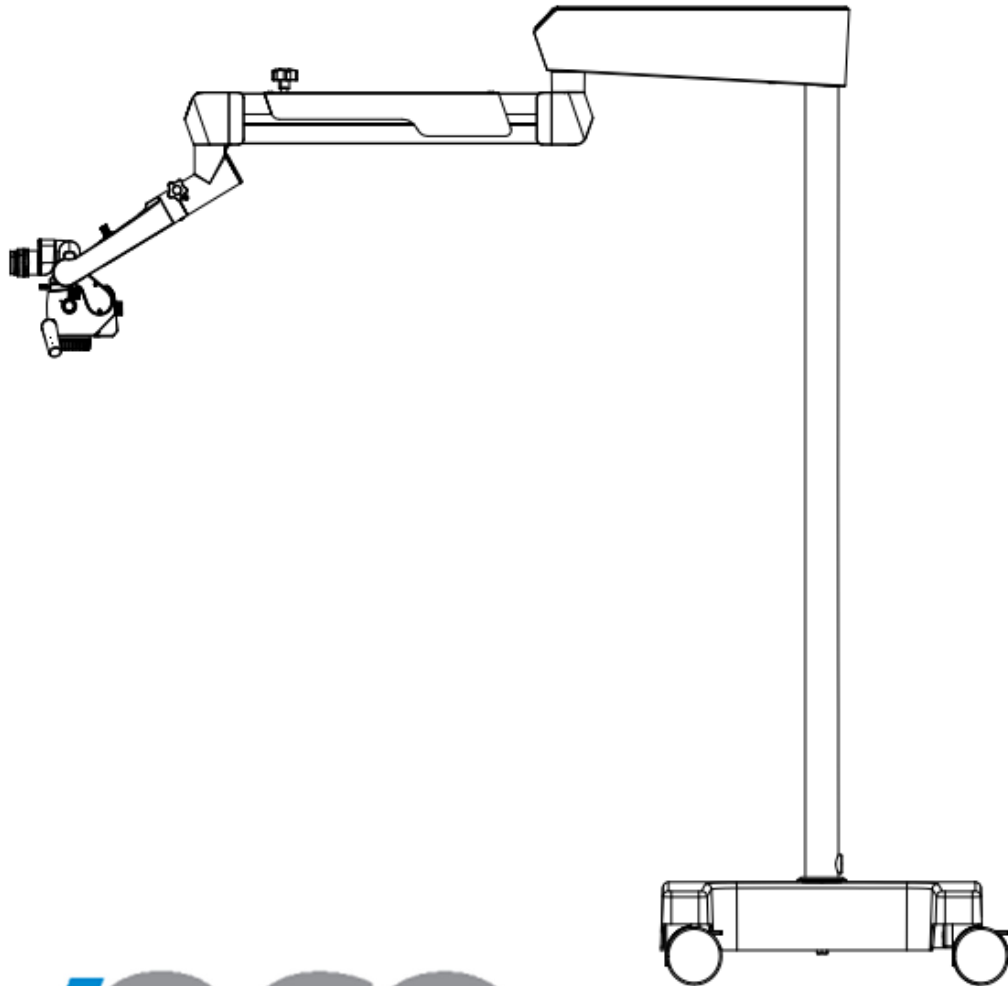


Ryeco AM2000 Surgical Microscope

User Manual



(Please read the Ryeco instruction carefully before using it!)



Safety Caution

When using the instrument, you must observe the safety instructions, and the meanings of these symbols are as follows:

Prompt Symbols

The following safety information has been incorporated into the user manual. Please note this information and be particularly careful in these cases, especially the contents with the following symbols.



Warning, indicating that there is potential hazard, failure to follow the instructions may pose a risk of harming users or product failure!



Note, promoting the user of the instrument, or providing the useful information to the user.

Safety Requirements on Installation and Use

Safety Requirements

- ✓ This instrument can be used only for the purposes described in the User's Manual.
- ✓ Only trained and instructed personnel are allowed to use this instrument. The customer or the organization operating the equipment has the responsibility to train and guide all personnel using the equipment.
- ✓ Before starting the instrument, please completely comprehend the User's Manual, including the User's Manual for accessories and other system components.
- ✓ Keep the User's Manual in order to facilitate the operator to read at any time.
- ✓ Please observe all symbols and labels of the instrument!
- ✓ The modification and repair of this instrument can only be performed by the ALLTION service personnel or others authorized by ALLTION.
- ✓ Do not place any container filled with liquid over the instrument. Confirm that no liquid can penetrate into the instrument.



No modification of this equipment unless authorized by the manufacturer.



Although the equipment conforms to the intent of the standard IEC 60601-1-2 in relation to electromagnetic compatibility, electrical equipment may produce interference. If interference is suspected, move equipment away from sensitive device or contact us.



Do not store or use the instrument in a damp room. Do not expose the instrument in the place with splashing, dropping or water mist.



When the instrument is generating smoke, electric spark or a strange noise, please immediately cut off power supply of the instrument. Do not use this instrument until it has been repaired by our service agent.



Please note that local regulations take precedence over the requirements of the above mentioned criterions. If you have any enquiry, please contact the local ALLTION dealer.

Requirements on Installation



The installation of the product will be completed by our service representative or by professional personnel authorized by us. Please make sure that the following operational requirements have been met:

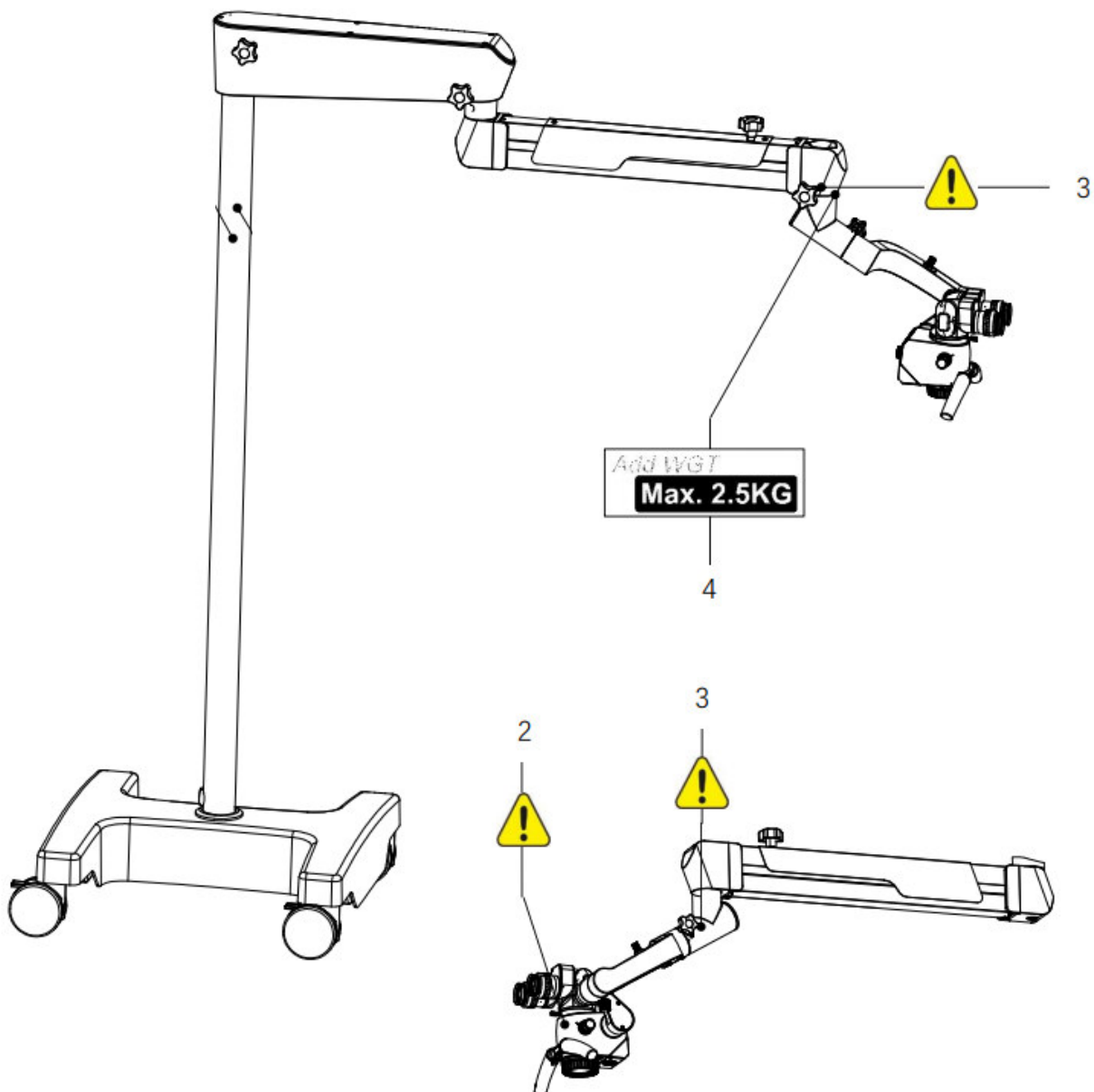
- ✓ All the safety-related mechanical connections (please find the Manual for details) are properly connected and all screws have been tightened.

Operating requirements

- ✓ Please pay special attention to the PROMPT symbols on the instrument (especially Warning sign).
- ✓ Avoid to watch the light source of the microscope directly, for example, the objective lens of the microscope.
- ✓ Do not disassemble and assemble the binocular head barrel and objective lens during use to prevent falling and injuring the patient.
- ✓ Do not disassemble or assemble the supporting components during use to prevent the Support system from being out of balance, damaging the components or hurting the patient.

