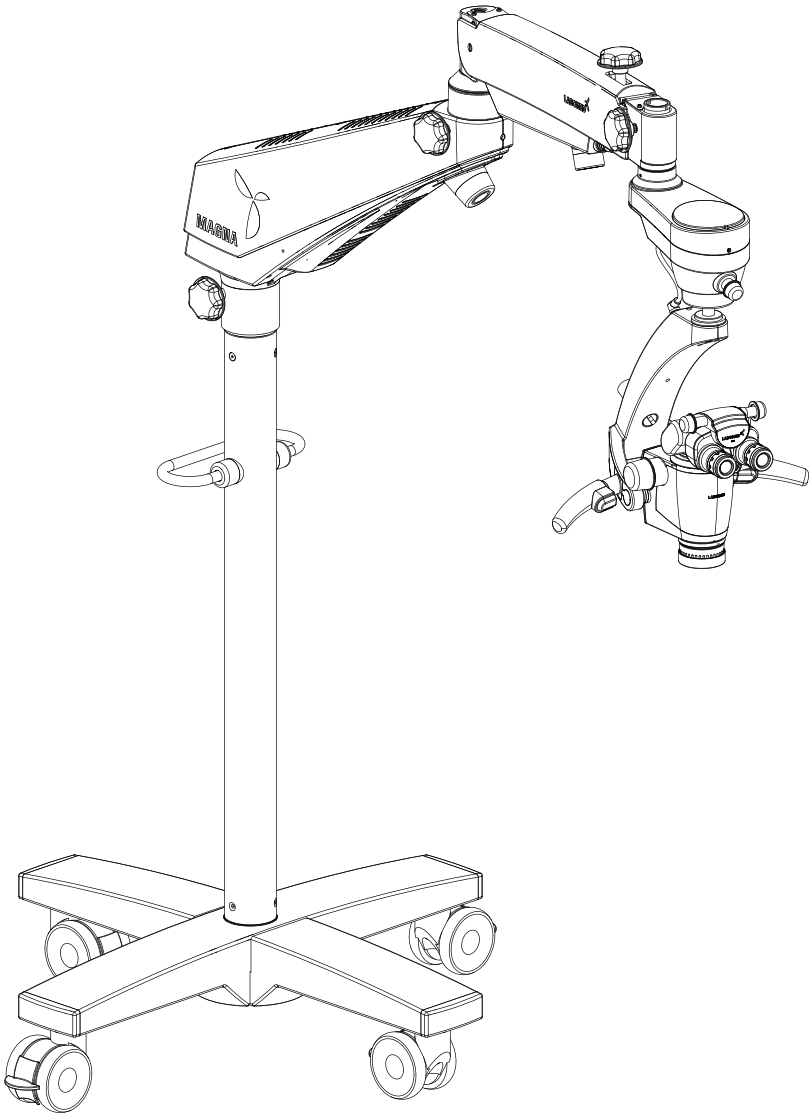
LABOMED
ideas for vision

MAGNA

User Manual

Dental Operating Microscope



To ensure correct use of this instrument and to avoid injury during operation, read this manual completely before use.

Part No.: 6129000-795
Issue 1.16, printed
February 2026

MAGNA is a trade name for the LABOMED® endodontic microscope.

LABOMED is a registered trademark of Labo America, Inc.

All other trademarks are the property of their respective owners.

The information in this document was accurate at the time of publication. Specifications are subject to change without notice. LABOMED reserves the right to change the product described in this user manual without notice and without incorporating those changes into products already sold.

LABOMED products are designed and manufactured under quality processes that meet the quality management system requirements of ISO 13485.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, whether electronic, mechanical, recording or otherwise, without the prior written permission of LABOMED.

TABLE OF CONTENTS

1.	Introduction, Intended Use and Contraindications	1
2.	Product Description: Floor Stand	2
3.	Product Description: Ceiling Mount	3
4.	Installation References (Ceiling Mount)	4 - 10
5.	Ceiling Mount Installation	
5A.	Drop Ceiling Applications	11 - 12
5B.	Leveling the Ceiling Mount System	13
5C.	Installing the Ceiling Mount on Concrete Ceilings	14 - 15
6.	Product Description: Wall Mount	16 - 20
7.	Wall Mount Installation	21 - 23
8.	Wall Mount Installation Procedure	
8A.	Wall Mount Installation on a Wooden Wall	24 - 25
8B.	Wall Mount Installation on a Masonry Wall	26 - 28
9.	Construction Requirements (Ceiling / Wall Mount)	29
10.	Warnings and Cautions	30 - 31
11.	Explanation of Symbols	32
12.	Standards and Directives	33
13.	Unpacking	34
14.	Installation of the Cross Base (Mobile Stand)	35
14.1.	Installation of the Microscope (Mobile Stand)	36 - 37
14.2.	Electrical Connections	38 - 39
14.3.	Wiring Diagram	40
14.4.	Control Elements	41 - 42
15.	Using the Microscope	43 - 44
16.	Use of Accessories	45 - 46
17.	Thermal Cut-off	47
18.	Tension Adjustment	47
19.	Moving and Storing the Instrument	48
20.	Care and Maintenance	49- 50
21.	Cleaning and Disinfection	51
22.	Autoclaving	51
23.	Schedule of Autoclavable Caps	52
24.	Ambient Requirements	53
25.	Disposal	53
26.	Technical Specifications	54
27.	Troubleshooting Table	55 - 56
28.	Guidance Tables	57 - 60
29.	Dimensions and Weight	61
30.	Glossary	62
31.	Warranty	63 - 64

1. INTRODUCTION AND INTENDED USE

The LABOMED® Magna is a surgical and diagnostic microscope that adapts to a range of surgical needs. It provides a magnified view of the surgical field and consistent visualization throughout every intraoperative phase of endodontic treatment, without compromising performance.

The microscope delivers very high optical image quality, good depth of focus and a wide field of view for precise surgery. Illumination control and the high eyepoint of the observation head help reduce user fatigue and allow comfortable use over long periods.

Key features of this microscope:

1. The observation head is easily positioned with the suspension arm.
2. An advanced 1:6 Galilean zoom, convertible to an 8-step magnification changer, provides optimal magnification for each need.
3. Cold-light illumination from a high-intensity 50 W LED is delivered through a fiber-optic light guide.
4. The effortless ABA (Automatic Balancing Arm) articulation system uses an electromagnetic brake for full flexibility in positioning the microscope and setting its viewing angle.
5. The LABOMED NuVar common main objective (CMO) with variable working distance is standard, so each user can set a comfortable working distance.
6. The rigid cross base with caster wheels gives the device stability and mobility.
7. When the microscope is not in use, the suspension arm folds over the main body for compact storage.

Report any serious incident involving this device to Labotech Microscopes India Pvt. Ltd. or to your national health authority.

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 the Magna only as specified in its 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 Motorized Filter (std arm)	6129101
Magna Ceiling Mount with Motorized Filter (long arm)	6129202
Magna Wall Mount with Motorized 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)

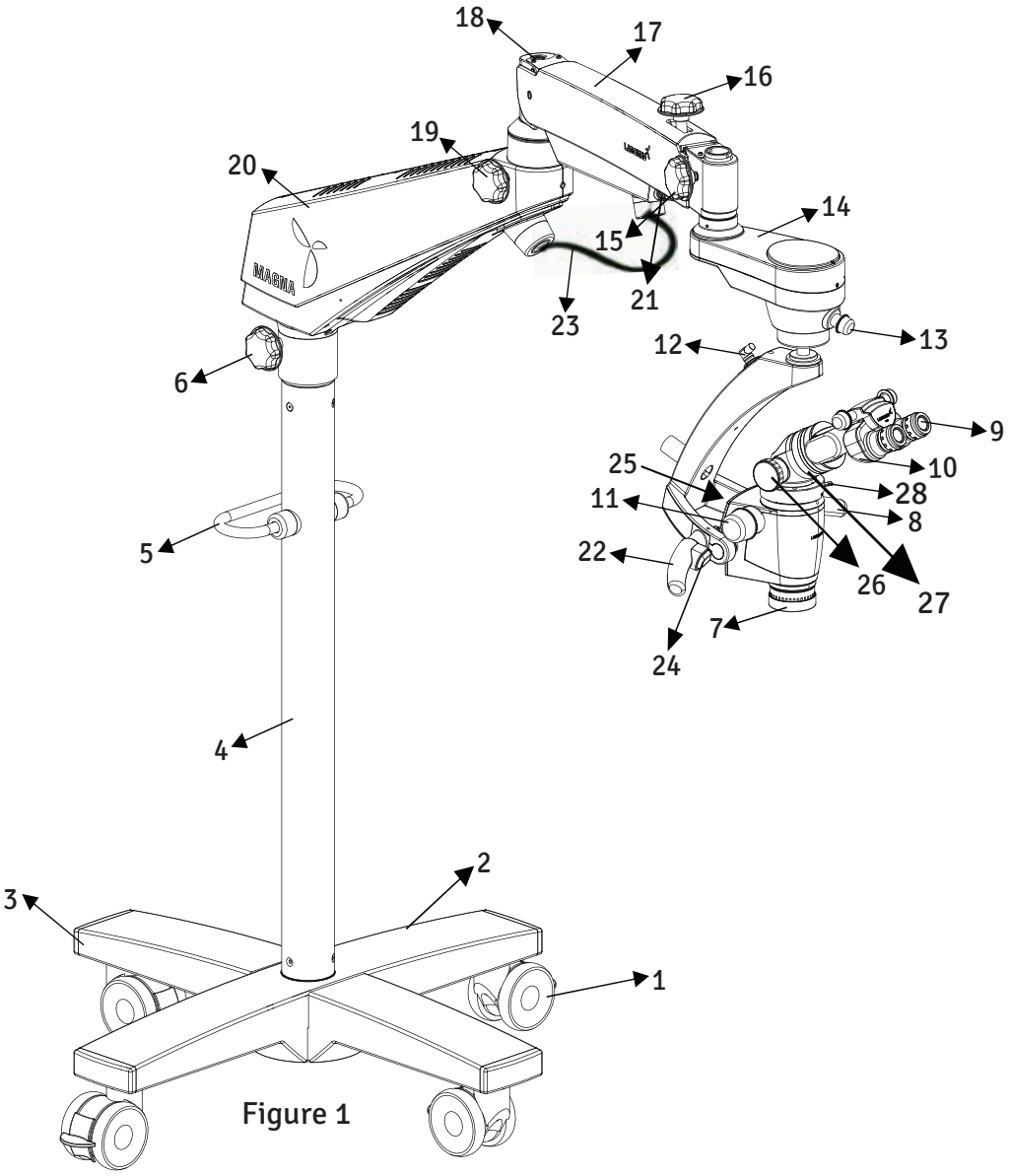


Figure 1

1. Caster wheel with brakes
2. Cross base, top
3. Cross base, bottom
4. Column
5. Transport handle
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 (Automatic Balancing Arm) electromagnetic clutch 15. ABA 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 22. Left-hand release (electromagnetic clutch) 23. Wire mesh with fiber-optic 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)

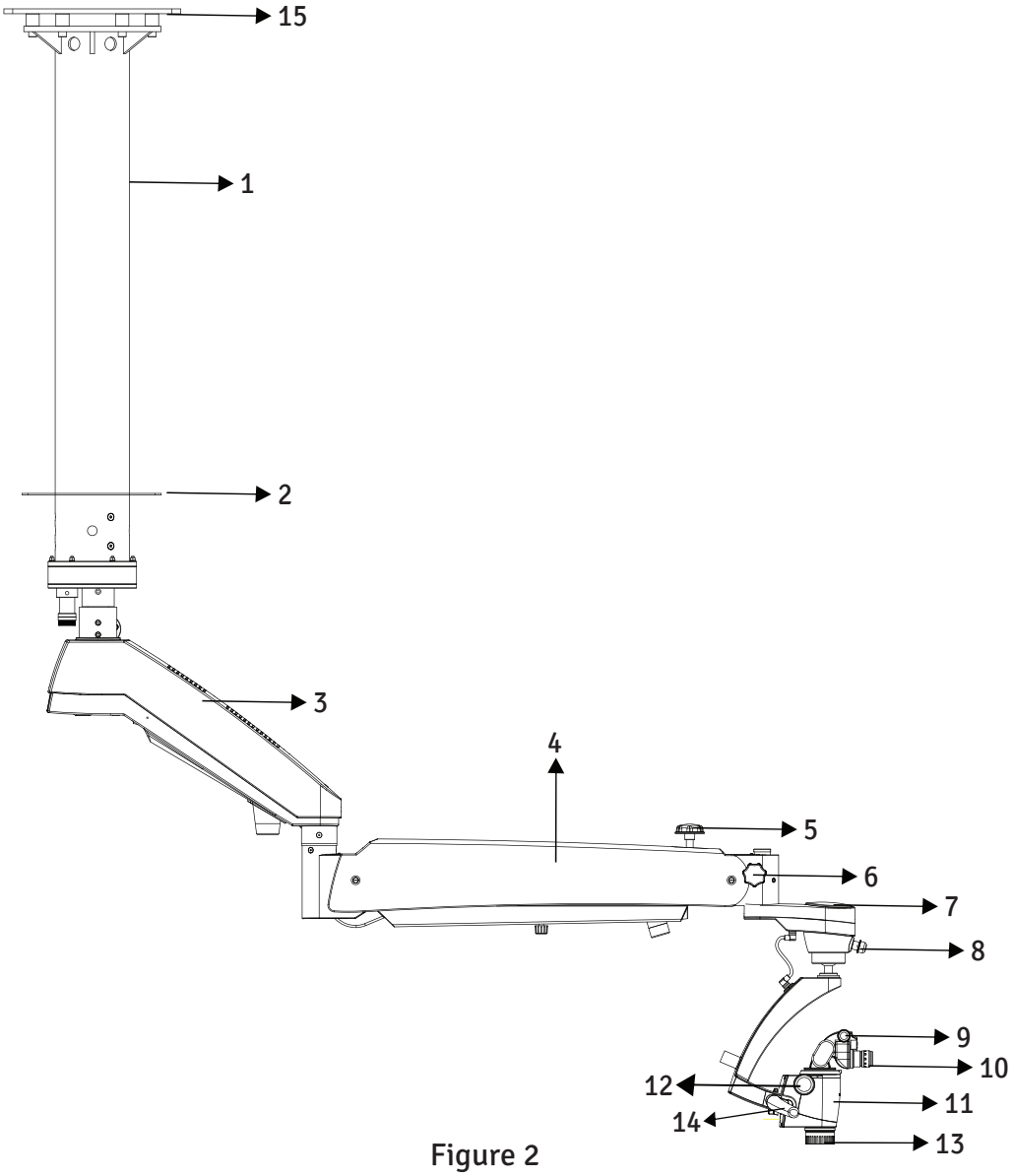


Figure 2

1. Column
2. Cover mount (for false ceilings only)
3. Swivel arm
4. Suspension arm
5. Suspension arm hydraulic movement lock knob
6. ABA lock knob
7. ABA (Automatic 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)

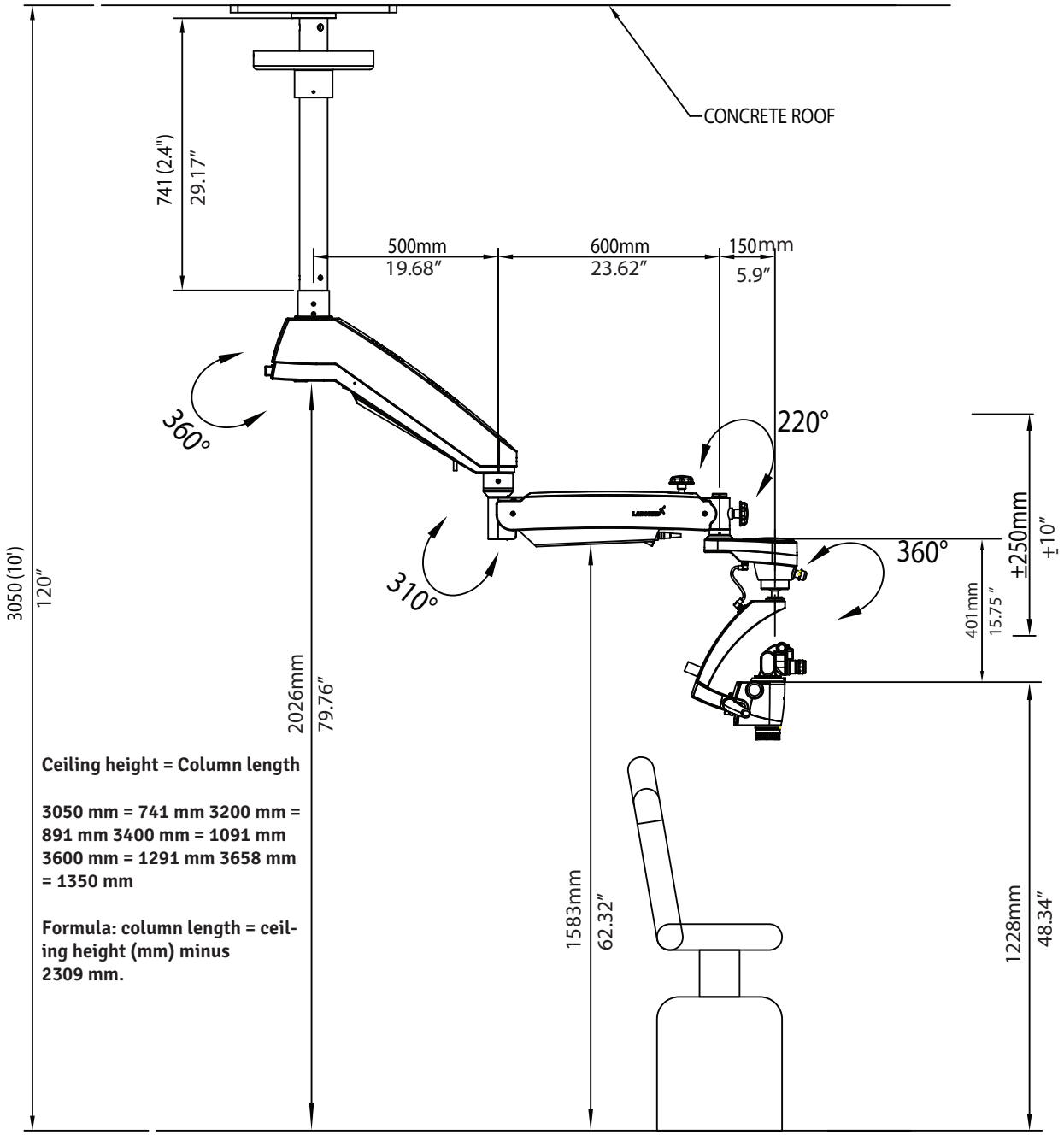


Figure 3

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR A 12-FT CEILING HEIGHT

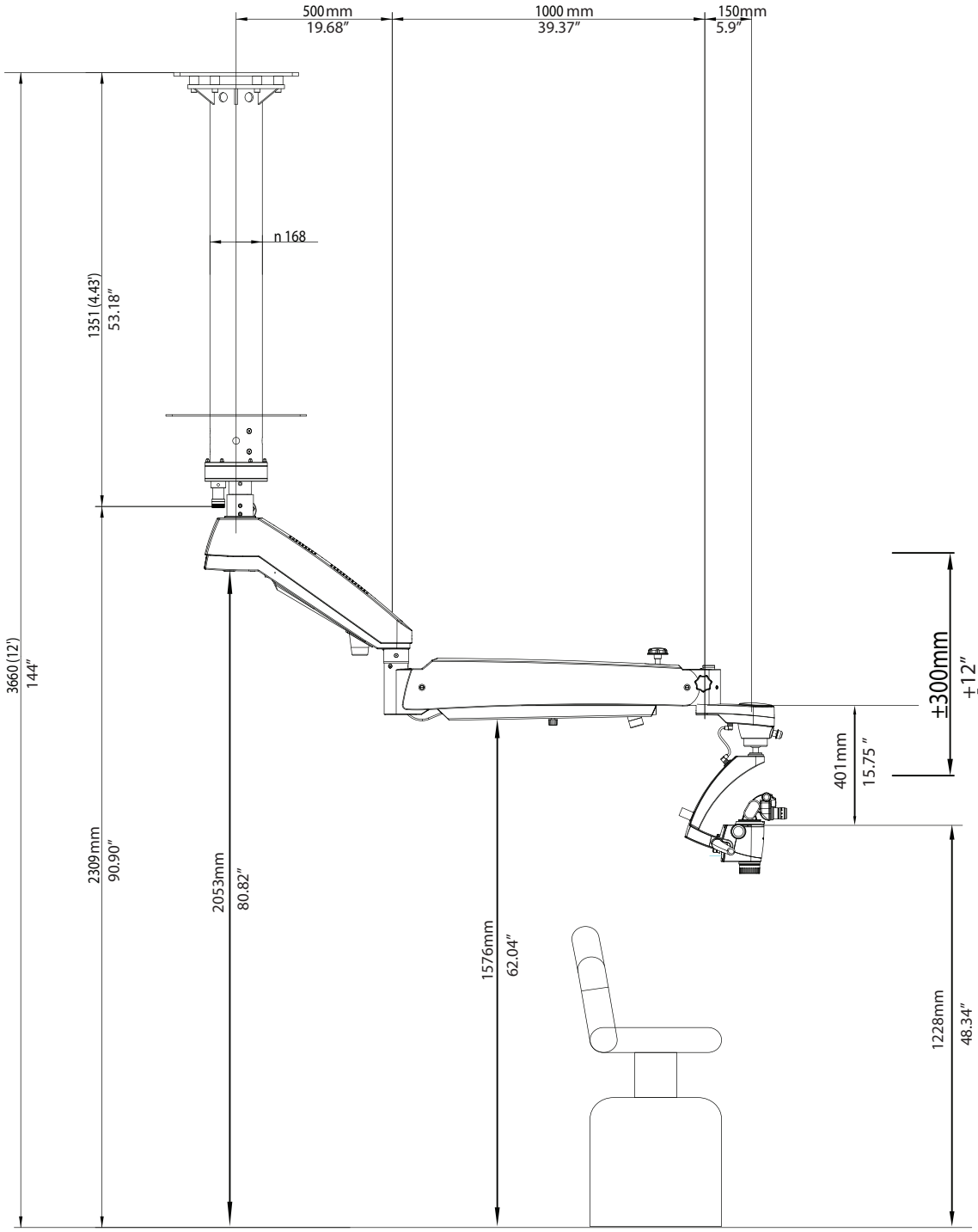


Figure 3(A)

