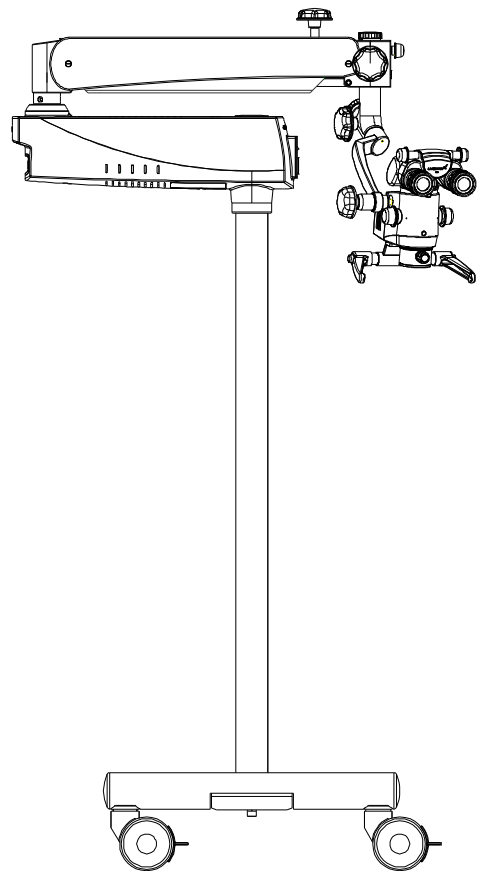


PRIMA M μ User Manual

Microscope



Caution:

To ensure proper use of this instrument as well as to avoid injury while operating instrument, understanding this manual completely before use is highly recommended.

Part No: 6210000-795

Issue 1.2

Printed on: March 2016

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The LABOMED Prima M μ is a surgical and diagnostic microscope which is adaptable for different surgical needs for consistent visualization during all intra operative phases of DNT surgeries by providing magnified view of the surgical field without compromise to performance.

Salient features of this Microscope are:

1. The observation head can easily be positioned with the help of suspension arm.
2. An advance 3-step magnification changer allows an optimal magnification for a particular surgery from three different magnifications.
3. Cold Light illumination with a high intensity 27W LED lamp is provided in magnichanger for proper illumination. The illumination is further adjustable up to its most suitable brightness using intensity control knob suitably located at the suspension arm, and is easily approachable to the surgeon.
4. When the microscope is not in use, the suspension arm can be folded over the main body to store it compactly.
5. Rigid H-form base with castor wheels provides greater stability as well as mobility to the instrument.
6. Dual Iris Diaphragm allows greater depth of field particularly valuable for photography.

Intended use

Prima M μ Surgical Microscope is an AC powered device intended for use during diagnosis and Surgery to provide a magnified view of surgical field.

NOTE: The use of Prima M μ Microscope is purely for intended use.

Configuration:

Microscope

Prima M μ

Catalogue no.

6210000-000

2 PRODUCT DESCRIPTION

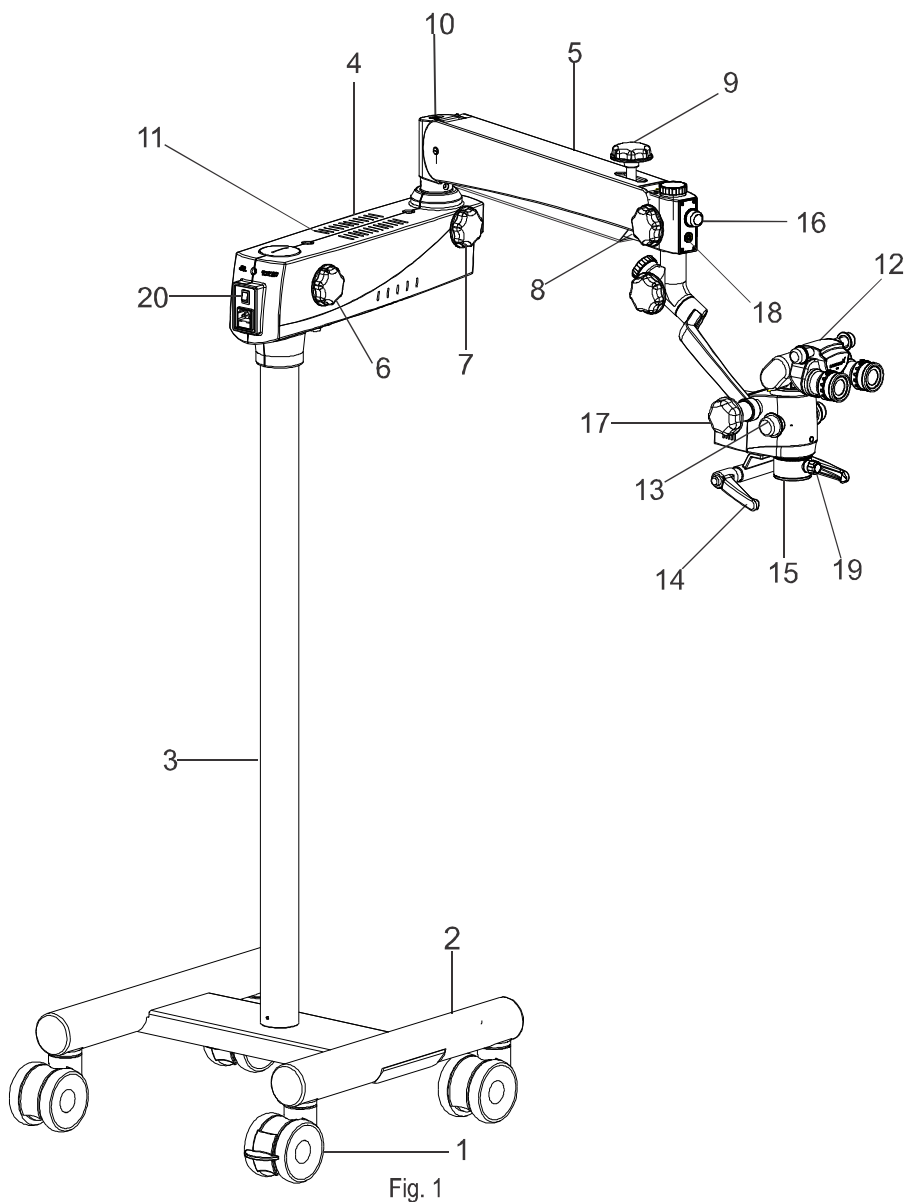


Fig. 1

- | | |
|-------------------------------------------|----------------------------------------------|
| 1. Wheel with brake | 2. Metal base |
| 3. Column | 4. Swivel arm |
| 5. Suspension arm | 6. Swivel arm locking knob |
| 7. Suspension arm movement locking knob | 8. Coupling movement locking knob |
| 9. Suspension arm hydraulic movement lock | 10. Suspension arm spring tension adjustment |
| 11. Swivel arm cover | 12. Binocular head with eyepieces |
| 13. Magnichanger | 14. Handle |
| 15. Common Main Objective | 16. Illumination Control Knob |
| 17. Magnichanger tiltation control knob | 18. Inlet for LABOMED camera |
| 19. Fine focusing knob | 20. On/Off switch |

Warnings & Cautions

LABOMED is not responsible for the safety and reliability of this instrument when:

- Assembly, disassembly, repair, or modification is made by unauthorized dealers or persons.
- Instrument is not used in accordance with this User's Guide.

WARNING: AN INSTRUCTION THAT DRAWS ATTENTION TO RISK OF INJURY OR DEATH.