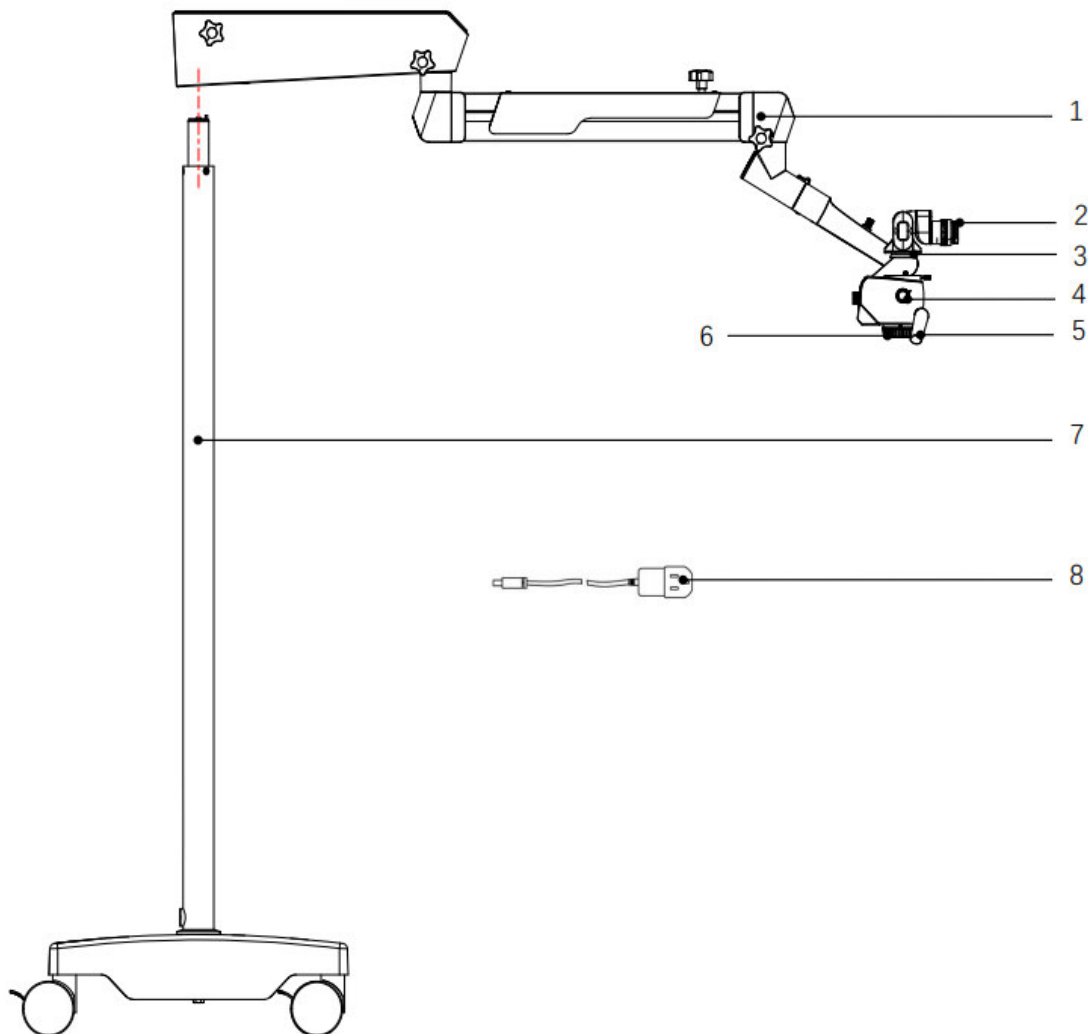


This surgical microscope cannot be used for ophthalmic examination and surgery.

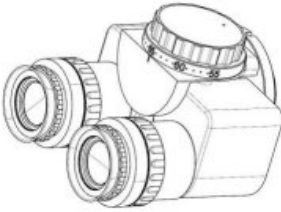
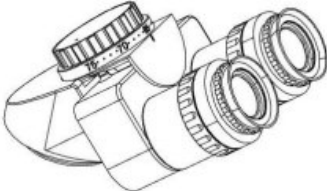





Standard Configuration

| | Name of Components | Specification | Quantity |
|---|--------------------|---|----------|
| 1 | Cross arm bracket | Length:650mm | 1 |
| 2 | Binocular tube | Available in 180° variable-angle, straight or 45° bevel, | 1 |
| 3 | Eyepiece | 12.5X or 10X | 2 |
| 4 | Magnification pod | five-range zooming | 1 |
| 5 | Control handle | | 1 |
| 6 | Objective lens | F250 objective lens, optional F300 objective lens (please find the Optional Accessories List) | 1 |
| 7 | Floor stand | Other installation modes are available for option, please find the Optional | 1 |



Supporting Components

| Supporting Components List | | |
|-----------------------------------|---|--|
| Name | Specification | Picture |
| 1 Straight tube binocular head | Straight tube |  |
| 2 45° binocular head | 45°inclined |  |
| 3 200-300 Variable Objective Lens | Continuous zoom from 200mm to 300mm |  |
| 4 F200 objective lens | F200 | |
| 5 F250 objective lens | F250 | |
| 6 F300 objective lens | F300 | |
| 7 F350 objective lens | F350 | |
| 8 F400 objective lens | F400 | |
| 9 Beam splitter | 2:8 beam splitting, optional 5:5 beam splitting |  |
| 10 30°Binocular Extender | 30°angle |  |

11 90° binocular extender 90° angle



12 Angle Rotation Device

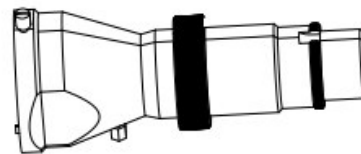


13 Camera adapter

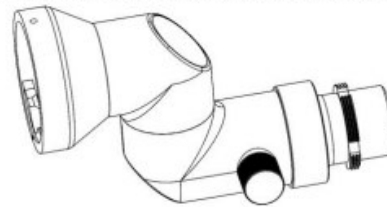
Interfaces with Sony,
Canon, Nikon cameras
optional



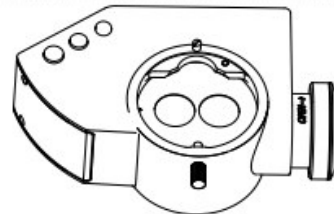
14 2-D Rotation Binocular
Assistant Scope
Connector



15 3-D Rotation Binocular
Assistant Scope
Connector



16 ALL-CAM2
Full Function Camera 1080P

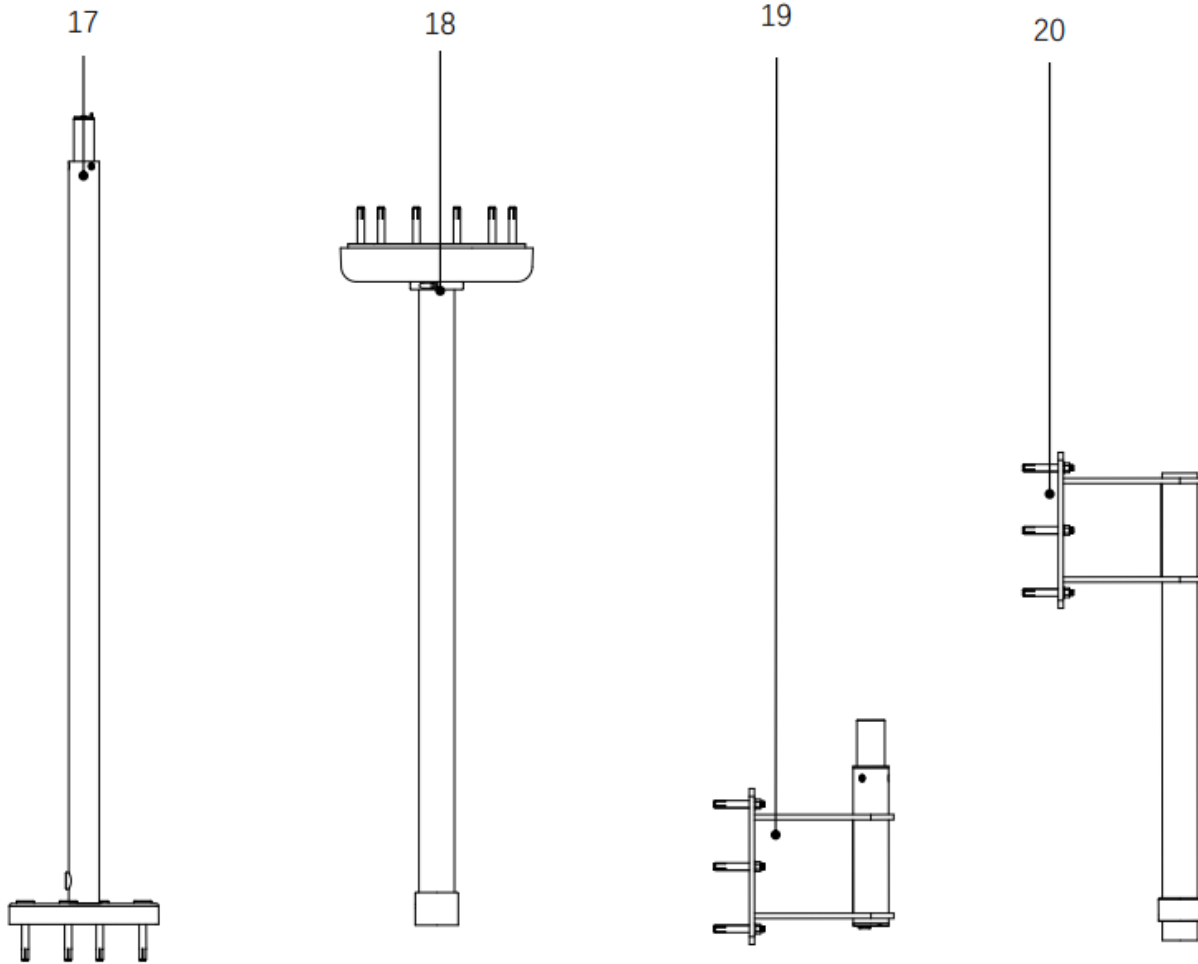


17 Fixed Stand Mount

18 Ceiling mount stand

19 Low-position wall mount
stand

20 High-position wall mount
stand



Inspection before Assembly



After opening the packaging box, find the packaging list, check the parts with the real objects one by one according to the package list, check if any component is not provided; if any component is not provided, please contact the local dealer in time;



Please check the product if there's any damage, especially the optical components, if any, please contact the local dealer in time;