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR AN 11-FT CEILING HEIGHT

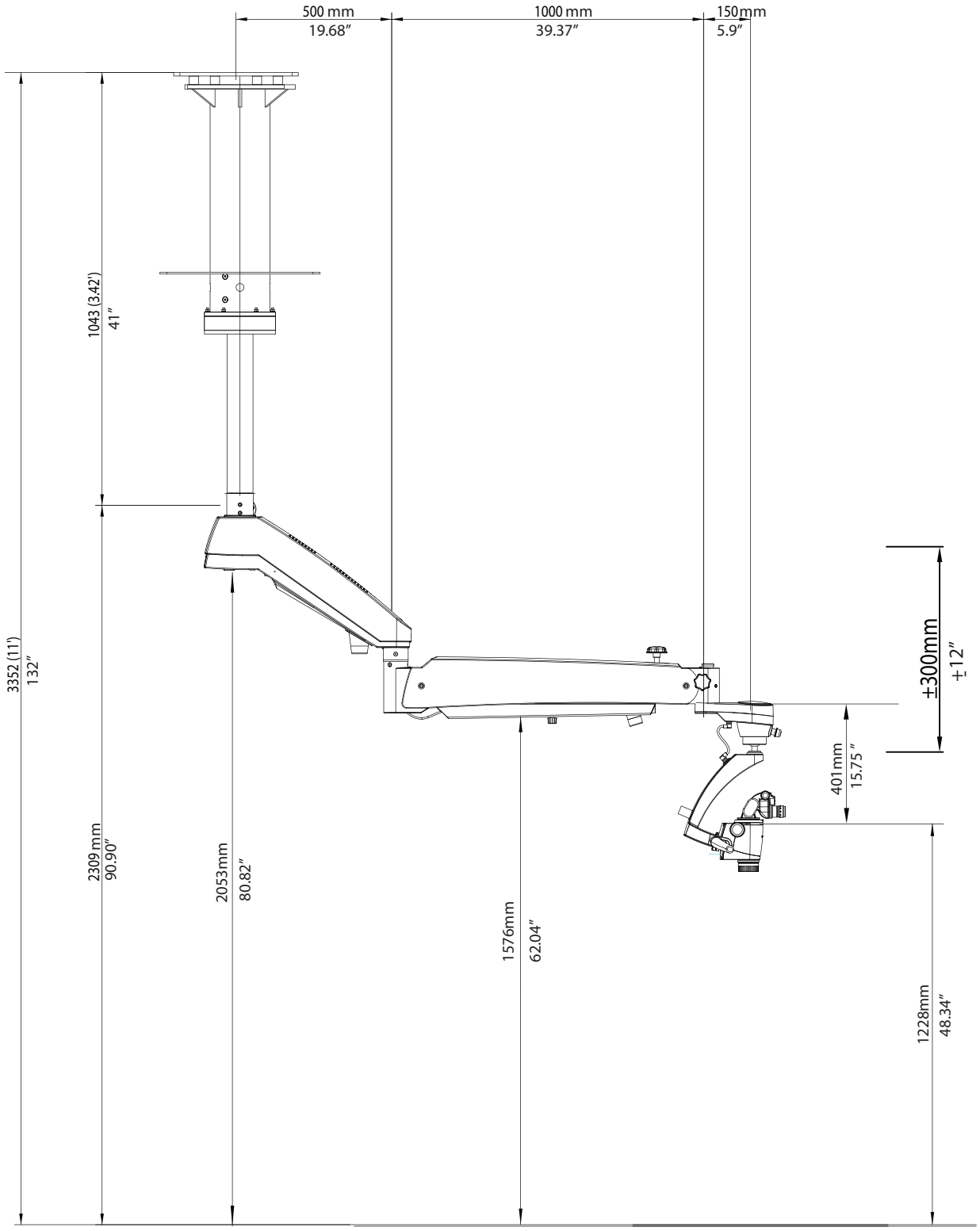


Figure 4

INSTALLATION REFERENCES (CEILING MOUNT)

CEILING MOUNT SYSTEM FOR A 10-FT CEILING HEIGHT

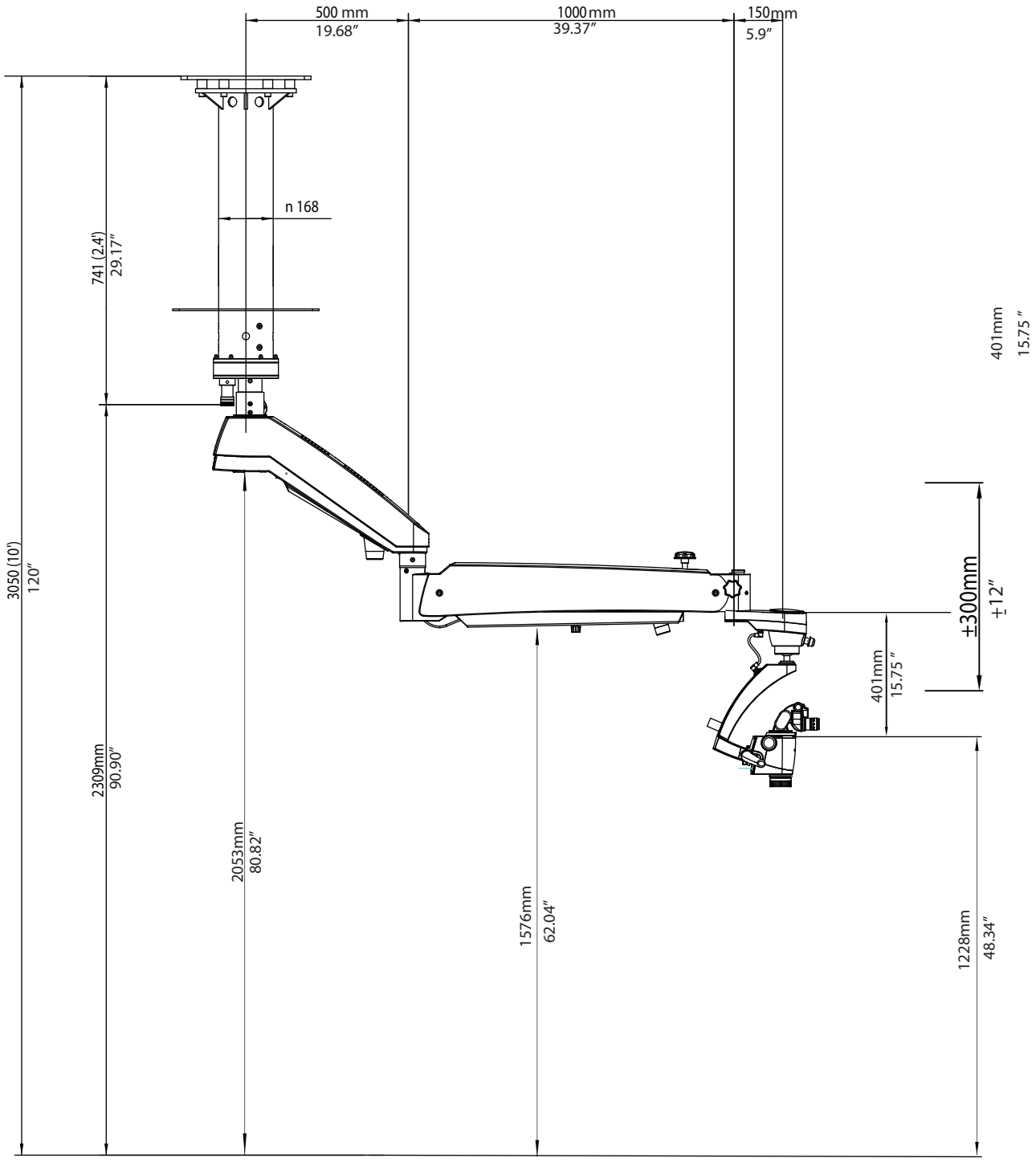
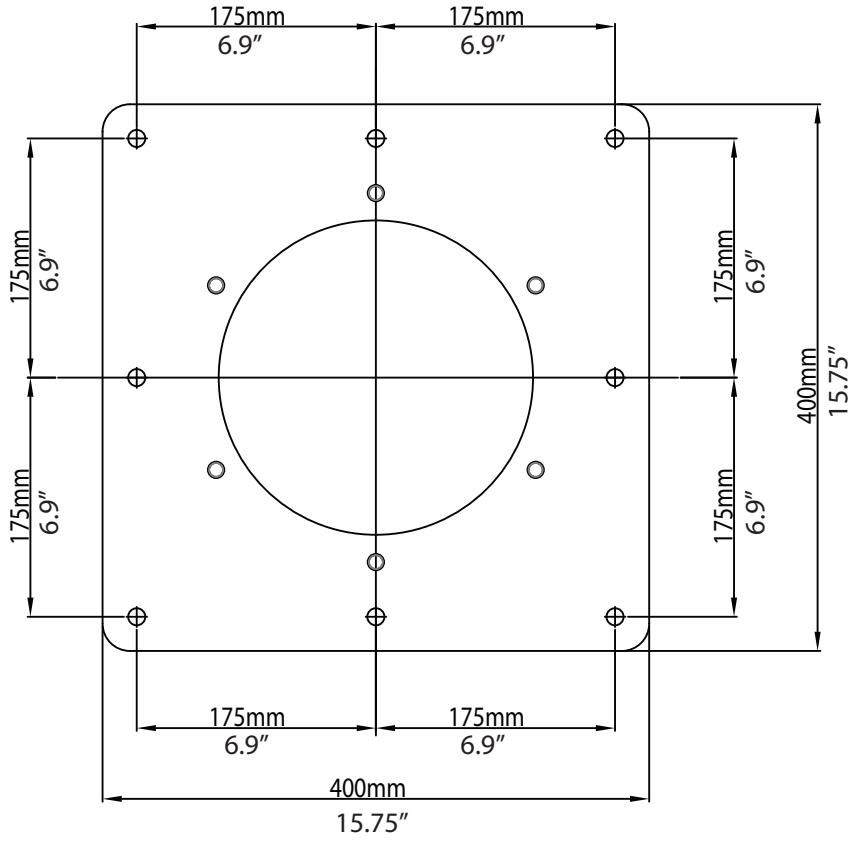


Figure 5

INSTALLATION REFERENCES (CEILING MOUNT)

Marking references



MASTER PLATE

Figure 6

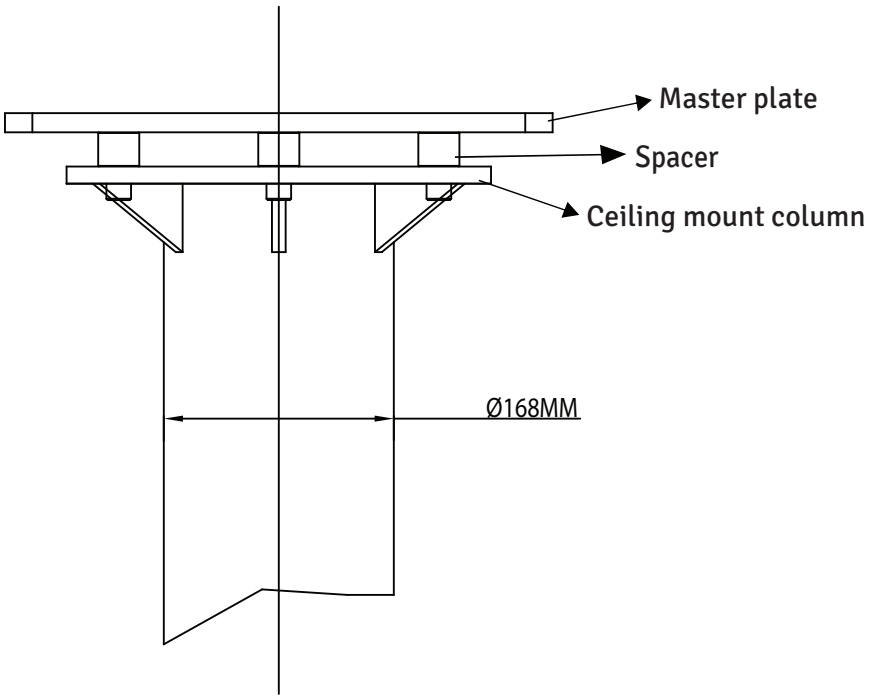


Figure 7

INSTALLATION REFERENCES (CEILING MOUNT)

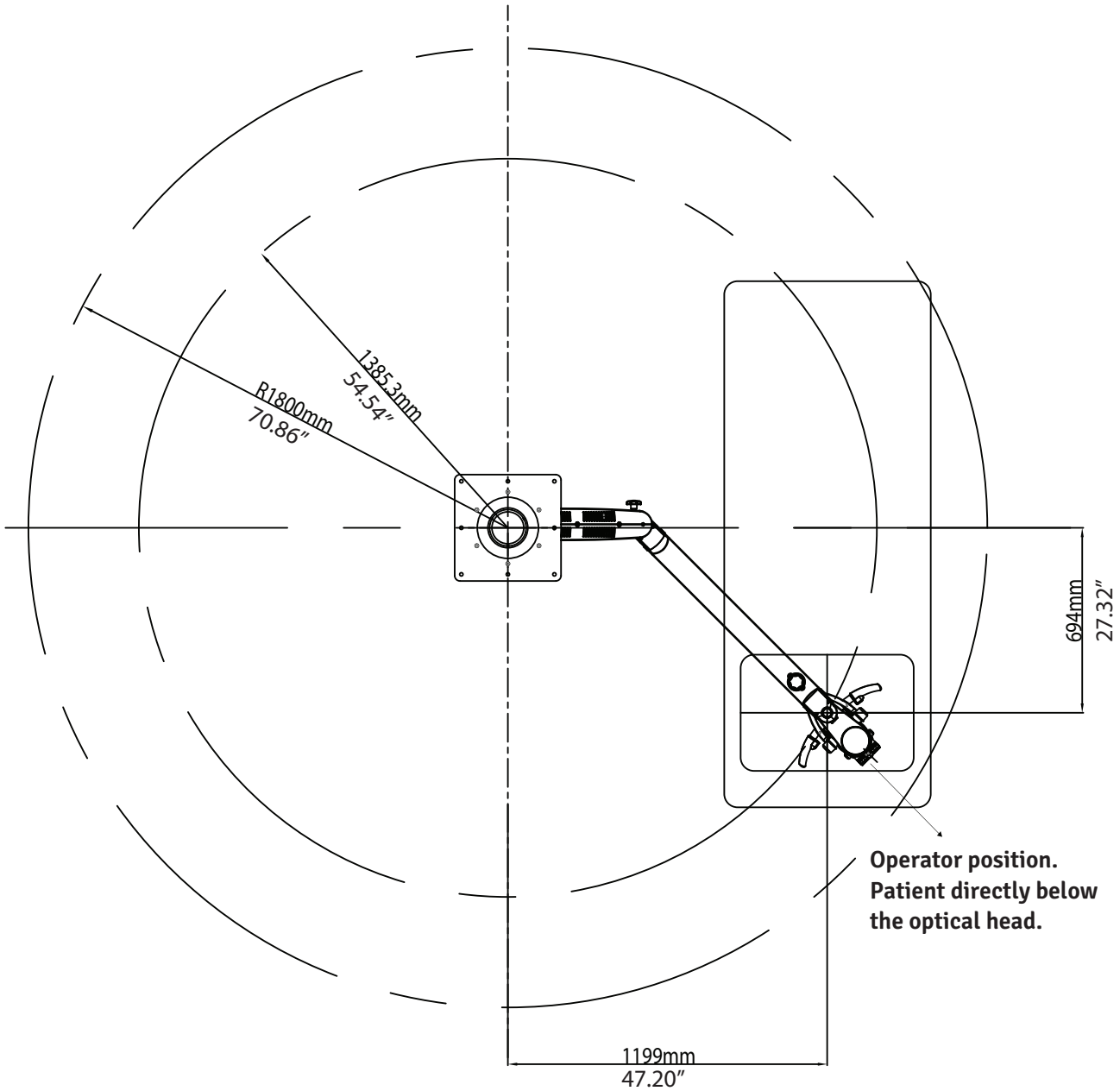


Figure 8

INSTALLATION REFERENCES (CEILING MOUNT)

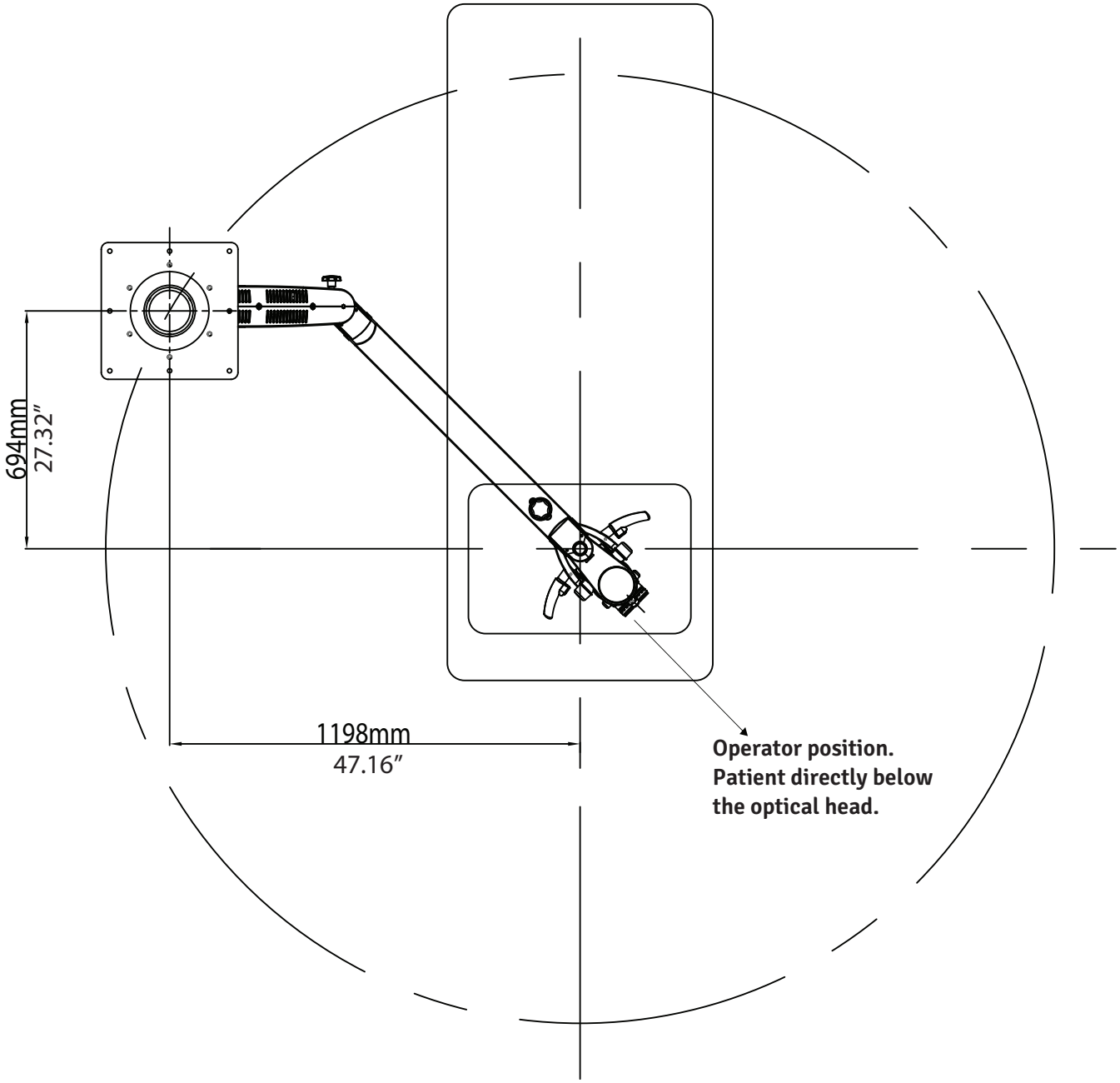


Figure 9

5. CEILING MOUNT INSTALLATION

5A. DROP CEILING APPLICATIONS

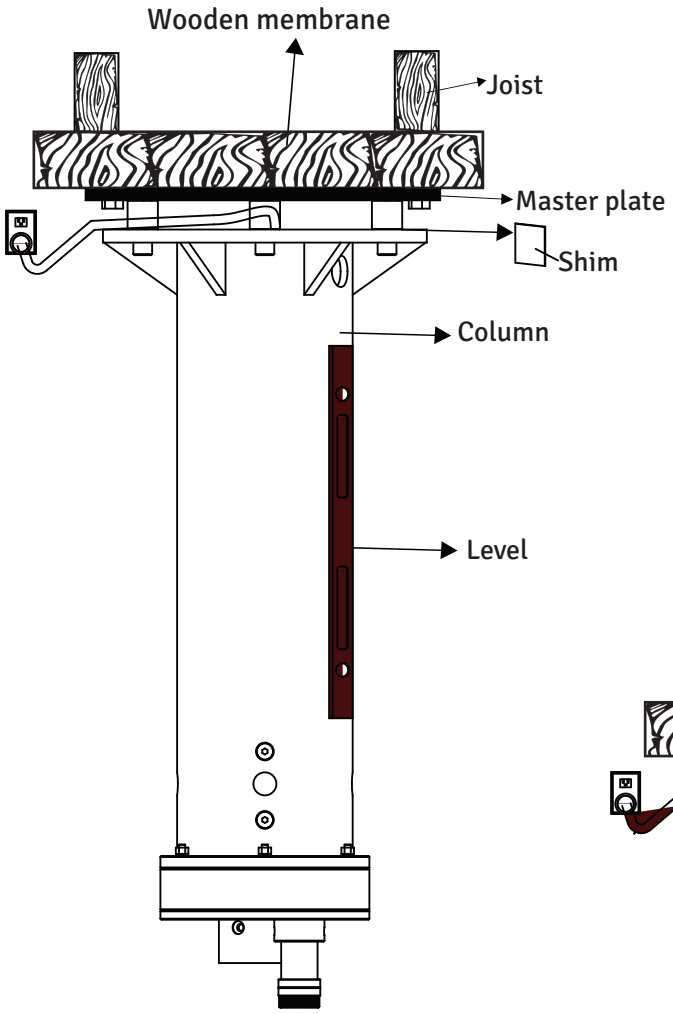
Many newer buildings use drop ceilings. In this type of application, all supporting structures and electrical service (115 or 230 VAC, 15 A, as applicable) are the customer's responsibility and must be completed before installation.