WARNING: USERS OF THIS EQUIPMENT SHOULD BE THOROUGHLY TRAINED IN THE APPROPRIATE MEDICAL PROCEDURES. FURTHERMORE, THEY SHOULD TAKE THE TIME TO READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE PERFORMING ANY PROCEDURE. THEY SHOULD ALSO READ AND UNDERSTAND THE INSTRUCTIONS FOR ANY OTHER EQUIPMENT USED IN CONJUNCTION WITH THIS MICROSCOPE (i.e. ELECTOSURGICAL GENERATORS). FAILURE TO DO SO MAY RESULT IN INJURY TO THE PATIENT AND/OR DAMAGE TO MICROSCOPE.

WARNING: UNITED STATES FEDERAL LAW AND EUROPEAN REGULATIONS REQUIRE THAT THIS DEVICE BE PURCHASED ONLY BY A PHYSICIAN OR A PERSON ACTING ON BEHALF OF A PHYSICIAN.

WARNING: THIS INSTRUMENT SHOULD BE USED IN STRICT ACCORDANCE WITH THE INSTRUCTIONS OUT LINED IN THIS USER'S GUIDE. THE SAFETY OF THE OPERATOR AND THE PERFORMANCE OF THE INSTRUMENT CANNOT BE GUARANTEED IF USED IN A MANNER NOT SPECIFIED BY LABOMED.

WARNING: DO NOT REPAIR OR SERVICE THIS INSTRUMENT WITHOUT AUTHORIZATION FROM THE MANUFACTURER. ANY REPAIR OR SERVICE TO THIS INSTRUMENT MUST BE PERFORMED BY EXPERIENCED PERSONNEL OR DEALERS WHO ARE TRAINED BY LABOMED OR SERIOUS INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: MODIFICATIONS TO THIS INSTRUMENT ARE NOT ALLOWED. ANY MODIFICATION TO THIS UNIT MUST BE AUTHORIZED BY LABOMED OR SERIOUS INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: IF THIS INSTRUMENT IS MODIFIED, APPROPRIATE INSPECTION AND TESTING MUST BE CONDUCTED TO ENSURE CONTINUED SAFE USE OF THIS INSTRUMENT.

WARNING: TO AVOID RISK OF ELECTRIC SHOCK, THIS EQUIPMENT MUST ONLY BE CONNECTED TO A SUPPLY MAIN WITH PROTECTIVE EARTH OR DAMAGE TO THIS INSTRUMENT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: ENSURE THAT THE VOLTAGE APPLIED TO THE UNIT IS THE SAME AS THE VOLTAGE IS INDICATED ON THE DATA PLATE OR DAMAGE TO THE UNIT MAY OCCUR.

WARNING: THIS INSTRUMENT MUST BE PLUGGED IN TO AN OUTLET WITH AN EARTH GROUND. DO NOT REMOVE OR DEFEAT THE EARTH GROUND CONNECTION ON POWER INPUT CONNECTOR OR THE UNIT'S POWER CORD OF THIS INSTRUMENT OR DAMAGE TO IT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: THE EQUIPMENT OR SYSTEM SHOULD NOT BE USED ADJACENT OR STACKED WITH OTHER EQUIPMENT LIKE MRI, RFID, SECURITY SYSTEM LIKE METAL DETECTORS OR SIMILAR DEVICES. IF ADJACENT OR STACKED USE IS NECESSARY, THE EQUIPMENT OR SYSTEM SHOULD BE OBSERVED TO VERIFY NORMAL OPERATION IN THE CONFIGURATION IN WHICH IT WILL BE USED.

WARNING: THIS INSTRUMENT IS NOT SUITABLE FOR USE IN THE PRESENCE OF FLAMMABLE AND ESTHETIC MIXTURES, SUCH AS OXYGEN OR NITROUS OXIDE.

WARNING: LED RADIATION DO NOT STARE DIRECTLY INTO BEAM WHEN MICROSCOPE IS IN ON POSITION.

WARNING: THE USE OF ACCESSORIES OR CABLES OTHER THAN THOSE SPECIFIED, WITH THE EXCEPTION OF THOSE SOLD BY THE MANUFACTURER AS REPLACEMENT PARTS FOR THE INTERNAL COMPONENTS, MAY RESULT IN INCREASED EMISSIONS OR DECREASED IMMUNITY OF THE EQUIPMENT OR SYSTEM.

CAUTION: AN INSTRUCTION THAT DRAWS ATTENTION TO THE RISK OF DAMAGE THE PRODUCT.

CAUTION: THE INTERNAL CIRCUITRY OF THE INSTRUMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESDS) THAT MAY BE SENSITIVE TO STATIC CHARGES PRODUCED BY THE HUMAN BODY. DO NOT REMOVE THE COVERS WITHOUT TAKING PROPER ESDS PRECAUTIONS.

CAUTION: DO NOT USE SOLVENTS OR STRONG CLEANING SOLUTIONS ON ANY PART OF THIS INSTRUMENT AS DAMAGE TO THE UNIT MAY OCCUR. SEE CARE & MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTION.

CAUTION: MEDICAL ELECTRONIC EQUIPMENT NEEDS SPECIAL PRECAUTIONS REGARDING EMC AND NEEDS TO BE INSTALLED AND PUT IN TO SERVICE ACCORDING TO THE EMC INFORMATION PROVIDED IN THE ACCOMPANYING DOCUMENTS.

CAUTION: PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT CAN AFFECT MEDICAL ELECTRICAL EQUIPMENT.

CAUTION: THIS INSTRUMENT IS NOT TO BE USED NEAR HIGH-FREQUENCY EMITTING SURGICAL EQUIPMENT.

CAUTION: DO NOT CONNECT ANY UNITS TO THE DEVICE OTHER THAN THE INTENDED.

CAUTION: DO NOT USE A CONVERTER ADAPTER THAT WILL CONVERT THE THREE-PRONG AC PLUG TO A TWO-PRONG LINE PLUG. THE POWER SUPPLY IN THIS MICROSCOPE WILL NOT BE PROPERLY GROUNDED THE ELECTRIC SHOK MIGHT RESULT.

CAUTION: REMOVE THE AC POWER PLUG FROM THE WALL SOCKET WHILE CHECKING FOR BLOWN FUSE.

CAUTION: DO NOT ROLL THE MICROSCOPE OVER CABLES OR HOSES ON THE FLOOR.

CAUTION: DO NOT REMOVE FERRITE BEADS IF APPLIED TO CABLES.

EXPLANATION OF SYMBOLS

**Caution:**

Observe all warning labels and notes!

If any label is missing on your instrument or has become illegal, please contact us or one of our authorized representatives. We will supply the missing labels.



Brightness control: After the illumination has been switched on, you can continuously adjust the brightness of the fiber illumination by turning the appropriate knob.



Accompanying documents must be consulted



Compliance to medical device directive 93/42/EEC



Protective earth



This way up- indicates correct upright position of the transport package.



Keep dry- transport package shall be kept away from rain.



Year of manufacture used on PRODUCT DATA



Fragile- contents of the transport package are fragile and therefore shall be handled with care



Electromagnetic interference can occur in the vicinity of devices carrying this symbol.



Alternating Current



Permissible humidity range during transport and storage



Permissible pressure range during transport and storage



Recycling of packaging materials



The product complies with US and Canadian safety requirements



Permissible temperature range during transport and storage



Separate disposal of waste electrical equipment



MR (Magnetic Resonance) unsafe symbol.

5 STANDARDS AND DIRECTIVES

The instrument described in this manual has been designed in compliance with the following standards:

- ISO 15004-2 First Edition 2007-02-15. Ophthalmic instruments and test methods. Part 2: Light hazard protection.
- ISO 9001/13485 quality management systems approved by UL (notified body).
- ISO 14971-2007 Risk management to medical devices.

Directives used

- Directives 93/42/EEC, Annex II, Article 3.
- IEC 60601-1-3rd edition (2005).
- IEC 60601-1-2
- EN 55011:2007

Classification

- For Europe, per Directive 93/42/EEC, the unit is a Class I instrument
- For USA: FDA classification Class I
- Please observe all applicable accidental prevention regulations.

