and labelling:**

One (1) binaural stethoscope in box or case or bag.

**Labelling on the primary packaging:**

Refer General Requirements

**Accessories/Spare parts/Consumables:** N/A

**Instructions for use:**

Examination of sounds within the body.  
Easy to disassemble for cleaning and disinfection.

**09.05.01.02. Sphygmomanometer, manual**

**General Description:**

A rail mounted, aneroid type, blood pressure meter is required for use in the hospital. The unit measures adult patient blood pressure using an adult cuff and displays the pressure on a large visible display.

**Technical Specifications:**

Aneroid type measurement of cuff pressure.  
Patient's blood pressure is clearly displayed on a large dial face.  
Pressure range: 0 – 300 mm Hg  
The patient arm cuff and inflation bulb are mounted with the aneroid.  
The unit shall be designed to maintain calibration.  
Typical dimensions : (W x D x H) m : 0.15 x 0.15 x 0.04 cm  
Typical Weight: 0.30 kg

**Material:**

Aneroid: Aluminium light weight construction.  
Cuff: fabric covered silicone rubber, length 0.54 m

**Packaging and labeling:**

One (1) rail mount aneroid in box with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

Child Velcro cuff  
Flexible hose connecting inflation cuff to aneroid.  
Rail clamp and cuff basket, rail mount

**Weight/Volume/Dimensions:**

estimated weight: 0.5 kg  
estimated volume: 60 cdm

**Instructions for use:**

Place cuff around upper patient arm and inflate cuff and measure blood pressure according to medical procedure.

**Safety:** always make sure that air is not leak from the cuff, Rubber bulb and tubing.

**09.05.01.03. Electrocardiography/digital**

**General Description:** Portable digital ECG-recorder set.

**Technical Specifications:**

Digital recording rest Electro Cardio Graph (ECG)  
Records 12 standard leads simultaneous: aVR, aVL and aVF, I, II, III and V1-6 pre-cordials.  
Automatic and manual printout mode.  
Internal memory for data storage.  
Splash-resistant alphanumeric keyboard and direct function keys.  
Reset zeroing, auto-base-line correction (0.5 Hz) and 1mV test.



Electrode connection quality check.  
 Filter setting for line-frequency (50 or 60 Hz) and tremor.  
 Large back-lit LCD (10x12cm) displays recorded data and failure announcements: ECG-curves, leads, heart rate, patient name and ID, electrode control, clock, leads, speed and filter setting.  
 Integrated high-resolution 300 dpi thermal printer, width 210 mm.  
 Print-out, folded thermo-reactive paper, format A4.  
 Number of channels, selectable: 3, 6 or 12.  
 Standard combination of channels or manually selectable.  
 Paper speed, selectable: 5, 25 and 50 mm/sec.  
 Sensitivity, automatic or selectable: 5, 10 and 20 mm/mV.  
 Copy function available.  
 Appropriately protected for work with defibrillators.  
 RS232 interface.  
 Built-in batteries and charging unit.  
 When fully charged, the battery gives approx. 50 readings.  
 Power supply: 220 V.  
 Recorder and charger are in conformity with Council Directive 93/42/EEC, on Medical Devices and have a CE marking.  
 Supplied with clear instructions / diagrams for assembly and use in English  
 list of accessories / parts.

**Set components:**

ECG device is supplied as complete set comprising:  
 1 x ECG unit, portable.  
 1 x patient cable  
 6 x suction ball-type chest electrodes, reusable.  
 4 x extremity clamp electrodes, reusable.  
 1 x bottle of gel for electrodes.  
 1 x box of recording paper (1000 A4 sheets of paper).  
 150 x pages / 1 pack of recording paper.

**Packaging and labeling:**

One (1) ECG unit wrapped in a plastic film with manufacturer's instruction for use, spareparts and accessories.

**Labeling on the primary packaging:**

Refer General requirements

**Over packaging:** Packaging unit

One (1) ECG unit complete set

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

estimated weight: 5.5 kg

estimated volume: 11 cdm

**Instructions for use:**

Portable ECG-recorder can be used in field and/or hospital settings. Easy to use and transport.

1 box of recording paper (1000 A4 sheets of paper equivalent to approx. 1000 ECG's).

Supplied with instruction manual covering item description and function, how to use the recorder, its maintenance, list of spare-parts.

The item is supplied as a set, including necessary cables and electrodes, gel and paper..

ECG recorder must be operated and maintained by adequately trained personal only.

**Safety process:**

It is recommended to follow manufacturer's instruction manual at all times.

The electrodes must be cleaned and disinfected after each use.

#### **09.05.01.04. Electrocardiography/6 channel**

##### **GENERAL DESCRIPTION**

- 6 channels ECG destined for exploration of the electrical activity of heart

##### **TECHNICAL CHARACTERISTICS**

###### **• BASIC UNIT**

- Portable 6 channels ECG with records and print from 12 leads
- Simultaneous acquisition on 12 channels
- Displayed leads: 3
- LCD graphic display to allow simultaneous ECG preview before printing or storing.
- Sampling frequency: 1000 Hz
- Alphanumeric keyboard for patient data entry and clinical comments
- RS232C interface for connecting to the PC or transmitting ECGs at distance
- Internal memory for min. 40 ECGs storage;
- Automatic and manual operation
- Fully user configurable: min. 2 automatic formats
- High resolution printout from integrated thermal printer
- Recording speeds: 5/10/25/50 mm/sec
- Dual power supply: AC 220 V / 50Hz and from built-in rechargeable battery.
- Battery capacity: min. 3 hours of normal use

###### **Device to be protected to defibrillation**

- Interpretative software (adult)
- Trolley for ECG basic unit
- ECG patient cable holder

###### **Accessories**

- ECG cable in European standards
- Precordial electrodes (6 pcs)
- Limb electrodes (4 pcs)
- User Manual

###### **Consumables**

- Thermal paper (min. 50 sheets)
- ECG gel (1 bottle)

##### **STANDARDS**

- ISO Certificate
- CE Mark or FDA Approval

##### **WARRANTY AND SERVICE**

- Warranty service
- Warranty period: min. 12 months
- Response time max. 48 hours from receiving a request from the beneficiary
- Post-warranty service
- Service contract or at beneficiary's request
- Response time max 48 hours from receiving a request from beneficiary
- Installation and Commissioning
- Done by the supplier
- Spares and consumables availability for 10 years from delivery
- Training at installation

#### **09.05.01.05 Electroshock Therapy**

#### **09.05.01.06 Heart rate Monitor**

#### **09.05.01.07 resuscitation kit**

#### **09.05.01.08 Arterial blood gas machine (ABG)**

## 09.06 Dermatology

### 09.06.01 Dermatology examination instruments

#### 09.06.01.01 Wood lamp

For Detail specification refer item no. **09.07.01.09.** under the category of Out patient department except the material which is made is wood it has the same application as portable examination light.

#### 09.06.01.02 Microscope

##### General description:

Microscope, Binocular, with inclined optical head

Eyepiece: Pair of 10X. Field Ø 18 mm.

##### Objectives: (Achromatic)

4 X / 0.10

10 X / 0.25

40 X / 0.65

100 X / 1.25

##### Stand:

. Metal

. Fitted with coarse and fine adjustment knobs.

##### Special features:

Mechanical X-Y stage with scales and vernier scale

##### Illuminator:

. Low voltage

. Halogen bulb 6 V, 20 W.

##### Condenser:

. Abbe

. N.A. 1.25

. Iris diaphragm

. Filter holder

. Glass filter (blue and green)

. Dust cover

##### Power supply:

. 220 V AC  $\pm$  15%, 50 Hz.

#### 09.06.01.03 Cryogen machine

#### 09.06.01.04 Cautery machine

**General Description:** Coagulation unit, electro, mobile, 200 W

##### Technical Specifications:

Electro surgery unit, high frequency generator,

Electronic controlled mono-polar and bi-polar operations

Soft-, forced- and spray coagulation techniques must be applicable

Neutral electrode functional safety control

Double foot pedals for cutting and coagulation operation

Maximum power approximately: 200 W

Mounted on a mobile trolley with accessory drawer

Power requirements: 100-240V 50/60 Hz Power consumption approx 400 W / describe

Dimensions approx. 300 x 150 x 400 mm

**Material :** Various composite materials

##### Packaging and labelling :

Refer General requirements

##### Accessories/Spare parts/Consumables :

To be supplied with:

2 patient plates

- 2 Electrode handles with 2 buttons (non-disposable) and 3 m cable
- 1 Set of approximately 10 different electrodes
- 2 Cables of 3 m for the bipolar coagulation forceps
- 4 Bipolar coagulation forceps, insulated and autoclavable:
  - 1 bayonet shape 17 cm and 24 cm,
  - 1 straight 19 cm,
  - 1 bended 17 cm

**Weight/Volume/Dimensions :**

- estimated weight: 45 kg
- estimated volume: 400cdm

**Instructions for use :**

Electro surgery unit offering mono-polar and bi-polar operations for surgical tissue removal and for control of bleeding in general surgical procedures

**09.06.01.05 Hybeck**

**09.06.01.06 UV source**

**09.07 Pediatrics**

09.07.01 Pediatrics examination instruments

**09.07.01.01 Baby scale**

**Description:** Weighing, Scale, electronic for infants (Baby scale)

**Features:**

- . Full electronic
- . Portable
- . Capacity: 20kg
- . Division: 10g

Construction: Durable, unbreakable sturdy material

**Display:**

- . Digital readings
- . LCD screen
- . Large figures
- . In Kilograms

**Control system:**

- . Front panel
- . Button (s) control for on-tare-off functions
- . Automatic: Zero Setting
- . Weight locks function (preferable)

**Power supply:**

- . Battery operated by using 9 V., battery (to be included)
- . Automatic off switch to save battery life

**Baby tray:**

- . Detachable
- . Made of unbreakable material
- . Easy to clean and disinfect
- . Anti-tilt
- . Side with safe edges ends and of suitable heights

- Dimensions: 500 x 250 x 100 mm (L x W x H ) (approx.)

Safety: All safety measures to be considered for the baby & staff

#### **09.07.01.02. Sphygmomanometer, infant**

**Description:** Sphygmomanometer, mercurial, desk type, for infant

**General description:-**

- For infants
- Mercurial type
- Desk model
- With metal box. (Colored)

Glass tube of high precision graduation, mounted on a plate with large numbers

- Range: 0. 300 mmHg
- Supplied complete and with:
- Mercury compartment with locking device
- two Infant (2) velcro cuffs
- (1) Size 20 x 5 cm (Lx W) and
- (2) Size 30 x 7 cm (Lx W)

Rubber bulb with air release valve

Standard tubing

- Metal parts to be chrome plated

#### **09.07.01.03 Otoscope, infant**

**General Description:** Otoscope set.

**Technical Specifications:**

Otoscope set composed of diagnostic head threaded on a handle. Pivoting head has wide-angle viewing lens, magnification 3 x. Reusable plastic specula can be attached to frontal part.

Halogen bulb, 2.5 V provides with bright white light.

Handle with on/off switch.

Otoscope works with 2 AA-batteries (1.5 V / LR6 alkaline).

Set contained in storage case.

**Supplied with:**

- 1 x spare 2.5 V halogen bulb.
- 1 x set of 8 reusable plastic specula, 2 of each diameter: 2.5, 3.0, 4.0 and 5.0 mm.

Supplied with clear instructions for use / diagrams for assembly in English

list of accessories / parts. Supplied WITHOUT batteries.

**Packaging and labelling:**

**Primary packaging:** Unit of use One (1) otoscope set in a storage case.

Refer General requirements

**Extra information required:** Number of units.

**Accessories/Spare parts/Consumables:**

The following item should be ordered separately: Battery, drycell, alkaline, 'AA', 1.5V/PAC-4

**Weight/Volume/Dimensions:**

- estimated weight: 0.170 kg
- estimated volume: 0.792 cdm

**Instructions for use:**

Examination of inner ear, canal and tympanic membrane. Batteries should be ordered separately.

**Safety Process:**

Specula must be thoroughly cleaned and disinfected after each use to prevent cross contamination.

#### **09.07.01.04. Pediatrics Stethoscope**

**General Description:** Stethoscope, foetal, Pinard.

**Technical Specifications:**

Foetal heart stethoscope, model Pinard.

Monaural.

Made of unbreakable plastic or aluminium.

Earpiece, diameter approx 5 cm.

Length, approx 15 cm.

**Packaging and labelling:**

**Primary packaging:** One (1) foetal stethoscope in a plastic bag. with manufacturer's instruction for use (when applicable).

Refer General requirements

**Extra information required:** Number of units.

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 0.040 kg

- estimated volume: 0.480 cdm

**Instructions for use:**

Diagnosis of foetal heart sounds as part of antenatal care services.

**09.07.01.05 Digital Thermometer**

**Description:** Thermometer, clinical, digital, 32 - 43°C

**Technical Specifications:**

Digital thermometer Celsius scale with switch to Fahrenheit

Safe to use, atraumatic, no glass, no mercury

Measurement range: 32°C to 43°C

Accurate measurement: +/- 0.1°C 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

**09.07.01.06 Thermometer**

**Description:** Thermometer, clinical, mercurial, Rectal

**Features:**

- Clinical thermometer

- Mercurial type

- For rectal temperature measuring

- Flat style

- Made from suitable glass with mercurial reservoir from which a Fine tube . with stricture at the neck- originate

**Temperature range:**

From 35° C to 42° C

Each degree is in 10 subdivisions marks

**Readings:**

Degrees in numerical subdivisions, in marks printed in ceramic or engraved

For easy readings a strip of opal area forms the background for the degrees and graduations

Supplied in a single plastic case with a cap.

**09.07.01.07. Torch Light**

a) penlight type, manufactured from aluminum

b) 2.5 V illumination

c) AAA-cell batteries, set of 2

d) Metal pocket clip

**09.07.01.08. Examination Couch**

**Description:** Bed, infant, 150 x 76 cm, with mattress, for children, stove enameled

**Technical Features:**

\* mounted on 4 swivel castors

\* Dimensions: 150 x 76 x 61 cm

\* Adjustable side panels

\* Frame height: 130 cm

- \* Mattress height: around 61 cm
- \* Complete with mattress

#### **09.07.01.09. Examination light**

##### **General Description:**

Mobile examination light,  $220 \pm 15\%$ , lamp rate, 12V.

##### **Technical Specifications:**

Light, medical for examination, on mobile stand.

Arm: 105 cm articulated, spring loaded arm, arm with on/off switch and incorporated electronical transformer.

Mobile stand with 5 swivel castors.

Power supply:  $220 \pm 15\%$  V.

Bulb: 12V/20W, halogen, light intensity: approx 20.000 Lux at 40 cm.

Lamp emits natural white light: colour temperature 4000 K.

Reflector adjustable for positioning.

Free cord: length approx 3 m.

To be supplied with: 1 spare bulb and 1 spare fuse.(optional)

Light, examination, mobile, 220/12V must be in conformity with Council

Directive 93/42/EEC, on medical devices and have a CE marking.

Supplied with clear instructions for use/diagrams for assembly in

English

list of accessories/parts.

##### **Packaging and labelling:**

##### **Primary packaging:**

One (1) examination light wrapped in a plastic film. with manufacturer's instruction for use, spare parts and accessories.

##### **Labelling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

If required, the following items should be ordered separately: Useful accessories: extra bulbs and fuses.

##### **Weight/Volume/Dimensions:**

- Estimated weight: 7.7 kg.
- Estimated volume: 134 cdm.
- Estimated dimensions: 0.80 X 0.14 X 1.20 m.

##### **Instructions for use:**

Medical Light to be proposed as basic equipment in health structures, it can be used for medical and gynaecological examination and minor operation.

##### **Safety process:**

The light must be in conformity with Council Directive 93/42/EEC on medical devices and have CE marking.

#### **09.07.01.10 Incubator, transport, basic**

##### **General Description:** can be table top

##### **Technical Specifications:**

Removable canopy double wall design: approx. 90 x 45 x 45 cm.

Fold down head door with 2 part holes. Rear: 2 part holes.

Silent window opening and closing system

Apertures for tubes

Fixed tray with tilt position (+/- 10°).

Infant fixations

Protection and accessories support rail on 4 sides

Easy operation

Control panel with air and skin temperature control and alarm settings

Integral ventilation and humidity control

Visible battery and mains power status

Visible and audible system alarm status  
Holder for 10 l pin index Oxygen bottle  
Holder for essential life saving equipment  
Oxygen pressure, flow and concentration control  
Robust design with vibration damping  
Sound level not exceeding: 45Db(A).  
Examination lamp for accurate patient assessment during transport  
Battery powered, rechargeable, maintenance free battery pack  
Incorporated battery charger 12-24V DC, 100-240VAC, 50 Hz  
Dimensions approximately: 1.2 x 0.5 x 0.7m (w x d x h)  
Separate robust light weight transfer trolley, collapsible frame, with 4 swiveling castors (2 with brakes).

**Material :** Various composite materials

**Packaging and labelling :**

Primary packaging :

One (1) unit in crate, packed with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Incubator is supplied with :

2 x Skin temperature probe.

2 x IV poles.

2 x Air filters.

**Weight/Volume/Dimensions :**

- estimated weight: 70 kg

- estimated volume: 700 cdm

**Instructions for use :** Incubator for transport of critical ill newborns

**09.07.01.11 Room heater**

**Specification**

**Type:** Room Heater

Brand: should be described

Warranty: not less than 1 Year

**Features:-**

2000 watts in put

2 KW output

Unique daisy design

Thermostat with frost protection

Choice of heat settings

Cool air setting

Neon indicator

Overheat protection

**09.07.01.12 first aid kits**

For detail specification refer item No. **03.08.22.02** from the category of Clinical Laboratory

**09.07.01.13 Resuscitation kit**

**09.07.01.14 IV stand**

**09.07.01.15 Oxygen cylinder**

**09.08 Orthopedics**

09.08.01 Orthopedic examination instruments

**09.08.01.01 Orthopedic table**



#### **09.08.01.02 Working table**

**Description:** Treatment/Dressing/Injection

Trolley, dressing, st. st., 2 trays (\*)

Worktable, laminated top, with cabinets under the table top, 2.00 m

Worktable, 1 sink, with cabinets under the table top, 1.50 m (\*)

Refrigerator, under counter model, 110 l

Cabinet, instrument, double door, 0.90 m

Stool, height adjustable with gasspring, mobile, st. st.

Couch, examination, enameled st. frame, adjustable head (\*)

Footstool, one step, epoxy coated steel (\*)

Stand, infusion, st. st., mobile

Pedal bin, st. st (\*)

Light,examination,mobile,220-12 V (\*)

#### **09.08.01.03 Negatoscope**

**General Description:**

Double field x-ray film illuminator/ viewer, negatoscope

**Technical Specifications:**

Double field x-ray film illuminator/ viewer, negatoscope

Housing of synthetic material

Metal back plate

Acryl front plate

Approximately 8 TL lights, each 15 W

Each field has his own main-switch

Field of view, approximately: 0.80 x 0.40 m

Dimensions, approximately: 0.90 x 0.10 x 0.60 m

Power requirements: 220 V / 50 Hz

Power consumption, approximately: 120W / describe

**Material:** Steel construction with acryl glass

**Packaging and labeling:**

**Primary packaging:**

One (1) viewer in box, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer general requirements

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions:**

- estimated weight: 45 kg

- estimated volume: 100 cdm

**Instructions for use:**

Double field x-ray film illuminator, also called negatoscope, for viewing of x-ray films at imaging department of hospitals.

#### **09.08.01.04 Splinter/immobilizer**

**Description:** a rigid support for restricting movement of an injured part, esp a broken bone

**Technical Specifications**

Made of a thin sliver of wood, esp one that is used to light cigars, a fire, etc.

#### **09.08.01.05 Dopler u/s**

#### **09.08.01.06 Goniometer**

**Description:** an instrument used to measure angles, particularly range-of-motion angles of a joint.

**Technical Specification**

- Transducer type: Strain gauge
- Life: 600,000 cycles

- Accuracy:  $\pm 2^\circ$  measured over a range of  $\pm 90^\circ$
- Repeatability:  $1^\circ$  measured over a range of  $90^\circ$
- Operating temperature range:  $+10^\circ\text{C}$  to  $+40^\circ\text{C}$
- Temperature zero drift: 0.15 degrees angle /  $^\circ\text{C}$
- 

#### **09.08.01.07 Meter**

#### **09.08.01.08 wheel chair**

For detail specifications refer Item No. 01.01.02.01 under the category of health facility equipment/instruments

#### **09.08.01.09 stretcher**

For detail specifications refer Item No. 01.01.02.02 under the category of health facility equipment/instruments

### **09.09 Minor procedures**

#### **09.09.01 Dressing and injection**

##### **09.09.01.01 Dressing set**

Bandage, elastic, roll

Compress, gauze, Sterilized PACK

#### **09.09.02 Injection**

##### **09.09.02.01. Syringe with needle, disposable**

**Description:-** Sterile Injection needles for single use,

Size: 1, 2, 3, 5, 10 ml

needle unit

primary container, needle and hub, See Figure 9. 1.

Effective needle length

length of the needle from the needle tip to the hub, See Figure 9.1.

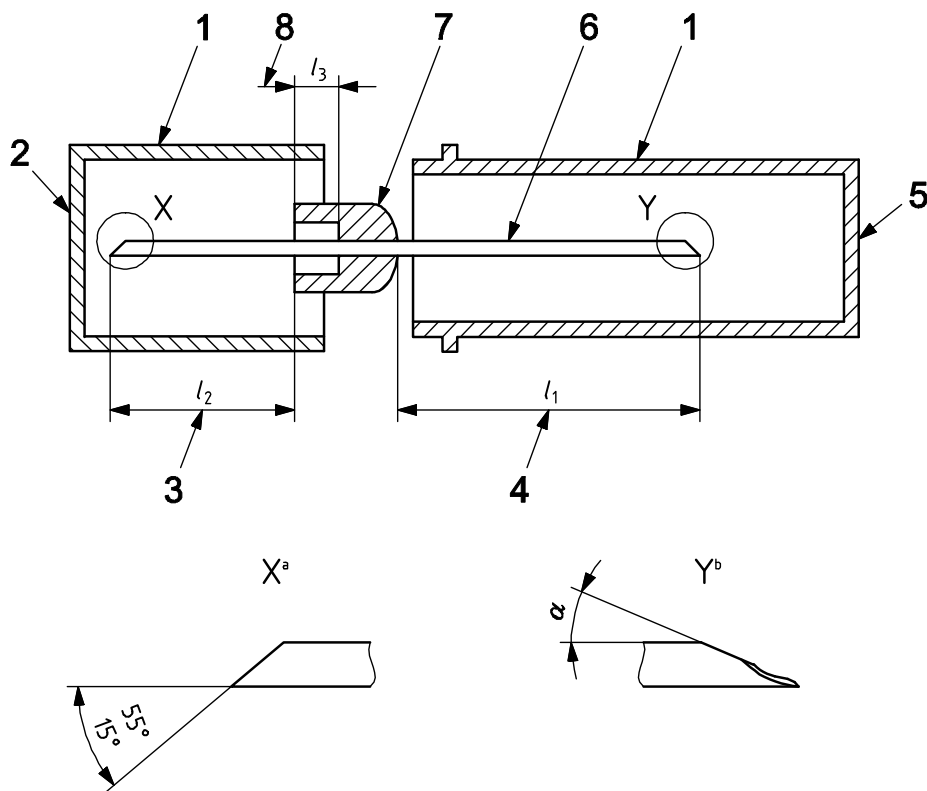
Hard pack

Needle unit, consisting of a rigid butt-end sheath and a rigid effective needle sheath, sealed to form a complete unit, See Figure 9. 1.

Soft pack

Needle unit, consisting of a preformed plastic tray with a peel-off cover, in which the needle is protected by a rigid sheath

**NOTE:-** A butt-end sheath might or might not be present.



#### Key

1	primary container (two parts)	5	effective needle sheath
2	butt-end sheath	6	needle
3	butt-end needle length ( $l_2$ )	7	hub
4	effective needle length ( $l_1$ )	8	socket depth ( $l_3$ )
a	Butt-end angle ( $15^\circ$ to $55^\circ$ ).		
b	Primary bevel angle ( $\alpha$ ).		

Figure 9. 1 — Schematic diagram of hardpack

#### primary container

protective package, hard pack or soft pack, for the needle

Secondary container

container in which primary containers are packed

Requirements of assembled needle and hub

Freedom from extraneous matter

The surface of the assembled needle and hub shall be clean and free from extraneous matter when viewed by normal visual acuity without magnification. Lubricant on the external surface shall not be visible as droplets of fluid under normal visual acuity without magnification.

Limits for extractable metals

Limits and tests for extractable metals shall be in accordance with ISO 7864.

Union between hub and needle

The union between the hub and needle shall not break under a minimum force of 22 N applied at the crosshead speed of 1 mm/s in both directions along the needle axis.

#### Requirements of needle tubing Material

The tubing used for construction of the needle shall comply with ISO 9626.

Dimensions

The nominal outside diameter of the needle tubing, in accordance with ISO 9626, shall be between 0,2 mm and 0,5 mm.

The effective needle length (see  $l_1$  in Figure 9.1) of the needle tubing shall be within 10 % of that stated by the manufacturer.

The size of the needle shall be designated by the nominal outside diameter and the effective needle length, expressed in millimetres, e.g. 0,4 mm × 34 mm.

#### **Butt end**

The angle at the butt end shall be between 15° and 55° when measured through the long needle axis (see Figure 9.1).

The butt-end length (see  $l_2$  in Figure 9.1) shall be between 9,0 mm and 14,0 mm.

#### **Needle tip**

The needle tip shall be pointed and, when examined under  $\times 2,5$  magnification, shall appear free from feather edges, burrs, hooks and/or other defects. The angle of the primary bevel of the needle tip (see Figure 9.1) shall be within 2° of that stated by the manufacturer.

### **3 Requirements of hub**

#### **3.1. Compatibility with syringe**

##### **General**

The hub may be threaded or unthreaded.

#### **3.2. Threaded hubs**

The internal thread in the hub shall fit on a metric form M6 × 0,75.

#### **3.3. Unthreaded hubs**

If an internal thread is absent, the needle shall be capable of being securely screwed on to the threaded mounting hub of a cartridge syringe complying with ISO 9997.

#### **Socket depth**

The depth of the socket of the hub ( $l_3$  in Figure 9.1) shall be not less than 5 mm.

### **Colour coding**

The nominal outside diameter of the needle tubing shall be identified by colour coding in accordance with ISO 6009 (see Table 1 below). This colour coding shall be on the primary container or on the needle hub. Attention is drawn to the sets of reference hubs available as reference colour samples (see Annex A of ISO 6009:1992).

The colour zones of opaque colours and the nearest colour samples in a number of colour atlases are given for information in Annexes B and C of ISO 6009:1992, respectively.

Table 1 — Colour code

Nominal outside diameter of needle	Colour
0,2	Black
0,25	White
0,3	Yellow
0,4	medium grey
0,5	Orange

### **4. Requirements of the primary container**

Each needle shall be supplied in a primary container.

The material and design of this container shall ensure maintenance of sterility, that, once opened, the container shall show clear evidence of having been opened,

That the effective needle sheath can be used as an aid for attaching the needle to the syringe, without the operator touching the needle.

### **5. Sterility**

The needle unit shall have been subjected to a validated sterilization process.

### **6. Labelling**

The primary or secondary container shall be marked with at least the following information:  
name or trademark and address of manufacturer or distributor;

size of needle

type of thread;

the words “Sterile injection needle for single-use”;

graphical symbol for single use in accordance with ISO 15223-1 or symbol ISO 7000-1051;

the words “Do not use if seal is broken”, or “Do not use if soft pack is open or damaged”;

(expiry date) use by date (year and month in accordance with ISO 8601) of the guaranteed sterility;  
method of sterilization;  
lot number;  
the number of single units in the secondary container.

#### **09.09.02.02. Syringe, single-use**

General characteristics: Sterile, Nozzle with a Luer fitting, Single-use, Polypropylene (material)

Use: Injection for general purpose and other uses including, reconstitution and feeding (e.g., into a naso-gastric tube) • For intradermal injection (tuberculin testing)

Type:

pieces: one barrel and one plunger

3 pieces: one barrel, one plunger and one elastomeric piston seal

Luer fitting

Luer Lock fitting

Need for a fixed needle: Yes: with by-packed needle

No: without a needle

Volume: 0.3, 0.5, 1, 2 ml for insulin

0.5 ml or 1 ml for tuberculin

1, 2, 3 ml for general purpose

5, 10, 20 ml for general purpose

nozzle located centrally

nozzle located eccentrically

50 ml with Luer nozzle for mixing,

50 ml for feeding and other uses Specific packaging:

**Specific packaging:** Individual sterilized blister or ribbon packs made of paper and plastic

Protective end capped syringes

**Sterilization:** Ethylene oxide (EO), Irradiation (R)

Shelf life remaining: Minimum of 2/3 of the life time when leaving the supplier warehouse

Requirements: Conform to ISO standards:

ISO 7886 –1: Sterile hypodermic syringes for single use - Part 1: Syringes for manual use<sup>19</sup>

ISO 8537: Sterile single-use syringes, with or without needle, for insulin

#### **09.09.02.03. Auto-Disable syringes (sterile single-use syringes with re-use prevention devices)**

##### **General description and purpose:**

Single-use, sterile syringes for general curative services, including re-use prevention feature.

Note that the term “re-use prevention feature” is defined by ISO standards and covers auto-disable (AD) syringes where the disabling feature activates during the course of injection administration, and other types of disabling mechanisms that may voluntary activation on the part of the health worker.

**Material:** Polypropylene, stainless steel for some mechanisms preventing reuse

Syringe size with graduated scale: 1,2,3,5,10ml for curative care

Needle: Diameter: for IM, IV and Subcutaneous injection.

Length: for IM, IV and Subcutaneous injection

Needles shall conform to ISO standards, and will be of high quality metal, free of burrs and other imperfections.

Types: Syringes with permanent attached needle

Syringes packed with non standard luer needle in the blister or ribbon pack

Syringes packed with a leur needle in the blister or ribbon pack (Once the needle is fixed, the needle becomes permanently attached)

##### **Physical Characteristics**

##### **For general curative services:**

-plastic, 2 or 3 part, translucent material, allowing inspection of drug

-1 ml with 29G x ½”

-2ml or 3ml x 23G x 5/8", 23G x 1", graduations of 0.1 cc or more

-5ml x 21G x 1.5", 21G x 5/8", graduations of 0.2 cc or more

-10ml x 19-21G x 1.5", graduations of 0.5 cc or more

-20ml x 21G x 1.5", graduations of 0.5 cc or more

Graduations should be in black where possible, calibrated as noted above. Blue may be provided as an option, but must contrast with the plastic in a readable manner.

**Packaging and labeling requirements:**

Individual sterilized blister or ribbon pack made of paper and plastic

Needle cap and cap over thumb plate (if applicable) make syringe into a sterile unit

Syringes should be sterile packed in individual blister packs, with peel off "Tyvek" or equivalent backing, with needles attached to the syringe. Packaging will incorporate Tyvek or another appropriately permeable material to ensure proper terminal sterilization.

Primary syringe packaging should include a minimum of the following information, and should be conspicuous on the packaging:

Name, address, country of origin of the manufacturer (logos are optional),

Manufacturer's product reference,

Type and description of product with a clear and conspicuous marking that the product has a re-use prevention feature.

Indication of a fixed or detachable needle.

Indication of sterility and sterilization method,

Lot number,

Expiration date in month/year format,

Clear indication that the product is not for reuse,

CE markings,

Clear and conspicuous marking of the size of syringe and needle.

Conditions for appropriate storage.

Boxes containing the syringes must be packed into heavy outer shipping cartons suitable for international transit, and must be conspicuously labeled with the type, fixed or detachable needles, quantity, sizes, expiration date, lot number, and name of the manufacturer.

**Boxes** should also indicate conditions for appropriate storage.

Shipping cartons should be clearly and conspicuously labeled with the type, fixed or detachable needles, quantity and size of syringes, the expirations date, the lot number(s), and name of the manufacturer.

Shipping cartons should also reference conditions for appropriate storage.

Shipping cartons markings should also reference their weights and dimensions.

Shelf life remaining Minimum of 2/3 of the life time when leaving the supplier warehouse

Requirements for adherence to quality and performance standards

**Conform to:**

WHO performance specification E8/DS.120 if AD syringes for immunization purpose

WHO specifications WHO/BCT/02.1221 if AD syringes for general purpose

ISO standard ISO 7886-3: Sterile hypodermic syringes for single use -Part 4: Syringes with re-use prevention feature

Syringe with re-use prevention feature: ISO 7886-4

Fixed or detachable needle

Automatic or user-activated mechanism

Variable dose

Products will be pre-qualified by the World Health Organization Product Quality Standard

System or another internationally recognized quality control agency.

**Requirements for instructional materials**

Instructions for use must be on the box and included within each box in leaflet form, and must be in the English language and may include pictograms. Other languages may be included in addition, but may not substitute for English. There should be a minimum of 5 copies per box.

**Additionally required information**

Additionally required product information should indicate all standards to which it complies, including a minimum requirement that they meet currently published ISO or other internationally recognized standards as well as:

The country of origin and the country from which the product will ship.

The weights, dimensions, and total quantity of boxes per shipping carton.

**09.09.02.04. Auto-disable Syringes for fixed-dose immunization****General description and purpose:**

Single-use sterile syringes for immunization and prevention services, including an auto-disable feature.

Note that the term “re-use prevention feature” cover auto-disable (AD) syringes where the disabling feature activates during the course of injection administration. ISO standards for immunization syringes are limited to those engineered to activate automatically during the course of the injection.

**Material:** Polypropylene, stainless steel for some mechanisms preventing reuse

Syringe size with pre-set volume and single marking: 0.05 ml BCG vaccine

0.1ml for BCG vaccine

0.5, 1ml for immunization

**Needle for immunization:** Diameter: e.g.: 23G , 24G, 25G for 0.5 ml and 1ml syringes  
e.g.: 27 G for 0.05 ml syringe

**Length:** e.g.: 30mm (1 1/4”), 25mm (1”), 16mm (5/8”) for 0.5 ml and 1 ml syringes  
e.g.: 10mm (3/8”), 12mm ( 1/2”) for 0.05 ml syringe

**Types:** Syringes with permanently attached needle

- Syringes packed with non standard Luer needle in the blister or ribbon pack
- Syringes packed with a Luer needle in the blister or ribbon pack.(once the needle is fixed, the needle becomes permanently attached)

**Physical Characteristics:**

-plastic, 2 or 3 part, translucent material, allowing inspection of drug

-0.1 / 0.05 cc with 23G x 1/2” for BCG

-0.5 cc / 1 cc with 26G x 1/2” for reproductive health

-2 cc and 5 cc for reconstitution

Graduations should be in black where possible, calibrated as noted above. Blue may be provided as an option, but must contrast with the plastic in a readable manner.

Needles shall conform to ISO standards, and will be of high quality metal, free of burrs and other imperfections.

Shelf life remaining: Minimum of 2/3 of the life time when leaving the supplier warehouse

**Packaging and labeling requirements**

Individual sterilized blister or ribbon pack made of paper or plastic

Needle cap and cap over thumb plate(if applicable) make syringe in to sterile unit

Syringes should be sterile packed in individual blister packs, with peel off “Tyvek” or equivalent backing, with needles attached to the syringe. Packaging will incorporate Tyvek or another appropriately permeable material to ensure proper terminal sterilization.

Primary syringe packaging should include a minimum of the following information, and should be conspicuous on the packaging: Name, address, country of origin of the manufacturer (logos are optional),

Manufacturer's product reference,

Type and description of product with a clear and conspicuous marking that the product has a re-use prevention feature.