WARNING: THE SUPPORTING STRUCTURE FOR A CEILING MOUNT OR WALL MOUNT INSTALLATION MUST SUPPORT A MINIMUM WEIGHT OF 220 LB (100 kg) AND MUST BE LATERALLY AND VERTICALLY STABLE AND FREE FROM VIBRATION.
FOR CONSTRUCTION DETAILS, SEE PAGE 29 OF THIS MANUAL.

WARNING:
- **THE CEILING MOUNT AND COLUMN ASSEMBLY TOGETHER CAN WEIGH UP TO APPROXIMATELY 55 KG WITHOUT THE MICROSCOPE (SEE PAGE 61 FOR DETAILS).**
- **TO AVOID PERSONAL INJURY, TWO (2) PEOPLE ARE REQUIRED FOR INSTALLATION.**

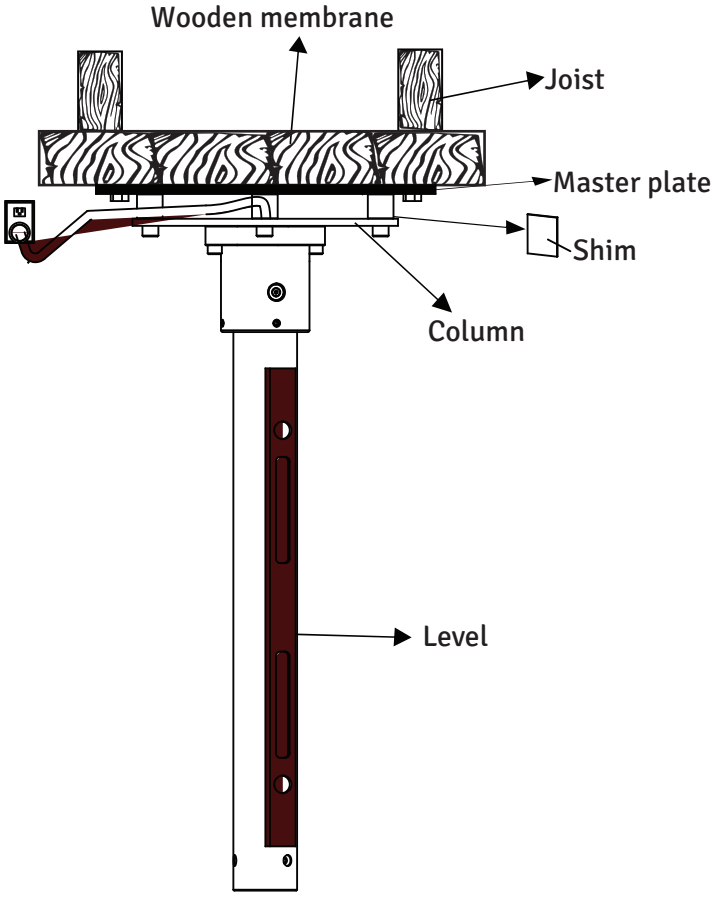
PROCEDURE:

1. Make sure there is a 350 mm diameter hole in the drop ceiling for mounting the master ceiling plate.
2. On a wooden ceiling, install the LABOMED ceiling mount system by fixing a flat wooden membrane at least 90 mm thick to the joists, then mounting the master ceiling plate to the membrane as shown in Figures 10 and 11.
3. Using the paper template provided, mark the positions of the eight (8) mounting holes on the wooden membrane (see figure).
4. Drill eight (8) 1/4" (6 mm) pilot holes, either directly into the joist or into the additional wooden membrane, depending on the ceiling.
5. Place a 10 mm flat washer over each of the eight M10 × 100 mm hex head lag screws.
6. With the flat side of the master plate facing the mounting surface, line up the (6) holes with the pilot holes and insert the hex head lag screws.
7. Tighten the master plate with a 17 mm hex socket wrench.
8. Position and align the ceiling mount against the master plate and insert six M12 × 40 socket head bolts.
9. Tighten all bolts slightly with a 10 mm Allen key.
10. Use a level to make sure the column assembly is vertical. To correct the leveling, see "Leveling the Ceiling Mount System".
11. After leveling the column, tighten all six bolts to full torque.
12. Steps 1 to 11 are the customer's responsibility. A LABOMED representative will then complete the microscope installation.
13. Power up the system with the cable provided. Make sure the AC outlet is hospital grade and properly grounded.
14. Put the drop ceiling tile back in place.



Heavy-duty, vibration-free ceiling mount

Figure 10



Normal ceiling mount

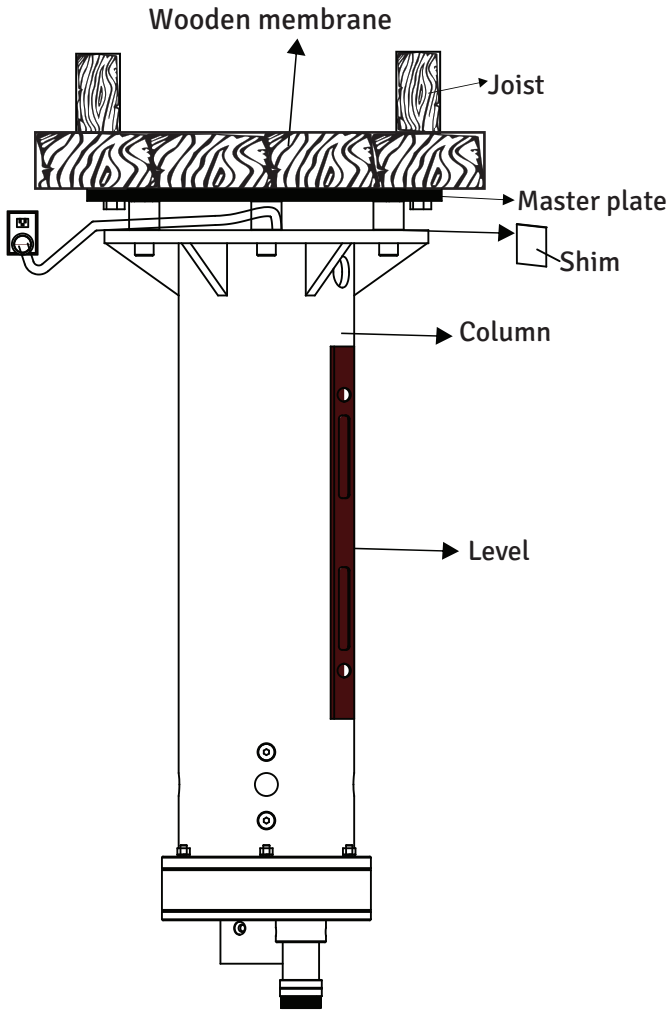
Figure 11

5B. LEVELING THE CEILING MOUNT SYSTEM

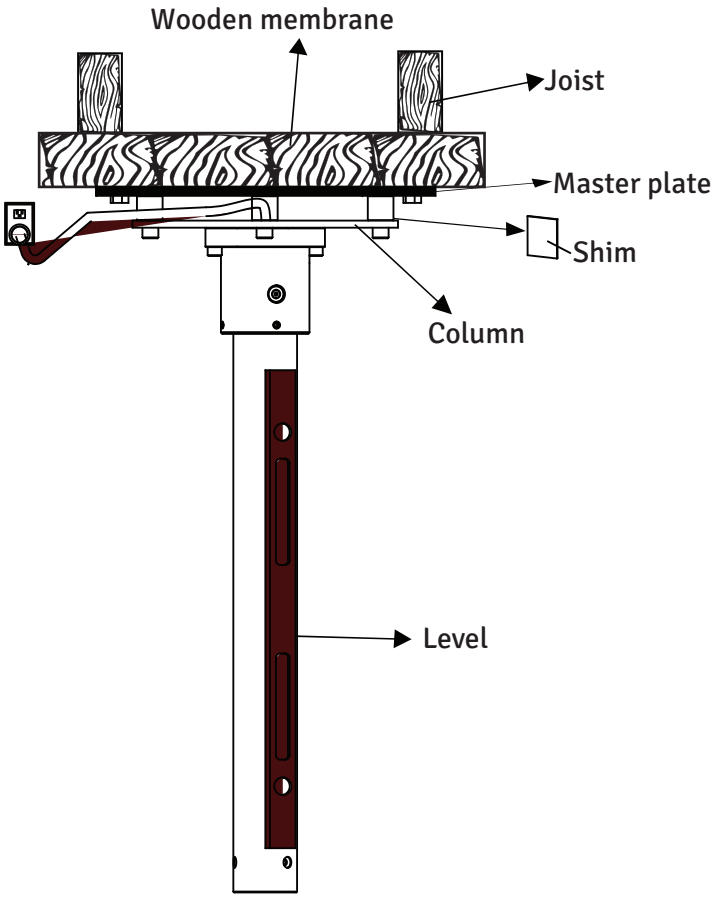
After installation, the ceiling mount column must be plumb. A perfectly vertical column prevents the microscope system from drifting from side to side. Proceed as follows:

1. Use the 10 mm Allen key to slightly loosen all six (6) M10 bolts.
2. Place a level across the bottom of the ceiling mount as shown in the figure to check vertical alignment. Use shims as required and adjust the RAWL bolts or lag bolts until the column is vertical.
3. Tighten all screws securely.

NOTICE: Shims and shim materials are supplied by the customer, not by LABOMED. Many shims and shim materials are available commercially; no specific type or brand is required.



Heavy-duty, vibration-free ceiling mount
Figure 13

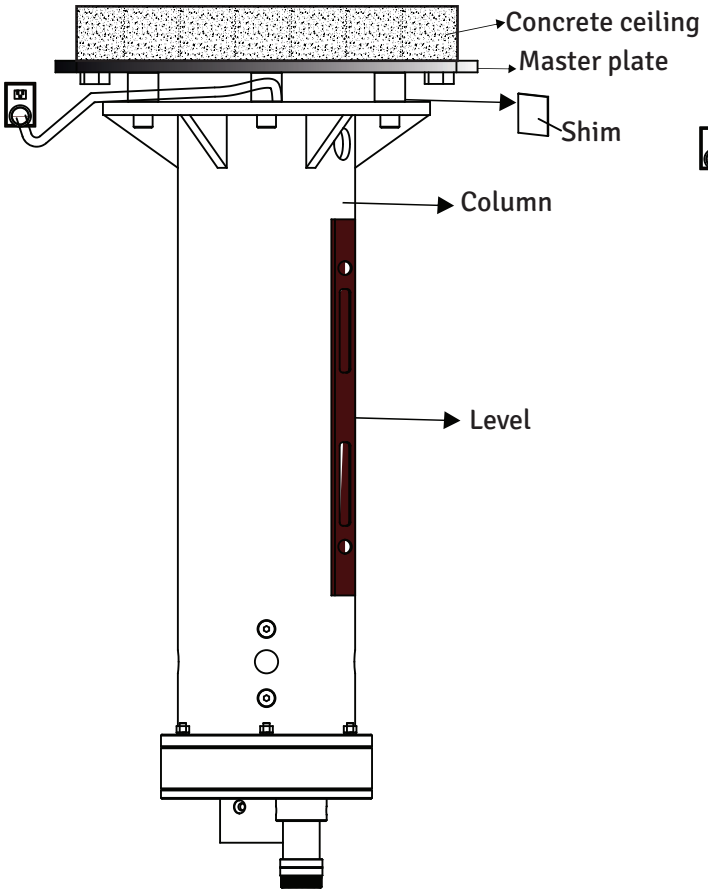


Normal ceiling mount
Figure 14

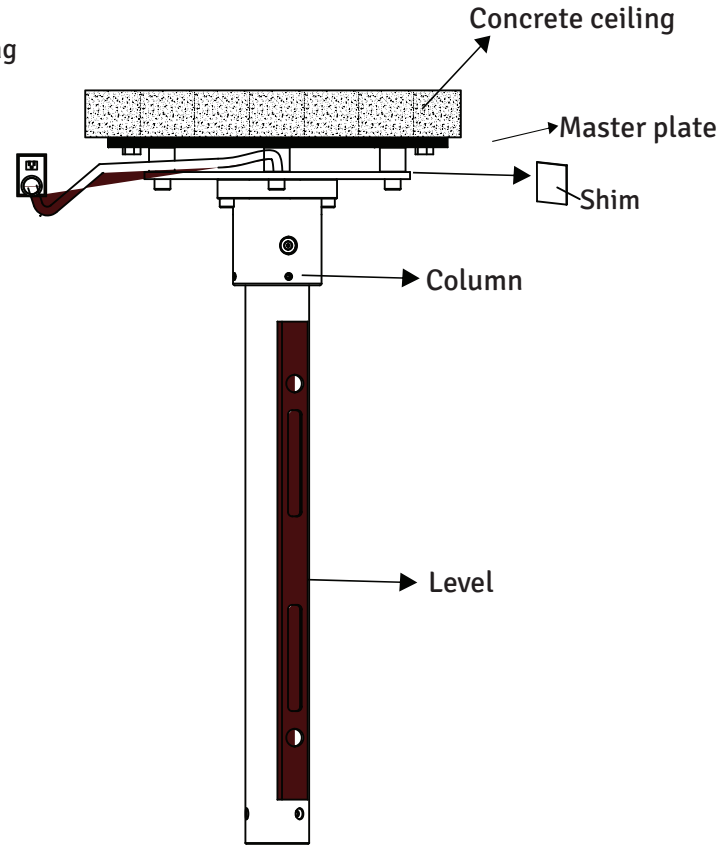
5C. INSTALLING THE CEILING MOUNT ON CONCRETE CEILINGS

Fixing the master plate:
1. Use the paper template provided to mark the anchor positions for the master plate.
2. Drill the eight (8) mounting holes, 14 mm in diameter and 100 mm deep.
3. Place a 10 mm flat washer and a split washer over each of the eight M10 × 75 hex head RAWL plugs.
4. With the flat surface of the master plate facing the ceiling, align its 8 holes with the holes in the ceiling.
5. Insert the hex head RAWL screws into the holes and fully tighten the master plate with a 17 mm hex socket wrench.

Installing the ceiling mount:
6. Position the ceiling mount against the master plate, align the 6 mounting holes and insert six M12 × 40 socket head bolts.
7. Tighten all bolts slightly with a 10 mm Allen key.
8. Use a level to make sure the column assembly is vertical. To correct the leveling, see "Leveling the Ceiling Mount System".
9. Fully tighten all bolts with the 10 mm Allen key.
10. Steps 1 to 9 are the customer's responsibility. A LABOMED representative will then complete the microscope installation.
11. Power up the system with the cable provided. Make sure the AC outlet is hospital grade and properly grounded.
12. Put the drop ceiling tile back in place.

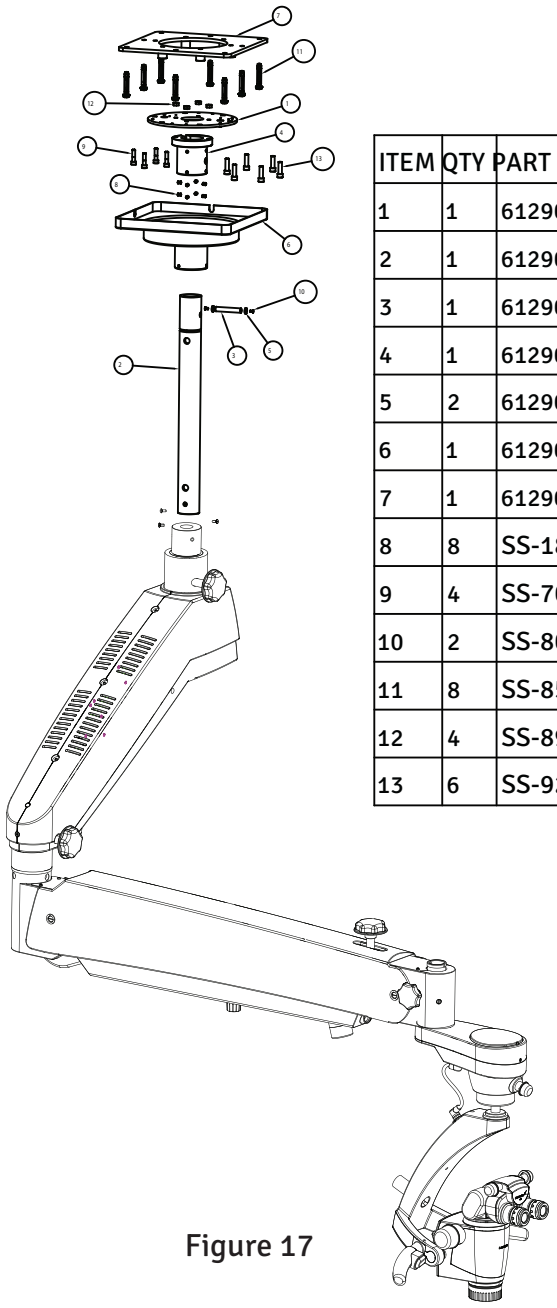


Heavy-duty, vibration-free ceiling mount
Figure 15



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	CEILING COVER ASSY.
7	1	6129004-801	MASTER PLATE
8	8	SS-180	M4 × 4/GRB/UB
9	4	SS-707	M10 × 40 ALLEN BOLT
10	2	SS-802	SOCKET FLAT HD SCREW M6 × 16
11	8	SS-854	RAWL PLUG M10
12	4	SS-895	M10 HEX NUT
13	6	SS-921	M12 × 40 SOCKET HEAD CAP SCREW

Figure 17

6. PRODUCT DESCRIPTION (WALL MOUNT)

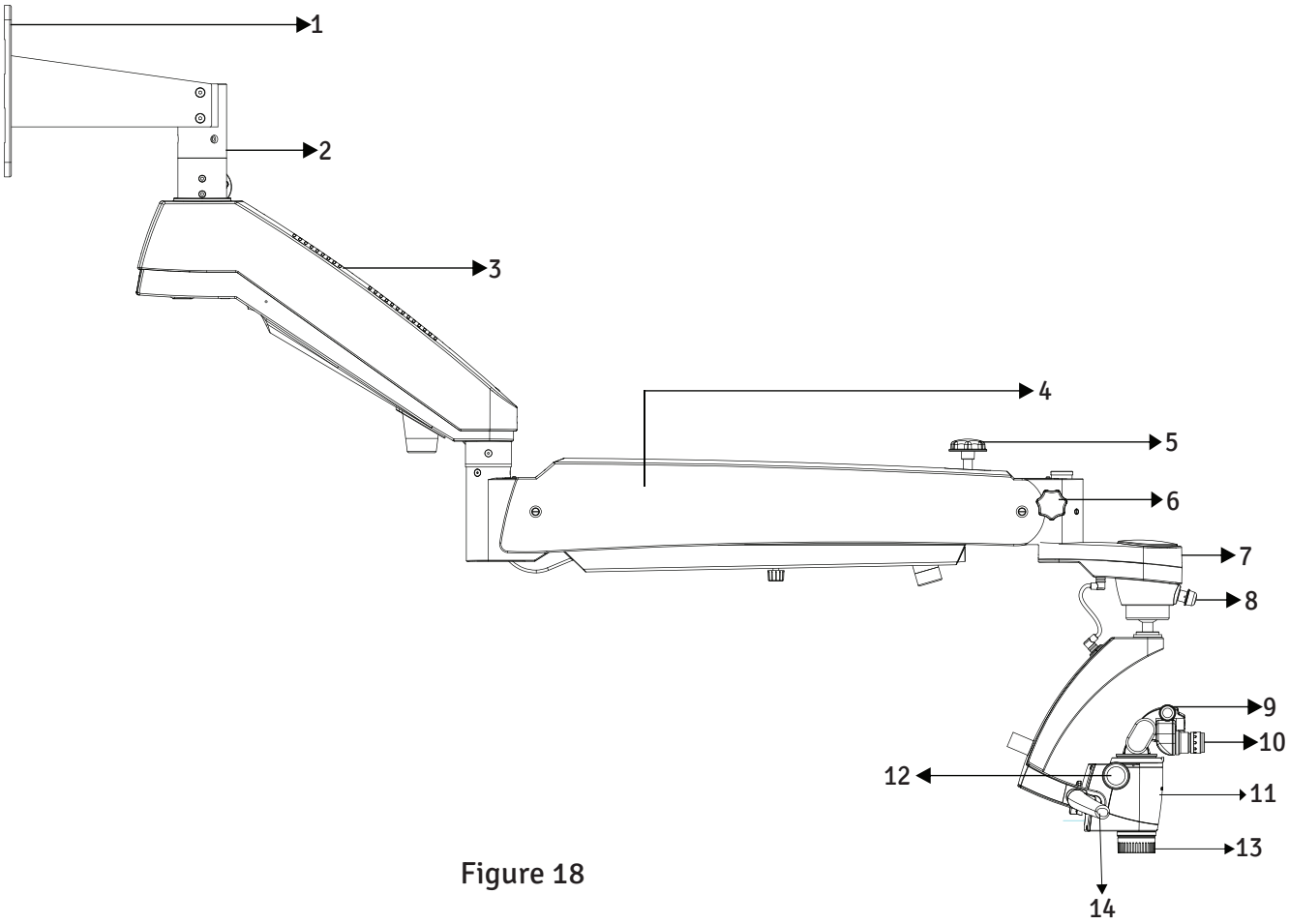


Figure 18

1. Wall mount bracket
2. Mount shaft
3. Swivel arm
4. Suspension arm
5. Suspension arm hydraulic movement lock knob
6. ABA lock knob
7. ABA (Automatic 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)