6 *CONDITION OF INSTRUMENT AT THE TIME OF UNPACKING/SUPPLY*

The appliance is delivered in sub-assembled groups along with one set of Installation Kit and one instruction / service manual.

Please check following at the time of unpacking:

1. Mobile supporting base with brakes on castor wheels, or the type of mounting system
2. Column, depending on the type of mount ordered
3. Swivel arm and Suspension arm assembly.
4. Cover for swivel arm (pre-fitted to the microscope)
5. Inclined coupling with magni-changer assembly and objective (as ordered)
6. Observation Head, (inclined or ergo) as ordered
7. Paired Eye Pieces, as ordered
8. Power Cord
9. Installation Kit
 - a) Allen Wrench 5.00mm
 - b) Allen Wrench 8.00mm
10. Instruction cum Operating Manual / Service Manual

7 INSTALLATION

- 7.1 Install the base by fixing the both sides (A) & (B) on the meta plate (D) as shown in Fig. 2 by tighten the allen screws (1) provided from the bottom of the metal plate.
- 7.2 The base is installed by fixing the column (C) on the base. Engage the column to the indexing screw (D), see Fig. 2. Align the tapped hole of the column in the screw seat, hold the upright firmly and tight the allen screws (2) from the bottom of the base.

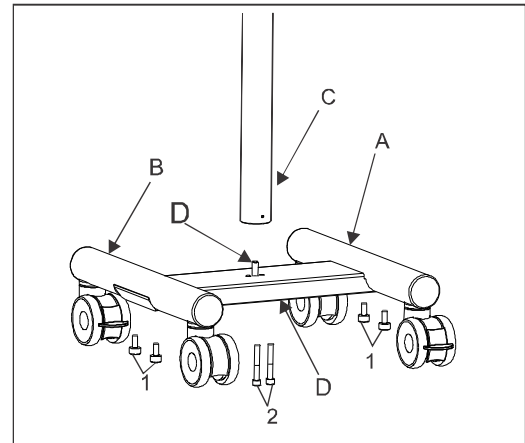


Fig. 2

- 7.3 Retrieve the swivel arm and suspension arm assembly from the packing box and follow instruction as below (refer Fig. 3)
- Ensure loosening of swivel arm lock knob(A).
- Install the swivel arm assembly on the upright holding shaft (1) figure 3.
- Lock the swivel arm with threaded screw (2) from the top.
- Loosen suspension arm locking (B) knobs so that it can be rotated.

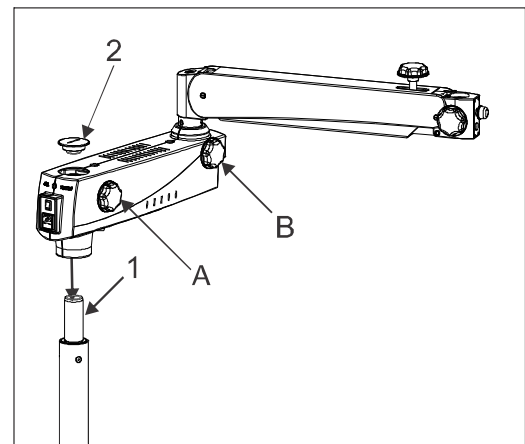


Fig. 3

7.4 Retrieve the carrier assembly from the packing and follow as below refer Fig. 4.

- Install the coupling to the suspension arm by sliding the guiding shaft (1) in to the suspension arm.
- Lock the inclined coupling with the threaded plug (2).

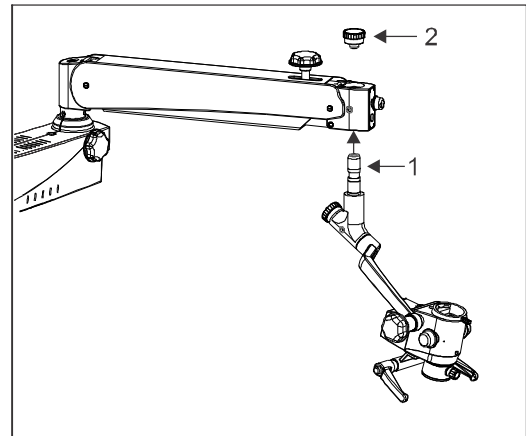


Fig. 4

7.5 Providing power to LED

- Switch off the illumination system
- The power comes pre-routed through swivel arm (that houses the power system) and the suspension arm.
- Insert the power supply wire into the receptacle in the microscope till it properly tighten into position as shown as A in Fig. 5
- Make sure that the wire has been routed in such a way that the carrier system and the surgical microscope are not obstructed, and that they can be moved in their entire range of movement without stretching, extreme, kinking or twisting of the light guide.

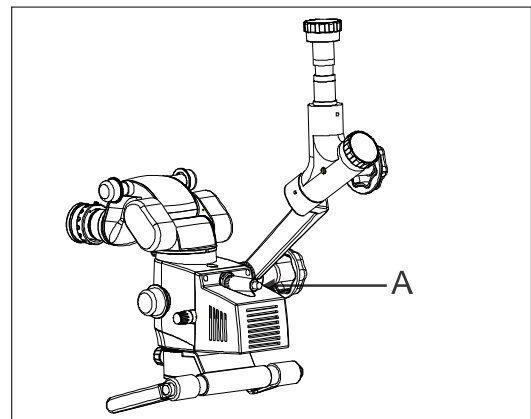


Fig. 5

7.5 Install the binocular head and eyepieces on the magni-changer. Secure the binocular head with head locking screw shown as (A) in Fig. 6

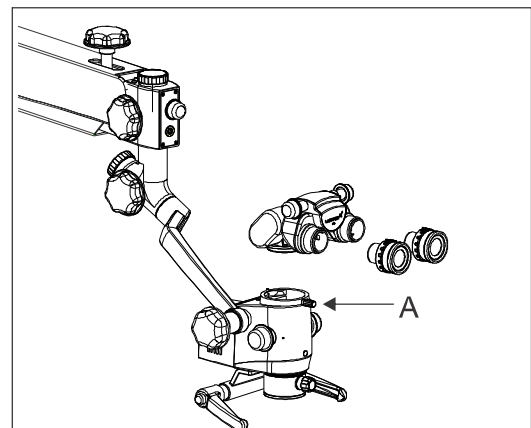


Fig. 6

8 ELECTRICAL CONNECTIONS

Connect the power cable to the AC inlet socket (2) provided on the back of the swivel arm as shown in the fig 7.

Switch on the power from on/off switch (1).

Note: Power supply is designed with universal input 100V-240V AC, 50/60Hz. To plug in follow instruction on electrical label provided at bottom of the arm as shown (3) here in Fig. 7.

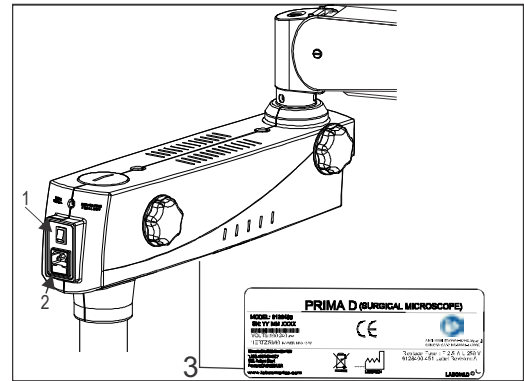


Fig. 7

8.1 Replacing the illumination source

Open the swivel arm cover's. Detach the fibre optic cable and replace the illumination assembly A with new assembly. Secure back the arm cover's.