Indication of a fixed or detachable needle.

Indication of sterility and sterilization method,

Lot number,  
 Expiration date in month/year format,  
 Clear indication that the product is not for reuse,  
 CE markings,  
 Clear and conspicuous marking of the size of syringe and needle.  
 Conditions for appropriate storage.  
 Boxes containing the syringes must be packed into heavy outer shipping cartons suitable for international transit, and must be conspicuously labeled with the type, fixed or detachable needles, quantity, sizes, expiration date, lot number, and name of the manufacturer.  
 Boxes should also indicate conditions for appropriate storage.  
 Shipping cartons should be clearly and conspicuously labeled with the type, fixed or detachable needles, quantity and size of syringes, the expirations date, the lot number(s), and name of the manufacturer.  
 Shipping cartons should also reference conditions for appropriate storage.  
 Shipping cartons markings should also reference their weights and dimensions.  
 Requirements for adherence to quality and performance standards:  
 Conform to:  
 WHO performance specification E8/DS.1 if AD syringes for immunization purpose  
 WHO specifications WHO/BCT/02.12 if AD syringes for general purpose  
 ISO standard ISO 7886-3: Sterile hypodermic syringes for single use -Part 3: Auto-Disable syringes for fixed doses immunization  
 Immunization AD syringe ISO 7886-3  
 Fixed needle: 0.5ml fixed dose  
 Automatic locking mechanism (single action) Includes automatic retractable syringes  
 Products will be pre-qualified by the World Health Organization Product Quality Standard System or another internationally recognized quality control agency.  
 Requirements for instructional materials  
 Instructions for use must be on the box and included within each box in leaflet form, and must be in the English language and may include pictograms. Other languages may be included in addition, but may not substitute for English. There should be a minimum of 5 copies per box.  
 Additionally required information: Additionally required product information should indicate all standards to which it complies, including a minimum requirement that they meet currently published ISO or other internationally recognized standards as well as: The country of origin and the country from which the product will ship.  
 The weights, dimensions, and total quantity of boxes per shipping carton  
 09.09.02.05. Retractable syringes  
 General Description and purpose: Single-use, sterile syringes for preventive and curative services, including re-use and needle-stick prevention features. The safety mechanism retract the needle directly from the patient, effectively reducing exposure to the contaminated needle.  
 Technical Specification:  
 Capacity: 1ml, 2ml, 3ml, 5ml and 10ml  
 Material of the syringe Polypropylene  
 Prevented from re-use by needle retraction/plunger disabled  
 Needle is either auto-retracted or manually retracted into the syringe once injection is complete.  
 Needle is locked into the Barrel to provide protection from both reuse and accidental needle-stick injury Auto-retraction is a single-handed operation if retracted manually.  
 Packaged in sterile blister pack  
 Device is nontoxic, non-pyrogenic and latex-free.  
 Quality System Standard applied: ISO 13485  
 Product standard applied: ISO 7886-4



#### 09.09.02.06. Needle single-use, hypodermic

General characteristics	Single-use Sterile Luer conical fitting Stainless steel (material)	
Purpose	• intramuscular, intravenous, subcutaneous, intradermal	
Length	<ul style="list-style-type: none"> <li>• 10 mm (3/8")</li> <li>• 12 mm (1/2")</li> <li>• 16 mm (5/8")</li> <li>• 25 mm (1")</li> <li>• 30 mm (1 1/4")</li> <li>• 40 mm (1 1/2")</li> <li>• 50 mm (2")</li> </ul>	
Diameter of the needle tube and Luer colour code of the needle hub	External Diameter (Gauge and mm)	Colour code of the hub (in accordance with ISO 6009)
	27G : 0.4 mm 26G : 0.45 mm 25G : 0.5 mm 24G : 0.55 mm 23G : 0.6 mm 22G : 0.7 mm 21G : 0.8mm 20G : 0.9 mm 19G : 1.1mm 18G : 1.2 mm 17G : 1.5 mm 16G : 1.6 mm 15G : 1.8 mm 14G : 2.0mm	Grey Brown Orange Purple Blue Black Deep Green Yellow Cream Pink Deep red White Blue Grey Pale green
Packaging	Individually sterilized blister or ribbon packs made of paper and plastic	
Shelf life remaining	Minimum of 2/3 of the life time when leaving the supplier warehouse	
Requirements	Conform to ISO standards: • ISO 7864: Sterile hypodermic needles for single use	

#### 09.09.02.07. Single-use auto-disable needle-free syringe injectors

General description and Purpose: Sterile, single-dose, auto-disabling, needle-free syringe, used for human clinical and medical use to deliver intra-dermal (ID), and/or subcutaneous (SC), and/or intra-muscular (IM) injections.

Single use and auto disabling refer to the needle free syringe/cartridge not the injector itself.

Needle-free jet injectors deliver a sterile, single dose of liquid medication by pressurizing the dose in a chamber from which it is ejected through a small orifice on an auto-disabling syringe with sufficient force to penetrate human tissues. It is intended for clinical use by medical personnel on humans, as well as for self-use by patients when indicated.

Auto-disable feature: The syringe must be passively and automatically rendered unusable upon the filling or delivery of the intended dose. The timing and method of the activation of the auto-disable feature may vary by design. It must not be possible to intentionally or inadvertently re-use the syringe/cartridge under the normal conditions of use.

Cross contamination: Parts of the device intended for patient contact shall be disposable.

Cycle time: The total cycle time for delivery of a dose should be comparable to or less than that of a needle/syringe and vial/ampoule cycle time.

Number of life time cycles: The minimum requirement is set at 20,000 cycles. Test evidence to support this claim is to be provided and specified by manufacturer.

Environmental requirements:

Ambient temperature range during transport and storage: In accordance with ISO 21649: -40°C to +70°C

Water and dust resistance: The injector must resist exposure to rain or otherwise accidental exposure to water, unless the use of water immersion is part of the recommended cleaning procedure. Protection of the injector by the outer storage/carry case against water and dust penetration must not be less than rating IP55 per IEC 60529.

Ambient humidity range during transport, storage and use: 5% to 95% RH, non-condensing.

**Power source:** The device may be manually, gas or electrically powered.

**Injector hand piece weight:** Maximum 1 kg (including syringe filled to usual dose volume), except that systems designed for mass campaigns using rapid, filling, loading, injecting, and unloading mechanisms may weigh up to 1.5 kg on the expectation that there will be frequent shift rotations of staff performing injections.

**Interface requirements:**

**Disposable syringe filling:** The disposable syringe must be capable of being filled either directly or indirectly through a vial adapter or other transfer mechanism from a vaccine vial or ampoule, or from a needle.

Human factors:

Generally, the device must be useable by the widest practicable range of active health workers, regardless of age, gender, size or minor disability, including long-sighted and short-sighted people without glasses, in accordance with the general principles laid out in ISO 20282-1: 2006.

**Skill level:** It must be possible for health workers to operate the device after a hands-on training session of maximum one hour and 20 injections.

**Handedness:** The device must be equally useable by left and right handed health workers.

**Activation and arming force:** Compliance with the following ISO standards is required: ISO 20282-1; ISO 20282-3; and ISO 62366. The maximum force requirement for delivery should not exceed 30 N.

**Repetitive use:** The device must be designed to reduce the risk of repetitive motion injuries and to prevent discomfort during routine use by a single operator for up to 200 cycles per day. It must be designed so that the operator's wrist can remain in a neutral position during delivery to the patient.

**Pinch points:** Use should not result in pinching of the operator's hands.

**Materials:** Ozone depleting chemicals: During manufacture and assembly of the product any substance included in Annex A, B or C of the Montreal Protocol must not be used.

**Warranty:** The product is to be covered by a replacement warranty covering the designed lifetime of the device in the event of any component failure not caused by mechanical damage.

**Servicing provision:** The product should not require major maintenance or refurbishment through the tested cycle life, beyond general cleaning and disinfection. No disassembly for

cleaning should be required. Required cleaning materials must be limited to low cost products such as bleach, quaternary ammonia, iodine and water and full cleaning instructions must be supplied by the manufacturer.

**Disposal and recycling:** The manufacturer is to provide information to the buyer on any hazardous materials contained within the system and is to recommend in its instructions environmentally safe disposal methods, including resource recovery/recycling.

The user instructions should also stipulate that any disposable part of the system must be collected in suitable medical waste containers before treatment and that these containers should carry the international biohazard symbol.

**Instructions:** Provide user and maintenance instructions in English and in pictorial form.

**Training:** Training will be conducted in accordance with the device manufacturer's released procedures or protocols. It must be possible for health workers safely to operate the device after a hands-on training session lasting a maximum of one hour and 20 injections.

**Verification:** In accordance with PQS Verification Protocol E08/JI01-VP.1

**Packaging:** Disposable syringes must be packaged sterile in individual pouches or other suitable individual unit packaging. They may also be packaged with multiple syringes per pouch provided that each syringe has a cap or other means to maintain sterility after the outer package is opened. In addition, multiple sterile syringes may be packaged together in magazines for use in injection systems specifically designed for mass campaigns using rapid, filling, loading, injecting, and unloading mechanisms.

On-site installation: Not applicable.

On-site maintenance: Training to be conducted per device manufacturers instructions.

09.09.02.08 Infusion giving set

Description: Infusion pump

Specification

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

Digital display to indicate flow rate and volume infused.

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.

Calibrate automatically with any type of infusion set.

Visual and Audible alarms for empty Container, occlusion, low battery, Air -in-line and internal malfunction.

Power of AC 220V/50Hz with a battery backup of 2 hours operation

09.09.02.09. Blood Lancet

BLOOD LANCET IN PACKS

Forked, brass, and Chrome plated Pkt of 500

Pull Blood Lancet, Stainless Steel Blood Lancet, Twist Blood Lancet, Safety Blood Lancet

Certificate: CE Or ISO

Size: 28G, 30G

Quality: Smooth tri-bevel point, and High degree of precision

Sterilized by Gamma radiation

Fits most standard lancing devices

09.09.02.10. IV Cannula

Sterile, disposable

Size: 16 g, 18 g, 20 g, 22 g, and 24 g

09.09.02.11. Spinal needle:

Sterile, disposable

Size: 0.9 × 90 mm, 20 g, 22 g, 24 g, and 25 g

09.09.02.12. Butterfly needle: 23 g

09.09.03 POP Cutting material

09.09.03.01 Plaster of Paris (PoP)

- Size: (15 x 3) Cm, 10 x 3) Cm, ...
- manufacturing date should be labeled
- Expiry date should be labeled
- Sterilized and Packed in a plastic or paper container

09.09.03.02 PoP Table

GENERAL DESCRIPTION

POP TABLE STAINLESS STEEL

MOUNTED ON SWIVEL CASTERS OF WHICH TWO WITH BRAKES TWO ANTISTATIC

AVAILABLE WITH TWO SHELVES

MATERIAL: STAINLESS STEEL, HIGH RESISTANCE TO CORROSION

DIMENSION: 90X60CM TRIANGULAR SURFACE DIVIDED IN TWO PARTS, ONE PART FLAT,

OTHER PART CIRCULAR WITH DEPTH FOR WATER COLLECTION

with push handle HEIGHT : 90 CM

09.09.03.03 Blanket, Survival

General Description: Blanket, survival,

Technical Specifications:

Lightweight flexible wrap-around blanket

Easy to unfold, strong, tear resistant

Rectangular size, approx: 220 x 140 cm

One side silver coated, reflects up to 90 % of radiated heat

Wind and waterproof, and rot proof

Stays flexible in freezing temperatures

Single use, non-sterile

Material: Non-stretch polyester film

Dimensions:

Length, approx: 220 cm

Width, approx: 140 cm

Thickness, approx: 12 µm

Packaging and labelling:

Primary packaging: Unit of use.

One (1) survival blanket in a plastic bag.

Labelling on the primary packaging:

Refer General requirements

Weight/Volume/Dimensions:

Estimated weight: 0.075 kg

Estimated volume: 5 cdm

Instructions for use:

Wraparound body blanket protects against cold, heat, wind and rain

Arrange the silver coated surface according the desired effect: External - reflects heat away, isolates content against heat, Internal - preserves (body) heat, isolates from wind and humidity

If necessary the blanket can be cut into smaller pieces for children and newborns.

Safety process:

In case of absolute necessity, the blanket may be reused after cleaning and disinfecting with chlorine solution.

#### 09.09.03.04 Cotton wool

General Description: Cotton wool, 500 g, roll, non sterile

Technical Specifications:

Surgical quality 100 % cotton

Not pre-cut

Net weight: 500 g

Material: Surgical hydrophilic cotton made of cotton, which has been carefully purified, bleached, and carded

Size selected: Cotton wool: roll of 500 g

Disposable

Non-sterile

Packaging and labelling:

Primary packaging: Unit of use.

One (1) roll of cotton wool in a plastic bag

Labelling on the primary packaging:

Refer General requirements

Weight/Volume/Dimensions:

Estimated weight: 0.55 kg

Estimated volume: 2.63 cdm

Instructions for use:

Dressing material with high absorption used for cleaning wounds.

Non-sterile cotton wool: can also be used in sterile condition (after steam sterilisation).

The size has been chosen as being the most commonly used.

Conditions for stock: Keep under dry conditions.

Safety process:

The cotton wool is for single use only.

Collect and destroy by incineration in a controlled environment.

Transport and Storage:

Controlled temperature: avoid exceeding 30°C

09.09.04 PoP Tools

09.09.04.01 power Drill

For bone drilling

Have replaceable bits of different size which is compatible with fixing screw

Manual operating sterilized type

Built in rechargeable battery can only chemically sterilized otherwise drill bits

09.09.04.02 Power Saw

For bone cutting

Have replaceable blade

Can be Autoclavable

Manually operated

09.09.04.03 Hip Spica table

Description: Hip Spica Assembly (Adult)

Technical Description:

Hip Spica Assembly - Adult: Elevated sacral rest provides added height for casting in sacrolumbar area.

Includes elevated back board, elevated sacral rest, body slat, and perineal post.

Other Attachments Required: Siderail Locks (BF133)

Table Compatibility: STERIS OrthoVision tables. It can be customized through SSQ process to fit Cmax, 3085 SP, 3080-R and 3080 tables with Orthopedic Extension.

Usage: Body casting procedures

Note: Maximum patient weight capacity is 400 lbs. (181 kg).

Prices do not include any applicable taxes, shipping and handling fees.

Certification Certified Pre-owned

Warranty: 90 Days

Lead Time: 5 Days Minimum

## 10 Mortuary and Autopsy Instruments



**Photo 10: Morgue refrigerator**

### 10.01 Mortuary and Autopsy

#### 10.01.01 Body Store

##### **10.01.01.01 Mortuary cooling unit, 3 corps,**

**General Description:** Stainless steel mortuary cooling unit, 3 corpses, 1 door and with three stainless steel corps trays

**Technical Specifications:**

Designed for low ceiling areas (minimum height 2.30m)

Pre-fabricated type

Constructed in accordance to the prescribed sanitary conditions for corps storage

Supplied with 3 corps trays of stainless steel, sliding on proper telescopic wheels

Separate compressor with condensate drainage, to provide a temperature of 0 to 4 degr. C.

Cooling system on top

Cold chamber is made of partition, ceiling and floor panels. Built with PVC corners and (or) partitions, avoiding thermo points.

Dimensions, approx.: 230 x 90 x 260 cm (h x w x d)

**Power requirements:** 220V/50Hz

Power consumption: 1200 W/ describe

**Material:**

Finishes: Galvanized sheet steel - stainless steel front - all-over stainless steel

#### **10.01.01.02 Mortuary cooling unit, 6 corps**

##### **General Description:**

Cold room, walk-in type, 200 x 200 cm

##### **Technical Specifications:**

Pre-fab cold room unit contains one cell for cooling.

Minimum temperature to be maintained at 2-6 degr.C.

Complete with cooling unit

Dimensions cool cell, approx.: 200 x 200 x 218 cm (w x d x h)

Power requirements: 220V/50Hz

Power consumption: 1000 W/ describe

##### **Material:**

Epoxy coated metal.

##### **Packaging and labeling:**

Primary packaging: Unit of use

One (1) pre-fab cold room in box, with manufacturer's instruction for use.

##### **Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

##### **Weight/Volume/Dimensions:**

estimated weight: 100 kg

estimated volume: 1300 cdm

**Instructions for use:** Cold store walk-in to be used in the kitchen.

#### **10.01.01.03 Trolley, mortuary, height adjustable**

**General Description:** Trolley to be designed for corpse lifting and removal from mortuary refrigerator

##### **Technical Specifications:**

Hydraulic height adjustable by means of a foot pump

Executed to fit the corpse trays from the mortuary refrigerator

Max. Load: 150 kg.

Lifting height: 400 - 1720 mm

Size: 2400 x 685 mm

**Material:** Heavy duty plastic and steel

#### **10.01.01.04 Trolley, concealment, with cover**

**General Description:** Trolley, concealment, with cover

##### **Technical Specifications:**

Capacity: 225kg

Height Range: 470mm to 1500mm.

Dimensions: 2300mm long x 750mm wide

#### **10.01.02 Bier Room**

##### **10.01.02.01 Catafalque**

**Description:** Catafalque for funeral services or coffin display,

oak-imitation melamine paneled execution on 4 castors,

with 2 brakes

dimensions: 1600 x 500 x 480 cm

weight : 32 kg

#### **10.01.03 Autopsy**

##### **10.01.03.01 Table, autopsy, with 2 sinks, st.**

**General Description:** Autopsy table.

Autopsy table built in stainless steel quality AISI-304 (18/8)

Sink with taps and drain valve for attaching shredder.

Slide able supports which avoid the body coming in to contact with the table surface

Turret with venture suction tube.

Hydro mixer hot and cold water, telephone shower button operated.

Electric connection for saws, aspirator and other elements by means of air sealed sockets.

Built according international standard ISO9001 and CE marked

**DIMENSIONS:** 2600x800x900 MM

**ACCESSORIES:**

Shredder

Analogical scale with support

Book Rest

Instrument table

Washing table

**10.01.03.02 Table, organic dissecting**

**Short Description:**

Organ dissecting table, stainless steel tubular frame with plastic feet and with teak cutting board, over perforated plate, and with perforated tray to one side. Removable stainless steel tank for sponge.

dimensions: 700 x 650 x 250 mm

organic table, st. steel to fit autopsy table

**10.01.03.03 Neck support for autopsy**

Neck support for autopsy table use

**10.01.03.04 Scale, autopsy,**

Ceiling mount, 6 kg (it is included in Autopsy Table)

**10.01.03.05 Ruler, straight steel**

with scale, for measurement, not more than 2 meters

**10.01.03.06 Autopsy instruments, Set**

**General Description:** post-mortem set

Blow pipe

Ampulation saw

Postmortem scissor

Bowel scissor

Combined hammer with chisel

Bipod skull reset

Chisel with detachable cross handle

Brain knife

Caltin knife

Cartilage knife

Chain hook set of three

Scalple (four pcs)

**10.01.03.07 Saw, autopsy, electric**

Autopsy saw, oscillating at very high speed to cut through bones.

\* motor, complete with tumbler switch, cable, chuck, spanner, 4 saw blades with shaft, 4 circular saw blades with shaft and a chuck key

\* power requirements: 220V/50Hz

\* power consumption: 100 W/ describe



#### **10.01.03.08 Autopsy and Disecting table, with sink unit at one end**

Description Autopsy table with incision and dissection part, slop basin, and instrument shelf with drains.

- \* Internal pre-connected fittings consisting of thermostat-controlled mixer unit
- \* shower with high pressure hose, filling fittings and drain valve for the sink
- \* connected drains with water traps and outlets for pressurized air and mains.
- \* dimensions, approx.: 300 x 75 x 90 cm.
- \* power requirement: 220 V, 50 Hz, 10 A./ describe
- \* provisions: compressed air,
  - hot water diam. 20 mm, 3-8 ato,
  - cold water diam. 20 mm, 3-8 ato, drain diam. 75 mm, Accessories: - headrest.



## 11. Biomedical Engineer Testing ,Measuring & Hand Tools



photo: Tool Kit

### 11. 01. Bio-medical Equipment

#### 11.01.01 Bio-medical testing equipment

##### 11.01.01.01 ECG Simulator

##### 11.01.01.02 Dosimeter (kV, mA, time)

###### SPECIFICATIONS:

###### Accuracy:

Dose -  $\pm 4\%$

Time -  $\pm 0.1\%$ ,  $\pm 0.2$  msec

Diagnostic kV -  $\pm 1$  kV or  $\pm 1\%$

Mammographic kV -  $\pm 0.5$  kV

**Display:** 16 character/line, two-line liquid-crystal

**Self-Test:** (Automatic at turn on) includes display test, sensor identification, battery check, circuit checks, test outputs

**Setup:** Separate setup menu provides user selection of time and dose units, kV mode

**Functions:** Dose, Dose Rate, Max Rate, Pulsed, Auto Dose, Last Dose, kV Pulse, kV Fluoro, kV Dental

**Power:** 2 C-cells ./ describe

Auto power off after 15 minutes of inactivity extends battery lifetime

**Operating temperature:** 15 °C to 35 °C

**11.01.01.03 TNT X-Ray Test Tools**

**11.01.01.04 X-ray calibration tools set (perpendicularity, beam alignment, etc)**

**11.01.01.05 Phantom, x-ray**

**11.01.01.06 Phantom, MRI**

**11.01.01.07 BP analyser**

BP Analyzer Specifications		
Pressure Generation/Measurement	Static-pressure range	50 mmHg to 400 mmHg(53 kPa)
	Difference Between Target Pressure and Actual Pressure:	-5 mmHg
	Internal Leak Rate:	< 2 mmHg per minute with minimum volume of 300 cc
Four Respiratory Artifacts		3 spontaneous breathing controlled ventilation
3 Adult Wrist-Cuff Simulations		Normal Hyper Hypo
Pressure Source		Specified pressure generated from 50 mmHg to 400 mmHg in selectable increments of 1 mmHg
Pressure Gauge		Static pressure measured from 0 mmHg to 400 mmHg at the pressure port
Pressure Relief Rest		Test for the NIBPM pressure relief valve (0 mmHg to 400 mmHg) with display of peak pressure
Neonate Internal Cuff Simulations		Internal neonate cuff Four standard neonate pressures
Normal Sinus Rhythm and Arrhythmias	BP and ECG	- Healthy heart - Weak pulse - Mild exercise - Strenuous exercise - Obese subject - Geriatric subject - Tachycardia - Bradycardia
User-Definable Simulations	User-definable systolic and diastolic values, along with heart rate and pulse volume Ranges: Systolic Pressure Range: 20 to 250	

	Diastolic Pressure Range: Dynamic NIBP Repeatability: Heart Rate: Pulse Volume:	10 to 200 Within 2 mmHg (at maximal pulse size independent of device under test) 30 to 250 0.1 cc to 2.4 cc
Performance Parameters	Max Pulse Volume: Max Heart Rate: Internal Neonatal Cuff Volume: Internal Adult Cuff Volume (Including NN Volume): Heart Rate Setting Accuracy: Simulation Units:	2.4 cc - 200 BPM at 2.4 cc pulse volume - 250 BPM at 1.2 cc pulse volume 20 cc 310 cc $\pm 1$ BPM kPa and mmHg (user selectable)
Pressure Leak Test		The pressure port is pressurized from 0 mmHg to 400 mmHg and keeps track of the pressure loss over time. Peak pressure and present pressure are displayed at all times; leak rate is displayed when it is available.
Serial Port		Bidirectional RS232 port; baud rate of 9600 with no parity, one stop bit, and eight data bits.
Pressure Measurement	Pressure-Measurement Units: Pressure-Measurement Range: Pressure-Measurement Resolution: Pressure-Measurement Accuracy: - Standard Version (BP Pump 2 <sub>L</sub> ): - High-Accuracy Version (BP Pump 2 <sub>M</sub> ):	kPa, mmHg, cmH <sub>2</sub> O, cmH <sub>2</sub> O and psi (user selectable) 0 mmHg to 400 mmHg 0.1 kPa, 1.0 mmHg, 1.0 cmH <sub>2</sub> O, and 0.1 psi 0 to 300 mmHg: + 0.5 % of reading + 1 mmHg 301 to 400 mmHg: + 2 % of reading $\pm 0.7$ mmHg (0.09 kPa) throughout range
Parallel Port		25-pin female connector, with D-subminiature style and pinouts conforming to IBM "PC" printer port (unidirectional), HP and ASCII printers.

**11.01.01.08 Safety tester (ground current leakage tester) and analyser**  
**SPECIFICATIONS**

**EARTH/GROUND**

RESISTANCE.....0-19.99 Ohms +/- 1% of readingt  
LEAKAGE CURRENT..... 0-1999  $\mu$ Amps, RMS  
CAPACITY..... 10 Amps, 30 Minutes  
POWER .....85 to 265 VAC, 50/60 Hz/ describe  
OPERATING RANGE..... 15 to 40 C

**11.01.01.09 ESU analyser**

**11.01.01.10 Ventilator gas analyser**

**11.01.01.11 Oscilloscope, with memory**

**11.01.01.12 Multimeter (R, I, V, T, PNP/NPN)**

**11.01.01.13 LC meter**

**11.01.01.14 IC Tester**

**11.01.01.15 Photo irradiance meter**

**11.01.02 Workshop tools & furnitures**

**11.01.02.01 Function generator**

Typical specifications for a general-purpose function generator are:

Produces sine, square, triangular, sawtooth (ramp), and pulse output. Arbitrary waveform generators can produce waves of any shape.

It can generate a wide range of frequencies. For example, the Tektronix FG 502 (ca 1974) covers 0.1 Hz to 11 MHz.

Frequency stability of 0.1 percent per hour for analog generators or 500ppm for a digital generator.

Maximum sinewave distortion of about 1% (accuracy of diode shaping network) for analog generators. Arbitrary waveform generators may have distortion less than -55dB below 50 kHz and less than -40dB above 50 kHz.

Some function generators can be phase locked to an external signal source, which may be a frequency reference or another function generator.

AM or FM modulation may be supported.

Output amplitude up to 10V peak-to-peak.

Amplitude can be modified, usually by a calibrated attenuator with decade steps and continuous adjustment within each decade.

Some generators provide a DC offset voltage, e.g. adjustable between -5V to +5V.

An output impedance of 50 ohms.

**11.01.02.02 Solder Gun**

**11.01.02.03 Variable AC/DC power source**

**11.01.02.04 Tool set/ Tool Kit**

**Description:** Set tools for for electronic work and Hand tool set, consisting of:

- \* 1 spanners, open ended,0-11 BA(1 set)
- \* 1 screwdriver, electricians, 6"
- \* 1 screwdriver, engineers, 10"
- \* 1 screwdriver, miniature, 2 1/2"
- \* 1 screwdriver, Phillips,3 "
- \* 1 screwdriver, Phillips, 6 "
- \* 1 screwdriver, neon indicator,
- \* 1 screwdriver, pozi drive, no.2
- \* 1 screwdriver, pozi drive, no.3
- \* 1 non cutting snipe nose pliers
- \* 1 diagonal cutting pliers
- \* 1 wire stripper and cutter
- \* 1 retractable blade knife
- \* 1 hammer, ball plain, 1 lb.

- \* 1 combination pliers, 6"
- \* 1 square head center punch
- \* 1 spanner, adjustable, 8"
- \* 1 mains soldering iron, 65 W,220V/50Hz.
- \* 1 junior hacksaw
- \* 1 steel tape, 6 ft.
- \* 1 hand file, 6 " flat bastard
- \* 1 hand file, 6" round bastard
- \* 1 file handles,(1 set)
- \* 1 tool case, steel

#### **Tool Kit**

Technicians Tool Kit Contains:

Utility compartment storage box  
 Flat nosed plier  
 Bent nosed plier  
 Linesman plier  
 Side cutting plier  
 Spring hook  
 3 Pc soldering aid tool  
 Desoldering pump  
 Super drill set w/ adapter  
 3 pc anti static alignment tool kit  
 Diagonal cutting nipper  
 Long nosed plier  
 Long nosed plier-165mm  
 6" adjustable wrench  
 Ceramic soldering iron 110v  
 6" straight forceps  
 Measuring tape  
 10pc electronic combination wrench  
 Inspection mirror  
 Slip joint plier-154mm  
 2pc Pallet  
 Aluminum frame tool case  
 6pc Electronic screwdriver set  
 40pc socket and screwdriver set  
 Precision wire stripper  
 Crimping tool  
 5pc Needle file set  
 IC extractor  
 7pc Folding Hex Key Set  
 3 Prong holder  
 Heavy Duty Clawed Hammer  
 PVC Insulated Tape  
 Solder Core  
 Heat Sink  
 ESD Wrist Strap

#### **11.01.02.05 Workbench for workshop**

**Description:** worktable for work shop

**Technical Features and Performance Parameters:**

1 or 2 under cabinet, with 4 drawers  
 top complete with vice, 90 mm jaw  
 dimensions: 150 x 75 x 80 cm ( w x d x h) or

dimensions: 200 x 75 x 80 cm ( w x d x h)

**Material :**

Wooden top and steel base

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) worktable in box, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 25 kg

- estimated volume: 1.2 cm

**Instructions for use:**

Worktable to be used in the various workshops, such as: biomedical, electrical and mechanical workshop.

**11.01.02.06 Cabinet for workshop, open type**

**Required Functional Capabilities:**

The workshop cabinet to store small materials; epoxy coated steel material construction, without doors

**Technical Features and Technical Performance Parameters:**

executed with 9 interchangeable shelves and 30 dividers for the shelves

dimensions, approximately: 100 x 30 x 200 cm (w x d x h)

**11.01.02.07. Stool, height adjustable, mobile, with back support**

**Required Functional Capabilities:** Height adjustable stool, swivel type on 5 feet base with castors

**Technical Features and Technical Performance Parameters:**

safety top-operated gas lift column

height adjustable from 42-56 cm

vinyl upholstered seat and backrest

**11.01.02.08. Shelve**

**Description:** Open cabinet, with shelves for workshop

**General Description:** Open cabinet, with shelves for workshop

**Technical Specifications:**

**Material :** Epoxy coated metal

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) open cabinet in box, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General Requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 20 kg

- estimated volume: 800cdm

**Instructions for use:**

Open cabinet, with shelves is used in the workshops in the hospital to store small parts and tools.



## 12 Clinical Physiology



photo: Defibrillator Electrode and Monitor

### 12.01 Electro Physiology

#### 12.01.01 ECG

##### 12.01.01.01 ECG recorder, 3-channel with trolley

**General Description:** Portable digital ECG-recorder set.

**Technical Specifications:**

Digital recording rest Electro Cardio Graph (ECG)

Records 12 standard leads simultaneous: a VR, a VL and a VF, I, II, III and V1-6 pre-cordials.

Automatic and manual printout mode.

Internal memory for data storage.

Splash-resistant alphanumeric keyboard and direct function keys.

Reset zeroing, auto-base-line correction (0.5 Hz) and 1mV test.

Electrode connection quality check.

Filter setting for line-frequency 50 and tremor.

Large back-lit LCD (10x12cm) displays recorded data and failure announcements: ECG-curves, leads, heart rate, patient name and ID, electrode control, clock, leads, speed and filter setting.

Integrated high-resolution 300 dpi thermal printer, width 210 mm.

Print-out, folded thermo-reactive paper, format A4.

Number of channels, selectable: at least 3channel

Standard combination of channels or manually selectable.

Paper speed, selectable: 5, 25 and 50 mm/sec.

Sensitivity, automatic or selectable: 5, 10 and 20 mm/mV.

Copy function.

Appropriately protected for work with defibrillators.

RS232 interface.

Built-in batteries and charging unit.

When fully charged, the battery gives approx. 50 readings.

Power requirements:

Power supply: 220 V/50Hz

Supplied with

Clear instructions / diagrams for assembly and use in English language

**Set components:**

ECG device is supplied as complete set comprising:

1 x ECG unit, portable.

1 x patient cable

6 x suction ball-type chest electrodes, reusable.

4 x extremity clamp electrodes, reusable.

1 x bottle of gel for electrodes.

1 x box of recording paper (1000 A4 sheets of paper).

150 x pages / 1 pack of recording paper.

**12.01.01.02 ECG recorder, 6-channel, trolley**

**Description:**

Electrocardiograph, high resolution, digital 12 lead ECG system, with 3-channel printer;

**Technical Features:**

- \* Manual or automatic operation
- \* Sensitivity (complex amplitude) 5, 10, 20 mm/mV
- \* Producing 12 leads recording at 5, 10, 25 and 50 mm/sec
- \* Zeroing and anti-drift system (ADS)
- \* Electrode checkout, sound and visible alarm
- \* 50 Hz suppression filter with On/Off possibility
- \* One button auto operation plus copy function
- \* Keyboard moist-resistant
- \* Must be safe (compatible) to work with defibrillators
- \* Complete with:
  - Paper, power cord, patient cable with 10 reusable electrodes, 4 extremities clamp electrodes, 6 suction balls for chest, electrode cream, paper for 200 12-lead-automatic ECG-printouts, water-proof apparatus carrying-bag, operation manual
- \* Power requirements: 220V / 50Hz / 100 W/ describe
- \* Battery operation possibility: autonomy for at least 40 automatic ECG's. Charger included and preferably built-in.
- \* Weight: max 3.0 kg
- \* Power requirements: 220V
- \* Power consumption: 0,06 Kw/ describe

**12.01.01.03 Recorder, 12-channel,trolley**

**Description:** ECG recorder, multi channel, mobile, stress test

A three channel, automatic operated, electrocardiograph, stress test oriented, with special stress test lead combinations and a built-in exercise timer and a digital heart rate indicator.

**Technical Features:**

- \* Incorporating the following recording procedures:
  - Thermo pen positioning
  - Sensitivity selections channel by channel
  - Lead selections in accordance with the sequence
  - Lead sequence marketing on the chart margin
  - 1 mV standard signal application
  - Controlling recording chart feeding
  - Duration of recording, adjustable.
- \* Including standard accessory set, consisting of:

1 patient cable, 4 limb electrodes (adult), 4 limb electrode straps (adult), 6 chest electrodes (adult), 1 electrode bag, 1 tube 100 g. cream, 1 roll recording charts, 1 thermo pen, 1 power fuse, 1 screwdriver, 1 dust cover, 1 power cord, 1 ground lead, 1 accessory bag.

- \* Supply complete with carrying cart, patient cable hanger and lead patient cord.
- \* Power consumption: 0,06 Kw/ describe
- \* Power requirements: 220 V/50 HZ.

#### 12.01.02 Stress Testing

##### **12.01.02.01 Cardio-respiratory exercise equipment, treadmill**

**Description:** the mill suitable for a wide range of rehab and training purposes, such as active rehabilitation, mobilization, cardio-respiratory rehabilitation and /or general trainig and fitness

**Features:**

Staright forwarded operation  
easily readable display  
low mounting height  
Sprung running surface  
powerfull AC motor, 2.1 HP  
programmable  
Heart rate control and monitoring with a polar chest nband  
modular construction

**Technical specification**

speeds adjustable from 0.5 to 18 km/h  
Approved and authorized for medical use  
easy to operate an extremly well laid out operating panel  
programmable operating unit  
possibility for heartbeat controlled training (with a polar transmitter and receiver included)  
emergency stop via emergency button  
hip belt with safety switch ( for automatic stop if the client can't maiantain the running speed of the belt)

**optional features**

speed range extra fast or extra slow  
Various front and side supports  
various types of height adjustments  
an access platform  
extra de luxe emergency stop

#### 12.01.03 Holter monitoring

##### **12.01.03.01 Holter, digital recorder, dual channel**

**General Description:** Digital Holter Recorders provide high-quality 5- or 7-lead, 3-channel Holter recordings with an ECG signal preview screen. Fast data transfer using a compact flash card frees the recorder for immediate assignment to the next patient.