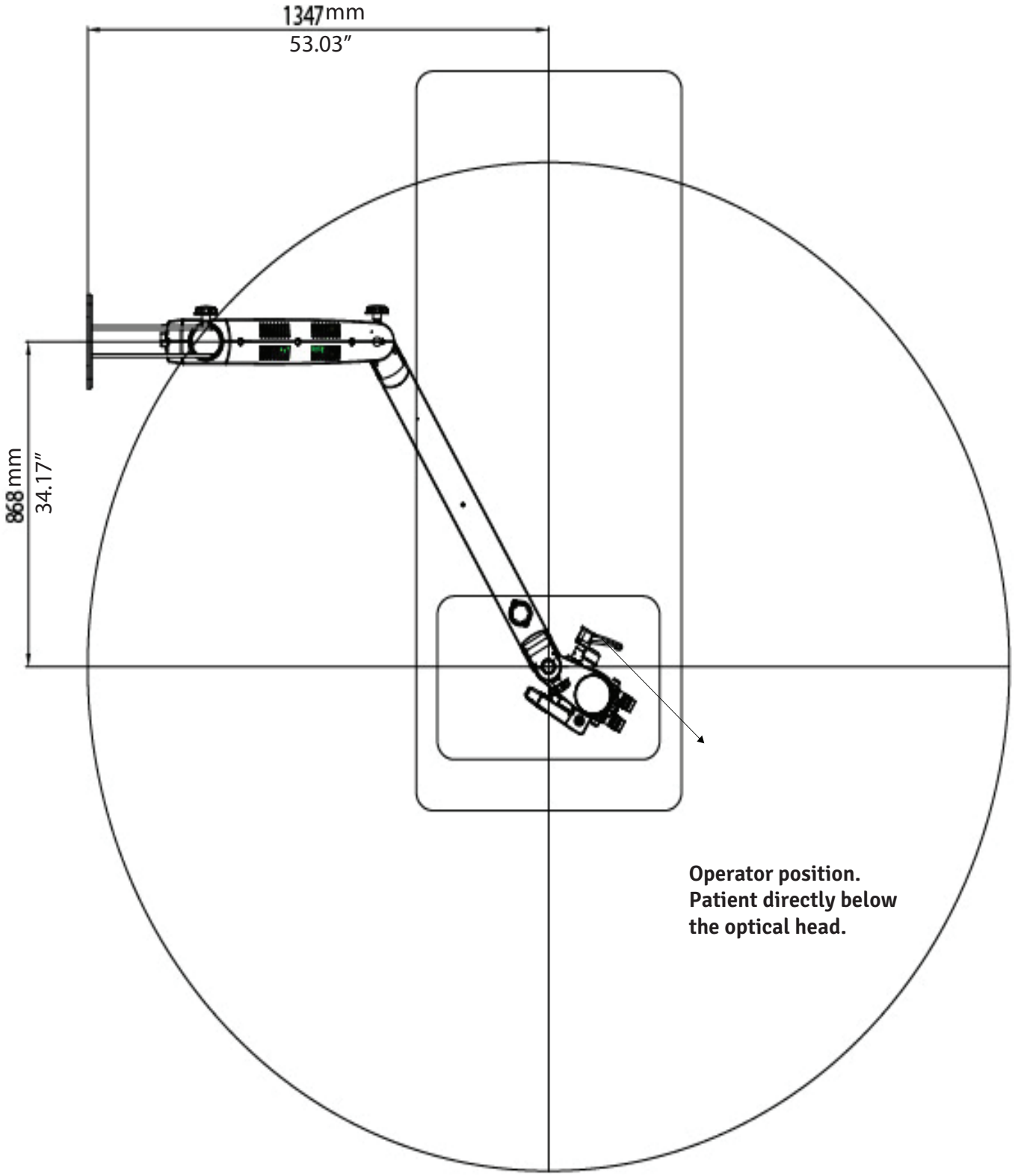


Figure 19

INSTALLATION REFERENCES (WALL MOUNT)

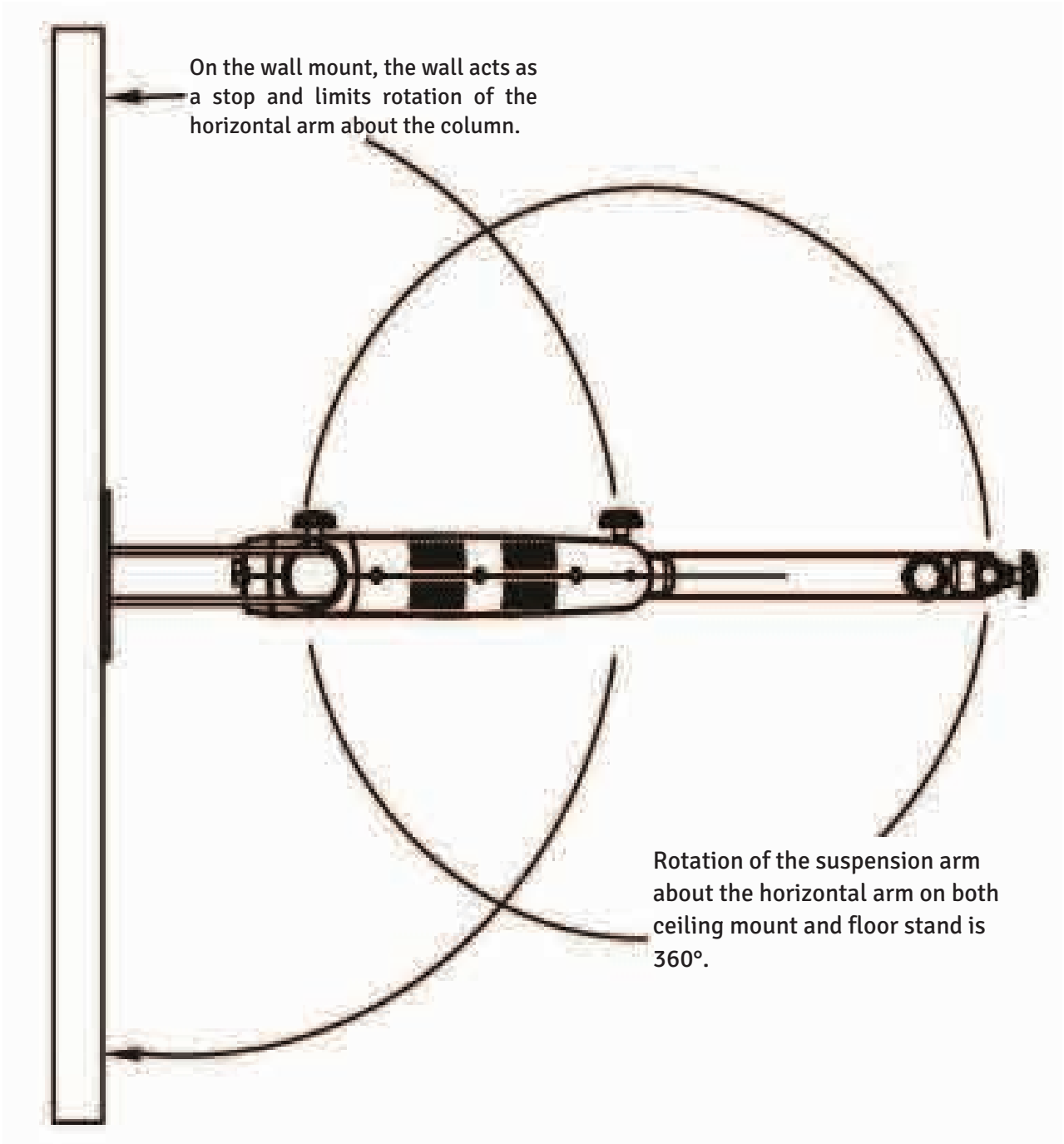


Figure 20

INSTALLATION REFERENCES (WALL MOUNT)

Magna wall mount with short arm

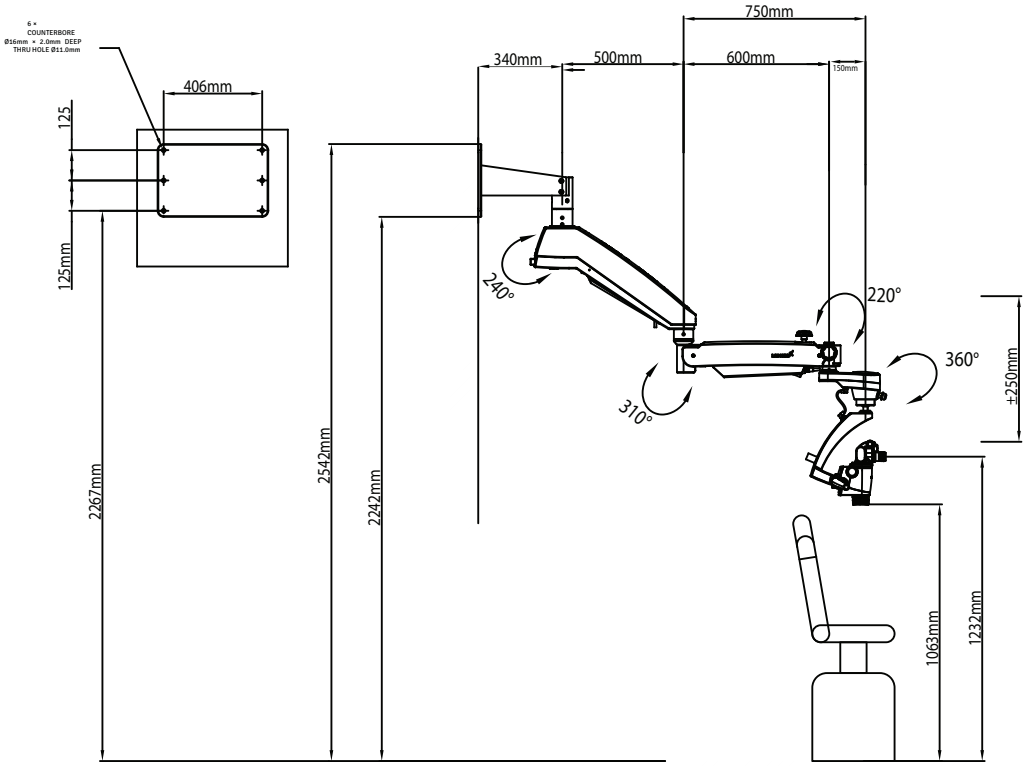


Figure 21

Magna wall mount with long arm

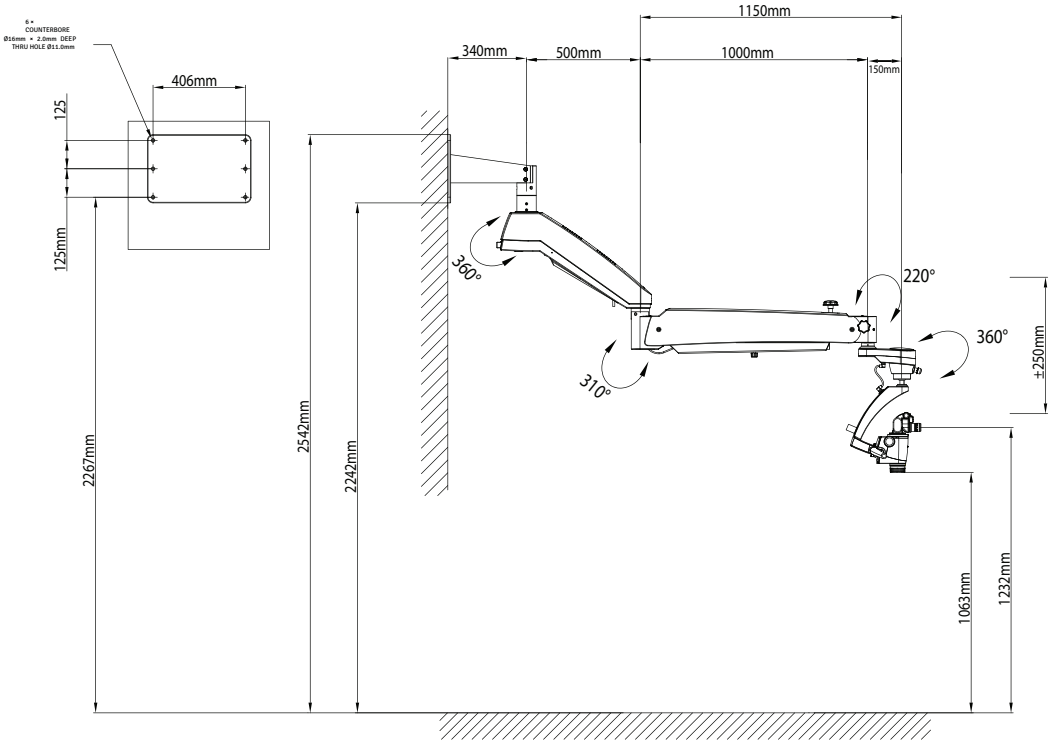


Figure 22

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: choose the height for the ordered configuration from Figure 21 or 22

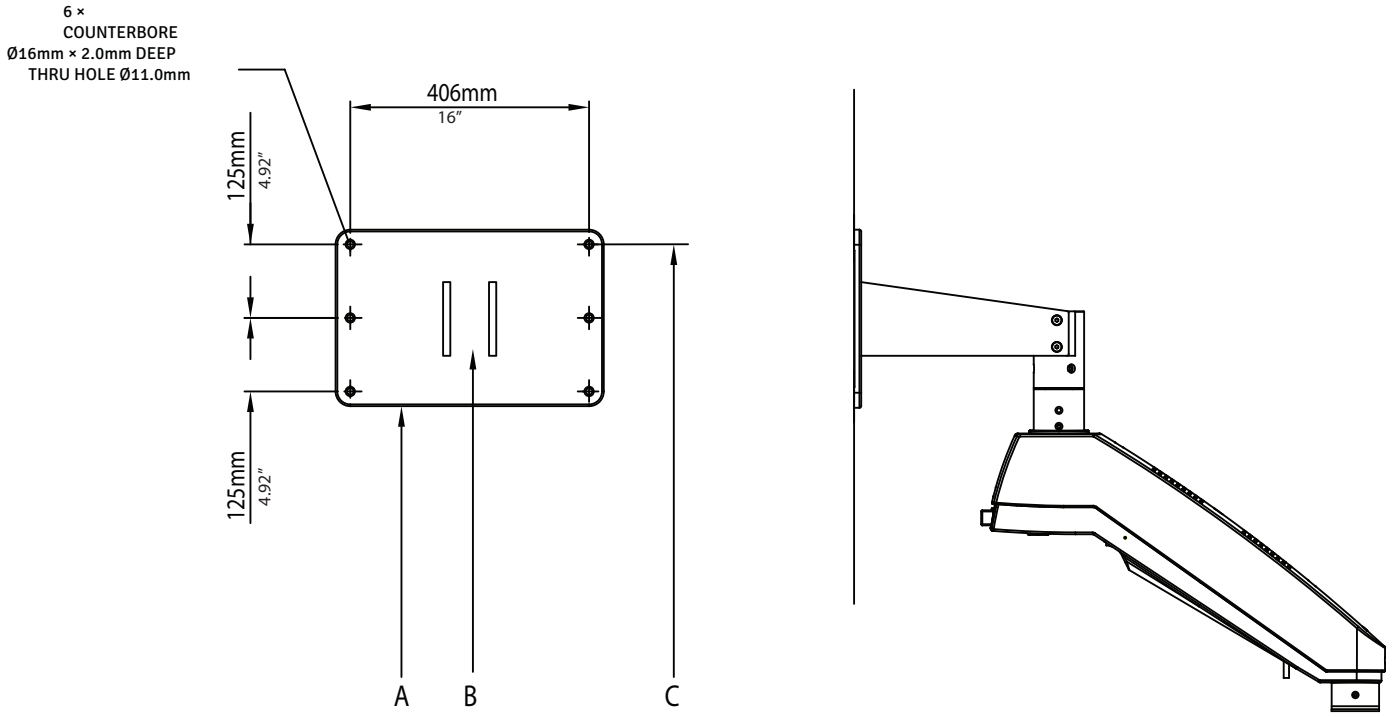


Figure 23

7. WALL MOUNT INSTALLATION

WALL MOUNT INSTALLATION

Before installing a LABOMED wall mount microscope, make sure there is enough space for the selected configuration. See Figures 21 and 22.

Measure the distance between stud centers. The LABOMED wall mount is designed to mount directly on a wall with wood studs at 406 mm (16") centers, or on a solid brick or concrete wall at least 229 mm (9") thick.

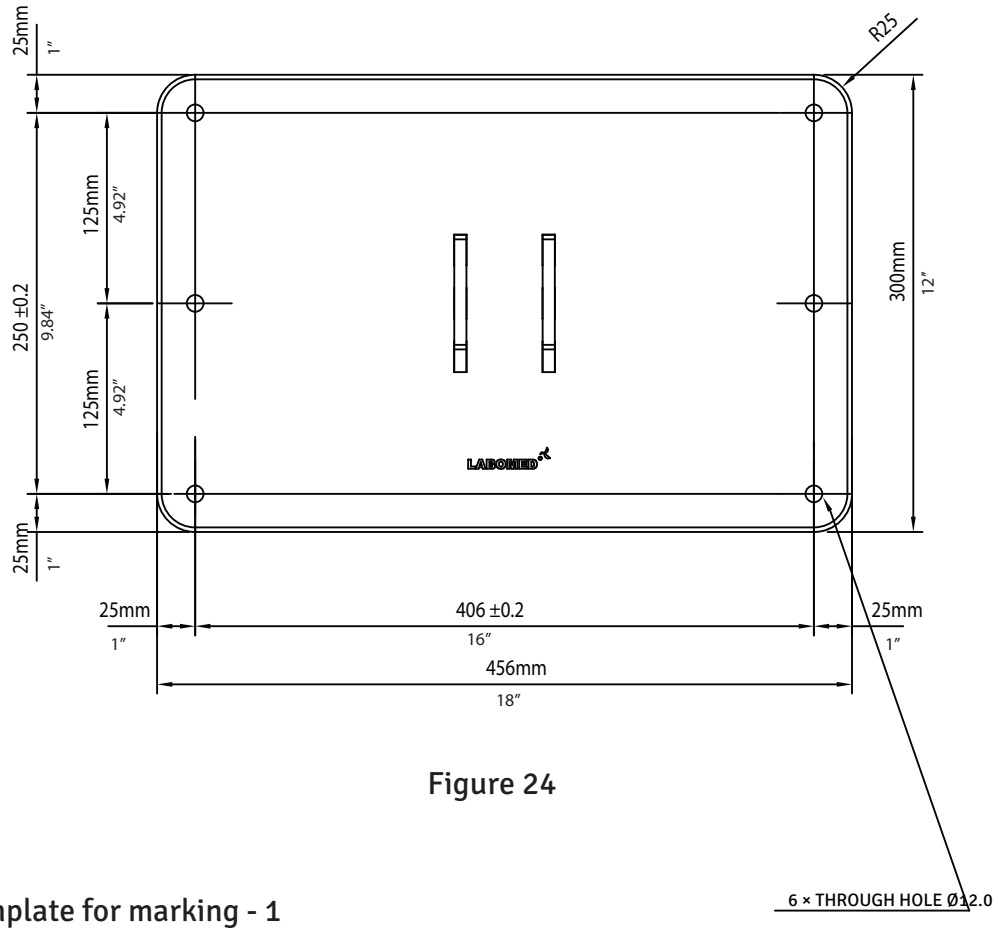


Figure 24

CONTENTS

1. Paper template for marking - 1
2. Wall mount assembly - 1
3. Hex 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 ON A WOODEN WALL