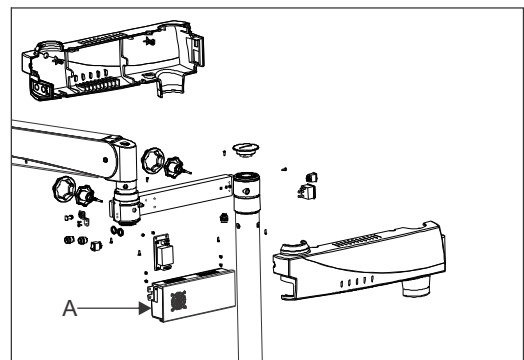


Fig. 8

8.2 Fuse Replacement

The fuse is located with the AC inlet, provided near the on/off switch. Use a flat head screw driver to open the fuse compartment. Two fuses are provided in this, i.e. one is live fuse and second as spare fuse. Replace the blown fuse with live fuse and secure back the fuse compartment.

For fuse replacement refer label shown in fig. 9

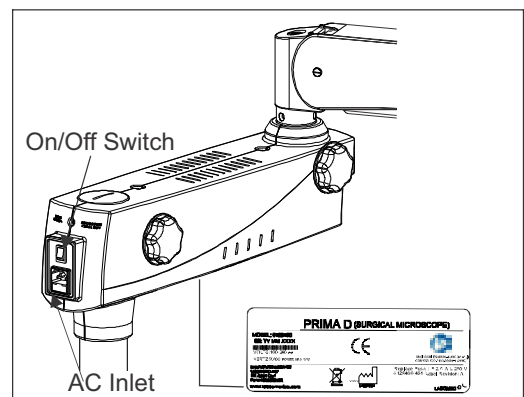


Fig. 9

8.3 Data Plate for Prima Mμ Microscope

Device Name

Model Number

Serial Number

Input Voltage

Frequency

Max. Load

Separate Disposal waste electric device

Manufacturer

Accompanying Document must be consulted

IEC60601-1:2005 Labeling for USA & Europe

IEC60601-1:2005 Labeling for Canada

Fuse Rating

Company Trademark

Label Control Number

PRIMA Mμ (SURGICAL MICROSCOPE)

MODEL: 6211000
SN: YY MM XXXX
VOLTS: 100-240 ~
HERTZ 50/60 POWER MAX 45W

MANUFACTURED IN INDIA FOR
LABO AMERICA INC.
820, Auburn Court
Fremont CA 94538 USA
www.laboamerica.com

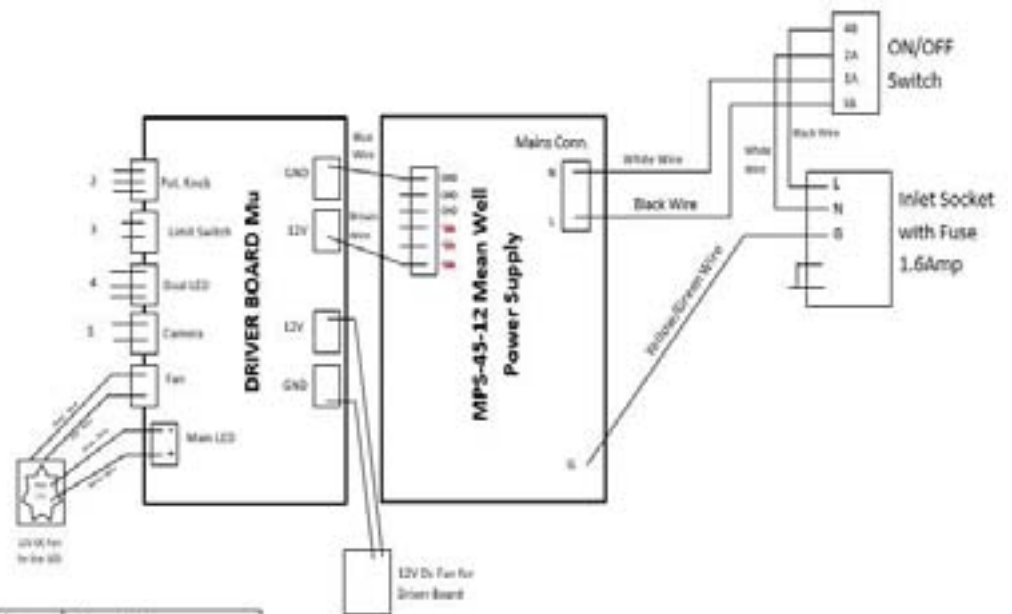
CE

ANSI/AAMI ES60601-1:2005 3rd ed. J
CAN CSA C22.2 NO.60601-1 (2000)

Replace Fuse : F 2.5 A L 250 V
6211000-451 Label Revision: A

LABOMED®

8.4 Wiring Coding Diagram of Prima Mu Microscope



Wire Marking No.	Power Supply Marking	Description
2	KNOB	Potentiometer Wire
3	SW	Limit Switch Wire
4	DLED	Dual LED Wire
5	CAM	Camera Wire

9 CONTROL ELEMENTS

9.1 ON/OFF switch (Shown as 1 in fig. 7 above)

It is located on the back of the swivel arm. At 'ON' position, green LED glows and cooling fan starts running. Keep the intensity control knob at minimum level before switching on the system.

To save burning life of LED, switch OFF the appliance if the microscope is not in use for longer time.

9.2 Intensity control knob

It is located in front of the suspension arm shown as (A) in Fig. 10. Brightness of field of view can be adjusted as per user comfort using intensity control knob.

9.3 Swivel arm locking knob

This knob helps you to lock the movement of swivel arm at the desired position after initial focusing of the attendance area by turning it clockwise, knob is shown as (B) in Fig. 10 .

9.4 Brakes

Locks the stand from unwanted movement by pressing down the two brakes provided on caster wheels. To unlock press upper portion of brake. See Figure 11.

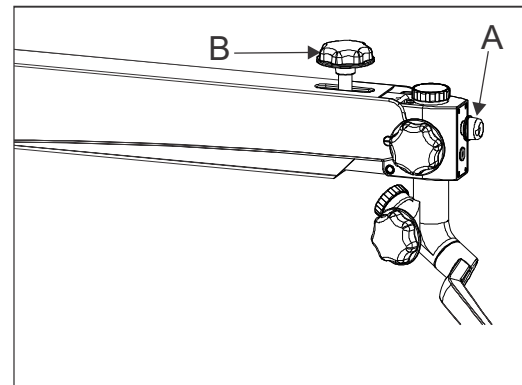


Fig. 10

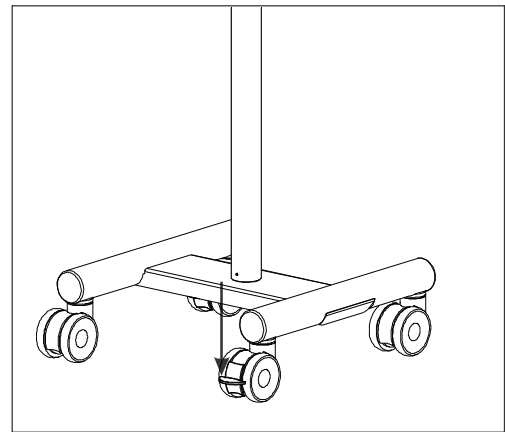


Fig. 11

10 INSTRUCTIONS FOR USING THE MICROSCOPE



WARNING:  **INSTRUMENT IS UNSAFE FOR MRI ENVIRONMENTS**

Setting up of Microscope:

- 1 Lock all the brakes on base wheels after setting up of microscope on the attendance area for stability.
- 2 Although tension on microscope is factory preset as per the ordered configuration. Still user can adjust up and down force by tuning the allen screw clockwise or anticlockwise with the help of a 8.0 mm allen wrench.
Refer Fig. 12 to see the exact location of tension adjusting screw.
- 3 Lock the Up & Down movement of suspension arm using locking knob(B) in fig. 12 after focusing of the area of interest.
- 4 Adjust the eye distance as per IPD scale according to your convenience.
- 5 The illumination is controlled through the control knob (A), fig. 12. Rotate it clockwise or anti clock wise to achieve desired illumination level.