**Technical Specifications:**

Channels .....2 or 3 Channel Recording  
Resolution.....8, 10 bit Sampling  
Recording.....Full Disclosure  
Data Transfer.....Removable memory or USB  
Sample Rate.....128 - 1024 Samples per Second  
Frequency Response.....0.05 Hz to 60 Hz @ -3dB  
Signal Verification.....LCD Display  
Pacemaker Detection.....Programmable On/Off

**Features**

**MEMORY**

Recording Time.....24, 48, 72, 96, 120, 168 Hours  
Type.....Non-volatile Flash Memory  
Capacity.....Up to 1.0G (Removable)

**Supplied with**

Two piece each of Patient Cable 5 or 7 wire integrated cable

**ENVIRONMENTAL**

Operating temperature: 0°C (32°F) to 45°C (113°F)

Non-operating temperature: -20°C (-4°F) to 65°C (149°F)

Operating humidity: 10% to 95% (non-condensing)

Non-operating humidity: 5% to 95% (non-condensing)

**Power requirements:****BATTERY**

Type..... (1) AAA Alkaline IEC-LR3

Life.....96 Hours (4 days)

Type..... (1) AAA Lithium L92-FR03

Life .....168 Hours (7 Days) Type: (1) AA Alkaline IEC-LR6

Life: 48 Hours

**12.01.03.02 Holter, digital, analysis and research station, with printer****12.01.04 EEG****12.01.04.01 EEG machine with Recorder, basic trolley**

**General Description:** Electroencephalograph/EEG/ digital 32 channels with trolley

**Technical Specifications**

PC based with minimum following PC specifications: Pentium IV, 512 MB DDR RAM, 160 GB HDD, CD/DVD RW, 17-25" LCD TFT Display, Key Board, Mouse and UPS.

Number of EEG Channels should be 32 with colour coding, and another eight channels for Polygraphy. Also any two channels can be configured as Bipolar, AC or DC through software

Simultaneous sampling of all EEG channels and multiple sampling rates.

Photic Stimulator with software programmable for manual or automatic sequences.

Networking facility

DICOM compatible.

32 Channel Amplifiers needed.

CMRR should be > 110 dB or better

Noise < 2uV peak to peak

Input Impedance > 100 Mohm

16 bit ADC resolution voltage of 0.153 uV

Low filter adjustable between 0.16 to 5 Hz.

High Filter Adjustable between 50 to 100Hz.

Notch Filter Adjustable to software.

Acquisition Sensitivity from 1 microvolt per mm to 2000 microvolt per mm.

**Supplied with:**

EEG System completes with software for acquisition and review and the compatible computer with necessary interface and Laser printer with 600 DPI Resolution and A4 is required.

Standard accessories to include the patient cable and connectors with electrodes and Papers for at least 1000 EEG Exams and all the necessary power cables and other interfaces.

**COMPONENTS FOR VIDEO EEG UPGRADATION.**

Environmental factors

The unit shall be capable of being stored continuously in ambient temperature of 0 -50 deg C and relative humidity of 15-90%.

The unit shall be capable of operating in ambient temperature of 20-30 deg C and relative humidity of less than 70%

**Power requirements:**

Power input to be 220 VAC, 50Hz

Resettable over current breaker shall be fitted for protection.

Voltage corrector/stabilizer of appropriate ratings meeting standard specifications.( Input 160-260 V and output 220-240 V and 50 Hz)

Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.

Standards, Safety and Training

Manufactures/Supplier should have ISO certificate to Quality Standards.

Comprehensive training for lab staff and support services till familiarity with the system.

Shall be certified to be meeting safety standards of EEG Systems.

#### **Documentation**

User/Technical/Maintenance manuals to be supplied in English.

Certificate of calibration and inspection.

List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.

List of important spare parts and accessories with their part number and costing

Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/Para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

#### **12.01.04.02 Recorder, EEG, advanced, trolley**

12.01.05 EMG Room

##### **12.01.05.01 Recorder, EMG, basic, trolley**

**General Description:** PC Based Channel EMG / with accessories

##### **Technical Specifications**

Standard program for recording motor nerve conduction velocity, sensory nerve conduction velocity, repetitive nerve stimulation, F response, H reflex and blink reflex.

Standard program for routine electromyogram (EMG) recording, motor unit potential (MUP) analysis, interference pattern analysis, single fiber EMG, jitter analysis

Standard program for recording sympathetic skin response

Standard program for recording brain stem auditory evoked response, middle latency response and slow vertex response

Standard program for recording pattern reversal visual evoked potential (VEP), LED VEP, Electroretinogram (ERG) and electrooculogram (EOG)

Standard program for recording P300

Standard program for recording somatosensory evoked potentials (upper limb & lower limb) and short latency evoked potentials

Facilities for checking electrode-skin impedance

##### **Amplifiers:**

Input impedance: 100 mega ohms or more

Sensitivity: 2 microvolt – 10 mill volts per division

Time base: 0.1 millisecond – 0.5 seconds per division in variable steps

Filters: Standard low cut, high cut filters for all recordings

PC requirements: Pentium 4 processor, laser jet printer, 17 inch color flat Screen/monitor, key board, 80 GB

Hard Disk, 256 MB RAM, CD ROM, CD/DVD writer and floppy drive

##### **Supplied with**

Standard accessories

Surface stimulating and recording electrodes – 10

Concentric needle electrodes (30 mm long with connecting cable) – 4

Single fiber EMG electrode – 4

ERG contact lens electrode – 2

Ground electrode – 2

Headphones and child ear tips with cables – 2

VEP monitor and LED goggles – 1

Flash stimulator – 1

Electrode gel – 10  
Recording paper – 3  
Power cable – 2  
Ground lead – 2

**Power requirements:** 220 ± 10% VAC, 50 Hz

**12.01.05.02 Recorder, EMG, advanced**

**12.02 Physiology**

**12.02.01 Spiro meter**

**12.02.01.01 Spirometry, hand held**

**Specifications**

**Diagnostic:** FVC, F/V Loop, MVV, Post Medication Comparison.

**Frontline:** FVC, Post Medication Comparison.

Ultrasonic flow measurement

700 test session storage

64x160 pixel graphical display

Hygienic disposable spirette

Automated quality control

Graphic curve display (Diagnostic only)

Clinical interpretation

Optional PC data transfer

Customizable configuration

Powered by AA batteries

Calibration check with syringe

**12.02.01.02 Spirometry, advanced**

**12.02.01.03 Spirometry, automatic, ergo, computer based**

**12.02.01.04 Spirometry, automatic, computer based**

**12.02.02 Audiometry**

**12.02.02.01 Audiometer, basic, earphone**

**12.02.02.02 Audiometer, diagnostic, automatic**

**12.02.02.03 Cabin, silent, 2.00 x 1.50 m**

**12.02.03 Biometry/anthropometrics**

**12.02.03.01 Hanging scale, w/access**

**12.02.03.02 Floor Scale,**

**Description:** weight, mechanical

**Specifications**

- Capacity:..... 400 lb /180 kg
- Graduation: .....1 lb / 1 kg
- Platform Size: .....11-1/2" (w) x 13" (d)
- 1 Year..... Limited Warranty

**12.02.03.03 Floor Scale, weight, digital**

**12.02.03.04 Floor Scale,**

**Description:** weight, with height measuring rod

**Specifications**

- Capacity:..... 400 lb /180 kg
- Graduation: .....1 lb / 1 kg
- Platform Size: .....11-1/2" (w) x 13" (d)
- height .....60-200 cm
- 1 Year..... Limited Warranty

### **12.02.03.07 Measuring board**

#### **12.03.04 Ventilators**

##### **12.03.04.01 Mechanical Patient Ventilator for adult**

###### **Specification**

Anesthesia Ventilator unit with that can be mounted either on the ventilator or on the side of the anaesthetic trolley Ventilator to be complete with spirometry and manometer display.

The ventilator shall be capable of ventilating paediatric patients down to 2 kg body weight.

The ventilator shall have a graphical screen with following features as a minimum requirement:

Volume PreSet Time Cycled Ventilator (IPPV Mode)

Pressure Controlled Mode

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

Rate or Frequency 4 to 60 bpm

PEEP(Positive end-expiratory pressure)

Inspiratory Pressure Limit

Monitor Interface Capability

Oxygen or Air drive gas / Electronically Driven

Power Supply 220/230 VAC , 50 Hz

Battery Backup (30 Minutes)

Low / High FiO2 Alarm

Incorrect Rate or Ratio alarm

Mains Failure alarm (30 Minutes Battery Backup)

Low battery alarm.

The ventilator shall be supplied complete drive hose and power cable.

##### **12.03.04.02 Electrical Patient Ventilator**

**General Description:** Ventilator, intensive care, adult / child (basic)

###### **Technical Specifications:**

Electrically powered, electronically controlled, volume cycled lung ventilator.

Volume and Pressure control ventilation

Pressure support

Back up ventilation

PEEP /CPAP ventilation

Comprehensive Alarms and monitoring

Digital read-outs for temperature, oxygen percentage and respiration rate

Gas delivery system by internal air source, built in compressor

Humidifier for extended ventilation

Air Oxygen mixer

On mobile stand with support arm and place for 2 bottle

Built-in battery back up to 8 hours

Power requirements 100-240 VAC, 50/60Hz 12-30 VDC

Power consumption: 250 W / describe

Dimensions describe

**Material :** Various composite materials

###### **Packaging and labelling :**

Refer General requirements

**Accessories/Spare parts/Consumables :** To be provided with 3 adult and 3 paediatric patient circuits

###### **Weight/Volume/Dimensions :**

- estimated weight: 15 kg

- estimated volume: 400 cdm

**Instructions for use :**

Adult- paediatric patient ventilator for intensive care, emergency, post-anaesthesia, or intra-hospital transport

**12.03.04.03 PEDIATRIC VENTILATOR**

**Description:** Microprocessor Controlled Ventilator, infant

**Specification**

Microprocessor based controlled ventilation system. LCD color monitor 10 Inch Minimum.

**Patient Range:**

Pediatrics. Body weight range 2 Kg-30 Kg.

**Breathing classification:**

Pressure control, Volume control and pressure control with set Volume Breath.

**Modes of Ventilation:**

Volume control

Assisted CMV

Pressure control PS

Assist Pressure support

**CPAP**

SIMV+ Pressure support

Volume support.

Non invasive ventilation

Pressure Regulation Volume

**Control:**

Set & measured parameters simultaneously.

**Measurement range/ specification**

Inspiratory tidal volume ..... :10 – 300 ml or more

Respiratory frequency ..... : 5-120 bpm

SIMV breath frequency ..... : 1-50 bpm

Inspiratory pressure ..... : 10-80 cm H O<sub>2</sub>

Inspiratory flow .....:80 cm H O<sub>2</sub>

I : E ratio .....1:4.5

PEEP .....:0 20 cm HO<sub>2</sub>

FiO<sub>2</sub>/ O<sub>2</sub> delivery .....:21 – 100%

Monitoring Parameters for set and measured value simultaneously with

Digital Display

Total breath rate.

Peak Inspiratory flow

Oxygen concentration FIO<sub>2</sub>

Expired minute volume

Peak expiratory flow

I : E ratio

Peak Pressure

Mean pressure

**Others control and functions**

Back up ventilation

Pause time INSP

Microprocessor gas delivery system

Breath circuit Compliance Compensation

Expiratory hold/ Inspiratory hold

Panel lock for safety

Pressure and flow trigger sensitivity

Trigger sensitivity indication

Should able to operate on single air/ gas source at 21% Oxygen.

Mounted on trolley with lockable wheel



Autoclavable reusable patient tubing circuit for Infant (2)

#### **Alarms**

Apnea

AC power failure

High and low Expired minute volume

High and low peak air way pressure

High and low breath rate

FiO<sub>2</sub> variation

Low and high base line pressure

Gas supply source failure

Low battery

#### **Power supply**

220/230 V 50 Hz with internal chargeable battery back up min for 1 hr.

Compressed Air Supply

Compatible compressor with automatic Power back up facility for one hour at least.

Lung Mechanics with Graphics Display Monitor.

#### **Humidifier**

Automatic compensation (Servo) controlled heated humidifier with temperature monitoring at air way and humidification chamber with alarm for low/ high limits with water trap in the patient circuit.

#### **12.03.04.04 Ventilator, infants**

**Description:** premature newborn babies, The ventilation system should be based on the continuous-flow-principle for neonates and pediatrics, complete with heated humidifier.

#### **Technical Features and Performance Parameters:**

- \* flow range adjustable 1 - 30 L/min
- \* frequency 2 to 200/min
- \* integrated flow trigger for SIPPV and SIMV
- \* integrated oxygen blender 21-100 %
- \* integrated monitoring for flow, volume, pressure and FiO<sub>2</sub>.
- \* ventilation modes: IPPV, SIPPV, IMV, SIMV, CPAP
- \* to be supplied with all necessary accessories, as canisters, tubing sets, etc.
- \* the heated humidifier should provide stable temperature and humidity at low flows for neonates, with automatic overheat protection and full back-up alarm systems.
- \* the trolley should be sturdy and safe with large swivel castors.
- \* power requirements: 220v/50hZ

## 13 Pharmacy Instruments



Photo 13: Pharmacy equipment

### 13.01 Dispensing tools

#### 13.01.01 Counters

##### 13.01.01.01 Automatic counter

###### Technical Specification

Dimensions: 12.8"H x 12.3"D x 6.2"W (32.5cm x 31.2cm x 15.7cm)

Weight: 6lb (2.7kg)

Power: Standard wall outlet needed. Should be 220V, 50Hz)

Throughput: 15 -18 tablets/second

Maximum Tablet Size: 0.86" long (22mm) and 0.74" wide (19mm)

Minimum tablet size: 0.125" diameter (3.175mm)

Inventory Mode: Ideal for large counts; maintains the count while the tray is being emptied

Count Capacity: Up to 9,999

Tray Capacity: 800cc, holds approximately 1,600 tablets of ibuprofen 200mg.

##### 13.01.01.02 Tablet Counting and Verification System

Interfacing: Can integrate with any pharmacy management system and workflow platform \*

Works with compound label barcodes for data exchange without the need for pharmacy interface

Ad hoc counting with UPC scanning for checking on-hand quantities

Built-in workflow software: Turn it on or off as needed to fit your process

Inventory tools: effortlessly performs physical inventories, with no hand-tallying; send inventory counts directly to the pharmacy management system or other database

Wide variety of reports available covering Rx status, drug maintenance, etc.

On-screen help (videos and documents)

Multilingual text, configurable by the user

Drug database management  
Automated cleaning reminders, configurable by the user

**Technical Specifications**

Weight: 21 lbs (9.5kg)  
Size: 18.0" L x 12.5" W x 14.5" H (46cm x 32cm x 37cm)  
Touch screen: 10.4" (26.4cm) high-resolution 3D graphical display  
Power: standard 220 V  $\pm$ 10%, 50Hz  
Bar code scanner  
Fingerprint verification system: configurable user security levels  
Local USB port for drug maintenance database updates, reports, etc.  
Network archiving of processed orders  
Wireless or wired connectivity \*  
Maximum tablet size: 0.86" long (22mm) and 0.74" wide (19mm)  
Minimum tablet size: 0.125" diameter (3.175mm)  
Tray Capacity: 650cc, holds approximately 1,000 tablets of ibuprofen 200mg.  
Product not yet available outside North America.

**13.01.01.03 Manual Counter**

**General Description:**

Manual tablet counter for use in the pharmacy.

**Technical Specifications:**

Triangular aluminium flat tray with channels to align tablets for counting.  
Raised side edges to contain tablets while counting manually.  
Coloured to aid visibility of tablets.  
Funnel to tip tablets into pill containers.  
Overall dimensions (w x d x h), m: 0.30 x 0.40 x 0.05

**Material:** Aluminium

**Packaging and labelling:**

**Primary packaging :**

One (1) manual tablet counter plate in box with manufacturer's instruction for use, spare parts and accessories.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

**Weight/Volume/Dimensions:**

- estimated weight: 0.10 kg
- estimated volume: 1 cdm

**Instructions for use :** Manual pill counter for counting pills and tablets in the pharmacy before issuing to patients.

**13.01.01.04 Tablet bags**

**13.01.01.05 Tablet counting spoon**

**13.01.01.06 Ttablet cutter or pill cutter**

**13.01.01.07 Dispenser trolley**

**13.01.01.08 Dispenser, bench top**

**13.02 Compounding tools**

**13.02.01 compounding tools**

**13.02.01.01 Mortar and pestel, porcelain**

**General Description:**

Ice pack for vaccine carrier, maintains cool temperature for transportation of vaccines.

**Technical Specifications:**

Ice Pack for vaccine carrier.

Plastic water containers that are frozen.

Capacity: 300 ml

**Material:** Plastic with lid allowing for expansion when freezing.

**Packaging and labelling:**

**Primary packaging:**

One (1) ice packs in box, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

Estimated weight: 0.10 kg

Estimated volume: 3 cdm

**Instructions for use:** For the maintenance of vaccine carrier temperature during transport of vaccines.

#### **13.02.01.02 Spatula**

#### **13.02.01.03 Mixing plate**

#### **13.02.01.04 Test tubes**

**Description:** Test tube, glass, heat resistant,

**Technical Specifications:**

Test tube, medium walled, rimmed.

Wall thickness 1.2mm.

Nominal size 150mm x 16mm.

Neutral borosilicate glass.

**Material:** Neutral borosilicate glass.

**Packaging and labelling:** Pack quantity 100.

**Labelling on the primary packaging:**

Refer General requirements

**Extra information required:**

Number of units per secondary packaging. Information for particular storage conditions (temperature, pressure, light, humidity, etc.) as appropriate (or equivalent harmonised symbol).

Information for handling, if applicable (or equivalent harmonised symbol).

Manufacturer's instruction for use. Alternatively, the instruction for use can be indicated on a separate insert..

**Accessories/Spare parts/Consumables:**

Not applicable.

**Weight/Volume/Dimensions:**

Unit net weight approx. kg (unpacked).

Unit volume approx: cdm (unpacked).

**Instructions for use:** For general purpose laboratory use.

#### **13.02.01.05 Pipettes**

**Description:** Pipette, graduated, 10 ml.

**Technical Specifications:**

Pipette, graduated BS700 ISO 835 Class B.

Type 1 calibrated to deliver from zero to any graduation line.

Capacity 10mL.

Blue ceramic graduations, 0.01mL.

Tolerance  $\pm 0.10$ mL.

**Material:** Soda lime glass.

**Packaging and labelling:** Pack quantity 5.

Refer General requirements

**Accessories/Spare parts/Consumables:**

Pipette filler bulb, PVC, pear shaped (Pack of Ten).

**Weight/Volume/Dimensions:**

Unit net weight approx. kg (unpacked).

Unit volume approx: cdm (unpacked).

**Instructions for use:**

For compounding or pipetting reagents, samples or solutions.

**13.02.01.06 distiller unit**

**Specifications**

Rated Voltage: 220V

Distillation Capacity: 4 Litres

Rated Frequency: 50Hz

Distillation Volume: 2 L/H

Rated Power: 750W/ describe

Over-temperature Safety: Power-off when temperature is 160 °C

**13.02.01.07 beaker**

For detail specification refer the items listed under the category of 03.08.11 Glassware, beakers

**13.02.01.08 digital balance**

For detail Specification refer Items listed under the category of 03.08.10 Balances/Scale

**13.02.01.09 manual balance**

For detail Specification refer Items listed under the item no. of 03.08.10.03 Balances/Scale or it can be any spring balance that may be suspended in air and measure.

**13.02.01.10 flask**

For detail Specification refer Items listed under the category of 03.08.13 Glassware, flasks

**13.02.01.11 stirrer**

**13.02.01.12 compounding bench**

**13.02.01.13 dispensing chair**

**13.02.01.14 Dish**

**13.03 Cold store equipment**

**13.03.01 Refrigerator**

**13.03.01.01 Refrigerator, vaccine, electric & gas**

**Description: working on both electric and kerosene, for vaccine storage**

**TECHNICAL SPECIFICATIONS TECHNICAL DATA**

Model	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Gross capacity (liters).....	110	110	185	185
Net capacity (liters) .....	102	102	170	170
Net vaccine storage capacity (liters) ...	20	20	55	55
Net freezer capacity (liters) .....	15	15	47	47

**INPUT/CONSUMPTION**

Gas Inlet pressure Propane (mill bar)...	30	–	30	–
Standard voltage, 50/60 Hz .....	230 VAC	230 VAC	230 VAC	230 VAC
Optional VAC.....	120 and 240	120 and 240	120 and 240	120 and 240
Max input (watts) .....	175	175	300	300
Gas consumption/24hrs (grams) .....	385g	–	500g	–
Electricity consumption/24hrs .....	2.15kWh	2.15 kWh	6.3kWh	6.3 kWh
Kerosene tank volume (liters) .....	–	10	–	10
Kerosene consumption/24hrs (liters) ..	–	0.5	–	0.9

## FEATURES

100% galvanized steel.....	yes	yes	yes	yes
Lockable vaccine compartment .....	yes	yes	yes	yes
Electric thermostat .....	yes	yes	yes	yes
Gas thermostat .....	yes	—	yes	—
Day/night regulator .....	—	yes	—	yes
Stabilizer tank .....	—	no	—	yes
Defrosting, electrical operation.....	no automatic	no automatic	no automatic	no automatic
Burner type .....	SIBIR LPG	Cosmos 10	SIBIR LPG	Aladdin 23
Piezo ignition .....	yes	—	yes	—
Flame indicator .....	yes	yes	yes	yes
Fuel supply interlock .....	yes	yes	yes	yes
Reversible door hang .....	no	no	no	no
Shelves .....	galvanized and lacquered wire	galvanized and lacquered wire	galvanized and lacquered wire	galvanized and lacquered wire
Level indicator .....	yes	yes	yes	yes

## DIMENSIONS

Height (mm) .....	1019	1133	1456	1569
Width (mm) .....	594	595	592	592
Depth (mm) .....	623	690	623	640
Net weight (kg) .....	52	70	68	88

## PERFORMANCE ACCORDING TO EPI/PROC/5

(8 thermocouples)

Stable running

32 ambient (°C)	min 2.4, max 5.5	min 1.2, max 4.2	min 2.8, max 5.8	min 1.9, max 4.6
43 ambient (°C)	min 2.7, max 6.3	min 3.0, max 6.6	min 1.5, max 5.8	min 2.2, max 6.1
Safe Ice pack freezing 32 ambient (°C)	1.2 kg	0.6 kg	3.6 kg	2.8 kg
Hold over time 32 ambient (°C).....	4.02 hrs	4.0 hrs	3.02 hrs	3.10 hrs
Day/night cycling 32/15 ambient (°C)	min 3.8, max 5.9	—	min 0.2, max 5.1	—
Epi specification .....	E3/RF.2	E3/RF	6 E3/RF.2	E3/RF.2

## ADDITIONAL TESTS

Maximized safe ice pack freezing (3 batches)..	3.0 kg	3.0 kg	7.2 kg	7.2 kg
Low ambient test, stable running at 15°C ambient .....	min 2.2, max 4.0	min 2.4, max 3.8	—	—

(All measurements were made at thermostat setting "3")

## CORROSION STANDARD

Internal and external cabinet, lid and frame ..... all DIN 8985

## SHIPPING DATA

Country of origin .....				
Shipping weight (kg) .....	69	83	96	115
Packing height (mm) .....	1100	1310	1530	1750
Packing width (mm) .....	700	710	700	710
Packing depth (mm) .....	680	680	690	690
Packing volume (cbm) .....	0.52	0.64	0.74	0.86
Plywood case .....	all yes			
Units per 20' container .....	48	36	35	24
Units per 40' container .....	102	78	75	51
Units per 40' HC container .....	102	102	75	71

#### **13.03.01.02 Refrigerator Medicine, small**

**Description:** Pharmaceutical refrigerator, 300 liter, with air circulation

**Technical Features:**

Specially designed to store pharmaceutical

6 drawers with retaining catches and dividers

Without deepfreeze compartment

Temperature setting: +2 to +12 °C.

Capacity approx 300 liter

Power requirements: 220V/50Hz

Power rating: 140 Watt/ describe

Power consumption approx. 0.8 kWh/24h/ describe

Dimensions describe

#### **13.03.01.03 Refrigerator Medicine, large**

**Description:** Pharmaceutical refrigerator, 500 liter, with air circulation

**Technical Features:**

Specially designed to store pharmaceuticals

Without deep-freeze compartment

Capacity: 520 liter

Temperature +2 to +12°C

Power requirements: 240 V/50 Hz, 320 Watt/ describe

Power consumption: approx. 1.5 kWh/24/ describe

Dimensions describe

#### **13.03.01.04 Vaccine carrier, small**

**General Description:**

Ice pack for vaccine carrier, small, maintains cool temperature for transportation of vaccines.

**Technical Specifications:**

Ice Pack for vaccine carrier.

Plastic water containers that are frozen.

Capacity: 300 ml

**Material:** Plastic with lid allowing for expansion when freezing.

**Packaging and labelling:**

Primary packaging: Unit of use

One (1) ice pack in box, with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight /Volume/Dimensions:**

Estimated weight: 0.10 kg

Estimated volume: 3 cdm

**Instructions for use:** For the maintenance of vaccine carrier temperature during transport of vaccines.

#### **13.03.01.05 Vaccine carrier, Cold box, large**

**General Description:**

Vaccine cold box, large, short range, vaccine storage capacity 16 litres; Cold life 80/93 hours.

**Technical Specifications:**

Small vaccine carrier, For transport of vaccines,

vaccine storage capacity 16 litres;

Weight fully loaded 35 kg;

Cold life 93 hours at 43°C without opening the cold box;

With lid and carrying handle;

Supplied with one set of 0.6 litre icepacks;

Complies with WHO Performance Specification E004/CB01.2

**Packaging and labeling:**

1 each per carton, double wall carton

**Accessories/Spare parts:**

Extra set of Icepacks

**Weight/Volume/Dimensions:**

Estimated shipping weight: 17.30 kg

Estimated shipping volume: 0.180 m<sup>3</sup>

**Instructions for use:**

Transport of vaccine by vehicles to large immunization sessions.

Delivery of vaccine to intermediate vaccine stores when the journey is longer than 48 hours.

**13.03.01.06 Vaccine carrier, Cold box, long range**

**General Description:**

Cold box, large, long range, vaccine storage capacity 18 litres; cold life 114/126 hours

**Technical Specifications:**

Cold box, large, long range, for transport of vaccines;

Vaccine storage capacity 18 litres;

PQS ref. E004/015;

Weight fully loaded 46kg;

Cold life 126 hours at 43°C without openings;

With lid and carrying handle and supplied with one set of 0.3 litre icepacks;

Complies with WHO Performance Specification E004/CB01.2

**Packaging and labeling:**

Double wall carton

**Accessories/Spare parts/Consumables:**

**Weight/Volume/Dimensions:**

Estimated shipping weight: 30kg

Estimated shipping volume: 0.280cbm

**Instructions for use:**

For transport of vaccine in vehicle for immunization purposes; delivery of vaccine to intermediate vaccine stores.

**13.03.01.07 Refrigerator/freezer**

**Description:** Refrigerator with deep-freeze compartment

**Technical Features:**

For ambient temperature up to 32 °C

Double doors model

Deep freeze compartment approx 85 liter

Refrigerator, approx. 300 liter

Automatic defrost with drainage in the freezer

Dimensions, approx 60 x 60 x 160 cm (w x d x h)

Power requirements 240V/50Hz

Power consumption approx 500 W/ describe

Net weight approx 71 kg

13.03.02 Temperature monitoring

**13.03.02.01 Thermometer, room, digital**

**Technical specifications**

- Convenient ear or forehead use
- Displays room temperature with date and time
- Mini flashlight for night time use
- Stores 20 scans in its memory
- Large backlit display with voice readout
- Waterproof tip for easy cleaning



### **13.03.02.02 Thermometer, room, mini/max**

Description: **Thermometer wall mounted**

#### **Specifications:**

Temperature range: 0 – 50 deg;C

Display Low & degree Centigrade : temperature below 0 & deg for temperature above 50

clarity and Waterproof

to be suspended on a wall

### **13.03.02.03 Termo hygrometer**

#### **Features**

Jumbo LCD display for easy readings from across the room

Wireless sensor transmits temperature and humidity data from up 100 feet away

Main display receives data from up to 3 sensors (other 2 sold separately)

Toggles display from temperature to humidity bold digits for easy reading of both

Memory for minimum and maximum recorded data such as temperature highs and lows

Technical Details

**Product Dimensions:** 1.1 x 4.3 x 4.9 inches ; 12 ounces

**Shipping Weight:** approximately 1 pounds

**Item model number:** should be indicated

**Batteries:** 4 AA batteries required.

## **13.04 Dry Storage**

### **13.04.01 Cupboard and shelves**

#### **13.04.01.01 Metal shelves**

For specification Please item no. 01.01.04.03 shelves, lockable under health facility instrument

#### **13.04.01.02 Wooden shelves**

For specification Please item no. 01.01.04.03 shelves, lockable under health facility instrument except the materials made is wood in this case

#### **13.04.01.03 lockable cupboard**

For detail specification Please refer item no. 01.01.04.02 Medicine cabinet, lockable under health facility instrument

## 14 Blood Bank Instruments



**Photo 14: Blood Donor Couch**

### 14.01 Blood Collection

#### 14.01.01 Collection

##### **14.01.01.01 Blood bag,**

**Description:** Single, 450ml

##### **Technical Specifications**

Single blood bag

Capacity: 450ml

Additive: CPDA-1

Fit with 16 G needle

With in-line closure device

Provided with writable label

**14.01.01.02 Blood bag,**

**Description:** Single, 250ml

**Technical Specifications**

Single blood bag

Capacity: 250ml

Additive: CPDA-1

Fit with 16 G needle

With in-line closure device

Provided with writable label

Box of 100 blood bags

**14.01.01.03 Blood bag,**

**Description:** double, 450ml

**Technical Specifications**

Single blood bag

Capacity: 250ml

Additive: CPDA-1

Fit with 16 G needle

With in-line closure device

Provided with writable label

Box of 100 blood bags

d bag, double,450ml

**14.01.01.04 Blood bag,**

**Description:** double, 250ml

**Technical Specifications**

Double blood bag system

Capacity 250l primary bag, 300 ml satellite bag

Additive: CPDA-1

Fit with 16 G needle

With in-line closure device

Provided with writable label

Box of 100 blood bag systems

**14.01.01.05 Blood bag,**

**Description:** triple, 450ml

**Technical Specification**

Triple blood bag system

Capacity: 450ml primary bag and 2 satellite empty bags

Triple blood bag: 450 ml primary bag containing CPDA solution and 2 satellite bags (400 ml bag containing SAGM preservative and 400 ml for platelet storage).

Additive: CPDA-1

Fit with 16 G needle

With in-line closure device

Provided with writable label

Box of 30 blood bag systems

**14.01.01.06 Balance, blood bag**

**Description:** with agitator, electrical

**Technical Specifications**

Programming and control of the required volume

Continuous display of unit volume, 1 ml increment

Fitted with auto calibration system

Volume range: 1 to 600 ml

Closure of tubing on reaching required volume with audio-visual indication  
Suitable for all types of blood bags  
Tare function  
Audio-visual alarm on functioning errors  
Compact size and light weight, high stability  
Autonomy on battery: 3 hours  
Power requirements: 220 V / 50 Hz, with voltage surge protection  
Supplied with: 1 x Spare rechargeable battery  
Supplied with: Instructions for use, preventive maintenance and troubleshooting in English.

#### **14.01.01.07 Blood collection chair**

##### **Technical Specifications**

Couch surface divided into 4 sections: back, head, arms and legs  
All sections manually adjustable  
High stability on every position  
Material: epoxy coated tubular steel  
Upholstered with washable fabric  
With removable accessory tray

#### **14.01.01.08 Trolley, blood collection**

**General Description:** Blood collecting trolley,

##### **Technical Specifications:**

One laminated top shelf with drawer and organizer  
One laminated shelf below  
Waste bin  
Armrest  
Syringe collector

Dimensions, approx.: 60 x 45 x 73 cm (w x d x h)

**Material:** Chromium frame and laminated shelves

##### **Packaging and labeling:**

**Primary packaging:** Unit of use

One (1) blood collecting trolley in boxes, with manufacturer's instruction for use.

##### **Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

##### **Weight/Volume/Dimensions:**

- estimated weight: 15 kg  
- estimated volume: 300 cdm

##### **Instructions for use:**

Blood collecting trolley for the laboratory blood collecting area to draw blood from patient.

