

**List of equipments for the department of Ophthalmology (EYE)**

Sl. No.	Name of Equipments
1	Pentacam
2	IOL Master 50C
3	Flash Autoclave with accessories
4	Auto refract kerotometer
5	Slit lamp with Applanation tonometer
6	A-Scan with immersion option
7	Pachymeter
8	Indirect Ophthalmoscope
9	Catract surgery set
10	Glucoma surgery set
11	D.C.R. surgery set
12	Ophthalmology trial box complete set
13	END Laser DCR complete set
<b>A</b>	<b>CORNEA AND EYE BANK</b>
1	Pachymeter
2	Specular Microscope Living
3	Orb-Scan (obscan)
4	Living pentacam
5	Anterior segment Oct
6	Optical Biometer
7	Laminar Flow
8	Autoclave Flash
<b>B</b>	<b>GLACUMA</b>
1	Gonioscope (3/4 Mirror)

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2	Non Contact Tonometer
3	Applanationtono Meter with slit lamp
4	Perkins Tonometer
5	Heidelberg Retinal Tonography
6	GDx Nerve Fiber Layer Analyzer
7	Ultrasonic Biomicroscopy (UBM)
8	Fundus Camera
<b>C</b>	<b>VITRIO RETINA</b>
1	ND Yag Laser
2	Digital Indirect Ophthalmoscope with +20
3	Heidelber Retinal Angiogram
4	(ERG) Electroretinigram & (EOG) Eletro Oculogram Visually Evoked Response (Potential)
5	Ultrasound B-Scan
6	Micropeimetry
7	ICG
8	High End Operating Microscope for retinal surgery
9	Biom
10	High End Vitrectomy Machine with endolaser and cryo facilities
11	SD Oct. (Spectral Domain)
<b>D</b>	<b>PAEDIATRIC OPHTHALMOLOGY</b>
1	Indirect Ophthalmoscopy cordless
2	Synaptophore
3	Retcam
4	Laser Indirect Ophthalmoscopy L10 (Red Laser)
5	Laser Indirect Ophthalmoscopy L10 (Green Laser)
<b>E</b>	<b>INDIAN OCULAR LENS OF DIFFERENT POWER</b>

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1	Non foldable lenses
2	Foldable Lenses
3	Catract surgery set
4	Glucoma surgery set
5	DCR surgery set Viteno Retinal surgery set
6	Flase Auto clave
7	Retinal Laser lens
8	Conventional Auto Clave
9	Slit lamp with Applanation Tonometer
10	Trial Box
11	Auto Refractometer
12	Auto Refractometer kerotometer
13	Endo laser DCT complete set

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## VITERO RETINAL UNIT

### 1. Nd YAG LASER

#### TECHNICAL SPECIFICATION OF YAG LASER

Laser wavelength	:	1064 nm
Mode	:	Super Gaussian
Optical breakdown	:	Typically . 2.5 mJ in air
Pulse duration	:	< 4 ns ( typ. 2 – 3 ns)
Max. laser energy	:	Single pulse, typically 10 mJ Double pulse, typically 23 mJ Triple pulse, typically 37 mJ
Energy levels	:	22 steps
Pulse repetition		
Frequency	:	Max. 2.5 Hz
Focus diameter	:	10 $\mu\text{m}$ in air ( 1/e <sup>2</sup> )
Angle of exit aperture	:	16°
Aiming beam	:	Laser diode 670 nm, power: 5 $\mu\text{W}$ – 150 $\mu\text{W}$ 4-spot focusing system
Focus shift variable	:	+ 150 $\mu\text{m}$ ; 0 ; - 150 $\mu\text{m}$
Electrical connection	:	100 – 240 V, $\pm$ 10%, 50 – 60 Hz
Illumination	:	12V; 30W halogen lamp, adjustable
Magnification	:	5, 8, 12, 20, 32x through Galilean changer with 10X eyepieces and tube f = 140 mm
Tube	:	Parallel tube f=140 mm with 50 – 78 mm PD adjustment Convergent tube should be available as option
Eyepieces	:	10X high eyepoint eyepieces with $\pm$ 8D compensation of ametropia; 12.5X available as option
Slit adjustment	:	Width: 0 – 14 mm, continuous Length: in steps 1/3/5/9/14 mm
Isolation Transformer	:	Machine should have Isolation Transformer for Safe handling

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## 2. DIGITAL INDIRECT OPHTHALMOSCOPE

BINOCULAR INDIRECT OPHTHALMOSCOPE:

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, yellow filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories : large & small scleral depressor, fundus charts.
- Quality certification: CE marked & relevant ISO certification.

## 3. HEIDELBERG RETINAL ANGIOGRAM

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## 4. ELECTRORETINOGRAM (ERG), ELECTROOCULOGRAM (EOG) AND VISUALLY EVOKED POTENTIAL (VEP)

### A Typical System Configuration

#### Anthro 30, 36, or 48-inch wide Utility Cart with shelf Apple Computer (Mac Pro, iMac, or 15" MacBook Pro)

- Includes keyboard, mouse, and DVI adapter.
- Thunderbolt, 802.11ac Wi-Fi, USB 3, Bluetooth 4.0, SDXC slot  
Interface
- Includes National Instruments D/A board, video converter, and EDI Switchbox

#### Medical grade isolation transformer

#### Grass 15LT Amplifier System

- Gain and filter settings controlled entirely through pre-programmed protocols, reducing possibility of user error.
- One 4-channel AC amplifier module included. Three more optional for a total of 16 possible channels.

#### Ganzfeld Stimulator (for full-field stimulation)

- Choose full-sized or hand-held model

#### FMS color microdisplay with IR eye and fundus imaging

- 40 microsecond response time.
- 1280 x 1024 spatial resolution.
- 24-bit (8-bit red, green, & blue) color channel resolution.
- Integrated refractor for correction of patient's refractive error without magnification changes.
- Infra-red video eye camera to monitor electrode and eye position.
- Infra-red video fundus camera to monitor fixation while testing.

#### Spot Calibrator

- Easy point & click luminance calibration of all stimulators.  
Software

#### Choose from:

- **Basic:** Limited pre-programmed monocular protocols for traditional clinical electrophysiology and multifocal ERG testing only.
- **Clinic:** Basic protocols plus multifocal ERG, multifocal VEP, Optic Nervehead Component, and more. Provides the ability to modify report layouts and text.

### Pre-Programmed Tests

#### Traditional

- EOG (2010 ISCEV)
- Full-Field ERGs (2008 ISCEV)
- Full-Field Flash VEP
- Pattern ERG (2007 ISCEV)
- Pattern VEP (2009 ISCEV)
- Periodic Sweep VEP

#### Multifocal

- Multifocal ERG (2011 ISCEV)  
(103 hexagons, 7 minute)
  - 103 hexagons, 4 and 2 min.
  - 241 hexagons, 7 min.
  - 61 hexagons, 2, 4, & 7 min.
  - 37 hexagons, 2, 4, & 7 min.
- Multifocal VEP
  - 2 channel, 120 sectors
  - 2 or 3 channel, 60 sectors
- Optic Nervehead Component

#### Advanced

- mfERG Ring Ratio Analysis
- M-Sequence Pattern ERGs
- M-sequence VEP
- M-sequence Sweep VEP
- M-sequence Full-Field Flash
  - scotopic and photopic with modeled recovery functions.
- mfERG modeled recovery plots

### Pre-Programmed Comparisons to:

- Previous recordings
- User-specified Baseline Recordings
- Normal Averages

## 5. B SCAN

Portable, digital, combination A-scan and B-scan, with easy-to-use touch screen operation, high resolution, extreme accuracy, repeatable measurements.

