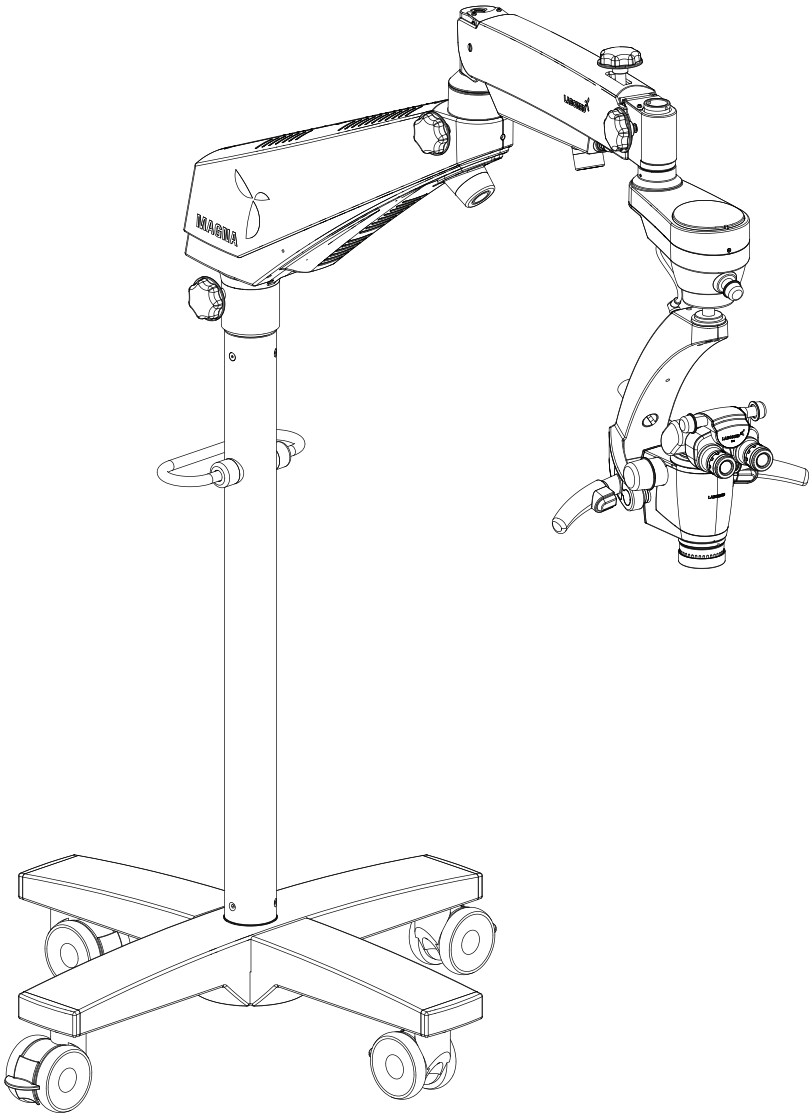
LABOMED
ideas for vision

MAGNA

User Manual

Operating Microscope Dentistry



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.: 6129000-795
Issue 1.16
Printed on Feb, 2026

MAGNA is a Trade name for LABOMED endodontics microscope.

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LABOMED products are designed and manufactured under quality processes that meet quality management system requirements in compliance with ISO 13485.

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1. INTRODUCTION AND INTENDED USE

LABOMED Magna is a surgical and diagnostic microscope that is adaptable for different surgical needs for consistent visualization during all intra operative phases of endodontics by providing a magnified view of the surgical field without compromising performance.

The microscope provides extremely high optical image quality, good depth of focus, and a wide field of view for precise surgery. Illumination control and high eye point of the observation head helps reduce the user's work fatigue and allows comfortable use over a long period.

Salient features of this microscopes are:

1. The observation head can easily be positioned with the help of a suspension arm.
2. An advanced Galilean Zoom 1:6, also convertible to 8 step magnichanger allows optimal magnification for various needs at different magnification levels.
3. Cold light illumination with a high intensity 50W LED lamp is provided using a fiber optic guide for proper illumination.
4. An effortless articulation system ABA (Automatic Balancing Arm) features an electromagnetic brake system that enables the ultimate flexibility in maneuvering the microscope's viewing angle and position.
5. The Labomed NuVar CMO with variable working distance comes as standard and provide greater convenience to user in achieving a comfortable working distance.
6. The rigid Cross base with caster wheels provides stability and mobility to the device.
7. When the microscope is not in use, the suspension arm can be folded over the main body for compact storage.

Any serious incident associated with this device should be reported to Labo America, Inc. USA and to your national health agency.

INTENDED USE

The Magna microscope is an AC powered device intended for use during diagnosis and surgery to provide a magnified view of the region of interest.
Note: Use Magna as specified in the intended use.

CONTRAINDICATIONS - NONE

CONFIGURATIONS

Microscope	Catalogue No.
Magna Floor Stand (std arm)	6129100
Magna Ceiling Mount (std arm)	6129200
Magna Wall Mount (std arm)	6129300
Magna Ceiling Mount (Heavy duty) long arm	6129201
Magna Wall Mount long arm	6129301
Magna Floor Stand With Motorised Filter (std arm)	6129101
Magna Ceiling Mount With Motorised Filter (long arm)	6129202
Magna Wall Mount With Motorised Filter (long arm)	6129302

Ceiling Mount Options (Heavy Type / 170 mm Dia)

Ceiling Height	Column Length (Microscope)
10 Ft (305 cm)	2.4 Ft (740 mm)
12 Ft (366 cm)	4.4 Ft (1350 mm)

2. PRODUCT DESCRIPTION (FLOOR STAND)

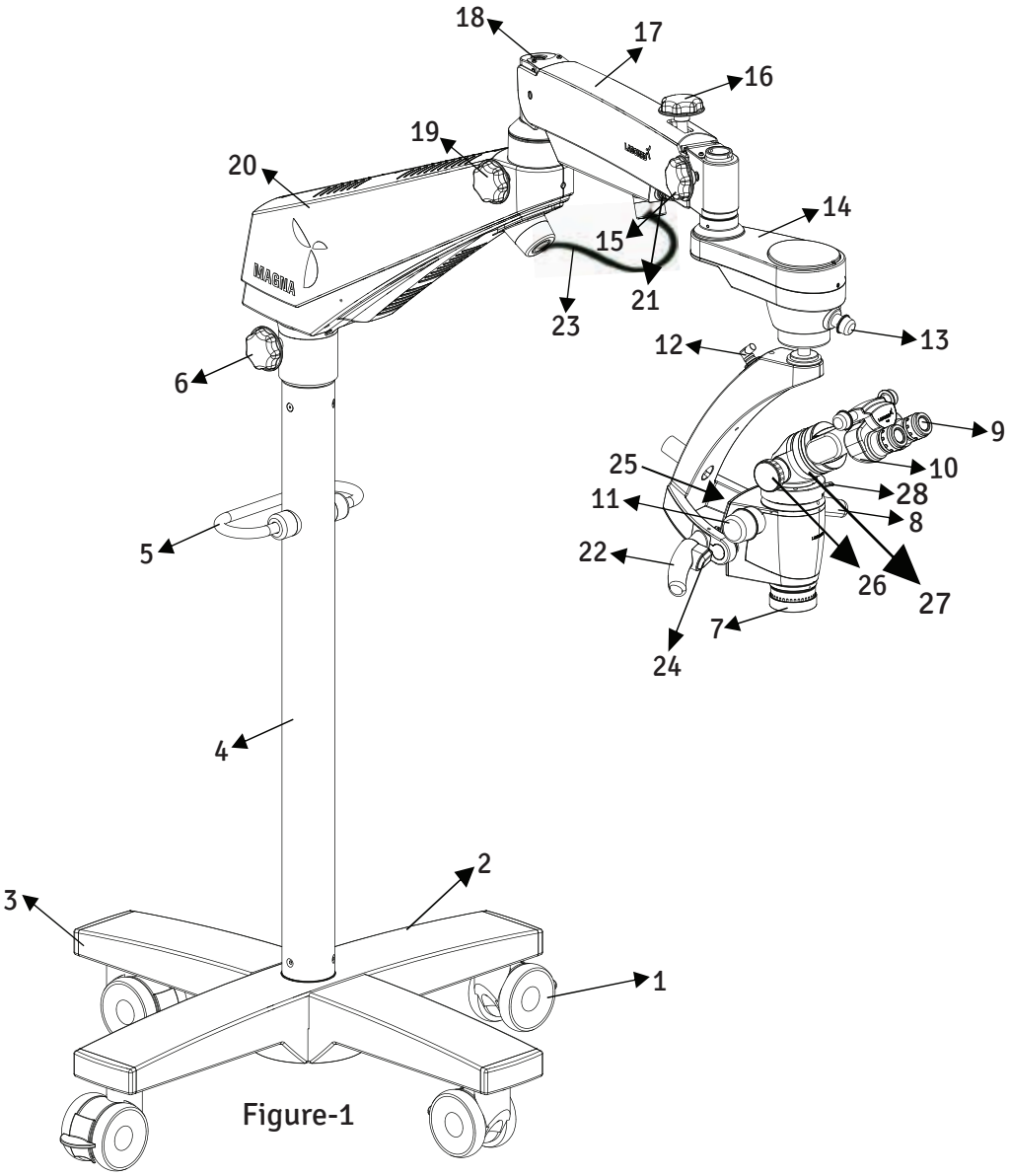


Figure-1

1. Caster wheel with Brakes
2. Cross Base Top
3. Cross Base Bottom
4. Column
5. Handle for transport
6. Swivel Arm Locking Knob
7. Common Main Objective with Fine Focusing
8. Right hand Release (Electromagnetic Clutch)
9. Eyepieces
10. Ergo Head 0 - 210° adjustable
11. Zoom Magnification Knob
12. 2 pin connector for Clutch Buttons
13. Illumination Control Knob
14. ABA (Auto Balancing Arm) Electromagnetic Clutch
15. Auto Balancing Arm Locking Knob
16. Suspension Arm Hydraulic Movement Lock
17. Suspension Arm
18. Suspension Arm Spring Tension Adjustment
19. Suspension Arm Movement Locking Knob
20. Swivel Arm
21. 7 pin connector for ABA Arm
22. Left Hand Release (Electromagnetic Clutch)
23. Wire Mesh with Fibre light guide inside
24. ABA Release Button
25. Filter Change knob
26. DBSI
27. Rotoplate
28. Zoom to step changer button

3. PRODUCT DESCRIPTION (CEILING MOUNT)

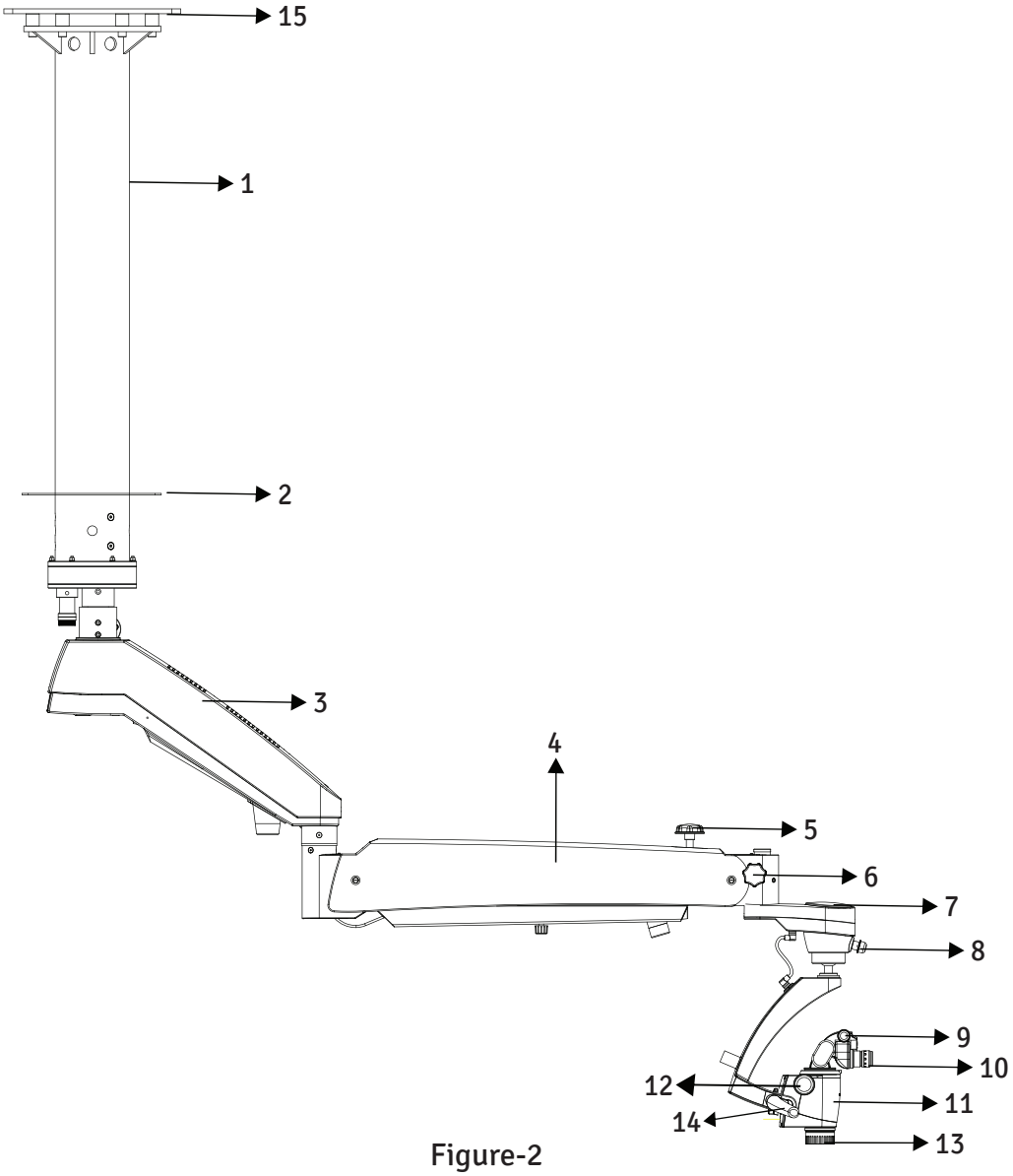


Figure-2

1. Column
2. Cover Mount (to be used in false ceiling only)
3. Swivel Arm
4. Suspension Arm
5. Suspension Arm Hydraulic Movement Lock Knob
6. Auto Balancing Arm Lock Knob
7. ABA (Auto Balancing Arm) Magnetic Clutch
8. Illumination Control knob
9. Ergo Head 0 - 210˚ adjustable
10. Eyepieces
11. Right Hand Release (Electromagnetic Clutch)
12. Zoom Magnification Knob
13. Common Main Objective with Fine Focusing
14. Left Hand Release (Electromagnetic Clutch)
15. Master Plate

4. INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT (Standard Arm)

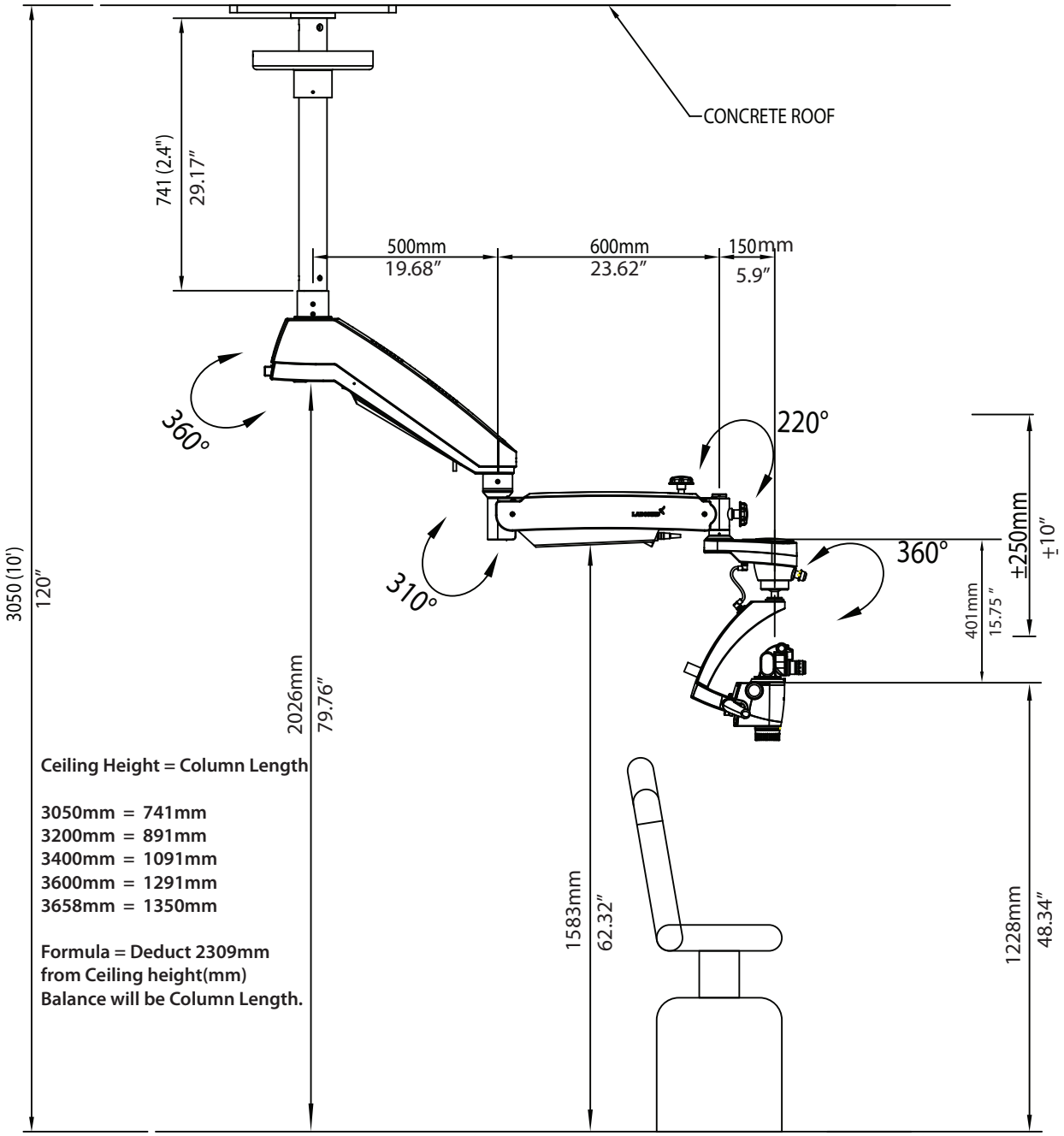


Figure-3

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR 12 FEET CEILING HEIGHT

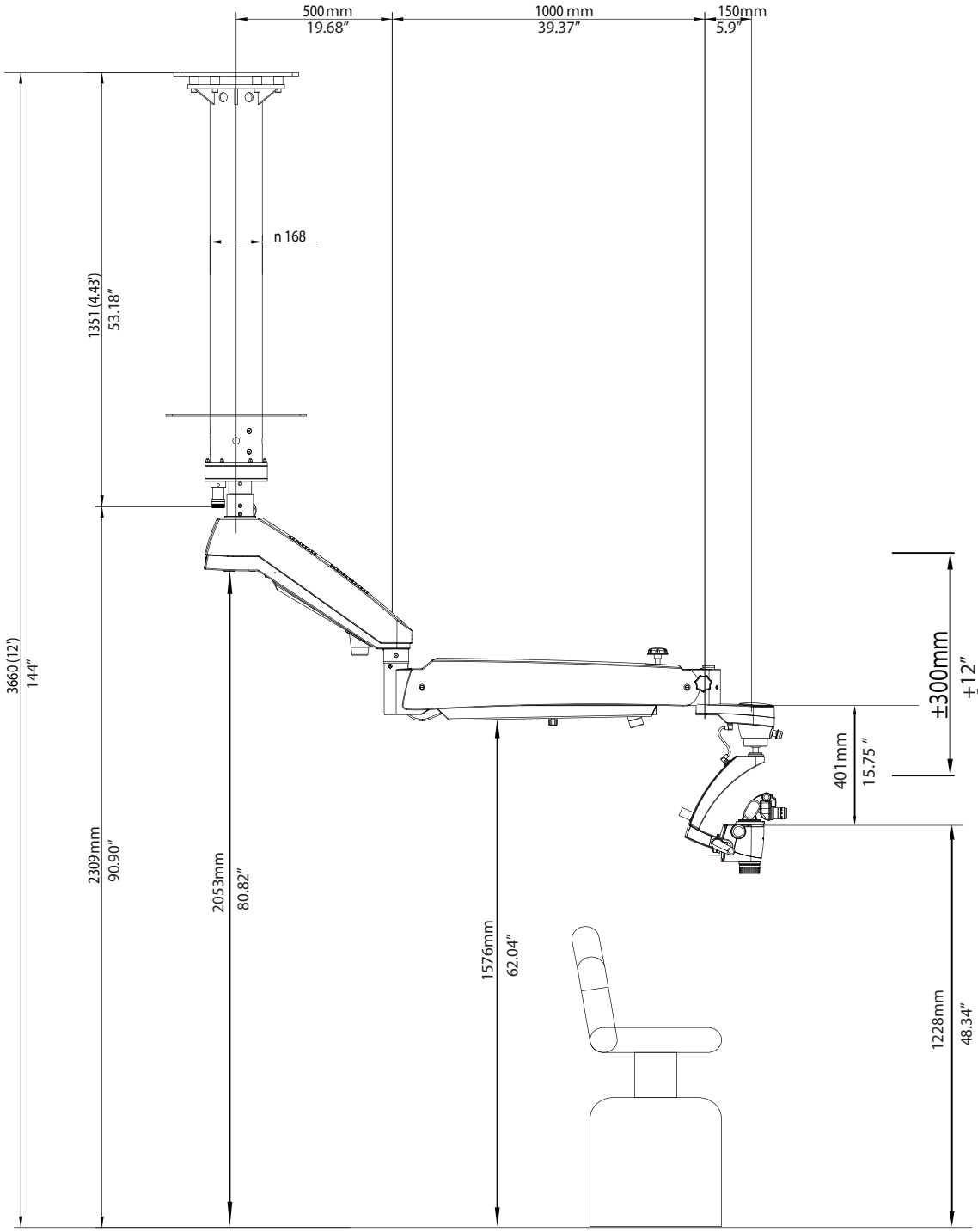


Figure-3(A)