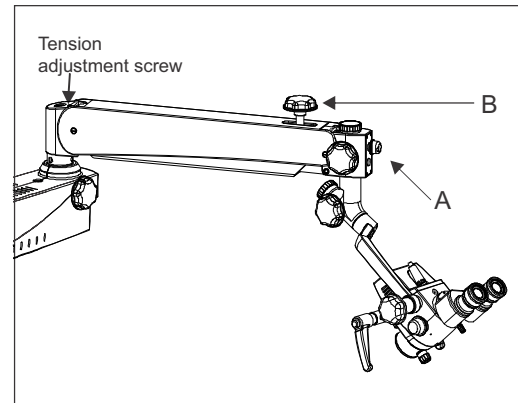


Fig. 12

Setting up of magnification (Ref. Fig. 13)

- 1 Adjust to highest magnification with one of the rotating knobs (11a) provided at magnification changer.
- 2 Fine focusing is done by knob provided on CMO shown as (11d) in fig. 13
- 3 Centering of observation area in field of view can be done by up & down movement with the help manual handles(11c).
- 4 Make sure that the magnification changer is engaged in the index point at the click stop position.

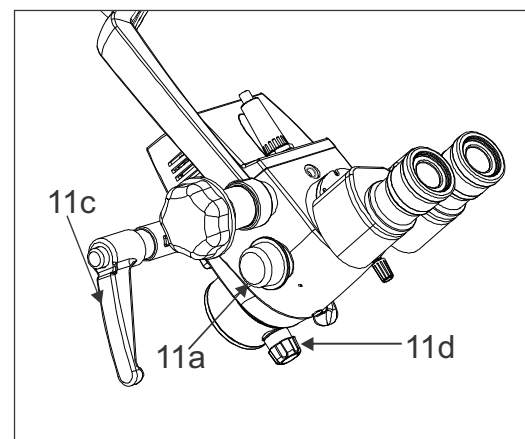


Fig. 13

Main microscope

The objective lenses with fine focusing knob and focal lengths of 250 mm is available for different working distances.

The ergo binocular tube (optional: straight and 45 ° inclined) is provided for the main surgery.

The standard equipment includes eyepieces with a magnification factor of 10X (option: 12.5X)

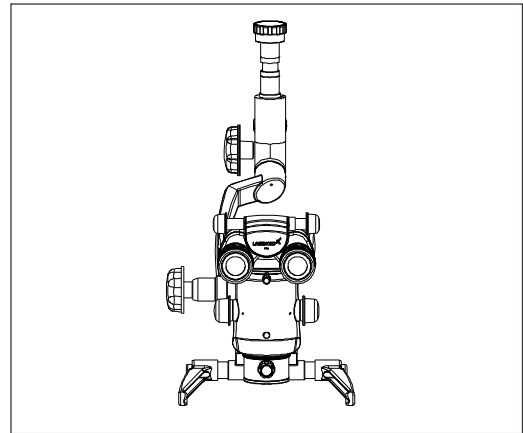


Fig. 14

11 CHANGING THE OBJECTIVES & EYEPIECES

1. The objectives can be taken out by rotating it in anti-clock wise direction. It can be threaded in by rotating in clock wise direction.
2. To install the eyepieces, insert in the eye tubes of observation head.
3. A range of objectives/eyepieces can be selected by choice.

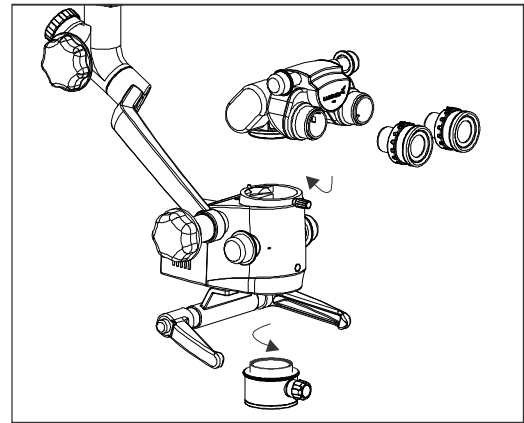


Fig. 15

12 USE OF ACCESSORIES

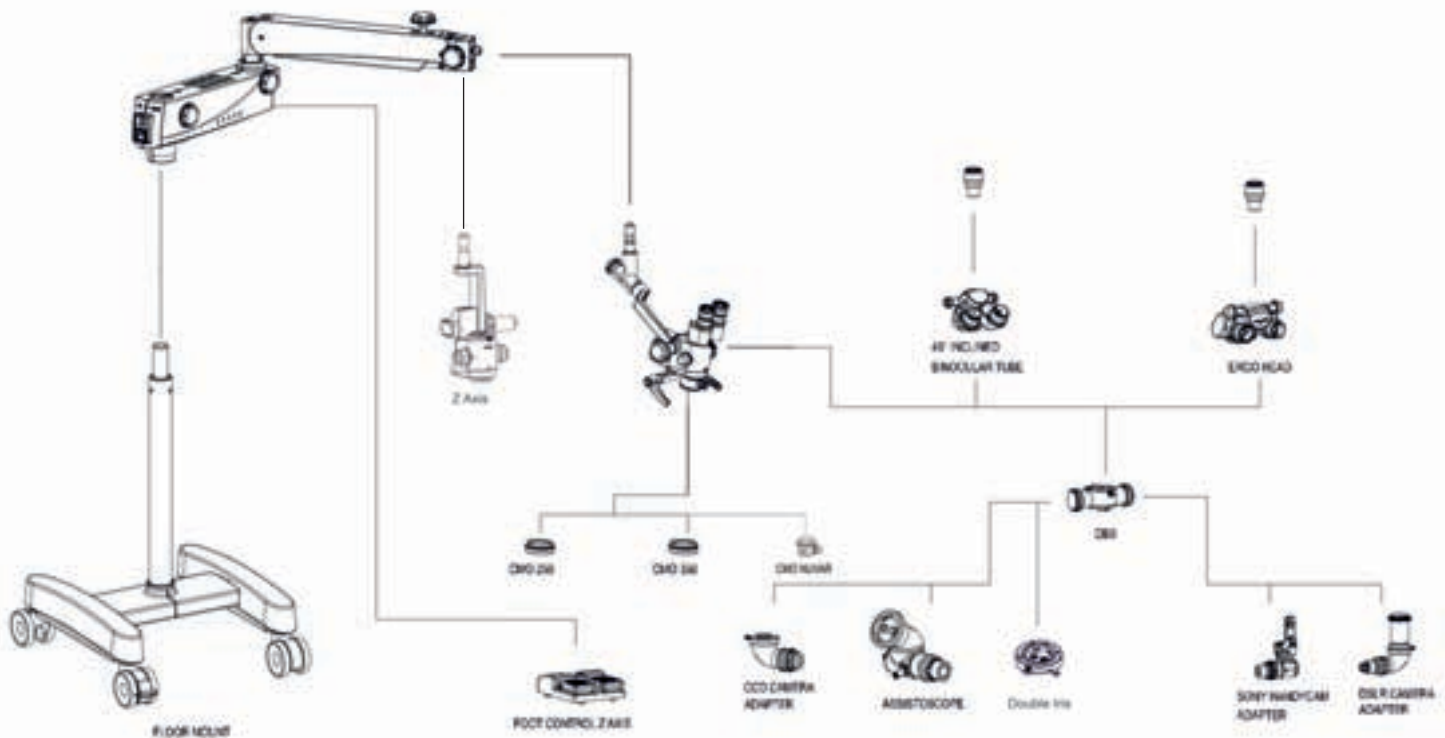


Fig. 16

1. Install double beam splitter by replacing the binocular tube (straight or ergo).
2. Total four accessories are provided as follows
 - 2.1 DSLR camera adapter for Nikon, Canon and Sony
 - 2.2 CCD camera adapter for Mintron.
 - 2.3 Adapter for Sony Handy-Cam.
 - 2.4 Assistoscope for assistant viewing
3. Install any one or two accessories on any side (Left or right) of the beam splitter
4. Reinstall binocular tube (straight or ergo) on double beam splitter.