A-Scan offers built-in immersion capabilities and up to eight IOL formulas, including two post-refractive formulas. Axial length, ACD, and lens thickness are provided for each scan. Group up to five scans with average axial length and standard deviation automatically calculated. Easily review each scan, delete outlying scans, and add new scans, as desired. Customizable tissue velocities of each structure and highly-developed automatic scan recognition algorithms ensure accurate and repeatable measures. Built-in calibration check ensures continued accuracy of system.

B-Scan provides excellent resolution with a full set of features including display of A-scan trace across a selectable vector, zoom and pan capabilities, multiple color and grayscale display modes, measurement functions, annotation, and more. The real-time B-scan display,

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adjustable gain and TVG controls, and enhanced "high-resolution" mode which produces a scan with 256 line vectors facilitate optimal diagnostic viewing.

Touch screen operation with large backlit display

Complete measurement and calculation record within seconds

Ability to store up to five different user profiles

Portable and compact weighing less than 6 pounds (3 kg)

Fully adjustable tilt for ergonomic comfort

Video printer

The Scan Should offers extreme portability, weighing about 5 lbs (2.4 kg), and comes with an optional padded carrying case. A video printer comes standard and allows for printing of a hardcopy record of scans and data. A data download and scan viewer software option is also available to create permanent digital archive of scan results.

Two A-Scan probe styles are available - standard or soft-touch - depending upon user preference and scanning application. Built-in immersion scanning capabilities is provided with optional Prager shell for ease of use and the highest assurance of accuracy and repeatability.

## 6. MICROPERIMETER

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## 7. IDIOCYANINIE ANGIOGRAPHY MACHINE (ICG)

Technical Spec. of Mydratic Retinal Camera (HIGHER VERSION)		
1	Capture Mode	Colour / Red - Free / FA / ICG/ AUTO FLUO
2	Auto Fluorescence	AVAILABLE
3	Angle of Coverage	50° / 35° / 20°
4	Photographic Magnifications	with 35 mm camera at zero diopter; 1.84X at 50°, 2.45X at 35°, 4.28X at 20°
5	Working Distance	39 mm
6	Diopter compensation range for patient's eye	0 - 10D ~ +6D - 23 D ~ - 9D
7	Range for patient's eye	+ 5D ~ + 23D A + 22D ~ +41 D
8	Diopter Compensation at finder	- 6D ~ +5D
9	Split Focus	IN BUILT
10	Internal Fixation	AVAILABLE
11	Counter	INBUILT
12	Optical Head tilt	Up 15° / Down 10°
13	Light Source	For photography: Max 300 WS Xenon
14	Power Supply	100 - 120 V, 200 - 240 V / 50 - 60 Hz
15	Power Consumption	1500 VA
16	Dimensions / Weight	340 mm (W) * 505 mm (D) * 506 - 715 mm (H) / Aprox. 35 kg

Unique Specifications	
* Gold Standard Captured by Nikon D 90 Professional S L R Camera	
* Max. Variable Flash Intensity Level	3 Level (20°, 35° & 50°)
* Variable Magnifications:- Split Focus, Machine guided user friendly capture process	
* DX - Capture Facility	

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## **8. HIGH END OPERATING MICROSCOPE FOR VITERO RETINAL SURGERY**

### SPECIFICATION FOR SURGICAL OPERATING MICROSCOPE

- Compact microscope body with high quality apochromatic Optics with 1:6 zoom ratio, Retina Protection Device and contrast enhancement aperture.
  - Stereo Coaxial Illumination for very bright red reflex.
  - Inclined binocular tube with integrated facility for inverting the image with 12.5 X magnification eye pieces
  - Objective with 200mm focal length for convenient working distance
  - Depth focus management with one touch button.
  - Motorized foot controlled X-Y coupling with automatic re-centering and X-Y inversion facility.
  - Motorized foot controlled Zoom and focus with recentring of focussing position thru foot control.
  - High quality programmable floor stand with magnetic breaks and clutches for easy positioning thru handles and suspension arm.
  - Stand should have programming facility for setting the speed of XY, Zoom and focus with storage facility of initial setting at least for nine users.
  - Stand should have cold light fibre Optic illumination with Xenon lamps housing and also Xenon illumination as back up lamp
- HaMode filter for Xenon illumination system to generate halogen like light for hospitals where some surgeons prefer xenon and others halogen illumination.
- Independent integrated binocular assistant microscope with 5 Step magnification changer , focusing and binocular tube with integrated facility for inverting the image.
  - 3CCD Video camera attachment .
  - Compact Video recording and with Touch screen 17" LCD for controls and live video display. The system should have the possibility for upgrade for Z-Align for Toric IOLs and to connect with LAN for data transfer from the diagnostic equipment.
  - High performance apochromatic optic with excellent depth of focus and depth perception is required for performing the most difficult Vitreo - Retinal surgery.
  - To move in the filed of retinal surgery motorized XY movement is extremely important with continuously changeable angle of illumination.

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- As Vitreo-retinal surgeries are always done by two surgeons working together hence operating microscope should have the assistant's binocular attachment for the second surgeon.
- For patient follow up the video documentation and still photographic attachments are also must.
- Operating Microscope should have motorized zoom and motorized fine focusing to enable to have excellent video documentation.
- Microscope Should Have Fundus Viewing System
- Fundus Viewing System should be controlled through footswitch
- Microscope Should have inbuilt in inverter for excellent working distance

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## **9. HIGH END VITRECTOMY MACHINE WITH ENDOLASER AND CRYO FACILITIES**

### **VACUUM**

1. Should have the facility to generate direct venturi vacuum of up to 650 mmHg through cassette system having 2 independent aspiration ports.

### **CUTTER**

1. Should have the ability to drive vertical guillotine vitrectomy cutter ( in 27G, 25+ G and 23G) to go up to 7500 cuts / minute
2. Should have the facility to allow surgeon to select from 3 different duty cycle options at any given cut rate
3. Should have the 3-D technology to linearly control vacuum and cut-rate simultaneously in vitrectomy mode

### **IOP Control**

1. Should have the capacity to monitor infusion pressure constantly
2. Should have the capacity to compensate the infusion pressure constantly with results in a more stable IOP

### **Illumination .**

1. The system should have dual port Xenon Illumination
2. The System should recognize the gauge of illuminator connected and adjust the illumination accordingly
3. The system should have the facility to monitor the bulb life, to avoid surprises
4. The System should have RFID capacity, which recognizes the probe connected, and automatically loads the settings.

### **Integrated Advance Green LASER**

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1. Should have Integrated advance Green LASER
2. Should have Dual LASER Port
3. Should have Voice Confirmation
4. Should have Multifunctional Foot switch

### MIVS

1. Should have the capacity to support MIVS options like 27 G and 25G +
2. Should have a single entry system

### Advance Phaco:

1. Should have Torsional (Ozil) Phaco incorporated

### Other Features

1. The System should have the Vented Gas Forced Infusion Capability
2. The System should have the Automated Silicon Oil Injection Capability
3. The System should have Auto Fluid / Air Exchange
4. The System should have Auto Gas Fill ( C3F8 and SF6) option
5. Should have the fully programmable footswitch with the facility to change procedural modes through footswitch.
6. Should have the facility of diathermy.
7. Should have the facility to digitally control the infusion pressure and the facility to toggle between a regular infusion pressure and an higher alternate pressure ( to achieve tamponade effect) with the help of footswitch.
8. Should have the facility for the extrusion of sub-retinal fluid.
9. Should have the facility of voice re-confirmation.
10. Should have programmability to store various parameters.