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR 11 FEET CEILING HEIGHT

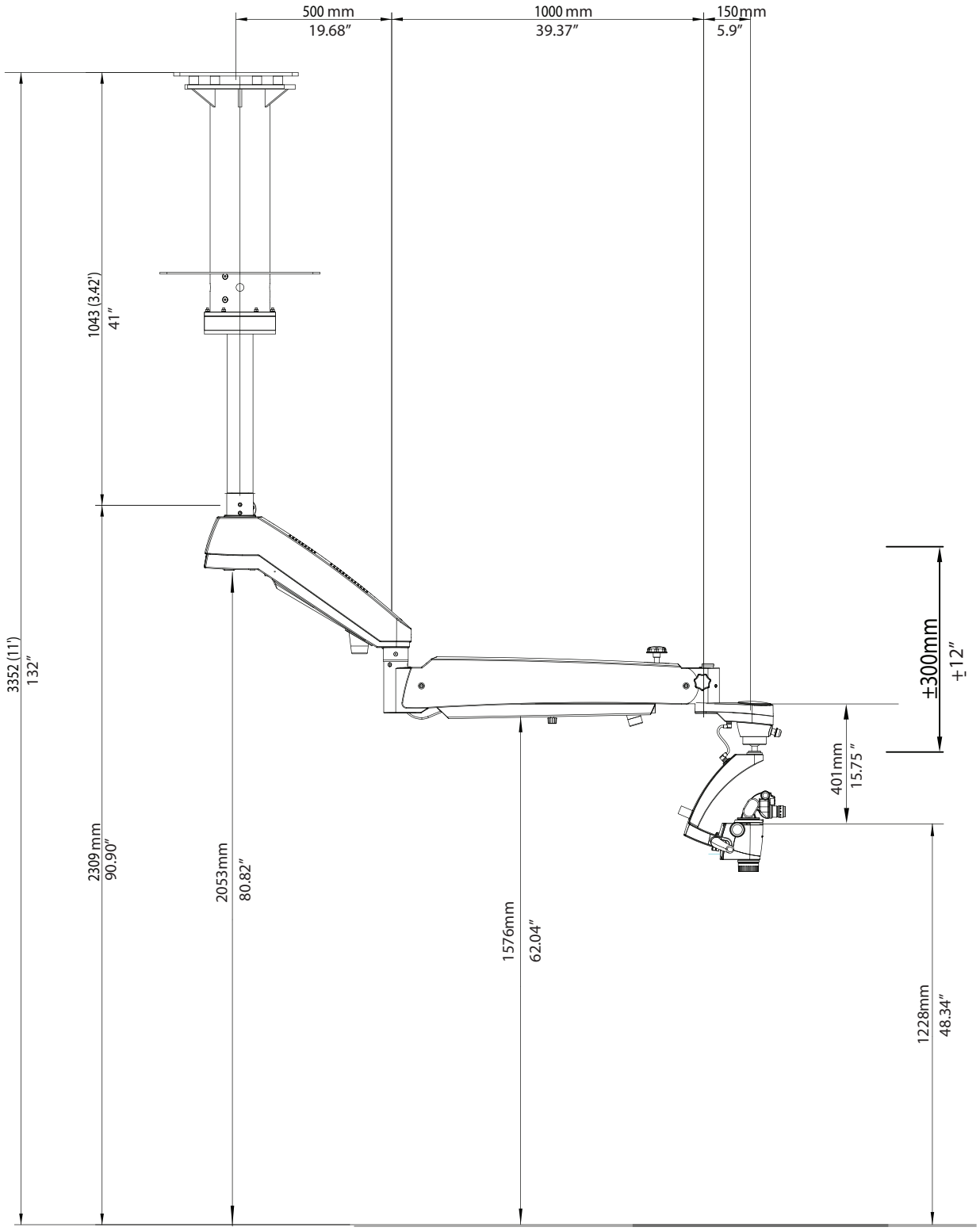


Figure-4

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR 10 FEET CEILING HEIGHT

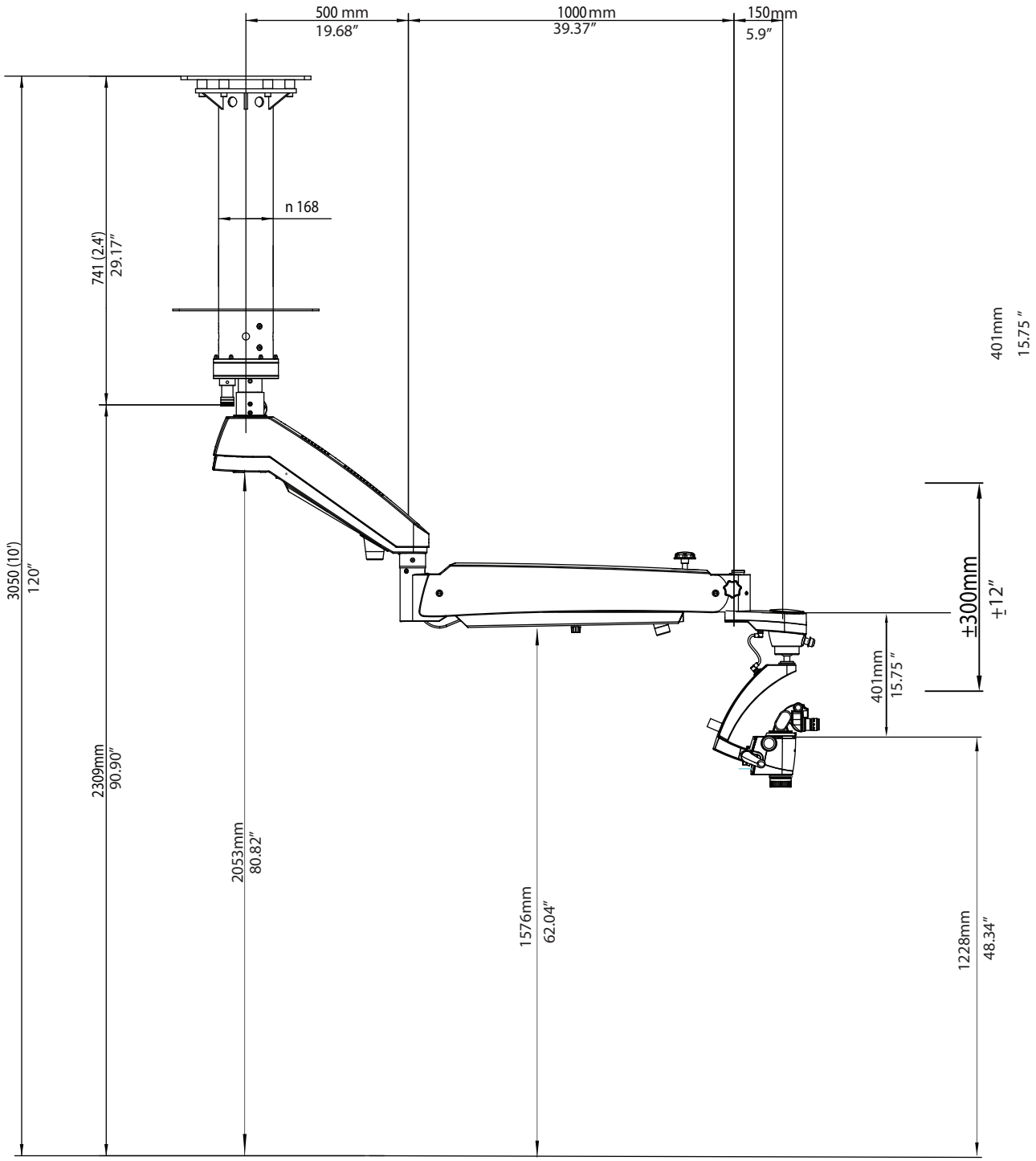
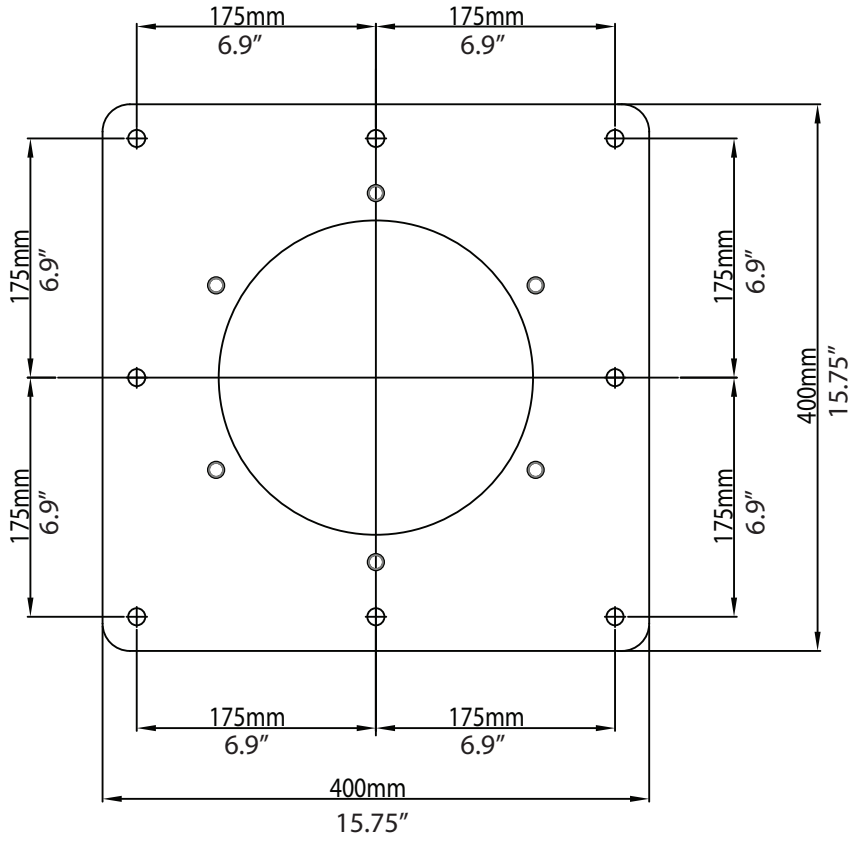


Figure-5

INSTALLATION REFERENCES (CEILING MOUNT)

Marking References



MASTER PLATE
Figure-6

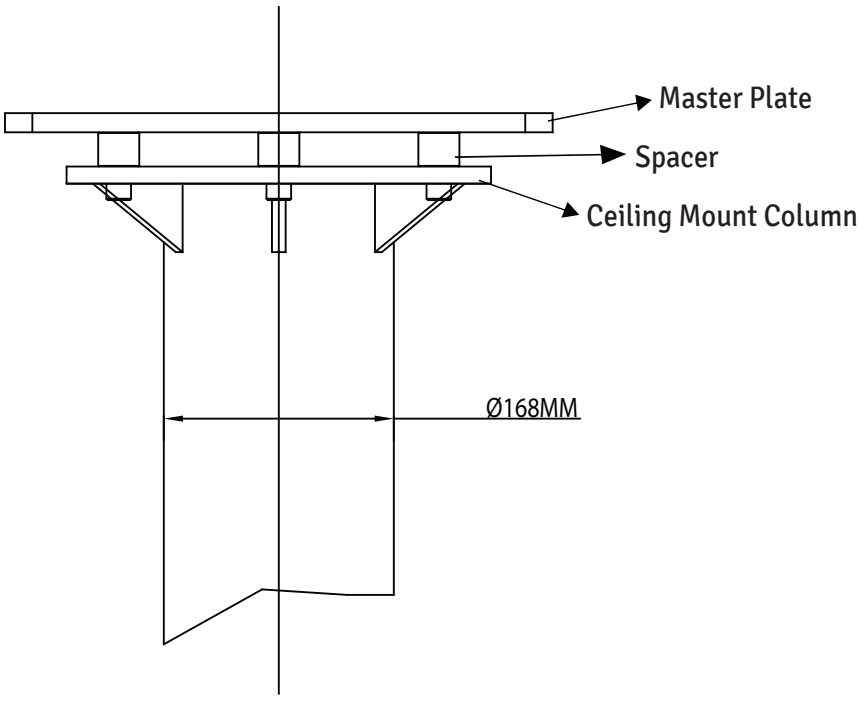


Figure-7

INSTALLATION REFERENCES (CEILING MOUNT)

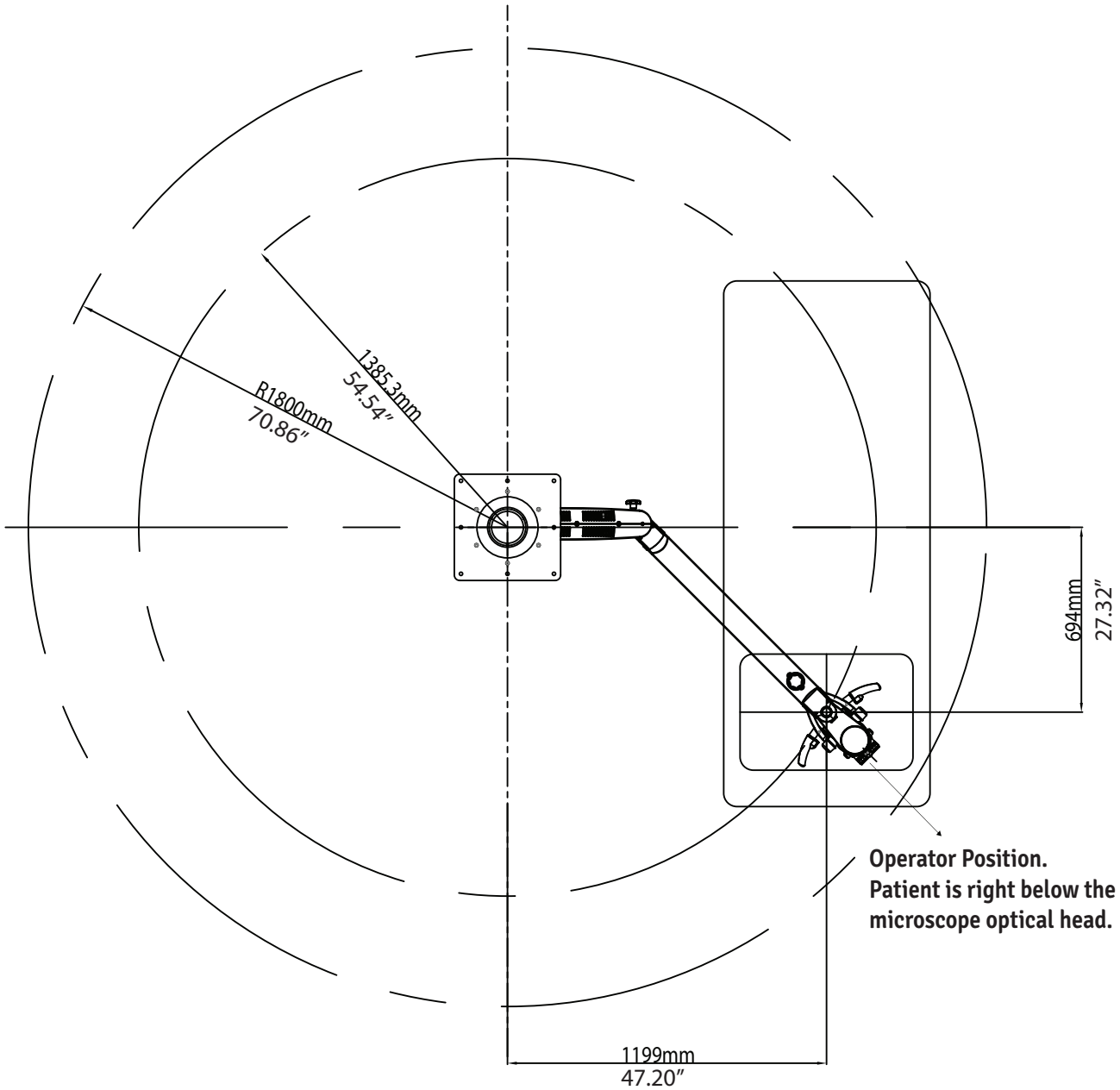


Figure-8

INSTALLATION REFERENCES (CEILING MOUNT)

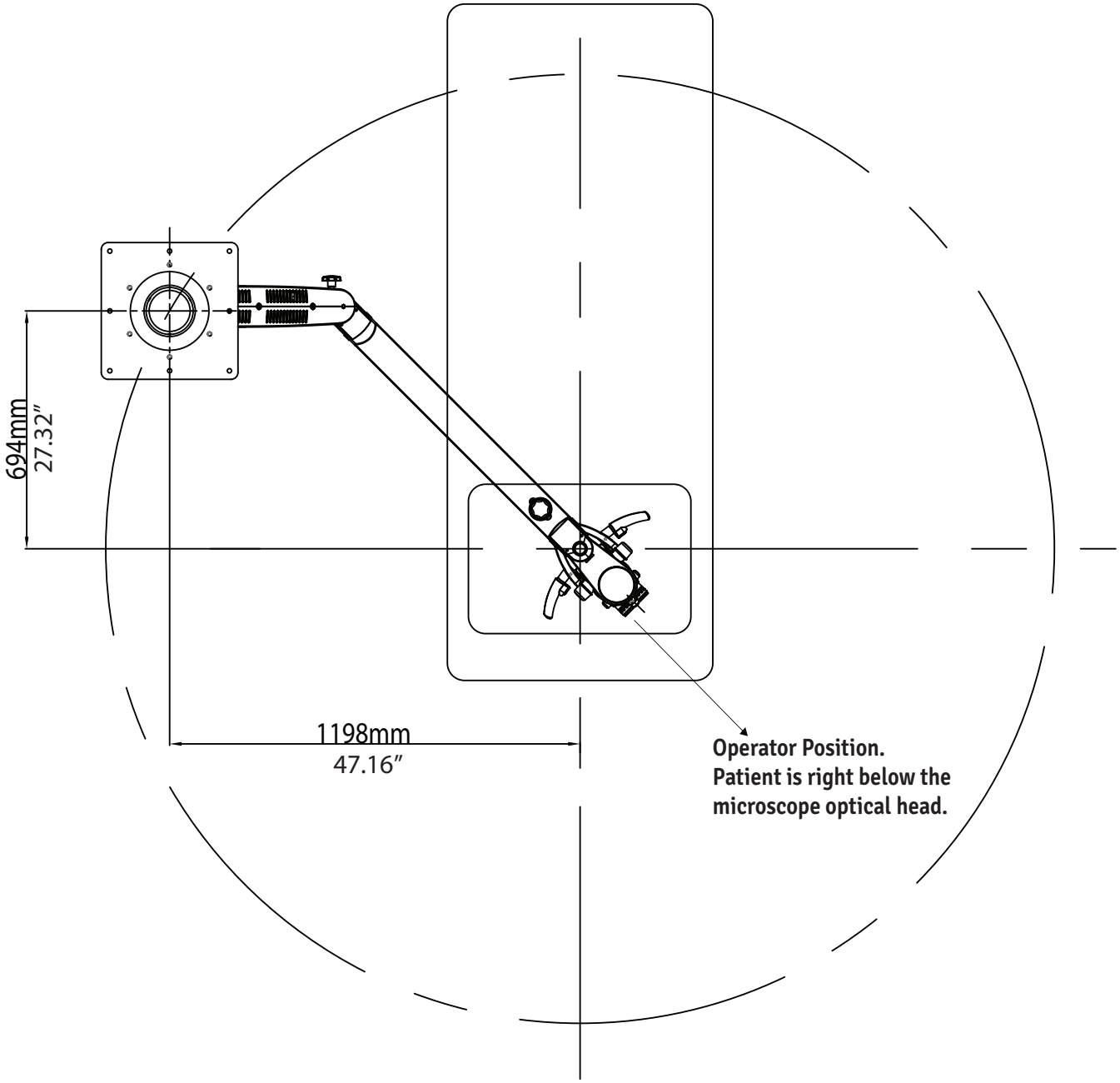


Figure-9

5. CEILING MOUNT INSTALLATION

5A. DROP CEILING APPLICATIONS

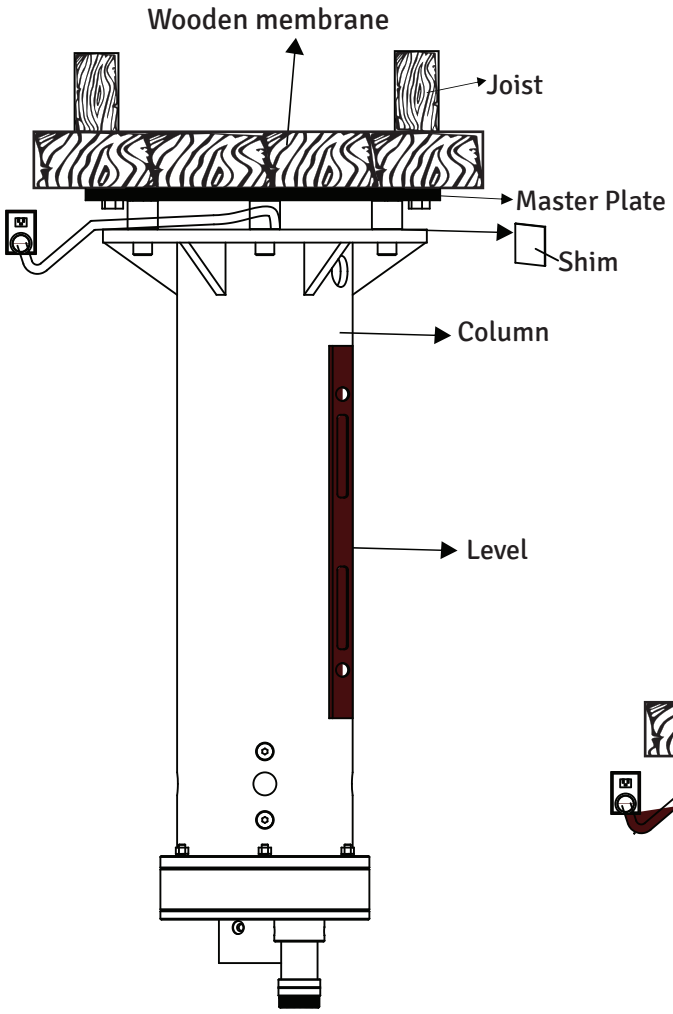
Many newer constructions use drop ceilings. Whenever this type of application is used, all supporting structure and electrical service (115 or 230 VAC, 15A as applicable) is the customer's responsibility and must be completed before the installation.

WARNING: THE SUPPORTING STRUCTURE FOR THE CEILING MOUNT AND WALL MOUNT INSTALLATION MUST BE CAPABLE OF SUPPORTING A MINIMUM WEIGHT OF 220 LBS (100 kg) AND BE STABLE LATERALLY AND VERTICALLY FREE FROM VIBRATION.
FOR MORE CONSTRUCTIONAL DETAILS REFER PAGE NO 29 OF THIS MANUAL.