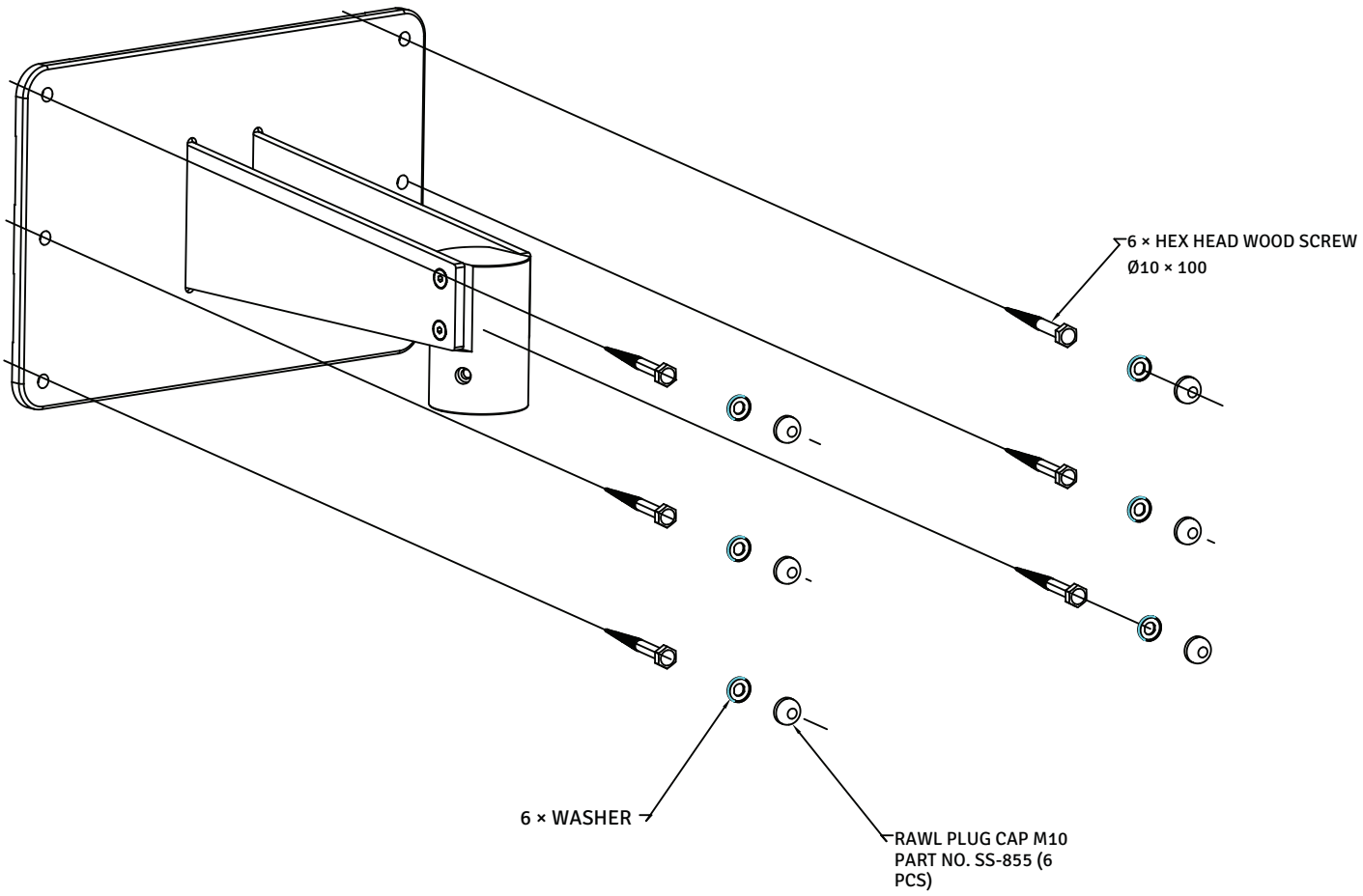


Figure 25

7B. WALL MOUNT INSTALLATION ON A SOLID BRICK WALL

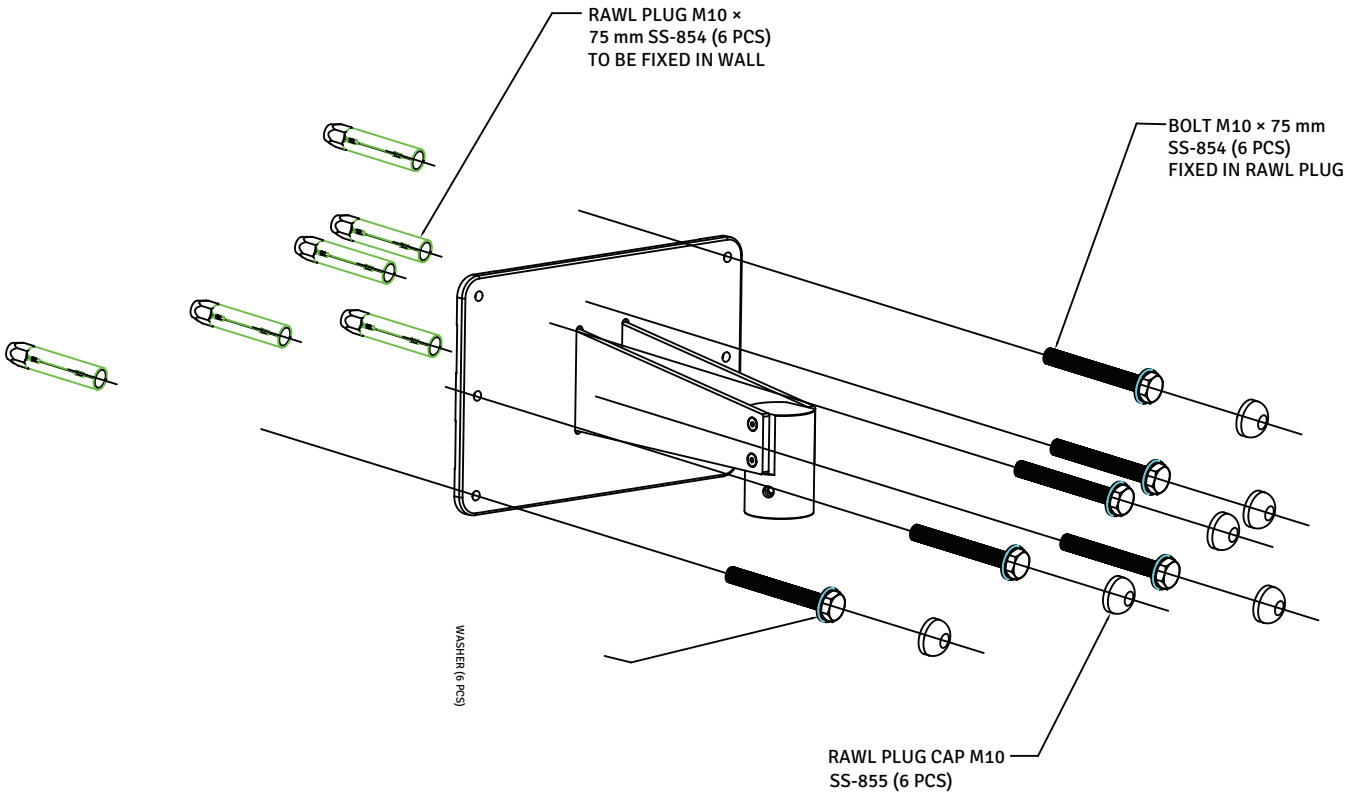


Figure 26

8. WALL MOUNT INSTALLATION PROCEDURE

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

To secure the wall mount system to wooden studs at 16" (406 mm) centers, use 3/8" × 4" hex head lag screws.

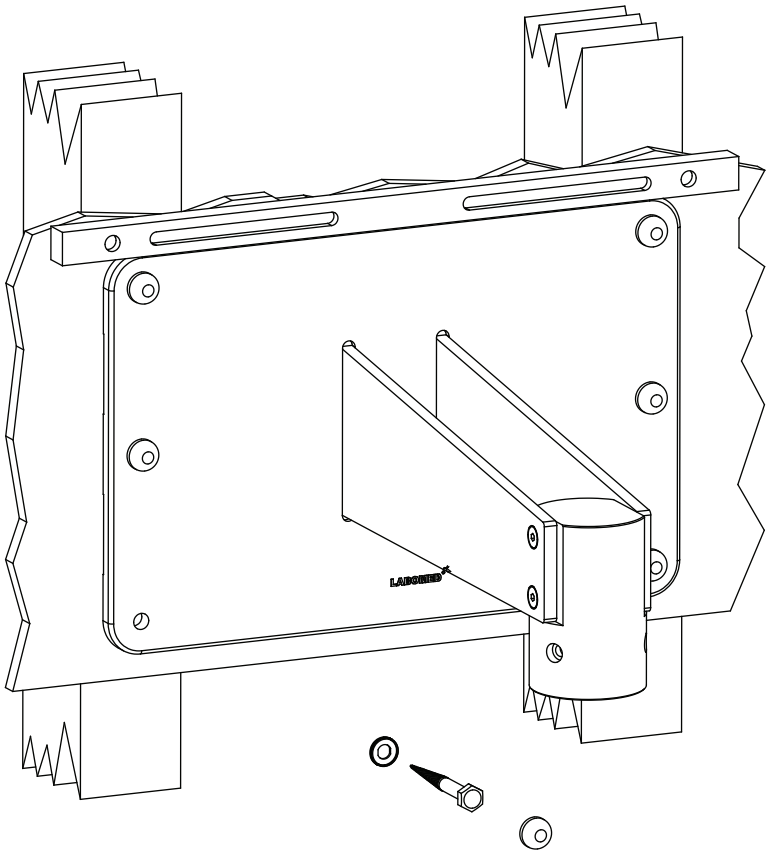


Figure 27

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

8A.1. LEVELING THE WALL MOUNT PLATE ASSEMBLY

After installation, the wall mount (6137100-806) must be level both horizontally and vertically. Leveling prevents the microscope system from drifting from side to side when used at full extension.

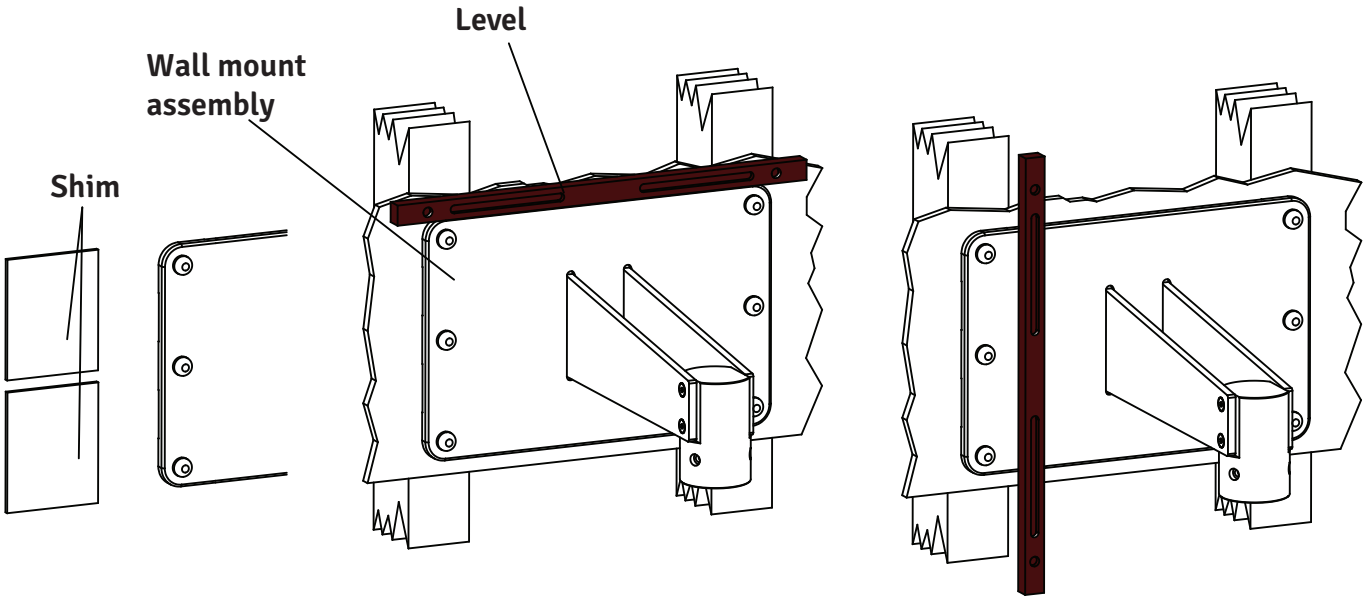


Figure 28

1. Slightly tighten the bolts on the top side, leaving the bottom bolts slightly loose.
2. Place a level across the top of the back plate to check horizontal alignment. See Figure 28.
3. Use a 17 mm socket and ratchet to slightly loosen the 3/8" × 4" hex head lag screws in the corners of the back plate.
4. Adjust the back plate until it is level, then tighten the three bottom lag screws, leaving the top lag screws slightly loose.
5. Place a level vertically along the face of the wall mount, on both sides, to make sure it is perpendicular to the floor. See the 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 (see the figure above). Check with the level and tighten the lag screws once the mount is level.
7. Check the other side, insert shims as needed, then tighten the lag screws.
8. When the wall mount is level both horizontally and vertically, securely tighten all six lag screws before installing the microscope.
9. Leveling and installing the wall mount are the customer's responsibility. A LABOMED representative will then complete the microscope installation.

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

To secure this wall mount to a solid brick wall, use the six (6) M10 × 75 mm RAWL anchor bolts provided. See the figure below.

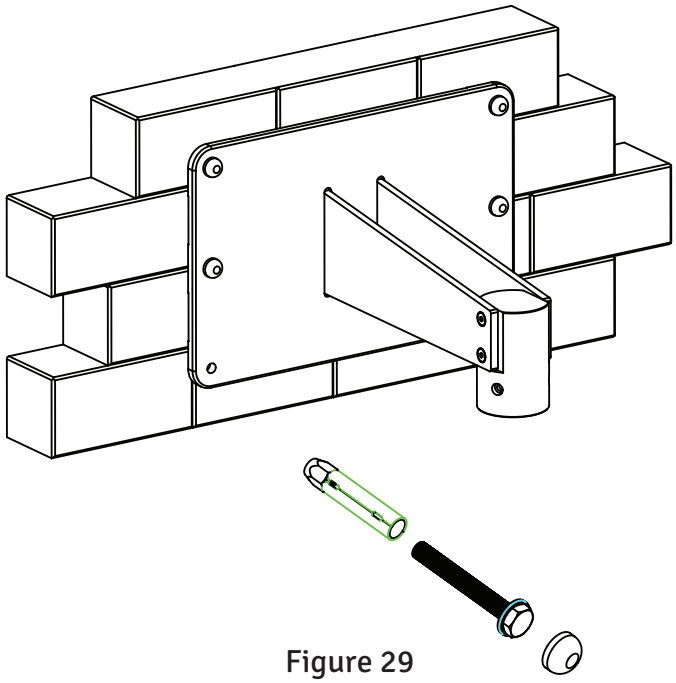


Figure 29

1. Determine where on the wall the microscope will be mounted.
2. Tape the paper template to the wall. Mark the six (6) holes, making sure the template is straight.
3. Using a 16 mm masonry drill bit, drill six (6) 16 mm holes, at least 75 mm deep, at the marked positions.
4. Use the 10 mm × 75 mm RAWL anchor bolts.
5. Place the RAWL bolts through the holes and carefully insert them into the wall.
6. Remove the threaded bolt.
7. Position the wall mount against the wall. Place a flat washer under the head of each bolt and thread the six (6) RAWL bolts into the wall.
8. Using a 17 mm socket and ratchet, tighten the six (6) RAWL bolts to secure the wall mount, making sure its top edge and front face are level.
9. Leveling and installing the wall mount are the customer's responsibility. A LABOMED representative will then complete the microscope installation.

NOTICE: Shims and shim materials are supplied by the customer, not by LABOMED. Many shim materials are available commercially; no specific type or brand is implied.

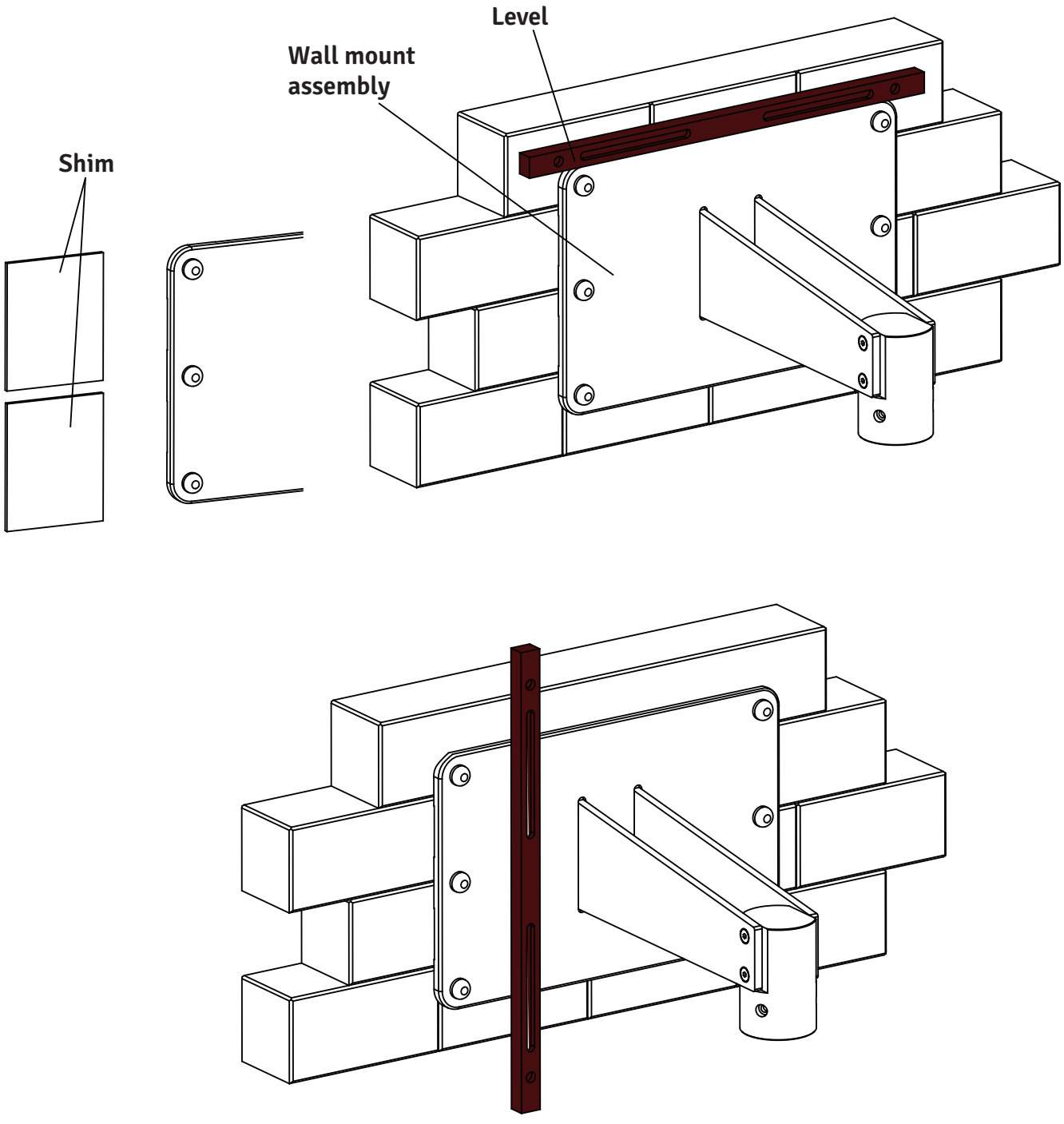


Figure 30

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

1. Slightly tighten the bolts on the top side, leaving the bottom bolts slightly loose.
2. Place a level across the top of the back plate to check horizontal alignment. See Figure 30.
3. Use a 17 mm socket and ratchet to slightly loosen the six (6) toggle bolts in the corners of the back plate.
4. Adjust the wall mount until it is level, then tighten the three bottom RAWL bolts, leaving the top toggle bolts slightly loose.
5. Place a level vertically along the face of the back plate, on both sides, to make sure 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, insert shims as needed, 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 the microscope.

8B.2. INSTALLING THE HORIZONTAL ARM ASSEMBLY

1. Open the microscope arm box and remove the arm.
2. Unscrew the threaded plug from the wall mount shaft as shown in Figure 30.
3. Assemble the arm on the wall mount shaft (see Figure 3) and reinstall the threaded plug.
4. Complete the installation as shown in Figure 1, 2, 3 or 4, according to the ordered configuration.

For further installation and use of the microscope, see Section 10 onward.

9. CONSTRUCTION REQUIREMENTS (CEILING/WALL MOUNT)

1. Install the Magna ceiling or wall mount exactly as described in this manual.
2. The construction specialist must confirm in writing that the applicable regional and local codes and regulations have been met and that the points below have been observed. The customer must keep this confirmation with the ceiling mount records, and must enclose a copy with those records.
3. The ceiling on which the mount is installed 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 it. The ceiling should preferably be made of concrete at least 8 inches thick.
4. The master plate should be installed during construction.
5. A minimum edge distance of 16" is required on all sides.
6. The ceiling plate must be aligned parallel (max. deviation ±1°).

Consider the following when calculating the effective strength:
- The bolt or anchor manufacturer's specifications.
- The quality of the structural ceiling, e.g. the strength and thickness of the concrete.
- The spacing of the anchor holes and their weakening effect on the ceiling.

NOTE:
If an existing ceiling mount is replaced, never reuse the old anchors. Drill new anchor holes. When calculating the effective strength of the new anchors, account for the weakening effect of the old holes in the ceiling. Based on the above, the person responsible for the building must decide on, and take responsibility for, the most suitable anchoring method.