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11. Should have the facility of torsional Phacoemulsification
12. Should have the facility for Anterior Vented Gas forced infusion.
13. Should have the facility to use variety of Phaco tips like, Kelman, ABS and micro tips
14. Should have the facility to use variety of Phaco tips like, Kelman, ABS and micro tips
15. Should have the facility to use High Infusion Sleeve
16. Should have the availability of Linear, Pulse, Burst and 3D in Phaco mode
17. Should have the Irrigation / Aspiration mode
18. Should have the facility of fragmentation with the help of 4 crystal Ultrasound hand piece.

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## **10.SPECTRAL DOMAIN OPTICAL COHERENCE TOMOGRAPHY (SD OCT)**

### TECHNICAL SPECIFICATION FOR HIGH DEFINATION SPECTRAL DOMAIN OCT FOR POSTERIOR SEGMENT

- Axial resolution : 5 $\mu$ m ( in tissue )
- Transverse resolution : 15 $\mu$ m ( in tissue )
- Scan speed : 27000 A-scans per second or more
- A-scan depth : 2.0 mm ( in tissue ), 1024 points
- Field of view : Minimum 36 degrees x 30 degrees
- Optical source : superluminescent diode ( SLD ), 840 nm

### **Fundus Image**

- Live during scanning using LSLO & SLO for precise registration
- Optical source : superluminescent diode ( SLD ), 750nm
- Focusing Adjustment range : -20D to +20D ( diopters ) for focusing

- Scan Patterns: Macular Cube 200 x 200  
Macular Cube 512 x 128

Five Line Raster with 4096 A Scans

per B Scan

Enhanced Five Line Raster

- Internal and external fixation
- Internal storage : > 80,000 scans
- Pupil size requirement :  $\geq$ 2.0 mm
- Optimal pupil size requirement : 3.0 mm
- Capture time 2.5 secs or less.
- Validated Normative Data for RNFL for Glaucoma applications and Macular Analysis
- Guided progression analysis.
- Retinal Change analysis.
- Auto Fovea detection.
- Auto Centering for RNFL calculation.
- Auto focus system
- 3D viewing of the section cube with possibility of cutting the layers.
- Auto detection of the center of the Optic Disc.
- Upgradability for Anterior Segment imaging.
- Motorised Chin Rest.
- Scan Capture and Alignment controls through Mouse.

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- Scan Capture module, Monitor & CPU should fully integrated in the unit.
- Ergonomically designed original motorized table.
- Photo quality suitable printer.

<b>TECHNICAL SPECIFICATIONS OF Optical Coherence Tomography</b>	
<b>Observation &amp; Photography of Fundus Image</b>	
Feature	OCT With Real Fundus Image
Scan Mode	Colour, FA, FAF (Spaide Filters), Red Free
Observation	Near IR
Picture Angle	45° Equivalent 30° (Digital Zoom)
Diopter Scale Range	-13 D to † 12 D (in fundus photography)
Operating Distance	40.7 mm (in fundus photography)
	63.7 mm (in anterior segment photography)
Photographable Diameter of Pupil	45°: $\Phi$ 4.0 mm or more
	Small pupil diameter: $\Phi$ 3.3 mm or more

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**GENERAL OPHTHALMOLOGY DEPARTMENT****1. PENTACAM****TECHNICAL SPECIFICATION OF OB - SCAN / PENTACAM**

<b>Refractive Power Measuring Range</b>	
Sphere Range	- 25D ~ +22D (0.01D / 0.12D / 0.25 D Steps)
Cylinder Range	0D ~ ± 10 D (0.01D / 0.12D / 0.25 D Steps)
Axis Range	0° ~ 180° (1° / 5° steps)
Measurable Area	ø 8mm (max.)
Measurable Minimum Pupil Diameter	ø 2 mm
<b>Corneal Curvature Measuring Range</b>	
Corneal Curvature Radius	5.00 mm ~ 10.00 mm (0.01 mm steps)
Corneal Refraction	67.5D ~ 33.75 D (0.01D / 0.12D / 0.25D steps) Proviso: Corneal refractive index = 1.3375
Corneal Astigmatism	0D ~ ±10D (0.01D / 0.12D / 0.25 D Steps)
Corneal Astigmatism Axial Angle	0° ~ 180° (1° / 5° steps)
Measurable Corneal Area	ø 0.8 mm ~ 9.2 mm (proviso Radius corneal curvature = 8 mm)
Measurable PD Range	20 ~ 85 mm (1 mm step)
Export Output Terminal	USB (IN / OUT) , RS 232 (OYT), LAN (IN / OUT)

**UNIQUE FEATURES**

5 FUNCTIONS IN ONE MACHINE: AUTO REFRACTION, KERATOMETRY, ABERROMETRY, TOPOGRAPHY AND MULTIPLE MAPS FOR OVERVIEW ANALYSIS

DECISION SUPPORT FOR CATARACT AND REFRACTIVE PROCEDURES

LESS STRESS WITH INVISIBLE LIGHT MEASUREMENT AT TOPOGRAPHY

EASIER OPERATION WITH R / L FULLY AUTOMATED MEASUREMENT AND TOUCH PANNEL

VARIOUS MAPS: SUCH AS - MULTI MAPS, IOL SELECTION MAPS, SUMMERY MAPS, PUPILLOMETRY MAPS, OCULAR IOL SELECTION SUPPORT

PRE & POST REFRACTIVE SURGERY SUPPORT

SEPARATE CASE REPORT FOR KERATOCONOUS / DIFFERENT TYPE OF CATARACT

TORIC IOL IMPLANTED EYE

**2. OPTICAL BIOMETER**

Specification for Optical Biometer.

Technology For Measurement : OLCR ( Optical Coherence Reflectometry ) for all the measurement  
Light Source : Super luminous Diode (SLD)

Wavelength of Light Source for Peripheral Fixation : 570nm

Power on Patients Eye : <0.02mW

The Machine Should Give Complete Eye Measurement at one shot

The Machine should give 1.Biometry, 2. Keratometry 3. Pachymetry 4.Lense Thickness, 5.Pupilometry

6. White to White 7. ACD (Anterior Chamber Depth) 8. Eccentricity of Visual axis 9. Retinal Thickness

One reading Should Contain 16 individual full eye scans & 4 Individual Keratometric scan taken on 2 Concentric Rings along the patients visual axis.

Keratometry should be taken in two rings of 2.3 mm & 1.65mm with 32 Points

Formule : SRK T, HOLLADAY , HAGGIS & HOFFER Q

POST Lasik FORMULE : Shammas Corneal Thickness (CT)

No History for Post Refractive

case ,Holaday 2 ( Optional) &

Olsen Formula ( Optional) 1

**3. FLASH AUTOCLAVE WITH ACCESSORIES**

Rapid instrument sterilizer with following features:

- Outer chamber, steam Jacket & Inner chamber made in corrosion resistant stainless steel- all argon welded..
- Lid made of thick stainless Steel.

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- Inner chamber dimensions: 300mm dia. X 500mm height.
- Fitted with Automatic pressure Control switch, Low Water cut off, safety valves, Moisture trap, Non return valve, drain valve, dial thermometer.
- Power: 3 phase, 440V 50 Hz AC
- CE & WHO GMP certified
- AMC/CMC required.