## **14.02 Processing**

### **14.02.01 Processing**

#### **14.02.01.01 Platelet Shaker**

##### **SPECIFICATIONS**

Desktop type with silicon rubber plate.  
Its rollers and glides allow the drawer storage platform to agitate smoothly.  
Sturdy, one piece perforated drawer for uniform air circulation. The drawer will be removable type.  
Capacity to hold at least 48 bags.  
Microprocessor controlled.  
Speed range 25 – 300 rpm  
Timer minimum for 24 hours

Digital display and alarm function.  
Motion alarm system.  
Voltage 220/230V, 50 Hz operated

#### **14.02.01.02 Blood Bag Tube Sealer**

##### **Technical Specifications**

For permanent sealing of blood bag tubing  
Material: aluminum  
To be used with item 14.01.01  
Box of 1000 seal clips

#### **14.02.01.03 Blood Bag Tube Stripper,**

**Description:** Manual

##### **Technical Specifications**

Multi-functional: stripping, cutting and crimping seals  
Adjustable tube diameter, up to: approx. 30 mm  
Cutting blade sterile type and replaceable  
To be used with item 14.01.01  
Supplied with: 5 x Replacement blades

#### **14.02.01.04 Blood bag Tube Seals/clips**

##### **Technical Specifications**

For permanent sealing of blood bag tubing  
Material: aluminum  
To be used with item 210  
Box of 1000 seal clips

#### **14.02.01.05 Plate, Cross Matching/Grouping**

##### **Technical Specifications**

Used for blood grouping and cross matching  
Opal glass plate with 12 recessed wells  
Size wells: approx. 20 mm (diameter) x 3 mm (depth) Reusable  
Wells marked with Anti-A, Anti-B, Anti-AB and Anti-Rh, and 8 unmarked wells  
Size plate: approx. 5 x 50 x 180 mm (h x w x l)

### **14.03 Transport and Storage**

#### **14.03.01 Refrigerator, blood Bank**

##### **14.03.01.01 Refrigerator,**

**Description:** Blood Bank, 60 units

##### **Technical specifications**

Upright refrigerator for storing whole blood or red blood cell packs in a blood bank  
Compression type, CFC-free refrigerant  
Storage capacity: approx. 60 units (of 450 ml)  
Fan-cooled for even distribution of air in the cabinet  
Roll out drawers or shelves, easily height adjustable  
Material, internal: stainless steel, aluminum or equivalent, approx. 22 gauge  
Material, external: stainless steel or epoxy coated steel  
Insulation material: polyurethane, CFC-free  
Lockable door, glass or solid  
Electronic temperature control: 2 C to 6 C  
Accuracy, whatever the load: +/- 1 C  
Hold-over time: min 6 hrs (full load at 4 C (+/- 1 C) takes at least 6 hrs to reach 10 C, at ambient 32 C)

Cooling-down time: max 8 hrs (full load at 37 C (+/- 1 C) takes max 8 hrs for all packs to reach 6 C)  
Ambient operating temperature, range: 10 C to 43 C

**Temperature monitoring:**

External digital display with actual interior temperature, minimal graduation 0.1 C  
Electronic temperature recording device  
Audio and visual alarm system indicates unsafe temperatures  
Battery back-up for audio and visual alarm system, and temperature recording device Fit with remote alarm connection and interface  
Fitted with integrated castors  
Minimum compressor starting voltage: 22 % below nominal voltage  
Power requirements: 220 V / 50 Hz  
Power consumption: approx. 250 W/ describe  
WHO pre-qualified, laboratory test procedure: BTS/Proc 3

**Supplied with automatic voltage regulator:**

Microprocessor controlled spike and surge protection, and protection against disturbances  
Nominal output voltage: 220 V / 50 Hz, single phase  
Accepted input range: -30 % to +20 %  
Output accuracy: +/- 4 %  
Correction speed: 1250 V/s  
Response time: <15 ms  
Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation and load as % of nominal current  
Permissible overload: 1000 % during 100 ms  
Electronic fuse disconnects and reconnects automatically  
KVA rating matches power consumption of the refrigerator  
Supplied with: Instructions for use, preventive maintenance and troubleshooting in English language

**14.03.01.02 Refrigerator,**

**Description:** Blood Bank, 90 units

**Technical Specifications**

Upright refrigerator for storing whole blood or red blood cell packs in a blood bank  
Compression type, CFC-free refrigerant  
Storage capacity: approx. 90 units (of 450 ml)  
Fan-cooled for even distribution of air in the cabinet  
Roll out drawers or shelves, easily height adjustable  
Material, internal: stainless steel, aluminum or equivalent, approx. 22 gauge  
Material, external: stainless steel or epoxy coated steel  
Insulation material: polyurethane, CFC-free  
Lockable door, glass or solid  
Electronic temperature control: 2 C to 6 C  
Accuracy, whatever the load: +/- 1 C  
Hold-over time: min 6 hrs (full load at 4 C (+/- 1 C) takes at least 6 hrs to reach 10 C, at ambient 32 C)  
Cooling-down time: max 8 hrs (full load at 37 C (+/- 1 C) takes max 8 hrs for all packs to reach 6 C)  
Ambient operating temperature, range: 10 C to 43 C

**Temperature monitoring:**

External digital display with actual interior temperature, minimal graduation 0.1 C  
Electronic temperature recording device  
Audio and visual alarm system indicates unsafe temperatures  
Battery back-up for audio and visual alarm system, and temperature recording device  
Fit with remote alarm connection and interface  
Fitted with integrated castors  
Minimum compressor starting voltage: 22 % below nominal voltage  
Power requirements: 220 V / 50 Hz  
WHO pre-qualified, laboratory test procedure: BTS/Proc 3

**Supplied with automatic voltage regulator:**

Microprocessor controlled spike and surge protection, and protection against disturbances

Nominal output voltage: 220 V / 50 Hz, single phase

Accepted input range: -30 % to +20 %

Output accuracy: +/- 4 %

Correction speed: 1250 V/s

Response time: <15 ms

Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation and load as % of nominal current

Permissible overload: 1000 % during 100 ms

Electronic fuse disconnects and reconnects automatically

KVA rating matches power consumption of the refrigerator

Supplied with: Instructions for use, preventive maintenance and troubleshooting in English language

**14.03.01.03 Plasma Freezer****Technical Specifications**

Upright freezer for storage/conservation of chemicals/reagents in clinical laboratory

Compression type, CFC-free refrigerant, with spark free ignition

Fan-cooled for even distribution of air in the cabinet

Stainless steel structure

Internal gross volume: 140 to 160 L

Easily adjustable shelves

Insulation material: polyurethane, CFC-free

Lockable door, solid

Electronic temperature control: up to -20 C

Accuracy, whatever the load: +/- 1 C

Ambient operating temperature, range: 10 C to 43 C

**Temperature monitoring:**

External digital display with actual interior temperature, minimal graduation 0.1 °C

Electronic temperature recording device

Audio and visual alarm system indicates unsafe temperatures

Battery back-up for audio and visual alarm system, and temperature recording device Fitted with integrated castors

Minimum compressor starting voltage: 22 % below nominal voltage

Meeting quality standard ISO 8187 / EN 28187

Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1

Power requirements: 220V± 10%, 50 Hz

Power consumption: approx. 300 W/ describe

**Supplied with automatic voltage regulator:**

Microprocessor controlled spike and surge protection, and protection against disturbances

Nominal output voltage: 220 V / 50 Hz, single phase

Accepted input range: -30 % to +20 %

Output accuracy: +/- 4 %

Correction speed: 1250 V/s

Response time: <15 ms

Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation And load as % of nominal current

Permissible overload: 1000 % during 100 ms

Electronic fuse disconnects and reconnects automatically

KVA rating matches power consumption of the freezer

**Supplied with:**

Instructions for use, preventive maintenance and troubleshooting in English language

#### **14.03.01.04 Blood Bag Box,**

**Description:** Transport, 10 units

##### **Technical Specifications**

Transport box for whole blood or red blood cell packs

Material, external surface and internal lining: polyethylene

Insulation material: polyurethane, CFC-free

Storage capacity: approx. 10 units (of 450 ml)

Hinged cover, with 2 lockable fitting

Cold life: up to 65 hrs at 43 °C ambient temperature

Compliant with WHO minimal performance specification B4/BC1

Cold packs conforming to specifications E5/12

Supplied with: 24 x F cooling element of 0.3 L

#### **14.03.01.05 Cold Pack, 0.3liter**

##### **Technical Specifications**

Cold packs conforming to specifications E5/12

Volume: 0.3 L

To be used with

Supplied as a set of 6 cold packs

#### **14.03.01.06 Refrigerator**

##### **General Description:**

Refrigerator, blood bag storage, 50 bags

##### **Technical specifications:**

Refrigerator, for blood bag storage, steel construction, door lockable.

Compressor hermetically sealed, air-cooled, free of vibration

Automatic defroster included

Refrigerator system to work in ambient temperature up to 40 °C

With illumination and thermometer

Capacity approx 170 liter

Temperature setting: +4 °C /+5 °C

Power requirements: 240 V/50 Hz

Power rating: 135 Watt/ describe

Power consumption: 0,8 kWh/24 h /describe

Number of drawers: 2

Dimensions external approx : describe

**Material:** Epoxy coated metal.

##### **Packaging and labeling:**

Primary packaging: Unit of use

One (1) refrigerator in box, with manufacturer's instruction for use.

##### **Labeling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

##### **Weight/Volume/Dimensions:**

- estimated weight: 30 kg

- estimated volume: 670cdm

**Instructions for use:** Blood bag refrigerator to be used in the operating theatre suite.

#### **14.03.01.07 Donor Couch**

##### **General description/Features**

Based on homodynamic principles

Tilt adjustment can be done by using remote control

dual geared motor comfort to the donor

Interface to Labotop Blood Collection monitor



Ensuring safety and comfort to the donor  
 castor wheels with locking  
 Facility for blood collection from both sides  
 Micro controller based control

**Technical specification**

power supply ..... 230 ± 10% VAC  
 Weight, approximate ..... 60 Kg  
 Lifting capacity ..... ≥ 150 kg  
 Control ..... remote  
 Power consumption ..... 100 w/ describe  
 Movement actuation ..... PM DC Motor  
 Length of Seal ..... 182 ccm  
 Width ..... 67 cm  
 Length of arm rest ..... 60 cm  
 Width of arm rest ..... 15 cm  
 Upholstery ..... Soft Upholstery of 2.5 thick

**14.03.01.08 Blood Collection Monitor**

**General:** it is a compact instrument to provide smooth and gentle rocking for homogenous mixing with anticoagulant without clot formation of blood cells during collection of blood from a donor.

**special features**

Volume can be set in 1 ml. increments.  
 Provision of pausing collection and change programmed volume during pause  
 Micro-controller based program  
 Volume can be set from 1 ml to 999 ml.  
 Display of weight and volume.  
 Auto tare facility to accurate for the weight of the bag.  
 Motor activated clamping at the end of the collection.  
 Audio visual alarm to alert in case of any abnormal condition.  
 Auto calibration  
 Over load indication.  
 Highly user friendly system with LCD messages.  
 Display of the time taken for collection

**Technical specification**

Readability ..... 1 ml/1g.  
 Display ..... large LCD  
 Alarm ..... Audio visual  
 Input Voltage ..... 230 ± 10% VAC (SMPC) or 90 – 270 VAC (SMPC)  
 Battery backup ..... 6 to 8 hrs  
 calibration ..... automatic

## 15. Clinical/Hospital Engineering



**Photo 15: Portable Oxygen system**

### 15.01. Medical gasses

#### 15.01.01. Oxygen Supply

##### **15.01.01.01. Central oxygen supply system, low capacity**

**General Description:** Plant, central, medical-gas, 100 beds

**Technical Specifications:**

Plant able to supply the average weekly medical gas consumption of a general 100 bed hospital with Oxygen, Nitrous oxide and compressed Air Oxygen supply system with 2 banks of 8 cylinders, with automatic commutation and O<sub>2</sub> emergency inlet

N<sub>2</sub>O supply system with 2 banks of 2 cylinders with automatic commutation and

N<sub>2</sub>O emergency inlet

Medical Air aggregate with 2 commutating compressors, net plant output 600l/min at 4 bar

Filtering: pre-filtering 1micron, post filtering coalescing 0.01 micron

Air storage vessel with auto drain and capacity of at least 500 l

Duplex air filter dryer module, capacity matching air aggregate

Output pressure of the plant regulated to 4 bar

Plant control panel and pressure alarm system for Air, O<sub>2</sub> and N<sub>2</sub>O with 2 remote satellites

Electric power requirements 230/415V 3ph 50/60Hz 6kVA/ describe

Plant should comply with local and international regulations

**Material :** Steel and copper materials

**Packaging and labelling :**

Primary packaging : Unit of use

One (1) unit in crate, packed with manufacturer's instruction for use.

**Labelling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:**

1yr supply of spare filters, o-rings and washers, Piping, fitting and installation material to be defined on location

**Weight/Volume/Dimensions :**

- estimated weight: 1000 kg

- estimated volume: 1500 cdm

**Instructions for use :**

Central medical-gas plant used to supply oxygen, nitrous oxide and medical air to an existing pipeline system in a hospital of approx. 100 beds.

O<sub>2</sub>, N<sub>2</sub>O cylinders and Med air compressors not to be placed in same room

Vacuum and anaesthetic gas evacuation where required can be obtained by venturi system on compressed air

**15.01.01.02. Central oxygen supply system, high capacity**

**15.01.01.03. Oxygen cylinder, 11 Litr**

**Specification**

Cylinder O<sub>2</sub> size 240cft

Bull nose valve

Color-coded

A bull nose spanner shall be supplied with the cylinder.

Duly tested by renowned/ authorized company.

Complete with trolley and cylinder holding bracket/ chain.

The cylinder holder must be designed so that the cylinder should not vibrate during movement.

BSS specifications and coloring standard

**15.01.01.04. Oxygen cylinder, 5 ltr**

**Oxygen Cylinder (5 L with regulator and flow meter) on trolley with accessories**

**General description: Oxygen cylinder:**

Rechargeable, Seamless, Made of chromium- molybdenum steel

Cylinder neck fitted with side nozzle, bull nose value for connecting oxygen regulator.

Valve with hand wheel for safety opening / closing.

Cylinder with bottom, Capacity 5 Lit and bars

1 X Reducing unit RE 20. O<sub>2</sub>. O<sub>2</sub>

One-staged reducing unit for oxygen to reduce and monitor Pressure of one-sided cylinder bank.

Normal flow rate: -----20 Nm<sup>3</sup>/ h

Inlet pressure max. -----200 bar

Switch point contactor -----50 % max.

Cylinder pressure (for 3rd source)

Outlet pressure: ----- 8 bar

1 x HP Valve with Sinter Metal Filter

HP- valve with sinter metal filter for the shut-of cylinder banks and the protection of the reducing stations and gas control stations against pollution.

Nominal pressure----- 200 bar

Filter pores ----- 50 .m

1 x Collecting Pipe 2- fold left / NRV

High pressure collection pipe with integrated

Non- return valves for Connection of gas cylinder bank. The collecting pipe can be connected with 2 connecting bends.

Nominal pressure ----- 200 bar

1 x HP Relief Valve (O<sub>2</sub>)

For connection to end of collecting pipe, with soldered socket to release gases to open air.

2 x Connecting Bend O<sub>2</sub>

For connection between gas cylinder and collecting pipe resp. non return valve

Cylinder connection ----- G ¾ box nut

2 x Cylinder Bracket 2 . fold

Cylinder bracket for 2 cylinders

High pressure manometer to indicate pressure level in the cylinder

Oxygen flow meter tube calibrated from 0. 15 litres per minute, with tube nipple outlet.

Humidifier, bubble through type, water capacity 300 ml. couples directly to flow meter.

#### **Trolley:**

For transportation oxygen cylinder.

Metal steel construction, epoxy coated.

powder with two antistatic rubber wheels with pushing handle and safety fasteners to secure cylinder

**15.01.01.05. Oxygen cylinder, 20 ltr**

**15.01.01.06. Oxygen cylinder, 40 ltr**

**15.01.01.07. Oxygen cylinder, 50 ltr**

**15.01.01.08. Oxygen cylinders manifold**

#### **Technical specification**

Cylinder manifolds and their components fully comply with the standard DIN EN 737-3.

Cylinder manifolds are designed for feeding central supply systems in hospitals, laboratories and industry with medical and technical gases.

The main components of the plants are the reducing stations resp. the gas control stations. They are used for controlling and monitoring of the gases of the gas sources and for the reduction of the high pressure of the source to an appropriate pressure in the pipeline system. Gas sources can be cylinders and/or cryogenic gas tanks (VIE). In this case the cylinder banks are for the reserve supply. In general cylinder manifolds are consisting of 2 cylinder banks of the same size. One cylinder bank is in operation, the other bank in standby. The switch-over from one bank to the other is done by the reducing stations resp. the gas control station fully automatically. Additionally the switch-over can be done manually.

A one-sided cylinder manifold can be used for reserve supply and must be setting in operation manually.

Cylinder manifolds are designed in a way that all service and maintenance works can be executed without interruption of the gas supply.

Cylinder manifolds are modular systems. The components and the accessories allow an extension - even after installation - of the cylinder manifolds to meet the specific requirements.

#### **Reducing Stations**

**Technical description:** double bank cylinder system, two stage reducing system, high pressure and 1 line pressure reducer, type tested flameproof by BAM (Federal Institute for Material Research and Testing). The high pressure reducers are fitted with pressure gauges and relief valves with exhaust pipe connectors for 15 mm O. D. The line distribution reducer has a line pressure gauge.

Reducing stations fully comply with the standard DIN EN 737-3 (in case they are used together with control unit and EN-Set). Fully automatic control panel for a manifold with double cylinder bank in medical gas piping systems. The automatic control panel reduces the variable cylinder pressure in two stages down to the constant line distribution pressure.

The change-over from running empty bank at 10 bar to the secondary bank is done fully automatic by means of a pneumatic change-over valve. In case of primary supply by a cryogenic gas source the feeding is done between first and second pressure reducing stage. High pressure potential-free contactors are provided to transfer warning signals of running empty bank to manifold alarm signal board.

All components mounted on a steel base plate, white enameled to RAL 9002.

#### **15.01.01.09. Oxygen Cylinder Manifold**

**Description: Cylinder Manifold with RS 80 - Oxygen - 2x16 cylinders**

To connect 2 x 16 cylinders, double row. The cylinders are not included in this specification.

Consisting of:

**1 x Reducing Station RS 80-O<sub>2</sub>**

fully automatic reducing station for double-sided cylinder manifold for oxygen.

Nominal flow rate: 80 Nm<sup>3</sup>/h

Cylinder pressure: 200 bar, max.

Operating pressure: 5 bar  
Load on potential free contacts: max. 250 V, 5 A  
Cylinder bank connection: G 3/4  
Cryogenic gas source connection: G 3/4  
Cryogenic gas source pressure: 12 - 16 bar  
Measurements (w x h x d): (670 x 445 x 190) mm  
Weight: approx. 28.5 kg

**1 x Control Unit O2**

Control unit to monitor, protect and maintain operating pressure of Reducing Stations RS 20/ RS 80.  
Control unit consisting of switch gauge for monitoring increasing and decreasing operating pressure of 5 bar, switch gauge dismantable under pressure without interruption of gas supply, one type-tested safety valve with knurled head screw for function check and soldering unions for connection of vent pipeline, dismantable under pressure without interruption of gas supply, with gas type specific emergency inlet point consisting of a ball valve with NIST connector according to DIN EN 739, complete assembled including soldering unions on inlet and outlet as well as bracket for wall fastening. All components in oil- and grease-free version accessory to DIN EN 737, part 3

Operating pressure: 16 bar  
Switch point contactor: 6 bar increasing/ 4 bar decreasing  
Load on contacts: 1.5 - 24 V AC/DC or 5 - 50 mA or 3W  
Discharge flow: 80 Nm<sup>3</sup>/h  
Connection vent pipeline: Copper pipe 28 x 1.5 / 22 x 1  
Connection control unit: 22 x 1 / 15 x 1  
Connection emergency inlet: NIST  
Measurements (w x h x d): (105 x 168 x 85) mm  
Weight: 3 kg

**1 x Ball Valve, DN 20 - 22x1**

Ball valve with male screw threads and flat tightened solder unions, front ends with slots to incorporate o-ring, oil-free and degreased, for medical gases and vacuum, handle with safety securing in open position, marked acc. DIN EN 19.

**Nominal pressure:** 16 bar

**2 x HP Valve with Sinter Metal Filter**

HP-valve with sinter metal filter for the shut-of cylinder banks and the protection of the reducing stations and gas control stations against pollution.

Nominal pressure: 200 bar  
Nominal diameter: 10 mm  
Filter pores: 50 µm  
Connection: G 3/4

**2 x Collecting Pipe 2-fold-left/NRV**

High pressure collection pipe with integrated non-return valves for connection of gas cylinders on the **left/ right** cylinder bank. The collecting pipe can be connected with 2 connecting bends.

**Nominal pressure:** 200 bar

**Nominal diameter:** 10 mm

**2 x Collecting Pipe 3-fold-left/NRV**

High pressure collection pipe with integrated non-return valves for connection of gas cylinders on the **left / right** cylinder bank. The collecting pipe can be connected with 3 connecting bends.

Nominal pressure: 200 bar

Nominal diameter: 10 mm

**2 x HP Relief Valve (O<sub>2</sub>, N<sub>2</sub>O, CO<sub>2</sub>)**

for connection to end of collecting pipe, with soldered socket to release gases to open air. Nominal pressure: 200 bar

**8 x Double Connecting Bend O2, Left, DIN EN**

for connection between gas cylinder and collecting pipe resp. non-return valve. HP connecting bend with hand connection for installation of cylinders in double row.

Cylinder connection: G 3/4

Diameter of pipe: 8 x 1.5 mm

**8 x Double Connecting Bend O<sub>2</sub>, Right, DIN EN**

for connection between gas cylinder and collecting pipe resp. non-return valve. HP connecting bend with hand connection for installation of cylinders in double row.

Cylinder connection: G 3/4 box nut

Diameter of pipe: 8 x 1.5 mm

**2 x Cylinder Bracket 2-fold**

Cylinder bracket for 2 cylinders.

**4 x Cylinder Bracket 3-fold**

Cylinder bracket for 3 cylinders.

**16 x Supplementary Fixing Chain**

In addition to the cylinder bracket, if cylinders are arranged in double rows.

**15.01.01.10 Cylinder Manifold with RS 20 - Nitrous Oxide - 2x3 cyl. (S)**

**Technical specifications**

To connect 2 x 3 cylinders, single row. The cylinders are not included in this specification.

Consisting of:

**1 x Reducing Station RS 20-NB**

fully automatic reducing station for double-sided cylinder manifold for non-flammable and non-corrosive gases.

Nominal flow rate: 20 Nm<sup>3</sup>/h

Cylinder pressure: 200 bar, max.

Operating pressure: 5 bar

Load on potential free contacts: max. 48 V, 2 A

Cylinder bank connection: G 3/4

Cryogenic gas source connection: G 3/4

Cryogenic gas source pressure: 12 - 16 bar

Measurements (w x h x d): (670 x 445 x 190) mm

Weight: approx. 14 kg

**1 x Control Unit N<sub>2</sub>O**

Control unit to monitor, protect and maintain operating pressure of Reducing Stations RS 20/ RS 80.

Control unit consisting of switch gauge for monitoring increasing and decreasing operating pressure of 5 bar, switch gauge dismantable under pressure without interruption of gas supply, one type-tested safety valve with knurled head screw for function check and soldering unions for connection of vent pipeline, dismantable under pressure without interruption of gas supply, with gas type specific emergency inlet point consisting of a ball valve with NIST connector according to DIN EN 739, complete assembled including soldering unions on inlet and outlet as well as bracket for wall fastening. All components in oil- and grease-free version according to DIN EN 737, part 3

Operating pressure: 16 bar

Switch point contactor: 6 bar increasing/ 4 bar decreasing

Load on contacts: 1.5 - 24 V AC/DC or 5 - 50 mA or 3W

Discharge flow: 80 Nm<sup>3</sup>/h

Connection vent pipeline: Copper pipe 28 x 1.5 / 22 x 1

Connection control unit: 22 x 1 / 15 x 1

Connection emergency inlet: NIST

Measurements (w x h x d): (105 x 168 x 85) mm

Weight: 3.0 kg

**1 x Ball Valve, DN 15 - 15x1**

Ball valve with male screw threads and flat tightened solder unions, front ends with slots to incorporate o-ring, oil-free and degreased, for medical gases and vacuum, handle with safety securing in open position, marked according DIN EN 19.

Nominal pressure: 16 bar

**2 x HP Valve with Sinter Metal Filter**

HP-valve with sinter metal filter for the shut-of cylinder banks and the protection of the reducing stations and gas control stations against pollution.

Nominal pressure: 200 bar

Nominal diameter: 10 mm

Filter pores: 50 µm

Connection: G 3/4

**2 x Collecting Pipe 3-fold-left/NRV**

High pressure collection pipe with integrated non-return valves for connection of gas cylinders on the left / right cylinder bank. The collecting pipe can be connected with 3 connecting bends.

Nominal pressure: 200 bar

Nominal diameter: 10 mm

**2 x HP Relief Valve (O2, N2O, CO2)**

for connection to end of collecting pipe, with soldered socket to release gases to open air.

Nominal pressure: 200 bar

**6 x Connecting Bend N2O, DIN EN**

for connection between gas cylinder and collecting pipe resp. non-return valve.

Cylinder connection: G 3/8 box nut

Diameter of pipe: 8 x 1.5 mm

**2 x Cylinder Bracket 3-fold**

Cylinder bracket for 3 cylinders.

**15.01.01.11. Flow meter**

**General Description:**

Oxygen flow meter with humidifier for connection to medical gas outlet on wall mounting. For the provision of oxygen therapy throughout hospital.

**Technical Specifications:**

Plug-in type oxygen flow meter to set oxygen flow in oxygen therapy apparatus.

Contains an adjustable flow control valve, 0 – 15 l/min

Flow control valve shall have a clear scale indicating the flow rate.

Includes a detachable humidifier.

Supplied with oxygen supply tubing, nasal catheter and oxygen mask.

Flow meter plug shall be compatible with the oxygen gas outlet of the hospital.

Overall dimensions: Length: 0.10 m

**Material:**

Valve: metal construction with precision gas flow component.

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) complete oxygen flow meter in box with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables :**

Humidifier

Silicon tubing

Nasal catheter

Oxygen mask

**Weight/Volume/Dimensions :**

- estimated weight: 0.20 kg

- estimated volume: 2 cdm

**Instructions for use :**

Plug flow meter in oxygen gas supply and adjust oxygen flow rate according to clinical requirements.

**Safety procedure:**

Not to be used in the presence of fire.

### **15.01.01.12. Flow meter**

**Description:** Flow meter, oxygen, humidifier, wall gas-outlet connection type  
Plug-in type flow meter, single oxygen type

#### **Technical Features:**

- \* Flow control valve
- \* Adjustable from 0-15liter/min.
- \* Humidifier
- \* Tubing, nasal catheter and oxygen mask
- \* Plug to fit central oxygen supply outlet

### **15.01.01.13. Oxygen Concentrator**

**General Description:** Oxygen concentrator /SET.

#### **Technical Specifications:**

Device concentrates oxygen from ambient air.

Integrated Oxygen Sensing Device (OSD) measures concentration at flow meter entrance.

Output flow: max 5 LPM (Litre Per Minute)

Flow meter range: 1 to 5 LPM

Output pressure: 60 kPa.

Oxygen concentration: 95%  $\pm$ 3% at 1-3 LPM, 92%  $\pm$ 3% at 4 LPM, 90%  $\pm$ 3% at 5 LPM.

Time to reach 95% the specified performance: 5 minutes.

Four-step filtering (coarse, pre, inlet and bacterial) of air-intake.

All filters replaceable, coarse filter washable/reusable.

Continuous monitoring, with visual and audible alert on: Low and high output pressure and Low oxygen concentration

**Oxygen monitor:** amber light on the front illuminates when oxygen concentrator is below 85%. If concentration remains below 85% for more than 15 minutes, an audible alarm sounds. Power failure and Battery test

Temperature operating range: 20 to 60 C

Relative humidity operating range: up to 99%

Sound level produced: 40 to 50 dB(A)

Power requirements: 220 V, 50 Hz

Power consumption, approx: 500 W/ describe

#### **Oxygen concentrator is supplied as a complete set with:**

- 1 x Oxygen concentrator
- 1 x Power cord
- 2 x Adult cannulae, with 2 m tubing.
- 4 x Infant cannulae, with 2 m tubing.
- 4 x Paediatric cannulae, with 2 m tubing.
- 3 x Connector for above.
- 4 x Humidifiers.
- 4 x 50' tubing.
- 4 x Adapter kit.
- 1 x Box of 6 coarse filters (spare)
- 3 x Pre-filters (spare)
- 3 x Inlet-filters (spare)
- 3 x Bacterial-filters (spare)
- 1 x Instruction manual in English
- 1 x Service manual in English.

#### **Packaging and labelling:**

Unit presentation: 1 (one) Oxygen concentrator with accessories and instruction guidelines

#### **Labelling on the primary packaging:**

Refer General requirements

#### **Accessories/Spare parts/Consumables:**

S0002052 Flow splitte, for oxygen concentrator.

**Note:** items listed under 'set components' above, can be ordered separately.



For the purpose, use item code with the item short description as notified under the 'set components' above and notified previous purchase order number placed for the related oxygen concentrator.

**Instructions for use:** Oxygen concentrator produces oxygen from ambient air. For delivery of oxygen therapy to newborns and infants, the use of a flow splitter is recommended. It allows providing oxygen to 2, 3, 4 or 5 patients simultaneously.

Device is supplied with spare filters enough for approx. 2 years operations.

Filters are washed or changed at recommended intervals that vary according intensity of use and/or environment (dust):

external coarse filter (to be washed daily to weekly),

pre-filter (to be changed monthly),

inlet-filter (to be changed 6-monthly or when top of filter is discoloured), and

bacterial filter (to be changed annually).

The oxygen concentrator must be operated by adequately trained staff only. It is recommended to follow manufacturer's operating instructions at all times.

#### 15.01.02. Vacuum system

##### **15.01.02.01. Central vacuum compressor system**

###### **Technical Specification**

###### **Vacuum Plants**

3-FOLD PLANTS, medical vacuum plants with 3 pumps fully comply with the standard DIN EN 737-3.

2-FOLD PLANTS with only 2 pumps are following the DIN EN 737-3 standard, except for the requested quantities for vacuum pumps (3 instead of 2) and reservoirs (1 instead of 2). The export versions are producing vacuum with the same quality.

Vacuum is produced by pumps. The pumps are driven by electric motors, the tank acts as a reservoir, the air intake is protected by a secretion trap and a bacteria filter system. Taking various aspects into consideration e.g. economics, reliability, service, oil-lubricated rotary pumps are selected.

A twin set bacteria-filter prevents contamination of reservoir, pumps and expired air. The secretion trap allows separating of secretions and fluids before entering the bacteria filter and reservoir.

The electric control board incorporates all controls, switch gears to run the plant fully automatic or under manual control. The pumps are running on basic and peak load.

The load interval changes after each starting. Duplex or triple set up of all major items due to service repair give full supply at any time.

###### **Vacuum Pumps**

Vacuum pumps fully comply with the standard DIN EN 292, 294, 1012 and 60204-1.

Rotary vane vacuum pumps are directly driven, oil-lubricated, air-cooled, of low noise and vibration free. For a rated power of 5,5 kW or bigger the start-up is done in star-delta in combination with an internal vacuum bypass system.

All offered vacuum pumps are designed for a vacuum of up to 98 %. The pumps are automatically vented in standstill.

An internal non-return valve protects the vacuum system. The oil-mist separator prevents environmental pollution and loss of oil.

###### **Vacuum Control Panels**

Vacuum control panels fully comply with the standards DIN EN 60204, DIN 31000, VDE 0108, UVV-VBG 4, VDE 106-part 100/03.83, VDE 0106-part101, VDE 0660-part 500, DIN 57660.

Vacuum control panel for the fully automatic operation and monitoring of vacuum plants.

The control panel incorporates all necessary switch and control elements for the reliable operation of the vacuum plant, means in and outlet terminals, safety facilities, spare fuses, spare part list and wiring diagram pocket mounted at inside of door.

There are separate control circuits for each vacuum pump, so that in case of failure the entire part of the electric system sets the other pump in operation.

Each vacuum pump has its own relay (up to 4 kW) or star-delta switch, selection switch (hand-O-automatic), hour-counter, lamp for operation and for malfunction and follow-up control for limitation of switching cycle.

#### **15.01.02.02. Copper-Pipes - Hard**

Copper-pipes -hard fully comply with the standard DIN EN 737-3.

Special copper pipe for medical gases. They are degreased and cleaned from the inside so that the residual grease on the interior surface will not exceed 0.2 mg/dm<sup>2</sup>.

The test for leaks, homogeneity of material and freedom from tears is carried out in an eddy-current tear tester as per DKI material test sheet no. 781.

Identification is carried out by consecutive lengthwise, durable stamping, e.g.: pipe dimension, manufacturing quarter/year, manufacturer.

Hard copper pipes are sealed at the ends by means of plastic plugs and are supplied in a length of 5m.

#### **15.01.02.03. Bottle, suction, central vacuum, rail connection,**

##### **General Description:**

Bottle for collection of secretions that are aspirated by the suction tube at the patient bed side. Forms part of the suction system used in clinical areas.

##### **Technical Specifications:**

Suction container with 1.5 l capacity suitable for connection to central vacuum.

Transparent to view level of contents.

Contains press fittings suitable for connection to suction hose.

Suction container should be autoclavable at 136° C

Suitable for automatic cleaning and disinfection.

Container capacity, l: 1.5

Overall weight, kg: 0.1

**Material:** Polysulfide, transparent

##### **Packaging and labeling :**

Primary packaging : Unit of use

One (1) Suction Container in protective plastic with manufacturer's instruction for use, spare parts and accessories.

##### **Labeling on the primary packaging:**

Refer General requirements

##### **Accessories/Spare parts/Consumables:**

Supplied with a lid.

##### **Weight/Volume/Dimensions:**

- estimated weight: 0.10 kg

- estimated volume: 2 cdm

##### **Instructions for use:**

Connect suction container to suction regulator that is rail mounted. Ensure that the lid of the container is secured air tight.

#### **15.01.03. Compressed air system**

##### **15.01.03.01. Central compressed air system,**

**Description:** Compressed Air Plants, low capacity

##### **Technical specifications**

3-FOLD PLANTS Compressed air plants with 3 compressors fully comply with the standard DIN EN 737-3.

2-FOLD PLANTS Special versions with only 2 compressors are following the DIN EN 737-3 standard, except for the requested quantities for compressors (3 instead of 2) and air receivers (1 instead of 2). The export versions are delivering breathing air with the same quality.

Compressed air is produced by compressors. The compressors are driven by electric motors, the air is stored in a receiver and prepared for medical use by passing through dryer and filter.

Taking various aspects into consideration e.g. economics, reliability, service, oil lubricated piston compressors are selected. The air receiver size is related to compressor output to comply with the hourly stop and start ratio laid down by the manufacturer.

Air dryers, refrigeration type, are fitted to reduce humidity. The required cleanness is achieved by special filters. Pressure reducers related to flow give constant line distribution pressure.

The electric control board incorporates all controls, switch gears to run the plant fully automatic or under manual control. The compressors are running on basic and peak load. The load interval changes after each starting. Duplex or triple set up of all major items due to service and repair give full supply at any time.

The breathing air quality according to DIN EN 737-3 (edit. 11/98) supplied into the distribution system shall be:

- Humidity below +5 °C at pipeline pressure
- Oil contents less than 0,5 mg/m<sup>3</sup>, no odour or taste
- CO<sub>2</sub> less than 1000 PPM V/V
- CO less than 5 PPM V/V (according to ISO 7396)

### **Compressors for Breathing Air**

Compressors for breathing fully comply with the standard DIN EN 286-1, 292, 294, 50081, 50082 and 60204-1. Compressor unit complete with all necessary cooling and monitoring devices for operation with external control panel. There are different types of compressors available. Piston compressors series DWRML, DWSRM, DWRM, DWSBM (mounted on horizontal receiver), DWSC (in compact super-silenced tower design) as well as screw compressor series DWLS (in compact super-silenced design).

The compressors are oil-lubricated, driven by electric motor with V-belt, pressure released during start.

Compressor and motor are mounted on a common frame, drive protected by a cage, air intake fitted with a filter, anti-vibration mounting,

### **Air Receivers**

Air receivers fully comply with the standard DIN EN 737-3.

Vertical receiver, internally and externally zinc plated, outside surface painted (RAL 5012, blue), tested and certified by Technical Supervisory Board (TÜV).

Pressure gauge, type-approved safety-valve, test connector for official retest procedure.

### **Air Dryers**

Air dryers fully comply with the standard DIN ISO 7183 UVV VBG 20, VBG 4, EN 60335, EN 50081, EN 50082. For removing moisture from compressed air by lowering the dew point temperature. Cooling takes place in two steps. In the air/air heat exchanger a first pre-cooling takes place by counter current against the outflowing, cold and de-moisturized compressed air. Further cooling down to the pressure dew point takes place in the refrigerant/air heat exchanger which is being cooled by a refrigeration circuit.

Automatic performance regulation enables the dryer to operate continuously within the range of 100 % to 0 % capacity. The condensate arising during the entire cooling process is automatically collected and discharged by a pneumatic resp. microprocessor controlled condensate drain. To prevent condensate formation on the outside of the downstream pipe work the treated compressed air is re-heated before its outflow in the air/air heat exchanger. The air dryer is equipped with an operating alarm. Operating alarm and condensate

### **Air Filters and Reducing Stations**

Air filters and reducing stations fully comply with the standard DIN EN to generate breathing air quality via two three-stage filter combinations arranged in parallel.

Pre filter stage for permanent separation of solid particles, oil, water aerosols down to 0.01 microns. Condensate drain via float valve. Activated charcoal filter stage for adsorption of oil vapor and odor, high efficiency due to longitudinal flow through the cartridge. Bacterial filter class S with penetration rate less than 0.03%. Consisting of folded glass fiber paper, enclosed in a perforated stainless steel cage. Filter material coated with a mixture of metallic copper and silver to have of bactericidal and bacteriostatic effect on fungi, bacteria, spores. 2 pressure reducers arranged in parallel to reduce the receiver pressure to 5 bar line pressure, complete with pressure gauge and safety valve.

8 ball valves to allow maintenance or repair work to be carried out without interruption of the air supply. All items are mounted on a common steel panel.