The weight of the mount, including the surgical microscope, is as follows:
- Ceiling mount, normal (see page 12): approx. 30 kg
- Ceiling mount, heavy duty (see page 12): approx. 55 kg
- Surgical microscope (swivel arm and suspension arm): approx. 20 kg
- Microscope carrier: approx. 12 kg
- Total Magna weight (normal ceiling mount): approx. 62 kg
- Total Magna weight (heavy-duty ceiling mount): approx. 87 kg

Control and Power Supply of the System
Power line: 3 × 1.5 mm² Fuse: 4.0 A
Power consumption: 200 W

NOTE:
A socket with a 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 measures in the building to include the instrument in the protective potential-equalization system.

10. WARNINGS AND CAUTIONS

LABOMED is not responsible for the safety and reliability of this instrument when:
- Assembly, disassembly, repair or modification is carried out 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 MUST BE THOROUGHLY TRAINED IN THE APPROPRIATE MEDICAL PROCEDURES. THEY MUST ALSO READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE PERFORMING ANY PROCEDURE, AND READ AND UNDERSTAND THE INSTRUCTIONS FOR ANY OTHER EQUIPMENT USED WITH THIS MICROSCOPE (E.G., ELECTROSURGICAL GENERATORS). FAILURE TO DO SO MAY RESULT IN INJURY TO THE PATIENT AND/OR DAMAGE TO THE MICROSCOPE.

WARNING: USE THIS INSTRUMENT IN STRICT ACCORDANCE WITH THE INSTRUCTIONS IN THIS USER MANUAL. THE SAFETY OF THE OPERATOR AND THE PERFORMANCE OF THE INSTRUMENT CANNOT BE GUARANTEED IF IT IS USED IN A MANNER NOT SPECIFIED BY LABOMED.

WARNING: DO NOT REPAIR OR SERVICE THIS INSTRUMENT WITHOUT AUTHORIZATION FROM LABOMED. ANY REPAIR OR SERVICE MUST BE PERFORMED BY EXPERIENCED PERSONNEL 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 CARRIED OUT TO ENSURE ITS CONTINUED SAFE USE.

WARNING: TO AVOID THE RISK OF ELECTRIC SHOCK, CONNECT THIS EQUIPMENT ONLY TO A SUPPLY MAINS WITH PROTECTIVE EARTH; OTHERWISE, DAMAGE TO THE INSTRUMENT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: MAKE SURE THE VOLTAGE APPLIED TO THE UNIT MATCHES THE VOLTAGE ON THE DATA PLATE; OTHERWISE, DAMAGE TO THE UNIT MAY OCCUR.

WARNING: WHERE THE SUPPLY VOLTAGE FLUCTUATES, A CONSTANT-VOLTAGE STABILIZER IS RECOMMENDED FOR SAFE AND EFFICIENT USE OF THE DEVICE.

WARNING: THIS INSTRUMENT MUST BE PLUGGED INTO A GROUNDED (EARTHED) OUTLET. DO NOT REMOVE OR DEFEAT THE EARTH CONNECTION ON THE POWER INPUT CONNECTOR OR ON THE POWER CORD. DAMAGE TO IT MAY CAUSE INJURY TO THE OPERATOR OR PATIENT.

WARNING: DO NOT USE THE EQUIPMENT OR SYSTEM ADJACENT TO OR STACKED WITH OTHER EQUIPMENT. IF ADJACENT OR STACKED USE IS NECESSARY, OBSERVE THE EQUIPMENT TO VERIFY NORMAL OPERATION IN THAT CONFIGURATION.

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

WARNING: LED RADIATION. DO NOT STARE DIRECTLY INTO THE BEAM WHEN THE MICROSCOPE IS SWITCHED ON. THE INSTRUMENT IS CLASSIFIED IN RISK GROUP 2 PER IEC 62471 (BLUE-LIGHT HAZARD).

WARNING: USING ACCESSORIES OR CABLES OTHER THAN THOSE SPECIFIED BY LABOMED, OR UNAUTHORIZED REPLACEMENT PARTS FOR 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 CONTAINS ELECTROSTATIC-SENSITIVE DEVICES (ESD) THAT MAY BE DAMAGED BY STATIC CHARGES FROM 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 ELECTRICAL EQUIPMENT NEEDS SPECIAL PRECAUTIONS REGARDING ELECTROMAGNETIC COMPATIBILITY (EMC) AND MUST BE INSTALLED AND SERVICED ACCORDING TO THE EMC INFORMATION IN THE ACCOMPANYING DOCUMENTS.

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

CAUTION: DO NOT USE THIS INSTRUMENT NEAR HIGH-FREQUENCY SURGICAL EQUIPMENT.

CAUTION: DO NOT CONNECT ANY EQUIPMENT TO THE DEVICE OTHER THAN EQUIPMENT INTENDED FOR USE WITH IT.

CAUTION: DO NOT USE AN ADAPTER THAT CONVERTS THE THREE-PRONG AC PLUG TO A TWO-PRONG PLUG. THE MICROSCOPE'S POWER SUPPLY WILL NOT BE PROPERLY GROUNDED, AND ELECTRIC SHOCK MAY RESULT.

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

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

CAUTION: DO NOT REMOVE FERRITE BEADS FROM CABLES.

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

CAUTION: DO NOT OPERATE THE DEVICE WITHOUT THE SILICONE COVERS ON THE HANDLES AND ALL KNOBS.

11. EXPLANATION OF SYMBOLS



Warning: Observe all warning labels and notes. If a label is missing from your instrument or has become illegible, contact the manufacturer for replacement labels.



Caution label: Observe all cautions to avoid unwanted situations with the instrument.



Brightness control: Once the illumination is switched on, the user can adjust brightness continuously by turning the knob.



Consult the accompanying documents.



Compliance with the Medical Device Regulation (EU) 2017/745 (MDR).



Suspension arm locking.



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



Keep dry: keep the transport package away from rain.



Manufacturer



Fragile: the contents of the transport package are fragile; handle with care.



Electromagnetic interference can occur near devices bearing this symbol.



Alternating current.



Recycling of packaging materials.



Tension adjustment.



Separate disposal of waste electrical equipment.



MR unsafe (magnetic resonance).



Do not overbalance by more than 5°.



ABA (Automatic 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 protection**

12. STANDARDS AND DIRECTIVES

The instrument described in this user manual is 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 US FDA 21 CFR 820 quality management systems, approved by UL.
- ISO 14971: Application of risk management to medical devices.

DIRECTIVES / REGULATIONS:

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

CLASSIFICATIONS

- For Europe, under 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.
- Observe all applicable accident prevention regulations.
- IP code: IP 20

13. UNPACKING

The device is delivered in pre-assembled modules, together with one installation kit and one user manual.

When unpacking the device, check for the following:

1. Mobile cross base in two parts with braked caster wheels, 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 on the type of mounting (floor or wall/ceiling).

4. Automatic Balancing Arm (ABA) with magnification changer assembly and NuVar CMO with variable focal length.

5. Ergo observation head, tiltable 0–210°.

6. DBSi (double beam splitter, inclined), double iris diaphragm, RotoPlate.

7. DSLR adapter with mount for Sony, 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 marking positions (ceiling and wall mounts only)

14. INSTALLATION OF THE CROSS BASE (MOBILE STAND)

1. Open the box containing the cross base bottom, as shown in Fig. 1.



Fig. 1

2. Take out the cross base bottom and place it on the floor, as shown in Fig. 2.

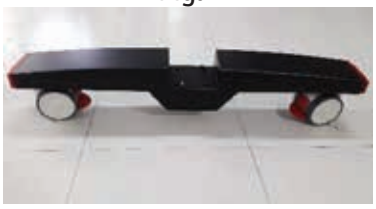


Fig. 2

3. Open the box containing the cross base top, as shown in Fig. 3.



Fig. 3

4. Take out the cross base top and place it on the floor, as shown in Fig. 4.



Fig. 4

5. Referring to Fig. 5, place the cross base top on the cross base bottom, aligning the guide pins with the guide holes, and tighten the 4 screws provided.



Fig. 5

6. The assembled cross base looks as shown in Fig. 6.



Fig. 6

14.1 INSTALLATION OF THE MICROSCOPE (MOBILE STAND)

1. Open the microscope box and take out the column. Mount the column on the shaft in the base, aligning the corresponding holes in the column (A) and shaft (B). Secure it with three (3) M6 × 16 mm Allen screws (C) using a 4 mm Allen key, as shown in Fig. 7.

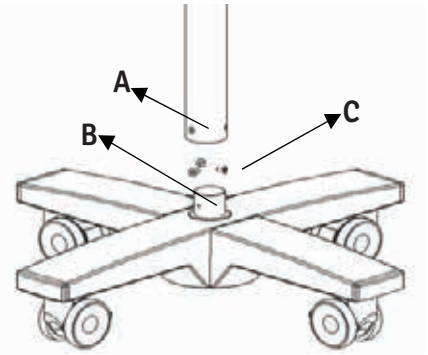


Fig. 7

2. Take the arm assembly out of the same box and proceed as follows: a. Make sure the swivel arm lock knob (D) is loose. b. Mount the arm assembly on shaft (F). c. Align the three holes (E) with the tapped holes on shaft (F). d. Using a 4 mm Allen wrench, tighten the two M6 × 16 mm Allen screws (G).

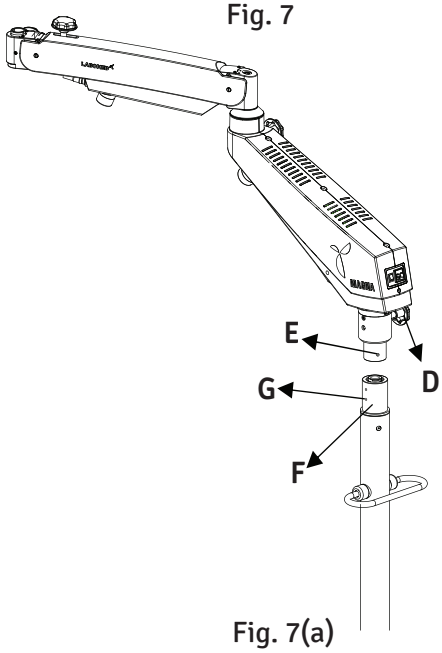


Fig. 7(a)

3. Open the next box and remove the carrier assembly from its packaging, as shown in Fig. 8. a. Insert the Automatic Balancing Arm (ABA) shaft (H) into the suspension arm, as shown in Fig. 8.

b. Lock the 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 cannot detach if knob (I) is accidentally unscrewed.

d. Make sure the magnification changer handles (M) have their silicone covers.

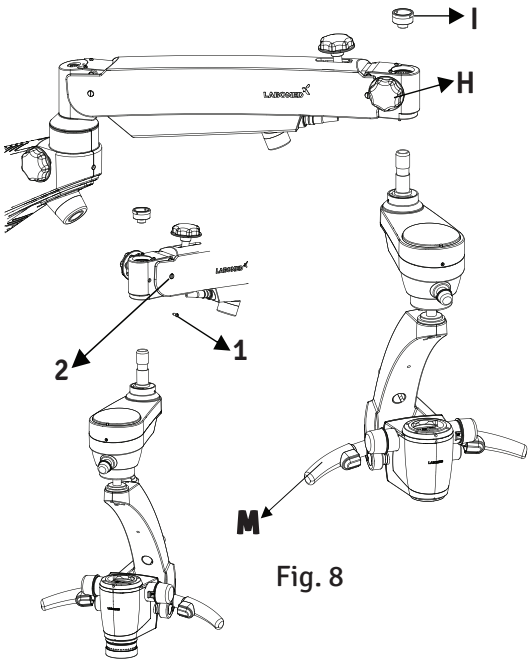


Fig. 8

INSTALLATION OF THE MICROSCOPE (MOBILE STAND)

4. Install the standard accessories on the carrier assembly as follows:

a. With a 2 mm Allen key, loosen the M4 grub screw (3) and fit the double iris diaphragm (J) on the magnification changer, then retighten the M4 grub screw.
b. Loosen the M4 grub screw (4) on the double iris diaphragm with a 2 mm Allen key, fit the DBSi (double beam splitter, inclined) (K) and retighten the M4 grub screw.
c. Remove the end cap from the DBSi by turning ring (5) counterclockwise, fit the DSLR camera adapter (L) by matching the slot, and turn ring (5) clockwise to tighten it. Loosen knob (6) on the DSLR adapter and fit the supplied mount (Canon, Nikon or Sony) (L.1). Retighten knob (6) to secure the mount.
d. Loosen the M4 grub screw in the DBSi with a 2 mm Allen key and fit the RotoPlate (M). Retighten the M4 grub screw.
e. Loosen the M4 grub screw on the RotoPlate with a 2 mm Allen key, fit the Ergo head (tiltable 0°–210°) (N) and retighten the M4 grub screw.
f. Set both eyepieces to **(O)** diopter on the Ergo head.

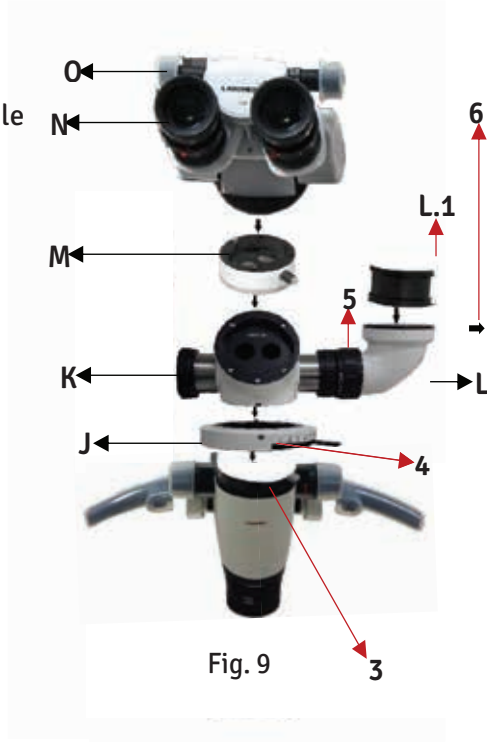


Fig. 9

Note: Make sure the accessories are fitted correctly for the best visual results.

5. Mount the light guide as follows:

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 the cable cover. ⚠ The fiber cable must index into position when inserted into the fiber-optic mount.

b. A wire mesh for cable routing is permanently fixed to the carrier arm at point (P).
c. With one hand, fold and gather the wire mesh at point (P); with the other hand, insert the fiber light guide into the mesh.
d. Release the wire mesh and fasten its other end to the cable cover at point (H), as shown in Fig. 14.
e. Make sure the light guide runs through the wire mesh into the carrier system so that the microscope is unobstructed and can move through its entire range without stretching, kinking or twisting the light guide.



Fig. 10

14.2 ELECTRICAL CONNECTIONS

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

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

Note: The power supply has a universal input of 100–240 V AC, 50/60 Hz. To connect the power supply, follow the instructions on the product label (3) at the bottom of the arm, as shown in Fig. 11.

1. REPLACING THE ILLUMINATION SOURCE

a. Remove the swivel arm covers by unscrewing the top and bottom screws, as shown in Fig. 12.
b. Disconnect the power supply connections, replace the illumination assembly (A) in Fig. 12 with a new assembly and reconnect.
c. Refit the arm covers.

2. REPLACING THE FUSE

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

b. Open the fuse compartment (C) with a flat-head screwdriver. Two fuses are provided: one live fuse and one spare.
c. Replace the blown fuse with the spare fuse and close the fuse compartment.

Note: For the correct fuse rating, see the label shown in Fig. 11.

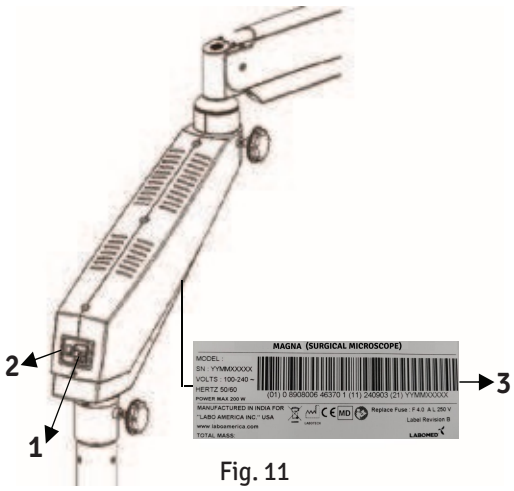


Fig. 11

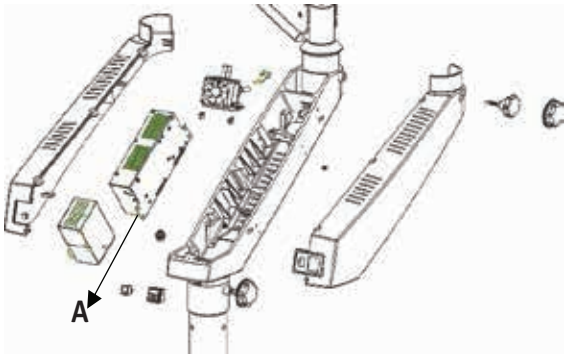


Fig. 12

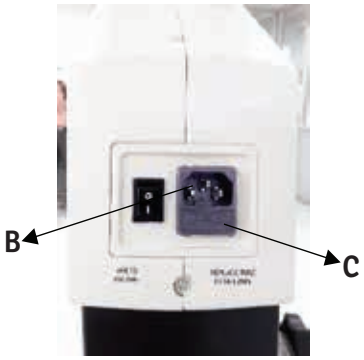


Fig. 13

ELECTRICAL CONNECTIONS

3. AUTOMATIC BALANCING ARM CONNECTIONS

a. Connect the 7-pin connector (D) to the 7-pin female inlet
(E) in the suspension arm to power the Automatic Balancing Arm (ABA), as shown in Fig. 14.

b. Take the power cable with 2-pin connectors at both ends, connect one end to the 2-pin inlet (F) on the ABA and the other end to the marked point on the ABA to power up the ABA system.

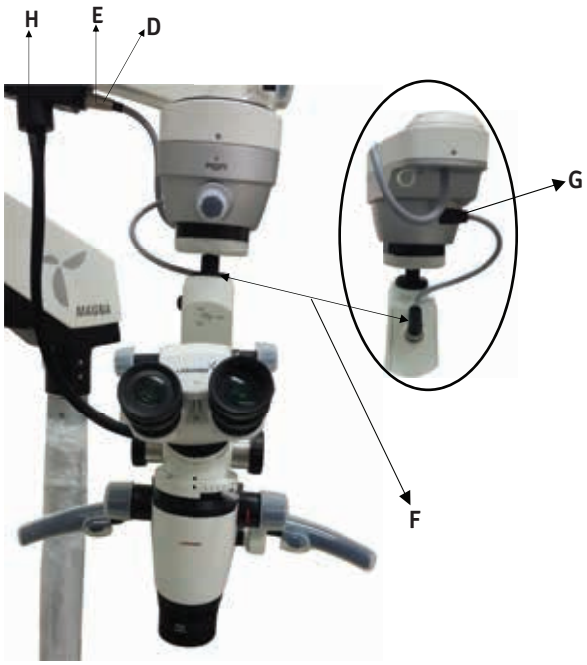
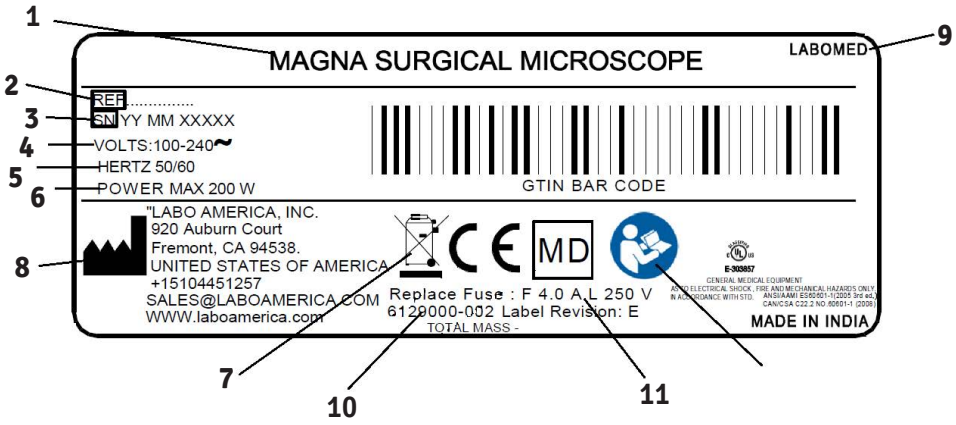


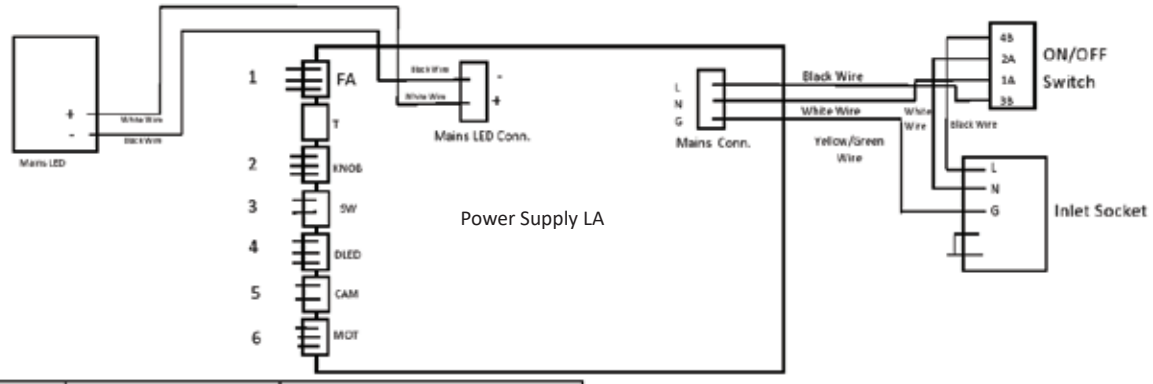
Fig. 14

4. LABEL DETAILS

1. Device name
2. Model no.
3. Serial no.
4. Input voltage
5. Frequency
6. Max. load
7. Separate disposal of waste electrical equipment
8. Manufacturer
9. Company trademark
10. Label control no.
11. Fuel rating
12. Consult the accompanying documents



14.3 WIRING 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 at the back of the swivel arm. In the ON position, a green LED (B) lights up and the cooling fan starts, as shown in Fig. 15.