#### 4. CONVENTIONAL AUTOCLAVE

##### Hot air oven

- **HOT AIR STERILIZER (OVEN-Memmert Type)**
- Digital control & display
- Temp. range  $50^{\circ}\text{C}$  to  $250^{\circ}\text{C} \pm 1^{\circ}\text{C}$  controlled by digital display temperature controller cum-indicator. Provided with air circulation fan. Door gasket made of Synthetic Rubber Compound instead of Asbestos.
- **Inner chamber size made of S.S. 304**
- W      X      H      X      D
- 300    X      300    X      300 mm
- ISO 9001&. W.H.O. GMP.certified and C.E. marked

#### 5. SLIT LAMP WITH APPLANATION TONOMETER

##### 3 Step Slit Lamp BioMicroscope Microscope:-

Field of view – Convergent Stereoscopic Microscope  
 Magnification Selection- 3Step by drum rotation  
 Base line ( Sytrioscopic View) should be 24  
 Range of adjusting Eyepieces +8 to -8 Diopter  
 Vertex distance adjustment should possible  
 Interpupillary distance adjustment 52 mm to 78 mm  
 Magnification – with standard eye pieces - 6.3, 10X, 16X,  
 Upgradeable with optional inclined eye piece adapter  
 Should have counterbalance instrument  
 Tilting facility should be available  
 Microscope - Stereo angle  $13^{\circ}$   
 Eye piece 12.5 with crosshair- reticule optional

##### illumination;-

Slit Width (continuous) - 0-8mm  
 Slit Length (continuous) - 1-8mm  
 Slit Test mark fixation star  
 Illumination - Tungsten  
 Illumination source 6V 27 W  
 Max. intensity - 600,000 (Lux)  
 Filters - Gray, Red-free, Blue, Heat absorption  
 Power supply should 3 Step ,Continuous

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spring balanced instrument stand with table designed for concealing cables and electrical attachments  
Original Goldman Applanation Tonometers

**Measuring force generated** by leverage weight

- Gold Standard IOP measurement
- Reusable Tonometer prism
- Measuring range** 0 - 80 mm Hg
- Weight 0.680 kg

The maximum of **Measurement divergence** on the measuring prism over a measuring range of

0 - 58.84 mN is  $\pm 1.5\%$  of the nominal value ,however minimal  $\pm 0.49$  mN

MOTORIZED TABLE TO BE SUPPLIED

All the above machine should be USFDA Approved ,CE & SQS Approved

## 6. A SCAN WITH IMMERSION OPTION

Specification of Ultrasound Biometer TRANSDUCER PROBE

Frequency	10 MHz $\pm$ 10%
Fixation	Internal LED
Sampling Frequency	16.625 MHz
Bandwidth	>6 MHz at -6 dB
<b>ACCURACY</b>	
Electronic	$\pm$ 0.05 mm
Clinical	$\pm$ 0.1 mm
<b>SOUND VELOCITY / PHAKIC STATUS FUNCTIONS</b>	
Anterior Chamber	152 m/s
Cornea	1641 m/s
Normal Lens	1641 m/s
Vitreous	1532 m/s
Aphakic	1532 m/s
Cataract	1629 m/s
IOL	
PMMA	2718 m/s
Silicones	980 m/s
Acrylic	2120 m/s
<b>MEASUREMENT TECHNIQUES</b>	Contact & Immersion
<b>MEASUREMENT MODES</b>	Automatic
	Manual
	Calibration
Measurement range	15 mm to 45 mm axial length
<b>SOFTWARE MEMORY</b>	Scan Memory is 10 per eye with Standard Deviation of Axial Length & Anterior Chamber Depth
<b>USER MEMORY</b>	
Surgeon	6 Profiles
IOL Styles	10/ Surgeon
Patient Memory	100
Analysis	10
<b>INTERFACE</b>	
USB Type A connector to Printer	
USB Mini Type B for PC communication	
Jack for footswitch connection	
DC Jack for AC power adaptor	
Probe Connector	
<b>IOL POWER CALCULATION FORMULAE</b>	SRK T Post Lasik: Double K
	SRT II History Derived
	Holladay Refraction Derived

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Binkhorst Contact lens Method  
 Hoffer Rossa Method  
 Haigis Shammas Method

The machine should take measurement in Normal Viterous and Silicon Filled Viterious

## 7. PACHYMETER

## 8. INDIRECT OPHTHALMOSCOPE

### High end indirect ophthalmoscope

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, ye1low filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Small pupil viewing facility.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories : large & small scleral depressor, fundus charts.
- Quality certification: CE marked & relevant ISO certification.

## 9. CATARACT SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

## 10. GLUCOMA SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

## 11. DCR SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

## 12. VITERORETINAL SURGERY SET

HIGH GRADE STAINLESS STEEL SET

*Red*  
19/8

*Qul*  
19/8

*cut*  
19/8/2014



HIGH GRADE TITANIUM STEEL SET

### 13. TRIAL BOX WITH TRIAL FRAME WITH LED VISION CHART

#### **Product Specification**

Spherical, cylindrical and prismatic lenses with trial frame in wooden box. The trial lens case are made out of refined hard plastics that offers maximum protection to the lenses against impacts. The compact sizes they come in facilitates easy storing. The smooth interiors hold fast the lens in a manner which minimizes or virtually eliminates any possibility of scratch marks on the surface of the lens.

#### LED VISION CHART

- A. MULTIDISTANCE OPTION
- B. MULTIMEDIA ACCESS THROUGH USB AND MMC
- C. MULTILANGUAGE
- D. MENU OPTION FOR DISTANCE LANGUAGE SINGLE OPTO AND SETUP FUNCTION
- E. BASIC CHART LIKE SNELLEN, DOTS, HOTV AND KAY EXTENDED
- F. ASTIGMATISM, DUOCHROME, AMSLER GRID FULL, CONTRAST SENSITIVITY CHART, COLOR VISION CHART, PHORIA TEST AND ANISOKONIEA TEST
- G. FIXATION TARGET FOR CHILDREN
- H. EDUCATION CHART
- I. MONITOR WITH LED BACKLIGHT
- J. USER FRIENDLY REMOTE CONTROL WITH GLOWING KEYPAD
- K. POWER SAVING MODE
- L. WALL MOUNT AND TABLE TOP FACILITY

#### 14. RIGID LENS OF DIFFRENT POWER

#### 15. FOLDABLE LENS WITH DIFFERENT POWER

#### 16. RETINAL LASER LENS

##### DIAGNOSTIC LENSES:

- 20D lens, double aspheric x 3nos.
- 28D lens, double aspheric x 1no.
- 90D non contact lens x 2nos.

*Rahul*  
19/12

*Santhosh*  
19/18

*Santhosh*  
19/12/2014






- 78D non contact lens x 2nos.
- Mini quad XL vitrectomy lens x 1no.
- Super macula Vitrectomy lens x 1no.
- Goldman design 3 mirror contact lens x 2nos.
- Superfield non contact fundus lens x 1no.
- CE marked / relevant ISO certification
- Vogt or Ocular make

## 17. AUTOREFRACTOMETER

### TECHNICAL SPECIFICATION OF AUTO REFRACTOMETER

Objective Refractometer Mode	
Sphere Range	- 25D to + 22 D (0.12D / 0.25D steps)
Cylinder Range	0 to +10 D (0.12D / 0.25D steps)
Axis Range	0° to 180° (in 1° to 5° steps)
Minimum Measurable Pupil Diameter	∅ 2.0 mm
Others	
PD Measurement	20 mm to 85 mm (0.5 mm step)
Input / Output	USB (input) / RS 232 C (output) / LAN (output)
Other Specifications	
Dimensions	317 mm (W) X 521 (D) X 447 - 477 mm (H)
Weight	15 Kg
Power Supply	100 - 240 V AC, 50 - 60 Hz, 30 - 70 VA
Features:	
	<b>Rotary Prism Technology</b>
	<b>8.5 - inch LCD Touchscreen Panel</b>
	<b>Connectable to LAN</b>
	<b>One Touch Lock</b>
	<b>Easy - to - Load Printer</b>