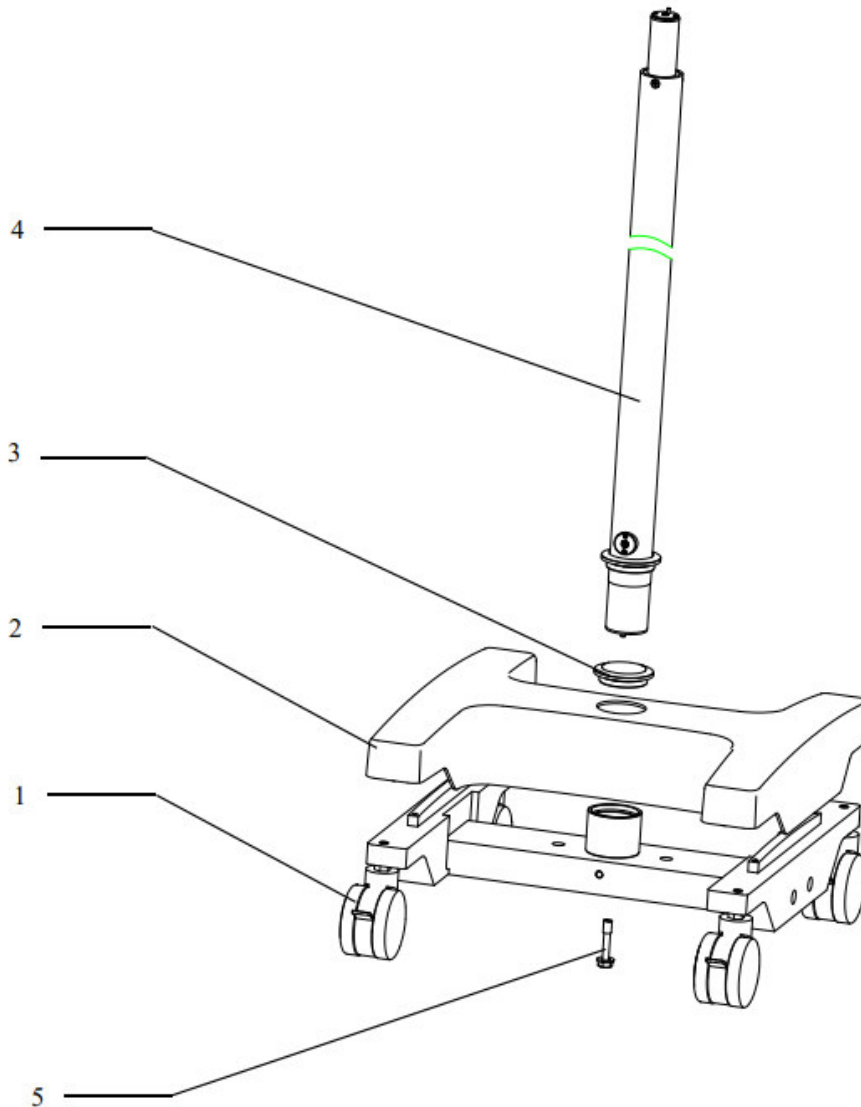
The product is the high precision instrument, please handle with care when taking it out, and make sure the components are put at the safe place.

- ✓ Before assembly, make sure the staffs have carefully read the User's Manual and well know the assembly steps.

Installation of Support System

Installation of Mobile Floor Stand

-
- ✓ Move the base (1) from the wood pallet, take away the plastic cover and the compression ring (3) firstly and put it aside;
-
- ▶ Put base (1) on the horizontal ground and lock four casters;
-
- ▶ Fit the plastic cover (2) onto the base (1) and tighten the compression ring (3);
-
- ▶ Insert the upright post (4) in the installation hole of base (1), the positioning pin and the positioning hole need to be aligned to ensure that the upright post is installed in place;
-
- ▶ After the upright post is installed in place, tighten the screw (5) ;
-
- ▶ Finish the assembly of the mobile floor stand.
-



Installation of Fixed Floor Stand

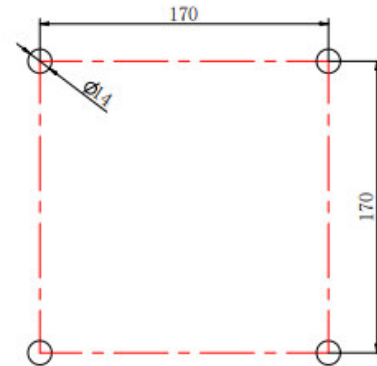


The floor to assemble the fixed floor stand must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of tipping over.



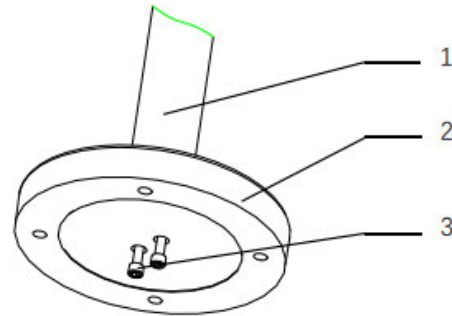
The ground to install the fixed floor stand must be horizontal enough, otherwise, it will cause the product to be tilted after installation.

- ▶ Drill 4 holes in the ground with $\Phi 14$ driller, the hole depth is 75mm, and the hole position is as shown on the right diagram.

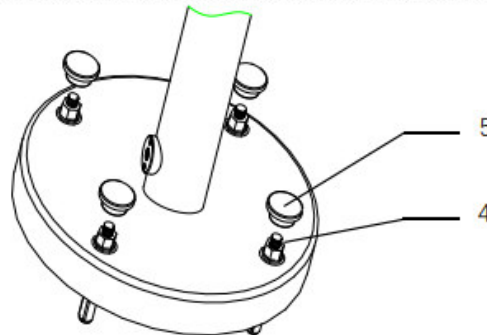


If the position and dimension of the installation hole are incorrect, the stand can't be installed.

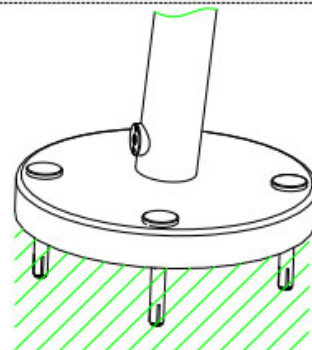
- ▶ Install the pole assembly (1) into the installation hole of the ground fixing plate (2), lock it with two M10 screws (3), and the positioning pin must align with the positioning hole during assembly;



- ▶ Take out the socket spanner from the tool box, insert the M10 expansion bolt (4) in the installation hole, align the stand with the bolts, and tighten, assemble the decorative cover (5);



- ▶ Finish the installation of the fixed floor stand.

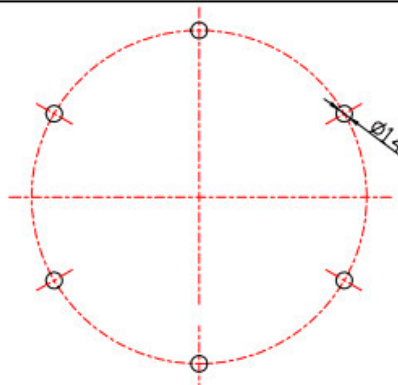


Installation of Ceiling Mount



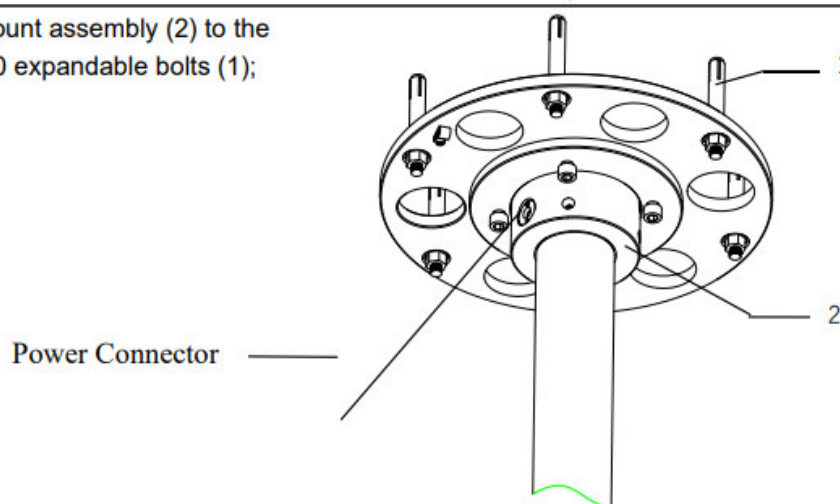
The ceiling to assemble the ceiling mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.

- ▶ Drill 6 holes in the ground with $\Phi 14$ driller, the hole depth is 75mm, and the position dimension of the hole is as shown on the right diagram;

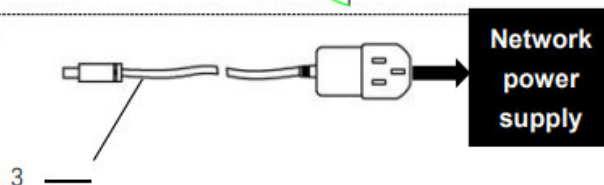


When drilling, please note the direction of power cord connection, The power connector is along same direction with the pre-installed socket on the ceiling.

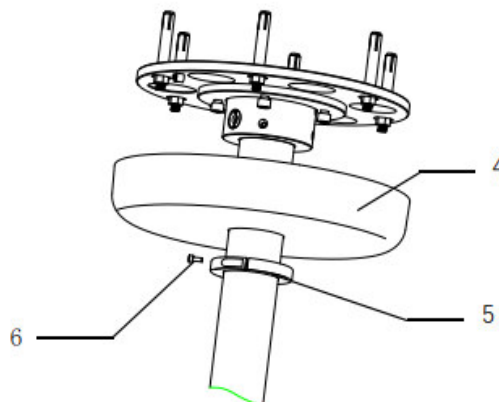
- ▶ Lock the ceiling mount assembly (2) to the ceiling with six M10 expandable bolts (1);



- ▶ Connect the power cable (3) to the power connector, and then plug it into an externally installed power socket.



- ▶ Install the decorative cover(4) from the bottom of the pole and bottom cover limit block(5), tighten the bolts(6)of the locking limit block after installation.



- ▶ Finish the installation of the ceiling mount.

Installation of Low-Position Wall Mount.

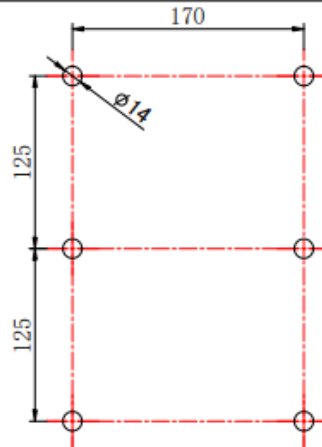


The wall to install the low position wall mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.



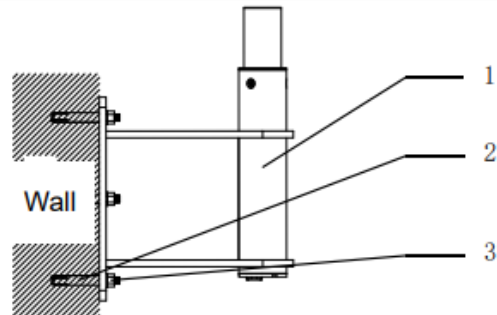
The wall to install the low-position wall mount shall be smooth enough, otherwise, it will cause the product to be tilted after installation.