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

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

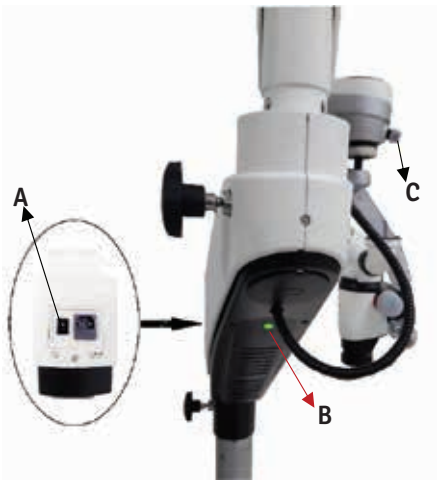


Fig. 15

2. LIGHT INTENSITY CONTROL KNOB

The light intensity control knob (D) is at the front of the Automatic Balancing Arm (ABA). Adjust the brightness of the field of view as desired with this knob, as shown in Fig. 15(a).

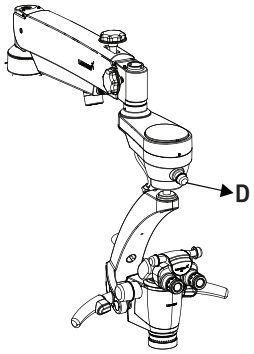


Fig. 15(a)

3. AUTOMATIC BALANCING ARM (ABA) CONTROLS

a. The ABA is articulated with two clutch release buttons on the left (E) and right (F) sides of the carrier arm, as shown in Fig. 16.

b. Pressing and holding a clutch button lets you move the ABA into any desired position. Releasing the clutch button locks the ABA in the desired position.

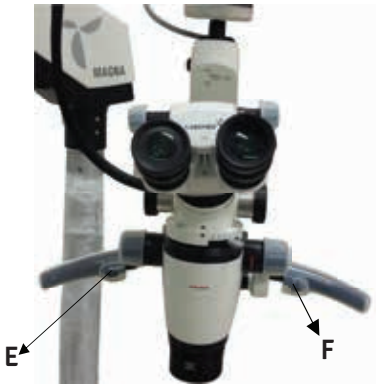


Fig. 16

4. FILTER CHANGE KNOB

See Fig. 16(a).
The filter change lever is at the back of the magnification changer housing. Use lever H to change the filter position.

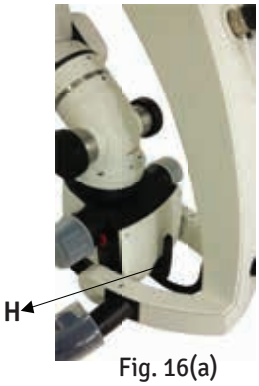


Fig. 16(a)

CONTROL ELEMENTS

4. LOCKING KNOBS

a. Swivel Arm Locking Knob

Knob (G) locks the swivel arm in the desired position when turned clockwise, as shown in Fig. 17.

b. Suspension Arm Locking Knob

Knob (H) locks the suspension arm in the desired position when turned clockwise, as shown in Fig. 17.

c. Suspension Up/Down Movement Locking Knob

Knob (I) locks the up/down movement of the suspension arm at the desired height when turned clockwise, as shown in Fig. 17.

d. Automatic Balancing Arm (ABA) Carrier Locking Knob

Knob (J) locks the rotation of the Automatic Balancing Arm (ABA) carrier in the desired position when turned clockwise, as shown in Fig. 17.

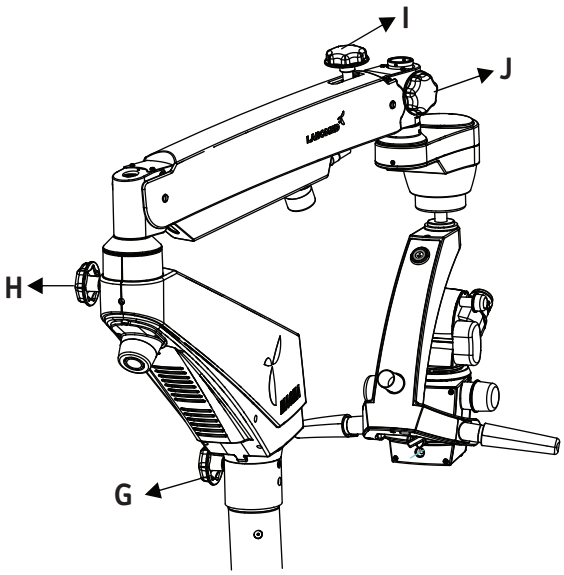


Fig. 17

5. BRAKES

Lock the stand against unwanted movement by pressing down all four brakes (K) on the caster wheels; lift the brakes to release them, as shown in Fig. 18.

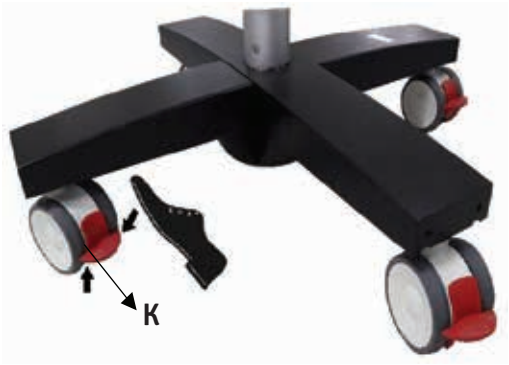


Fig. 18

6. LED FEATURES

Single-chip white LED with over 2250 lumens.
Large monolithic chip with a uniform 9 mm emitting area.
Lumen maintenance above 70% after 60,000 hours. Current-driven LED with variable drive current from less than 1 A up to 13.5 A.
Environmentally friendly, RoHS compliant.
Typical spectrum: 400–700 nm.

15. USING THE MICROSCOPE

WARNING: THE INSTRUMENT IS UNSAFE FOR MRI ENVIRONMENTS.

CAUTION:

After installation, the ABA system may feel stuck after a long period without use in transit or storage. This temporary, mild locking is caused by the properties of the ABA braking material. To release it, switch on the microscope, press the push button with one hand and push the ABA system with the other to free the temporary lock. Repeat 7–8 times; the ABA system will then work normally.

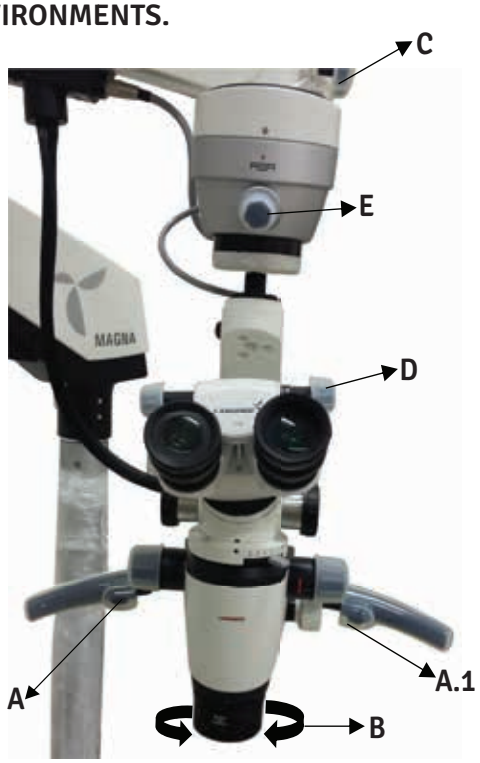


Fig. 19

SETTING UP THE MICROSCOPE:

a. For stability, lock all four brakes on the base caster wheels.
b. Optimize the ABA position using the clutch controls (A) and (A.1) to obtain the correct field of view, as shown in Fig. 19.
c. Set the desired working distance by turning ring (B) on the variable objective. The same ring is used for fine focusing, as shown in Fig. 19.
d. After focusing, lock the swivel arm, suspension arm and ABA movements with the lock knobs (C) in Fig. 19.
e. Adjust the interpupillary distance (IPD) of the eyepieces with the IPD adjustment knob (D) in Fig. 19.

f. Illumination is controlled with the intensity control knob (E). Turn it clockwise or counterclockwise to reach the desired illumination level, as shown in Fig. 19.

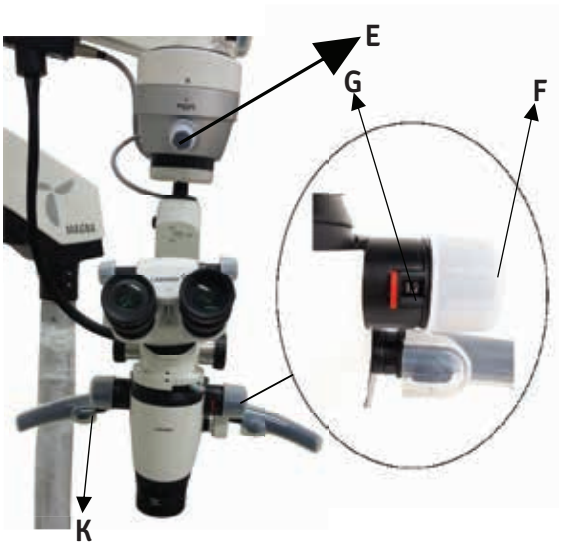


Fig. 20

SETTING THE MAGNIFICATION:

a. Use the knobs (F) on the magnification changer (Fig. 20) to select the desired magnification.

b. Turn them clockwise to increase magnification and counterclockwise to decrease it.

USING THE MICROSCOPE

CONVERTING FROM CONTINUOUS ZOOM TO STEP MAGNIFICATION:

a. See Fig. 20. Press the red click button (G) beside the magnification indicator to select 8-step magnification. Press the same button from the reverse side to return to continuous zoom.
b. Turn the fine-focus ring (A) in Fig. 21 to achieve fine focus.
c. See Fig. 19. Use the clutch buttons (A) on the left handle and (A.1) on the right handle to center the area of interest in the field of view.

Main microscope configuration:

The Magna comes with the following standard accessories:

a. NuVar variable objective, focal length 300–400 mm (standard).
b. 0°–210° tiltable Ergo binocular tube.
c. DBSi (double beam splitter, inclined).
d. Double iris diaphragm.
e. RotoPlate (0°–20° rotation).
f. DSLR adapter and mount for Canon, Nikon or Sony.

Standard configurations include 10x eyepieces (12.5x eyepieces are optional).

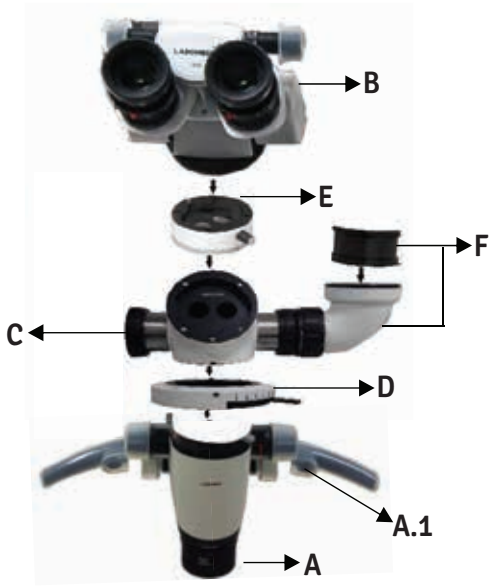


Fig. 21

16. USE OF ACCESSORIES

Model: Magna

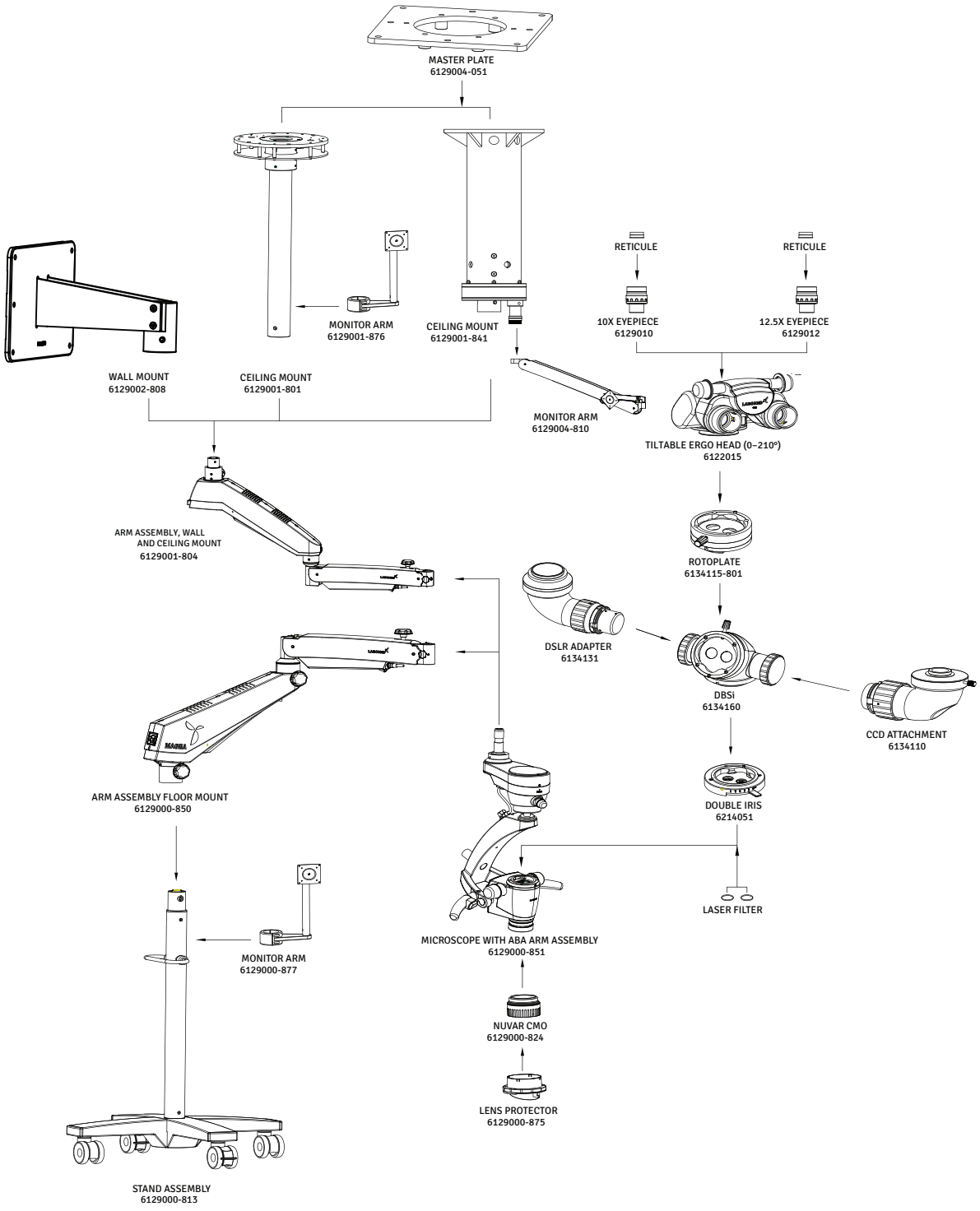


Fig. 22

USE OF ACCESSORIES

1. **RotoPlate:** The RotoPlate eliminates neck craning, making hard-to-see regions of the mouth comfortable to view from the 9 and 3 o'clock seated positions.

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

3. **Double iris attachment:** An adjustable diaphragm attachment fitted between the magnification changer and the observation head or DBSi. It reduces incoming light and increases depth of field, which is very helpful for photographic imaging.

The following adapters can be attached to the DBSi as required:
a. DSLR camera adapter for Nikon, Canon and Sony cameras.
b. CCD camera adapter for Mintron cameras.
c. Adapter for Sony Handycam.
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 natural and forced air circulation to cool the electronic components. The instrument also has a built-in safety mechanism, the automatic thermal cut-off, which is triggered by thermistors when the LED temperature rises above 80 °C. The thermistor then limits the current to the circuit, and the LED blinks to indicate high temperature. Let the LED cool down before switching it on again.

18. TENSION ADJUSTMENT

If optional accessories are added to the microscope, adjust the suspension arm tension to compensate for the additional weight.

1. Tension adjustment for the floor stand

a. See Fig. 23. Insert an 8 mm Allen wrench into bolt (A). Turn it clockwise to increase the tension, or counterclockwise to decrease it, as required.

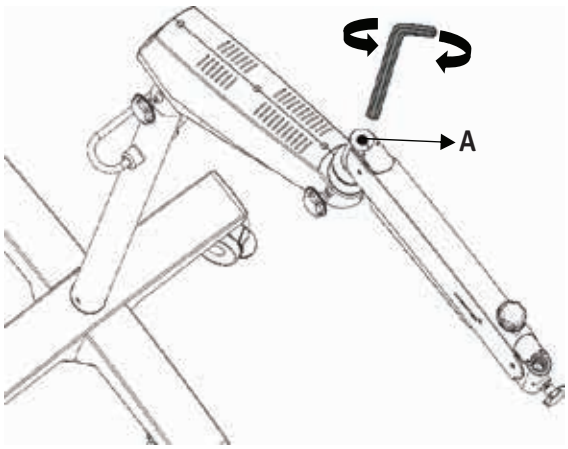


Fig. 23

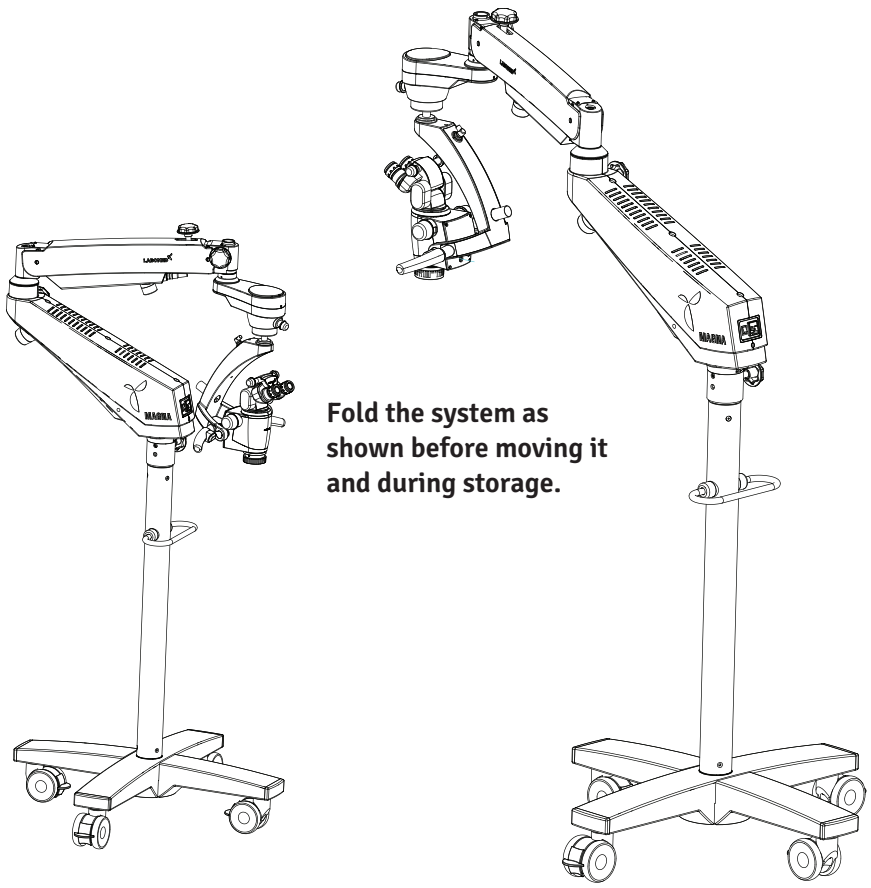
2. Tension adjustment for the ceiling/wall mount

a. See Fig. 24. Insert the 8 mm long-handled box wrench supplied with the microscope (LK-008 BS) into bolt (B). Turn it clockwise to increase the tension, or counterclockwise to decrease it, as required.



Fig. 24

19. MOVING AND STORING THE INSTRUMENT



Fold the system as shown before moving it and during storage.

Fig. 25

MOVING THE STAND

1. Switch off the unit at the power switch.

2. Disconnect the power cable.

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

4. Release the brakes.

5. Take care when passing through doorways to avoid collisions. Do not move the instrument over steps or cables, as the stand can topple. Take extreme care when moving the instrument on slopes. Do not park the instrument on a slope.

20. CARE AND MAINTENANCE

This instrument is a high-grade technological product and needs no special periodic maintenance if handled carefully. To ensure optimum performance and safe working order, however, check its safe function periodically as shown in the table below. We recommend having this check carried out by our service representative as part of regular maintenance. If a failure occurs that you cannot correct with the troubleshooting table, attach an "out of order" sign to the instrument and contact our service representative for service parts, circuit diagrams and other support.