MOTORIZED TABLE TO BE SUPPLIED

## 18. AUTOREFRACTOKERATOMETER

### TECHNICAL SPECIFICATION OF AUTO KERATO REFRACTOMETER

Objective Refractometer Mode	
Sphere Range	- 25D to + 22 D (0.12D / 0.25D steps)
Cylinder Range	0 to +10 D (0.12D / 0.25D steps)
Axis Range	0° to 180° (in 1° to 5° steps)
Minimum Measurable Pupil Diameter	ø 2.0 mm
Corneal Curvature Mode	
Corneal Curvature Radius	5.00 to 10.00 mm (0.01 mm step)
Corneal Refraction	67.50 D to 33.75 D (0.12 / 0.25 D steps)
Refraction Index	1.3375
Corneal Astigmatism	0D to +10 D (0.12D / 0.25 D steps)
Corneal Astigmatism Axial Angle	0° to 180° (in 1° to 5° steps)
Others	
PD Measurement	20 mm to 85 mm (0.5 mm step)
Input / Output	USB (input) / RS 232 C (output) / LAN (output)
Other Specifications	
Dimensions	317 mm (W) X 521 (D) X 447 - 477 mm (H)
Weight	15 Kg
Power Supply	100 - 240 V AC, 50 - 60 Hz, 30 - 70 VA
Unique Features:	
Rotary Prism Technology	
8.5 - inch LCD Touchscreen Panel	
Connectable to LAN	
One Touch Lock	
Easy - to - Load Printer	

### MOTORIZED TABLE TO BE SUPPLIED

## 19. ENOLASER DCR WITH COMPLETE SET

# PAEDIATRIC OPHTHALMOLOGY UNIT

## 1. INDIRECT OPHTHALMOSCOPE

### BINOCULAR INDIRECT OPHTHALMOSCOPE:

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, yellow filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories : large & small scleral depressor, fundus charts.
- 20D AND 28 D TO BE SUPPLIED
- Quality certification: CE marked & relevant ISO certification.

## 2. SYNAPTOPHORE

## 3. RET CAM

### Ret Cam

1. Note Book Computer : Pre Loaded with Retcam System Software, it should include DVD R/RW ,
2. integrated Network adapter & USB
3. Hand Piece : Contains the camera , lightweight and easy to position , it has a long cable for easy reach, can be used with interchangeable lenses pieces.
4. Hand piece Inter Connect Harness.
5. Hand Piece Hoister. Holds the Hand piece when the hand piece is not in use
6. Electro Optical Box : Should contain the camera control unit ,illumination Lamp & Control
7. Circuit.
8. Foot Switch
9. Cart with storage compartment for transport
10. Dimension : 19" X 19" X34" ( 483 X 483 X 864 mm)
11. Weight : 30 Kg approx.
12. Electrical : 100-240 v AC 50/60 Hz
13. Power : 250VA
14. High end Note book as required by the system

*Rahul*  
19/8

*Govind*  
19/8

*Chandru*  
19/8/2014

#### 4. LASER INDIRECT OPHTHALMOSCOPE (LIO) RED LASER

RED LASER MODEL (Specification)	14 pounds (6.4 kg)
Weight	
Dimension	4" H X 12" W X 12" D (10 cm X 30 cm X 30 cm)
Electrical	115 VAC, 50/60 Hz, 0.8 230 VAC, 50/60 Hz, 0.4
Cooling	No external air or water cooling required
Treatment Laser / Power	Infrared diode laser (810 nm) 0 – 3000 mW
Aiming Laser/ Power	Red diode laser (650-670 nm) 0 - < 1.0 mW
Delivery Devices	EndoProbe, TruFocus LIO, Portable Slit Lamp Adapters, Large Spot SLA, and OMA
Pulse Duration	<b>CW-Pulse :</b> 30 ms – 9000 ms <b>Long Pulse :</b> 10 s – 30 min <b>Micro Pulse :</b> 100 $\mu$ s – 1000 $\mu$ s Duration 1.0 ms – 10 ms Interval
Large Spot Delivery Devices	TruFocus Laser Indirect Ophthalmoscope Plus (LIO+) The TruFocus LIO+ delivers a 1.2 mm retinal spot size with a 20 D Lens
LENS	28D AND 20D TO BE SUPPLIED WITH THE LIO

#### 5. LASER INDIRECT OPHTHALMOSCOPE (LIO) GREEN LASER

GREEN LASER WITH LIO (Specification) Treatment Laser	Diode-pumped, frequency-doubled, solid-state laser, (Medical Grade)
Laser Output	2500 mW
Laser Output Type	True CW Laser pulses & Micropulse
Wavelength	532 nm Green
Pulse Exposer	10 ms to 3000 ms, 1 Min Cotinius
Repeat Interval	10 ms to 3000 ms
MicroPulse Duration	Micro Pulse 0.05 to 10ms
Micropulse Interval	Micro Pulse 1.00 to 10 ms
Pilot/ Aiming Laser	Red diode laser
Wavelength	635 nm
Power	0 to <1.0mW
Cooling	AIR Cool / TEC Cooled
Connector Type for Delivery Devices	RFID / Resistor
Delivery Device Output Ranges	
Endo Probe (Optional)	0-2000 mW, Type: Straight, Tappered, Angled, Self Illuminating, Aspirating.
LIO+	0-2000 mW, True Focus type and light source available from console , Dual LIO which can be used in both

*Paul*  
19/8

*Sw/ther*  
19/8

*cut*  
15/8/2014



Slit Lamp Adapter (Optional)

Tx Cell (Optional upgrade to Multispot)

Laser Output technology

Diode used for laser source

Eye Safety Filter

Thermal managements

Light Source For LIO

Foot Pedal

532nm(Green) & 810nm(Red)

0-1800 mW, Spot Size : 50  $\mu$ m, 100  $\mu$ m, 200  $\mu$ m, 300  $\mu$ m, 500  $\mu$ m,

0-2000mW

**True wave technology**

30 Watts

**Ultra view clear Eye safety filter**

**Zones Specific Efficient Thermal Management System**

**Inbuilt**

**Wireless Foot switch with power control function, i.e. power can be increase & decrease from foot switch**

**LENS 20D AND 28D TO BE SUPPLIED WITH THE LIO**

Should have facility to do Micropulse Laser Tubeculoplasty

Should have voice confirmation technology to aid surgical techniques

Machine should automaticly detect the delivery Device,

Should have intuitive Graphical Touch Screen Interface

Should have compact design remote control with adjustment for parameter

Should Have Dual Sense Dual port with Quick and simple selection of Multiple Delivery devices

Weight

It Should be Light Approx 9 Kg

Dimensions

12"W X 14"D X 8.5"H (30.5cm X 35.6cm X 21.4cm)

Electrical

90-240 VAC, 50/60 Hz (no voltage selector required)

< 200 watts in standby , < 350 watts max

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19/8

*Paul*  
19/8/2014

## GLUCOMA UNIT

### 1. GONIOLENS

- GOLDMAN 2 MIRROR GONIOLENS
- GOLDMAN 3 MIRROR GONIOLENS
- GOLDMAN 4 MIRROR GONIOLENS

### 2. NON CONTACT TONOMETER

#### Technical Specifications For NON CONTACT TONOMETER

1	Measurement Range	0 - 60 mm Hg [ 0 - 30 mm Hg/ 0 - 60 mm Hg (Selectable)]
2	Working distance	11 mm
3	Measurement Display	T V Monitor Screen # R/L change - over . . . Automatically detected and display # Upto three measurements of each eye can be displayed & printed out
4	Measurement Recording	Built - in printer
5	Measurement Mode	Auto Start or Manual (Selectable)
6	External Output Terminal	RS - 232 C
7	Operating Temperature	10° C to 40° C
8	Power Supply	AC 100 - 120 V, 220 - 240 V, 50 / 60 Hz
9	Power Consumption	80 VA(" Auto -Shut - off" : power saving mechanism adopted
10	Dimensions	272 (W) * 505 (D) * 430 ~ 458 (H) mm
11	Weight	18 kg
12	<b>Other Specifications</b>	
13	Error Indication	When the measurement signal is not strong enough, IOP value is indicated in ( ) or just "ERR" is displayed
14	Adjustable Safety Stopper	Minimum distance between the front of the instrument and the patient can be established in advance
15	Base Travel	44 mm (back & forth) / 88 mm (Left & Right) / 28 mm (Vertically)
16	Chinrest Vertical Travel Soft Puff Dual Sensor for Accuracy Easy calibration upto $\pm 4$ mm Hg according to applanation reading. Two step max. pressure range 0 - 30 mm Hg / 60 mm Hg Auto / Manual measurement option.	68 mm