WARNING:
- **CEILING MOUNT AND COLUMN ASSEMBLY TOGETHER CAN WEIGHTS APPROXIMATELY UPTO 55KG WITHOUT MICROSCOPE (REFER PAGE 61 FOR MORE DETAILS)**
- **TO AVOID PERSONAL INJURY TWO (2) PEOPLE ARE REQUIRED FOR PROPER INSTALLATION.**

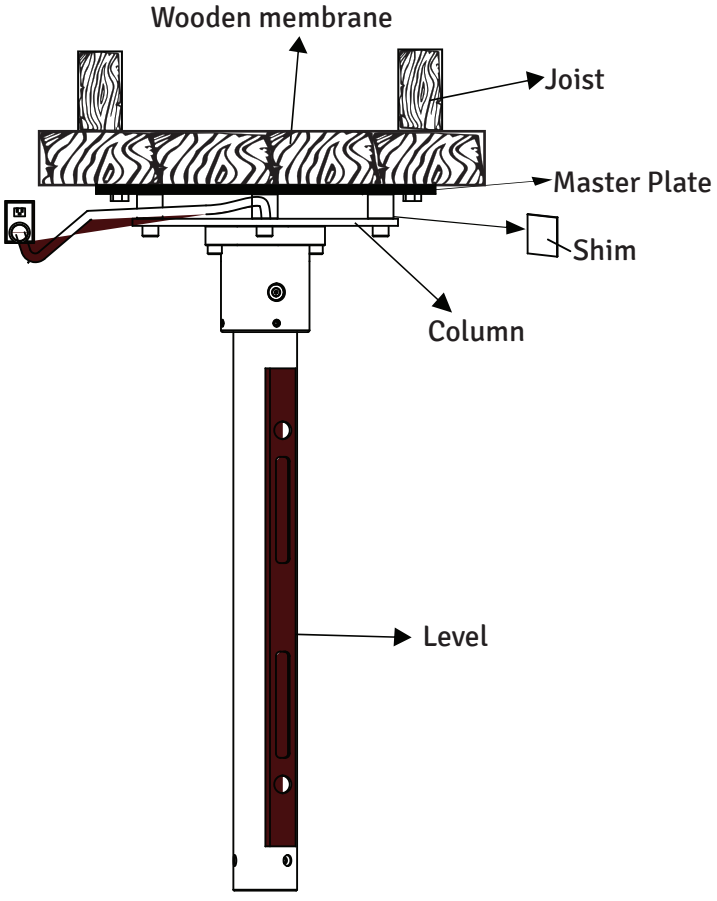
PROCEDURE:

1. Ensure that there is a 350mm diameter hole in the drop ceiling to mount the master Ceiling plate.
2. Labomed Ceiling Mount system for wooden ceiling can be installed by fixing a flat wooden membrane at least 90mm thick to the joist and then mount the Master Ceiling Plate to the wooden membrane as shown in Fig.10 and Fig.-11.
3. Using the Paper template provided, mark the positions of the Eight (8) mounting holes on wooden membrane refering figure.
4. Drill Eight (8) 1/4"(6mm) pilot holes either direct into Joist or the additional wooden membrane as per the roof available.
5. Place a 10mm flat washer over each of the Eight M10 X 100mm hex head lag screws.
6. Referring Flat side of Master Plate, line up the (6) holes with the pilot holes in the mounting surface and insert the hex head lag screws into the holes.
7. Tighten the master Plate with a 17mm Hex Socket Spanner.
8. Position and align the ceiling Mount against the master plate and insert 6 socket head bolts M12 X 40.
9. SlightlyTighten all the bolts using Allen key 10mm.
10. Use a level to ensure the column assembly is Levelled vertically. Refer Section "Leveling the ceiling Mount system" to correct any leveling concerns.
11. After levelling the column. Tighten all 6 bolts to the full torque.
12. Completing of all the procedure from 1 to 11 above is the responsibility of the customer. Labomed representative will complete rest of the microscope Installation after this.
13. Power up the system with the cable provided. Make sure AC outlet is hospital grade & grounded properly.
14. Put the drop ceiling tile back into place.



Heavy Duty vibration free Ceiling Mount

Figure-10



Normal Ceiling Mount

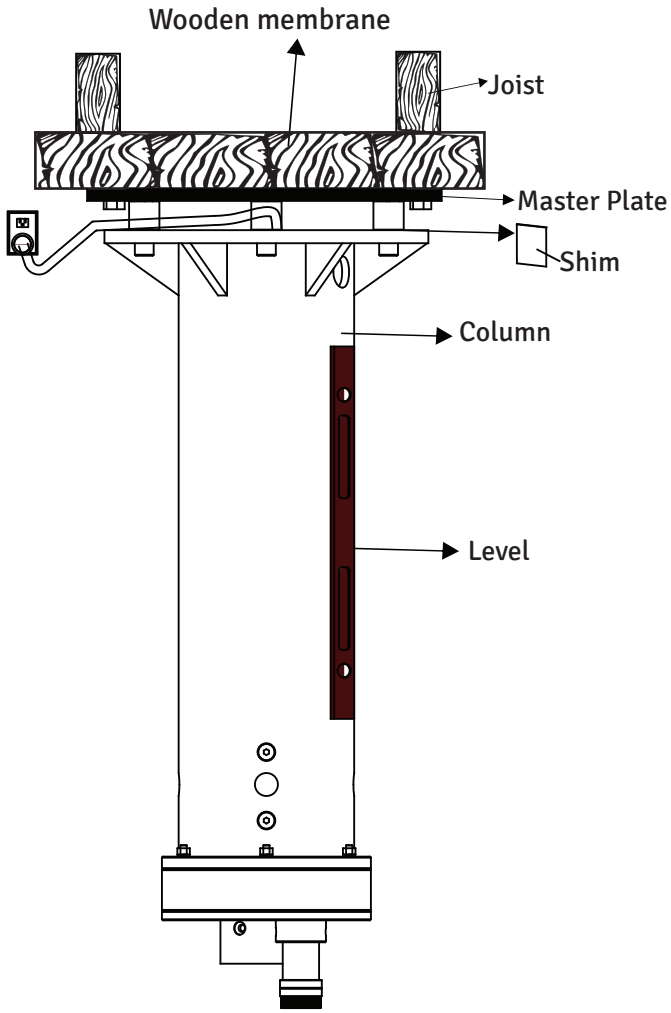
Figure-11

5B. LEVELING THE CEILING MOUNT SYSTEM

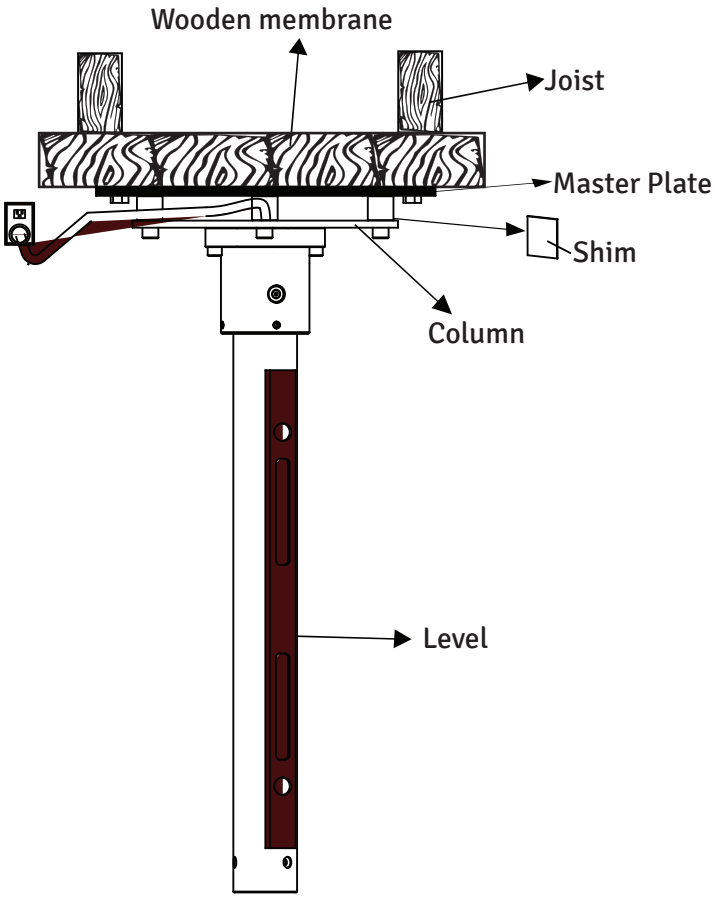
It is important to ensure the column for the ceiling mount is Plumb after installation. The column must be perfectly vertical to prevent the microscope system from drifting from side to side.Use following procedure:

1. Use the 10mm Allen key to slightly loosen all of the (6)M10 bolts.
2. Place a level across the bottom of ceiling mount as shown in Figure and to check the Vertical leveling. Use Shims as required and adjust the RAWL Bolts/ Lag bolts until the column is Vertical.
3. Tighten all screws securely.

NOTICE:Shims and Shim materials are to be provided by the customer and are not furnished by Labomed. There are numerous shims and shim materials commercially available and no specific type or brand name is required.



Heavy Duty vibration free Ceiling Mount
Figure-13



Normal Ceiling Mount
Figure-14

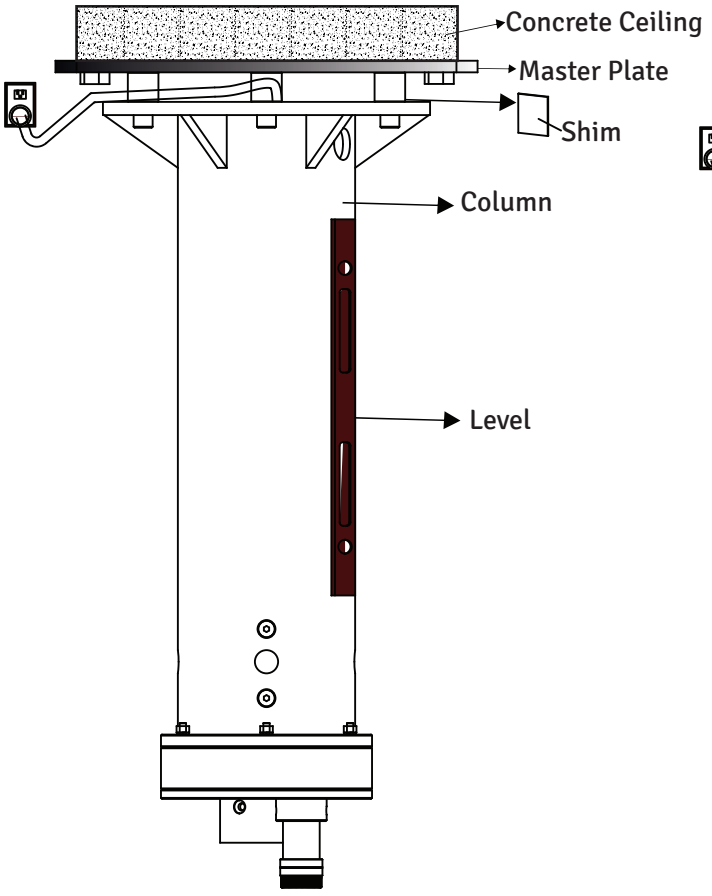
5C. INSTALLING CEILING MOUNT ON CONCRETE CEILINGS

Fixing of Master Plate:

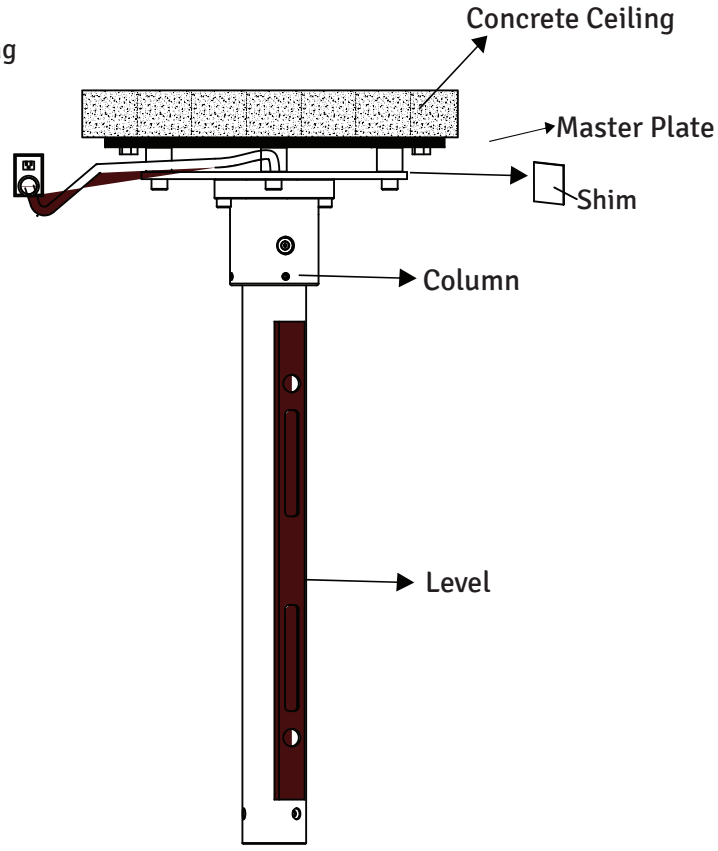
1. Use the Paper template provided to mark the position for the anchors of Master Plate.
2. Drill the Eight (8) mounting holes 14mm diameter and 100mm deep.
3. Place a 10mm flat washer and a split washer over each of the Eight M10 X 75 hex head RAWL Plug.
4. Referring flat surface of Master Plate, align 8 holes with the pilot holes in the ceiling.
5. Insert the hex head RAWL screws into the holes and fully tighten the Master Plate with a 17mm hex socket spanner.

Installation of Ceiling Mount:

6. Position the ceiling Mount against the master plate and insert 6 socket head bolts M12 X 40 after aligning the 6 mounting holes.
7. Slightly tighten all the bolts using Allen key 10mm .
8. Use a level to ensure the column assembly is Leveled vertically. Refer Section “Leveling the ceiling Mount system” to correct any leveling concerns.
9. Fully tighten all the bolts with 10mm allen key.
10. All the procedure from Part 1 to 9 above is the responsibility of the customer to organise. Labomed representative will complete rest of the microscope Installation after this.
10. Power up the system with the cable provided. Make sure AC outlet is hospital grade & grounded properly.
11. Put the drop ceiling tile back into place.

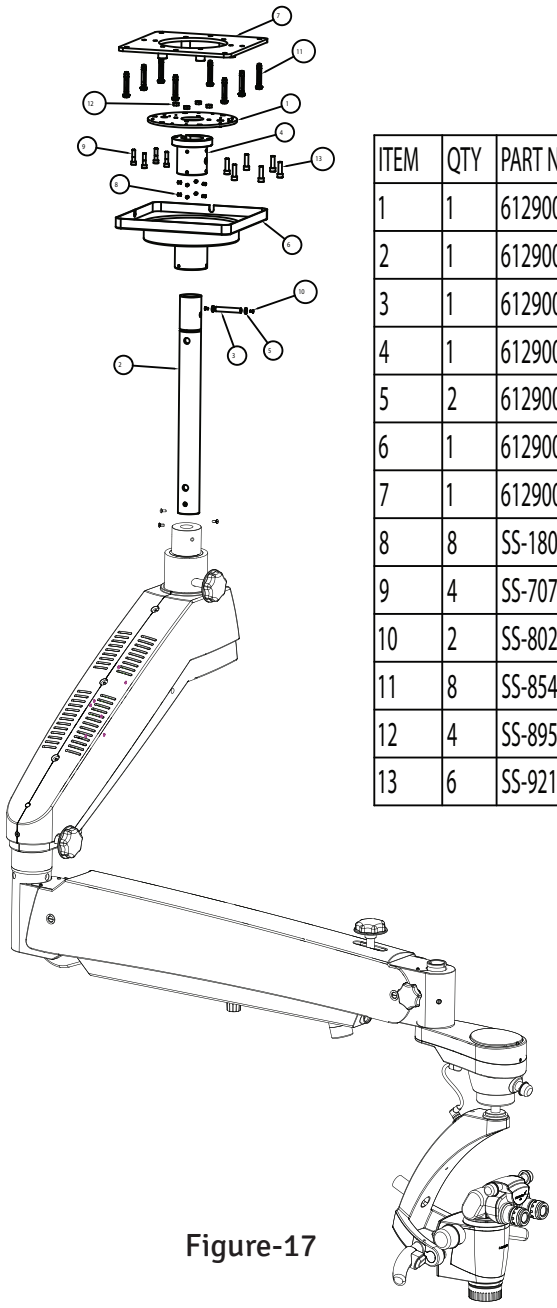


Heavy Duty vibration free Ceiling Mount
Figure-15



Normal Ceiling Mount
Figure-16

INSTALLATION REFERENCES (CONCRETE CEILING MOUNT)



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	6129001-048	TOP PLATE
2	1	6129001-111	PILLAR
3	1	6129001-124	SAFETY PIN
4	1	6129001-126	FLANGE BUSH
5	2	6129001-131	WASHER
6	1	6129001-805	ASSLY CEILING COVER
7	1	6129004-801	MASTER PLATE
8	8	SS-180	M4 X 4/GRB/UB
9	4	SS-707	M10 X 40 ALLEN BOLT
10	2	SS-802	SOCKET FLAT HD SCREW M6x16
11	8	SS-854	RAVAL PLUG M10
12	4	SS-895	M10 HEX NUT
13	6	SS-921	M12x 40-SOCKET HEAD CAP SCREW

Figure-17

6. PRODUCT DESCRIPTION (WALL MOUNT)

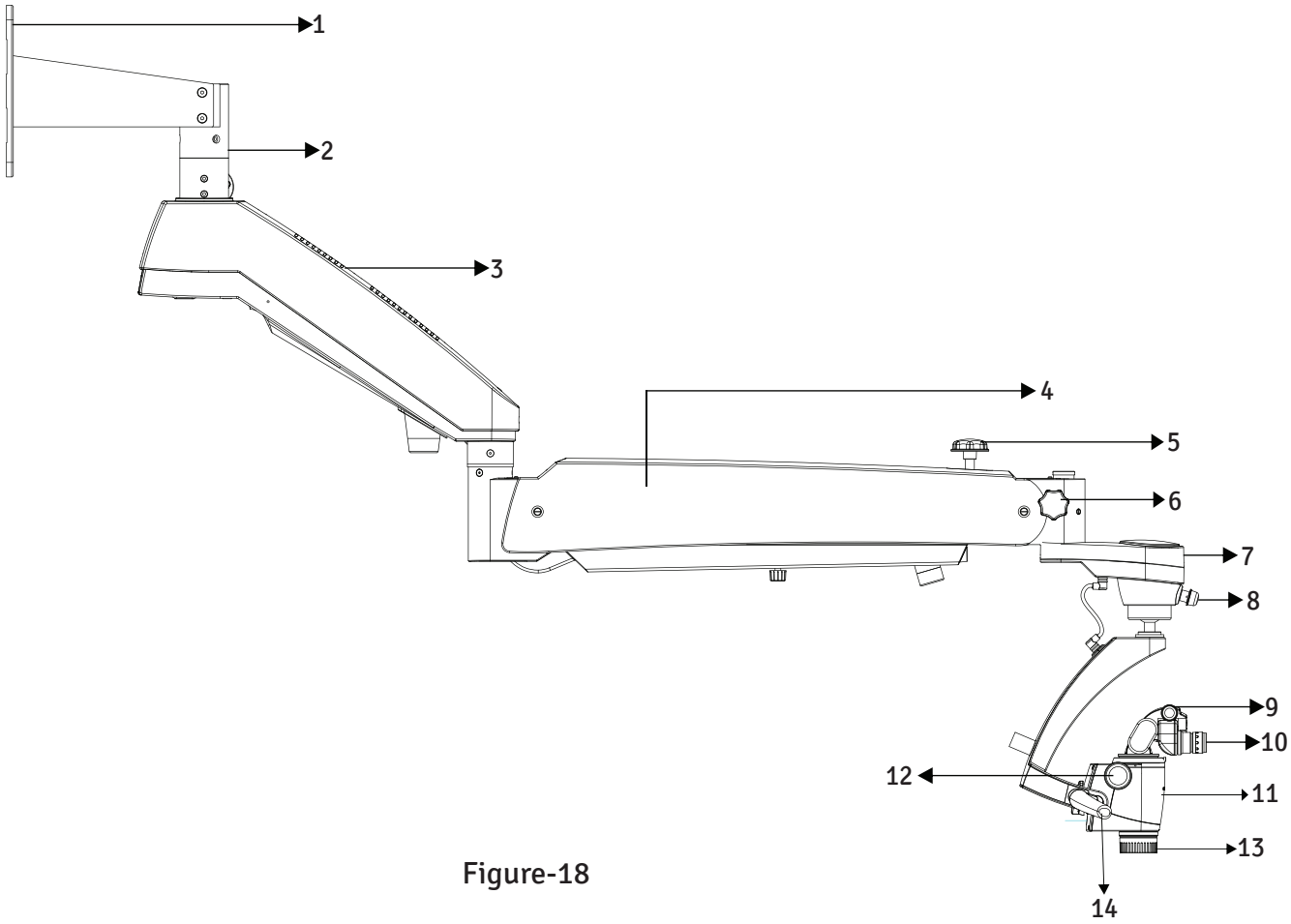


Figure-18

1. Wall Mount Bracket
2. Mount Shaft
3. Swivel Arm
4. Suspension Arm
5. Suspension Arm Hydraulic Movement Lock Knob
6. Auto Balancing Arm Lock Knob
7. ABA (Auto Balancing Arm) Magnetic Clutch
8. Illumination Control knob
9. Ergo Head 0 - 210˚ adjustable
10. Eyepieces
11. Right Hand Release (Electromagnetic Clutch)
12. Zoom Magnification Knob
13. Common Main Objective with Fine Focusing
14. Left Hand Release (Electromagnetic Clutch)

INSTALLATION REFERENCES (WALL MOUNT)