13 TENSION ADJUSTMENT

After Supplementary accessories are mounted, the additional load of suspension arm must be compensated by adjusting tension on tension control screw provided on suspension arm by moving it clock wise or anticlockwise.

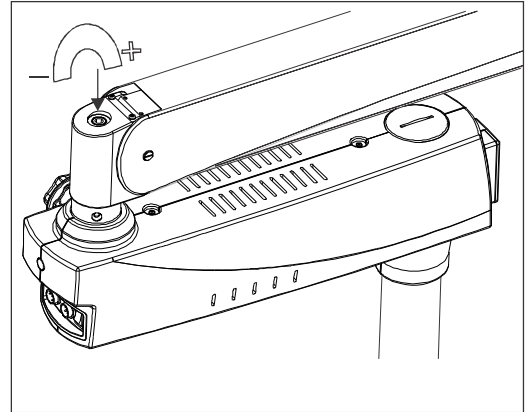
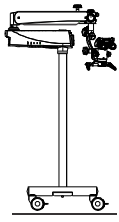


Fig. 18

14 MOVING POSITION OF THE SYSTEM



Position of the system for safe transportation.

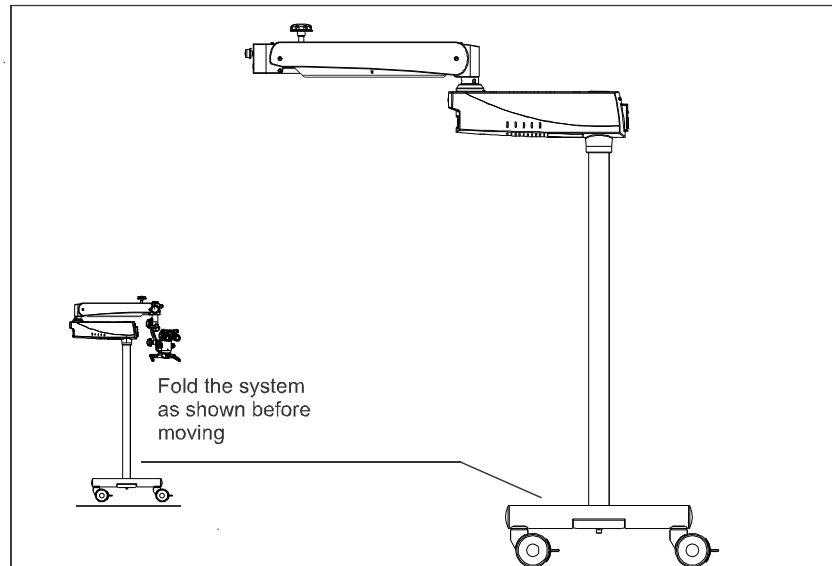


Fig. 19

Relocating the stand

Turn off the unit at the power switch

Disconnect the power cable from line power.

Remove the video cable from the video modules (e.g. video monitor, USB monitor, etc) and the camera control unit.

Release locks by pressing the upper parts of the locks downward.

Bring the unit into its moving position.

Be careful of heights when passing through doorways.

Avoid collision of any kind.

Do not go over steps and edges: the stand might topple!

Be extremely careful when moving over slopes.

Do not park the stand on slopes

Press lock downward.

Check whether the stand is locked in position.

15 CARE & MAINTENANCE

This instrument is a high grade technological product and does not require any special periodical maintenance if handled carefully. To ensure optimum performance and safe working order of the instruments, its safety must be checked once every 12 months. We recommended having this check performance by our service representative as part of regular maintenance work. If a failure occurs which you cannot correct using the trouble-shooting table, attach a sign to the instrument stating out of order and contact our service representative for servicing part or circuit diagram etc.

- **Care instructions:**

- Keep accessories away from dust when not in use, e.g. protect them with dust cover.
- Remove dust with a pneumatic rubber bulb and soft brush.
- Use microfiber cloth and pure 99% Isopropyl Alcohol for cleaning lenses and eyepieces.
- Protect your instrument from moisture, fumes, acids and cosmetic materials. Do not store chemicals close to the instrument.
- Protect it from improper handling. Never install other devices sockets or unscrew optical system and mechanical parts unless explicitly instructed to do so in this manual.
- Protect the microscope from oil and grease. Never oil or grease the guide surfaces or mechanical parts.
- Remove coarse contamination using a damp disposable cloth.
- Use disinfectants based on the following ingredients: aldehydes, alcohols, quaternary ammonium compounds.
- Camera: Keep optical components clean using the microfiber cloth. Soak the cloth using a little methanol or glass cleaner. Do not use ethanol 99% isopropyl alcohol.
- Do not clean product or optical components in a cleaning/disinfecting device or ultra sound bath.

- **Tropical environment/fungus:**

LABOMED employs certain safety precautions in its manufacturing techniques and materials. Other preventive measures include:

- Keep optical part clean.
- Use and store them in a clean environment only.
- Store under UV light when not in use.
- Use in continuously climate-controlled rooms only.
- Keep moisture away and cover using a plastic cover filled with silica gel.

- **Occupational safety and health protection:**

Observe work safety and health protection of persons responsible for processing contaminated products.

Current regulations of hospital hygiene and prevention of infection must be observed in the preparation, cleaning and disinfection of the products.

- **Workplace:**

Remove surface contamination with a paper towel.

- **Reprocessing:**

Recommended: reprocess a product immediately after use.

- **Cleaning& Servicing:**

- Wipe the instrument and stand (non-optics) with a damp (non dripped wet) cloth regularly. Standard mild detergent should be used at suitable dilution. Afterward wipe with a dry non-fuzzing cloth
- Do not use harsh or corrosive cleaning agent. They can cause damage to painted and printed plastic part.
- Avoid splashing water, may cause device -as safety clean in IPXO.
- Use 99% isopropyl alcohol to clean optical components.
- Dry optical components using a microfiber cloth; dry the rest of the product using a paper towel.
- Service as and when required should be performed by LABOMED after – sales service department.

16 AMBIENT REQUIREMENT

For operation	Temperature Rel. humidity (without condensation) Air pressure	+10°C....+40° C 30%.....90% 700hPa.....1,060hPa
For transportation and storage	Temperature Rel. humidity (without condensation) Air pressure	-40°C.....+70°C 10%.....100% 500hPa.....1,060hPa

The unit meets the essential requirements stipulated in Annex I to the 93/42/EEC directive governing medical devices. The unit is marked with: **CE** and is compliance to **ANSI / AAMI EC 60601-1:2005**.

17 DISPOSAL

Disposal must comply with locally applicable laws & regulations.

18 TROUBLESHOOTING TABLE

Problem	Possible Cause	Remedy
No Illumination at all	Power cable not plugged	Plug in power cable.
	Power switch not pressed ON	Press power switch ON
	Defective instruments fuse	Change instrument fuse
	Defective power cable	Change power cable
	Line power failure	Contact in-house Technician
	Failure of suspension system electronics	Contact service dept.
Insufficient Illumination	Brightness level set too low	Adjust brightness using the brightness control knob.
Inoperative surgical field illumination	Failure of electronics	Illumination surgical field using alternate illuminator and contact service dept.
	Switch off via microswitch on suspension system	Move suspension arm of suspension system into working position
	Thermal cut-off in lamp house is contaminated.	Clean thermal cut-off with a dry brush; blow it clean, if necessary
	Defective fan. Failure of system electronics	Illuminate surgical field using alternate illuminator and contact service department
Up & Down motion of screw on suspension system too stiff	Friction adjustment screw on suspension system tightened too firmly.	Loosen friction adjustment screw on suspension system as require
Microscope Unstable	Brakes on wheels not used	Use Brakes.
No image visible in field of view.	Magnichanger is not indexed properly.	Index magnichanger properly.