### **Compressed Air Control Panels for Piston Compressors**

compressed air control panels for piston compressors fully comply with the standards DIN EN 60204, DIN 31000, VDE 0108, UVV-VBG 4, VDE 106-part 100/03.83, VDE 0106-part 101, VDE 0660-part 500, DIN 57660.

Control panel for the fully automatic operation and monitoring of compressed air plants with piston compressors of series DWSBM, DWSRM and DWRM.

The control panel incorporates all necessary switches and control elements for the reliable operation of the compressed air plant, means in and outlet terminals, safety facilities, spare fuses, spare part list and wiring diagram pocket mounted at inside of door.

### **15.01.03.02. Central compressed air system, high capacity**

**Description:** Compressed Air Plant 1319 l/min

#### **Technical Specifications**

3-fold air plant, complete.

**Free air delivery:** 79.1 m<sup>3</sup>/h - 1319 l/min consisting of:

#### **3 x Piston Compressor DWSRM 1640**

Compressor unit complete with all necessary cooling and monitor devices for operation with external control panel.

#### **Equipment / scope of supply:**

Electric motor driven via V-belt, oil-lubricated, two-stage, air cooled, for generating a working pressure of max. 15 bar.

Motorshaft, V-belt and fan flywheel are enclosed by a cooling air hood,

Cooling air hood dismantable, for precise guidance of cooling air over cylinder, cylinder heads and after cooler,

low and high pressure stages are secured by safety valves, air intake succeeds via sound absorbing filter,

3 phase motor and compressor with tensioning device mounted on a common steel base frame, equipped with

electromagnetic vent valve for unloading during start-up, pressure switch for monitoring system pressure,

complete with non-return valve, flexible connecting hose, elastic bearings and oil filling.

Color: RAL 5012 (blue)

Operating pressure: 15 bar max., two stages

Free air delivery: 79.1 m<sup>3</sup>/h - 1319 l/min at STP

Number of cylinders: 4

Motor: 11,0 kW

Revs: 1130 1/min

Operating voltage: 400 V / 50 Hz AC

Control voltage: 230 V / 50 Hz AC

Sound level: 82 dB (A)

Cooling air demand: 5800 m<sup>3</sup>/h

Measurements (w x h x d): (1330 x 930 x 740) mm

Weight approximate: 260 kg

#### **2 x Air Receiver 1500 L**

In vertical version, internally and externally galvanized, externally varnished in color RAL 5012 (blue).

With pressure gauge, control flange, type-approved safety valve as well as manufacturer's certificate acc. § 9 of German Pressure Vessel Regulations.

Size of air receiver 1500 L

Operating pressure: 16 bar

Dimensions (h x d): 2200 x 1000 mm

Weight approx.: 595 kg

#### **2 x Bekomat 10**

Electronic level-adjusted drain valve.

Condensation level measured by an electronic sensor head.

Malfunction indication by means of a signal lamp and an additional potential free contact.

Test button for function control.

#### **2 x Air Dryer SD 80 AS**

Refrigeration type air dryer to dry the air by cooling it to a temperature of +5°C dew point at working pressure, which is equivalent to -27°C at 1013 mbar atmospheric pressure.

Flow rate: 95.6 m<sup>3</sup>/h

Power supply: 230V, 50Hz

Maximum power consumption: 0.35 kW/ describe

Dewpoint 5°C

Connection air: G 3/4"

Ambient temperature +2°C to +45°C

Cooling air: 450 m<sup>3</sup>/h

Weight approx.: 44 kg

Dimensions (w x h x d): 450 x 500 x 450 mm

Color: blue, similar RAL 5012

Flow rate at 12 bar operating pressure, ambient temperature 30 °C, air inlet temperature 35 °C, dew point 5 °C

**1 x Air-Filter Reducing Station 2**

To generate breathing air quality via three-stage filter combinations arranged in parallel.

All items are mounted on a common steel panel.

**Three stage filtering system consisting of:**

**PRE-FILTER STAGE:**

Smallest particle size 0.01 µm

Residual oil content, at 7 bar and 21 °C: below 0.5 mg/m<sup>3</sup>

Connector for condensate discharge: ISO 228/1-G 1/8

**ACTIVATED CHARCOAL STAGE**

Oil adsorption rate: free from oil vapor and odor

Adsorption capacity: 100 g

**BACTERIAL FILTER STAGE**

Filtration 99,7 % acc. to DIN 24148 (test aerosol 1)

Flow rate: 2 x 190 m<sup>3</sup>/h

Operating pressure: 2 x 5 bar and 2 x 8 bar (optional)

Inlet pressure: max. 16 bar

Inlet connection: soldered connector 22mm (diameter)

Outlet connection: soldered connector 22mm (diameter)

**1 x Pressure Reducer Set 150/8**

Complete with gauge, safety valve, fixing bracket and ball valve for extension of filter and reducing station 2.

Flow rate: 150m<sup>3</sup>/h

Outlet pressure: 8 bar

**1 x Distributor Block 3-fold / NB**

for the connection to Dräger pressure control panels RS 20, RS 80, GCS 80 or GCS 90 for non-flammable and non-corrosive gases, including ball valves and line pressure gauges.

Screw connector: G 1

Outlet pipe: 3 x DN 20

**1 x Set of Fittings 3 (SRM 35-3/2)**

Set of fittings for piping components within the breathing air plant, comprising all necessary bends, sockets, T-pieces, screw couplings, reducers; without pipes, valves and fixing materials.

**2 x Ball Valve, DN 10 - 12x1**

Ball valve with male screw threads and flat tightened solder unions, front ends with slots to incorporate o-ring, oil-free and degreased, for medical gases and vacuum, handle with safety securing in open position, marked acc. DIN EN 19.

Nominal pressure: 16 bar

**10 x Ball Valve, DN 20 - 22x1**

Ball valve with male screw threads and flat tightened solder unions, front ends with slots to incorporate o-ring, oil-free and degreased, for medical gases and vacuum, handle with safety securing in open position, marked acc. DIN EN 19.

Nominal pressure: 16 bar

**1 x Compressed Air Control Panel 3X5,5-11KW**

Control panel for the fully automatic operation and monitoring of breathing air plants with 3 piston compressors of series DWSBM, DWSRM and DWRM.

Housing made of sheet steel, lockable with two-way key; designed for wall mounting, cable inlet from below, with terminal strips for main power supply, motor and BMS incl. spare fuses and bulbs. Documentation acc. to DIN 40719 and DIN 40700 stored in wiring diagram pocket mounted at inside of door.

The control panel incorporates all necessary switch and control elements for the reliable operation of the compressed air plant, in particular:

1 main switch in front door acc. to VDE 0113/IEC 204,

3 star-delta switches,

3 electric kits for monitoring pressurization of compressor,  
 3 control transformers 230V/230V-250VA,  
 3 control circuits (1 x per compressor), so that the entire system will be in working condition if one fuse fails  
 1 automatic change over from basic to peak load after each starting  
 1 control transformer 230V/24V-50VA,  
 9 light indicators, 24V, for reports "fuse failure", "operation" and "motor malfunction",  
 1 lamp test device 24V,  
 3 selector switches (H-0-A) with automatic reset to null position from hand position,  
 3 adjustable pressure switches for compressor triggering, pre-adjusted at:  
 basic load on 12,0 bar / off 15 bar  
 peak load on 11,5 bar / off 15 bar  
 reserve on 10,5 bar / off 15 bar  
 1 pressure contactor for malfunction "ca breaks down", pre-adjusted at 10 bar decreasing,  
 1 shut-off and 1 ventilation valve as well as 1 gauge, mounted together with pressure switch and pressure contactor to a pneumatic control section, for precise adjustment of pressure settings and function check during operation, copper pipe connection 12x1,  
 3 hour counters,  
 11 potential-free make- and break contacts with isolating terminals (including transparent covers) for the reports "break down compressed air", "operation compressor 1", "operation compressor 2", "operation compressor 3", "malfunction compressor motor 1", "malfunction compressor motor 2", "malfunction compressor motor 3", "failure fuse 1", "failure fuse 2", "failure fuse 3", "malfunction air dryer", Output: 3 x 5,5 - 3 x 11,0 KW, SD, 3 star delta switches  
 Power supply: 400V, 50 Hz  
 Protection Class IP 55  
 Color: Control panel RAL 7032 (grey)  
 Mounting plate RAL 2000 (orange)  
 Weight approx.: 100 kg  
 Dimensions approx. (w x h x d): 1000 x 1400 x 300 mm

#### 15.01.04. Gas distribution system

##### **15.01.04.01 Copper pipe**

**Description:** Copper Pipe CUF37, 8x1 - 54x2

Quantity: 4200 m

Including fittings and fixation material

##### **15.01.04.02 Area Control Unit**

**Description:** For 2 Gases (O<sub>2</sub>, Air) and 1 Vac (DN 8)

##### **Technical Specifications**

Quantity: 7pcs

for oxygen - compressed air - vacuum with control block DN 8, flush mounted version with integrated clinical alarm. consisting of:

##### **1 x Valve Box, Basic Part**

For flush resp. surface mounting or for installation in plasterboard walls, plaster compensation up to 20 mm, basic part for fixing 3 valve or vacuum installation sets resp. 3 pressure reducer sets.

Measurements (w x h x d): (440 x 440 x 92) mm

##### **1 x Valve Box, Upper-Part with door for installation in basic part, with emergency opening, lock, key and identification label.**

Measurements (w x h x d): (452 x 452 x 92) mm

##### **1 x Valve Block O<sub>2</sub> DN 20**

gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

##### **1x Valve Block Air DN 20**

gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

1 x Control Block Vacuum DN 8 including connector for gauge or switch gauge set.

**1 x Switch Gauge Set 5 bar O2**

Pressure range: 0 - 16 bar

**1 x Switch Gauge Set 5 bar NB**

Pressure range: 0 - 16 bar

**1 x Switch Gauge Set Vac**

Pressure range: -1 to 0 bar

**1 x Power Pack / Top Hat Rail**

for supply of electronic subgroups with 24V power supply according to EN 60742.

AC power pack with fuse on the secondary side and fixed screw terminal for 230V Input (P, N) and 24V AC output. Assembled on DIN hat rail assembly feed

Power supply: 230 V AC

Output: 24 V AC +/- 10%

Fuse: 1.6 A slow blow(optional)

Current consumption: 35 VA/ describe

Safety class: IP 20

Dimensions (w x h x d): (87.5 x 93 x 66.5) mm

Weight: 400 g

**1 x Gas Monitor Base**

Emergency alarm panel for installation in EN valve box. Initiation of the visual (LED) and audible alarm (buzzer) for up to 3 gases by means of external contactors or switch gauge

**1 x Front Plate Set 3 / Mon. G**

For covering the 3 installation ports of the valve box top part, consisting of 3 electronic components.

**15.01.04.03 Area Control Unit**

**Description:** Control for 3 Gases (O2, Air, N2O) and 1 Vac (DN 8)

**Technical Specifications**

Quantity: 2 pcs

For oxygen - compressed air - nitrous oxide - vacuum with valve block DN 25, flush mounted version with integrated clinical alarm.

Consisting of:

**2 x Valve Box, Basic Part**

for flush resp. surface mounting or for installation in plasterboard walls, plaster compensation up to 20 mm, basic part for fixing 3 valve or vacuum installation sets respectively 3 pressure reducer sets.

Measurements (w x h x d): (440 x 440 x 92) mm

**2 x Valve Box, Upper-Part**

With door for installation in basic part, with emergency opening, lock, key and identification label.

Measurements (w x h x d): (452 x 452 x 92) mm

**1 x Valve Block O2 DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**1 x Valve Block Air DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**1 x Valve Block N2O DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**1 x Control Block Vacuum DN 8** including connector for gauge or switch gauge set.

**1 x Switch Gauge Set 5 bar O2**

Pressure range: 0 - 16 bar

**2 x Switch Gauge Set 5 bar NB**

Pressure range: 0 - 16 bar

**1 x Switch Gauge Set Vac**

Pressure range: -1 to 0 bar

**1 x Power Pack / Top Hat Rail**

for supply of electronic subgroups with 24V power supply according to EN 60742.

AC power pack with fuse on the secondary side and fixed screw terminal for 230V Input (P, N) and 24V AC output. Assembled on DIN hat rail assembly feed

Power supply: 230 V AC

Output: 24 V AC +/- 10%

Fuse: 1.6 A slow(optional)

Current consumption: 35 VA/ describe

Safety class: IP 20

Dimensions (w x h x d): (87,5 x 93 x 66,5) mm/ describe

**2 x Gas Monitor Base**

Emergency alarm panel for installation in EN valve box. Initiation of the visual (LED) and audible alarm (buzzer) for up to 3 gases by means of external contactors or switch gauge

**2 x Front Plate Set 2 / Mon. G**

for covering the 3 installation ports of the valve box top part, consisting of 2 electronic components and 1 blind plate.

**15.01.04.04 Area Control Unit**

**Description:** Control for 4 Gases (O<sub>2</sub>, Air, Tool Air, N<sub>2</sub>O) and 1 Vac (DN 8)

**Technical Specifications**

Quantity 3pcs

For oxygen - compressed air - nitrous oxide - tool air - vacuum with control block DN 8, flush mounted version with integrated clinical alarm. Consisting of:

**2 x Valve Box, Basic Part**

For flush resp. Surface mounting or for installation in plasterboard walls, plaster compensation up to 20 mm, basic part for fixing 3 valve or vacuum installation sets resp. 3 pressure reducer sets.

Measurements (w x h x d): (440 x 440 x 92) mm

**2 x Valve Box, Upper-Part**

With door for installation in basic part, with emergency opening, lock, key and identification label.

Measurements (w x h x d): (452 x 452 x 92) mm

**1 x Valve Block O<sub>2</sub> DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**2 x Valve Block Air DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**1 x Valve Block N<sub>2</sub>O DN 20**

Gas specific with valve, physical separation, NIST emergency inlet point and connector for gauge/switching gauge.

**1 x Control Block Vacuum DN 8**

Including connector for gauge or switch gauge set.

**1 x Switch Gauge Set 5 bar O<sub>2</sub>**

Pressure range: 0 - 16 bar

**2 x Switch Gauge Set 5 bar NB**

Pressure range: 0 - 16 bar

**1 x Switch Gauge Set 8 bar NB**

Pressure range: 0 - 16 bar

**1 x Switch Gauge Set Vac**

Pressure range: -1 to 0 bar

**1 x Power Pack / Top Hat Rail**

For supply of electronic subgroups with 24V power supply according to EN 60742.

AC power pack with fuse on the secondary side and fixed screw terminal for 230V

Input (P, N) and 24V AC output. Assembled on DIN hat rail assembly feed



Power supply: 230 V AC  
Output: 24 V AC +/- 10%  
Fuse: 1,6 A slow  
Current consumption: 35 VA  
Safety class: IP 20  
Dimensions (w x h x d): (87,5 x 93 x 66,5) mm  
Weight: 400 g

**2 x Gas Monitor Base**

Emergency alarm panel for installation in EN valve box. Initiation of the visual (LED) and audible alarm (buzzer) for up to 3 gases by means of external contactors or switch gauge

**1 x Front Plate Set 2 / Mon. G**

For covering the 3 installation ports of the valve box top part, consisting of 2 electronic components and 1 blind plate.

**1 x Front Plate Set 3 / Mon. G**

for covering the 3 installation ports of the valve box top part, consisting of 3 electronic components.

**15.01.04.05 Gas Monitor 6 G**

**Technical Specifications**

Quantity: 3 pcs

Emergency alarm panel according to DIN EN 737-3 for monitoring the operating conditions for max. 6 gases. Initiation of visual (LED) and audible alarm (buzzer) for up to 6 gases. Separate evaluation and alarm for line pressure "low"/"OK"/"high" for each gas.

Voltage: 24 V AC/DC

Max. power consumption: 30 VA (AC); 14 W (DC)

Relay driver outlets: 24 V max. 50 mA/ describe

Measurements (w x h x d): (225 x 125 x 45) mm

**15.01.04.06 Gas Monitor 3G**

**Technical Specifications**

Quantity: 1 pcs

Emergency alarm panel according to DIN EN 737-3 for monitoring the operating conditions for max. 3 gases. Initiation of visual (LED) and audible alarm (buzzer) for up to 3 gases. Separate evaluation and alarm for line pressure "low"/"OK"/"high" for each gas.

Component with flush-mounted cover frame, foil-covered front and circuit board screwed on rear-side for flush or surface mounting. Initiation of the visual (LED) and audible alarm (buzzer) for up to 3 gases by means of an external contactor or switch gauge. Separate evaluation and alarm for line pressure low/OK/high.

When not in use, 1 or 2 alarm circuits can be deactivated by means of inserting plug bridges.

Inserting a component, allows the full functionality of Dräger's system network to be post-installed.

When the alarm sets off, the related relay driver becomes deactivated. This way, a report can be forwarded to other architectural systems. The combined acknowledge/test buttons are used to mute the audible alarm for approx. 15 min., while at the same time, the LED-display changes from flashing light to steady light. The same buttons are used to carry out a visual and audible alarm function test and also a relay driver outlet function test. A permanent muting of alarm is obtained with a button that can only be activated by service workers. Resetting occurs automatically.

Visual and audible alarms, as well as acknowledge/test buttons are situated on a separate circuit board which is directly attached to the main circuit board.

**Gas Monitor 3G complete, equipped with:**

2-pole spring terminal for power supply,

3-pole spring terminal for network, (optional)

Voltage: 24 V AC/DC(optional)

Max. Power consumption: 15 VA (AC); 7 W (DC)

Relay driver outlets: 24 V max. 50 mA/ describe

Measurements (w x h x d): (125 x 125 x 45) mm/ describe

#### **15.01.04.07 Operation Signal 5 EN**

##### **Technical Specifications**

Quantity: 4 pcs

Operating alarm signal according to EN 737-3 for initiation of visual (LED) and audible alarms (buzzer) through external contactors or potential-free contacts.

Measurements approx. (w x h x d): 24 x 80 x 35 mm

Weight: approx. 180 g

Power supply: 24 V AC +15%/-20%, 24 V DC +25%/-20%

Current consumption: 8 VA (AC); 170 mA/5W (DC)

Potential-free contacts: 48 V / 1 A

Sound pressure level: > 60 dB(A)

Safety class: IP 44

#### **15.01.04.08 Ceiling and Wall Supply Units**

##### **Technical Specifications**

Quantity: 4pcs

Height-adjustable, 1-arm ceiling supply unit with pendant column and integrated adapter for anaesthesia machine.

The basic unit consists of a ceiling mount, an arm-system, and a pendant column. The arm-system is made of extruded aluminum. The ends of the arm are covered with removable caps which allow easy access to the bearings and brakes in case of maintenance. The height-adjustable arm allows individual vertical adaptation to the working conditions. The swivel joints are equipped with pneumatic brakes.

The swiveling range is 330° and can be adjusted on site according to local demands. The pendant column with ball bearing is connected by means of a suspension tube to the arm system. The possible rotation of 330° is controlled by a friction brake.

The basic unit is completely assembled and tested at works. It will be delivered ready for attachment to the pre-installed ceiling fixture. The installation material for connecting the ceiling supply unit to medical gas piping system and to electrical supply network is included.

The pendant column is intended to accommodate the gas and electrical components as well as to be attached with additional accessories for carrying the medical equipment. (Offered gas and electrical components as well as accessories can be found in the specification below).

Intended for room: According to drawing: Min. room height: 2486 mm

Net carrying capacity: Max. torque: 2050 Nm

consisting of:

##### **A. BASIC UNIT**

##### **1 x Ceiling Fixture, Anchor-Mounting (600mm)**

Consisting of HLS anchors, sub-ceiling flange, set of distance tubes, reinforcement, mount set tubes and flange.

Height of false ceiling: < 600 mm

##### **7 x Installation Set for Gas**

Sub-components for mounting on the false ceiling flange to connect gases like O<sub>2</sub>, N<sub>2</sub>O, Vacuum, Air or CO<sub>2</sub> to the central piping system. For each gas circuit 1 installation set is required.

The set consists of:

1 adaptor with hose barbs

1 divisible adhesive label

1 rubber cap 6 mm

1 clamp for tube (clamps are available in 8, 12 or 15 mm)

1 clamp for rubber cap

##### **1 x Kit Ejector**

Contains connecting pieces for ceiling pendant Replacement

##### **1 x Ejector**

##### **1 x Installation Set Electro**

Sub-component for mounting to false ceiling flange. Consisting of connector block for electric circuits, cable holders, set of mounting material and divisible adhesive

##### **1 x Ceiling Bearing Set 1 Arm System, Middle Weight**

Ceiling bearing set for attachment of Movita 600X or 603X to a ceiling fixture.

Consisting of ceiling hood and ceiling bearing tube. Ceiling hood: (600 x 600 x 170) mm

**1 x Lifting Arm System (900 mm)**

Height adjustment: 600 mm

Power supply: 230 V 50Hz

Motor power: 300 W/ describe

**1 x Pendant Column**

Consisting of pendant column 6000 with front rails, operating panel for lift and brakes with socket for cable remote control and the complete adapter. The adapter includes NIST connectors for O<sub>2</sub>, Air, N<sub>2</sub>O and Vac as well as AGSS and a cable to supply.

**\*\*\* GAS OUTLETS / ELECTRICAL COMPONENTS \*\*\***

**2 x Set of Components for 1 Gas Terminal Unit**

1 x Compressed Air (Air7)

1 x Vacuum (VAC)

**8 x Set of Components for 1 Electric Socket**

Consisting of socket with potential equalization, hose material, mounting material and mounting plate.

**3 x Installation of 1 Manometer MANO**

**\*\*\* ACCESSORIES \*\*\***

**1 x Cable Remote Control for Movita 603X J, DVE 808X**

To operate height adjustment and pneumatic brakes.

**15.01.04.09 Intensive Care Supply Unit**

Quantity: 2 pcs

This supply unit is for single intensive care workplace.

It consists of a pre-assembling set and a horizontal supply beam with 2 travelling crabs that can be equipped with an equipment carrier or an equipment tube. The beam is made of extruded aluminum, has a pleasing design and a closed surface. On the upper side of the profile a light module for indirect lighting is included.

The travelling crabs are attached from below, running in a wear-resistant slide rail, and can be moved along the whole length of the beam. The supply beam is completely assembled and ready for attachment to the pre-installed ceiling fixture. The travelling crab and accessories will be installed on site. The installation material for connecting the Ponta C to medical gas piping system and to electrical supply network is included.

The front and the rear side of the Ponta beam can be equipped with medical gas outlets and electrical components according to the customer requirements. Optionally, the beam can be equipped with reading light or guard light on the front side of the profile. (Offered gas and electrical components, lighting, as well as accessories can be found in the specification below.)

Intended for room: According to drawing: Min. room height:

Net carrying capacity, left side:

Net carrying capacity, right side: per carrier: 150 kg

per shelf: 40 kg

Consisting of:

**A.BASIC UNIT**

**1 x Installation Set Electro**

Sub-component for mounting to false ceiling flange. Consisting of connector block for electric circuits, cable holders, set of mounting material and divisible adhesive

**2 x Mounting Set Ceiling - Pre Installation**

**2 x Distance Tube 1500 mm - Pre Installation**

**1 x Connection Set**

**1 x Connection Set (without media plate)**

**1 x System Beam (3100 mm), Complete**

Consisting of 1 system beam, 12.4 m colored stripes, 2 top cover plates (middle), 2 top cover plates (end) and 1 lamp kit (complete).

**1 x Endcover Set**

Endcover set for system units, right and left.

**1 x Travelling Crab (equipment carrier)**

Travelling crab for equipment carrier with two mechanical brakes (against moving and rotating) and one standard rail 25 x 10 mm.

**1 x Travelling Crab (equipment tube)**

Travelling crab for equipment tube with one mechanical brake (against moving) and one standard rail 25 x 10 mm.

**1 x Ponta Indirect Light, Non Adjustable**

Light element without dimmer

Power: 36 W / 230 V / describe

Light bulbs not included.

**1 x Fluorescent Lamp 36 W for Indirect Lighting**

**1 x Down Light**

Consisting of 2 Down Lights.

Power: 20 W / 12 V/optional

Swivel range: 20 °

Color: white

Diameter: 54 mm

Light bulbs not included.

**1 x Halogen Spot Lamp 20 W / 12 V for Ponta Down Light**

**B. GAS OUTLETS / ELECTRICAL COMPONENTS**

**6 x Set of Components for 1 Gas Terminal Unit**

x Oxygen (O<sub>2</sub>)

1 x Compressed Air (Air)

2 x Vacuum (VAC)

**16 x Set of Components for 1 Electric Socket**

Consisting of socket with potential equalization, hose material, mounting material and mounting plate.

**1 x Set of Components : Telephone**

Consisting of installation socket, set of installation material, set of mounting material and set of mounting plates.

**1 x Set of Components: Nurse Call**

Consisting of socket (28-pole), nurse-calling system, set of installation material, set of mounting material and set of mounting plates.

**2 x Installation of Contributed Communication Socket**

sockets has to be delivered by customer to the company

**C. ACCESSORIES, LEFT SIDE**

**1 x Infusion Equipment Pole Set, Type 1 Narrow**

Consisting of support tube 1500 mm, tube attachment set for pendant head, infusion bottle holder, 2 compact rails, 4 rail holder short/long and 2 small

**d. ACCESSORIES, RIGHT SIDE**

**1 x Equipment Carrier Vent./ Mon. 1,5B**

Consisting of cross bar, 2 support tubes 1500 mm, 2 shelves and parallel rail.

Width: 690 mm

Surface area of shelf (wxd): (640 x 340) mm

## 15.02. Low Voltage systems

### 15.02.01. Nurse Call

#### 15.02.01.01. Central nurse call

By pressing button, signal will be set:

\* on the door side station

\* in the corridor

\* in the room

#### 15.02.01.02. Peripheral nurse call

Call from patient rooms, bathrooms and lavatories.

When call is placed, signals will be set:

- \* in the room
- \* in the corridor
- \* in the main group of lights
- \* in other rooms of same group
- \* Presence facilities

### **15.02.01.03 Wireless patient monitoring system**

#### **SPECIFICATIONS**

##### **General**

Dimensions: 21 x 47 x 147 mm (0.8 x 1.9 x 5.8 inch)  
 Weight: 210g (7.4 oz) including batteries  
 Cabinet material: ABS (polylac ABS F00)  
 Battery supply: 2 x 1.5 V alkaline, size AA (R6)  
 Power consumption: Approximately 45 mW  
 Operating time: approximately 7 days with two alkaline batteries, valid operating voltage is 2.1 to 3.5V. below 2.1 V, battery alarm is transmitted, and below 1.8 v, the transmitter stops operating

##### **ENVIRONMENT**

**Operating conditions:** Temperature: +10 to + 40 °c (+50 to 104 °F)  
 Humidity: 10 to 95% RH (Non-condensing )  
 (T3 1xx series: watertight to IPX7 for short term exposure)  
 Pressure: 700 to 1,060 hPa  
**Storage conditions:** Temperature: - 40 to +70<sup>0</sup>c ( -40 to 158 °F)  
 Humidity: 10 to 95 % RH (Non-condensing)  
 Pressure: 500 to 1,060 hPa

##### **TRANSMITTER**

Frequency range: VHF: 212 to 235 MHz, UHF; 430 to 470 MHz  
 Channel separation: 25 KHz  
 Channel selection: Crystal  
 Frequency tolerance: VHF; 2.0 KHz, UHF; 2.5 KHz (within full battery voltage range)  
 Output power: 1 mW ± 2 db  
 Neighbor Channel radiation: <200 nW (-37 dBm)  
 Spurious radiation: 47 – 74 MHz, 87.5 – 118 MHz, 174 – 230 MHz and 470 – 862 Mhz: <4 nW 9 - 54 dBm), else <250 nW (-36 dBm)  
 Antenna: Neutral electrode  
 Modulation: BPSK  
 Error correction: CRC  
 Enhanced burst error correction: Integrated transmission

##### **ECG AMPLIFIER:**

Input T 3124: Two balanced amplifiers, 4 electrodes: Red = A+, Green= A – and B-, yellow = B +, Black = Neutral  
 Input T 3125: Two balanced amplifiers, 5 electrodes: Red = A +, Green = A -, yellow = B +, White = b -, Black = Neutral  
 Input Impedance: > 5 M Ω/ < 500 pF differential

### **15.03. Air treatment**

#### **15.03.01. Air treatment**

##### **15.03.01.01. Air handling unit small**

##### **15.03.01.02. Air handling unit big**

#### **15.03.02. Air conditioner**

##### **15.03.02.01. Air conditioner**

##### **15.03.02.02. Fan**

#### **15.03.03. Temperature Controller**

##### **15.03.03.01. Thermometer**

**15.03.03.02. Thermostat**

15.04. Medical Sanitary

15.05.01. Scrub Unit

15.04.01.01. Scrub unit 1 position

**15.04.01.02. Scrub unit 3 position**

## 16 Waste Management



**Photo 16: Waste Pedal-bin, Colored plastic bags**

### 16.01. Waste Collection and Disposal

16.01.01 Collection, peripheral

#### **16.04.01.01 Pedal bin**

**General Description:** heavy duty pedal enables hands free Waste Disposal

**Technical Specifications:**

Material: Powder-coated galvanised steel.

**Key Features**

Hygienic, easy-clean surface

Quiet, Heavy Duty piano hinged pedal.

Hands free operation reduces the risk of cross-contamination ensuring more hygienic waste disposal.

Odours are contained in the bin thanks to the specially designed lid.

Leak proof rigid liner for easy and hygienic waste disposal.

Fire safe with self extinguishing design.

Restraint mechanism minimises damage to walls/equipment.

Optional wheels and handle available on 150L

#### **16.01.01.02. Safety Box/ Sharp Container**

**General Description:** Contains sharp waste and that the risks of needle-stick injury, air and ground water pollution are minimized. [Sharps](#) safety box intended safely and efficiently to contain, transport and store used [sharps](#) until final destruction, safe disposal or recycling.

**Specifaications:**

**Functionality:** The safety box must safely contain contaminated [sharps](#):

- at the point of use;
- during temporary storage;
- during handling and transport to the point of treatment and final disposal.

**Shipping and storage volume before use:** Boxes must be supplied flat-packed or nested to minimize shipping and storage volume.

**Nominal capacity:** Boxes must accept no less than 20 nbr. 0.5ml [AD syringes](#) per nominal litre of

storage capacity. This capacity is to be achieved when syringes are dropped in randomly, needle first, with 25mm unsheathed non-retractable needles attached and plungers fully depressed. No syringe must protrude from the container or above the fill line and the box must be capable of being correctly and permanently closed without any risk of needle-stick injury.

**Maximum capacity:** The maximum capacity is allowed to exceed the nominal capacity of 20 syringes per nominal litre provided all the conditions of clause 4.2.3 still apply. Boxes must be fitted with a sharps aperture, capable of receiving syringes and needle assemblies of all standard sizes up to and including 20 ml, together with other sharps. It must be possible to close and seal the aperture at any time between empty and full to maximum capacity. The closure mechanism must pass the test for security of attachment of aperture closure devices.

**Handles:** Boxes must be supplied with a handle or other lifting device which allows the container to be carried safely with one hand. The lifting device must be positioned above the fill line, must not obstruct access to the sharps aperture, and must be sufficiently robust to ensure that it does not break during use and during transport to the disposal site. It must remain attached to the box when the box is filled with sharps to its maximum capacity and tested in accordance with BS 7320:1990, Appendix A.

**Colour:** Boxes can be the colour of unbleached sulphate board, or non-chlorine bleached white, or yellow.

**Bio-hazard marking:** Boxes must be clearly marked with the international bio-hazard warning not less than 50mm diameter, printed in black or red on each of the front and back faces of the box.

**Fill line:** The maximum recommended fill line must be clearly marked on all vertical faces of the box, in black or red.

**Resistance to penetration:** The average of forces needed to penetrate samples taken from each position must not be less than 15 N, and the minimum force required to penetrate any sample taken from any position must not be less than 12.5 N.

**Resistance to damage during drops from height:** Boxes must pass the drop test described in **E10/SB01-VP**. After 100 drops, no syringe should have fallen out of the container; the box should not be seriously damaged, and no more than one needle should have penetrated the container walls.

**Stability and spillage:** Boxes must not tip over when placed on a 15 degree non-slip plane with its short axis parallel to the line of tilt in general accordance with the test method in AS 4031:1992, Appendix D. If overturning occurs, the arrangement of the sharps aperture should minimize the risk that sharps are spilled.

#### **Environmental requirements:**

**Temperature resistance:** Cardboard boxes, filled to their maximum capacity, must be able to resist temperatures of up to 170°C for periods up to 30 minutes without spilling any part of the load.

**Water resistance:** Boxes, filled to their maximum capacity, must be able to withstand 48 hours at 43°C and 90% relative humidity in 5 mm of water, without spilling any part of the load.

#### **Physical characteristics:**

**Overall dimensions:** Assembled box dimensions should be selected to accommodate the full range of sharps and to allow effective filling of the box.

**Minimum dimensions:** The minimum height from the bottom of the container to the fill line must be no less than 150mm for 2.5 litre boxes and 230mm for other sizes.

**Sharps aperture dimensions:** 38 mm diameter, or 38mm width and breadth. Larger apertures are allowed, but must be fitted with an engineered protective feature – for example a flange on a plastic safety box.

**Weight:** No specific restriction, consistent with keeping shipping weight to a minimum.

**Interface requirements:** External dimensions should be chosen to allow the box to fit within the treatment loading mechanisms.

#### **Human factors:**

**Sharps aperture marking:** The aperture must be clearly visible against the colour of the container.

**Tamper-proofing:** To reduce the risk of needlestick injury, the lowest point of the sharps aperture must be at least 50 mm above the maximum recommended fill line marked on the exterior of the box.

**Handling:** It must be possible to carry the box in one hand without spillage of contents and without risk of needle stick injury, both before and after final closure of the sharps aperture.

**Materials:** The following materials are permitted:



Bio-degradable cardboard-based materials – post-consumer recycled material is preferred;

Other bio-degradable board materials.

Non-toxic inks, glues and dyes.

Hard recyclable plastic (plastic containers should not be incinerated).

Metal.

If incineration is the final treatment option, the following materials are not permitted:

Materials which are not bio-degradable.

Materials which emit ozone depleting substances as defined in the Montreal Protocol;

Materials which generate toxic emissions during incineration at any temperature between 650°C and 1,200°C;

Materials which release gases with a high global warming potential.

**Warranty:** 100% of boxes are to remain physically intact and satisfactory for use when used in compliance with this performance specification.

**Servicing provision:** The product is a consumable item with no maintenance requirement.

**Disposal and recycling:** Boxes are disposed of after a single use cycle if made of cardboard. If made of plastic or metal, they are typically taken to a treatment site to be reused, recycled or disposed of.

**Instructions:** In addition to the international bio-hazard symbol, clear pictorial instructions without writing are to be printed on two sides of the container showing:

How to assemble the box.

How to use the box as a container for contaminated sharps;

Syringe disposal direction (needle down).

How to close the sharps aperture when the box is full.

**Verification:** In accordance with PQS Verification Protocol **E10/SB01-VP**

**Packaging:** Recyclable cardboard is to be used.

**On-site installation :** Not applicable.

**On-site maintenance:** None required.

#### **16.01.01.03. Needle Cutter/ Remover**

**General Description:** A manually operated needle cutter comprises a cutting device and a needle container which allows health workers to make used syringes safe and harmless at the point of use immediately after administering an injection. Where not intended for stationary applications, the device should be easily portable. The device must be safe, easy and convenient to use, easily cleaned, affordable and reliable. Needles or needle residues are stored until the needle container is filled up to its designed maximum fill line, at which point the container must be removed, capped, and either disposed of or emptied. In the case of disposable needle cutter devices with integral containers and cutting assemblies, it should be ensured that the entire device is disposed of properly.