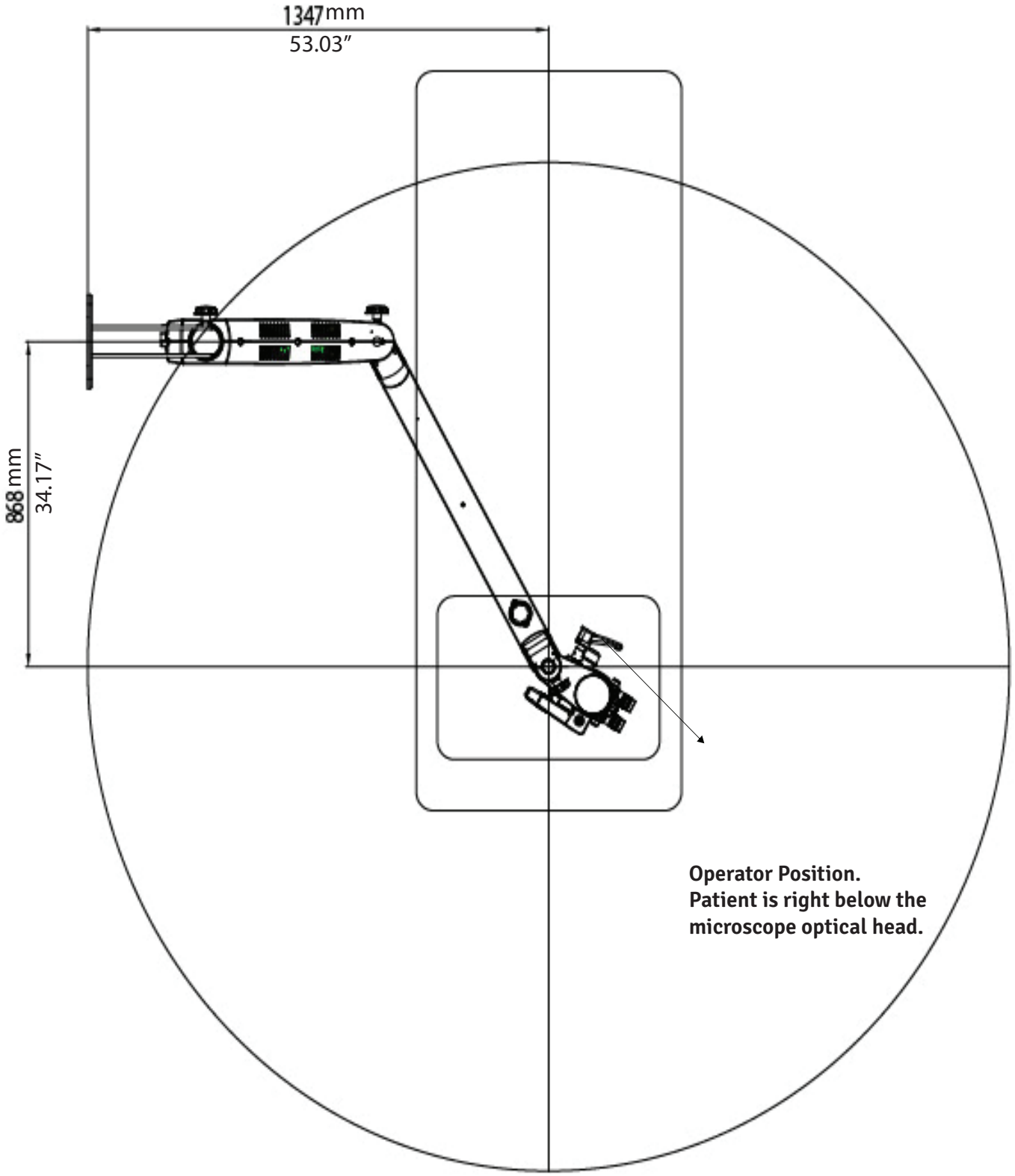


Figure-19

INSTALLATION REFERENCES (WALL MOUNT)

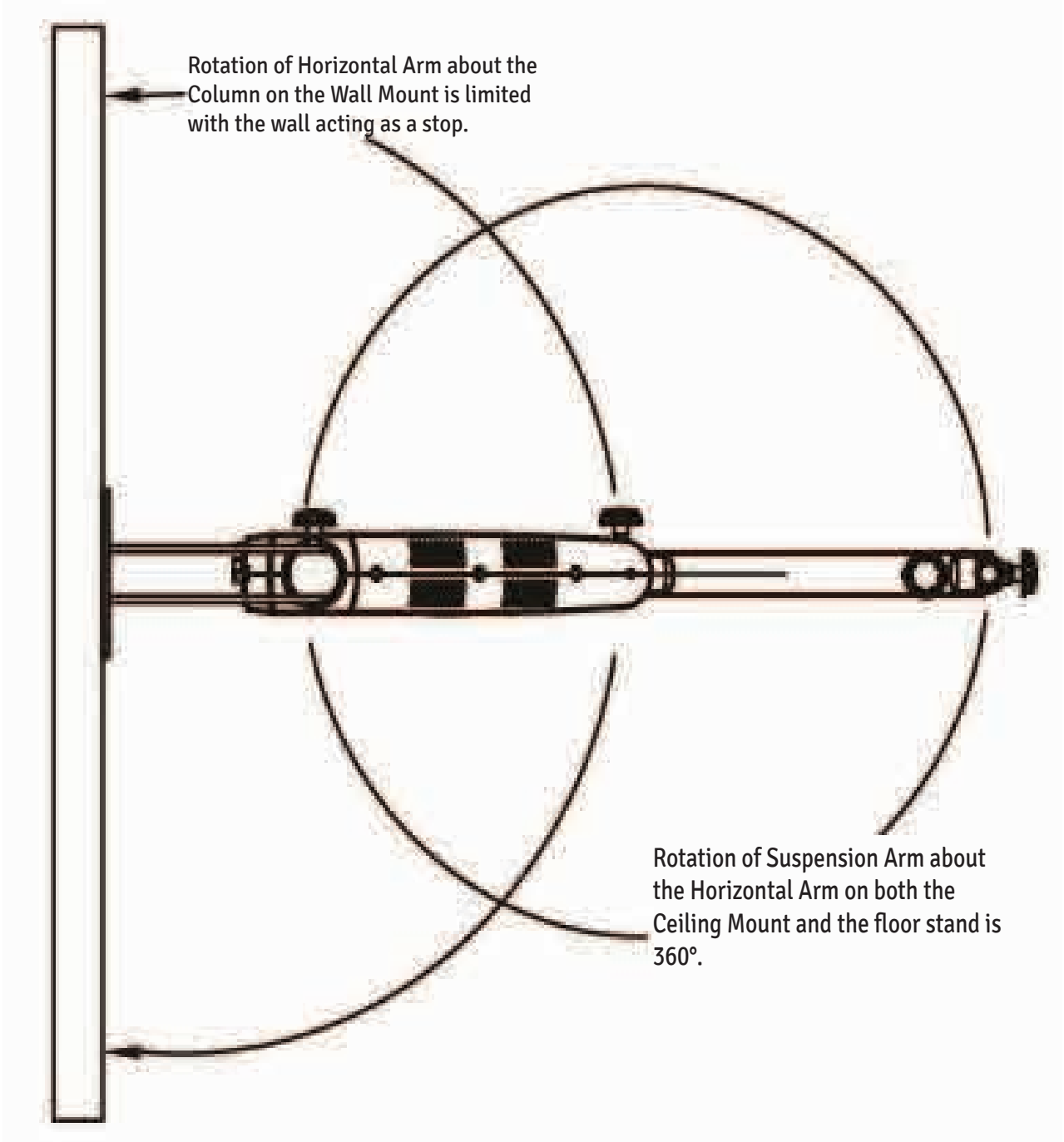


Figure-20

INSTALLATION REFERENCES (WALL MOUNT)

Magna Wall Mount with short Arm

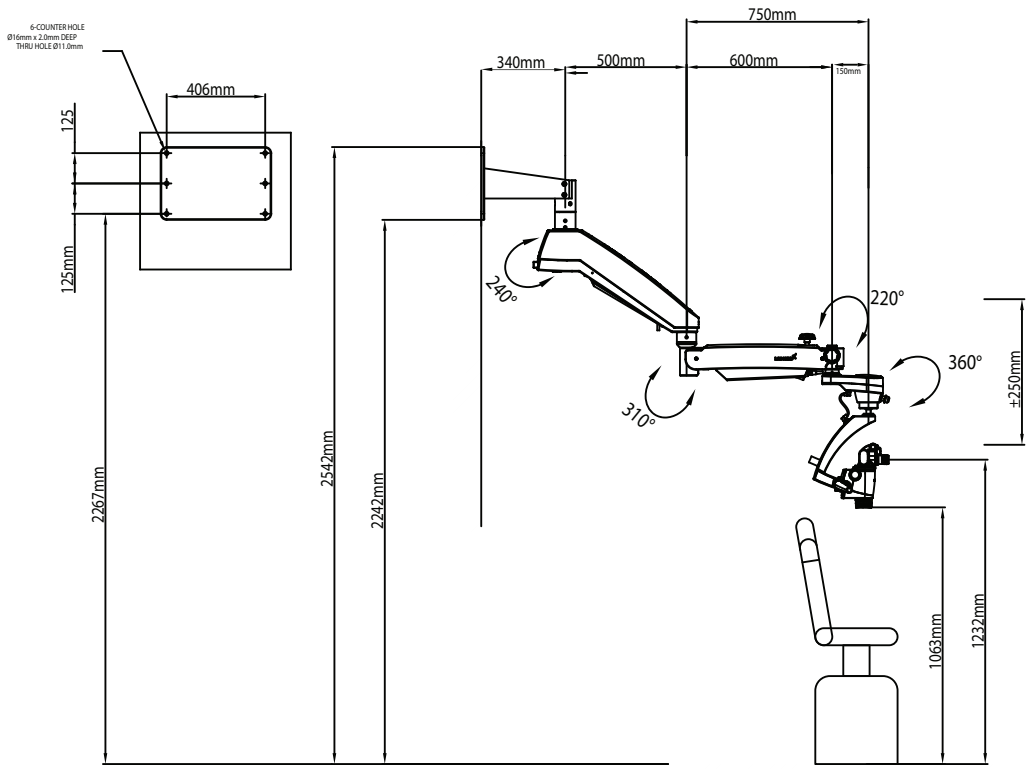


Figure-21

Magna Wall Mount with long Arm

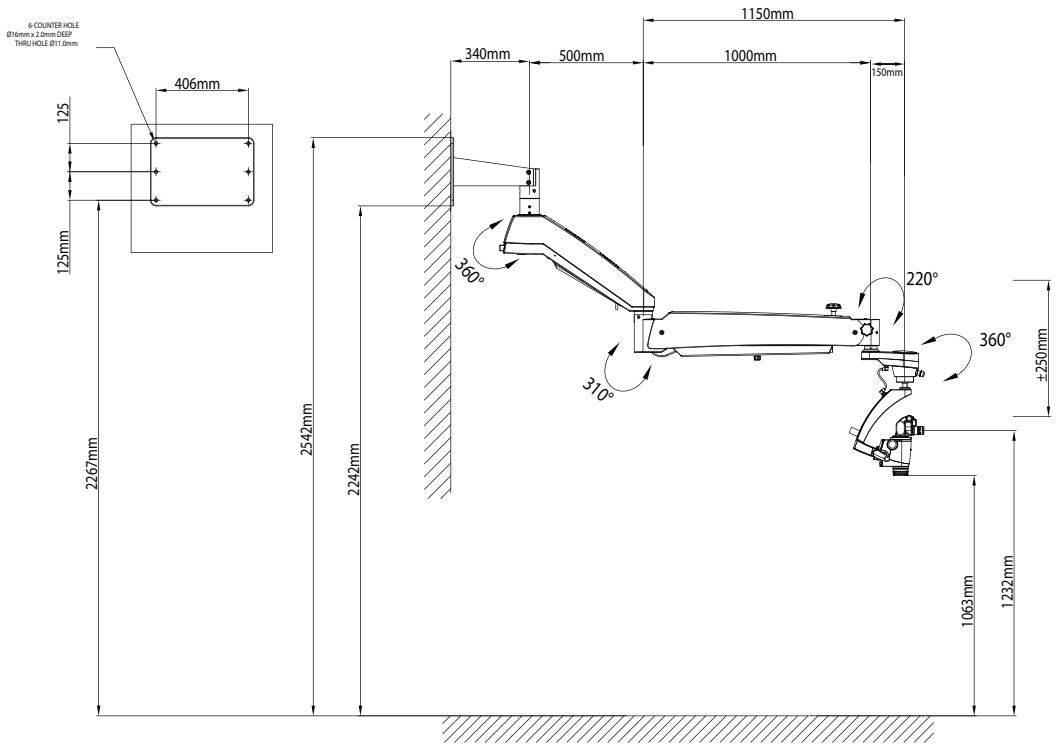


Figure-22

INSTALLATION REFERENCES (WALL MOUNT)

Wall mount: MARKING REFERENCE

Anchoring the Wall mount

Reference

A Paper Template for marking

B Wall Mount Assembly

C Distance from Floor- Refer suitable height as per ordered configuration from figure-21 or 22

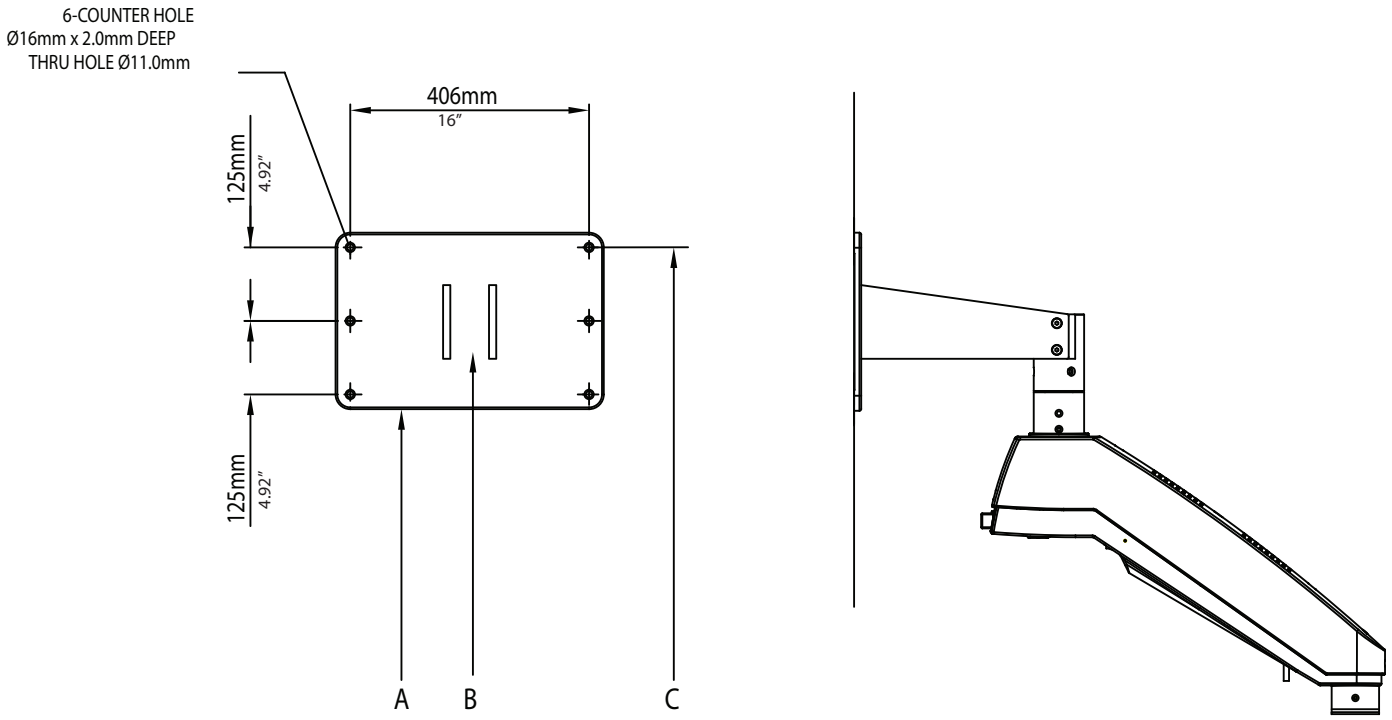


Figure-23

7. WALL MOUNT INSTALLATION

WALL MOUNT INSTALLATION

Before Initiating the installation of Labomed Wall Mount Microscopes, You must ensure that there is proper space available as per the configuration selected. Refer to Figure 21 and 22.

Measure the distance between the centers of the studs. The Labomed Wall Mount Model is designed to mount directly on a wall with wood studs spaced 406mm (16”) centers or on solid brick/concrete wall minimum 229mm (9”) thick wall.

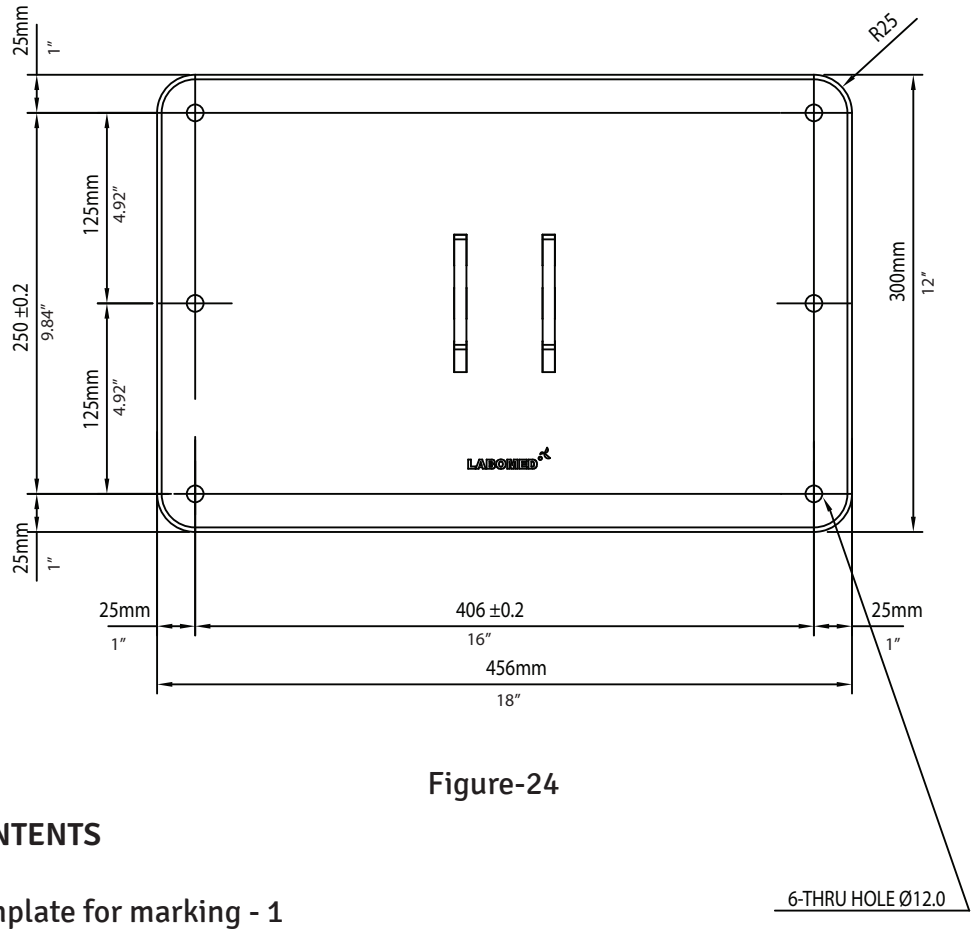


Figure-24

LIST OF CONTENTS

1. Paper template for marking - 1
2. Wall Mount Assembly -1
3. Hexagonal Lag bolts (for wooden walls) -6
4. Plain Washer -6
5. RAWL Anchor Bolts (for Masonry walls) -6
6. Cap set bolt -6