**MOTORIZED TABLE TO BE SUPPLIED**

*Rahul*  
19/8

*Gil Kumar*  
19/8

*entp*  
19/8/2014

### **3. HAND HELD TONOMETER**

Specification For Hand Held Tonometer:

1. Type: Tonometer
2. Technology:- Rebound Technology
3. No Anesthesia Required for Taking Measurement
4. Reading / Measurement Can be taken on Peadiatric patients
5. The Tonometer should be portable
6. The device conforms to CE regulations.
7. Dimensions:13 – 32 mm (W) \* 45 – 80 mm (H) \* 230 mm (L).
8. Weight:155 g (without batteries), 250 g (4 x AA batteries).
9. Power supply: 4 x AA batteries.
10. Measurement range: 7-50 mmHg
11. Display: Digital Liquid Crystal Display ,
12. Display range: 0-99 mmHg(IOP estimation beyond the measuring range).
13. Accuracy:-(95% tolerance interval relative to manometry):} 1.2 mmHg ( $\leq 20$  mmHg)
14. Repeatability (coefficient of variation): <8%.
15. Accuracy of display: 1.
16. Display unit: Millimeter mercury (mmHg).
17. There are no electrical connections from the tonometer to the patient.
18. The device has B-type electric shock protection.
19. Storage/transportation environment:Temperature +5 to +40 °C.
20. Rel. humidity 10 to 80% (without condensation).

### **4. SLIT LAMP WITH APPLANATION TONOMETER**

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TECHNICAL SPECIFICATION OF SLIT LAMP			
1	<b>Microscope</b>		
a	Type	Stereoscopic Microscope	
b	Magnification Selection	2 steps by Objective Lens rotation	
c	Objective	1 X , 1.6 X	
d	Eye Piece	10X, 16X (16 X Eye piece is optionally available in some regions)	
2	<b>Magnification</b>		
	<b>Objective</b>	<b>Eye piece</b>	<b>Magnification (Field of View)</b>
	1 X	10 X	10 X (18 mm dia.)
		16 X	16 X (11.25 mm dia.)
	1.6 X	10 X	16 X (14.5 mm dia.)
		16 X	25.6 X (9mm dia.)
	<b>Pupillary Adjustment</b>	10 X Eye piece	55 mm ~ 82mm
		16 X Eye piece	51 mm ~ 78 mm
	<b>Diopter Adjustment</b>	10 X Eye piece	± 8D
		16 X Eye piece	± 10D
3	<b>Slit Illumination</b>		
	Slit Width	Continuous from 0 to 9 mm (Circle at 9 mm)	
	Slit Length	Continuous from 1 to 8 mm	
*	<b>Aperture diameter</b>	9, 8, 5, 3, 2, 1, 0.2 mm	
	Slit Angle	0 ~ 180°	
*	<b>Slit Inclination</b>	5°, 10°, 15°, 20°	
*	<b>Filters</b>	Cobalt blue, Red - free, 13% ND, Heat absorbing, UV Cut (Normal Use), IR Cut (Normal Use)	
	Illumination Lamp	6 V 20 W Halogen	
4	<b>Base</b>		
	Longitudinal Movement	90 mm	
	Lateral Movement	100 mm	
	Fine Base Movement	15mm	
	Vertical Movement	30 mm	
*	<b>Fixation Target</b>	6V 0.2 A Tungsten lamp	

SMOOTH, EFFORTLESS CONTROLS  
 SLIT BEAM INCLINATION  
 FOUR BUILT - IN - FILTERS  
 CONTINUOUS ADJUSTMENT OF SLIT APERTURE  
 PRECISE ANGULAR MEASUREMENT

OPTIONAL ACCESSORIES:  
 HRUBY LENS  
 10X MEASURING EYE PIECE  
 MOTORIZED INSTRUMENT TABLE

- ADDED VERSATILITY IN GONIOSCOPY & FUNDUS OBSERVATION IS PROVIDED BY THE CAPABILITY TO INCLINE THE ILLUMINATION UP TO 20°
- CAN BE INTEGRATED WITH PHOTOCOAGULATOR LASER
- FIXATION TARGET DIOPTR ADJUSTMENT 6V 0.2 A TANGSTEN LAMP

**Technical Specifications of Applanation Tonometer**

The measurement of the ocular pressure is carried out on the patient sitting at the slit lamp in conjunction with other routine microscope examinations

Measuring Force Generated:  
 By Leverage Weight

High accuracy of the measurement the average deviation in any one single examination does not exceed ±0.5 mm Hg.

Installation: Applanation Tonometer is mounted on 2 supporting pivot top of the binocular microscope & can be mounted on a plate on the microscope arm

1 Main Features

The intra ocular pressure in mm Hg is found by multiplying the drum reading by ten

Measuring Range: 0 - 80 mm Hg in 2 mm increments + 0.5 mm, Hg

Scleral - rigidity is not to be taken into account as the small volumetric displacement of 0.56 mm<sup>3</sup> increases the intraocular tension by about 2.5% only.

Dimension: The pneumatic face, 3.06 mm

Repeated measuring procedures do not reduce the ocular pressure as no massaging effect occurs

Measurement Uncertainty of the force: Standard Divergence

There are no standardisation & calibration difficulties

Impingement of the measuring : 0.49 m N<3s <1.5% of the rated value element

Measurement: 47 mm wide X 33 mm deep X 90 mm height

Net Weight : 725 g (without accessories)

5.

*Rahul*  
19/10

*Cal Kun*  
19/10

*cut*  
19/10/2014



## 6. HEILDIELBERG RETINAL TOMOGRAPHY

## 7. GDx NERVE FIBER LAYER ANALYSER

RFNL ANALYSER FOR EARLY DETECTION OF GLAUCOMA.