##### **Specifications:**

**Needle size:** The device should disable wet or dry needles, 10-76 mm in length and 18-28 gauge in diameter.

**Needle/syringe type:** The device should disable all ISO compliant syringe/needle combinations.

**Needle insertion:** All needles in the size range specified in the above clause should insert easily into the device, with little or no force.

**Cycle time:** Needle removal or cutting devices should have a maximum cycle time per needle exceeding 5 seconds.

**Needle entry geometry:** The needle aperture must be designed so that the needle can be inserted into the port at any angle lying within a 60 degree cone whose apex is centred on the aperture.

**Complete cutting:** The cutting blade configuration should ensure that the needle, needle hub, or syringe nozzle is completely cut or sheared. Incomplete shearing or other modes of disabling the needle, such as crimping or bending, are not allowed.

**Self-clearing mechanism:** The cutting mechanism must be self-clearing. Syringe or needle remnants remaining in the device must not impair its operation.

**Needle container attachment:** The needle container, if separable, must attach securely to the device so that tipping or dropping it does not separate the container from the cutting assembly.

Attachment of the needle container to, and subsequent removal from the cutting assembly should be safe, clean and easy. There must be no risk of needle stick injury during these operations.

**Operating life:**

**Non-disposable devices:** must withstand at least 100,000 cycles of operation, and require no major maintenance or user intervention, other than cleaning and lubrication, no more frequently than once every 10,000 cycles of operation.

**Disposable devices:** must withstand a minimum of 300 cycles of operation, prior to being discarded. Preferably, the number of cycles of operation should match the maximum capacity of the needle container.

**Splatter:** During or after normal use of the device, there should be no detectable contamination of:

Exposed skin, mucous membrane, or clothing of the operator.

Work surfaces or other surfaces adjacent to and surrounding the device.

The outer surfaces of the device which are accessible to the user, with the exception of the needle entry target area.

**Drop test (complete device):** The performance and safety of the cutting assembly must not be compromised by dropping from a height of 1,000mm onto a smooth concrete surface in accordance with the test method in IEC 60068-2-32. In devices with a removable needle container, the container must NOT be detached.

**Drop test (needle container only):** The container when full of needles and with the closure device engaged, should be dropped 100 times onto a smooth concrete surface from a height of 1000mm. No needles must fall out of the container. Not more than one needle must pierce any of the sides. The container must not be seriously damaged by the test.

**Tilt angle:** The device must not tip over, whether empty or full, when placed on a 15 degree non-slip plane with its short axis parallel to the line of tilt in general accordance with the test method in AS 4031:1992, Appendix D.

**Leak-proof:** The device cutting assembly. The container must pass the dropping, toppling and leakage tests described in BS7320:1990, Appendix D and Appendix E.

**Needle container puncture resistance:** The needle container must pass the penetration resistance test in BS7320:1990, Appendix C.

**Needle container capacity:** The needle container must hold at least 150 nbr. 20mm needles, and/or needle remains, without affecting operation of the device.

**Needle container capacity indication:** The needle container must be translucent enough to allow the user visually to detect the level of needles in the container. The sides of the entering. Needles should not protrude from the needle container when it is filled up the level of the fill line.

**Environmental requirements:**

**Operating environment:** The performance of the device must not be compromised by exposure to continuous ambient conditions of 43 °C and 90% relative humidity for a period of one week when the needle container is in any condition between empty and full.

**Chemical resistance:** The device should be resistant to saline solution and to mild chemical cleaning agents, including diluted bleach.

**Bio-hazard marking:** The needle container must be must not leak any liquid contents when placed in the upright position at any angle between 0 and 15 degrees.

**Needle escape prevention:** The cutting assembly must be designed to prevent the migration of cut needles from the needle container into the needle aperture.

**Cutting device closure mechanism;** If the device is intended to be carried with the needle container attached, the needle aperture must have a closure mechanism to prevent needles from falling out of the attached needle container in any orientation of the assembly.

**Needle container closure mechanism:** If the needle container is intended to be detachable, it must have a secure closure mechanism that prevents spillage of sharps after detachment from the cutting assembly, whatever the orientation of the container. Preferably the closure mechanism should engage automatically upon removal of the full container from the

clearly marked with the international bio-hazard warning not less than 35mm diameter, printed in black or red, on each of the front and back faces of the box.

**Physical characteristics:**

**Overall dimensions:** If intended to be portable, the device must be compact and have minimal

protrusions. It must be transportable over long distances on foot by the lowest quartile of female operator without inconvenience and with minimal dismantling.

**Weight:** If intended to be portable, the empty device, complete with empty needle container, should weigh a maximum of 750 grams.

**Interface requirements:**

**Disposal:** The needle container or integral cutter and container, if disposable, must be able to fit into a protected needle pit with a 10 cm inner diameter entry tube.

**Human factors:**

**Generally:** The product must be useable by the widest practicable range of active health workers, regardless of age, gender, size or minor disability, including long-sighted and short-sighted people without glasses, in accordance with the general principles laid out in ISO 20282-1: 2006.

**Skill level:** It must be possible for health workers to operate the device with minimal training.

**User position:** The device must be comfortable to operate by 5th to 95th percentile adults in standing and seated positions with the device resting on a firm surface.

**Handedness:** The device must be equally useable by left and right handed health workers.

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**Activation force:** The maximum force required to cut a standard (21 g) needle, needle hub, or syringe nozzle should not exceed 67 N.

**Repetitive use:** The alignment of the cutting mechanism handles should avoid ulnar deviation and should be designed to prevent discomfort or the occurrence of repetitive strain injuries when the device is routinely used by a single operator for 200 cycles per day.

**Pinch points:** Normal use should not result in pinching of the operator's hands.

**Smoothness of operation:** Complete needle removal or destruction must be achieved with a single smooth hand movement.

**Hand to needle distance:** The distance from the needle to the hand holding or operating the needle cutter must exceed 50 mm while operating the device.

**Blade edge protection:** The device's cutting blades must not expose the user to cut hazards, either with or without the needle container connected.

**Cleaning:** External parts and reusable internal parts accessible to the user must be cleanable with standard mild cleaning agents.

**Materials:** The materials used must be selected to minimize surface degradation or corrosion arising from repeated use up to the specified minimum number of operating cycles, when the device is cleaned and lubricated in accordance with the manufacturer's recommendations.

**Warranty:** The device must be warranted to meet all physical and performance requirements defined in this specification over the relevant operating life as specified in clause

**Servicing provision: Non-disposable devices:** The only maintenance required during the design life of the device should be consumable part replacement, regular cleaning and lubrication. The minimum life cycle of consumable parts should be 25,000 removals, cuts or destruction cycles. Three additional sets of consumable parts should be provided with the device, together with product-specific service tools, if required. Used consumable parts should not be re-furbished but must be disposed of in the [needle container](#).

**Disposable devices:** Must be maintenance free.

**Disposal and recycling:** Device must be able to be disposed of in the medical waste stream in accordance with the prevailing government approved and regulated waste disposal practices applicable in the country of use.

**Instructions:** User and maintenance instructions must be available in English. Labelling on the device should include clear pictorial instructions.

**Training:** Training on the assembly, use and maintenance (if any) of the device will be provided by the health care programme when the device is first introduced, and subsequently during supervisory visits.

**Verification: In accordance with PQS Verification Protocol E10/NC01-VP.1**

**Packaging:** Materials used for packaging the finished product are to be free of ozone-depleting compounds as defined in the Montreal Protocol. The general specification of shipping containers will be subject to agreement with the individual procurement agencies.

**On-site installation:** Not applicable

**On-site maintenance:** If required, will be carried out by the user.

#### **16.01.01.04 Waste bins**

**General Description:** Mobile, waste collection bin with lid.

**Technical Specifications:**

Mobile waste bin constructed from moulded plastic.

Bin mounted on 4 casters for mobility.

It should be leak-proof and washable

They must have handles.

Have a lid that fits tightly and is easily opened and closed with pedal system (Step-ons).

Bin has a grip for manoeuvring in the facility.

Carrying capacity: approx. 150 kg.

**Overall dimensions:** Bin: approximately (l x w x d), m: 0.40 x 0.70 x 0.60

**Color and Markings:** Red or yellow with “Biohazard” or “Infectious Waste” printed in black. Marking should include the universal biohazard symbol.

The bins are color coded: Red for highly infectious waste, Yellow for infectious waste and black for non-infectious/general/ wastes.

**Material:** Made of non-corrosive material, washable plastic, flame retardant.

#### **16.01.01.05. Large Waste bins /Containers/**

**General Description:** Mobile, waste transport and interim storage, bin with lid.

**Technical Specifications:**

Mobile, waste bin constructed of moulded plastic.

Bin mounted on 4 casters for mobility.

They must have wheels.

It should be leak-proof and washable

Have a lid that fits tightly and is easily opened and closed.

Bin has a grip for manoeuvring in the facility.

Carrying capacity: approx. 150 kg.

Overall dimensions: Bin: approximately 91 cm tall with a diameter of 76cm.

**Color and Markings:** Red or yellow with “Biohazard” or “Infectious Waste” printed in black. Marking should include the universal biohazard symbol.

The bins are color coded: Red for highly infectious waste, Yellow for infectious waste and black for non-infectious/general/ wastes.

**Material:** Made of non-corrosive material, washable plastic, flame retardant.

#### **16.01.01.06. Medical Waste Plastic Bin Liners/Bio-hazard Bag/**

**General Description:** Plastic liners appropriate for safe segregation of infectious, non-sharp health care waste. Special attention will be required to ensure that the plastic liners are manufactured to quality standards outlined in this specification sheet. These specifications do not apply to plastic autoclave bags.

**Purpose:** Regulated medical waste must be properly packaged to ensure effective containment throughout the handling, storage, transport, and treatment processes.

**General Performance Specifications:**

1. The bin liners must be leak-resistant, impervious to moisture and be tear resistant.
2. The bin liners must be a distinctive red or yellow color, or clear. If a clear bag is used then the universal biohazard symbol must be appropriately displayed on the bag.
3. A container used to hold regulated medical waste must have either a red or orange plastic bag plainly visible; or if a clear bag is used then the universal biohazard symbol must be displayed on the container as well as on the bag.
4. Plastic bin liners used for the packaging of medical waste must be managed as regulated medical waste and must not be reused.

**Materials:**

Polyethylene. Product manufactured from Low Density (LD)/Linear Low Density (LLD) resin shall have a density between 0.915 grams/cc to 0.923 grams/cc. Liner material shall be formulated from polyethylene containing metallocene, octane, butane, or hexane-type copolymer resins with a maximum of 15% post-consumer reprocessed polymer. PVC is not

recommended since bags may be burned or incinerated. Dyes used in the coloration of plastic bin liners will be no greater than 100 ppm of sum incidental concentrations of lead, mercury, hexavalent chromium, and cadmium. (Autoclave bags or liners must be made of a polypropylene plastic that does not melt at the temperatures—116° to 135° C—achieved during autoclave sterilization!)

**Design Specifications:**

**Minimum Thickness (Mandatory):** 1.50 mil (should be double-bagged if off-site transport is to be performed).

**Material Density:** Low-density or linear-low-density polyethylene.

**Bag Size:** Dimensions will depend on bin size. Must not exceed 44 gallon (38 in x 46 in) to ensure load endurance is not exceeded.

**Impact Resistance:** 165 g

**Load Rating (Min.):** 35 kg

**Tear Strength by MD & TD methods:** 480 g

**Color and Markings:** Red or yellow with “Biohazard” or “Infectious Waste” printed in black. Marking should include the universal biohazard symbol.

**Closure:** Twist ties or other restraining devices are required to be either included in each case of liners or otherwise supplied in adequate quantities to cover the amount of liners procured.

16.01.02 Transportation

**16.01.02.01 Trolley, soiled**

**General Description:** Soiled linen trolley with a single ring for supporting and transporting a linen bag.

**Technical Specifications:**

Trolley, soiled linen.

Single ring to support soiled linen bag, suitable for 1.50 m circumference linen bags.

Mounted on 4 anti-static swivel wheels of diameter at least 0.10 m.

Push handle with protection buffers.

Including 2 spare canvas bags with closing cords.

Overall dimensions: 0.50 (L) x 0.46 (W) x 0.89 (H) m.

Bags Canvas, circumference 1.50 m

Carrying capacity approx. 150 kg.

**Material:**

Trolley frame: epoxy coated steel.

Linen bags: Canvas

**16.01.02.02. Wheel Barrow**

Purpose: used for waste transport in the premises

16.01.03 Processing and disposal equipment

**16.01.03.01 Autoclave, 40L**

**General Description:**

Sterilizer, steam, approximately 40 L, electric, with accessories

**Technical Specifications:**

Automatic stand-alone table top steam sterilizer with drying cycle

Chamber size, approx: 0.30 x 0.55 m (diameter x length)

Internal chamber volume, approx: 40 L

With 3 removable shelves

Two standard programs: 2.2 bar at 134 C and 1.1 bar at 121 C

Power shuts off upon completion of the cycle

Single door, self sealing with high-quality silicone gasket

Fit with 5 L water reservoir, manual fill, autonomy for at least 10 cycles

Water circuit has high-efficiency bacteriological filter

Smooth surface control panel allows easy cleaning

Front panel displays operating temperature, pressure and time, water level and system errors (f.e.door)

Safety feature protects against over-pressure and over-temperature  
Audio visual alarm at cycle end, in case of failure or potential danger  
Power requirements: 220 V / 50 Hz / single phase, approx 12 A  
Power consumption, approx: 2500 W

**Material:** interior chamber stainless steel

**Supplied with:**

1 x Set of 3 sterilizer baskets, size fitting internal chamber  
1 x Set of 3 spare bacteriological filters  
1 x Set of 3 spare gaskets (chamber/door)  
1 x Set spare fuses

Clear instructions for use/diagrams for assembly in English, list of accessories/parts.

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”.

Sterilizer, steam, approximately 40 L, electric, with accessories

### **16.01.01.02 Autoclave, 80 L**

**General Description:**

Sterilizer, steam, approximately 80 L, electric, with accessories

**Technical Specifications:**

Automatic free standing steam sterilizer, single door, frontloading

With self-contained steam generator

Chamber size, approx: 0.40 x 0.40 x 0.50 m (w x h x d)

Internal chamber volume, approx: 80 L

With 4 removable shelves

Air removal from chamber by vacuum pump at start-up

Multiple standard programs: 1.1 to 2.4 bar and 121 to 134C, incl. flash sterilisation

Drying cycle with forced air circulation

Power shut-off upon completion of cycle

Single door, self sealing with high-quality silicone gasket

Heat resistant door handle

Fit with 12 L water reservoir, manual fill, autonomy for at least 15 cycles

Water circuit has high-efficiency bacteriological filter

Smooth surface control panel allows easy cleaning

Front panel displays operating temperature, pressure and time, water level and system errors (f.e.door)

Safety feature protects against over-pressure and over-temperature

Audio visual alarm at cycle end, in case of failure or potential danger

Power requirements: 220 V / 50 Hz / 3 phase

Power consumption, approx: 7500 W/ describe

**Material:** interior chamber stainless steel

**Supplied with:**

1 x Set of 3 sterilizer baskets, size fitting internal chamber  
1 x Set of 3 spare bacteriological filters  
1 x Spare gasket (chamber/door)  
1 x Set spare fuses

Clear instructions for use / diagrams for assembly in English  
list of accessories / parts.

**Packaging and labelling:**

Product labelling shall meet the essential requirements describe in GHTF document SG1- N043R3: “Labelling for Medical devices (including In Vitro Diagnostic Devices)”.

### **16.01.03.03 Incinerator, 150 kg/hr**

#### **General Description:**

Incinerator, fuel operated, approx. 150 kg/hr., suitable for hospital waste

#### **Technical Specifications:**

Waste from: ward, pathology, kitchen and general waste

Dual airflow system

Ventilator for primary and secondary air

Control panel with time clock and digital display of the electronic burner temperature control

Burner suitable for fuel oil, type I and II

Weight furnace: 5 tons, stack: 3 tons

Fuel burners

Capacity 150 kg/hr

#### **Power requirements:**

380V/220V/50Hz

**Material:** Steel

### **16.01.03.04 Incinerator, 120kg/hr**

**General Description:** High temperature medical waste incinerator

#### **Technical Specifications:**

Temperature: Up to 1200°C or as required

Capacity: 10 to 500 Kg / hr.

Burning Efficiency 98%

Noise <78db

99% combustion efficiency

Temperature up to 1200°C or as required

Smoke and smell free

CE and ISO certified

#### **Power requirements:**

**220V/380V/50Hz**

Power Electric / Diesel or Gas

Chamber Single / Dual chamber

Body construction Mild Steel, painted w/ heat resistant aluminium paint

Size As required

#### **Equipped with:**

Safety Alarm

Emergency vent

Monitoring device

Heat exchanger

Air Pollution Control Device

**Certifications:** CE and ISO

### **16.01.03.05 Incinerator, 250 kg/hr**

**Description:** Incinerator, fuel operated approx. 150 kg/hr.

#### **General Description:**

**Incinerator, fuel operated, approx. 150 kg/hr., suitable for hospital waste**

#### **Technical Specifications:**

Waste from: ward, pathology, kitchen and general waste

Dual airflow system

Ventilator for primary and secondary air

Control panel with time clock and digital display of the electronic burner temperature control

Burner suitable for fuel oil, type I and II

Weight furnace: 5 tons, stack: 3 tons

Fuel burners

Capacity 150 kg/hr

Power requirements: 220V/50Hz

Power consumption: 1000 W/ describe

**Material:** Steel

**Packaging and labeling:**

Primary packaging: Unit of use

One (1) incinerator in box, with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Refer General requirements

**Accessories/Spare parts/Consumables:** N/A

**Weight/Volume/Dimensions:**

- estimated weight: 2000 kg

- estimated volume: 12000 cdm

**Instructions for use:** Incinerator is to be installed at the hospital complex corner to burn hospital waste.

#### **16.01.03.06 Laundry machine**

For specifications refer item no. **01.03.01.01 and 01.03.01.02 under 01.** Health facility Instruments category

16.01.04. PPE for waste handlers

#### **16.01.04.01. Protective Eyewear for Incinerator Operators**

**General Description:** used for incinerator operators to achieve eye protection against uncontained infectious sharps and intermittent heat during handling and incineration of infectious health care waste.

**Purpose:** Incinerator operators should be provided with protective eyewear to protect them from falling debris, potential bloodborne pathogens contained in medical waste, and heat.

**Basic Performance Specifications:**

1. Provide adequate protection against the particular hazards for which they are designed.
2. Reasonably comfortable when worn under the designated conditions.
3. Fit snugly and not unduly interfere with the movements of the wearer.
4. Durable.
5. Capable of being disinfected.
6. Able to be worn without disturbing the adjustment of any existing prescriptive eyewear.

**Material:** Polycarbonate.

**Design Specifications:** Design: Glasses with side protection or goggle design.

**Lens:** Impact and heat resistant, molded, and 2.2 mm thick with antifog coating.

**Heat Resistant:** Self-extinguishing foam and heat-resistant materials.

**Ventilation:** At minimum, four indirect ventilation slots.

**Fit:** Wide contact between goggle and face.

**Visibility:** Unobstructed peripheral vision.

**Strap:** Adjustable

#### **16.01.04.02. Protective Respirators (Dust Masks) for Incinerator Operators**

**Purpose:**

To protect incinerator operators against particulates (dust, fiber, fumes, mist, soot, and smoke) generated during incineration. Paper or cloth surgical masks do not protect from hazards inherent in the incineration of infectious medical waste and should not be substituted for an air-purifying respirator (cartridge or canister).

Respiratory protection is only needed for personnel remaining in the immediate vicinity of the incinerator. Personnel should be properly fitted for an air-purifying respirator, and replacement filter cartridges must be made available approximately every six months depending on frequency of use.

**Basic Performance Specifications:**

1. Provide adequate protection against the particular hazards for which they are designed.
2. Reasonably comfortable when worn under the designated conditions.
3. Fit snugly and not unduly interfere with the movements of the wearer.



4. Durable.

5. Capable of being disinfected regularly.

All dust masks must function as air-purifying respirators and must be able to achieve the National Institute for Occupational Safety and Health P100 or N100 rating, or equivalent European Committee for Standardization certification. P100 respirators will protect against any particulates, including oil-based materials. N-series respirators protect against solid and water-based particulates such as nuisance dust.

When purchasing an air-purifying respirator, the manager must ensure that the cartridge or canister filters are replaceable and that adequate quantities of spare filters are purchased and provided to incinerator operators. These filters contain a granular or porous material—such as carbon or coconut—which remove specific air particulates in order to protect the health and welfare of the incinerator operator.

Incinerator operators must be trained on the cleaning and maintenance of dust masks. Ideally, each operator should have his or her own dust mask. Any dust mask shared between coworkers must be cleaned and disinfected after each use. The face piece must fit correctly, and all parts must be in good working order.

A respirator must be inspected for damage before use and whenever it is cleaned. Defective respirators must be discarded or repaired by an appropriately trained person.

Incinerator operators must store their respirators in a place free from dust, sunlight, extreme temperatures, and moisture so that the face piece and valves are not damaged.

**Materials:** Silicone or thermal plastic polymer (TPE) mask with replaceable absorbent filters in disposable cartridges.

**Design Specifications:**

**Design** Replaceable dual-cartridge, half-mask respirator.

**Cartridge/Canister filter:** Bayonet or push-in mounted filters in cartridge or canister form; able to remove 99.9% of dusts and non-oil-based mists.

**Heat Resistant:** Self-extinguishing, heat-resistant materials.

**Ventilation:** Adequate inhale valves and exhale valve to enable easy breathing.

**Fit:** Wide sealing flange for a secure seal with special nose bridge.

**Visibility:** Unobstructed peripheral vision.

**Strap:** Elastic straps for a good fit.

#### **16.01.04.03. Protective Footwear plastic buotes**

**Purpose:** Waste handlers and incinerator operators should be provided with protective footwear to protect from falling debris, potential bloodborne pathogens contained in medical waste, and occupational heat exposure.

**Basic Performance Specifications:**

1. Made from cut-resistant materials.
2. Slip-resistant sole.
3. Puncture-resistant sole.
4. Protective against minimal impact.
5. Fit snugly and not unduly interfere with the movements of the wearer.
6. Durable.
7. Capable of being disinfected.
8. Available in sizes to fit all waste handlers (toes should be about 12.5 mm from the front).

\*For incinerator operators, boots should be made from heat-resistant materials when available.

**Materials:** Uppers should be made from polyurethane. Soles may be made of polyurethane if a single mold design is used. A vulcanized nitrile rubber sole will also resist punctures and heat.

**Design Specifications:**

**Toe Impact Protection:** Toe impact energy up to 90 joules.

**Sliding:** Sole construction.

**Sole Puncture Protection:** Minimum protection of 1200 Newtons.

**Slip Resistant Sole:** Deep tread with coefficient of friction >0.5.

**16.01.04.04. Plastic Apron**

General description: Personal protective equipment, water-impervious

**Technical specification:**

Made of heavy-duty neoprene, latex, nitrile, or other water-impervious material

Medium- to heavy-duty splash protection

Resistant to abrasions, chemicals, and puncture from needles and other medical sharps, and moisture proof

Cover upper body from waist to neck, lower body from waist to below knees, coupled in back

Should have cotton ties and neck loop for easy on/off

Minimum of 0.5 mm thickness

**Sizes:** Small, medium (approx. 35 × 45 in), and large (35 × 55 in)

**16.01.04.05. Helmet**

**Purpose:** used to protect the waste handler during carrying out incineration of medical wastes.

**16.01.04.06. Heavy Duty/Utility/ Gloves** – refer the Specifications at 03.09.05.04 (on Page 149)

## ANNEX I -General Requirement for Packaging and labeling

Packaging of instrument may vary from item to item however; it is one of the major criteria to be checked during port inspection as well as delivery of any medical Instrument. Proper packaging is mandatory for equipment safety during transportation. The following information may be used as a general reference for heavy machines packaging and labeling requirements:

**Primary packaging:** Unit of use

One (1) unit in crate, packed with manufacturer's instruction for use.

**Labeling on the primary packaging:**

Name and/or trademark of the manufacturer.

Manufacturer's product reference.

Type of product and main characteristics.

If the packaging is not transparent, it must bear a diagram (preferably actual size) showing the essential parts of the product and indicating the position of the product in the packaging.

Lot number prefixed by the word "LOT" (or equivalent harmonized symbol) (if applicable).

Information for particular storage conditions (temperature, pressure, light, humidity, etc.), as appropriate (or equivalent harmonized symbol).

Information for handling, if applicable (or equivalent harmonized symbol).

**Over packaging: Packaging unit**

Size of carton: as the size of the equipment.

Strength of carton: For storage and handling the following minimum values should be met. Corrugated carton in BC profile (7 mm), with edgewise crush resistance value 15 or more in temperate climate and at least half that in tropical climate (90% humidity and 40°C), measured according to SIS 84 30 03 (Swedish Standard) or similar.

Pallets: EUR size min. 140 mm high with 4-side access of ample quality. Palletized goods stackable 4 units high.

With weather protection and strapped as necessary. Cartons must be filled (near) 100%.

**Labeling on the packaging unit:** Labeling to be the same as primary packaging.

## ANNEXE II- List With Coding

### HEALTH FACILITY EQUIPMENT/INSTRUMENTS

01	Health Facility Equipment & Furniture	
01.01	Medical furniture	
	01.01.01	Beds
		01.01.01.01 Patient bed/Adult with mattress
		01.01.01.02 Paediatric Bed
		01.01.01.03 Bed, Fowler, with mattress
		01.01.01.04 Delivery Bed
		01.01.01.05 Bed side Cabinet & Over bed table
		01.01.01.06 Beds for Kids and Babies
		01.01.01.07 Baby crib trolley
		01.01.01.08 ICU Bed
		01.01.01.09 Bed side cabinet with Over Bed Table.
		01.01.01.10 Positioner, bag, patient, small
		01.01.01.11 Positioner, bag, patient, medium
		01.01.01.12 Positioner, bag, patient, Large
		01.01.01.13 Pillow, abduction
		01.01.01.14 Patient Screen
	01.01.02	Patient Transportation
		01.01.02.01 Stretchers
		01.01.02.02 Wheel chairs
	01.01.03	Trolleys
		01.01.03.01 Trolley, medication
		01.01.03.02 Instrument
		01.01.03.03 Instrument, Mayo
		01.01.03.04 Trolley General purpose
		01.01.03.05 trolley soiled linen
		01.01.03.06 Trolley Emergency
		01.01.03.07 Trolley, patient records
		01.01.03.08 Trolley Food Safety
		01.01.03.09 Trolley House keeping
		01.01.03.10 Trolley, clean linen distribution
	01.01.04	Storage
		01.01.04.01 Instrument cabinet
		01.01.04.02 Medicine cabinet, lockable
		01.01.04.03 Shelves
		01.01.04.04 Cupboard
		01.01.04.05 Refrigerator, kitchen
	01.01.05	Examination tables
		01.01.05.01 Couch, examination, gynaecology
		01.01.05.02 Couch, examination
01.02	Other furniture	
	01.02.01	Stool

01.03	Laundry	01.02.01.01	Foot stool, one step, epoxy coated steel
		01.02.01.02	work bench/Table
		01.02.01.03	Chairs
	01.03.01	Washing/Drying	
		01.03.01.01	Washer Extractor,8kg, 15 kg, 40 kg
		01.03.01.02	Dryer/Tumbler, 10 kg, 20 kg, electrical heated, s
	01.03.02	01.03.01.03	Extractor
		Processing, clean work area	
		01.03.02.01	Flat work ironer,
		01.03.02.02	Iron, electric
		01.03.02.03	Sewing machine, large
		01.03.02.04	Ironing board
		01.03.02.05	Trolley, box, wet laundry
	01.03.03	01.03.02.06	Worktable, sorting/folding, laundry linen
		Transport Trolley Park	
		01.03.03.01	Trolley, soiled linen
		01.03.03.02	Trolley, clean linen
		01.03.03.03	Bag, soiled linen
		01.03.03.04	Trolley tub, Transportation of laundry bags
		01.03.03.05	Cold room
		01.03.03.06	Freezer rooms
		01.03.03.07	Ambulance car/Motorcycles
		01.03.03.08	Insulated containers
		01.03.03.09	Ice Packs
		01.03.03.10	Temperature Monitoring devices- for immunization
		01.03.03.11	Cold chain
		01.03.03.12	Water Tanker/ Container

### Medical Imaging Equipment/Instrument

#### 02 Imaging, lithotripsy, Radiotherapy Equipment & Accessories

02.01	Diagnostic systems	02.01.01	X-ray machine	
			02.01.01.01	Routine radiography(conventional) Small
			02.01.01.02	Routine radiography(conventional) large
			02.01.01.03	Radiography with Fluoroscopy Small
			02.01.01.04	Radiography with Fluoroscopy large
			02.01.01.05	C-Arm machine (Monoblock/Rotating Anode)
			02.01.01.06	C-arm, digital X-ray machine
			02.01.01.07	O-Arm Machine
			02.01.01.08	DR(Digital Radiography)
			02.01.01.09	CR(Computer Radiography)
			02.01.01.10	Mammography
			02.01.01.11	Monoblock Dental X-ray
			02.01.01.12	Panoramic

		02.01.01.13	Bone Densitometer
		02.01.01.14	Mobile X-ray
		02.01.01.15	Phantom Portable X-Ray System (not in the list of)
		02.01.01.16	Cat Lab
		02.01.01.17	Computed tomography system
02.01.02	CT scan		
			1st Generation(One detector, translation- rotation- beam)CT-Scan
		02.01.02.01	2nd Generation (Multiple detectors, translation-r
		02.01.02.02	Small fan-beam)
			3rd Generation(Multiple detectors, rotation-rotati
		02.01.02.03	fan-beam)
02.01.03	MRI		
		02.01.03.01	MRI, low field 0.1-0.3 Tesla
		02.01.03.02	MRI, mid field 0.4-1.0 Tesla
		02.01.03.03	MRI, high field 1.0-1.5 Tesla
		02.01.03.04	MRI, Very high field 1.5& > Tesla
02.01.04	MRA		
		02.01.04.01	Magnetic Resonance Angography
02.01.05	Nuclear Medicine		
		02.01.05.01	PET(Positron Emission Tomography)
		02.01.05.02	SPECT(Gamma Camera/single photon emission
		02.01.05.03	Planar nuclear medicine
02.01.06	Nuclear Medicine-Radiography		
		02.01.06.01	CT-PET
		02.01.06.02	CT-SPECT
02.01.07	Ultrasound		
		02.01.07.01	General purpose ultrasound
		02.01.07.02	GYN/OBS Ultrasound
		02.01.07.03	ECHO-Cardiography
		02.01.07.04	Doppler/Vascular Doppler
02.02	Physiotherapy equipment		
	02.02.01	Therapeutic systems	
		02.02.01.01	Radiotherapy(Cobalt 60)
		02.02.01.02	Linear Accelerator
		02.02.01.03	Brachytherapy
		02.02.01.04	High frequency Ultrasound (Tens)
02.03	Image Guiding		
	02.03.01	Microscopy	
		02.03.01.01	Microscope /surgical /
	02.03.02	Endoscopy Rigid	
		02.03.02.01	Rigid Laparoscope
		02.03.02.02	Rigid Cystoscope
		02.03.02.03	MEDICAL VIDEO CAMERA
		02.03.02.04	Xenon Light Source and Light Cable
		02.03.02.05	Ureterorenoscope
		02.03.02.06	Endovision system and PCNL set

		02.03.02.07	Pediatric Endoscope System
		02.03.02.08	Rigid Rhinoscope
		02.03.02.09	Rigid Bronchoscope
		02.03.02.10	Rigid Protoscope
		02.03.02.11	Rigid Arthroscope
		02.03.02.12	Rigid Colposcope
		02.03.02.13	Rigid Laryngoscope
		02.03.02.14	Rigid Colonoscope
02.03.03		Endoscopy Flexible	
		02.03.03.01	Flexible Colonoscope
		02.03.03.02	FLEXIBLE URETEROSCOPE (URS)
		02.03.03.03	Polyscope
		02.03.03.04	Gastroscope
		02.03.03.05	Sigmoidoscope
		02.03.03.06	Bronchoscope
		02.03.03.07	<b>Halogen Light Source or LED light source</b>
02.04	Developers room accessories		
	02.04.01	Developers manual	
		02.04.01.01	Developing, Fixing and Rising tank
		02.04.01.02	Dark room lamp
		02.04.01.03	Lead markers R, L, 0-9 and A-Z
		02.04.01.04	ID printer
		02.04.01.05	Hatch Box
		02.04.01.06	Film Hanger
		02.04.01.07	Stationary Gamma Camera
		02.04.01.08	Heater (Film Drier)
		02.04.01.09	Hoper(Film storage box)
		02.04.01.10	Clock
		02.04.01.11	Thermometer, bath
		02.04.01.12	Developer reagent(Chemical)
		02.04.01.13	Fixer reagent (Chemical)
		02.04.01.14	X-ray Film
		02.04.01.15	Film Cassette with Intensifying Screen
	02.04.02	Developers automatic	
		02.04.02.01	Developer, automatic
		02.04.02.02	Developer, automatic, dry
02.05	Supporting diagnostic equipment		
	02.05.01	Supporting diagnostic equipment	
		02.05.01.01	Negatoscope, one field
		02.05.01.02	Negatoscope, two field
		02.05.01.03	Negatoscope, four field
02.06	Personal Protection Equipment (PPE)		
	02.06.01	Personal Protection Equipment (PPE)	

02.06.01.01	Gonad shield
02.06.01.02	Lead glass
02.06.01.03	Lead apron, small
02.06.01.04	Lead apron, medium
02.06.01.05	Lead apron, large
02.06.01.06	Lead Gloove
02.06.01.07	TLD
02.06.01.08	Ovary Protection

## CLINICAL LABORATORY INSTRUMENTS

### 03 Clinical Laboratory Equipment

#### 03.01 Sample collection and transportation

03.01.01	Blood sample collection	
03.01.01.01		Phlebotomy Chair (Blood collecting chair)
03.01.02	Sputum, urine, stool and other sample collection	
03.01.02.01		for Sputum
03.01.02.02		for Urine
03.01.02.03		Stool with spoon
03.01.02.04		Applicator, Wood, Non-sterile
03.01.02.05		Swab, Cotton-tip with Sterile Tube
03.01.03	Sample transportation	
03.01.03.01		Box, storage, 100 slides
03.01.03.02		Box, specimen transport, Triple Package

#### 03.02 Hematology/immunohematology

03.02.01	Hematology automated	
03.02.01.01		Hematology Analyzer, 8 parameter, 0 diff
03.02.01.02		Hematology Analyzer, 18 parameter, 3diff
03.02.01.03		Hematology Analyzer, 21parameter, 5diff
03.02.01.04		Hematology Analyzer, 24parameter, 5diff
03.02.01.05		Platelet Aggrigometer
03.02.01.06		Blood gas analyzer
03.02.01.07		Coagulation Analyzer
03.02.01.08		Plasmatic clotting Analyzer/Diacheck cP4
03.02.01.09		Blood analysis system
03.02.02	Hematology manual/batch	
03.02.02.01		Hematocrit reading Scale
03.02.02.02		Hemocytometer
03.02.02.03		Hemoglobin meter
03.02.02.04		Differential Cell Counter, Manual
03.02.02.05		Counter, hand tally, mechanical
03.02.02.06		Photometer, Hemoglobin
03.02.02.07		Counter, hand tally, mechanical
03.02.03	Immunohematology	