7A. WALL MOUNT INSTALLATION FOR WOODEN WALL

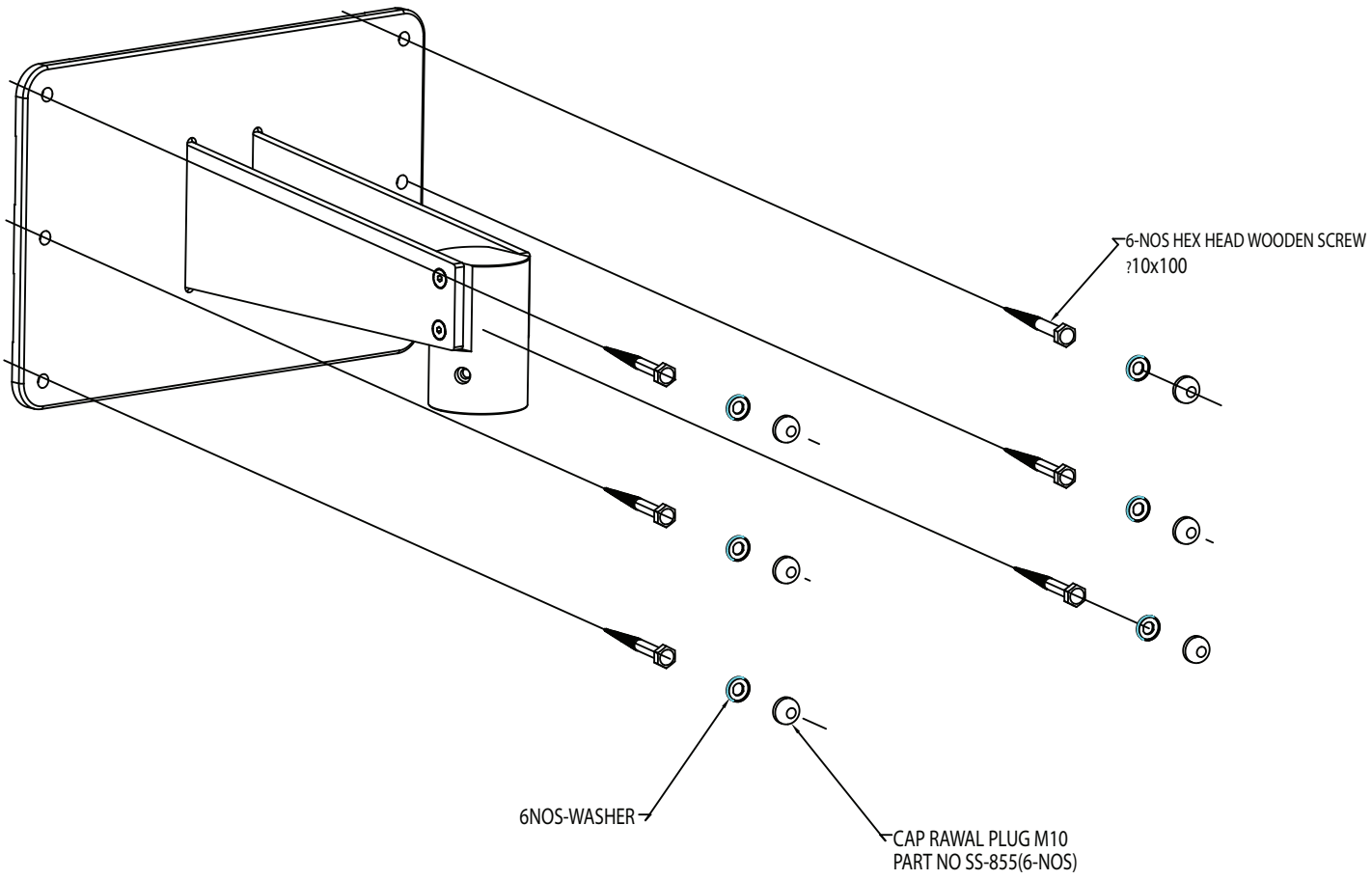


Figure-25

7B. WALL MOUNT INSTALLATION FOR SOLID BRICK WALL

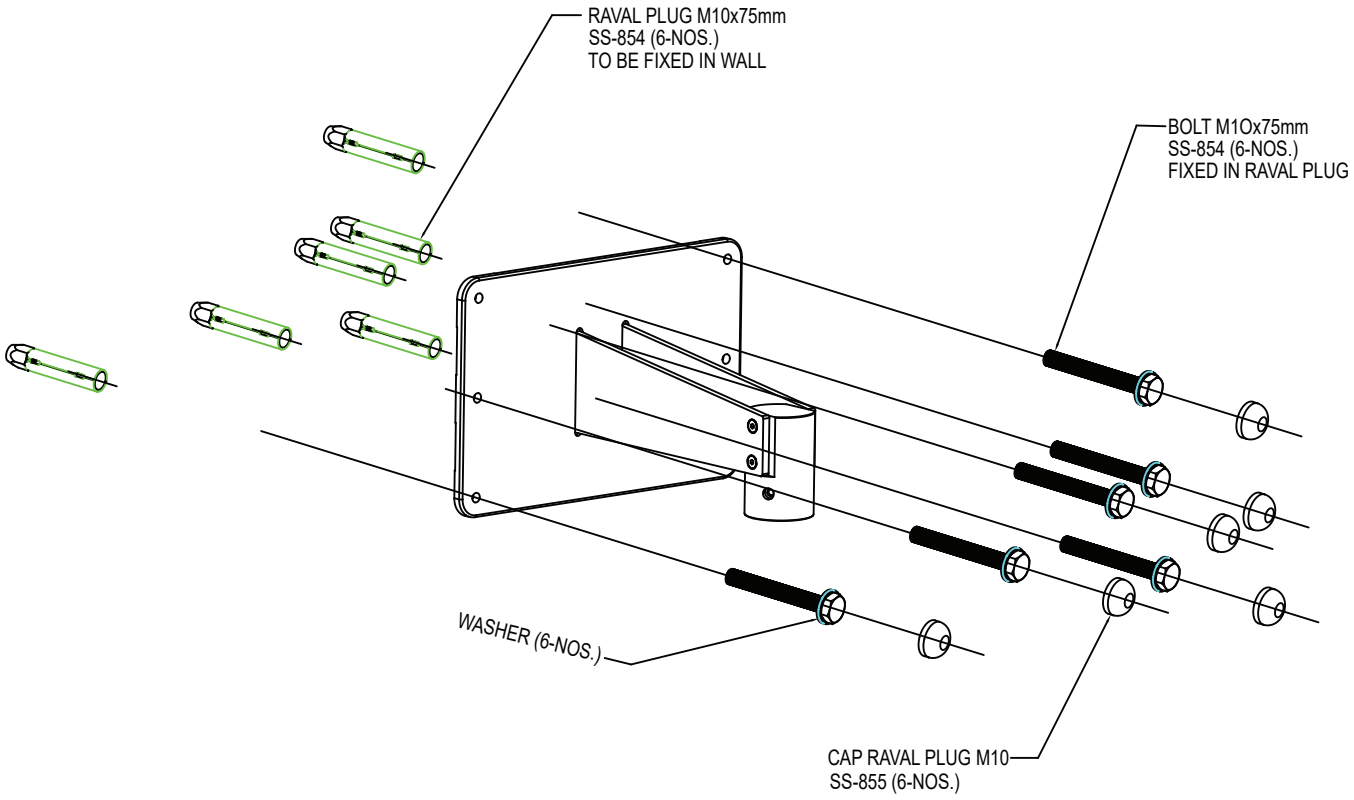


Figure-26

8. WALL MOUNT INSTALLATION PROCEDURE

8A.WALL MOUNT INSTALLATION ON STANDARD SIXTEEN INCH(16"406 MM) WOODEN WALL STUD SPACING

For securing the Wall Mount System to construction using wooden wall studs spaced on 16 (406 mm) Inch centers, it is recommended that 3/8" x 4" hex head lag screws are used.

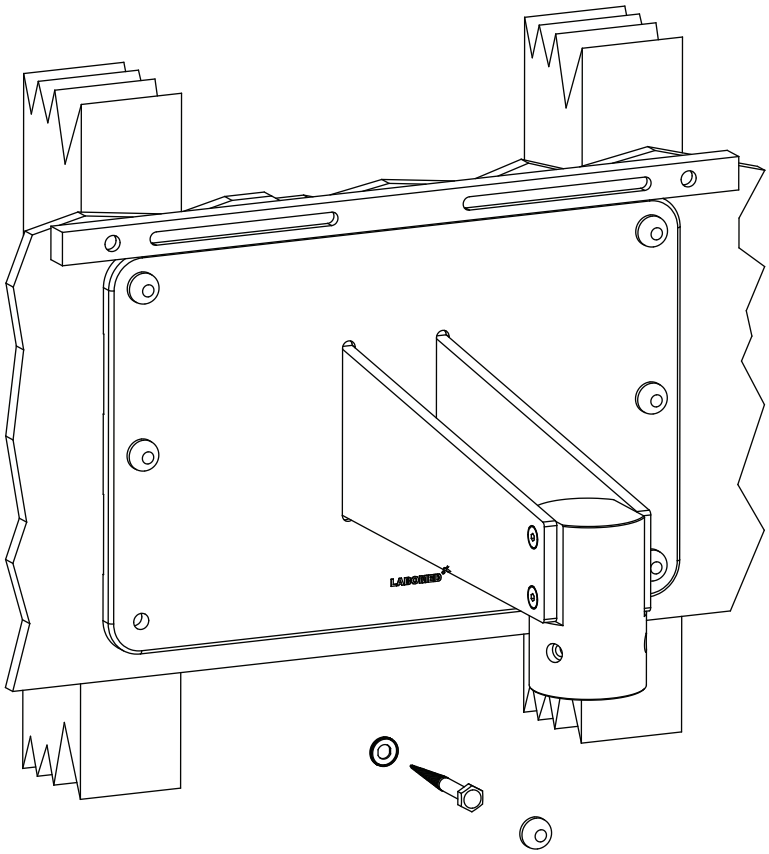


Figure-27

WARNING: THE MOUNTING HARDWARE SUPPLIED FOR WOODEN WALL IS NOT DESIGNED FOR INSTALLATION TO WALL WITH STEEL STUDS OR TO CINDER BLOCK/MASONRY WALLS.

8A.1. LEVELING THE WALL MOUNT PLATE ASSEMBLY

It is important to ensure that wall mount (6137100-806) is levelled both horizontally and vertically, after installation. Leveling of the wall mount assembly is necessary to prevent the microscope system from drifting from side to side when it is being used at full extension.

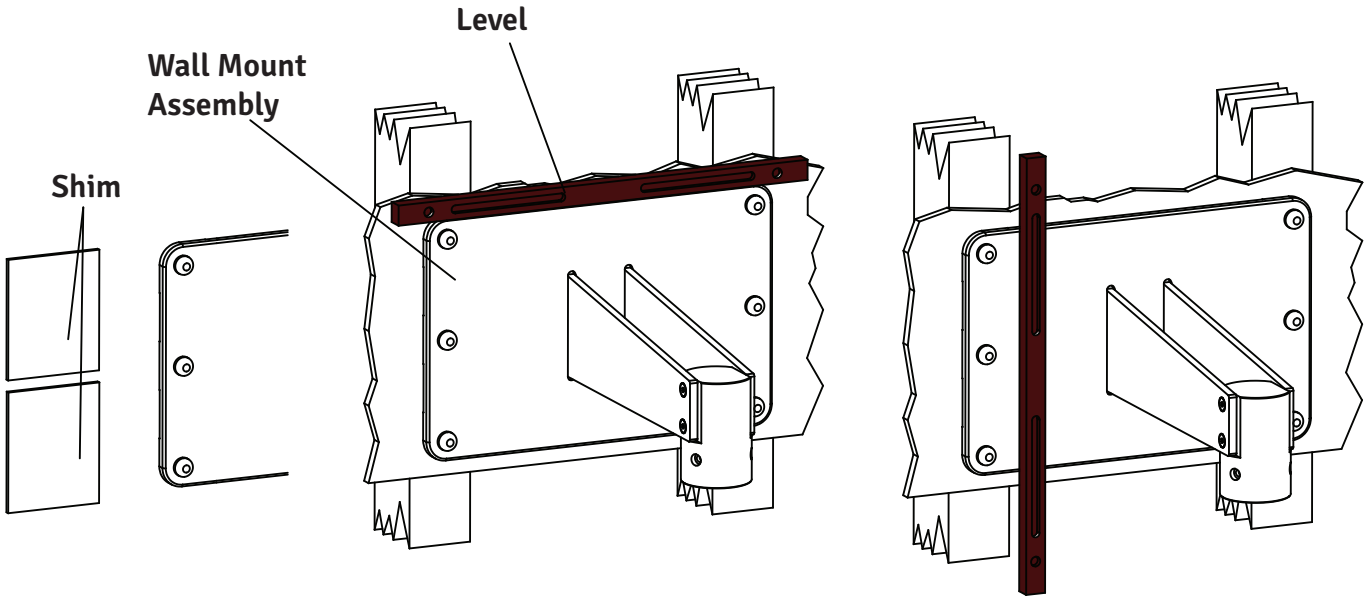


Figure-28

1. Slightly tighten the bolts on the top side- leaving the bottom bolts slightly loosened.
2. Place a level across the top of the back plate to check the horizontal leveling. See Figure 28 .
3. Use the 17mm socket and ratchet to slightly loosen the 3/8” x 4" hex head lag screws in the corners of the back plate.
4. Adjust the back plate until it is level and tighten the three lag screws on the bottom leaving the top lag screws loosened slightly.
5. Place a level vertically along the face of the wall Mount, on both sides, to ensure it is perpendicular to the floor. See Figure above .
6. If the wall mount is not perpendicular, insert shim material between the wall mount and the wall next to the lag screws Refer figure above.
   Check with the level and tighten the lag screws once the mount is level.
7. Check the other side and insert shims as needed and then tighten the lag screws.
8. When the Wall Mount is level, both horizontally and vertically, securely tighten all Six lag screws before installing microscope.
9. Levelling and Installing wall mount is customers responsibility. Labomed representative will complete rest of the microscope Installation after this.

8B. WALL MOUNT INSTALLATION ON SOLID BRICK MASONRY WALL MINIMUM 9" THICK

For securing this Wall Mount Model to a Solid Brick wall, Use the Six(6) M10 X 75mm RAWL Anchor bolts provided. See Figure below.

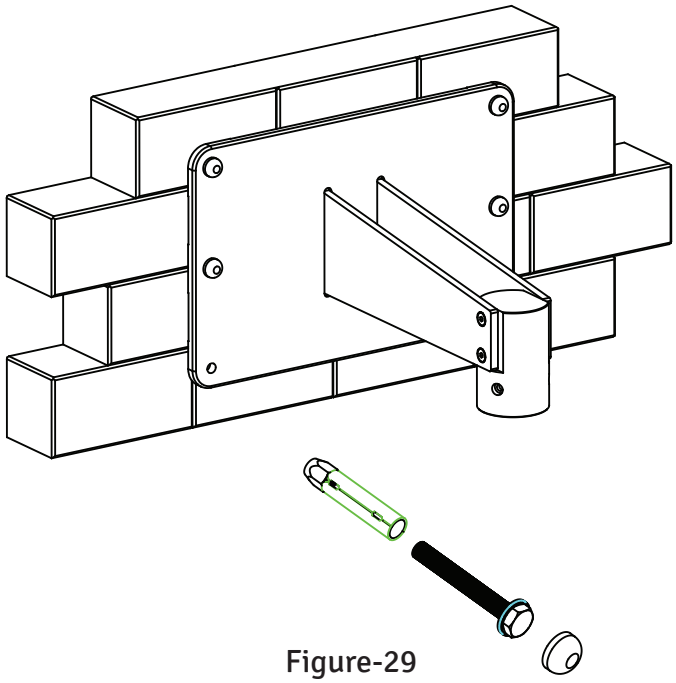


Figure-29

1. Determine the desired location on the wall where the microscope is to be mounted.
2. Place the Paper template against the wall and fix with tape. Mark Six (6) holes ensuring template is straight.
3. Using a 16mm" masonry drill bit, drill Six (6) 16mm holes min 75mm deep in the wall spaced as Outlined above.
4. Use 10mm X 75mm long RAWL Anchor bolts.
5. Place the RAWL bolts through the holes and carefully insert the bolts into the wall.
6. Take out the threaded bolt.
7. Position the wall mount against the wall .Place flat washer under head of coach bolt and thread in the Six (6) RAWL bolts in the wall.
8. Using a 17mm socket and ratchet arrangement, tighten the Six (6) RAWL bolts securing the wall mount into position. Ensuring the wall mount (top edge and front face) is level.
9. Levelling and Installing wall mount is customers responsibility. Labomed representative will complete rest of the microscope Installation after this.

NOTICE: Shims and shim materials are to be provided by the customer and are not furnished by Labomed. There are numerous shims materials commercially available and no specific type or brand name is implied.

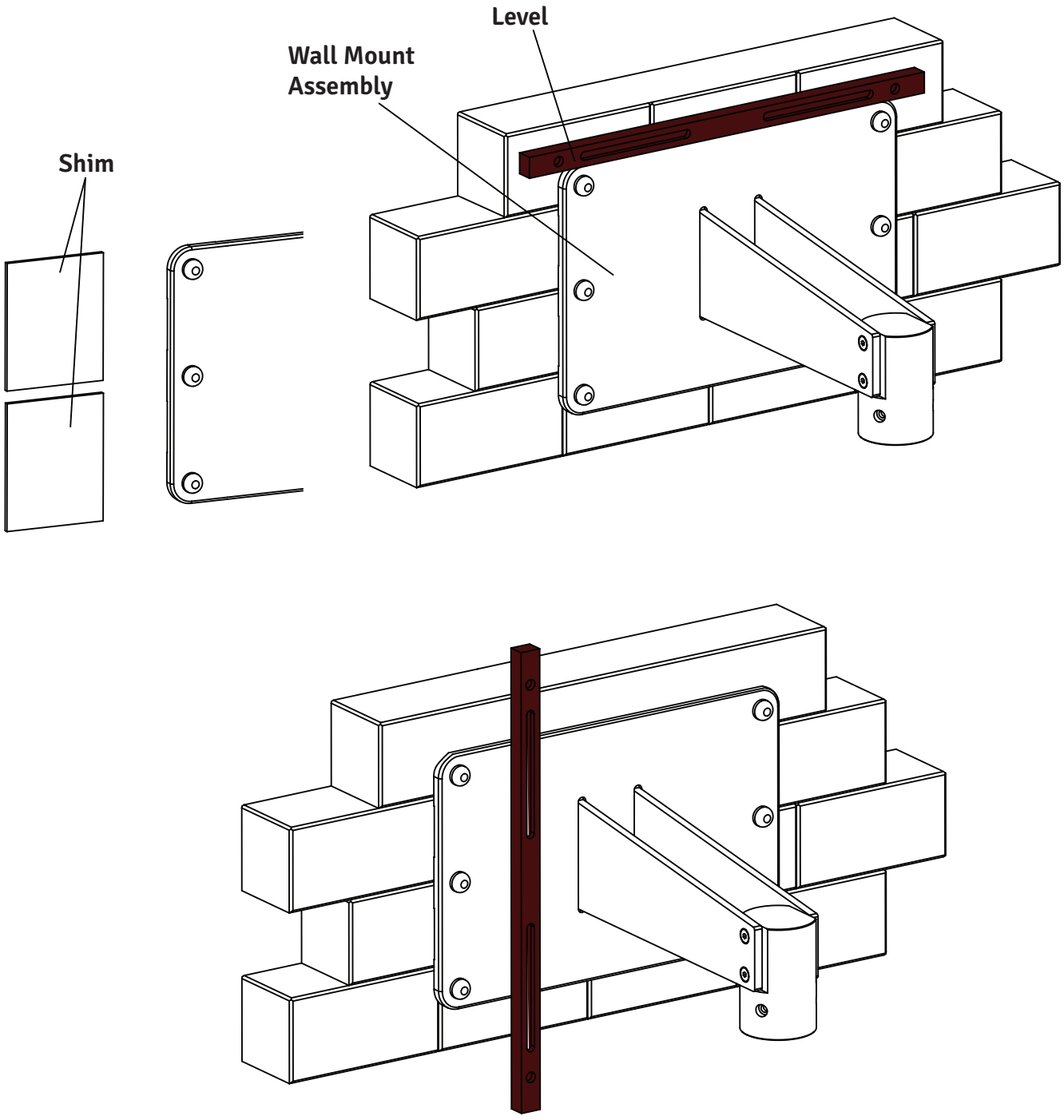


Figure-30

8B.1. LEVELING THE WALL MOUNT ON MASONRY WALL

1. Slightly tighten the bolts on the top side- leaving the bottom bolts slightly loosened.
2. Place a level across the top of the back plate to check the horizontal leveling. See figure-30.
3. Use a 17mm Socket & Ratchet arrangement to slightly loosen the Six (6) toggle bolts in the corners of the back plate.
4. Adjust the wall mount until it is level and tighten the three RAWL bolts on the bottom leaving the top toggle bolts loosened slightly.
5. Place a level vertically along the face of the back plate,on both sides, to ensure it is perpendicular to the floor. See figure-30.
6. If the back plate is not perpendicular, insert shim material between the back plate and the wall next to the RAWL bolts. Check with the level and tighten the toggle bolts once the mount is level.
7. Check the other side and insert shims as needed and then tighten the toggle bolts. See figure-30.
8. When the back plate is level, both horizontally and vertically, securely tighten all Six toggle bolts before installing microscope.

8.B.2. INSTALLING THE HORIZONTAL ARM ASSEMBLY

1. Open the microscope arm box and take out the arm.
2. Unscrew the threaded plug from wall mount shaft as shown in fig-30.
3. Assemble the Arm on wall mount shaft referring fig.3 and Reinstall the threaded plug into place.
4. Complete the rest of Installation as per fig.1,2,3 or 4 as ordered.

For further Installing & Use of the Microscope : Refer Section-10 Onwards.

9. CONSTRUCTION REQUIREMENTS (CEILING/WALL Mount)

1. The Magna ceiling mount/wall mount must be installed as per detailed in this manual.
2. The construction specialist must confirm in writing that the applicable regional and local codes & regulation have been complied with and that the points listed below have been observed. The customer must keep this confirmation with his records on the ceiling mount. A copy of this document must be enclosed by the customer with his record.
3. The roof on which ceiling mount is to be mounted must have the following load capacity:
   Perpendicular force: minimum 1500 Nm
   Torque: Perpendicular to the Ceiling 1500 Nm minimum.
   Parallel to the Ceiling 1200 Nm minimum.
   Also take into account any additional loads acting on the Ceiling and any other loads anchored in the Ceiling.
   The Ceiling should preferably be made of minimum 8 inches concrete.
4. The Master Plate should be installed at the time of Construction.
5. Minimum edge distance required on all sides is 16".
6. The ceiling plate must be aligned in a parallel position (max. deviation ±1˚).

The following must be taken into consideration when calculating the effective strength:

- Specification of the bolt / anchor manufacture.
- Quality of the structural roof, e.g. the strengths and the thickness of the concrete.
- Spacing of anchor holes and weakening effect of anchor holes in the ceiling.

NOTE:
If an existing ceiling mount is ever exchanged, never re-use the old anchors. New anchor holes must be drilled. When Calculating the effective strength of the new anchors, make sure to take into account the weakening effect of the old holes in the ceiling.
On the basis of the above aspects, the person responsible for the building must decide on and take responsibility for the most suitable method of anchoring.

The weight of the mount including the surgical microscope is as follows:

- Ceiling mount Normal (Ref.page 12): Approx.....30kg.
- Ceiling mount Heavy duty (Ref.page 12): Approx .. 55kg.
- Surgical microscope (Swivel Arm & Suspension Arm): Approx.....20kg.
- Microscope Carrier: Approx.....12kg.
- Total Magna weight (Normal Ceiling mount) =Approx.....62kg
- Total Magna weight (Heavy duty Ceiling mount) = Approx...87kg

Control and Power Supply of the System
Power line: 3/1.5mm2
Fuse: 4.0Amp.
Power consumption: 200W

NOTE:
A socket with properly installed protective earth connection must be provided at the installation site near the Ceiling flange. The terminals for power connections are located on the ceiling mount.
Potential equalization: take the necessary action in the building to include the instrument in the protective measures of "potential equalization".

10. WARNINGS AND 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.
- The instrument is not used in accordance with this user manual.

A WARNING is an instruction that draws attention to the risk of injury or death.

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

WARNING: THIS INSTRUMENT SHOULD BE USED IN STRICT ACCORDANCE WITH THE INSTRUCTIONS OUTLINES 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 LABOMED. ANY REPAIR OR SERVICE TO THIS INSTRUMENT MUST BE PERFORMED BY EXPERIENCED PERSONAL OR DEALERS TRAINED BY LABOMED OTHERWISE SERIOUS INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: ANY MODIFICATION TO THIS UNIT MUST BE AUTHORIZED BY LABOMED OTHERWISE 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 OTHERWISE 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 INDICATED ON THE DATA PLATE OTHERWISE DAMAGE TO THE UNIT MAY OCCUR.

WARNING: TO USE IN FLUCTUATION VOLTAGE ENVIRONMENT, CONSTANT VOLTAGE STABILIZER IS RECOMMENDED FOR SAFE & EFFICIENT USE OF DEVICE.

WARNING: THIS INSTRUMENT MUST BE PLUGGED INTO 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. DAMAGE TO IT MAY CAUSE INJURY TO OPERATOR OR PATIENT.