- ▶ Drill 6 holes in the wall with $\Phi 14$ driller, the hole depth is 75mm, The position and dimension of the hole is as shown on the right diagram;



If the position and dimension of the installation hole are incorrect, the installation could not be done.

- ▶ Install the low-position wall mount (1) to the wall with hole by M10 expandable bolts (2), then tighten the nuts (3).



- ▶ Finish the installation of the low-position wall mount.

Notes ryeco AM2000:

High-Position Wall Mount



The wall to install the high-position wall mount must be made of concrete or material with higher hardness than concrete. Otherwise, it will be risk of falling down.

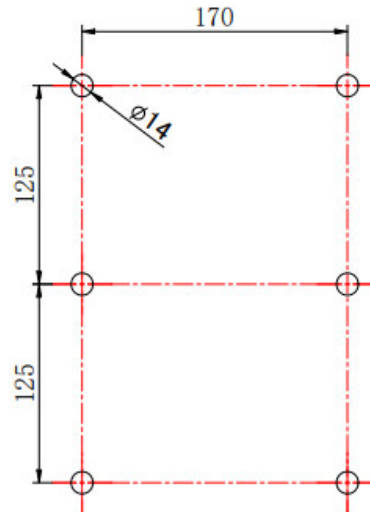


The wall to install the high-position wall mounted support shall be smooth enough, otherwise, it will cause the product to be tilted after installation.

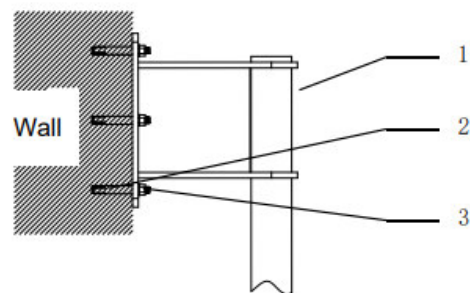
▶ Drill 6 holes in the wall with $\Phi 14$ driller, the hole depth is 75mm, The position and dimension of the hole is as shown on the right diagram;



If the position and dimension of the installation hole are incorrect, the installation could not be done.



▶ Install the high-position wall mount (1) to the wall with hole by M10 expandable bolts (2) and tighten the nuts (3).



▶ Finish the installation of the high-position wall-mount.

Notes ryeco AM2000:

Installation of Cross Arm System

Upright Installation of Cross Arm

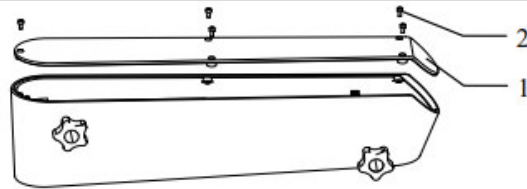


The upright installation of cross arm is applicable to mobile floor stand, fixed floor support and low-position wall mount.



Because the cross arm is heavy and long, please install by two operators for for safety.

- ▶ Loosen five fastening bolts (2) on the cross arm, remove the plastic cover (1) and put it aside;



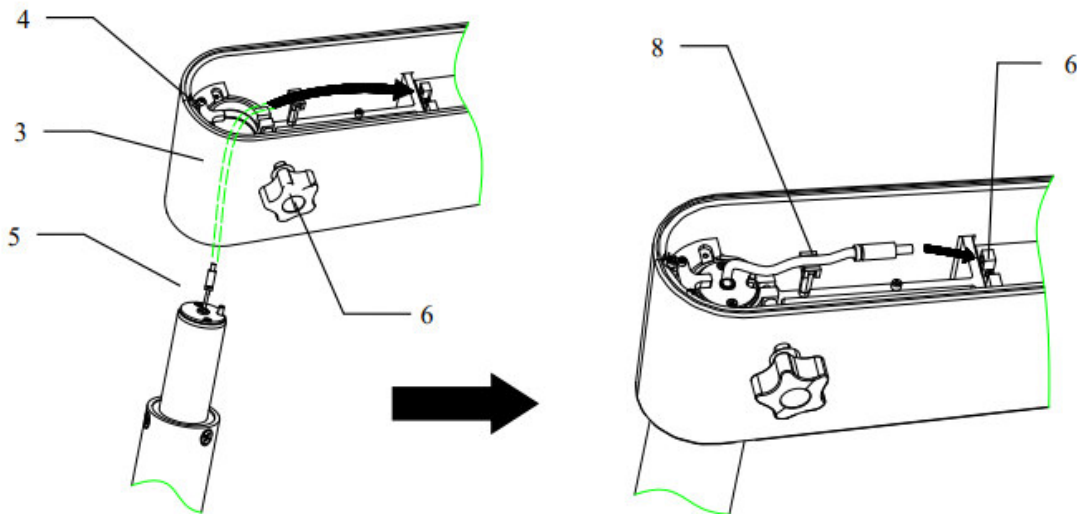
- ▶ Lift the cross arm over the pole, cross the power cable (3) from the mounting hole of cross arm (4), as shown by the bellow arrow.

- ▶ Install the cross arm (4) to the pole (5)



In order to install it in place, completely loosen the locking knob (6) before inserting the cross arm into the pole.

- ▶ Once the cross arm bracket is installed in place, insert the power plug into the power connector (7) and fix the cable to the cable holder (8).



- ▶ Install the plastic cover (1) on the cross arm (3), finish installation.

Suspending of Ceiling Mount

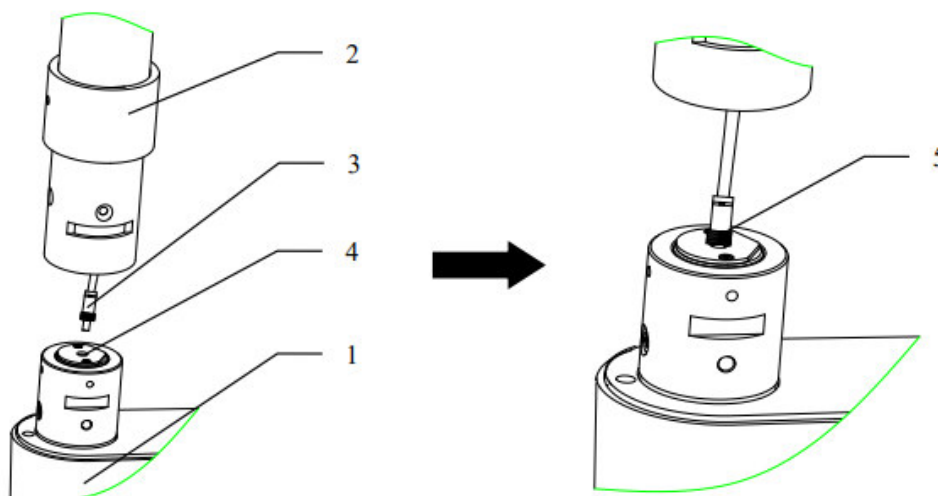


The suspending installation of first arm is applicable to ceiling mount System and high-position wall mount system.

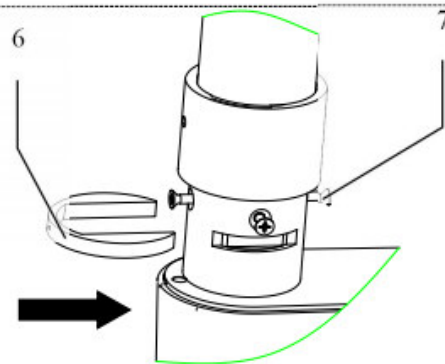


Because the first arm has certain weight and is long, please install by two operators together for safe installation.

- ▶ Lift the cross arm bracket (1) to a position under the column, insert the decorative ring (2) into the column, insert the power plug (3) on the column into the power connector (4), Tighten with the nut (5) on the power plug.

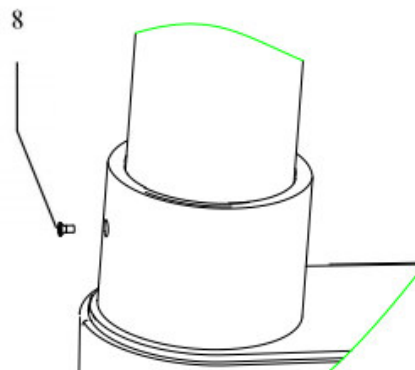


- ▶ Insert the connecting shaft on the first arm support into the upright post, align at the clamping groove and insert the limit block (6); tighten four M6 × 16 hexagon socket countersunk head screws (7) around four sides.



After the limit block (6) is inserted in place, the first arm support can be loosened;

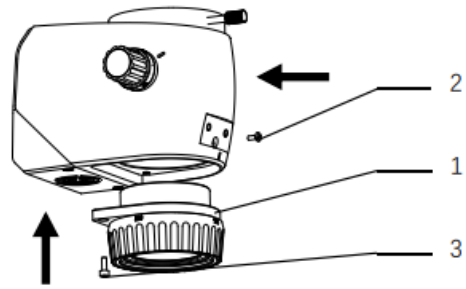
- ▶ Put the decorative ring (2), lock the side edge with M3 × 6 hexagon socket countersunk head screws (8), finish installation.



Installation of Objective Lens

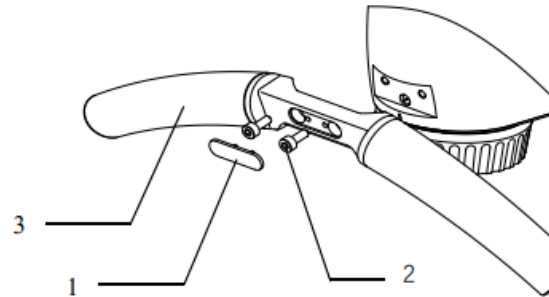
i The installation methods for the 200mm objective lens, 250mm objective lens, 300mm objective lens, 350mm objective lens, 400mm objective lens and 200-300mm objective lens are the same.

- ▶ Mount the large objective (1) into the microscope mount with two M4 screws (3).
- ▶ Install the safety screws (2).