- Scanning laser polarimetry technology with variable corneal compensation.
- **Illumination Source** – Laser diode wavelength 780nm.
- **Measurement area** – 20 x 20 degrees.
- **Reproductivity** – 5 microns
- **Ametropia correction** – 1 – 5 diopters
- **Acquisition Time** - Less than one minute
- **Normative Database** - Extensive stratified normative database
- **Table top dimension** – 14”H X 10”W X 24”D
- **Electrical requirement** – 220volt AC

## 8. ULTRASONIC BIOMICROSCOPY

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19/8

Carl Mann  
19/8  
Carl Mann  
19/8/2004

## 9. FUNDUS CAMERA

### TECHNICAL SPECIFICATION FOR DIGITAL FUNDUS CAMERA

Field angles	:	45 deg, 35 deg and 30 deg small pupil
Image mask	:	45°, 35°, black, dark, transparent, bright
Display	:	19" TFT Monitor (1280 x 1024 pixels)
Capture modes	:	<b>Colour, green, blue, red, fluorescein angiography/FA in red</b> <b>Both IR observation, Anterior Segment images ,</b> <b>A) Fundus Auto fluorescence ,</b> <b>B) ICG angiography( Upgraded)</b> <b>C) stereo,</b> <b>D) MPD</b> <b>Blue and red filters for documentation of the nerve fiber layer and choroids.</b>
Compensation of Ametropia	:	+35... -35D continuous
Pupil diameter	:	≥ 4.0mm ≥ 3.3 mm ( 30 degree small pupil)
Working Distance	:	Front lens to patient's eye 40 mm /1.6 inches
Interfaces	:	USB Port and network connectors, DVI port
Export	:	Image format DICOM (.dcm), Bitmap(.bmp), JPEG(.jpeg)

Patient list

*Rahul*  
19/12

*Q. J. Kumar*  
19/8

*cut*  
19/8/2014

Capture technology : Separate sensors for black and white and colour modes

Operating system : Windows XP Professional

Computer system : High speed computer system

Power consumption : Max. 200 VA

Line voltage : 100 ... 240V  $\pm$  10% ( self adjusting)

Frequency : 50/60 Hz

Upgradeability : Upgradeability of software should be possible

Instrument table : Asymmetrical

Fixation Targets : External and Internal  
Attention mode for internal fixation target( magnified and blinking cross)Various programmed sequences or freely positionable

Quantitative information : Extended PDT data including the percentage display of classic CNV and body surface area  
Determining the C/D ratio for glaucoma management  
Correction of the absolute data measured using the patient's refraction data

Qualitative Information : Geocorrected overlay of images for rapid glaucoma diagnosis  
Image processing with shortcuts.  
Mapping for Montage, Overlay, Dynamic Comparison ,Text into Graphics

Patient Information : Recording of refraction values, weight and size  
Complete address of referring or treating physicians, and photographers.  
Search for field angles, right/left eye and stereo image  
Varied personalized print layouts with automatic image arrangement  
Physician's letter layout with automatic entry of existing database information.

*Raid*  
19/18

*Qul Murr*  
19/18

*Carber*  
19/18/2014

After sales service should be available directly from Manufacturer. Also spare parts for the equipment are to be readily available at the Regional offices.

Red  
12/8

Carl Murr  
19/8

ambros  
19/8/2014



## CORNEA UNIT AND EYE BANK UNIT

### 1. PACHYMETER

a portable, digital Pachymeter, with easy-to-use touch screen operation, extreme accuracy, repeatable measurements and reliability. The combination of a high frequency, low noise probe and fast precise algorithms enables automatic scan capture immediately upon steady application of the probe onto the cornea.

Measurement accuracy and repeatability are assured by each scan actually consisting of 256 individual measurements and an automatic measurement algorithm to ensure that only scans with proper probe alignment are accepted. The high probe frequency and processing algorithms enable measures as thin as 125 microns, for measuring corneal flap or bed, and multiple corneal maps are available. Also comes standard with central corneal thickness correction calculator for measured applanation IOP.

Touch screen operation with large backlit display

Complete measurement and calculation record within seconds

Ability to store up to five different user profiles

Portable and compact weighing less than 6 pounds (3 kg)

Fully adjustable tilt for ergonomic comfort

Optional printer

extreme portability, weighing less than 6 lbs (3 kg), and comes with optional padded carrying case. Optional printer allows for hardcopy record of corneal thickness measurements. Data download and scan viewer software option also available to create permanent digital archive of scan results.

Two probe styles are available, depending upon user preference and scanning application, a 45 degree angled probe for when patient is in supine position and a straight probe for when patient is in sitting position. Built-in probe sensitivity test and calibration check ensures continued accuracy of system.

Rahel  
19/18

Gulshan  
19/18

Confino  
19/18/2014

## 2. SPECULAR MICROSCOPE FOR LIVING EYE (CLINICAL)

TECHNICAL SPECIFICATION OF SPECULAR MICROSCOPE CORNEAL ENDOTHELIUM PHOTOGRAPHY

PHOTOGRAPHY MAGNIFICATION	254 X (ON THE CONTROL PANEL)
PHOTOGRAPHY RANGE	0.25 X 0.55 mm
RESOLVING POWER	MORE THAN 125 LINE/ mm
FIXATION TARGET	CENTRAL & PEROPHERAL
<b>CORNEAL THICKENSS MEASUREMENT</b>	
MEASUREMENT RANGE	0.400 - 0.750 mm
	DISPLAY UNIT: 0.001 mm STEP DISPLAY

### OTHER SPECIFICATIONS:

DIMENSIONS	286 - 468 mm (W) X 445 - 592 mm (D) X 486 - 688 mm (H)
WEIGHT	17 KG
POWER SUPPLY: SOURCE OF VOLTAGE	100 - 240 V AC, 50 - 60 Hz
POWER SUPPLY: POWER OF INPUT	70 - 120 VA

### OTHER FEATURES:

COMPACT & STYLISH DESIGN  
COMPREHENSIVE ANALYSIS SOFTWARE  
TWO SEPARATE PHOTOGRAPHY MODES  
QUICK AUTOMATIC MEASUREMENT & ANALYSIS  
PANORAMA - SUBSTANTIAL SIZE INCREASE OF THE ANALYZED AREA

*Rahul*  
19/8

*Qul Duran*  
19/8  
*enter*  
*19/8/2014*

### 3. ORBSCAN

#### TECHNICAL SPECIFICATION OF OB - SCAN / PENTACAM

<b>Refractive Power Measuring Range</b>	
Sphere Range	- 25D ~ +22D (0.01D / 0.12D / 0.25 D Steps)
Cylinder Range	0D ~ ± 10 D (0.01D / 0.12D / 0.25 D Steps)
Axis Range	0° ~ 180° (1° / 5° steps)
Measurable Area	ø 8mm (max.)
Measurable Minimum Pupil Diameter	ø 2 mm
<b>Corneal Curvature Measuring Range</b>	
Corneal Curvature Radius	5.00 mm ~ 10.00 mm (0.01 mm steps)
Corneal Refraction	67.5D ~ 33.75 D (0.01D / 0.12D / 0.25D steps) Proviso: Cornea
Corneal Astigmatism	0D ~ ±10D (0.01D / 0.12D / 0.25 D Steps)
Corneal Astigmatism Axial Angle	0° ~ 180° (1° / 5° steps)
Measurable Corneal Area	ø 0.8 mm ~ 9.2 mm (proviso Radius corneal curvature = 8 mm)
Measurable PD Range	20 ~ 85 mm (1 mm step)
Export Output Terminal	USB (IN / OUT) , RS 232 (OYT), LAN (IN / OUT)
<b>UNIQUE FEATURES</b>	

5 FUNCTIONS IN ONE MACHINE: AUTO REFRACTION, KERATOMETRY, ABERROMETRY, TOPOGRAPHY AND PUPILLOMETER

MULTIPLE MAPS FOR OVERVIEW ANALYSIS

DECISION SUPPORT FOR CATARACT AND REFRACTIVE PROCEDURES

LESS STRESS WITH INVISIBLE LIGHT MEASUREMENT AT TOPOGRAPHY

EASIER OPERATION WITH R / L FULLY AUTOMATED MEASUREMENT AND TOUCH PANNEL

VARIOUS MAPS: SUCH AS - MULTI MAPS, IOL SELECTION MAPS, SUMMERY MAPS, PUPILLOMETRY MAPS, OCULAR COMPONENT MAPS, ZERNIKE VECTOR MAPS, CORNEAL R / L MAPS, REFRACTION KERATOMETRY IOL SELECTION SUPPORT