03.03	Clinical Chemistry	03.02.03.01	Flowcytometry, CD4, basic
		03.02.03.02	Flowcytometry, CD4, advanced
03.03	Clinical Chemistry	03.03.01	Chemistry automated
		03.03.01.01	Semi-automated (Spectrophotometer)
		03.03.01.02	Fully Automated (Spectrophotometer)
		03.03.02	Electrolyte analyzer
		03.03.02.01	Ion Selective Electrode
		03.03.03	Glucometer
		03.03.03.01	Photometer, Glucose
		03.03.04	Urinalysis
03.04	Serology	03.03.04.01	Urine Chemistry Analyzer
		03.04.01	Serology automated, ELISA
		03.04.01.01	Microplate ELISA Reader, 8channel
		03.04.01.02	Microplate ELISA Washer, 8channel
		03.04.01.03	ELISA, incubator, 4 plate
03.05	Microbiology	03.05.01	Incubators
		03.05.01.01	Incubator,Basic
		03.05.01.02	Incubator, CO2 Incubator
		03.05.01.03	Incubator, CO2 Incubator, Dualchamber
		03.05.02	Culture
		03.05.02.01	Dispenser
		03.05.02.02	Bunsen burner
		03.05.02.03	Colony counter
		03.05.02.04	Reading Lamp
03.06	Molecular Biology	03.06.01	Sample preparation
		03.06.01.01	Fast Protein Liquid Chromatography System (Electrophoresis)
		03.06.02	Detection/sample application
		03.06.02.01	Fast Protine Liquid Chromatography System (Electrophoresis)
		03.06.02.02	Thermal Cycler(PCR)
03.07	Histopathology	03.07.01	Sample processing
		03.07.01.01	Cryostat Frozen Section Machine
		03.07.01.02	Microtom knife sharpner
		03.07.01.03	Microtom Maintenance Kit
		03.07.02	Tissue Processor
		03.07.02.01	Automatic Tissue Processor
		03.07.02.02	Tissue embedding centre
		03.07.02.03	Dissecting Instruments Set

		03.07.02.04	Paraffin Dispenser, 6 liter
		03.07.02.05	Paraffin Cooling Plate
		03.07.02.06	Automatic Tissue Slide Stainer
		03.07.02.07	Cabinet, Storage, Slides & wax Block
		03.07.02.08	Slide warming Table
03.08	General laboratory equipment		
	03.08.01	Water distiler	
		03.08.01.01	Distiller, water, 2 l/hr, with tank
		03.08.01.02	Distiller, water, 4 l/hr, with tank
		03.08.01.03	Distiller, water, 8 l/hr, with tank
		03.08.01.04	Distiller, water, 12 l/hr, with tank
	03.08.02	Sterilization	
		03.08.02.01	Sterilizer, steam, 5 liter
		03.08.02.02	Sterilizer, steam, 20 liter
		03.08.02.03	Sterilizer, steam, 40 liter
		03.08.02.04	Sterilizer, steam, 80 liter
		03.08.02.05	Sterilizer, dry heat, 250 C, 20 liter
		03.08.02.06	Sterilizer, dry heat, 250 C, 40 liter
	03.08.03	Refregerator	
		03.08.03.01	Refrigerator, lab, 2-8C, 110L
		03.08.03.02	Refrigerator, lab, 2-8C, 250L
		03.08.03.03	Refrigerator/freezer, lab, 2-8C/-20C, 180L/40L
		03.08.03.04	Freezer, lab, -20C, 140L
	03.08.04	Waterbath	
		03.08.04.01	Waterbath, basic, 4 liter
		03.08.04.02	Waterbath, basic, 8 liter
		03.08.04.03	Waterbath, basic, 14 liter
		03.08.04.04	Waterbath, basic, 22 liter
		03.08.04.05	Waterbath, with shaker, 4 liter
		03.08.04.06	Waterbath, with shaker, 8 liter
		03.08.04.07	Waterbath, with shaker, 14 liter
		03.08.04.08	Waterbath, with shaker, 22 liter
	03.08.05	Pipettes	
		03.08.05.01	Pipette Stand, 4 position
		03.08.05.02	Pipette, digital 2-20 ul
		03.08.05.03	Pipette, digital 10-100ul
		03.08.05.04	Pipette, digital 20-200ul
		03.08.05.05	Pipette, digital 100-1000ul
		03.08.05.06	Multi-channel Pipette, 8 channel, 5-50ul
		03.08.05.07	Multi-channel Pipette, 8 channel, 20-200ul
	03.08.06	Microscopes	
		03.08.06.01	Monocular
		03.08.06.02	Binocular

	03.08.06.03	Trinocular
03.08.07	Centrifuges	
	03.08.07.01	Centrifuge, 1500rpm
	03.08.07.02	Centrifuge, 6000rpm
	03.08.07.03	Centrifuge, Ultra (100000rpm)
	03.08.07.04	Centrifuge, Manual
	03.08.07.05	Centrifuge, Hematocrit
03.08.08	Shaker	
	03.08.08.01	Rotary, blood specimen
	03.08.08.02	Rotary, agglutination test
	03.08.08.03	Vortex, Test tube
03.08.09	Hot plates	
	03.08.09.01	Hot plate
	03.08.09.02	Hot plates with stirrer
03.08.10	Balances/Scale	
	03.08.10.01	Top load, 500g, 0.01g
	03.08.10.02	Top load, 1500g, 0.1g
	03.08.10.03	Analytical, 220g, 0.001g
	03.08.10.04	Moisture, 220g, 0.001g
03.08.11	Glasware, beakers	
	03.08.11.01	Beakers, Glass, 50ml
	03.08.11.02	Beakers, Glass, 100ml
	03.08.11.03	Beakers, Glass, 250ml
	03.08.11.04	Beakers, Glass, 1000ml
03.08.12	Glasware, measuring, cylinder	
	03.08.12.01	Cylinder, Measuring, Glass, 10ml
	03.08.12.02	Cylinder, Measuring, Glass, 100ml
	03.08.12.03	Cylinder, Measuring, Glass, 500ml
	03.08.12.04	Cylinder, Measuring, Glass, 1000ml
03.08.13	Glasware, flasks	
	03.08.13.01	Flask, Erlenmeyer, Glass, 50ml
	03.08.13.02	Flask, Erlenmeyer, Glass, 500ml
	03.08.13.03	Flask, Erlenmeyer, Glass, 1000ml
03.08.14	Glasware, pipettes	
	03.08.14.01	Pipette, Glass, graduated, 2ml
	03.08.14.02	Pipette, Glass, graduated, 5ml
	03.08.14.03	Pipette, Glass, graduated, 10ml
	03.08.14.04	Pipette, Plastic, graduated, 2ml
	03.08.14.05	Pipette, Plastic, graduated, 5ml
03.08.15	Bottles	
	03.08.15.01	Bottle, amber, dropper, 30ml
	03.08.15.02	Bottle, amber, Screw Cap, 100ml
	03.08.15.03	Bottle, amber, Screw Cap, 250ml

	03.08.15.04	Bottle, amber, Screw Cap, 1000ml
	03.08.15.05	Bottle, Clear, Screw Cap, 100ml
	03.08.15.06	Bottle, Clear, Screw Cap, 250ml
	03.08.15.07	Bottle, Clear, Screw Cap, 1000ml
03.08.16	Glasware, others	
	03.08.16.01	Jar, coplain, staining
	03.08.16.02	ESR tubes
	03.08.16.03	Pipette, WBC(Thoma Pipette)
	03.08.16.04	Slides, Frosted
	03.08.16.05	Slides, Frosted, Non-Frosted
	03.08.16.06	Cover glass, Slide, 20mm x 22mm
	03.08.16.07	Cover glass, Slide, 22mm x 22mm
	03.08.16.08	Petir Dish, Glass
	03.08.16.09	Petir Dish, Plastic
	03.08.16.10	Rod, Glass
	03.08.16.11	Mortar & Pestle, Small
	03.08.16.12	Mortar & Pestle, Medium
03.08.17	Glasware, brushes	
	03.08.17.01	Brushes, bottle & flask
	03.08.17.02	Brushes, Test Tube
03.08.18	Racks	
	03.08.18.01	Racks, Test Tube
	03.08.18.02	Racks, Drying glass & plastic ware
	03.08.18.03	Racks, Drying slides, 12 position
	03.08.18.04	Racks, Staining slide, horizontal, 12 position
	03.08.18.05	Racks Drying, DBS cards
03.08.19	ESR Stand	
	03.08.19.01	ESR Stand, 20minute
	03.08.19.02	ESR Stand, 30 minute
	03.08.19.03	ESR Stand, 60 minute
03.08.20	Thermometer	
	03.08.20.01	Environmental, Max./Min., -30 <sup>0</sup> C / 60 <sup>0</sup> C
	03.08.20.02	Thermometer, Glass, -20 <sup>0</sup> C/100 <sup>0</sup> C
03.08.21	Safety Cabinet	
	03.08.21.01	General Purpose Fume Hood
	03.08.21.02	Biosafety Cabinet
03.08.22	Safety	
	03.08.22.01	Eye wash station
	03.08.22.02	Fire exitnguisher
	03.08.22.03	First Aid Kit
	03.08.22.04	Spil Kit
03.08.23	Other lab equipment	
	03.08.23.01	Inoculation loop, Plastic

		03.08.23.02	Inoculation loop, Wire
		03.08.23.03	Clamp, Test Tube, Chromplated
		03.08.23.04	Blower, Hot Air
		03.08.23.05	Stop watch, Digital
		03.08.23.06	Spatula, Stainless steel
		03.08.23.07	Forceps, Plastic, 115mm
		03.08.23.08	Forceps, Plastic, 150mm
		03.08.23.09	Washbottle, 100ml
		03.08.23.10	Washbottle, 250ml
		03.08.23.11	Washbottle, 500ml
		03.08.23.12	Lab Coat
03.09	Supplies/renewable		
	03.09.01	Micropipette, Tips	
		03.09.01.01	white, 2-20 ul
		03.09.01.02	Yellow,10-100ul
		03.09.01.03	Yellow,20-200ul
		03.09.01.04	Blue,100-1000ul
	03.09.02	Marker Pen	
		03.09.02.01	Marker Pen, Permanent, 0.8mm
		03.09.02.02	Marker Pen, Permanent, 2.5mm
		03.09.02.03	Marker Pen, Extrafine
	03.09.03	Punch,	
		03.09.03.01	Punch, DBS, 3.0mm
	03.09.04	Safety Box	
		03.09.04.01	Safety Box, Puncture resistant
	03.09.05	Personal Protective Equipment(PPE)	
		03.09.05.01	Gloves, Latex, Small
		03.09.05.02	Gloves, Latex, Medium
		03.09.05.03	Gloves, Latex, Large
		03.09.05.04	Gloves,Heavy Duty
		03.09.05.05	Eye Goggle
		03.09.05.06	Face sheild
		03.09.05.07	Mouth & Nose Mask
		03.09.05.08	Aprone
		03.09.05.09	Lab shoe
	03.09.06	Tubes	
		03.09.06.01	Tube, capillary, heparinized
		03.09.06.02	Tube, capillary, EDTA
		03.09.06.03	Tube, 4. 5ml EDTA
		03.09.06.04	Tube, 4. 5ml Sodium Citrated
		03.09.06.05	Tube, Serum gel, 5ml
		03.09.06.06	Tube Plain, 10ml
		03.09.06.07	Tube Conical, 10ml

	03.09.06.08	Tube, Nunc, 1ml, - 3ml
03.09.07	Blood Collection	
	03.09.07.01	Needle Holder
	03.09.07.02	Blood Lancet, 2mm, 2.4 mm
	03.09.07.03	Needle, Vacutainer
03.09.08	Funnels	
	03.09.08.01	Funnel, Glass
	03.09.08.02	Funnel, Plastic
03.09.09	Other lab supplies	
	03.09.09.01	Paper, lens
	03.09.09.02	Paper, PH indicator, 2.0 to 9.0
	03.09.09.03	Paper, Filter #1
	03.09.09.04	Paper, weighing
	03.09.09.05	Sealant, compound (Clay sealer)
	03.09.09.06	Microplate, PCR
	03.09.09.07	Microplate, ELISA
	03.09.09.08	Applicator, Wood, Non-sterile
	03.09.09.09	Swab, Cotton-tip, Sterile Tube
	03.09.09.10	Sheet Absorbent, Bench
	03.09.09.11	Bag, Biohazard
	03.09.09.12	Aluminum Foil
	03.09.09.13	Label, self adhesive
	03.09.09.14	Dispenser, 2 to 10ml
	03.09.09.15	Oil, Immersion
	03.09.09.16	Surgical Blade

## STERILIZATION & DISINFECTION EQUIPMENT/INSTRUMENT

### 04 Sterilizing disinfection Equipment/materials

4.01	Steam Sterilizer	
	04.01.01.	Horizontal front loading/Autoclave
		04.01.01.01 High pressure steam Autoclave
		04.01.01.02 Steam sterilizer, heavy duty & Programmable
		04.01.01.03 Autoclave, double wall
		04.01.01.04 Autoclave with formaldehyde program
		04.01.01.05 Table top Autoclave, semi automatic
		04.01.01.06 Table top, Sterilizer, glassware, rubber
		04.01.01.07 Portable autoclave, single walled
		04.01.01.08 Instrument Sterilizer/disinfector
	04.01.02	Vertically built /top loading Autoclave
		04.01.02.01 Single chamber autoclave
		04.01.02.02 Portable Autoclave/pressure cooker

		04.01.02.03	Sterilizer, steam, 14 litr
		04.01.02.04	sterilizer, steam, 39 litr
		04.01.02.05	Sterilizer, Steam, 24 Litr
04.02.	Dry Sterilization		
	04.02.01	Dry oven	
		04.02.01.01	Dry heat sterilizer, medium volume
		04.02.01.02	Dry heat sterilizer, High temprature & volume
		04.02.01.03	Flame streilizaion
4.03	Chemical sterilizaer		
	04.03.01	Disinfectant	
		04.03.01.01	phenol
		04.03.01.02	Cresol
		04.03.01.03	bleach
		04.03.01.04	ethylene oxide
		04.03.01.05	formadehydine
		04.03.01.06	ozone
		04.03.01.07	chlorine
		04.03.01.08	glutadehyde
		04.03.01.09	hydrogen peroxide
		04.03.01.10	peracetic acid
		04.03.01.11	ethanol and dyes
04.04.	Cold sterilization		
	04.04.01	Radiation sterilization	
		04.04.01.01	Gamma radiation
		04.04.01.02	UV light source
		04.04.01.03	Ultrasonic Cleaner
4.05	Drums		
	04.05.01	Containers	
		04.05.01.01	Metallic containers
		04.05.01.02	PVC Containers
	04.05.02	Packing and wrapping materilas	
		04.05.01.03	Fabric
		04.05.01.04	Aluninum foils
04.06.	Testing materials		
	04.06.01.	Indicators/sterilized	
		04.06.01.01	Plasters/masking tapes
		04.06.01.02	Timers
		04.06.01.03	Biological Indicators
		04.06.01.04	Paper sheet
		04.06.01.05	Chemical Indicators/TST Control
4.07	Transporting equipment		
	04.07.01.	Trolley	

		04.07.01.01	Metallic Trolley, for slided linen
		04.07.01.02	Metallic Trolley, for instrument
		04.07.01.03	PVC Trolley
		04.07.01.04	Trolley, Linen distribution
		04.07.01.05	Trolley for loading and unloading
		04.07.01.06	Tray for surgical Instruments
		04.07.01.07	Collecting baskets
4.08	Supply		
	04.08.01.	PPE	
		04.08.01.01	Body Cover /Apron/
		04.08.01.02	Medical Gown with mouth cover
		04.08.01.03	Mouth cover
		04.08.01.04	Shoe cover
		04.08.01.05	Eye cover / Safety glasses/
		04.08.01.06	Hand cover
		04.08.01.07	Disposable beard cover

## REHABILITATION & PHYSIOTHERAPY

### 05 Rehabilitation & physiotherapy

05.01	Exercise		
	05.01.01	Physical Exercise	
		05.01.01.01	Bicycle, exercise
		05.01.01.02	Balancing board
		05.01.01.03	Wheel, shoulder
		05.01.01.04	Standing mirror
		05.01.01.05	Parallel bar
		05.01.01.06	Up down stair
		05.01.01.07	Quadriceps bench
		05.01.01.08	Bars, wall
		05.01.01.09	Bed mattress
		05.01.01.10	Cervical, thoracic & lumbar traction with
		05.01.01.11	Tilting bed
		05.01.01.12	Balloon
		05.01.01.13	Walking stick
		05.01.01.14	Roller, wrist
		05.01.01.15	Bench, Swedish
		05.01.01.16	Mat, exercise, gymnasium
		05.01.01.17	Dumb bells, set, iron, 1 to 5 kg
		05.01.01.18	Exerciser, grip
		05.01.01.19	Pedal apparatus
		05.01.01.20	Set, measuring instruments, physio
		05.01.01.21	Treadmill, rehabilitation
		05.01.01.22	Ball, exercise, physio



		05.01.01.23	Pulley exercise, station
		05.01.01.24	Hoist, patient
		05.01.01.25	Walker, adult
		05.01.01.26	Walker, child
		05.01.01.27	Walking stick
05.02	Therapy		
	05.02.01	Therapy, dry	
		05.02.01.01	physiotherapy treatment, Table
		05.02.01.02	Shortwave therapy, pulsed and continuous
		05.02.01.03	Microwave, therapy unit
		05.02.01.04	Electro therapy, low frequency
		05.02.01.05	IR therapy
		05.02.01.06	Table, traction
		05.02.01.07	Lamp Phototherapy, mobile
		05.02.01.08	Ultrasonic therapy apparatus
		05.02.01.09	High frequency Ultrasound (Tens)
		05.02.01.10	Special traction Couch
		05.02.01.11	Traction unit for lumbar and cervical trac
			Complete unit for ultrasound and ccombina
		05.02.01.12	therapy
		05.02.01.13	Vaccum Unit, 2 channel
	05.02.02	Therapy, wet/hydrotherapy	
		05.02.02.01	Arm Bath, contrast
		05.02.02.02	Bath, contrast bath, leg
		05.02.02.03	Paraffin bath, mobile
		05.02.02.04	Whirlpool, full body
		05.02.02.05	Hoist, patient, bath
		05.02.02.06	Butterfly bath, Hubbart type, st. st. hoist a
5.03	Physical rehabilitation		
	05.03.01	Prosthetics and Orthotics	
		05.03.01.01	COACH
		05.03.01.02	SIT Casting apparatus
		05.03.01.03	Casting chair
		05.03.01.04	Modular spinal Casting apparatus
		05.03.01.05	Mirror
		05.03.01.06	Cast brims
	05.03.02.	Measuring devices	
		05.03.02.01	Ruler
		05.03.02.02	Tape Measure
		05.03.02.03	Flexible Measure
		05.03.02.04	Steel Square 90°
		05.03.02.05	Hip leveling guide

	05.03.02.06	Foot blocks
	05.03.02.07	Inside funnel measuring device
	05.03.02.08	<b>Goniometry</b>
	05.03.02.09	Body calipers
	05.03.02.10	Water level
	05.03.02.11	Clipper gauge
05.03.03	Compasses and Scribing Tools	
	05.03.03.01	<b>Precision Spring Divider</b>
	05.03.03.02	Bow Compass
	05.03.03.03	Scriber
	05.03.03.04	Marking Gauge
05.03.04	Cutting tools	
	05.03.04.01	Shoe maker Knife
	05.03.04.02	Plaster Knife
	05.03.04.03	Plaster cast shear/scissor
	05.03.04.04	Trimming scissor
	05.03.04.05	Leather trimming shears
	05.03.04.06	Leather Cutter
	05.03.04.07	Bandage cutting scissor
	05.03.04.08	General purpose light shears
	05.03.04.09	Otto Bock Cutter
	05.03.04.10	Special Twist Drill Set
	05.03.04.11	Forstner Drill
	05.03.04.12	Conical Drill HSS, for plastic
	05.03.04.13	Tap and Thread-cutter Set
	05.03.04.14	Countersink, 90°
	05.03.04.15	De-burring Knife
05.03.05	Tool kit per work benches	
	05.03.05.01	Screw driver Phillips head 2*100
	05.03.05.02	Screw driver Phillips head 3*100
	05.03.05.03	Phillips Angled Screwdriver
	05.03.05.04	Net driver 5.5
	05.03.05.05	Net driver 10
	05.03.05.06	Allen Wrench
	05.03.05.07	Allen key spherical end
	05.03.05.08	Pin Wrench
	05.03.05.09	Double Open-end Wrench Set
	05.03.05.10	Ring Wrench Set
	05.03.05.11	Ring Open-end Wrench Set
	05.03.05.12	Pliers, universal
	05.03.05.13	Langbeck
	05.03.05.14	Revolving hole punch pliers
	05.03.05.15	Hammers

05.03.06	Contouring, Parallel	
	Alignment Devices and riveting tools	
	05.03.06.01	Bending Irons
	05.03.06.02	Bending bar
	05.03.06.03	Rivet Extractor
	05.03.06.04	Rivet Header
05.03.07	Plaster molding tools	
	05.03.07.01	Plastic Basin
	05.03.07.02	Exhaust Tube Support
	05.03.07.03	Trash Container
	05.03.07.04	Workbench
	05.03.07.05	Storage Cabinet
	05.03.07.06	Bench Vise
	05.03.07.07	Heating chamber for thermoplastic sheets
	05.03.07.08	Welding hot air gun
	05.03.07.09	Oscillating saw
	05.03.07.10	Socket Router
	05.03.07.11	Combination disk sander and belt sander
	05.03.07.12	Vertical belt sanders
	05.03.07.13	Dust Collector
	05.03.07.14	Universal band saw
	05.03.07.15	Bench-model drilling machine
	05.03.07.16	Vacuum Pump with Tank
	05.03.07.17	Mobile Air Compressor
	05.03.07.18	Double Bench Grinder
	05.03.07.19	Engine Lathe
	05.03.07.20	Zigzag Sewing Machine
	05.03.07.21	Shoe Patching Machine
	05.03.07.22	Finishing and Trimming Machine
	05.03.07.23	Cordless Hand Drill
	05.03.07.24	Electrical Jig Saw
05.03.08	Other supplies and raw materials	
	05.03.08.01	Velcro strap hook and Loop
	05.03.08.02	Cotton (prostheses)
	05.03.08.03	Combination roller buckle
	05.03.08.04	Ring half round/D-ring /
	05.03.08.05	Iron rivet
	05.03.08.06	Copper rivet flat head
	05.03.08.07	Foot ankle flexure joint
	05.03.08.08	Orthotic side bar
	05.03.08.09	Orthotic side bar, Swiss
	05.03.08.10	EVA foam

05.03.08.11	Homopolymer
05.03.08.12	PPCAS-Trans Tibial alignment system
05.03.08.13	Trans Femoral alignment system
05.03.08.14	Prosthesis foot -Solid ankle cushion heel / SACH
05.03.08.15	Micro rubber soft density/MCR/ and Micro rubber density
05.03.08.16	Rubber end tips

## **LIFE SUPPORTING, TREATMENT & MONITORING DEVICES**

### **06 Life supporting**

#### **06.01 Ventilator/resuscitators**

06.01.01	Ventilators
06.01.01.01	Paediatric Intensive care Ventilator
06.01.01.02	Manual Patient Ventilator for neonatal
06.01.01.03	Manual Patient Ventilator for adult
06.01.01.04	Emergency ventilator
06.01.02	Resuscitators
06.01.02.01	Manual resuscitator

#### **06.02 Patient Monitors**

06.02.01	Monitoring devices
06.02.01.01	Patient monitor with ECG and Respiration
06.02.01.02	Pulse Oximeter
06.02.01.03	Digital Blood pressure Monitor
06.02.01.04	Capnography with all accessories

#### **06.03 Diagnostic equipment**

06.03.01	BP apparatus
06.03.01.01	BP apparatus Digital
06.03.01.02	Mercury BP/sphygmomanometer
06.03.01.03	Aneroid BP/sphygmomanometer
06.03.01.04	Doppler Fetal heart beat detector
06.03.01.05	Fetal Monitor

#### **06.04 Treatment equipment**

06.04.01	Defibrillators
06.04.01.01	Defibrillator, basic
06.04.01.02	Defibrillator, monitor
06.04.01.03	Automatic external defib
06.04.02	Kidney treatment
06.04.02.01	Haemodialysis system, complete
06.04.02.02	Lithotripter/shock wave/ kidney stone crusher
06.04.02.03	Lithotripter/ intracorporeal
06.04.02.04	Light source for Laparoscopy, Urology Lithotripter
06.04.02.05	Carbon Dioxide (CO2 ) Supply machine for Laparoscopy
06.04.02.06	Pump for laparoscopy and Lithotripter

		06.04.02.07	Blood Heater, Cooler
	06.04.03	Water treatment	
		06.04.03.01	Water treatment unit for reverse osmosis to serve dialysis units
		06.04.03.02	Reverse osmose system (water purification), to serve dialysis units
	06.04.04	detoxification machine	
		06.04.04.01	Electronic detoxification machine
06.05	Implants		
	06.05.01	Pacemaker	
		06.05.01.01	Temporary Pacemaker
		06.05.01.02	Permanent pacemaker

## **SURGICAL & ICU INSTRUMENTS**

### **07 Surgery and ICU/CCU/NICU equipment**

#### **07.01 OR and Surgery equipment**

07.01.01	Operating tables	
	07.01.01.01	Operating table, multiple section, hydraulic
	07.01.01.02	Operating table, multiple sec's, electro-hydraulic
	07.01.01.03	Operating table, multiple sec's, electro-hydraulic/ophthalmic/neuro
	07.01.01.04	Operating table, multiple sec's, electro-hydraulic/with accessories
07.01.02	Anaesthesia machines with accessories	
	07.01.02.01	Anaesthesia machine, with vent., mon., 2 vap. Closed
	07.01.02.02	Anaesthesia machine, with vent., 2 vap. Open
	07.01.02.03	Anaesthesia machine, with vent., 1 vap. Closed
	07.01.02.04	Anaesthesia machine, with vent., 1 vap. Open
	07.01.02.05	Endotracheal Tube
	07.01.02.06	Endotracheal tube with cuff without cuff
	07.01.02.07	Endotracheal Tube
	07.01.02.08	Endotracheal Tube with cuff
	07.01.02.09	Reinforced Endotracheal tube
	07.01.02.10	Gudel Airway
	07.01.02.11	Nasopharyngeal airway/Naso airway/nasal airway
	07.01.02.12	Reusable Silicone Laryngeal Mask Airway
	07.01.02.13	Disposable laryngeal mask airway
	07.01.02.14	Laryngeal Mask Airway
	07.01.02.15	Disposable ALL Silicone Laryngeal Mask Airway
	07.01.02.16	Combined Epidural /Spinal Anesthesia Kit
	07.01.02.17	Disposable Epidural-Spinal Combined Anesthesia Kit
	07.01.02.18	Epidural puncture kit

	07.01.02.19	Spinal Anesthesia Kit
	07.01.02.20	Manual Ventilators
	07.01.02.21	Ventilator Resuscitator, hand-operated, neonate, > 1000 cc
	07.01.02.22	Resuscitator
	07.01.02.23	Patient monitor with ECG and Respiration
	07.01.02.24	Pulse oximetry
	07.01.02.25	Digital Blood Pressure Monitor Machine
	07.01.02.26	Capnography
	07.01.02.27	Non-Invasive Blood Pressure (NIBP) Monitoring
	07.01.02.28	Mercury BP/sphygmomanometer
	07.01.02.29	Aneroid sphygmomanometer
	07.01.02.30	Defibrillator, basic
	07.01.02.31	Defibrillator, monitor
	07.01.02.32	Automatic external Defibrillator
	07.01.02.33	Electrocardiography/digital
	07.01.02.34	Electrocardiography/6 channel
	07.01.02.35	Sphygmomanometer, infant
	07.01.02.36	Pediatrics Stethoscope
	07.01.02.37	Digital Thermometer
	07.01.02.38	Thermometer
	07.01.02.39	ECG
	07.01.02.40	ECG recorder, 6-channel,trolley
	07.01.02.41	ECG recorder, 12-channel,trolley
	07.01.02.42	Ventilators
	07.01.02.43	Electrical Patient Ventilator
	07.01.02.44	Microprocessor Controlled Ventilator, infant
	07.01.02.45	Ventilator, infants and premature newborn babies
	07.01.02.46	Patient Monitors, vital sign
	07.01.02.47	Central monitor
	07.01.02.48	Laryngoscope, set
07.01.03	Electro surgery	
	07.01.03.01	electrosurgery cutting and coagulation unit, 80w, mobile
	07.01.03.02	electrosurgery cutting and coagulation unit, 300W, mobile
	07.01.03.03	electrosurgical cutting and coagulation unit, 200W, mobile
	07.01.03.04	argon gas electrosurgery unit, 300 watt, mobile
07.01.04	OR lights	
	07.01.04.01	headlight, fiberlight
	07.01.04.02	light, examination
	07.01.04.03	operating light, mobile, with battery
	07.01.04.04	operating light, large copula, ceiling
	07.01.04.05	operating light, 2 large copula, ceiling
	07.01.04.06	operating light, 2 large copula, with video camera

07.01.05	OR Microscopes	
	07.01.05.01	operating microscope, basic
	07.01.05.02	operating microscope, zoom, for microsurgery, m
	07.01.05.03	microscope, operating, micro, with video, on mob
07.01.06	Surgical suction machine	
	07.01.06.01	suction machine, FOOTOPERATED
	07.01.06.02	suction machine, ELEC, SMALL
	07.01.06.03	Surgical suction machine, ELEC, 1 BOTT
	07.01.06.04	Surgical suction machine, ELEC, 2 BOTT
	07.01.06.05	Surgical suction machine, CENTERAL, VAC, 1
	07.01.06.06	Surgical suction machine, CENTERAL, VAC, 2
07.01.07	Other OR equipment	
	07.01.07.01	syringe pump
	07.01.07.02	infusion pump
	07.01.07.03	Patient warmer
	07.01.07.04	Phacoemulsification set with accessories
	07.01.07.05	Heart-lung machine, with access
	07.01.07.06	x-ray viewer, one field
	07.01.07.07	x-ray viewer, two field
	07.01.07.08	x-ray viewr, four field
	07.01.07.09	resuscitator, manual
07.01.08	Major surgical sets	
	07.01.08.01	infant laparotomy set
	07.01.08.02	plastic repair instrument set
	07.01.08.03	gallbladder & bile duct set
	07.01.08.04	pancreatectomy & splenectomy set
	07.01.08.05	pancreatoduodenectomy set ( wipple procedure)
	07.01.08.06	gastroinntestinal instrument set
	07.01.08.07	abdominalperineal resection set
	07.01.08.08	major rectal instrument set
	07.01.08.09	fistulectomy set
	07.01.08.10	vaginal hysterectomy set
	07.01.08.11	abdominal gynaecological instrument set
	07.01.08.12	Open thoracostomy set
	07.01.08.13	closed thoracostomy set
	07.01.08.14	diaphragmatic hernia repair set
	07.01.08.15	basic cardiovascular set
	07.01.08.16	coronary set
	07.01.08.17	cardiovacular baby set
	07.01.08.18	thoracotomy set ( for closed heart procedures)
	07.01.08.19	coarctation of aorta set ( closed heart procedures)
	07.01.08.20	endarterectomy set

	07.01.08.21	basic neurosurgical set
	07.01.08.22	laminectomy set (1)
	07.01.08.23	sympathectomy set
	07.01.08.24	basic orthopaedic set
	07.01.08.25	basic eye surgery set
	07.01.08.26	tonsillectomy and adenoidectomy set
	07.01.08.27	tracheostomy set
	07.01.08.28	laryngectomy set
	07.01.08.29	dental set
	07.01.08.30	prostatectomy set
	07.01.08.31	craniotomy set
	07.01.08.32	laminectomy set (2)
	07.01.08.33	micro surgical instruments neuro
	07.01.08.34	Paediatric shunt set
	07.01.08.35	cataract set
	07.01.08.36	cholecystectomy set
	07.01.08.37	haemorrhoidectomy set
	07.01.08.38	rhinoplasty set
	07.01.08.39	hand & tendon microsurgery
	07.01.08.40	ureter dilation set
	07.01.08.41	Vagotomy Set
	07.01.08.42	Ophorectomy & oophorocystectomy set
	07.01.08.43	lobectomy & segmental lung resection set
	07.01.08.44	oesophagectomy & oesophagus replacement
	07.01.08.45	tetralogy of fallot set (babcock-taussig procedure)
	07.01.08.46	saphenous vein ligation set
	07.01.08.47	carotid artery ligation set
	07.01.08.48	prefrontal lobotomy set
	07.01.08.49	hydrocephalus shunt operation set
	07.01.08.50	cordotomy & rhizotomy set
	07.01.08.51	radical neck dissection set
	07.01.08.52	charnley hip replacement
	07.01.08.53	burr-hole set
	07.01.08.54	Cholecystectomy set
	07.01.08.55	Tympanoplasty set (1)
07.01.09	Minor Surgical sets	
	07.01.09.01	simple mastectomy set
	07.01.09.02	radical mastectomy set
	07.01.09.03	foreign body removal set
	07.01.09.04	epispadias repair set
	07.01.09.05	urethral dilatation & internal urethrotomy set
	07.01.09.06	supra pubic & retropubic prostatectomy set
	07.01.09.07	Nephrotomy, nephrostomy, nephrolithotomy, pye



07.01.09.08	cystectomy set
07.01.09.09	ureterotomy & ureterostomy set
07.01.09.10	ureterolithotomy set
07.01.09.11	anoplasty set
07.01.09.12	posterior proctotomy set
07.01.09.13	Gynecology/Obstetrics: dilatation & curettage set
07.01.09.14	cervical biopsy set
07.01.09.15	basic vaginal instrument set
07.01.09.16	Major vaginal repair set
07.01.09.17	vesicovaginal fistula repair set
07.01.09.18	colpotomy set
07.01.09.19	vaginal closure set
07.01.09.20	obstetrical instruments ( forceps operation)
07.01.09.21	Episiotomy or laceration repair
07.01.09.22	caesarean section set
07.01.09.23	thoactomy set (boitepou-thorax)
07.01.09.24	nasal fracture reduction set
07.01.09.25	nasal cysts excision set
07.01.09.26	peritonsillar abcess incision & drainage set
07.01.09.27	dental extraction forceps i
07.01.09.28	incision & drainage set
07.01.09.29	cut down set
07.01.09.30	vascular set
07.01.09.31	chest aspiration set
07.01.09.32	suture set
07.01.09.33	endoscopic diagnosis surgery
07.01.09.34	cystoscope-urethroscope for adults
07.01.09.35	excision of skin growth set
07.01.09.36	orchidectomy set
07.01.09.37	meatotomy set
07.01.09.38	perineal prostatectomy set
07.01.09.39	kidney transplant set
07.01.09.40	pyeloplasty & ureterplasty set
07.01.09.41	cystolithotomy set
07.01.09.42	ischiorectal abcess set
07.01.09.43	pilonidal cyst excision set
07.01.09.44	hymenectomy set
07.01.09.45	bartholin cyst excision set
07.01.09.46	simple vulvectomy set
07.01.09.47	radical vulvectomy & groin lymphadenectomy se
07.01.09.48	anterior & posterior colporrhaphy set
07.01.09.49	Salpingostomy set
07.01.09.50	salivary glands incision set