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 free of dust when not in use, for example with a dust cover.
2. Remove dust with a rubber air blower and a soft brush.
3. Protect the microscope from moisture, fumes, acids and cosmetics. Do not store chemicals near the instrument.
4. Protect it from improper handling. Never install other devices or sockets, and never unscrew the optical system or mechanical parts unless this manual explicitly instructs you to.
5. Protect the microscope from oil and grease. Never oil or grease the guide surfaces or mechanical parts.
6. Remove coarse contamination with a damp disposable cloth.
7. Use the disinfectants listed in Section 21 (Cleaning and Disinfection) of this user manual.
8. Clean lenses and eyepieces with special optics cleaning cloths and pure alcohol.
9. Clean optical components with a lint-free cloth moistened with a little methanol or glass cleaner. Do not use ethanol or spirit.
10. **LABOMED MaxLite** coatings are fungus resistant. Cleaning as described above does not damage the coatings.
11. When cleaning and disinfection are carried out as described in Section 21, repeated cleaning and disinfection have no effect on the mechanical and optical parts. The paints and coatings are durable and last for life.

TROPICAL ENVIRONMENT / FUNGUS

LABOMED builds safety precautions into its manufacturing techniques and materials. Further preventive measures include:

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

OCCUPATIONAL SAFETY AND HEALTH PROTECTION

- Observe occupational safety and health protection for the persons who process contaminated products.
- Follow current hospital hygiene and infection-prevention regulations when preparing, cleaning and disinfecting the products.

WORKPLACE INSTRUCTIONS

- Remove surface contamination with a paper towel.

21. CLEANING AND DISINFECTION

THE FOLLOWING DISINFECTANTS ARE RECOMMENDED FOR CLEANING AND DISINFECTION

1. For cleaning and disinfecting the painted, powder-coated, anodized, plastic, screen-printed and bare metal external parts:
Use ordinary household bleach (sodium hypochlorite 5%) at a strength of 5000 ppm (10 parts water to 1 part bleach).

2. For cleaning optical surfaces:
Use 70% isopropyl alcohol.

PROCEDURE

- **Take a muslin cloth.**
- **Moisten it until it feels damp.**
- **Clean or disinfect the surface gently, without much hand pressure, drawing the cloth from one end to the other. Do not rub the parts.**

NOTE:

1. Wear a mask and gloves during cleaning and disinfection.
2. The muslin cloth must not be dripping wet, to prevent seepage and rusting of moving or bare parts.
3. Alcohol is flammable; use it as a surface disinfectant only in well-ventilated spaces.

22. AUTOCLAVING

The rubber caps, sleeves and grips supplied by LABOMED should be autoclaved with the following program:

▪Temperature:	134 °C
▪Time:	10 minutes
▪Instrument:	Standard autoclave

23. SCHEDULE OF AUTOCLAVABLE CAPS

Autoclavable caps

Lock knob covers for arm movement:
1. Knob cover, part no. 6129000-237
2. Knob cover, part no. 6129000-237
3. Knob cover, part no. 6129000-237
4. Knob cover, part no. 6129000-237

Illumination control knob:
5. Silicone cover, P/N 6122015-210

IPD (interpupillary distance) knob:
6. Silicone cover, P/N 6122015-210

Clutch handle knob (right side):
7. Silicone cover, P/N 6129000-233

Zoom knob:
8. Silicone cover, P/N 6129000-220

NuVar protective cover (complete kit):
9. P/N 6129000-875

NuVar protective cover with lens only:
10. P/N 6129000-876

Double iris knob cover:
11. P/N 6214051-203

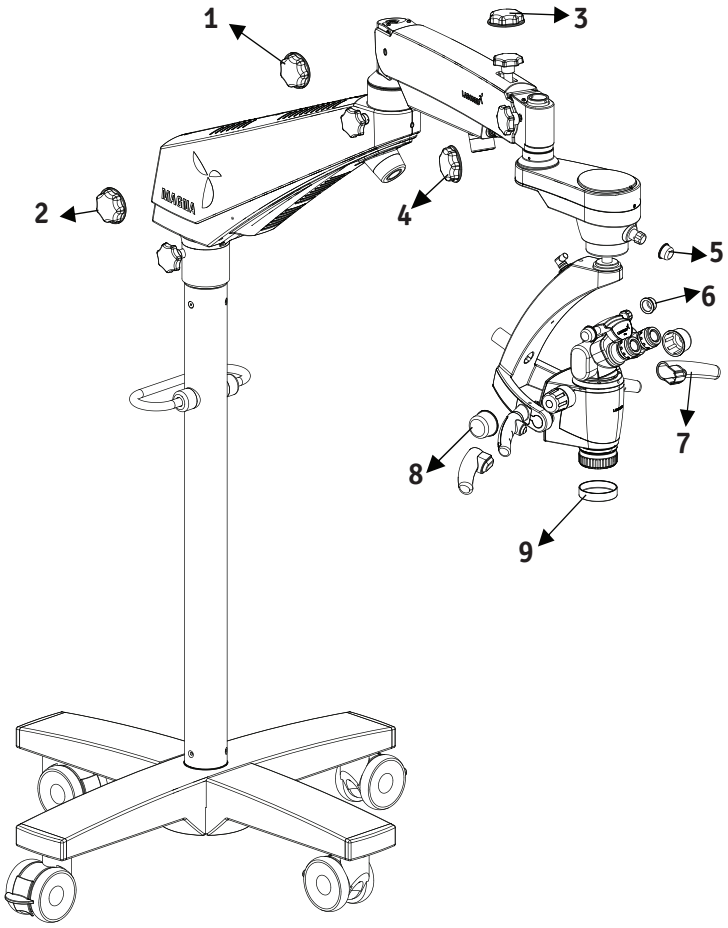


Fig. 26

24. AMBIENT REQUIREMENTS

For operation	Temperature Rel. humidity (non-condensing) Air pressure	+10 °C ... +40 °C 30%.....90% 700 hPa ... 1,060 hPa
For transport and storage	Temperature Rel. humidity (non-condensing) Air pressure	-10 °C ... +40 °C 30%.....90% 700 hPa ... 1,060 hPa

The device is subject to the conformity assessment procedure of Article 52(7), with technical documentation in accordance with Annexes II and III of Regulation (EU) 2017/745. These devices are Class I (without a measuring function and non-invasive) per Rule 1, Annex VIII of MDR 2017/745. The CE mark on the Magna indicates conformity with the legal requirements.

25. DISPOSAL

Dispose of the instrument in accordance with applicable local 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/18 mm lockable eyepieces, one with a resolution mark to assist diopter adjustment
5. Diopter adjustment	±7 D with diopter lock
6. Apochromatic magnification changer	1:6 Galilean zoom, convertible to an 8-step magnification changer
7. Zoom range	0.4 - 2.5x
8. Objective	**NuVar** system with variable focal length adjustment from 300 to 400 mm with fine focus. OPTIONAL: NuVar 20, 200–400 mm working distance
9. Light source	50 W LED
10. Input voltage	100 - 240V
11. Maximum power	200 W
12. Built-in filters	Yellow, green and polarizing
13. Vertical movement of arm	±250 mm, power-saving feature with light cut-off in park position
14. Microscope carrier	ABA (Automatic Balancing Arm) with electromagnetic release for easy, drift-free positioning
15. Mounting options	Floor stand, wall mount and ceiling mount

27. TROUBLESHOOTING TABLE

Problem	Possible Cause	Remedy
No illumination	Power cable not plugged in Power switch in OFF position	Plug in power cable Set the power switch to ON
	Defective instrument fuse	Replace the fuse
	Defective power cable	Replace the power cable
	Mains power failure	Contact the in-house technician
	Failure of suspension system electronics	Contact the service department
Insufficient illumination	Brightness set too low	Adjust the brightness control knob
	Light guide not fully inserted in the microscope arm	Insert the light guide fully for maximum illumination
	Defective light guide (illumination not uniform)	Replace the light guide
Surgical field illumination not working	Surgical field illumination not working	Insert the light guide as far as it will go
	Failure of electronics	Illuminate the surgical field with an alternative light source and contact the service department
	Switched off by limit switch on the suspension arm	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 too tight	Loosen the friction adjustment screw on the suspension system as needed

TROUBLESHOOTING TABLE

Problem	Possible Cause	Remedy
Stand is unstable	The wheel brakes are not engaged	Engage the brakes
No image is visible in the field of view	Magnification changer is not indexed correctly	Turn the magnification changer until it clicks into a stop

28. GUIDANCE TABLES

Guidance and Manufacturer's Declaration

Electromagnetic Emissions

All Equipment and Systems

Guidance and Manufacturer's Declaration – Electromagnetic Emissions

The Magna is intended for use in the electromagnetic environment specified below. The customer or user of the Magna should make sure 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. Its RF emissions are therefore very low and are not likely to cause interference in nearby electronic equipment.
Harmonics IEC 61000-3-2	Class A	The Magna is suitable for use in all establishments other than domestic establishments 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

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

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment Guidance
ESD IEC 61000-4-2	±2,4,8 kV contact ±2,4,8,15 kV air	±2,4,8 kV contact ±2,4,8,15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity 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	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	AC mains, line to ground ±0.5,1,2 kV AC mains, line ±0.5,1 kV DC input (>3 m), line to ground ±0.5,1,2 kV DC input (>3 m), line to line ±0.5,1 kV I/O, line to ground ±2 kV (outdoor lines only)	AC mains, line to ground ±0.5,1,2 kV AC mains, line ±0.5,1 kV DC input (>3 m), line to ground ±0.5,1,2 kV DC input (>3 m), line to line ±0.5,1 kV I/O, line to ground ±2 kV (outdoor lines only)	Mains power quality should be that of a typical commercial or hospital environment.
VOLTAGE DIPS, DROPOUTS, AND INTERRUPTIONS, IEC 61000-4-11 Voltage Dips (<16 A) 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	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Magna requires continued operation during power mains interruptions, it is recommended that the Magna be powered from an uninterruptible power supply or a battery.
Power Frequency 50/60 Hz Magnetic Field IEC 61000-4-8	30 A/m	30 A/m	Power-frequency magnetic fields should be at levels characteristic 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

The Magna is intended for use in the electromagnetic environment specified below. The customer or user of the Magna should make sure 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 6 V ISM, home: 6 V amateur, 80% AM at 1 kHz or risk frequency 150 kHz–80 MHz	3 V with 6 V ISM, home: 6 V amateur, 80% AM at 1 kHz or risk frequency 150 kHz–80 MHz	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	3 V/m, home: 10 V/m, 80% AM at 1 kHz or risk frequency, 80 MHz to 2700 MHz	3 V/m, home: 10 V/m, 80% AM at 1 kHz or risk frequency, 80 MHz to 2700 MHz	**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 2.7 GHz** Where P is the maximum 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 level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol. 

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. If the measured field strength in the location in which the ME equipment or ME system is used exceeds the applicable RF compliance level above, 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 reorienting 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 Magna, for ME equipment and ME systems that are not life-supporting.

Guidance and Manufacturer's Declaration – Electromagnetic Immunity

Recommended separation distances between portable and mobile RF communications equipment and the Magna

The Magna is intended for use in an electromagnetic environment 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 communications equipment.

Max. output power of Transmitter (W)	Separation (m) 150 kHz 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 2.5 GHz $d=(7/E1)\sqrt{P}$
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

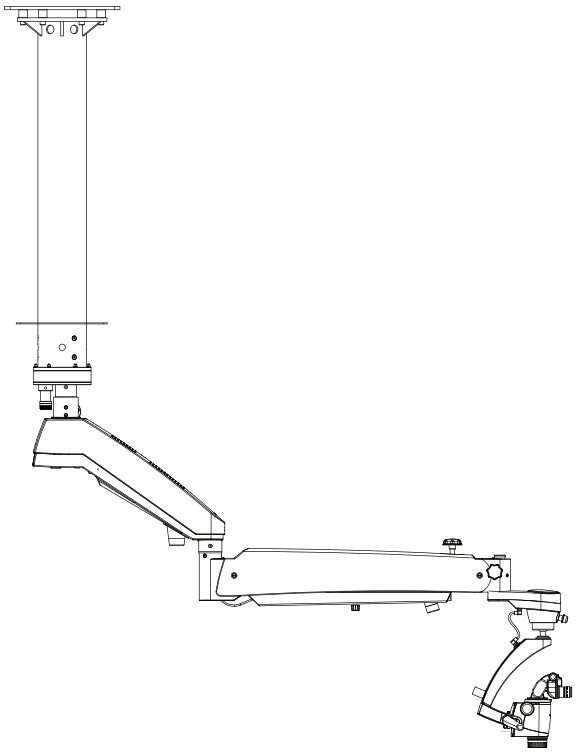
For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter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

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

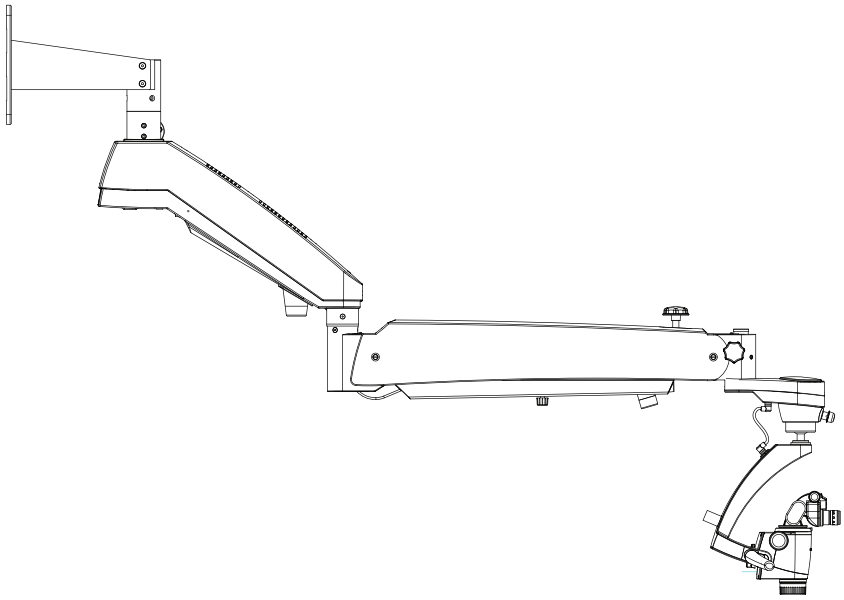
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

29. DIMENSIONS AND WEIGHT

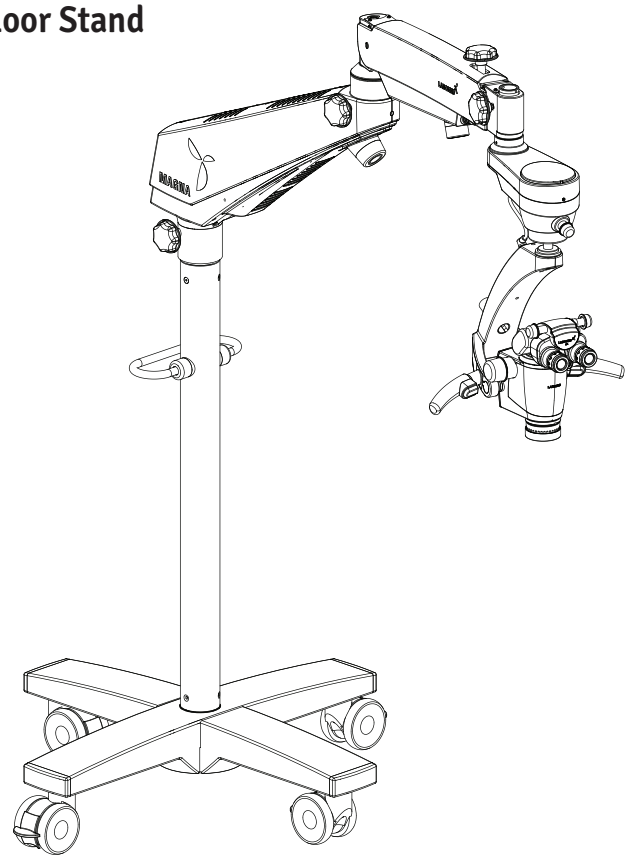
Ceiling Mount



Wall Mount



Floor Stand



Configurations	Weight
Magna with Wall Mount	
a. Wall bracket	12 kg
b. Shaft	07 kg
c. Magna arm, long/short	20 kg/15 kg
d. Magna carrier	12 kg
Magna with Ceiling Mount	
a. Ceiling mount, normal (see page 12)	30 kg
b. Ceiling mount, heavy duty (see p. 12)	55 kg
c. Magna arm, long	20 kg
d. Magna carrier	12 kg
Magna with Floor Stand	
a. Cross base (top)	48 kg
b. Cross base (bottom)	48 kg
c. Column	12 kg
d. Magna arm, short	15 kg
e. Magna carrier	12 kg

30. GLOSSARY

Ametropia compensation	Compensation of near- or farsightedness, set for each eye with the two individual eyepieces (range: +7 to -7 diopters).
Working distance	Distance from the common main objective (CMO) to the object or area of interest.
Color temperature	The color characteristic of a light source. Color temperature sets the color of a light source as warmer or colder relative to natural light. It is measured in kelvin (K).
Field of view diameter	The visible area of an object seen through the microscope. The higher the magnification, the smaller the field of view, and vice versa.
Green filter	A color filter that darkens red and blue light and brightens green light. It improves the contrast of images with red tones, making blood vessels more visible.
Illumination intensity	The luminous flux from a light source falling on a given area. It is measured in lux (lx).
LED	Light-emitting diode: an electronic semiconductor device that emits light when an electric current passes through it.
Eyepiece	The optical tubes through which the magnified image produced by the microscope is viewed.
Convergent beam path	The two light beams for the right and left eyes converge at a point at a distance from the common main objective (CMO). This distance equals the working distance.
White balance	White balance calibrates 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	(Charge-coupled device) camera with a technology that stores a charge and moves it out of the photosensor in an organized way.
CMOS camera	(Complementary metal-oxide semiconductor) camera whose image sensor is a silicon chip that captures and reads light.
DBS	(Double beam splitter) splits the light beam in two directions (one to the eyes, one to a side port) for simultaneous viewing and photography, videography or co-observation. Light is distributed 70% to the eyes and 30% to the side ports.
RotoPlate	The RotoPlate reduces neck craning, making hard-to-see regions of the mouth comfortable to view from the 9 and 3 o'clock seated positions.
Double iris diaphragm	The double iris diaphragm kit increases depth of field, which is particularly valuable for photography.
IPD	Interpupillary distance

31. WARRANTY

LABOMED warrants this product against defects in material and workmanship under normal use for one year from the date of invoice to the original purchaser. (An authorized dealer is not 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. It does not apply to a product that has been tampered with, altered in any way, misused, or damaged by accident or negligence, or whose serial number has been removed, altered or defaced. Nor does it extend to a product installed or operated other than in accordance with the applicable LABOMED instruction manual, or to a product sold, serviced, installed or repaired other than by a LABOMED factory or an authorized LABOMED dealer.

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

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

PRODUCT CHANGES

LABOMED reserves the right to change designs, or to add to or improve its products, without obligation to apply such changes to products previously manufactured.

CLAIMS FOR SHORTAGES

We take great care in selecting, checking, rechecking and packing to eliminate the possibility of error. If any shipping errors are found:

1. Carefully go through the packing material to make sure nothing was 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 nothing 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 ends with safe delivery in good condition to the carrier. Claims for loss or damage in transit should be made promptly and directly to the carrier.

If, on delivery, the outside of the packing case shows signs of rough handling or damage, ask the carrier's agent to note "Received in Bad Order" on the delivery receipt. If, within 48 hours of delivery, concealed damage is found on unpacking and there is no external sign of rough handling, ask the carrier to issue a "Bad Order" report. This procedure is necessary for the dealer to keep the right of recovery from the carrier.

Liability release for wall and/or ceiling installations:

By signing below, the purchaser confirms that the correct and secure installation of the mounting plates and hardware for the LABOMED Magna microscope(s) purchased is the sole responsibility of the purchaser and the appointed contractor, and will comply with applicable building codes and good practice. Labo America, Inc. and all of its affiliates will be held harmless and will bear no 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 above):

Licensed contractor/company name and details (address, license no., phone number):

Client signature:

Contractor signature:

Date:

Date:

Labo America, Inc.
920 Auburn Court, Fremont, CA
94538, U.S.A.

Global:
sales@laboamerica.com
www.laboamerica.com

Revision History

Rev. No.	Date of Release	DCR #	Change	App. By
1.4	April 16, 2018	DCR/06B/18	Caution added on page 6 (bottom); regulatory values updated on pages 46 and 47	S.bal
1.5	July 27, 2018	DCR/11A/118	Power consumption corrected from 195 W to 130 W.	S.bal
1.6	May 2019	ECR/08/19	Double handle details updated.	S.bal
1.7	Feb. 2020	ECR/57/19	Wall and ceiling mount updated; disinfection and cleaning	S.bal
1.8	Mar. 24, 2021	DCR/05A/21	page added; ceiling mount standard arm drawing.	S.bal
1.9	Nov. 2021	DCR/22/21	Inch 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 and 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 corrected (MDR Regulation (EU) 2017/745) and caution for fiber-optic cable indexing added	S.bal
1.15	July 2025	DCR/**16**/2025	Silicone cover instructions added	S.bal
1.16	Feb. 2026	DCR/**04**/2026	IP code added	S.bal

LABOMED
ideas for vision

Manufacturer: Labotech Microscopes India Pvt. Ltd.
Sales and Distribution:
Labo America Inc.
920 Auburn Court
Fremont, CA
94538
U.S.A.

Phone: 510-445-1257

Email:
sales@laboamerica.com
www.laboamerica.com

EC REP

Labomed Europe b.v
Essebaan 50
2908 LK Capelle aan den IJssel
The Netherlands
Tel: +31 (0)10 4584222

E-mail: info@labomedeurope.com
www.labomedeurope.com

CE

DQS Inc.
Labo America Inc.
Registered to ISO 9001:2015
BR Number 10005565

A16372 ISO 13485:2016
LABOTECH MICROSCOPES INDIA Pvt Ltd