PRE & POST REFRACTIVE SURGERY SUPPORT

SEPARATE CASE REPORT FOR KERATOCONOUS / DIFFERENT TYPE OF CATARACT

TORIC IOL IMPLANTED EYE

### 4. ANTERIOR SEGMENT OPTICAL COHERENCE TOMOGRAPHY

#### TECHNICAL SPECIFICATION OCT ANTERIOR

<b>Observation &amp; Photography of fundus image</b>	
Scan Mode	Color, Red - free *
Picture Angle	45° / 30° or equivalent (digital zoom)
operating distance	34.8 mm (in fundus photography)
	62.6mm (in anterior segment photography)**
Photographable (diameter of pupil)	45°: ø 4.0 mm or more
	Small pupil diameter: ø 3.3 mm or more
<b>Observation &amp; Photography of Fundus Image / Anterior Segment Tomography</b>	
Scan	(on fundus) Horizontal Direction 3 - 12 mm

*Rud*  
19/8

*Gilman*  
19/8

*auth*  
*gms*  
19/8/2014



Range		Vertical Direction 3 - 9 mm
	(on cornea)	Horizontal direction 3 - 6 mm
		Vertical direction 3 - 6 mm
Scan Speed		50, 000 A - Scan per second
Lateral Resolution		20 $\mu$ m
In -depth Resolution		6 $\mu$ m
Photographablediameter of Pupil		$\phi$ 2.5 mm or more
<b>Observation &amp; Photography of fundus image / fundus tomography</b>		
Internal Fixation Rating		Dot matrix type organic EL (The display position can be changed)
Electric Rating		
Source Voltage		AC 100 - 240 V
Power Input		70 - 150 VA
Frequency		50 Hz - 60 Hz
<b>Dimensions &amp; Weight</b>		
Dimensions		307 - 442 mm (w) x 472 - 668 mm (d) x 518 - 722 mm (h)
Weight		21 Kg

\* Display digital Red Free

\*\* Anterior scanning is option. With anterior segment attachment

#### Unique Features of 3D OCT

Inbuilt Fundus Camera for Colour & Red Free Photography w/ OCT

Scan Speed 50,000.00 A Scan/ Sec.

Auto allign, Auto Focus & Capture

12 mm X 9mm OCT Scan provides measurement & topography of optic nerve & macula in one scan.

User friendly for operator

Anterior Segment tomography also available

## 5. OPTICAL BIOMETER

Specification for Optical Biometer.

Technology For Measurement : OLCR ( Optical Coherence Reflectometry ) for all the measurement

Light Source : Super luminous Diode (SLD)

Wavelength of Light Source for Peripheral Fixation : 570nm

Power on Patients Eye : <0.02mW

The Machine Should Give Complete Eye Measurement at one shot

*Rahul*  
11/8

*Sul Kumar*  
19/8

*cut...*  
19/8/2014



The Machine should give 1. Biometry, 2. Keratometry 3. Pachymetry 4. Lense Thickness, 5. Pupilometry  
6. White to White 7. ACD (Anterior Chamber Depth) 8. Eccentricity of Visual axis 9. Retinal Thickness

One reading Should Contain 16 individual full eye scans & 4 Individual Keratometric scan taken on 2 Concentric Rings along the patients visual axis.

Keratometry should be taken in two rings of 2.3 mm & 1.65mm with 32 Points

Formule : SRK T, HOLLADAY , HAGGIS & HOFFER Q

POST Lasik FORMULE : Shmmas No History for Post Refractive case ,Holaday 2 ( Optional) & Olsen Formula ( Optional)

<b>1</b>	<b>Corneal Thickness (CT)</b>	
	Measurement range	300 -800 $\mu\text{m}$
	Display Resolution	1 $\mu\text{m}$
	In – vivo Repeatability	(1. $\sigma$ ) +/- 2 $\mu\text{m}$
<b>2</b>	<b>Anterior Chamber Depth (ACD)</b>	
	Measurement range	1.5 – 5.5 mm
	Display Resolution	0.01 mm
	In-vivo Repeatability	(1. $\sigma$ ) +/- 20 $\mu\text{m}$
<b>3</b>	<b>Lens Thickness (LT)</b>	
	Measurement range	0.5 – 6.5 mm
	Display Resolution	0.01 mm
	In-vivo Repeatability	(1. $\sigma$ ) +/- 50 $\mu\text{m}$
<b>4</b>	<b>Axial Length (AL)</b>	
	Measurement range	14 – 32 mm
	Display Resolution	0.01 mm
	In-vivo Repeatability	(1. $\sigma$ ) +/- 25 $\mu\text{m}$
	Wave length of Light Source For AL	820nm
<b>5</b>	<b>Keratometry</b>	
	Measurement range for radius	5 – 10.5 mm
	Display Resolution	0.01 mm
	In-vivo Repeatability	(1. $\sigma$ ) +/- 30 $\mu\text{m}$
	Measurement range for axis angle	0 - 180 $^{\circ}$
	Display Resolution	1 $^{\circ}$

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	In-vivo Repeatability	(1.σ) +/- 9%
	Wave Length of Light Source For Keratometer	950nm
<b>6</b>	<b>White – to – white distance</b>	
	Measurement range	7 – 16 mm
	Display Resolution	0.01 mm
	In-vivo Repeatability	(1.σ) +/- 0.3 mm
<b>7</b>	<b>Pupillometry</b>	
	Measurement range	2 – 13 mm
	Display Resolution	0.01 mm
<b>8</b>	<b>Eccentricity of the visual optical line</b>	
	Display Resolution	0.01 mm
<b>9</b>	<b>Retinal thickness</b> Manually Assesed	Resolution 1 μm

The Machine should have the option upgradable to Toric Planner which can do Toric intervention of High resolution eye image using incision Optimisation tool.

The Machine should have the option upgradable to T Cone Topographer which can take True Placido Topography of the central 6mm of the anterior Cornea

The Machine should take reading in Normal Eye as well as Silicon Filled Eye .

Electrical : Voltage 12V DC, Power Consumption 12W

General : Dimensions 310 X 260 X 420 mm, Weight 6,2 Kg

## 6. LAMINAR FLOW

### Laminar flow hood

#### HORIZONTAL LAMINAR FLOW CAMBINET

With Sunmica Table top, HEPA Filters, Pre-Filters fully tested for PARTICLE COUNT with Standard Accessories as

1 – Automatic Device to switch off the air flow / Motor when door is closed.

2 – Stand by Mode (Idling) .

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*Carl Hurr*  
19/18

*Carl Hurr*  
19/18/2004

3 – UV / Fluorescent Light Inter Lock : either UV Tube will glow or Fluorescent tube will glow for the users safety.

4 Front arm rest, made of SS 304 suitable for increasing efficiency and convenience for the user while working.

5. Working Area - 2' x 2' x 2'

Size of HEPA filter- 2' x 2' x 6''

No. of Hepa filter- 1

No. of Pre Filter- 1

Illumination- 1 x 20 w

6. Transparent front door

7. Built in U.V. Germicidal light

8. Whole cabinet made of commercial board & laminated with sun mica

1. CE & WHO GMP certified

2. AMC required

## 7. FLASH AUTOCLAVE

### Rapid sterilizer

Rapid instrument sterilizer with following features:

- Outer chamber, steam Jacket & Inner chamber made in corrosion resistant stainless steel- all argon welded..
- Lid made of thick stainless Steel.
- Inner chamber dimensions: 300mm dia. X 500mm height.
- Fitted with Automatic pressure Control switch, Low Water cut off, safety valves, Moisture trap, Non return valve, drain valve, dial thermometer.
- Power: 3 phase, 440V 50 Hz AC
- CE & WHO GMP certified
- AMC/CMC required.

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19/8

Carl Almar  
19/8

Carl Almar  
19/8/2014