WARNING: THE EQUIPMENT OR SYSTEM SHOULD NOT BE USED ADJACENT TO OR STACKED WITH OTHER EQUIPMENT AND THAT IF ADJACENT OR STACKED USE IS NECESSARY, THE EQUIPMENT SHOULD BE OBSERVED TO VERIFY NORMAL OPERATION IN SUCH CONFIGURATION.

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

WARNING: LED RADIATION - DO NOT STARE DIRECTLY INTO THE BEAM WHEN THE MICROSCOPE IS IN THE ON POSITION. INSTRUMENT IS PASSES IN RISK GROUP 2 PER IEC62471. (BLUE LIGHT HAZARDS).

WARNING: THE USE OF ACCESSORIES OR CABLES OTHER THAN THOSE SPECIFIED, BY LABOMED AND OTHER UNAUTHORIZED REPLACEMENT PARTS FOR THE INTERNAL COMPONENTS, MAY RESULT IN INCREASED EMISSIONS OR DECREASED IMMUNITY OF THE EQUIPMENT.

WARNINGS AND CAUTIONS

A CAUTION is an instruction that draws attention to the risk of damage to the product.

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

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

CAUTION: MEDICAL ELECTRONIC EQUIPMENT NEEDS SPECIAL PRECAUTIONS WITH RESPECT TO ELECTRO-MAGNETIC CHARGE (EMC) AND NEEDS TO BE INSTALLED AND SERVICED 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 EQUIPMENT TO THE DEVICE OTHER THAN THOSE INTENDED FOR USE WITH THE DEVICE.

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, AND ELECTRIC SHOCK MAY RESULT.

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

CAUTION: DO NOT ROLL THE MICROSCOPE OVER CABLES OR HOLES.

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

CAUTION: THE EMISSIONS CHARACTERISTICS OF THE EQUIPMENT MAKE IT SUITABLE FOR USE IN INDUSTRIAL AREA AND HOSPITALS (CISPR 11, CLASS A). IF IT USED IN RESIDENTIAL ENVIRONMENT (FOR WHICH CISP 11, CLASS B IS NORMALLY REQUIRED). THIS EQUIPMENT MIGHT NOT OFFER ADEQUATE PROTECTION TO RADIO FREQUENCY COMMUNICATION SERVICES. THE USER MIGHT NEED TO TAKE MITIGATION MEASURES, SUCH AS RE-LOCATING OR RE-ORIENTING THE EQUIPMENT.

CAUTION: DEVICE SHOULD NOT BE OPERATED WITHOUT SILICONE COVERS FOR HANDLES AND ALL KNOBS.

11. EXPLANATION OF SYMBOLS



Warning: Observe all warning labels and notes! If any label in missing on your instrument or has become illegible, please contact the manufacturer to obtain new labels.



Caution label: Observe all caution notes to avoid any unwanted situation with the instrument.



Brightness Control: After the illumination has been switched on, the user can continuously adjust brightness by turning the knob appropriately.



Accompanying documents must be consulted.



Compliance to medical device regulation (EU) MDR 2017/745.



Suspension Arm Locking.



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



Keep dry – the transport package shall be kept away from rain.



Manufacturer



Fragile- content of the transport package are fragile and should be handled with care.



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



Alternate current.



Recycling of packaging materials.



Tension Adjustment.



Separate disposal of waste electrical equipment.



Unsafe for use with MR (Magnetic Resonance).



Do not over balance more than 5°.



For ABA (Auto Balancing Arm) Power.



Medical Device.



Authorized European representative



Serial No (YY-Year, MM-Month, XXXX-Serial No)



Model No



Fuse



Max. Safe Load 12 kg

IP 20 **Ingress Safety Protection**

12. STANDARDS AND DIRECTIVES

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

- ISO 8600-3 First edition 1997-07-01 AMENDMENT 1 Optics and Optical instruments-Medical endoscopes and endoscopic accessories Part 3: Determination of field of view and direction of view of endoscopes with optics.
- ISO 8600-5 First edition 2005-03-15 Optics and photonics-Medical endoscopes and endotherapy devices Part 5: Determination of optical resolution of rigid endoscopes with optics.
- ISO 13485 and USFDA 21 CFR 820 Quality management systems approved by UL.
- ISO 14971 Risk management to medical devices.

DIRECTIVE / REGULATIONS:

- Regulations (EU) 2017/745
- IEC 60601-1-3.1 edition (2012)
- IEC 60601-1-2-4th edition (2014)
- EN 55011:2016

CLASSIFICATIONS

- For Europe, per MDR 2017/745, the unit is a Class I instrument, per rule 13, Annex VIII.
- For the United States, the FDA classification is Class I.
- Please observe all applicable accident prevention regulations.
- IP Code - IP 20

13. UNPACKING

The appliance is delivered in sub-assembled modular groups along with one Installation Kit and one user manual.

Please check for the following when unpacking the device:

1. Mobile Cross base in two parts with brakes on caster wheels or Ceiling Mount or Wall Mount as ordered.
2. Column, depending on the type of mount ordered (Floor or Wall/Ceiling).
3. Swivel arm and suspension arm assembly with fiber optic cable. Depending upon type of mounting (Floor or Wall/Ceiling).
4. Auto Balancing Arm (ABA) with magnichanger assembly and NuVar CMO with Variable focal length.
5. Observation head Ergo tiltable 0-210˚.
6. DBSI (Double Beam Splitter Inclined), Double Iris Diaphragm, Rotoplate.
7. DSLR Adapter with Mount for Sony or Canon or Nikon as ordered.
8. Pair of eyepieces as ordered.
9. Power cord.
10. Installation Kit
    a. Allen wrench 5 mm
    b. Allen wrench 8 mm
11. User manual
12. Paper template for location marking. (In case of Ceiling mount / wall mount only)

14. INSTALLATION OF CROSS BASE (MOBILE STAND)

1. Open the box containing Cross Base Bottom as shown in Fig. 1.



Fig. 1

2. Take out the Cross bottom base and put it on floor as shown in Fig. 2.

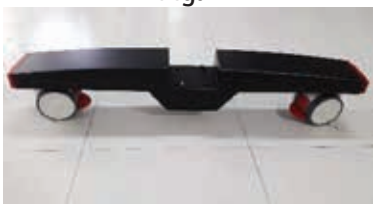


Fig. 2

3. Open the Box containing Cross Base Top as shown in Fig. 3.



Fig. 3

4. Take out the Cross Base Top and put iron floor as shown in Fig. 4.



Fig. 4

5. Referring Fig. 5. Align the Cross Base Top on Cross Base Bottom by aligning the guide pins in guide holes and Tighten the 4 screws provided.



Fig. 5

6. Assembled Cross Base will look like as shown in. Fig. 6.



Fig. 6

14.1 INSTALLATION OF MICROSCOPE (MOBILE STAND)

1. Open the microscope box. Take out (column) from the box. Mount the column onto a shaft in shaft in base by aligning the Corresponding holes in Column (A) and shaft (B). Secure it with (3) M6x16mm Allen Screws (C) using 4mm Allen Key as shown in fig.-7.

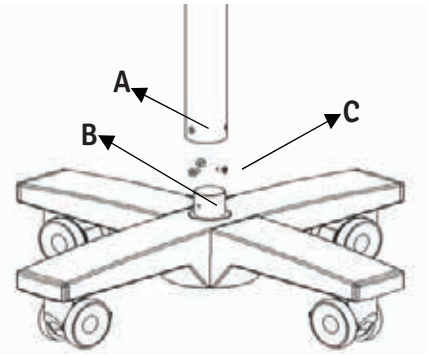


Fig. 7

2. Take out the Arm Assembly from the same box and follow the Instruction below:

a. Ensure that the swivel arm lock knob (D) is loosened.
b. Mount the Arm Assembly into Shaft (F).
c. Align three holes (E) with tapped hole on Shaft (F).
d. Use Allen Wrench 4mm and tighten 2 M6x16mm Allen screws (G).

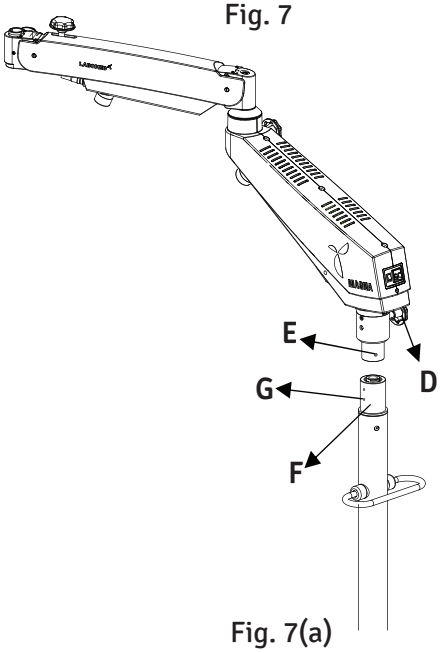


Fig. 7(a)

3. Open another box and take out the carrier assembly from its packaging following arm as shown in fig.-8.

a. Insert the Auto Balancing Arm (ABA) shaft (H) into the suspension arm as shown in fig.-8 .
b. Lock the auto Balancing Arm (ABA) with the threaded Knob (I) as shown in fig.- 8.
c. Make sure the safety screw (1) is installed and tightened at position (2) so the coupling does not detach if knob (I) is accidentally unscrewed.
d. Ensure magnichanger handles (M) have silicone covers.

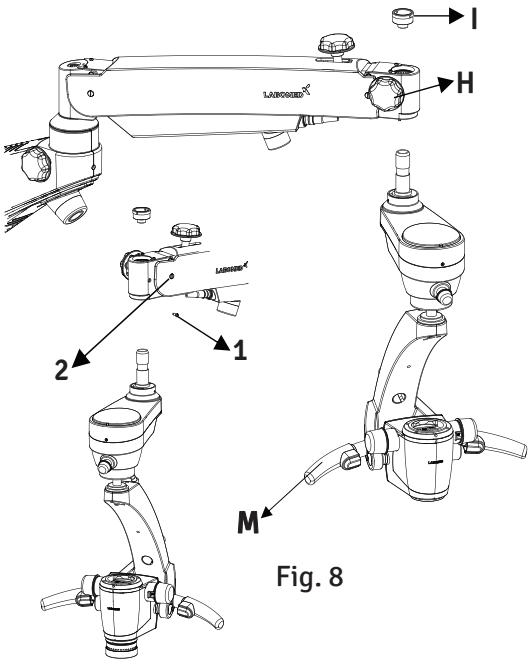


Fig. 8

INSTALLATION OF MICROSCOPE (MOBILE STAND)

4. Install the standard accessories onto the carrier assembly as mentioned below:

a. Loosen the M4 grub screw (3) by 2mm allen key and Fix Double iris diaphragm (J) on magnichanger by re-tightening the m4 grub screw.
b. Loosen the M4 grub screw (4) by 2mm allen key on Double Iris Diaphragm and fix DBSi (Double beam splitter inclined) (K) and re-tighten the M4 grub screw.
c. Remove the End cap from DBSi by rotating the ring (5) in Anticlock-wise and fix DSLR Camera adapter (L) by matching the slot and rotate the ring (5) clockwise to tighten the same. Loosen the knob (6) on DSLR adapter and fix the supplied Mount (Canon, Nikon, Sony (L.1). Retighten the Knob (6) to secure C-mount.
d. Loosen the M4 grub screw in DBSi by 2mm allen key and fix the Rotoplate (M). Re tighten the M4 grub screw.
e. Loosen the M4 grub screw by 2mm allen key on Rotoplate and Fix Ergo Head (0° - 210° tiltable) (N) and retighten the M4 grub screw.
f. Set both eyepieces to **(O)** dioptre on ergo head.

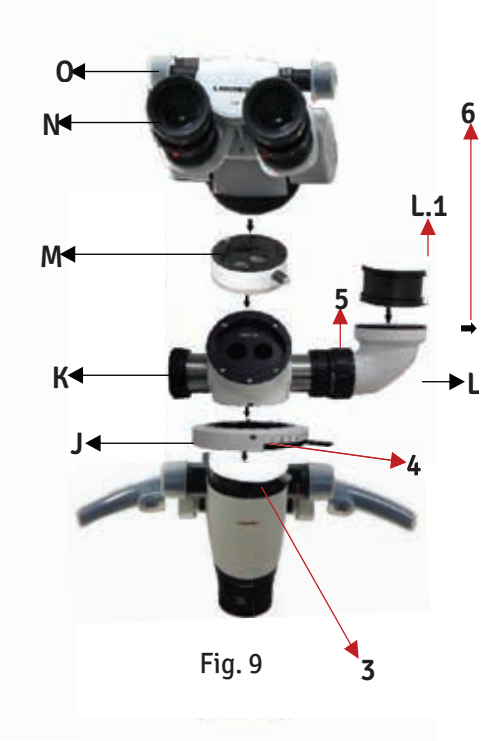


Fig. 9

Note: Please ensure the accessories are fixed properly to have better visual results.

5. Mount the light guide by completing the steps below:

a. Switch off the illumination system.
The light guide comes pre-routed through the swivel arm (which houses the LED illumination system, the suspension arm and through the cable cover.
b. A wire mesh for Cable routing is Permanently fixed to carrier arm at point (P).
c. Fold and gather wire mesh at Point (P) with one hand and Insert the Fibre light guide into mesh with other hand.
d. Now release the wire mesh and Fasten its other end to cable cover at point (H). Referring Fig.14.
e. Make sure the light guide has been routed through wire mesh into the carrier system such that the microscope is not obstructed and can be moved in its entire range of movement without stretching, Kinking, or twisting the light guide.



Fig. 10

14.2 ELECTRICAL CONNECTIONS

Connect the power cable to the AC inlet socket (1) located at the back of the swivel arm as shown in Fig. 11.

Switch on the power using the ON/OFF switch (2).

Note: The power supply is designed with universal input 100V-240V AC, 50/60Hz. To plug in the power supply, follow the instruction on the product label (3) located at the bottom of the arm as shown in fig.- 11.

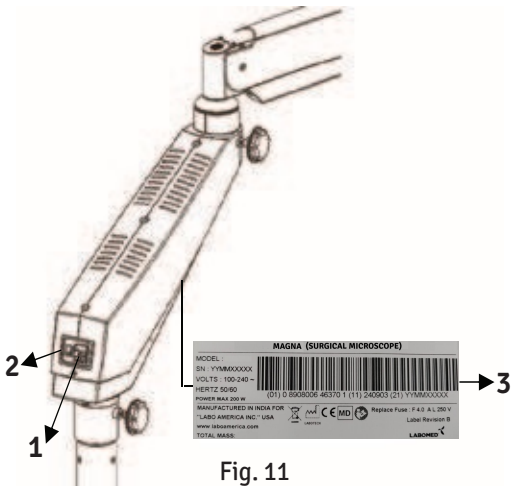


Fig. 11

1. REPLACING THE ILLUMINATION SOURCE

a. Remove the swivel arm covers by unscrewing the screws in top and bottom as shown in Fig. 12.
b. Remove the connections on the power supply and replace the illumination assembly (A) in Fig. 12 with a new assembly and refix the connections.
c. Assemble back the arm covers.

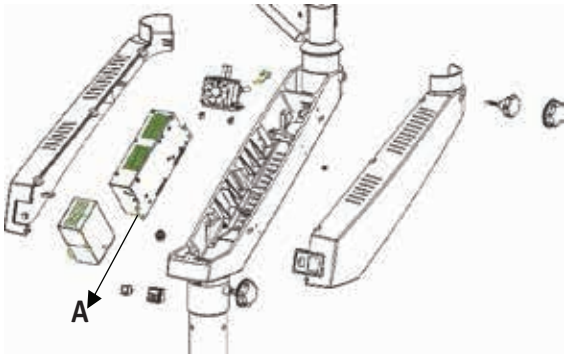


Fig. 12

2. REPLACING THE FUSE

a. Locate the fuse at the AC inlet (B) as shown in Fig.13.

b. Use a flat head screw driver to open the fuse compartment (C). Two fuses are provided: one is a live fuse and the second is a spare fuse.
c. Replace the blown fuse with the spare fuse and close the fuse compartment.

Note: For proper ratings of Fuse used in microscope, refer to the label shown in fig.- 11.

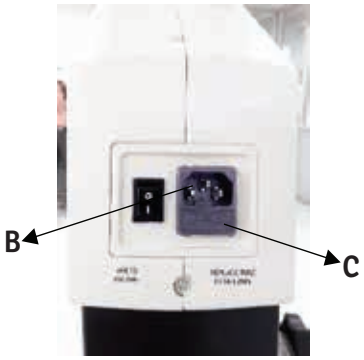


Fig. 13

ELECTRICAL CONNECTIONS

3. AUTO BALANCING ARM CONNECTIONS

a. Connect the 7 pin connector (D) at the 7 Pin female inlet (E) located in Suspension Arm for power in Auto Balancing Arm (ABA) as shown in Fig. 14.

b. Take the power wire having 2 pin connectors on both sides and connect to the 2 pin inlet (F) located on Auto Balancing Arm (ABA) and connect the other end of wire to point as marked ( ) on Auto Balancing Arm (ABA) to Power up the ABA system.

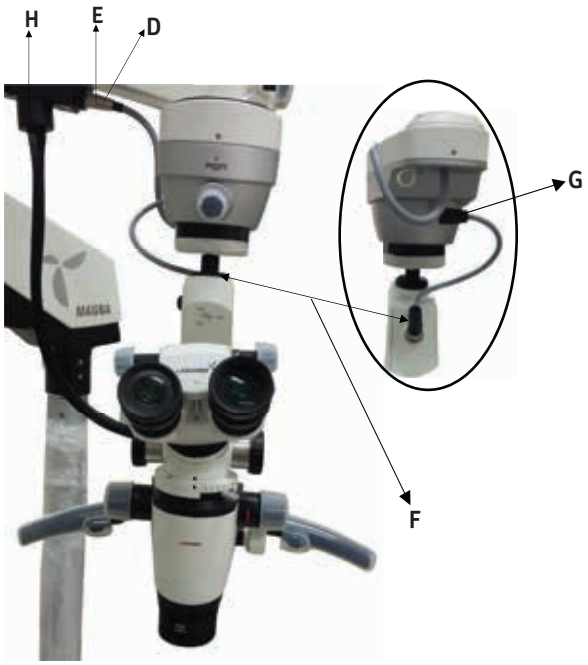
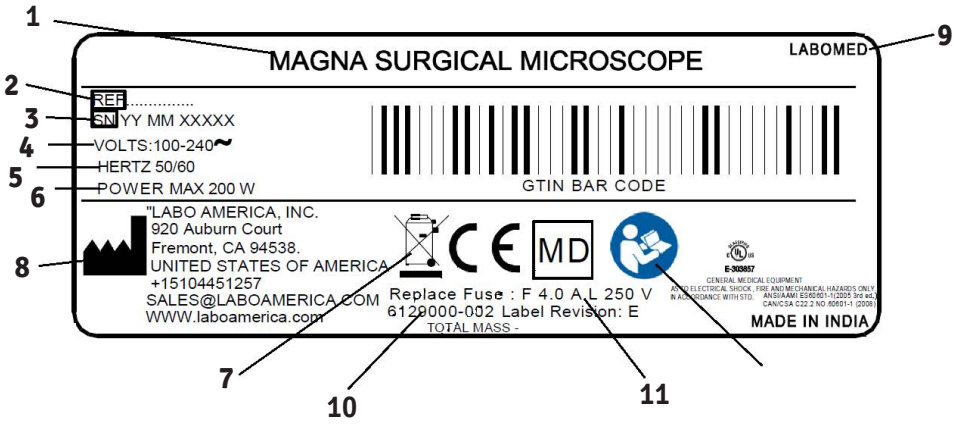


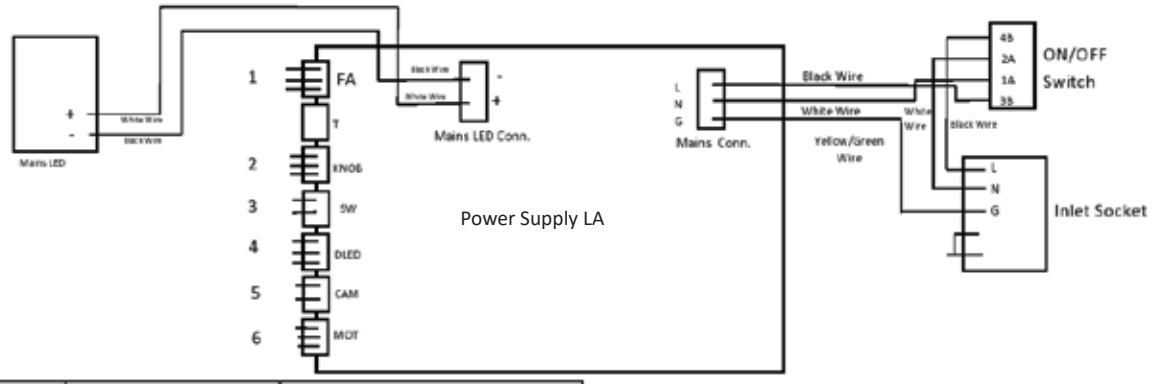
Fig. 14

4. LABEL DETAILS

1. Device Name
2. Model No.
3. Serial No.
4. Input Voltage
5. Frequency
6. Max. Load
7. Separate Disposal Waste Electric Device
8. Manufacturer
9. Company Trademark
10. Label Control No.
11. Fuse rating
12. Accompanying Document Must be consulted



14.3 WIRING CODING DIAGRAM



Wire Marking No.	Power Supply Marking	Description
1	FAN	Main LED Fan Wire
2	KNOB	Potentiometer Wire
3	SW	Limit Switch Wire
4	DLED	Dual LED Wire
5	CAM	Camera Wire
6	MOT	Motor Wire

14.4 CONTROL ELEMENTS

1. ON / OFF SWITCH

The ON/OFF switch (A) is located at the back of the swivel arm. In the ON position, a green LED (B) glows, and the cooling fan starts running as shown in Fig. 15.

Set the intensity control knob (C) at the minimum intensity level before switching the system on as shown in Fig. 15.

To preserve the life of the LED, turn off the instrument when the microscope is not in use.