Installation of Control handle

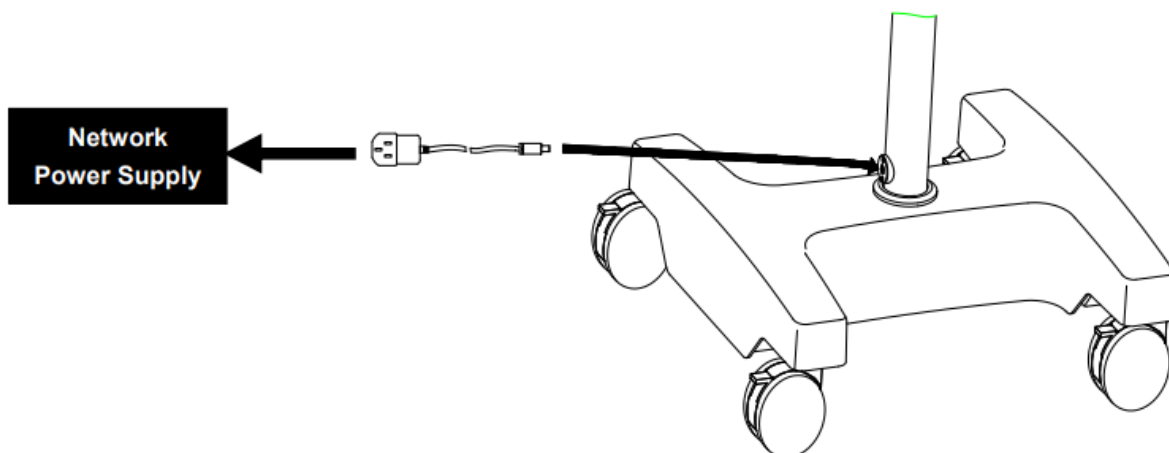
- ▶ Mount the control handle (3) into the microscope mount with two M4 screws (2).
- ▶ Installation of Decorative panel (1).



Wiring

- ▶ Connect the attached power wire according to the following picture;

i If the specification of power cord plug does not match the local socket standard, please contact your local dealer or store for replacement.

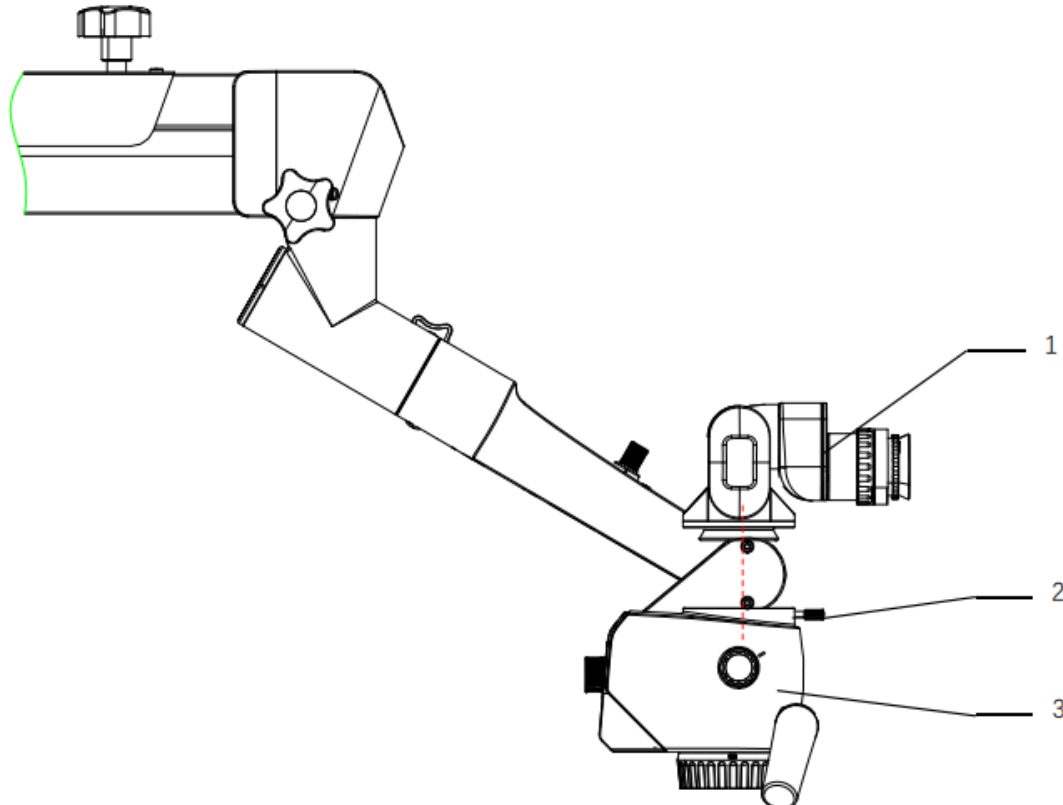


Installation of Binocular Head Barrel

- ✓ Make sure that the locking screw (2) is completely loosened before installation;
- ▶ Align the binocular tube (1) at the positioning pin, and install it in the bayonet of microscope body (3);
- ▶ Tighten the locking screw (2);



Before loosening the grip, please make sure: ① the binocular head barrel has been fully installed in place and has been completely clamped in the bayonet; ② the locking screw has been tightened. Otherwise, the binocular head barrel will be at risk of falling.



Installation Confirmation

- Check whether the threaded connection of all assembled positions have been tightened, judge whether the whole machine has completed installation;
- Loosen all locking knobs, check if the rotation and movement of all joints of the whole machine are smooth, judge whether the mechanical function is normal;
- Check whether the locking knob of each joint is valid, judge whether the locking function is normal;
- Turn on the power switch, observe whether the indicator of the power switch turns on, whether the light is illuminated from the microscope body, judge whether the power is supplied;



When the suspension arm moves to the highest point, there is no illumination light; when the dimming knob is adjusted to the minimum, there is no illumination light;

- Turn the dimming knob to observe whether the lighting spot changes bright and dark, judge whether the dimming function is normal;