		07.01.09.51	Parametrial fixation set (manchester operation)
		07.01.09.52	Vaginal construction set
		07.01.09.53	Salpingostomy set
		07.01.09.54	a.v. fistula set
		07.01.09.55	vasiular instrument separate pkts
		07.01.09.56	hollow mills for bone biopsy
07.01.10		Personal Protectives Equipment (PPE)	
		07.01.10.01	Examination gloves
		07.01.10.02	surgeon gloves, box
		07.01.10.03	Gynecology (Elbow-length) gloves, box
		07.01.10.04	Aprons, plastic
		07.01.10.05	Apron, protection, plastic, dsiposable
		07.01.10.06	Gown, surgical, woven
		07.01.10.07	Trousers, surgical, woven
		07.01.10.08	Tunic, Surgical, woven
		07.01.10.09	surgeon hand brushes, box
		07.01.10.10	surgeon-mask dispenser
		07.01.10.11	glove dispenser
		07.01.10.12	set, operating room utensils, for 150 bed hosp.
		07.01.10.13	set, operating room utensils, for 360 bed hosp.
		07.01.10.14	shoe conductivity tester
		07.01.10.15	mask
		07.01.10.16	goggles
		07.01.10.17	head cover
		07.01.10.18	shoe
07.01.11		Endoscopic surgery	
		07.01.11.01	Optical urethrotomy
		07.01.11.02	Ureterorenoscopy
		07.01.11.03	Transurethral resection
		07.01.11.04	Percutaneous nephrolithotomy
		07.01.11.05	Laparoscopy
07.01.12		Male Circumicition tools	
		07.01.12.01	Mogen
		07.01.12.02	Gomco
		07.01.12.03	Plastibell
07.02	ICU, NICU, CCU Equipment		
	07.02.01	Monitoring	
		07.02.01.01	portable Pulse Oximeter
		07.02.01.02	Paient Monitors, vital sign
		07.02.01.03	Capnography
		07.02.01.04	Advanced Monitor
		07.02.01.05	Central monitor
		07.02.01.06	ABGA machine

7.03	Pediatric section	07.02.02	Therapy/treatment	
		07.02.02.01	Bed ICU	
			Incubator,automatic,basic, thermo control only, n	
		07.02.02.02	RH or O <sub>2</sub> )	
			Table,resusc,newborn(open care system, cradle, n	
		07.02.02.03	warmer, drawers)	
		07.02.02.04	Basinet on trolley, neonatal, with mattress	
		07.02.02.05	Radiant warmer, fixed height stand	
			Phototherapy unit, single head, wth counter, heigh	
		07.02.02.06	adjustable	
	Supporting equipment	07.02.02.07	humidifier	
		07.02.02.08	Paient heater	
		07.02.02.09	Laryngoscope, set	
		07.02.03.01	boiler	
		07.02.03.02	Steriliser, steam 10L	
		07.02.03.03	Refrigerator	
		07.02.03.04	trolley, emergency	
		07.02.03.05	trolley, medication	
		07.02.03.06	Trolley for medicine Transport	
		07.02.03.07	mattress, decubidus	
7.04	Orthopedic Surgery	07.03.01	Pediatric Instrument	
		07.03.01.01	Pediatric Escophagoscope	
		07.03.01.02	Neonatal Broncoscope	
		07.03.01.03	Pediatrric laperascope	
		07.03.01.04	Neonatal Cytoscope urethroscope	
		07.03.01.05	Pediatric operating Cytoscope urethroscope	
		07.03.01.06	Pediatric Optical Uretherotome	
		07.03.01.07	Resectoscope	
		07.03.01.08	Pediatric percutaneous nephrolithotomy	
		07.03.01.09	Basic Set for rectoscopes and protoscopes	
	Instrument sets for plats and screw	07.03.01.10	Pediatric Urethral dialation set	
		07.03.01.11	Pediatric Trachostomy set	
		07.03.01.12	Pediatric Trachostomy set, big	
		07.03.01.13	Others	
		7.04.01.01	Small fragment set	
		7.04.01.02	Large fragment set	
		7.04.01.03	Combined set for small & large fragments	
		7.04.01.04	Mini fragment set	
		7.04.01.05	Reconstruction Plates set	
		7.04.01.06	Locking Compression plates set	

	7.04.01.07	DHS/DCS set
	7.04.01.08	Cannulated screws set (No 3.5, 4.0,&4.5)
	7.04.01.09	Cannulated screws set (No 7.3)
	7.04.01.10	Broken screws set
07.04.02	sets for Intramedullary Nails	
	07.04.02.02	PFNA Nail
	07.04.02.03	Proximal Femoral Nail (long)/Antegrade femoral nail Proximal Femoral Nail (Standard)/ Retrograde femoral nail
	07.04.02.04	
	07.04.02.05	Tibial Nail set
	07.04.02.06	Sign Nail set
	07.04.02.07	Set for Hip Prosthesis
07.04.03	Set for Hip Prosthesis	
	07.04.03.01	Diamond Hip system Box No. 1
	07.04.03.02	Diamond Hip system Box No. 2
07.04.04	Total knee replacement component (Sets)	
	07.04.04.01	Test prostheses
	07.04.04.02	Mixed tray
	07.04.04.03	Femur cutting instruments
	07.04.04.04	Tibial cutting guide
	07.04.04.05	Alignment instrument
	07.04.04.06	Drilling and reaming instruments
	07.04.04.07	Patella instrument
	07.04.04.08	Tray
	07.04.04.09	Self Compression Holes Plates: CL. Narrow.
	07.04.04.10	Self Compression Holes Plates: CL. Broad.
	07.04.04.11	Low Contact Self Compression Hole Plates (LCDCP.) (4.5) Narrow.
	07.04.04.12	Low Contact Self Compression Hole Plates (LCDCP.) (4.5) Broad.
	07.04.04.13	Semi Tubular Plates
	07.04.04.14	Self Compression Holes Plates 3.5 mm.
	07.04.04.15	T Buttress Plates (3.5) for distal radius
	07.04.04.16	L Buttress Plates Right.
	07.04.04.17	L Buttress Plates Left.
	07.04.04.18	Lateral Tibial Head Buttress Plate left
	07.04.04.19	Lateral Tibial Head Buttress Plate right
	07.04.04.20	Condylar buttress plates with Self compression holes Condylar Blade Plate with Self Compression holes
	07.04.04.21	95 deg RUSH NAIL FOR HUMERUS DIAMETER :
	07.04.04.22	3.5MM
	07.04.04.23	SCHANZ PIN
	07.04.04.24	Automatic Tourniquet

	07.04.04.25	Amputation Set
	07.04.04.26	External Fixator Set (large)
	07.04.04.27	External Fixator Set (small)
	07.04.04.28	Power Drill set
07.04.05	Screws, Pines, and Wires	
	07.04.05.01	Cortical Screws
	07.04.05.02	Cortical Screws
	07.04.05.03	Malleolar screw (hexagonal head)
	07.04.05.04	Cancellous screws : 6.5 mm half Threaded

## **DENTAL INSTRUMENT**

### **08 Dental Unit**

#### **08.01 Dental instrument, outpatient**

08.01.01	Dental units	
	08.01.01.01	
	08.01.01.02	Dental unit, basic complete
	08.01.01.03	Dental unit, advanced complete
	08.01.01.04	Dental,Treatment unit
08.01.02	Dentax X-ray	Dental instrument cabinet, mobile
	08.01.02.01	
	08.01.02.02	Monoblock Dental X-ray
08.01.03	Dental sets	Panoramic Dental X-ray
	08.01.03.01	
	08.01.03.02	Dental Examination set

## **OPD (OUT PATIENT DEPARTMENT) INSTRUMENTS**

Dental Surgical set

### **09 Outpatient department Equipment**

#### **09.01 ENT**

09.01.01	ENT workstation	
	09.01.01.01	ENT Work station/ basic
	09.01.01.02	ENT WORKSTATION ADVANCE
	09.01.01.03	ENT workstation/mobile
09.01.02	Otosopes	
	09.01.02.01	Otoscope, handheld set
	09.01.02.02	Otoscope, instruments
09.01.03	Audiometer	
	09.01.03.01	Audiometer/basic/2 channel
	09.01.03.02	AUDIONERY ADVANCED,COMPYTERIZED
	09.01.03.03	TUNING FORK
09.01.04	LARYNGOSCOPE	
	09.01.04.01	LARYNGOSCOPE SET
09.01.05	EXAMINATION INSTRUMENT	
	09.01.05.01	E.N.T. Examination/treatment instrument set

		09.01.05.02	Head Light/non sterilized
		09.01.05.03	head light
		09.01.05.04	ear hooks
		09.01.05.05	cerumen & blunt hook
		09.01.05.06	Ear & Nasal speculum
		09.01.05.07	Tracheostomy set
		09.01.05.08	septum straightening forceps (walsham )
		09.01.05.09	elevator cottle
		09.01.05.10	Antrum trocar needle & cannula
09.02	Ophthalmology		
	09.02.01	Workstations ophthalmic	
		09.02.01.01	ophthalmology workstation, basic
		09.02.02.02	ophthalmology workstation, advanced
	09.02.02	Dioptries	
		09.02.02.01	Diopters,manual
		09.02.02.02	Diopters,automatic
	09.02.03	Slit lamps	
		09.02.03.01	Slit lamp, basic
		09.02.03.02	Slit lamp, automatic
		09.02.03.03	Visuals yag III Laser slit lamp
		09.02.03.04	Visuals Sign, Slit Lamp
		09.02.03.05	Laser Slit Lamp
	09.02.04	Cornea	
		09.02.04.01	Corneal Topography
		09.02.04.02	Pachymeter
	09.02.05	Retina	
		09.02.05.01	Fundoscope
		09.02.05.02	Ophthalmoscope /funduscopy set
		09.02.05.03	Retinoscope/Streak
	09.02.06	Lasers	
		09.02.06.01	NdYAG laser
		09.02.06.02	Argon laser
		09.02.06.03	Visual Yag III Laser System
		09.02.06.04	Laser Photo Coagulator
		09.02.06.05	Accessories
	09.02.07	Vision test	
		09.02.07.01	vision chart
		09.02.07.02	Near Vision test
		09.02.07.03	Vision test ,automatic
		09.02.07.04	Auto Chart Projector
	09.02.08	Ophthalmoscopes	
		09.01.08.01	Direct Ophthalmoscope
		09.01.08.02	Indirect Ophthalmoscope

		09.01.08.03	Indirect Ophthalmoscope, coaxial
	09.02.09	Tonometers	
		09.02.09.01	Contact tonometer
		09.02.09.02	Non contact tonometer
		09.02.09.03	Computerized Tonometer
	09.02.10	Ophthalmometer	
		09.02.10.01	Keratometer
		09.02.10.02	Synoptophores
	09.02.11	Lens	
		09.02.11.01	Trial lenses, set
		09.02.11.02	Lens meter
		09.02.11.03	Computerized Lens meter
		09.02.11.04	Perimeters
	09.02.12	Refractometer	
		09.02.12.01	Eye Refractometer
09.03	Gynecology and obstetrics		
	09.03.01	Gynaecology examination instruments	
		09.03.01.01	Pinard fetoscope
		09.03.01.02	Speculum
		09.03.01.03	Cervical biopsy set
		09.03.01.04	Gynaecology examination instrument set
		09.03.01.05	Weighing scale/digital
		09.03.01.06	Weighing scale /stadiometer
		09.03.01.07	Ultrasonography
		09.03.01.08	Stand light
		09.03.01.09	Vital sign equipment
		09.03.01.10	colposcopy
		09.03.01.11	E& C set
		09.03.01.12	Vaccum Extractor, manual
		09.03.01.13	Vaccum Extractor, electrical
	09.03.02	Doppler	
		09.03.02.01	Doppler, handheld
		09.03.02.02	CTG monitor
	09.03.03	Gynaecology examination couch	
		09.03.03.01	Gynaecology examination couch
09.04	Neurology		
	09.04.01	Neurology examination instruments	
		09.04.01.01	Reflex hammer
		09.04.01.02	Neurostimulator
		09.04.01.03	Reflex meter
		09.04.01.04	Pain stimulus measurement device
		09.04.01.05	Opthalmoscope

		09.04.01.06	EMG
		09.04.01.07	EEG
		09.04.01.08	LP set
09.05	Cardiology		
	09.05.01	Cardiology examination instruments	
		09.05.01.01	Stethoscope
		09.05.01.02	Sphygmomanometer, manual
		09.05.01.03	Electrocardiography/Digital
		09.05.01.04	Electrocardiography/6 channel
		09.05.01.05	Electroshock therapy
		09.05.01.06	Heart rate monitor
		09.05.01.07	resustation kit
		09.05.01.08	arterial blood gas machine (ABG)
09.06	Dermatology		
	09.06.01	Dermatology examination instruments	
		09.06.01.01	Wood lamp
		09.06.01.02	Microscope
		09.06.01.03	Cryogen machine
		09.06.01.04	Cautery machine
		09.06.01.05	Hybeck
		09.06.01.06	UV source
09.07	Pediatrics		
	09.07.01	Paediatrics examination instruments	
		09.07.01.01	Baby scale
		09.07.01.02	Sphygmomanometer, infant
		09.07.01.03	Otoscope, infant
		09.07.01.04	Paediatrics stethoscope
		09.07.01.05	Thermometer, digital
		09.07.01.06	Thermometer, <b>mercurial</b>
		09.07.01.07	Torch light
		09.07.01.08	Examination couch
		09.07.01.09	Examination light
		09.07.01.10	Incubator, transport, basic
		09.07.01.11	Room heater
		09.07.01.12	frist aid kits
		09.07.01.13	Rescustation kit
		09.07.01.14	IV stand
		09.07.01.15	oxygen cylinder
09.08	Orthopedics		
	09.08.01	Orthopaedic examination instruments	
		09.08.01.01	Orthopaedic table
		09.08.01.02	Work table with compartment
		09.08.01.03	Negatoscope



		09.08.01.04	splinter/immobilizer
		09.08.01.05	Dopler u/s
		09.08.01.06	Goniometer
		09.08.01.07	Meter
		09.08.01.08	wheel chair
		09.08.01.09	Strechter
09.09	Minor procedures		
	09.09.01	Dressing	
		09.09.01.01	Dressing Set
	09.09.02	injection	
		09.09.02.01	Syringe with needle ,disposable
		09.09.02.02	Syringe, single-use
		09.09.02.03	Auto-Disable syringes (sterile single-use syringes with re-use prevention devices)
		09.09.02.04	Auto-disable Syringes for fixed-dose immunization
		09.09.02.05	Retractable syringes
		09.09.02.06	Needle single-use, hypodermic
		09.09.02.07	Single-use auto-disable needle-free syringe injectors
		09.09.02.08	infusion giving set
		09.09.02.09	blood lancet
		09.09.02.10	IV Cannula
		09.09.02.11	Spinal needle:
		09.09.02.12	Butterfly needle:
	09.09.03	POP Casting Material	
		09.09.03.01	POP
		09.09.03.02	POP table
		09.09.03.03	Blanket, Survival
		09.09.03.04	Cotton wool
	09.09.04	PoP Tools	
		09.09.04.01	power Drill
		09.09.04.02	Power Saw
		09.09.04.03	Hip Spica table

## MORTUARY & AUTOPSY INSTRUMENT

10	Mortuary and Autopsy		
10.01	Mortuary and Autopsy		
	10.01.01	Body Store	
		10.01.01.01	Mortuary cooling unit,3 corps,
		11.01.01.02	Mortuary cooling unit,6 corps
		11.01.01.03	Trolley, mortuary, height adjustable

	11.01.01.04	Trolley, concealment, with cover
10.01.02	Bier Room	
	10.01.02.01	Catafalque
10.01.03	Autopsy	
	10.01.03.01	Table, autopsy, with 2 sinks, st. st
	10.01.03.02	Table, organic dissecting
	10.01.03.03	Neck support for autopsy
	10.01.03.04	Scale, autopsy, ceiling mount, 6 kg
	10.01.03.05	Ruler, straight steel
	10.01.03.06	Autopsy instruments, Set
	10.01.03.07	Saw, autopsy, electric

## BIO-MED ENGINEERING TOOLS & TEASING INSTRUMENTS

### 11 Bio-medical Equipment

#### 11.01 Bio-medical equipment

##### 11.01.01 Bio-medical testing & measuring Instrument

11.01.01.01	ECG Simulator
11.01.01.02	Dosimeter (kV, mA, time)
11.01.01.03	TLD X-Ray Test Tools
11.01.01.04	X-ray calibration tools set (perpendicularity, beam alignment)
11.01.01.05	Phantom, x-ray
11.01.01.06	Phantom, MRI
11.01.01.07	BP analyser
11.01.01.08	Safety tester (ground current leakage tester) and analyser
11.01.01.09	Electrical Safety analyser
11.01.01.10	Ventilator gas analyser
11.01.01.11	Oscilloscope, with memory
11.01.01.12	Multimeter (R,I,V,T,PNP/NPN)
11.01.01.13	LC meter
11.01.01.14	IC Tester
11.01.01.15	Photo irradiance meter

##### 11.01.02 Workshop tools & furnitures

11.01.02.01	Function generator
11.01.02.02	Solder Gun
11.01.02.03	Variable AC/DC power source
11.01.02.04	Tool set/kit
11.01.02.05	Workbench for workshop
11.01.02.06	Cabinet for workshop, open type
11.01.02.07	Stool, height adjustable, mobile, with back support
11.01.02.08	Shelve, workshop

## CLINICAL PHYSIOLOGY

12	Clinical Physiology		
12.01	Electro Physiology		
12.01.01	ECG		
	12.01.01.01	ECG recorder, 3-channel, trolley	
	12.01.01.02	ECG recorder, 6-channel,trolley	
	12.01.01.03	ECG recorder, 12-channel,trolley	
12.01.02	Stress Testing		
		Stress Test equipment for cardiac contains: 6-channel ECG-recorder, ergo meter/ Treadmill, Step and cycle exercise	
	12.01.02.01		
12.01.03	Holter monitoring		
	12.01.03.01		
	12.01.03.02	Holter, digital recorder, dual channel	
12.01.04	EEG	Holter, digital, analysis and research station, with printer	
	12.01.04.01	Recorder, EEG, basic, trolley	
	12.01.04.02	Recorder, EEG, advanced, trolley	
12.01.05	EMG Room equipment		
	12.01.05.01	Recorder, EMG, basic, trolley	
	12.01.05.02	Recorder, EMG, advanced	
12.02	Physiology		
12.02.01	Spiro meter		
	12.02.01.01	Spirometry,handheld	
	12.02.01.02	Spirometry, advanced	
	12.02.01.03	Spirometry, automatic, ergo,computer based	
	12.02.01.04	Spirometry, automatic, computer based	
12.02.02	Audiometr		
	12.02.02.01		
	12.02.02.02	Audiometer, basic,earphone	
	12.02.02.03	Audiometer, diagnostic, automatic	
12.02.03	Biometry/anthropometrics	Cabin, silent, 2.00 x 1.50 m	
	12.02.03.01	Hanging scale, w/access	
	12.02.03.02	Floor Scale, weight, mechanical	
	12.02.03.03	Floor Scale, weight, digital	
	12.02.03.04	Floor Scale, weight, with height measuring rod	
	12.02.03.05	height measuring rod, floor stand alone	
	12.02.03.06	height measuring rod, wllmount	
	12.02.03.07	Measuring board	
12.02.04	Ventilators		
	12.03.04.01	Mechanical ventilators, Adult	
	12.03.04.02	Electrical ventilator, adult/Child	
	12.03.04.03	Microprocessor controlled Ventilator, Infant	
	12.03.04.04	Ventilator, infants and premature newborn babies	

## PHARMACY EQUIPMENTS

### 13 Pharmacy equipment

#### 13.01 Dispensing tools

##### 13.01.01

##### Counters

13.01.01.01

Auto tablet Counters

13.01.01.02

Tablet Counting and Verification System

13.01.01.03

Manual tablet Counters

13.01.01.04

Tablet bags

13.01.01.05

Tablet counting spoon

13.01.01.06

Tablet cutter or pill cutter

13.01.01.07

Dispenser trolley

13.01.01.08

Dispenser, bench top

#### 13.02 Compounding, measuring tools and materials

##### 13.02.01

##### compounding tools

13.02.01.01

Mortar and pestel, porcelain

13.02.01.02

Spatula

13.02.01.03

Mixing plate

13.02.01.04

Testubes

13.02.01.05

Pipettes

13.02.01.06

distiller unit

13.02.01.07

Beaker

13.02.01.08

digital balance

13.02.01.09

manual balance

13.02.01.10

Flask

13.02.01.11

Stirrer

13.02.01.12

compounding bench

13.02.01.13

dispensing chair

13.02.01.14

Dish

#### 13.03 Cold store equipment

##### 13.03.01

##### refrigerators

13.03.01.01

Refridgerator, vaccine, electric & kerosene

13.03.01.02

Refridgerator Medicine, small

13.03.01.03

Refridgerator Medicine, large

13.03.01.04

Vaccine carrier, Small

13.03.01.05

Vaccine carrier, Cold box, large

13.03.01.06

Vaccine carrier, cold box, Long range

13.03.01.07

Refridgerator/freezer

##### 13.03.02

##### Temperature monitoring

13.03.02.01

Thermometer, room, digital

13.03.02.02

Thermometer, room, mini/max

13.03.02.03

Thermo hygrometer

#### 13.04 Dry Storage

##### 13.04.01

##### Cupboard and shelves

13.04.01

metal shelves

13.04.02	wooden shelves
13.04.03	lockable cupboard

## **BLOOD BANK EQUIPMENTS**

### **14 Blood Bank**

#### **14.01 Collection**

##### **14.01.01**

##### **Collection**

##### **14.01.01.01**

##### **14.01.01.02**

Blood bag, single,450ml

##### **14.01.01.03**

Blood bag, single,250ml

##### **14.01.01.04**

Blood bag, double,450ml

##### **14.01.01.05**

Blood bag, double,250ml

##### **14.01.01.06**

Blood bag, triple,450ml

##### **14.01.01.07**

Balance, blood bag with agitator, electrical

##### **14.01.01.08**

Blood collection chair

#### **14.02 Processing**

##### **14.02.01**

##### **Processing**

##### **14.02.01.01**

Platelet Shaker

##### **14.02.01.02**

Blood Bag Tube Sealer

##### **14.02.01.03**

Blood Bag Tube Strepper, Manual

##### **14.02.01.04**

Blood bag Tube Seals/clips

##### **14.02.01.05**

Plate, Cross Matching/Grouping

#### **14.03 Transport and Storage**

##### **14.03.01**

##### **Refrigerator, blood Bank**

##### **14.03.01.01**

Refrigerator, Blood Bank, 60 units

##### **14.03.01.02**

Refrigerator, Blood Bank, 90 units

##### **14.03.01.03**

Plasma Freezer

##### **14.03.01.04**

Box, Transport, Blood Bag, 10 units

##### **14.03.01.05**

Cold Pack, 0.3liter

##### **14.03.01.06**

Refrigerator, Blood bag storage 50 bags

##### **14.03.01.07**

Donor Couch

##### **14.03.01.08**

Blood Collection Monitor

## **CLINICAL/HOSPITAL ENGINEERING**

### **15 Hospital Engineering**

#### **15.01 Medical gasses**

##### **15.01.01**

##### **Oxygen**

##### **15.01.01.01**

**Central oxygen supply system, low capacity**

##### **15.01.01.02**

Central oxygen supply system, high capacity

##### **15.01.01.03**

Oxygen cylinder,11 litrl

##### **15.01.01.04**

Oxygen cylinder, 5 litr

##### **15.01.01.05**

Oxygen cylinder, 10 litr

##### **15.01.01.06**

Oxygen cylinder, 20 litr

		15.01.01.07	Oxygen cylinder, 40 litri
		15.01.01.08	Oxygen cylinder, 50 litri
		15.01.01.09	Oxygen Cylinder Manifold with RS 80 - Oxygen
		15.01.01.10	Cylinder Manifold with RS 20 - Nitrous Oxide
		15.01.01.11	Flow meter, wall mounting
		15.01.01.12	Flow meter, plug in to central system, 0-15 L/m
		15.01.01.13	Oxygen concentrator
	15.01.02	Vacuum system	
		15.01.02.01	Central vacuum compressor system
		15.01.02.02	Copper-Pipes – Hard
		15.01.02.03	<b>Bottle, suction, central vacuum, rail connection</b>
	15.01.03	Compressed air system	
		15.01.03.01	Central compressed air system, low capacity
		15.01.03.02	Central compressed air system, high capacity
	15.01.04	Gas Distribution Systems	
		15.01.04.01	Copper Pipe
		15.01.04.02	Area Control Unit for 2 Gases (O2, Air) and 1 Vac (DN 8)
		15.01.04.03	Area Control Unit for 3 Gases (O2, Air, N2O) and 1 Vac (DN 8)
		15.01.04.04	Area Control Unit for 4 Gases (O2, Air, Tool Air, N2O) and 1 Vac (DN 8)
		15.01.04.05	Gas Monitor 6 G
		15.01.04.06	Gas Monitor 3G
		15.01.04.07	Operation Signal 5 EN
		15.01.04.08	Ceiling and Wall Supply Units
		15.01.04.09	Intensive Care Supply Unit
15.02	Low Voltage systems		
	15.02.01	Nurse call	
		15.02.01.01	Central nurse call
		15.02.01.02	Peripheral nurse call
		15.02.01.03	Wireless patient monitoring System
15.03	Air treatment		
	15.03.01	Air treatment	
		15.03.01.01	Air handling unit small
		15.03.01.02	Air handling unit big
	15.03.02	Air Conditioner	
		15.03.02.01	Air conditioner
		15.03.02.02	Fan
	15.03.03	Temperature Controller	
		15.03.03.01	Thermometer
		15.03.03.02	Thermostat
15.04	Medical sanitary		
	15.04.01	Scrub units	
		15.04.01.01	Scrub unit, 1 position
		15.04.01.02	Scrub unit, 3 position

## WASTE MANAGEMENT

### 16 Waste Management

#### 16.01 Wast collection and isposal

16.01.01.	Collection	
16.01.01.01		Pedal bin
16.01.01.02		Sharps containers/safety box
16.01.01.03		Needle Cutter/Remover
16.01.01.04		Waste bins
16.01.01.05		Large Waste bins /Containers/
16.01.01.06		Medical Waste Plastic Bin Liners/Bio-hazard Bag/
16.01.02	Transportation	
16.01.02.01		Trolley for soiled
16.01.02.02		Wheel Barrow
16.01.03	Dispisal/Processing	
16.01.03.01		Autoclave, 40L
16.01.03.02		Autoclave,80L
16.01.03.03		Incinerator, 150 kg/hr
16.01.03.04		Incinerator, 120kg/hr
16.01.03.05		Incinerator, 250 kg/hr
16.01.03.06		
16.01.04	PPE for waste handlers	laundry machine
16.01.04.01		Protective Eyewear
16.01.04.02		Protective Respirators (Dust Masks)
16.01.04.03		Protective Footwear/ plastic buotes
16.01.04.04		Plastic Apron
16.01.04.05		Helmet
16.01.04.06		Heavy Duty/Utility/ Gloves

### ANNEX III- List of Technical Working Group

No	Participant	Sex	Profession	Region	Name of organization
1	Aschalewu Bekele	M	Pharmacist	A.A	FMHACA
2	Asfaw Afework (Eng.)	M	Biomedical Engineer	A.A	Blacklione Hospital
3	Assegid kassa	M	Lab Technogist	A.A	Blacklione Hospital
4	Aster Gebrehiwot (Sr.)	F	Nurse	A.A	MCM ( korea Hospital)
5	Bekele Tefera	M	Pharmaceutical Chemist	A.A	FMHACA
6	Demeru Yeshitila (Eng.)	M	Biomedical Engineer	A.A	USAID/JSI, FMHACA
7	Endalkachewu Hailu (Dr)	M	MD	A.A	St. /FMHACA
8	Fisseha Korma (Eng.)	M	Biomedical Engineer	A.A	USAID/JSI/FMHACA
9	Kidanemariam G/michael	M	Pharmacist	A.A	FMHACA, Standard and information director
10	Mekdes Tefera (Sr)	F	Clinical Nurse	A.A	St. Paul Hospital
11	Mengistab w/aregai	M	Pharmacist,Monitoring & Evaluation Expert	A.A	FMHACA, Deputy General Director
12	Misrak Yilma	F	Lab Technogist	A.A	Adama referral Hospital
13	Mr. Ludo Scheerlinck	M	Biomedical Engineer	A.A	UNICEF/ Denmark
14	Mulugeta Mideksa	M	Biomed Engineer	A.A	JHU/TSEHAI, (EBLEEA)
15	Teklu Assefa	M	Electrical Engineer	A.A	National Metrology Institute
16	Tesfa Melaku	M	Lab Technologist	A.A	St. Paul Hospital
17	Wondafrash Million	M	Biomed Engineer	A.A	JHU/TSEHAI, FMoH
18	Yesuf Edris	M	Pharmacist	A.A	FMHACA

### ANNEXE IV- Mini Consultative workshop participants List

S. No.	Full Name	Profession	Organization
1	Abdul latif	MPH	Landmark Hospital
2	Amsal Terefe	Medical Lab technologist	Yekatis 12 Hospital
3	Andualem Demeke (Dr)	Surgeon,Ass. professor	AAU, TASH
4	Aschalew Bekele	Pharmacist	FMHACA
5	Bekele Tefera	Pharmaceutical chemist	FMHACA, Drug Quality Test La
6	Bezu Chemedra (Dr)	Orthopedic Surgeon	AAU, TASH
7	Demeru Yeshitla (Eng.)	Bio-med Engineer	USAID/Jhpiego, FMHACA
8	Dekisa Tefera	Med. Lab. technologist	Adama General Hospital
9	Endale Engida (Dr)	MD, MPH	Unicef
10	Eskadmas Yinesu	Medical Physist	AAU, TASH
11	Eyayalem Melese	Ansthetist	AAU, HSC
12	Fisseha Korma (Eng.)	Bio-med Engineer	USAID/Jhpiego, FMHACA
13	Fitsum daniel	Hematologist	AAU
14	Kebede Oli (Dr)	Cardiologist, professor	Land mark Hospital
15	Kidanemariam G/michael	Pharmacist	FMHACA, standards and information director
16	Mesfin Ashenafi	OR Nurse	Land mark Hospital
17	Mitiku Tesfaye (Dr)	Dentist	Menelik –II Hospital
18	Mulatu Kassaye	Med. Lab. Technologist	EHNRI
19	Mulugeta Mideksa (Eng.)	Bio-med Engineer	Ethiopian Bio-medical Assoc.
20	Nebiat Teferi (Dr)	ENT	AAU, Yekatit 12 Hospital



21	Selamawit dedgicho	Pharmacist	Menelik II Hospital
22	Solomon Asmamaw	Pharmacist	Gonder University Hospital
23	Tadesse Gemechu	Med. Eqt Technician	MCM/Korean Hospital
24	Wintana Mekkonen	Physiotherapist	Black Lion Hospital
25	Wondwosen Sertsu (Dr)	Surgeon	Land mark Hospital
26	Yodit Alemayehu	Med. Lab. Technology	Eth. Med. La. Association
27	Yohannes Jorge	Nuclear Medicine, Ass. professor	AAU, TASH

## ANNEXE V- List of participants on the National Consultative workshop

No	Participant	Sex	Profession	Regional represented	Name of organization
1	Abadir Hussen	M	Pharmacist	Diredawa	Diredawa Regional Bureau
2	Abdirazak Hassan	M	BSC Nurse	Somali	FMHACA Somali Region
3	Abdulhay Abdushehim	M	Pharmacist	Afar	Afar Health Bureau
4	Abdisalem Bekele	M	Biomedical Technologist	A.A	Minilik II Hospital
5	Adnan Shamil	M	Environmental Health	Oromiya	FMHACA s/w Branch
6	Ajema Bekele	M	Pharmacist	A.A	FMHACA
7	Anub Abouwhab	M	Biomedical Technologist	Harari	Harari Regional Bureau
8	Aschalewu Bekele	M	Pharmacist	A.A	FMHACA
9	Asefa Ayehu	M	Laboratory Technologist	A.A	FMHACA
10	Asfawu Aework	M	Bio-Medical Engineer	A.A	AAU Tikur Anbessa Hospital
11	Bashir Abdi	M	Pharmacist		Somali Regional Health Bureau
12	Bereket Endrias	M	Bio-Medical Engineer	A.A	FMOH
13	Berihu Nesfin	M	BSC Nurse		Tigray Regional Bureau
14	Bogale Dememe	M	Health Officer		ARHB
15	Demeke Bitewu	M	Electrical Eng.	A.A	National Metrology Institute of Ethiopia
16	Demeru Yeshitila	M	TCB, Bio-Medical Engineer	A.A	USAID/Jhpiego/FMHACA
17	Desaleng Mekuria	M	Anesthetists	A.A	Ethiopian Association of ANHE
18	Dr.Alemu Negera	M	General surgeon	A.A	MCM Korea Hospital
19	Dr.Asfawu Tena	M	Internist	A.A	MCM Korea Hospital
20	Dr.Bruk Zewdie	M	Orthopedic Surgeon	A.A	AFRTH
21	Dr.Ketema Dirba	M	Surgeon	A.A	Yekatit 12 Hospital
22	Endaleling Sileshi	M	Pharmacist	Sidama	SNNPR Regional Health Bureau
23	Ephrem Girma	M	Pharmacist	A.A	Addis Ababa Regional Health Bureau
24	Eshetu Adinew	M	MPH	A.A	Addis Ababa Regional Health Bureau

25	Fisseha Korma	M	TCB Bio-Medical Engineer	A.A	USAID/Jhpiego/FMHACA
26	G/Kidan Yohanes	M	Pharmacist	Tigray	FMHACA N/E Branch
27	Gashaw Adane	M	Biologist	Amhara	Amhara Regional Health Burea
28	Getu Bogale	M	Pharmacist	Diredawa	FMHACA Eastern Branch
29	Hulemenaw Delelegn	M	MPH,Laboratory Technologist	A.A	EMLA
30	Jemal Edris	M	Chemist		ERPA
31	Dr. Kibron Gebreselassie	M	Surgeon	Tigray	Mekele University
32	Kirubel Abebe	M	General Practitioner	N/Shoa	D/Birhan University
33	Leul Kinfe	M	Chemist	Tigray	Fanus Meditech P.L.C
34	Mengistu Debebe	M	Pharmacist		FMHACA S/W Branch
35	Mengistu Endalew	M	Pharmacist	Sidama	SNNPR,FMHACA
36	Merawe Mekonnen	M	Pharmacist	Amhara	FMHACA N/W
37	Merawe Mekonnen	M	Laboratory Technician		
38	Meselle Derese	M	Pharmacist	A.A	Labora International Trading P.L.C
39	Meseret Yimam	M	Pharmacist	A.A	T/M Agmas G.T
40	Mulugeta Mideksa	M	Bio-Medical Engineer	A.A	Ethiopian Bio-Medical Eng Association
41	Mulugeta Olika	M	Pharmacist	A.A	Oromiya Regional Health Bureau
42	Oumer Jibril	M	Radiographer	Arsi	ASTU
43	Rahel dagnew	F	Pharmacist	A.A	Ministry of Industry
44	Robel Mesfin	M	Technical Dept.Head	A.A	Mesroy Int P.L.C
45	S/r Mebrat Ashine	F	Nurse,Med ,eqpt Officer	A.A	PFSA
46	Shami Mumed	M	Pharmacist	Harari	Harari Regional Health Bureau
47	Taddesse K/Mariam	M	MSC	A.A	A.A Teg.Dep. Head
48	Tariku Lambiyo	M	Medical Parasitologist	Sidama	Debub University Referral Hospital Laboratory
49	Teklay W/Mariam	M	B.Pharm,MPH	Tigray	Tigray Regional Health Bureau Regulatory
50	Teferi Chernet	M	Bio-Medical Engineer	A.A	EHNRI
51	Wendafrash Million	M	Bio-Medical Engineer	A.A	FMOH
52	Yenus Mohammed	M	Pharmacist	Afar	Afar Health Burea