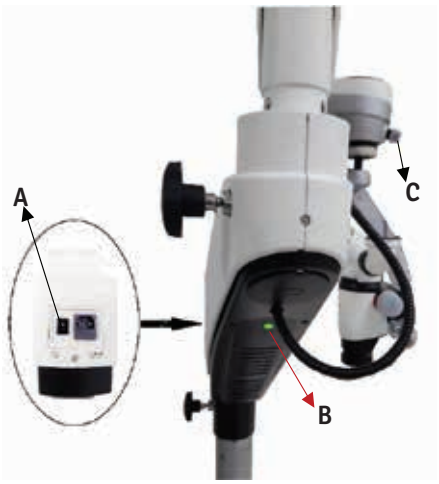


Fig. 15

2. LIGHT INTENSITY CONTROL KNOB

The Light Intensity Control knob (D) is located at the front of the Auto Balancing Arm (ARM). The brightness of the field of view can be adjusted as desired using the intensity control knob as shown in Fig. 15(a).

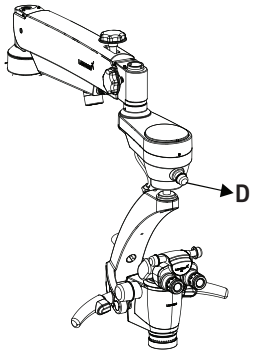


Fig. 15(a)

3. AUTO BALANCING ARM (ABA) CONTROLS

a. Articulation of Auto Balancing Arm (ABA) can be handled through two clutch release buttons located on left side (E) and right side (F) of carrier arm as shown in Fig. 16.

b. Pressing and holding down of the clutch button can articulate the Auto Balancing Arm (ABA) in any of the desired position. Release of clutch button can lock the Auto Balancing Arm in the desired position.

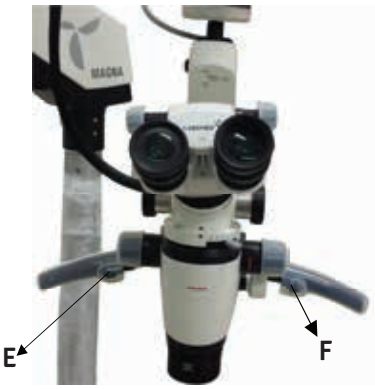


Fig. 16

4. FILTER CHANGE KNOB

Refer Fig. 16(a)
Filter change lever is located in backside of Magnichanger Housing. Use lever H to change Filter Position.

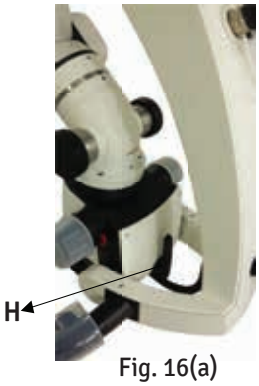


Fig. 16(a)

CONTROL ELEMENTS

4. LOCKING KNOBS

a. Swivel Arm Locking Knob

This knob shown as (G) locks the movement of the Swivel arm at the desired position by turning it Clockwise as shown in Fig. 17.

b. Suspension Arm Locking Knob

This knob shown as (H) locks the movement of the Suspension arm at the desired position by turning it clockwise as shown in Fig. 17.

c. Suspension Up/Down Movement Locking Knob

This knob shown as (I) locks the up/down movement of the Suspension arm at the desired height by turning it clockwise as shown in Fig. 17.

d. Auto Balancing Arm (ABA) Carrier Locking Knob

This knob shown as (J) locks the rotation of Auto Balancing Arm (ABA) at the desired position by turning it clock wise as shown in Fig. 17.

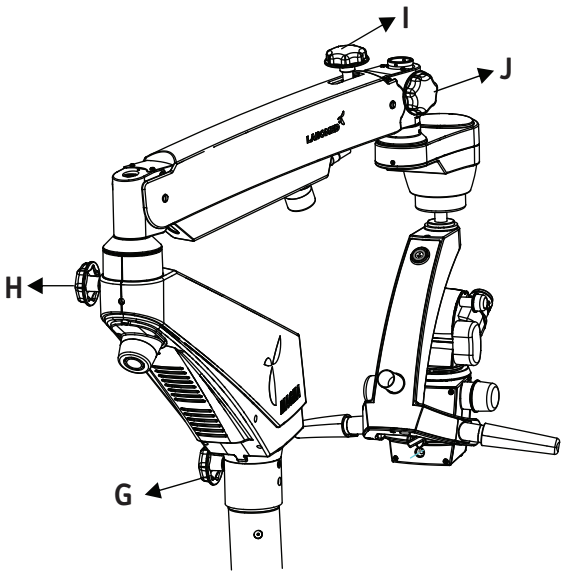


Fig. 17

5. BRAKES

Lock the stand to prevent unwanted movement by pressing down all the four brakes (K) provided in the caster wheels and lift up the brakes to release the brakes as shown in Fig. 18.

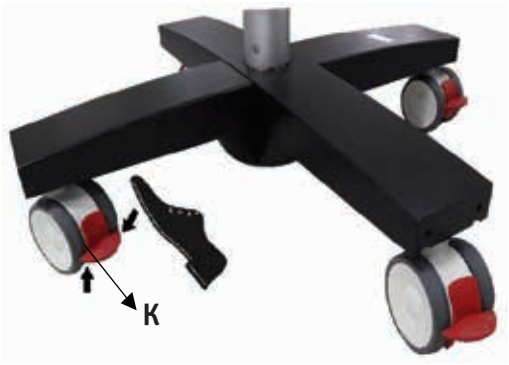


Fig. 18

6. LED FEATURES

Single Chip White LED with over 2250 white Lumen's.
Large monolithic chip with uniform emitting area of 9mm.
Lumen maintenance of greater than 70% after 60000 hrs.
Current driven LED with variable drive current less than 1Amp through 13.5 Amp.
Environment friendly ROHS compliant.
Typical spectrum is 400 - 700 nm.

15. USING THE MICROSCOPE

WARNING: INSTRUMENT IS UNSAFE FOR MRI ENVIRONMENTS.

CAUTION:

Upon Installation, ABA System may feel stuck due to longtime Inoperative in transit or storage. This temporary mild locking may happen due to material Property of ABA braking Material.
To overcome this situation,-Switch on the microscope, Press Push Button with one hand and Push ABA System with other hand to dislodge this temporary Air lock. Repeat it 7-8 times, ABA System will start working normally.

SETTING UP THE MICROSCOPE:

a. For stability of microscope, lock all four brakes on the base caster wheels.
b. Optimize the Auto Balancing Arm (ABA) position by using clutch motions shown as (A) and (A.1) to get the proper field of vision as shown in Fig. 19.
c. Desired working distance can be obtained by rotating the ring shown as (B) on the variable objective lens. Fine focusing can be done by the same ring as shown in Fig. 19.
d. After focusing, lock swivel arm, suspension arm and ABA arm movements using lock knobs shown as (C) in Fig. 19.
e. Adjust the inter- pupillary distance (IPD) of the eyepieces using the IPD adjustment knob shown as (D) in Fig. 19.
f. The illumination is controlled through the intensity control knob shown as (E). Rotate it clockwise or anticlockwise to achieve the desired illumination level as shown in Fig. 19.

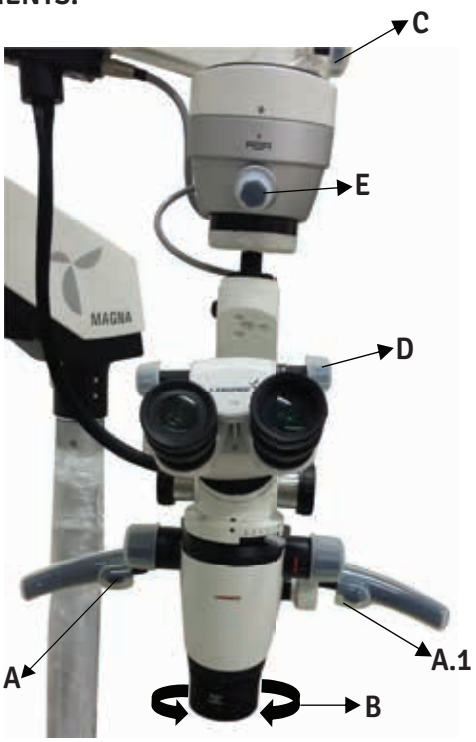


Fig. 19

SETTING UP THE MAGNIFICATION:

a. Use the knobs (F) Fig 20 provided on the Magnichanger to select the desired magnification level.

b. Rotate these clockwise to increase and Anticlockwise to decrease the level of magnification.

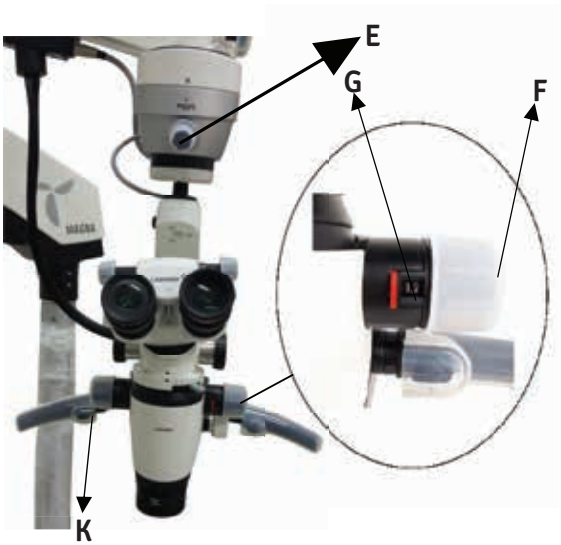


Fig. 20

USING THE MICROSCOPE

CONVERSION FROM CONTINUOUS ZOOM TO STEP MAGNIFICATION:

a. Refer Fig. 20 Pressing the Red click button (G) located besides the Magnification indicator will select the 8 step magnification. Pressing the same Red click button from reverse side to select the maginification in continuous zoom.
b. Rotate the fine focusing ring shown as (A) Fig 21 to achieve fine focus.
c. Refer Fig 19 Use the Clutch Buttons shown as (A)on Left handle and (A.1) on Right handle to Centre the area of interest in the field of view.

Main Microscope Configuration:

Magna comes with standard accessories mentioned below:

a. **NuVar** variable objective, focal length 300-400mm (standard).
b. 0˚- 210˚ tiltable ergo binocular tube.
c. DBSi (Double beam splitter inclined).
d. Double iris diaphragm.
e. Rotoplate (0˚- 20˚ of angle rotation).
f. DSLR adapter & Mount for Canon, Nikon, Sony.

Standard configurations include eyepieces with a magnification factor of 10x (12.5x eyepieces are optical).

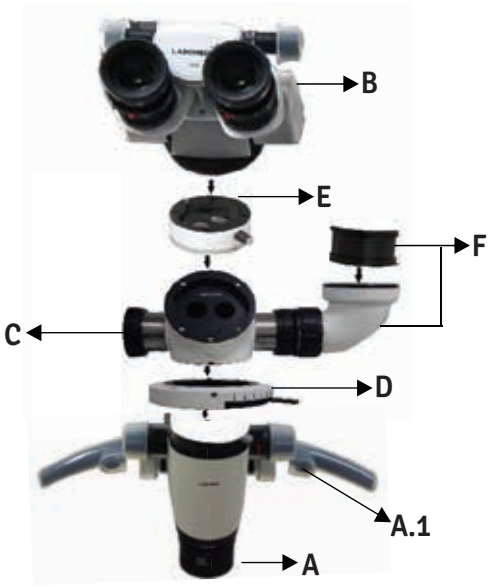


Fig. 21

16. USE OF ACCESSORIES

Model: Magna

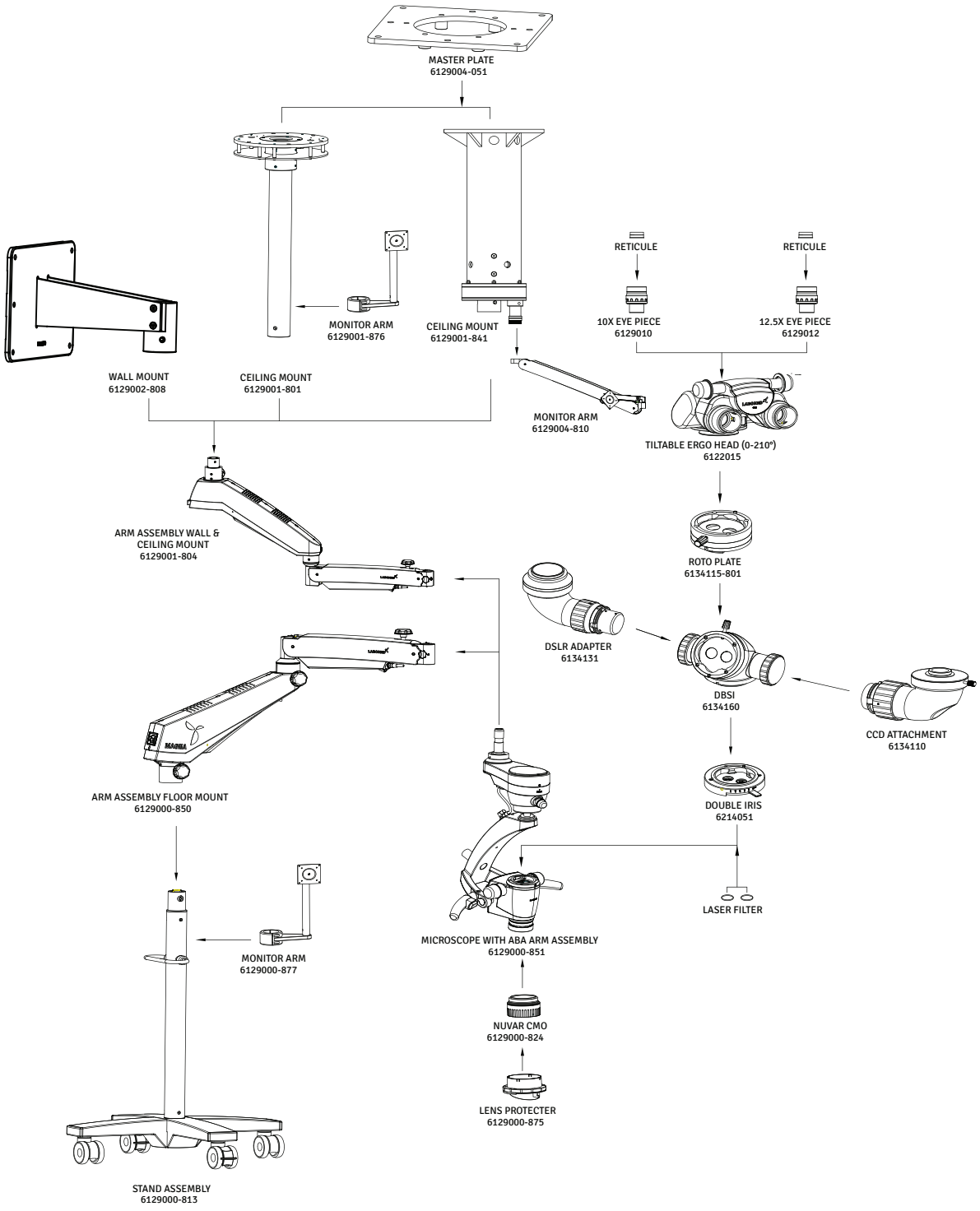


Fig. 22

USE OF ACCESSORIES

1. **Rotoplate:** Rotoplate eliminates neck craning, making it comfortable to view hard to see region of mouth from 9 and 3'O clock seated position.

2. **DBSi (Double Beam Splitter Inclined):** A beam splitter divides the light into two beams, it can be 50:50 or 80:20. In case of 80:20 ratio, 80% of light goes to observation head and 20% of light goes to camera accessories.

3. **Double Iris attachment:** An adjustable diaphragm attachment installed between Magnichanger and observation head or DBSi. It reduces incoming light and increases depth of field, it is very helpful for Photographic imaging.

The following adapters can be attached to DBSi (Double Beam Splitter inclined) as per user requirement.

a. DSLR camera adapter for Nikon, Canon and Sony cameras.
b. CCD camera adapter for Mintron camera.
c. Adapter for Sony Handy cam.
d. Assistoscope for assistant viewing.

Attach the accessory to the left or right side of the beam splitter.

17. THERMAL CUT-OFF

The instrument is designed with safety provisions. Fans in the electrical box provide free- and forced- air circulation to cool the electronic components. The instruments also includes a built-in-safety mechanism called “auto thermal cut-off”. This mechanism is activated through Thermistors when the LED temperature rises above 80°C. This time Thermistor sensor activates and provide resistance to circuit inflow. This causes LED light blinking as an indicator of high LED temperature. Allow the LED to cool down before switching it on again.

18. TENSION ADJUSTMENT

If any optional accessories are added to the microscope, suspension arm tension must be adjusted to compensate for the additional weight.

1. Tension Adjustment for Floor Mount

a. Refer Fig.23 Use an 8mm allen wrench in bolt (A) . Rotate it clockwise to increase the tension as desired. Rotate it counterclockwise to decrease the tension as desired.

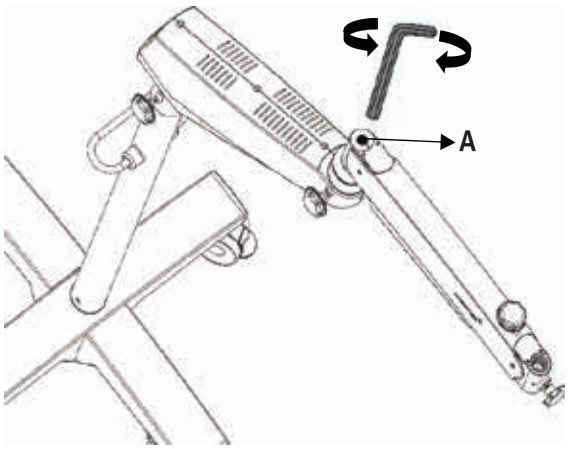


Fig. 23

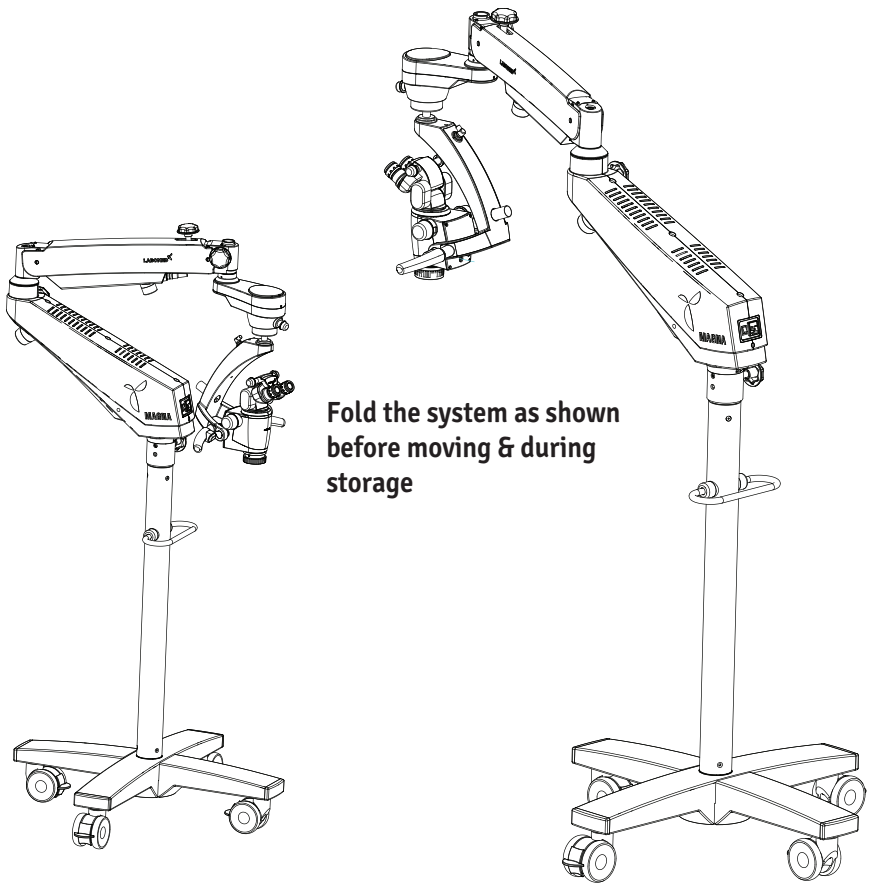
2. Tension Adjustment for Ceiling / Wall Mount

a. Refer Fig.24 Use an 8mm Box Spanner (LK-008 BS) with long handle provided with microscope in bolt (B) .
Rotate it clockwise to increase the tension as desired. Rotate it counter clockwise to decrease the tension as desired.



Fig. 24

19. MOVING & STORAGE THE INSTRUMENT



Fold the system as shown before moving & during storage

Fig. 25

MOVING THE STAND

1. Turn off the unit at the power switch.
2. Disconnect the power cable.
3. Remove the video cable from the video modules (e.g., video monitor, USB monitor) and the camera control unit.
4. Release the brakes.
5. Be careful when passing through doorways to avoid collisions of any kind. Do not move the instrument over steps or cables as the stand can topple. Be extremely careful when moving the instrument over slopes. Do not park the instrument on a slope.

20. CARE AND MAINTENANCE

This instrument is a high grade technological product and does not require any special periodical Maintenance if handled carefully. Still to ensure optimum performance and safe working order of the instrument, it's safe functioning must be checked periodically as per table below. We recommend 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.

Surgical Microscope Maintenance / Service Check

Microscope: - **Owner: -** **Month: -** **Year:-**

Date of Purchase:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
DAILY AFTER USE																															
Wipe of any oily marks/finger prints from eye piece & CMO other Optical parts with lens paper																															
Turn off Microscope																															
Replace Dust Cover																															
Each Month																															
Clean microscope body with water moistened tissue																															
Use lens cleaning fluid on lens tissue to wipe lenses																															
Remove Fibre Optical Cable and clean																															
6 monthly																															
Service Inspection																															
Smooth Function of Locking Knobs																															
Smooth Functioning of Torque Adjustment Mechanism on Suspension Arm																															
Rotary Motion of Carrier																															
INITIALS																															

CARE AND MAINTENANCE

CARE INSTRUCTIONS

1. Keep accessories away from dust when not in use, e.g. protect them with dust cover.
2. Remove dust with a pneumatic rubber blower and soft brush.
3. Protect your microscope from moisture, fumes, acids and cosmetic materials. Do not store chemical close to the instrument.
4. 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.
5. Protect the microscope from oil and grease. Never oil or grease the guide surfaces or mechanical parts.
6. Remove coarse contamination using a damp disposable cloth.
7. Use disinfectants refered as in section 21 (cleaning & disinfection) of this user guide.
8. Use special optics cleaning cloths and pure alcohol for cleaning lenses and eyepieces.
9. Clean optical components using a lint-free cloth. Soak the cloth using a little methanol or Glass cleaner. Do not use ethanol and spirit.
10. **LABOMED Max Lite** coating are fungal resistant. If you clean as described above, the coatings will not be damaged.
11. If cleaning and disinfection is done as described insection 21 is no impact of multiple cleaning/ Disinfection on mechanical and optical parts. Paints & Coating are rigid and life long.