Product Components

-
- 1 Main body of microscope

 - 2 180° binocular and eyepiece

 - 3 Objective lens

 - 4 120° hanger bracket

 - 5 Cross arm bracket

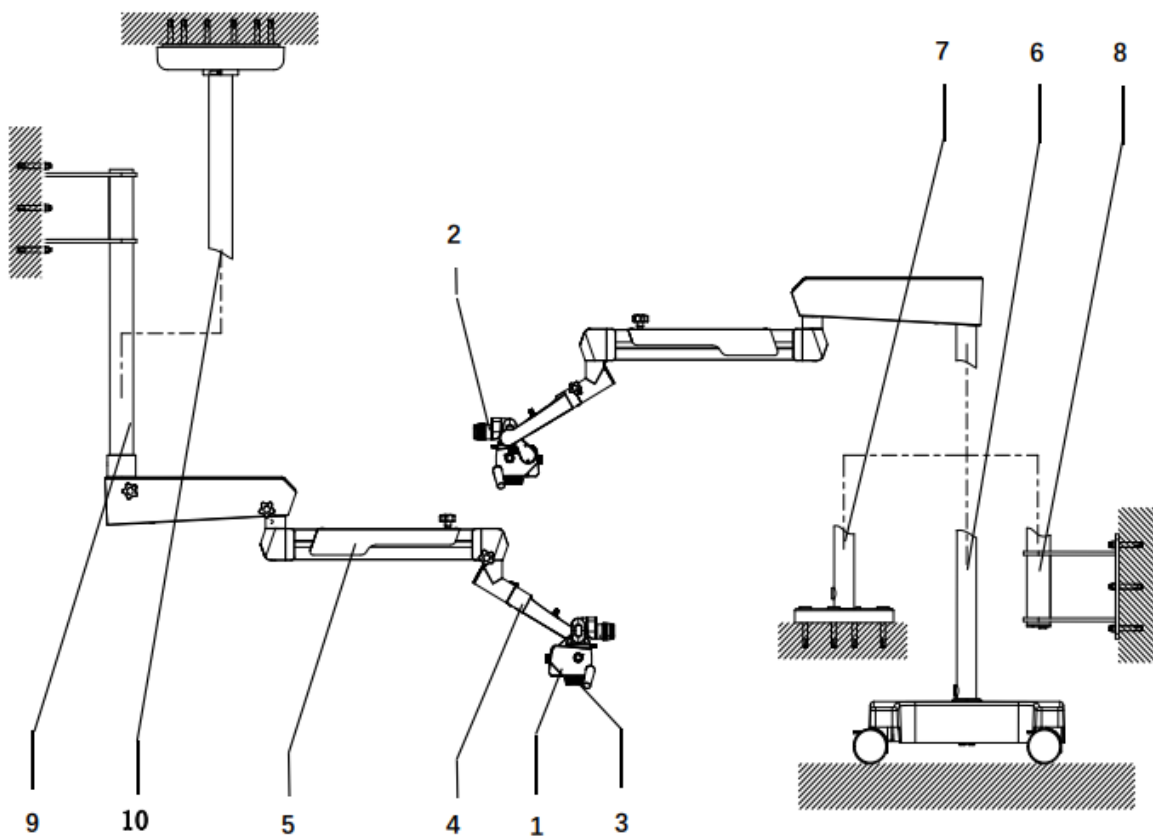
 - 6 Mobile floor stand

 - 7 Fixed Stand Mount

 - 8 Low-position wall mount stand

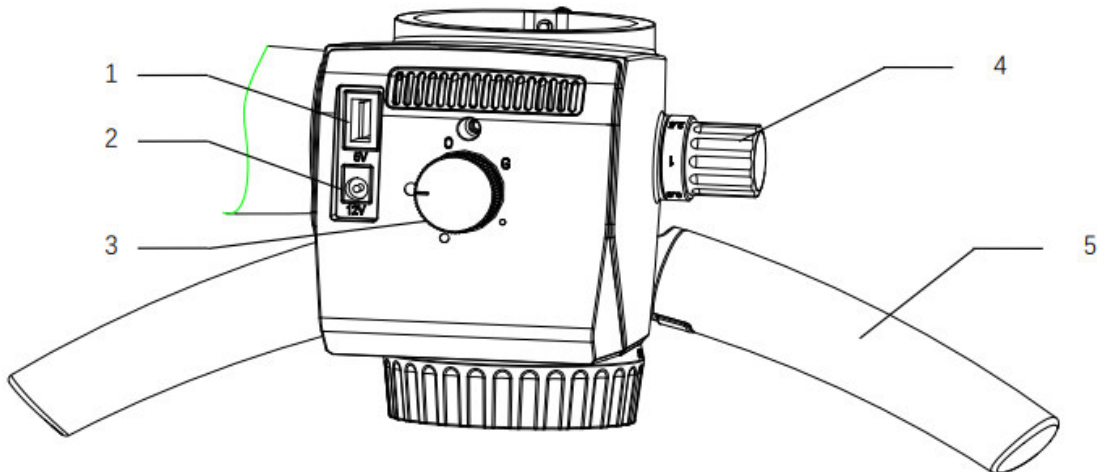
 - 9 High-position wall mount stand

 - 10 Ceiling mount stand
-



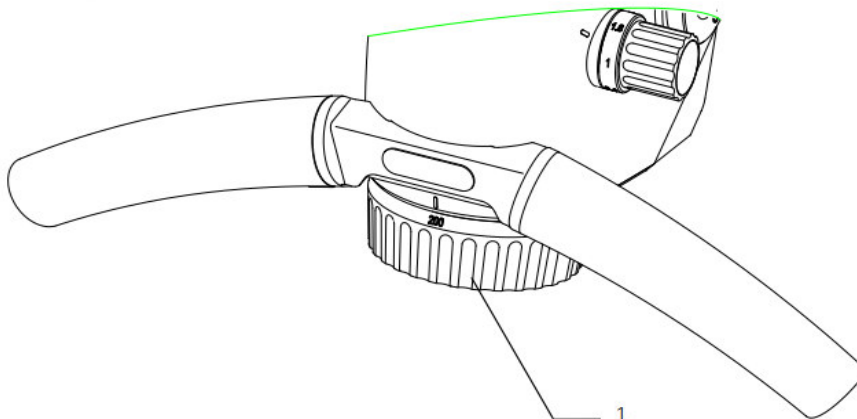
Main body lens of microscope

- 5V**
- 1 USB 5V power supply interface
For 5V/1.5A DC output.
- 12V**
- 2 12V power supply interface
For 12V/1.0A DC output.
- G ●**
O ●
- 3 Lighting shift knob
For switching different illumination, "●" means large spot without color filter, "●" means medium spot without color filter, "●" means small spot without color filter, "G" means green filter, "O" means orange filter.
- 4 Optical zoom knob
For manual adjustment of the optical magnification, and the numbers on the knob are magnification factors.



Objective lens

- 1 Focusing knob
It is used for manually setting the image definition (focusing, working distance).



180°binocular and eyepiece

1 Pupillary distance adjustment

Rotate the binoculars with both hands, adjust the papillary to make two images through both of eyepieces into one. The number on the knob is the pupillary distance.

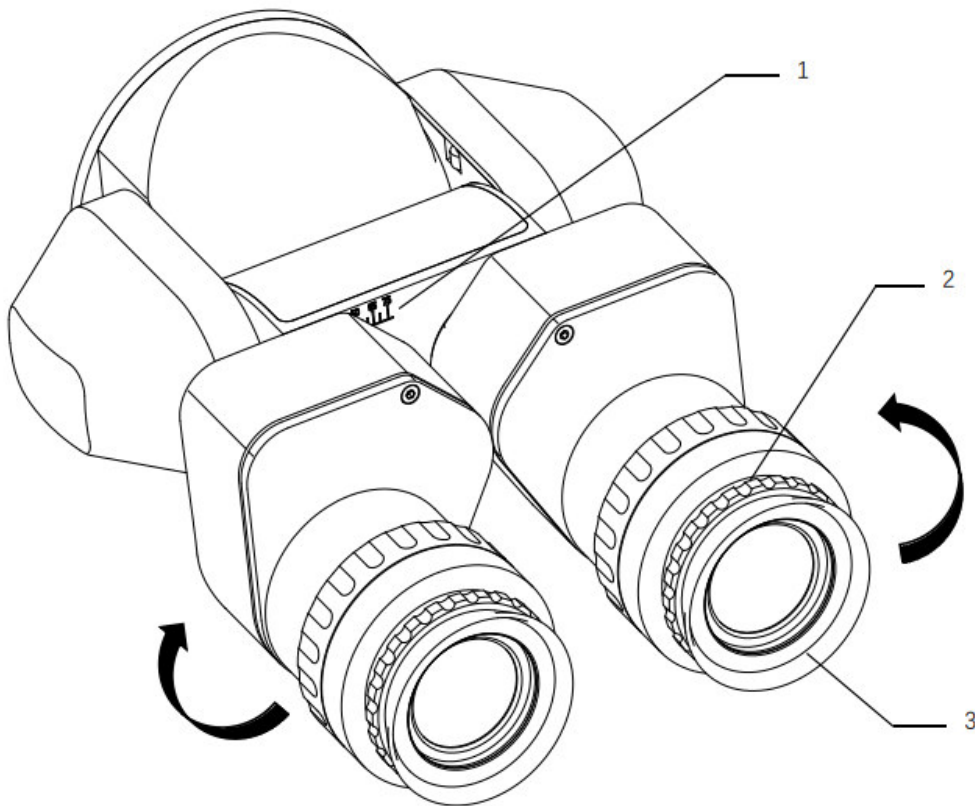
2 Diopter adjustment

The eyepieces provide diopter compensation at -6D and +6D. Setting the diopter adjustment at 0D if the operator wear glasses. Rotating the diopter adjustment to the best position till you see the most clear view if the operator doesn't wear glasses. In the positioning device, the built-in brake can keep the diopter adjustment still.

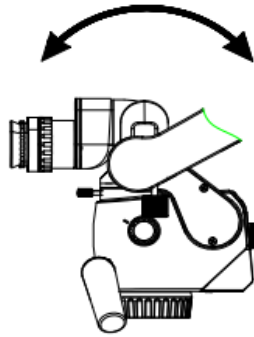
3 Eyecup

Adjust the eyecup to the right place till you can see the whole field of view.

- View with glasses: turn the eyecup inwards
 - View without glasses: turn the eyecup outwards until you see the whole field of view.
-

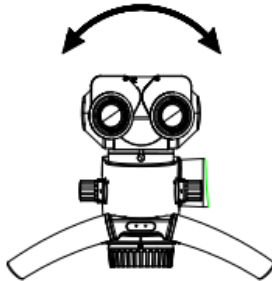


120°Hanger bracket



- 1 Friction adjustment knob for tilting motion (forwards/backwards) of the main lens of the microscope

Used to adjust the friction of the pitching rotation of the main lens of the microscope (as indicated by the arrow on the left).



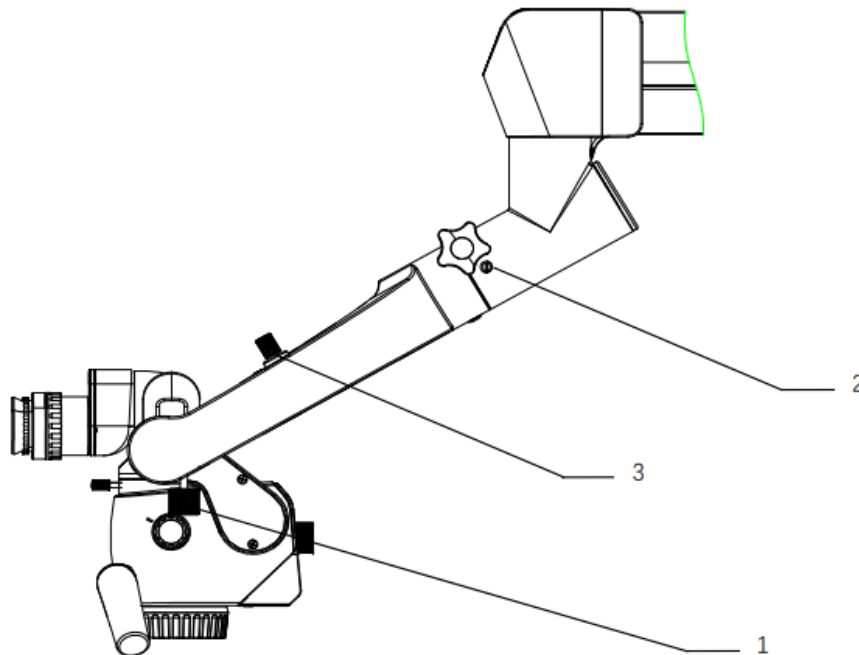
- 2 Friction adjustment knob for tilting motion (left/right) of the main lens of the microscope

Used to adjust the friction of the horizontal tilting movement of the main lens of the microscope (as indicated by the arrow on the left).



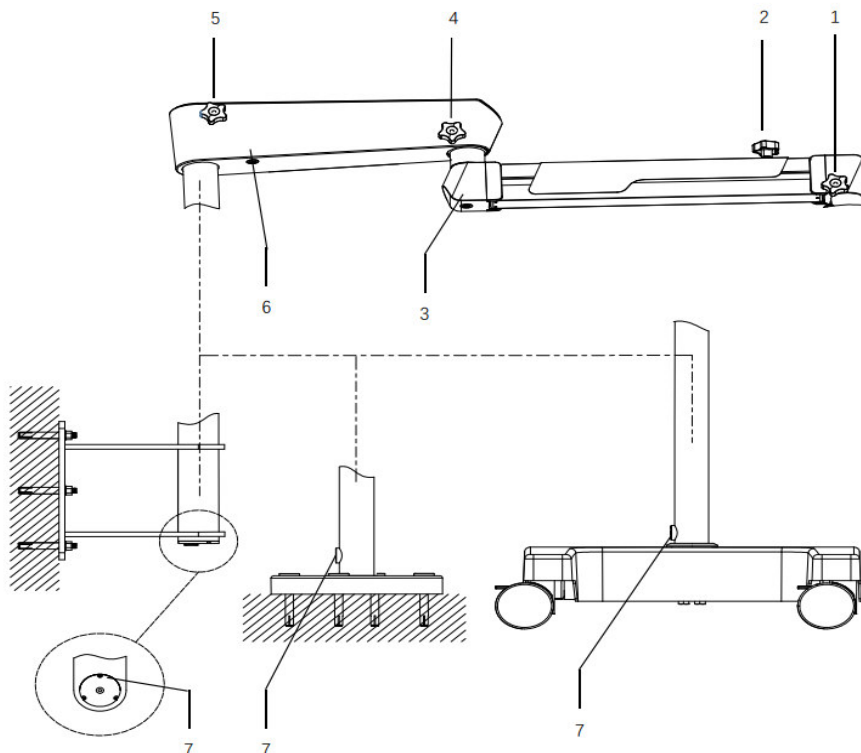
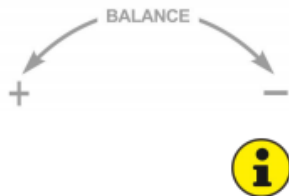
- 3 Dimming knob

For adjusting the brightness of the illumination, The dimming identification as the one in the left picture.