Technical Data (Specifications)

Binocular tubes	Straight viewing tube 90°, IPD 50-75mm Optional: 45° inclined head and 0-210° Ergo head, IPD 55-75mm
Eyepieces	WF 10x/18mm with retractable eye guards, diopter adjustment \pm 5mm Optional: WF 12.5x/18mm; fixed eye guards .
Magnichanger	3 step: 0.6X, 1.0X, 1.6X
FOV (Field of View)	15°-2.5° (80-13 mm)
Objective	CMO f= 250mm, Optional: f=300mm, f=400mm(Manual fine focus), f-200 mm with (fixed Objective lens only), NuVar CMO with focal length adjustment from 300-400 mm
Built-in filters	Yellow or Green
Vertical movement of arm	\pm 250 (500 mm) with Power saver light cut off at park position
Microscope carriers	\pm 155° Carrier
Accessories	Double Beam Splitter and Camera Adapters, Eyepiece & CMO.
Light Source	27W LED; Maximum intensity 70,000 LUX
Power Consumption	45 W Maximum
Input Voltage	100V-240V; 50/60 hz
Stand:	Stable and sturdy H-base stand with 2 lockable wheels.
Base (Dimensions):	550 mm width 550 mm length
Stand Height:	900 mm
Weight:	
Microscope arm with all optical module	20 Kg. Approx.
H-base with pillar	50 Kg. Approx
Elevation Stroke:	570 mm
Stand Height in Horizontal Position:	775 mm


Guidance Tables

Guidance and Manufacturer's Declaration Electromagnetic Emissions All Equipment and Systems		
Guidance and Manufacturer's Declaration – Electromagnetic Emissions		
<p>The Prima Mμ is intended for use in the electromagnetic environment specified below. The customer or user of the Prima Mμ should ensure that it is used in such an environment.</p>		
Emissions Test	Compliance	Electromagnetic Environment - Guidance -
RF Emissions CISPR 11	Group 1 Class A	The Prima M μ uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Harmonics IEC 61000-3-2	Class A	The Prima M μ is suitable for use in all establishments, other than domestic, and those directly connected to the public low-voltage power network that supplies buildings used for domestic purposes.
Flicker IEC 61000-3-3	Complies	

Guidance Tables (continued)

Guidance and Manufacturer's Declaration Electromagnetic Immunity All Equipment and Systems			
Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
<p>The Prima Mμ is intended for use in electromagnetic environment specified below. The customer or user of the Prima Mμ should ensure that it is used in such an environment.</p>			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
ESD IEC 61000-4-2	±6kv Contact ±8kv Air	±6kv Contact ±8kv Air	Floors should be wood, concrete or ceramic tile. If floors are synthetic, the R/H should be at least 30%.
EFT IEC 61000-4-4	±2kv Mains ±1kv I/Os	±2kv Mains ±1kv I/Os	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kv Differential ±2kv Common	±1kv Differential ±2kv Common	Mains power quality should be that of a typical commercial or hospital environment.
voltage Dips/Dropout IEC 61000-4-11	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles >95% Dip for 5 Seconds	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles >95% Dip for 5 Seconds	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Prima Mμ requires continued operation during power mains interruptions, it is recommended that the Prima Mμ be powered from an uninterruptible power supply or battery.
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.

Guidance Tables (continued)

Guidance and Manufacturer's Declaration Electromagnetic Immunity Equipment and Systems that are NOT Life-supporting			
Guidance and Manufacturer's Declaration – Electromagnetic Immunity			
The Prima Mμ is intended for use in the electromagnetic environment specified below. The customer or user of the Prima Mμ should ensure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 vrms 150 kHz to 80 MHz	(v1) = 3 vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Prima Mμ, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended Separation Distance: $d=(3.5/v1)(\text{Sqrt } P)$ $d=(3.5/E1)(\text{Sqrt } P)$ 80 to 800 MHz $d=(7/E1)(\text{Sqrt } P)$ 800 MHz to 2.5 GHz Where P is the max output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance levels in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol 
Radiated RF IEC 61000-4-3	80 MHz to 2.5 GHz @ 3V/m	(E1) = 3 v/m	
Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
* Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. The measured field strength in the location in which the ME Equipment or ME System should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the ME Equipment or ME System.			
* Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.			

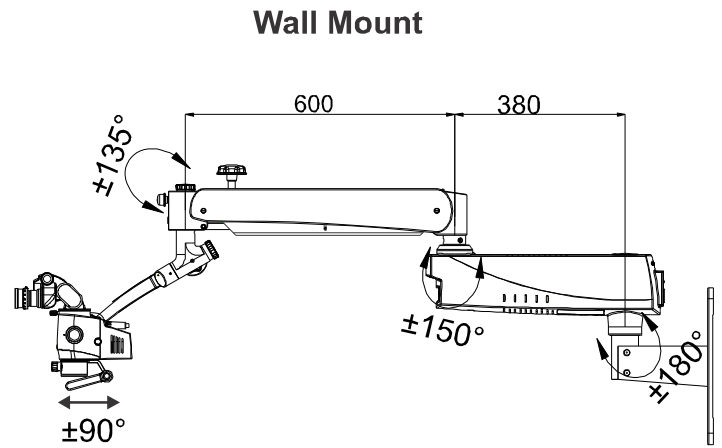
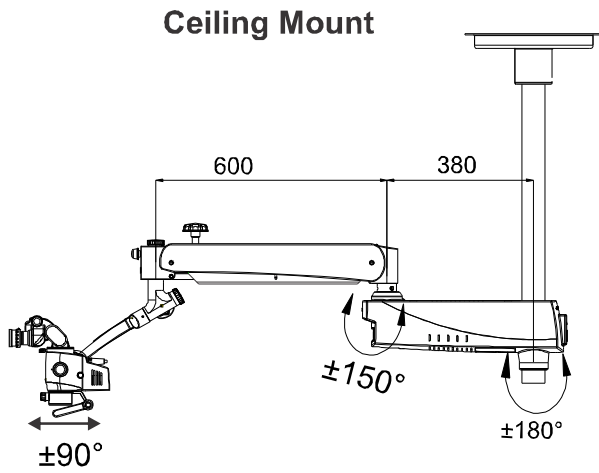
Guidance Tables (continued)

Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the Prima Mμ for ME Equipment and ME Systems that are NOT Life-supporting.			
Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
Recommended Separation Distances for between Portable and Mobile RF Communications Equipment and the Prima Mμ			
<p>The Prima Mμ is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the Prima Mμ can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment (transmitters) and the Prima Mμ as recommended below, according to the maximum output power of the communications equipment.</p>			
Max Output Power of Transmitter (W)	Separation (m) 150kHz to 80 MHz $d=(3.5/v1)(\text{Sqrt } P)$	Separation (m) 80 to 800 MHz $d=(3.5/E1)(\text{Sqrt } P)$	Separation (m) 800MHz to 2.5GHz $d=(7/E1)(\text{Sqrt } P)$
0.01	0.1166	0.1166	0.2333
0.1	0.3689	0.3689	0.7378
1	1.1666	1.1666	2.3333
10	3.6893	3.6893	7.3786
100	11.6666	11.6666	23.3333
<p>For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer.</p> <p>Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.</p>			

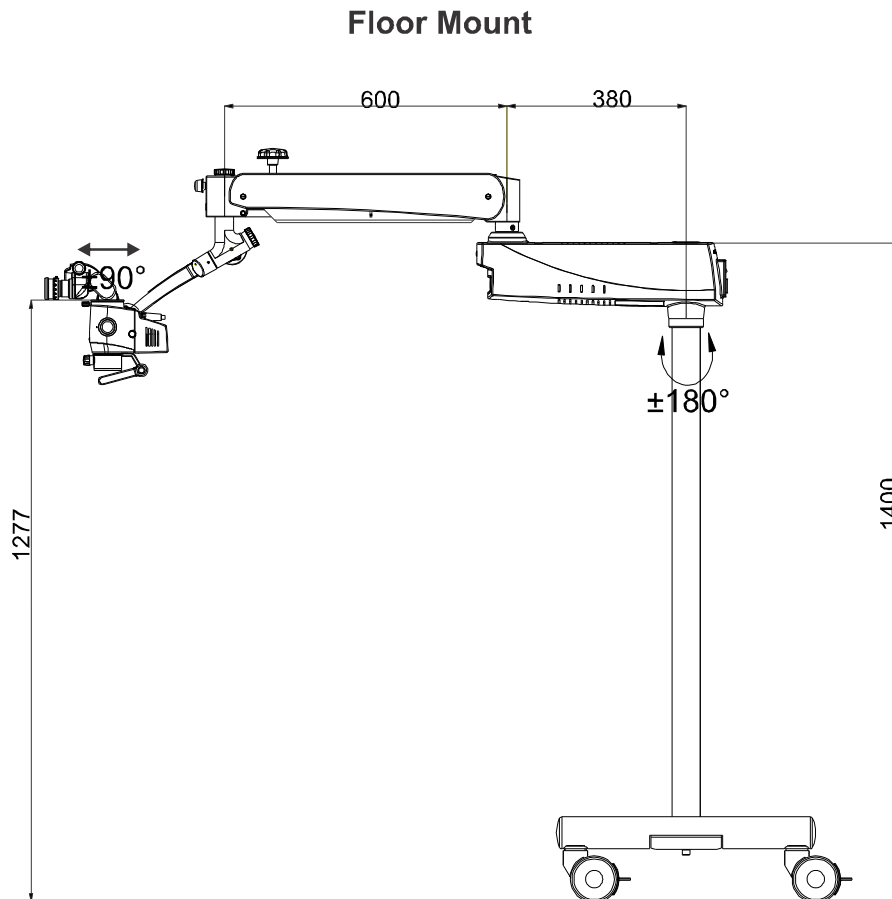
21 MEASURES & WEIGHT

Prima Mμ- Microscope with Ceiling Mount
Total Weight: Approx. 75 kgs.

Prima Mμ- Microscope with Wall Mount
Total Weight: Approx. 60 kgs.



Prima Mμ- Microscope with Mobile Stand
Total Weight: Approx. 100 kgs.



22 GLOSSARY

Ametropia compensation	Compensation of short- or far-sightedness. This can be done for each eye individually by means of the two eye-pieces (range: +5 to -5 diopters).
Working distance	Distance front lens to object level (250 mm).
Colour temperature	Specifies the colour impression of a light source. Using colour temperature, one can set the colour of a light source in relation ('hot' or 'cold' light) with the colour of natural light (sunlight). The unit of measurement for colour temperature is Kelvin (K).
Light field diameter	The size of the field, which is illuminated at a distance of 250 mm.
Field of view diameter	The visible area of an object that can be seen through the microscope. The greater the magnification level, the smaller the field of view and vice versa.
Yellow filter	A colour filter prevent premature curing of composite.
Intensity of Illumination	Specifies the luminous flux from a light source onto a certain area. The unit of measurement for illumination intensity is lux (Abbrev.: lx).
LED	Light Emitting Diode. Electronic semiconductor device that emits light when an electrical current passes through.
Eyepiece	The optical portion facing towards the eyes, with which the enlarged image produced by the colposcope can be viewed.
Beam path, convergent	The two light beams for the eyes run together in a point that lies at a distance of 250 mm in front of the front lens. This distance is in accordance with the working distance. This way, the eye does not has to focus on this point on its own, as it is the case with a parallel beam path.
White Balance	White balance is used to calibrate the camera to the colour temperature of the light at the location.
DSLR Camera	(Digital single-lens reflex camera) with a digital imaging sensor.
CCD Camera	(Charge-coupled device) a camera with a technology to store electro charge and move this charge out of photo sensor in organized way.
CMOS Camera	(Complementary Metal Oxide Semiconductor) cameras in which image sensors are silicon chips that capture and read light.
DBS	(Double beam splitter) Splits each light beam into two directions (eye and to side port) for simultaneous user view & photography, videography or co-observations. Ratio of light distribution is 70% for eyes & 30% to side ports for photography, videography or co-observations, installed between observation head and main microscope.

DBSi	Serves the same purpose as the DBS but in addition it provides a 60° inclined position, creating greater comfort, ideal for prolonged use applications or where patient is always supine.
Extender	Provides optical extension for a more comfortable working angle.
Rotoplate	Enables you to comfortably view your specimen at an angle by tilting the magnichanger and straightening our viewing tube. The Rotoplate has discrete positive indexing positions to engage and hold your ideal viewing angle.

23 WARRANTY

This product is warranted by Labotech Microscopes India Pvt. Ltd. against defective material and workmanship under normal use for a period of one year from the date of invoice to the original purchaser. (An authorized dealer shall not be considered an original purchaser). Under this warranty, Labotech Microscopes India Pvt. Ltd. sole obligation is to repair or replace the defective part or product at Labotech/Labomed discretion.

This warranty applies to new products and does not apply to a product that has been tampered with, altered in any way, misused, damaged by accident or negligence, or which has had the serial number removed, altered or effaced. Nor shall this warranty be extended to a product installed or operated in a manner not in accordance with the applicable LABOMED instruction manual, nor to a product which has been sold, serviced, installed or repaired other than by a Labotech Microscopes India Pvt. Ltd. factory or authorized LABOMED Dealer.

Charts, cards and other expendable items are not covered by this warranty.

All claims under this warranty must be in writing and directed to the LABOMED factory, or authorized instrument dealer making the original sale and must be accompanied by a copy of the purchaser's invoice.

This warranty is in lieu of all other warranties implied or expressed. All implied warranties of merchantability or fitness for a particular use are hereby disclaimed. No representative or other person is authorized to make any other obligations for a LABOMED product. Labotech/Labomed shall not be liable for any special, incidental, or consequent damages for any negligence, breach of warranty, strict liability or any other damages resulting from or relating to design, manufacture, sale, use or handling of the product.

PRODUCT CHANGES

Labotech Microscopes India Pvt. Ltd. reserves the right to make changes in design or to make additions to or improvements in its products without obligation to add such to products previously manufactured.

CLAIMS FOR SHORTAGES

We use extreme care in selection, checking, rechecking and packing to eliminate the possibility of error. If any shipping errors are discovered:

1. Carefully go through the packing materials to be sure nothing was inadvertently overlooked when the unit was unpacked.
2. Call the dealer you purchased the product from and report the shortage. The materials are packed at the factory and none should be missing if the box has never been opened.
3. Claims must be filed within 30 days of purchase.

CLAIMS FOR DAMAGES IN TRANSIT

Our shipping responsibility ceases with the safe delivery in good condition to the transportation company. Claims for loss or damage in transit should be made promptly and directly to the transportation company.

If, upon delivery, the outside of the packing case shows evidence of rough handling or damage, the transportation company's agent should be requested to make a "Received in Bad Order" notation on the delivery receipt. If within 48 hours of delivery, concealed damage is noted upon unpacking the shipment and no exterior evidence of rough handling is apparent, the transportation company should be requested to make out a "Bad Order" report. This procedure is necessary in order for the dealer to maintain the right of recovery from the carrier.



labomed

Our policy is one of continuous development. Labotech Microscopes India Pvt. Ltd. reserves the right to change design and specifications without prior notice.

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