TROPICAL ENVIRONMENT / FUNGUS

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

- Keep optical parts clean.
- Use and store them in a clean, cool and dry environment only.
- Keep moisture away using silica gel and dust cover.

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.

INSTRUCTIONS WORKPLACE

- Remove surface contamination with a paper towel.

21. CLEANING AND DISINFECTION

FOLLOWING DISINFECTANTS ARE RECOMMENDED FOR CLEANING AND DISINFECTION

1. For cleaning and disinfecting the external painted, powder coated, anodized, plastic, Screen printed and bare metal parts:
Use Normal household bleach (Sodium hypochlorite 5%)- strength 5000 ppm(10 parts water 1 part bleach).

2. For cleaning of optical surfaces:
Use 70% Isopropyl alcohol.

PROCEDURE

- **Take a muskin cloth.**
- **Moist it to feel wet.**
- **Disinfect/clean the surface gently without much hand pressure by pulling the wipe from one end to other end. Do not rub the parts for cleaning.**

NOTE:

1. **Use mask and Gloves while performing cleaning and disinfection.**
2. **While cleaning, muslin cloth should not be dripped wet to prevent seepage and rusting to running/bare parts.**
3. **Alcohol is flammable, its use as a surface disinfectant should be in well-ventilated spaces only.**

22. AUTO CLAVING

The rubber caps, sleeves and grips supplied by labomed are recommend for the following program for autoclaving:

- Temperature: 134˚C
- Time: 10 minutes
- Instrument: Standard Autoclave

23. SCHEDULE OF AUTOCLAVE CAPS

Autoclave Caps

Lock Knob Covers for Arm Movement:
1. Knobcover-Partno.6129000-237
2. Knobcover-Partno.6129000-237
3. Knobcover-Partno.6129000-237
4. Knobcover-Partno.6129000-237

Knob for Illumination Control:
5. Silicon Cover - P/N.6122015-210

Knob for IPD (inter-pupillary distance):
6. Silicon Cover - P/N.6122015-210

Knob for Clutch Handle (right side):
7. Silicon Cover - P/N.6129000-233

Knob for Zoom:
8. Silicon Cover - P/N.6129000-220

Nuvar Protective Cover (complete kit):
9. P/N. 6129000-875

Nuvar Protective Cover only with Lens:
10. P/N 6129000-876

Knob Cover Double Iris:
11. P/N 6214051-203

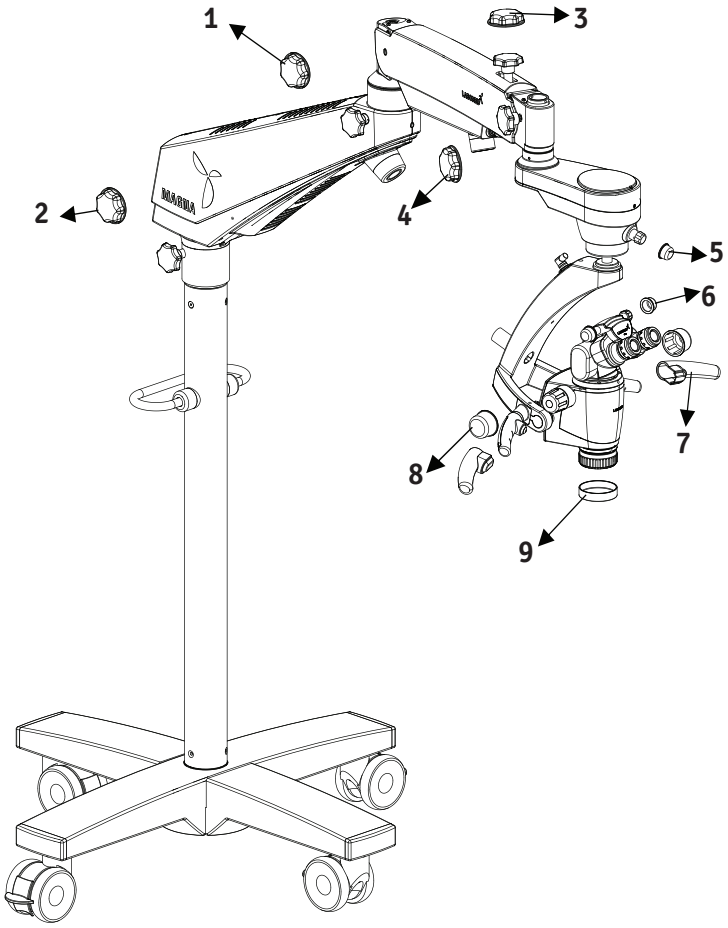


Fig. 26

24. 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	-10˚C.....+40˚C 30%.....90% 700hPa.....1,060hPa

The device is subjected to conformity assessment procedure complying with Article 52 (7) and technical documentation accordance to Annexure Il and III of council regulation (EU) 2017/745. These Devices are Class 1 (without a measuring function and non-invasive) per Rule 1 annex VIII of the regulation MDR 2017/745. All the colposcopy provided with the CE mark indicates agreement with the legal Stipulations.

25. DISPOSAL

Disposal of the instrument must comply with locally applicable laws and regulations.

26. TECHNICAL SPECIFICATIONS

1. Stand	Robust, vibration-free stand on a cross base with four lockable caster wheels
2. Binocular Tubes	0-210° tiltable head configured with Rotoplate, DBSi (Double Beam Splitter Inclined), Double Iris Diaphragm and DSLR Adapter
3. IPD Adjustment	49 - 78mm
4. Eyepieces	WF 10x/18mm lockable eyepieces, one with resolution mark to assist in diopter adjustment
5. Diopter Adjustment	±7mm with diopter lock
6. Apochromatic Magnichanger	Galilean Zoom 1:6, convertible to 8 step Magnichanger
7. Zoom Range	0.4 - 2.5x
8. Objective	**NuVar** system with variable focal length adjustment from 300 - 400mm with fine focus OPTIONAL: NuVar 200-400 working Distance
9. Light Source	50 Watt LED
10. Input Voltage	100 - 240V
11. Maximum Wattage	200 Watts
12. Built in Filters	Yellow, Green and Polarising
13. Vertical Movement of Arm	± 250mm, power saving feature with light cut-off in park position
14. Microscope Carrier	ABA (Auto Balancing Arm) with electromagnetic release for easy, drift-free positioning
15. Mounting Options	Floor Stand, Wall Mount and Ceiling Mount

27. TROUBLE SHOOTING TABLE

Problem	Possible Cause	Remedy
No illumination	Power cable not plugged in	Plug in power cable
	Power switch in OFF position	Press the power switch to ON position
	Defective instrument fuse	Change the fuse
	Defective power cable	Change the power cable
	Line power failure	Contact in-house technician
	Failure of suspension system electronics	Contact the service department
Insufficient illumination	Brightness level set too low	Adjust brightness control knob
	Light guide not properly inserted in arm of microscope	Insert the light guide properly to get maximum illumination
	Defective light guide (illumination not uniform)	Change the light guide
Inoperative surgical field illumination	Inoperative surgical field illumination	Insert the light guide as far as it will go
	Failure of electronics	Illuminate the Surgical field using an alternate illuminator, and contact the service department
	Switch off via limit-switch on suspension arm system	Move the suspension system into the working position
Insufficient illumination (Continued)	The thermal cut-off in the lamp housing is contaminated	Clean the thermal cut-off with a dry brush or blow it clean, with compressed air
	Defective fan; failure of system electronics	Contact the service department
Up and down motion of the suspension system is stiff	The friction adjustment screw on the suspension system is tightened too firmly	Loosen the friction adjustment screw on the suspension system as needed

TROUBLE SHOOTING TABLE

Problem	Possible Cause	Remedy
Stand is unstable	The brakes on the wheels are not in use	Engage the brakes
No image is visible in the field of view	Magnichanger is not indexed properly	Rotate the Magnichanger to click a stop

28. GUIDANCE TABLES

Guidance and Manufacturer's Declaration

Electromagnetic Emissions

All Equipment and Systems

Guidance and Manufacturer's Declaration - Electromagnetic Emissions

Magna is intended for use in the electromagnetic environment specified below. The customer or user of the Magna should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment Guidance
RF Emissions CISPR 11	Group 1	The Magna 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 Magna is suitable for use in all establishment, 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 Emissions

All Equipment and Systems

Guidance and Manufacturer's Declaration – Electromagnetic Emissions

Magna is intended for use in the electromagnetic environment specified below. The customer or user of the Magna should ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment Guidance
ESD IEC 61000-4-2	± 2,4,8kv contact ±2,4,8,15kv Air	± 2,4,8kv Contact ±2,4,8,15kv 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	AC Mains or DC Input ±2 Kv, 100 kHz PRF. I/O Ports ±1 Kv, 100 kHz PRF	AC Mains or DC Input ±2 Kv, 100 kHz PRF. I/O Ports ±1 Kv, 100 kHz PRF	Main power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	AC Mains, Line to Ground ± 0.5,1,2Kv Ac Mains, Line ±0.5,1Kv DC Input (>3m), Line to Ground ±0.5,1,2Kv DC Input (>3m), Line to Line ±0.5,1Kv I/O, Line to Ground ±2 Kv (Outdoor lines only)	AC Mains, Line to Ground ± 0.5,1,2Kv Ac Mains, Line ±0.5,1Kv DC Input (>3m), Line to Ground ±0.5,1,2Kv DC Input (>3m), Line to Line ±0.5,1Kv I/O, Line to Ground ±2 Kv (Outdoor lines only)	Main power quality should be that of a typical commercial or hospital environment.
VOLTAGE DIPS, DROPOUTS, AND INTERRUPTIONS, IEC 61000-4-11 Voltage Dips (<16A) Voltage Interruptions (all input current)	 100% drop, 0.5 periods, 0°,45°,90°,135°,180°,225°, 270° ,315° 100% dip, 1 period 30% dip, 25/30 periods 100% drop, 5 seconds	 100% drop, 0.5 periods, 0°,45°,90°,135°,180°,225°, 270° ,315° 100% dip, 1 period 30% dip, 25/30 periods 100% drop, 5 seconds	Main power quality should be that of a typical commercial or hospital Environment. If the user of the Prima Magna requires continued operation during power mains interruption, it is recommended that the Prima Magna be powered from an uninterruptable power supply or battery.
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	30A/m	30A/m	Power frequency magnetic field should be that of a typical commercial or hospital Environment.

GUIDANCE TABLES

Guidance and Manufacturer's Declaration

Electromagnetic Immunity

Equipment and Systems that are NOT Life-Supporting

Guidance and manufacturer's Declaration – Electromagnetic Immunity

Magna is intended for use in the electromagnetic environment specified below. The customer or user of the Magna 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 AC Mains	3 V with 6V ISM, home:6V amateur 80% AM at 1kHz or risk frequency 150kHz - 80MHz	3 V with 6V ISM, home:6V amateur 80% AM at 1kHz or risk frequency 150kHz - 80MHz	Portable and mobile RF communications equipment should be used no closer to any part of the Magna, including cables than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC 61000-4-3 Enclosure	3V/m, home: 10V/m 80% AM at 1kHz or risk frequency 80 MHz - 2700MHz	3V/m, home: 10V/m 80% AM at 1kHz or risk Frequency 80 MHz - 2700MHz	**Recommended Separation Distance:** **d=(3.5/v1)(Sqrt P)** **d=(3.5/E1)(Sqrt P)** **80 to 800 MHz** **d=(7/E1)(Sqrt P)** **800 MHz to 2.7GHz** Where P is the max output power rating of the transmitter in watts (W) according to the transmitter manufacture 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. 

Note 1: At 80 MHz to 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 access 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 150kHz to 80 MHz, field strengths should be less than [V1] V/m.

GUIDANCE TABLES (continued)

Recommended separation distance between Portable and Mobile RF Communications equipment and the Magna for ME equipment and ME systems that are not Life-supporting.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity

Recommended separation distance for between Portable and Mobile RF Communications equipment and the Magna

The Magna is intended for use in electromagnetic environments in which radiated RF disturbances are controlled. The customer or user of the Magna can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Magna as recommended below, according to the maximum output power of the Communication equipment.

Max Output Power of Transmitter (W)	Separation (m) 150kHz to 80 MHz d=(3.5/v1)(Sqrt P)	Separation (m) 80 to 800 MHz d=(3.5/E1)(Sqrt P)	Separation (m) 800 MHz to 2.5Ghz d=(7/E1)(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

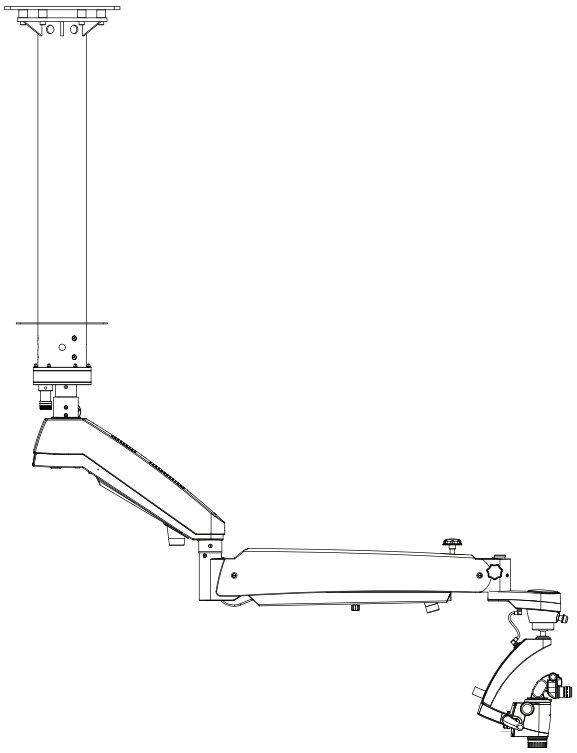
For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80MHz, the separation distance for the higher frequency range applies.

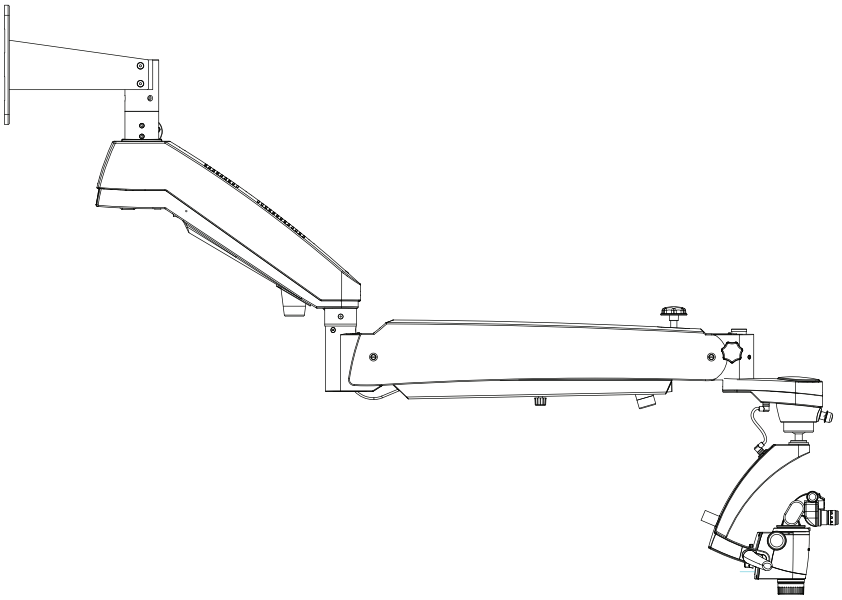
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

29. DIMENSIONS AND WEIGHT

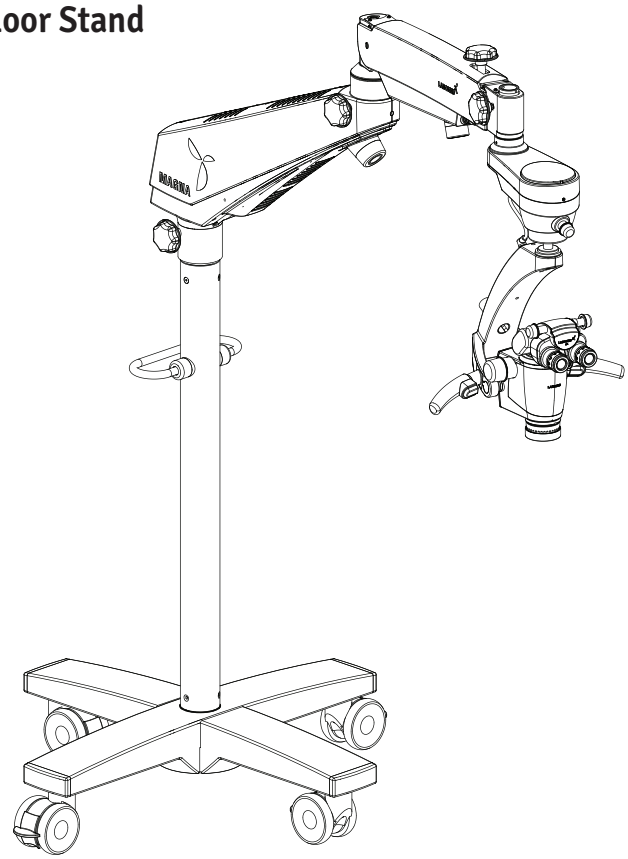
Ceiling Mount



Wall Mount



Floor Stand



Configurations	Weight
Magna with Wall Mount	
a. Wall Bracket	12Kg
b. Shaft	07Kg
c. Magna Arm Long/Short	20Kg/15Kg
d. Magna Carrier	12Kg
Magna with Ceiling Mount	
a. Ceiling Mount Normal(Ref.page 12)	30Kg
b. Ceiling mount Heavy duty(Ref.page 12)	55Kg
c. Magna Arm Long	20Kg
d. Magna Carrier	12Kg
Magna with Floor Stand	
a. Cross Base (Top)	48Kg
b. Cross Base (Bottom)	48Kg
c. Column	12Kg
d. Magna Arm Short	15Kg
e. Magna Carrier	12Kg

30. GLOSSARY

Ametropia Compensation	Compensation of short-or-far-sightedness. This can be done for each Eye using the two individual eyepieces (range: +7 to -7 diopters).
Working Distance	Distance from the common main objective (COM) to the object or area Of interest.
Color Temperature	Refers to the color characteristic of a light source. Using color Temperature, one can set the color of a light source to warm or cold light Relative to the color of natural light. The unit of measure for color temperature is Kelvin (K).
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.
Green Filter	A color filter that darkens red and blue light and brightens green light. This improves the contrast of the images with red tones, improving the Visibility of blood vessels.
Illumination Intensity	Specifies the luminous flux from a light source onto a certain area. The unit of measure for illumination intensity is Lux (Lx).
LED	Light Emitting Diode. Electronic semiconductor device that emits light when an electrical current passes through it.
Eyepiece	The optical tubes through which the enlarged image produced by the microscope can be viewed.
Convergent Beam Path	The tow light beams for the right and left eye run together at a point that lies at a distance from the common main objective (CMO). This distance is equal to the working distance.
White Balance	White balance is used to calibrate the camera to the color temperature of the light at the location.
DSLR Camera	(Digital Single Lens Reflex) camera with a digital imaging sensor.
CCD Camera	(Charged Coupled Device) camera with a technology to store a charge and move this charge out of the photo sensor in an organized way.
CMOS Camera	(Complementary Metal Oxide Semiconductor) camera in which images sensor is a silicon chip that captures and reads light.
DBS	(Double Beam Splitter) splits light beam into two directions (one to eye and one to side port) for simultaneous user viewing and photography, videography, or co-observation. Ratio of light distribution is 70% for eyes and 30% to side ports for photography, videography and co-observation.
Rotoplate	The Rotoplate reduces neck craning, making it comfortable to view hard to see regions of the mouth from the 9 and 3 o'clock seated positions.
Double Iris Diaphragm	The double iris diaphragm kit allows greater depth of field, which is particularly valuable for photography.
IPD	Inter Pupillary Distance

31. WARRANTY

This product is warranted by LABOMED 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 the original purchaser). Under this warranty, LABOMED's obligation is to repair or replace the defective part or product at LABOMED's 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 LABOMED factory or authorized LABOMED Dealer.

All claims under this warranty must be in writing and directed to the LABOMED factory or its Authorized dealer for this device 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. 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

LABOMED 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 material 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.

WARRANTY(continued)

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.

Liability release for wall and/or ceiling installations:

By signing below, purchaser confirms that the correct and secure installation of mounting plates and hardware for the LABOMED Magna microscope(s) purchased is the sole responsibility of the purchaser and appointed contractor, and will comply with applicable building codes and good practices. Labo America, Inc. and all of its affiliates will be held harmless and will not bear any liability for damage and/or injury caused by improperly installed and secured mounting plates and hardware.

Purchaser's name and address:

Project location (if different from the above):

Licensed contractor/company name and details (address, lic #, phone number):

Client Signature:

Contractor Signature:

Date:

Date:

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Revision History

Rev. No.	Date of Release	DCR #	Change	App. By
1.4	April 16, 2018	DCR/06B/18	Addition of Caution on Page 6 Bottom and updating regulatory values on page 46 & 47	S.bal
1.5	July 27, 2018	DCR/11A/118	Power Consumption Corrected from 195W to 130W.	S.bal
1.6	May, 2019	ECR/08/19	Double handle details updated.	S.bal
1.7	Feb.,2020	ECR/57/19	wall & ceiling mount updated disinfection and cleaning	S.bal
1.8	March 24,2021	DCR/05A/21	Page added Ceiling mount standard arm drawing.	S.bal
1.9	NOV ,2021	DCR/22/21	Inches Dimensions Added	S.bal
1.11	Aug ,2024	DCR/11/2024	Regulatory information	S.bal
1.12	Sep ,2024	DCR/12/2024	**Symbols updated per EU MDR 2017/745 & ISO 15223**	S.bal
1.13	Jan ,2025	DCR/01/2025	**Max. Safe Load symbol added**	S.bal
1.14	June,2025	DCR/14/2025	Typo Error corrected (MDR Regulation (EU) 2017/745	S.bal
1.15	July,2025	DCR/**16**/2025	silicone cover instructions added	S.bal
1.16	Feb,2026	DCR/**04**/2026	IP Code dded	S.bal

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ideas for vision

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