Cross arm and mobile floor stand\ fixed floor stand\ low-position wall mount stand

- 1 Rotation friction adjustment of 120° hanger bracket
For adjusting the rotation friction of 120° hanger bracket.
- 2 Friction adjustment of balance arm
For adjusting the rotation friction when moving the balance arm up and down.
- 3 Balance adjusting knob
For adjusting the spring force for balancing. After installing the surgical microscope with all accessories, adjust the balance of the balance arm with the knob, the adjusting identification as the one in the left picture.
For rotating the knob easily, the balanced arm shall be in the horizontal position when adjusting balance.
- 4 Balanced arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the balanced arm.
- 5 Load-bearing arm rotation friction adjusting knob
It is used for adjusting the rotation friction of the load-bearing arm.
- 6 Power switch with green indicator
It is used for starting and stopping the power supply of the instrument, when the instrument is started, the green indicator of the power switch turns on.
- 7 Power interface
Power supply interface.



Cross arm and ceiling mount stand /high-position wall mount stand

- 1 Rotation friction adjustment of 120° hanger bracket
 For adjusting the rotation friction of 120° hanger bracket.

- 2 Friction adjustment of balance arm
 For adjusting the rotation friction when moving the balance arm up and down.

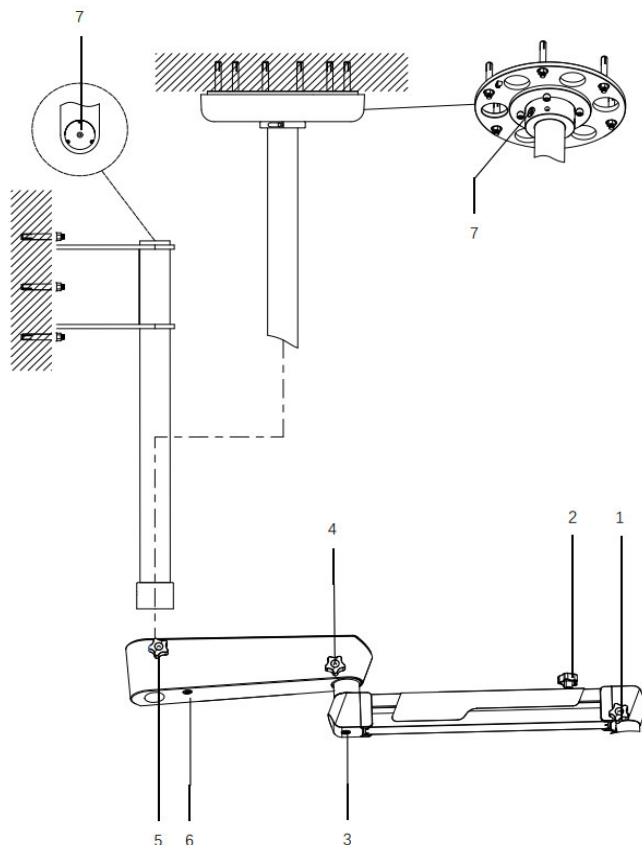
- 3 Balance adjusting knob
 For adjusting the spring force for balancing. After installing the surgical microscope with all accessories, adjust the balance of the balance arm with the knob, the adjusting identification as the one in the left picture.
 For rotating the knob easily, the balanced arm shall be in the horizontal position when adjusting balance.

- 4 Balanced arm rotation friction adjusting knob
 It is used for adjusting the rotation friction of the balanced arm.

- 5 Load-bearing arm rotation friction adjusting knob
 It is used for adjusting the rotation friction of the load-bearing arm.

- 6 Power switch with green indicator
 It is used for starting and stopping the power supply of the instrument, when the instrument is started, the green indicator of the power switch turns on.

- 7 Power interface
 Power supply interface.



Check before use



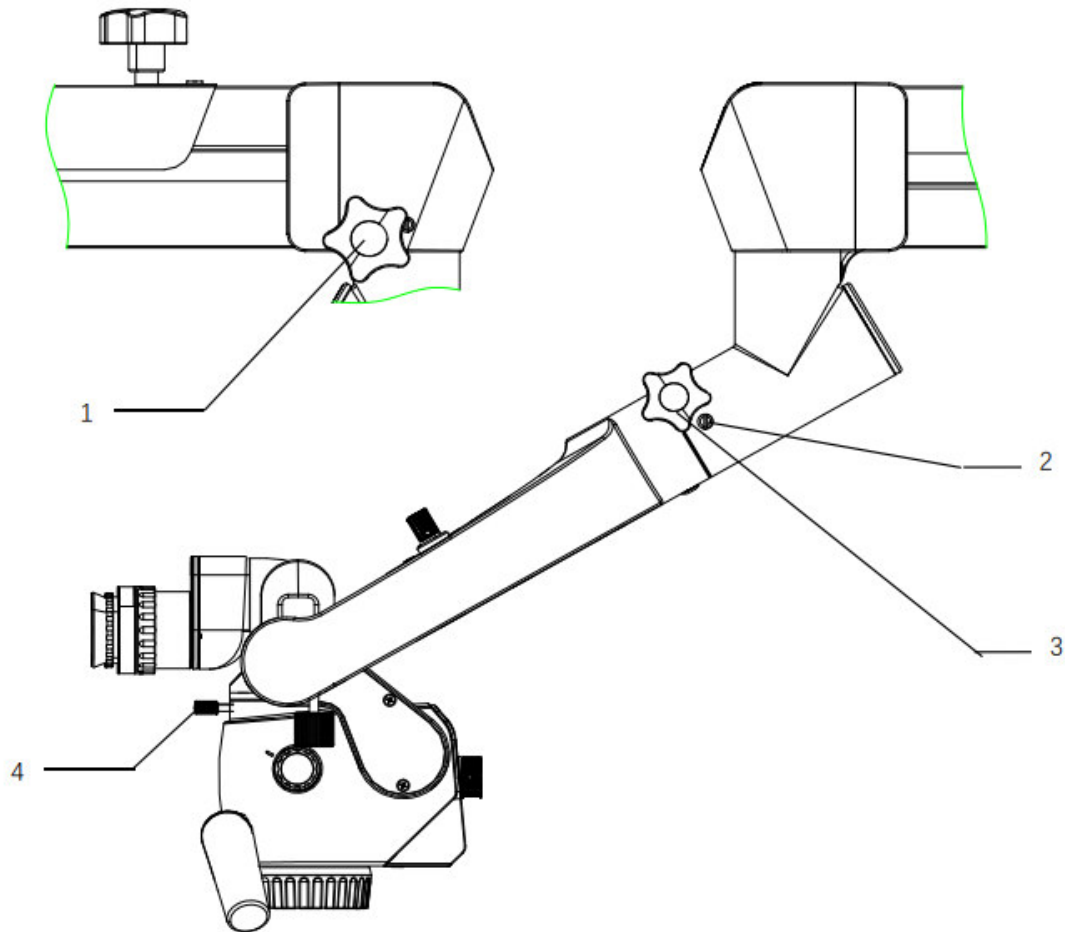
There must be no patient when checking the microscope!



To terminate the operation of the equipment, please turn off the power switch or disconnect from the network power supply!

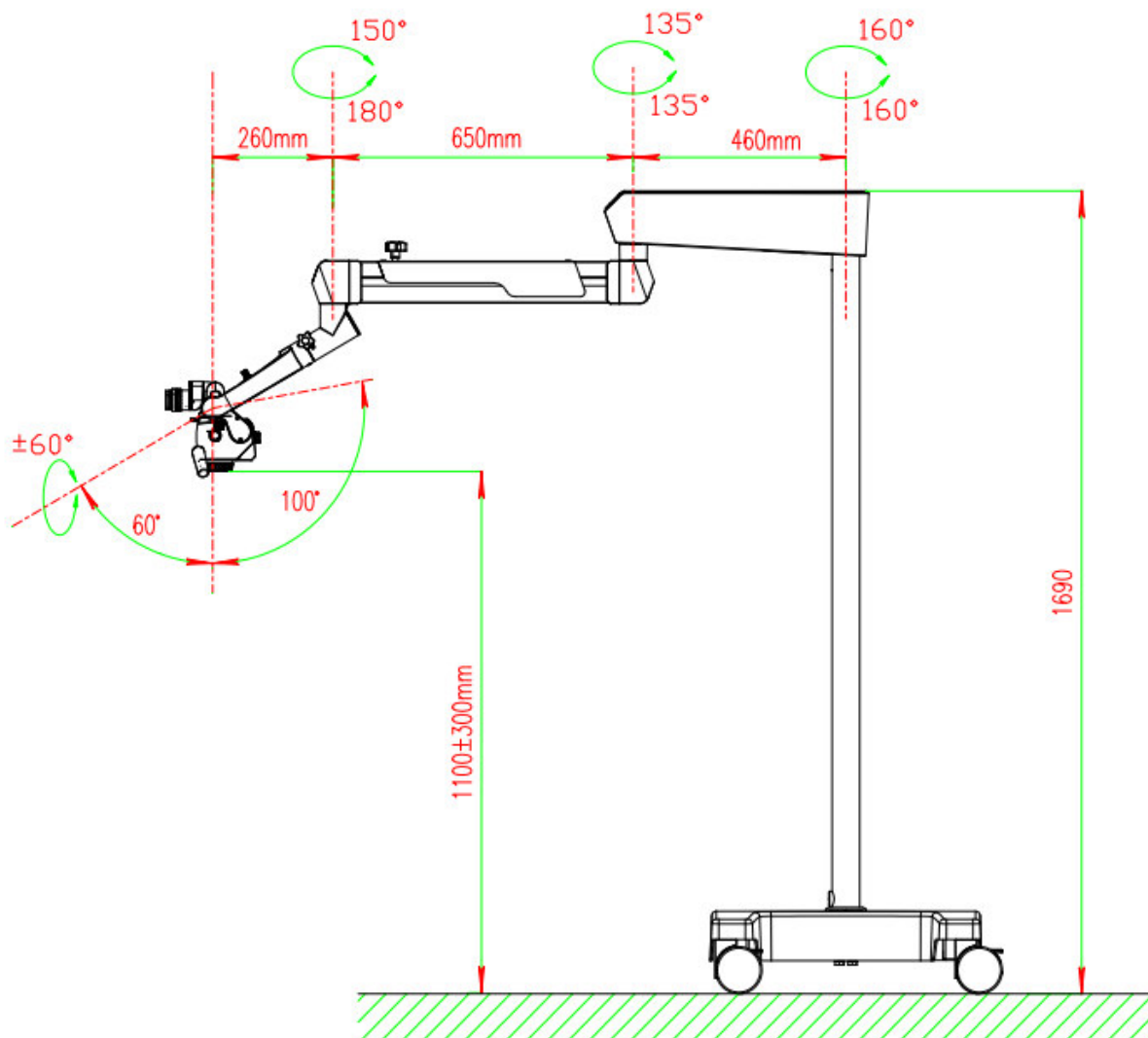
✓ Check if the bolts (1, 2, 3) have been locked;

✓ Check whether the objective lens (4) has been safely installed.



Basic dimension

The basic dimensions of the whole machine and the motion range of the joint are shown in the following figure:



Optical adjustment of surgical microscope

- ▶ Adjust the surgical microscope to the minimum magnification, move the surgical microscope to the chosen position till the object is observed clearly.
- ▶ Adjust the pupillary distance of the binocular barrel, and when the images of the two eyepieces merge into one, the correct position is reached.
- ▶ Adjust the surgical microscope to the maximum magnification and move the surgical microscope to the position that has clearest image.



Clearer image can be obtained by fine adjustment of the focus knob on the objective lens.

- ▶ Change the surgical microscope to the minimum magnification, and adjust the knob of diopter on the eyepiece until the clearest image is observed.
 - User with normal vision: adjust the diopter to 0;
 - User with abnormal vision and wearing glasses: adjust the diopter to 0;
 - User with abnormal vision and not wearing glasses: adjust the diopter till gaining clearest image.

- ▶ Finish optical adjustment.

Microscope Parameters

| | |
|---|---|
| Magnification rate | Manual five-range zooming |
| Large objective lens | Standard configuration: F250 large objective lens (with fine focus mechanism), optional: 200, 300, 350, 400 large objective lens and 200-300 variable objective lens. |
| Binocular barrel | 180° variable angle binocular barrel, f=170mm Rang of Pupillary distance:: 50mm~75mm |
| Eyepiece | 12.5X/Φ18mm, diopter adjustment range: ±6D |
| Object surface illumination (Ix) | Maximum illumination > 80000 lx (with F250 large objective lens) |
| Diameter of illumination spot | Φ72mm (with F250 large objective lens) |
| Illumination shift | Orange filter, green filter, large spot without filter, medium spot without filter, small spot without filter |

Optical parameters

| Large objective lens | F200 | | F250 | | F300 | | F350 | | F400 | |
|----------------------|-----------------------------|-------------------------------|-------|--------|-------|--------|-------|--------|-------|--------|
| | Total magnification rate[A] | Diameter of the view(mm) [B] | A | B (mm) | A | B (mm) | A | B (mm) | A | B (mm) |
| 0.4 | 4.3X | 51.5 | 3.4X | 64.3 | 2.8X | 77.2 | 2.4X | 90.1 | 2.1X | 102.9 |
| 0.6 | 6.4X | 34.3 | 5.3X | 42.9 | 4.4X | 51.5 | 3.6X | 60.0 | 3.2X | 68.6 |
| 1 | 10.6X | 20.6 | 8.5X | 25.7 | 7.1X | 30.9 | 6.1X | 36.0 | 5.3X | 41.2 |
| 1.6 | 17X | 12.9 | 13.6X | 16.1 | 11.3X | 19.3 | 9.7X | 22.5 | 8.5X | 25.7 |
| 2.5 | 26.6X | 8.2 | 21.3X | 10.3 | 17.7X | 12.4 | 15.2X | 14.4 | 13.3X | 16.5 |

Electrical parameters

| | |
|-----------------------------------|--|
| Rated voltage | DC12/3A (Adapter: Input: AC100-240V 50/60Hz, output: DC12V 3A) |
| Input power | 25-60VA |
| Electrical safety standard | IEC60601-1:2005 + A1: 2012 IEC60601-1-2:2014 |
| Lighting system | LED bulb, life time is over 50,000 hours |
| Noise | ≤65dB |
| Running mode | Continuous running |

Key components for electromagnetic compatibility

The electromagnetic compatibility key components of the product include the power adapter and dimming circuit board, It will cause significant decreasingly in electromagnetic compatibility transmission and immunity performance to use or replace with the accessories with non-matched design,



Do not replace the components without authorization.

Guidance and manufacturers declaration–electromagnetic emission



The AM-2000 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the AM-2000 surgical microscope should assure that it is used in such an environment.

| Emissions test | Compliance | Electromagnetic Environment - Guidance |
|---|------------|--|
| RF emissions CISPR11 | Group 1 | AM-2000 surgical microscope 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. |
| RF emissions CISPR11 | Class A | AM-2000 surgical microscope is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions IEC 61000-3-2 | Class A | |
| Voltage fluctuations /flicker emissions IEC 61000-3-3 | Complies | |

EQUIPMENT and SYSTEMS



The AM-2000 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the AM-2000 surgical microscope should assure that it is used in such an environment.

| Immunity test | IEC 60601 test level | Compliance level | Electromagnetic environment -guidance |
|--|---|---|--|
| Electrostatic discharge (ESD) IEC 61000-4-2 | ± 8 kV contact ± 15 kV air | ± 8 kV contact ± 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 %. |
| Electrostatic transient / burst IEC 61000-4-4 | ± 2 kV for power supply lines | ± 2 kV for power supply lines | Mains power quality should be that of a typical commercial or hospital environment. |
| Surge IEC 61000-4-5 | ± 1 kV differential mode | ± 1 kV differential mode | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | <5 % U_T ; for 0.5 cycle, (On U_T , > 95% of the drop) 40 % U_T ; for 0.5 cycles, (On U_T , 60% of the drop) 70 % U_T ; for 0.5 cycles, (On U_T , 30% of the drop) <5 % U_T ; for 0.5s, (On U_T , > 95% of the drop) | <5 % U_T ; for 0.5 cycle, (On U_T , > 95% of the drop) 40 % U_T ; for 0.5 cycles, (On U_T , 60% of the drop) 70 % U_T ; for 0.5 cycles, (On U_T , 30% of the drop) <5 % U_T ; for 0.5s, (On U_T , > 95% of the drop) | Mains power quality should be that of a typical commercial or hospital environment. If the user of the AM-2000 surgical microscope requires continued operation during power mains interruptions, it is recommended that the AM-2000 surgical microscope be powered from an uninterruptible power supply or a battery. |
| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |

U_T is the a. c. mains voltage prior to application of the test level

Guidance and Statement from Manufacturer - Electromagnetic Immunity- for EQUIPMENT and SYSTEM that are not LIFE-SUPPORTING



The AM-2000 surgical microscope is intended for use in the electromagnetic environment specified below. The customer or the user of the AM-2000 surgical microscope should assure 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 | 3Vrms 150kHz ~80MHz | 3Vrms | <p>Portable and mobile RF communications equipment should be used no closer to any part of the AM-2000 surgical microscope, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance</p> $d = \left[\frac{3.5}{V_1} \right] \sqrt{p}$ $d = \left[\frac{3.5}{E_1} \right] \sqrt{p} \quad 80\text{MHz} \sim 800\text{MHz}$ $d = \left[\frac{7}{E_1} \right] \sqrt{p} \quad 800\text{MHz} \sim 2.5\text{GHz}$ <p>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 metres (m).^b</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> <div style="text-align: center;"> </div> |
| Radiated RF IEC 61000-4-3 | 3V/m 80MHz~ 2.5GHz | 3V/m | |



- At 80 MHz and 800 MHz, the higher frequency range applies.
- These guidelines may not apply in all situations. Electromagnetic is affected by absorption and reflection from structures, objects and people.

Cleaning and Maintenance of the Instrument



If possible, the equipment and accessories shall be cleaned immediately after use. Contaminants cannot be dried on the object as this will make it more difficult to clean and disinfect.

Preventive maintenance and inspection

Operator of preventive inspection, maintenance and calibration: User

Maintenance cycle: 3 months.

Parts for preventive inspection and maintenance: eyepiece and Objective

Clean the optical surface



The optical component has a multi-layer laminating (e.g., eyepiece, objective) to ensure optimum image quality, the contaminants attached to the surface of the optical component will reduce the image quality. The internal optical equipment shall be protected from dust, the equipment shall not be stored without objective lens, binocular and eyepiece. After use, cover the dust cover on the surface of the system to avoid dust on the equipment. When the optical components and accessories are not in use, they are always kept in the dust-free box.



Do not use any chemical cleaning agent, corrosive solvent or detergent with scratching effect, which will damage the surface of the optical device.

▶ The stain (blood stains, etc.) on the surface of the optical part shall be removed with distilled water having added an appropriate amount of washing liquid. The surface can only be wiped with humid cloth, and the surface of the component must not be scrubbed with wet cloth;

▶ After removing the stains from surface, use a clean cloth to dip 75% medical alcohol for further cleaning.

Troubleshooting

| Faults | Possible Reasons | Solutions |
|--|--|---|
| Lighting failure | Power cable is not connected | Connect the power wire |
| | Power switch is not turned on | Turn on the power switch |
| | The dimming knob is adjusted to minimum position | Adjust the dimming knob |
| | The instrument is in the non-working area and the balanced arm is at high position | Move the balanced arm to the working area |
| | Instrument electrical failure | Contact the local dealer or after-sales service agent |
| | LED bulb failure | Contact the local dealer or after-sales service agent |
| Illumination fails intermittently during use | The cooling window and the air inlet are covered or blocked by external object | Remove the foreign object and clean the cooling window |
| | Failure of cooling fan | Contact the local dealer or after-sales service agent |
| | Instrument electrical failure | Contact the local dealer or after-sales service agent |
| The instrument cannot stop at any time when it moves up and down | Balanced arm is not adjusted to balance after adding or decreasing accessories of the microscope | Balance the balanced arm |
| | Spring failure | Contact the local dealer or after-sales service agent |
| The instrument is running stiffly | The friction adjustment knob is adjusted too tight. | Loosen the friction adjusting knob, and moderately adjust the friction. |
| Optical magnification switching failure | Mechanical failure of the instrument | Contact the local dealer or after-sales service agent |



Ryf After-sale service // Swiss Warranty with Ryf Ltd.

Any unauthorized repair on the instrument shall not enjoy warranty service anymore.

In order to safely return the microscope to Ryf Ltd. Grenchen, Switzerland for repair, please keep, if possible, the original packaging box and packaging materials of the optical surgery instrument.

One year Ryeco Swiss warranty-- cost for parts and labor are included in the product you have purchased from Ryf Ltd., Switzerland.

Notes: