

**Inami**

FLOOR OPERATION MICROSCOPES

# MANUAL



L-0970 | L-0990

**VIEWLIGHT**  
POWERED BY INNOVATION

Before use this instrument, be sure to read this manual

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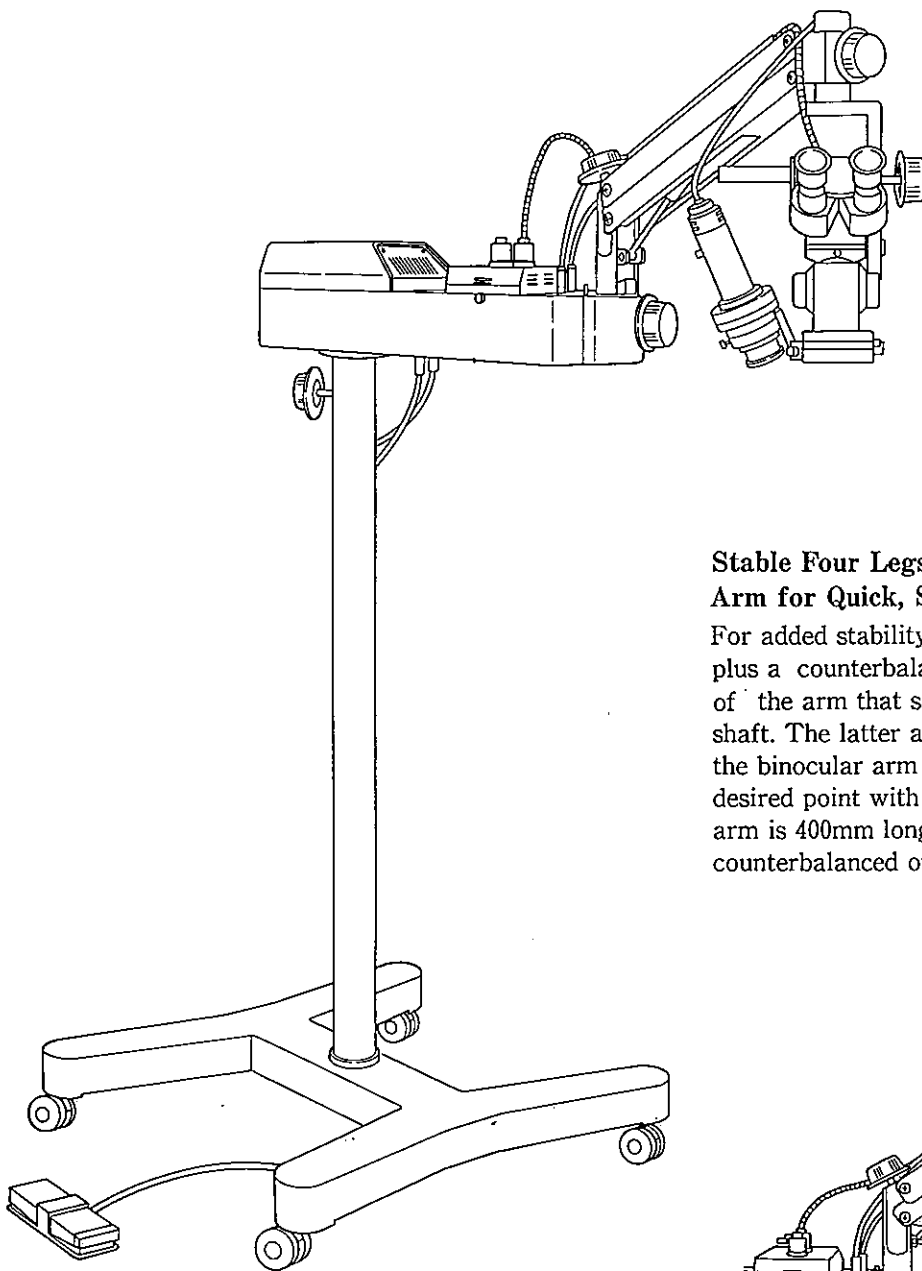
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This instruction manual provides a detailed description of the  
L-0990 Operation Microscope.

# OPERATION MICROSCOPE

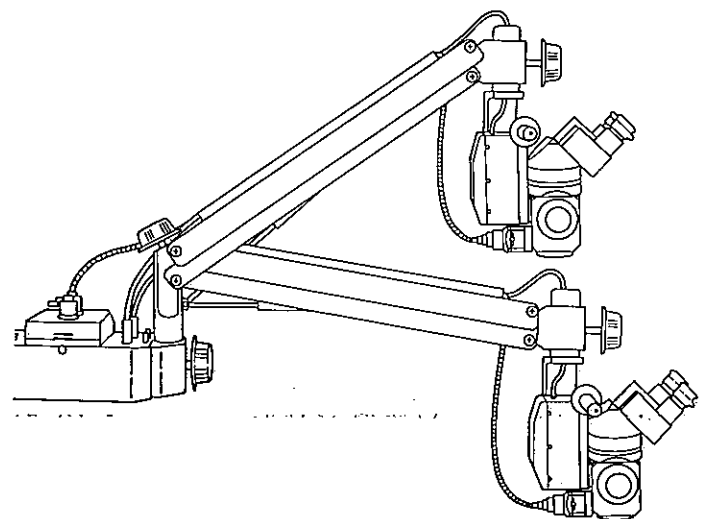
The Operation Microscope provides surgeons with a finely focused clear and sharp image, minimizing fatigue during delicate operations.

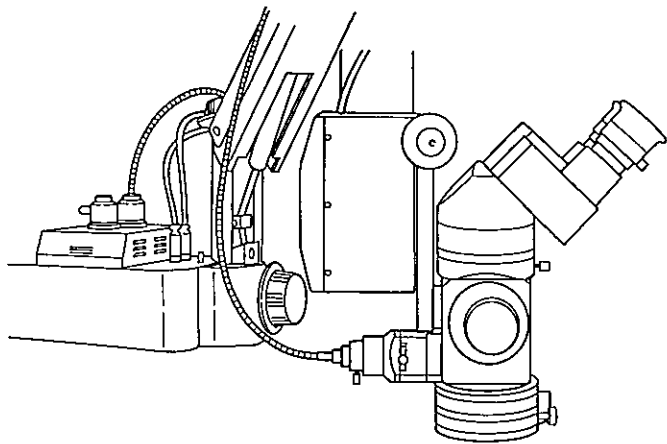
Combined with a variety of optional accessories, it offers wide applications with high efficiency.



## **Stable Four Legs Base with Counterbalanced Arm for Quick, Safe Optical Head Positioning**

For added stability, the stand is designed with four legs base, plus a counterbalance mechanism is incorporated at the end of the arm that sits at the top of the 1,140mm high vertical shaft. The latter allows for free up and down movement of the binocular arm which can be precisely positioned at the desired point with only a minimum of force. The horizontal arm is 400mm long with 320° rotation, while the counterbalanced one is 560mm and rotates 280°.



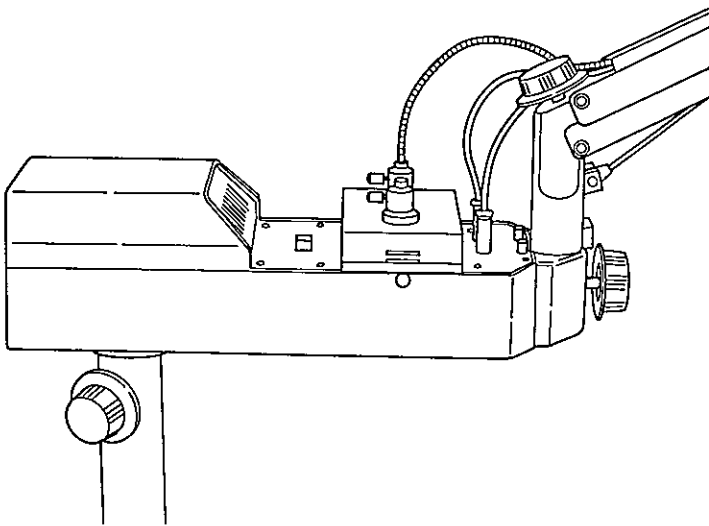


### Power Focusing and Adjustable 5 Steps Magnification

Focusing is motorized for troublefree operation merely stepping on the foot pedal. Its range is total 40mm, or 20mm each for the UP and DOWN movements (at the speed of 1.3mm per second) Total magnifications are adjustable in five steps. Most control knobs to be manipulated with one's fingers have detachable protection caps to permit easy sterilization for enhanced hygiene.

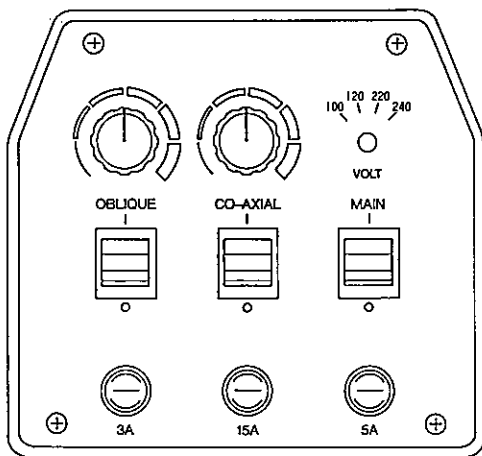
### Simple Main Lamp Switching in Eventual Lamp Failure

Main illuminator employs two sets of bright and cool 15V 150W halogen lamps: one is used for actual illumination, and the other is a spare in case of emergency. Its lighting is guided to the optical head through a fiber optic cable. Should the filament of the lamp in use be blown during surgery, the illumination source can be immediately switched to the other lamp by pulling off the light guide and attaching it to the second lamp. Further, replacement of the burnt lamp after the surgical process is very simple.



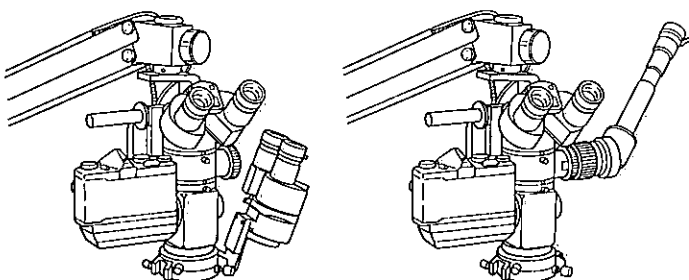
### Stepless Adjustment of Main/Oblique Illuminators

Two illumination systems are available so that either or both of them can be used to meet the condition of the surgical area: main coaxial, and oblique (9V 2A tungsten lamp) illuminators. Luminosity is independently controllable for each source by turning the intensity knob. Fuses are separately provided for the power line (5A), coaxial (15A) and oblique (3A) illuminators.



### A Rich Variety of Optional Accessories Further Extends Functional Ability

Any kind of surgical situation can be satisfied by combining the necessary parts selected from a wide array of optional accessories. With appropriate adaptors, image recording and/or monitoring on a TV screen through a still or video camera also possible.



# 1. ASSEMBLY INSTRUCTIONS

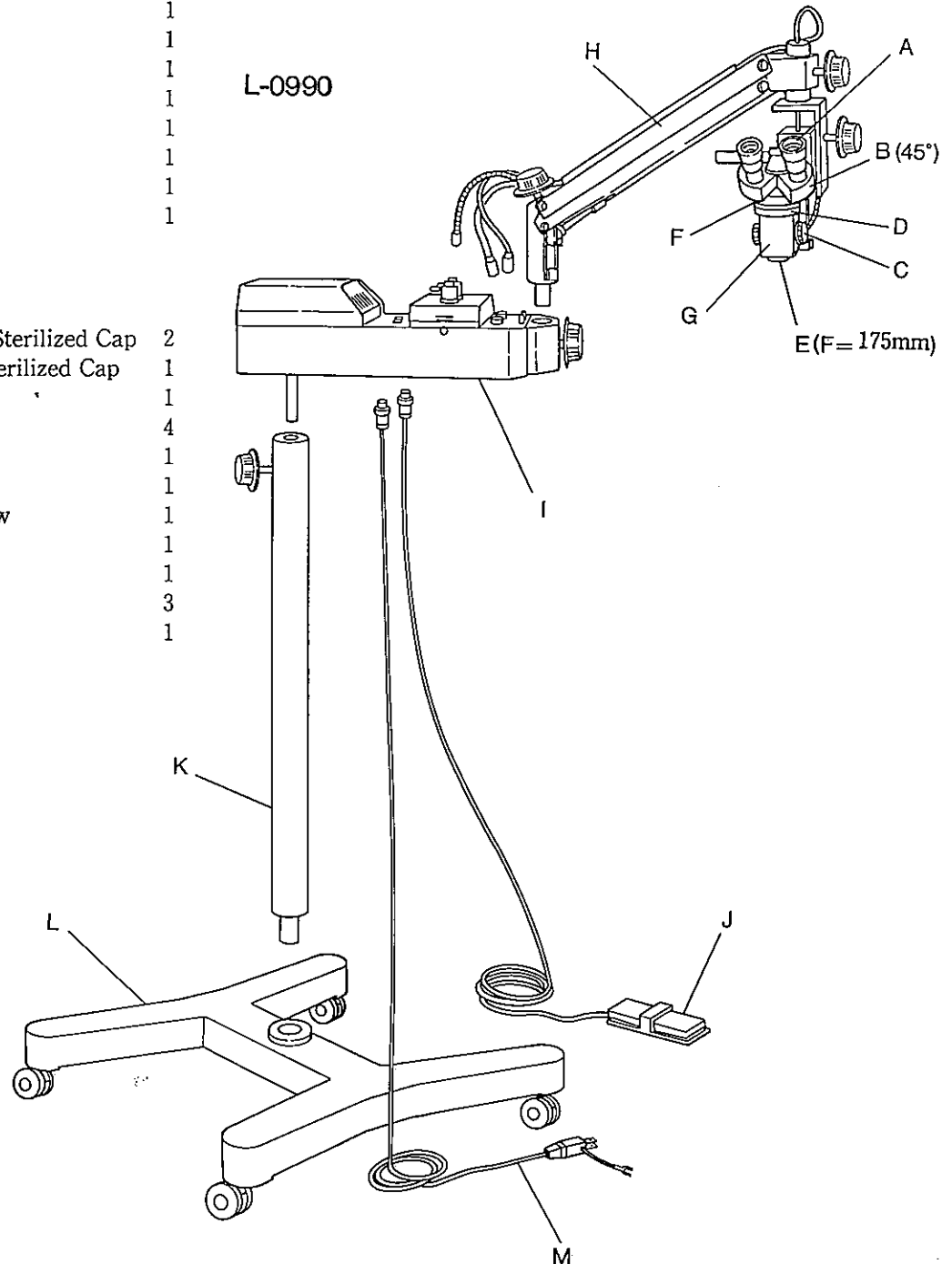
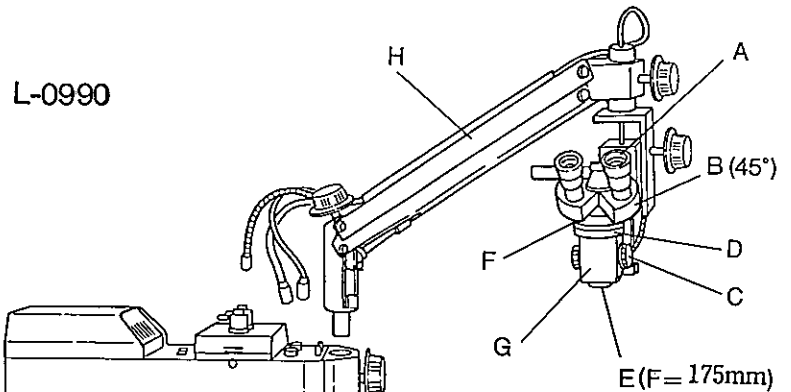
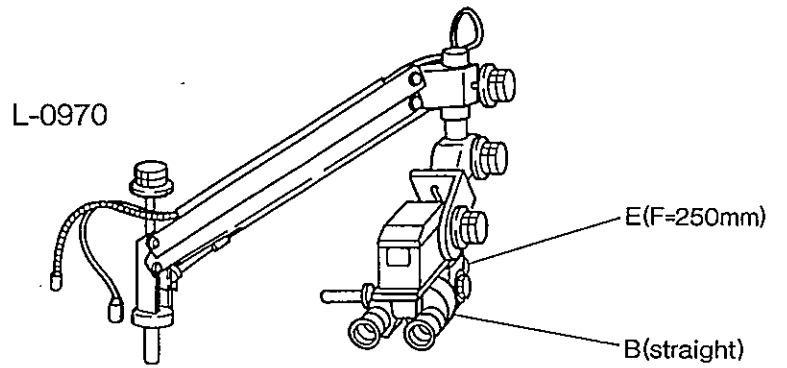
## 1-1. Packaged Components.

### 1-1-a. Standard Components (Floor Stand)

A. Eyepiece Lens 12.5X	2
B. 45° Inclined Binocular	1
C. Magnification Changer	1
D. Coaxial Light Adapter with Filters	1
E. Objective Lens F=200mm	1
F. Vertical Fine Control	1
G. Light Guide	1
H. Second Arm	1
I. First Arm	1
J. Foot Switch	1
K. Column	1
L. Base	1
M. Power Cord	1

### 1-1-b. Accessories

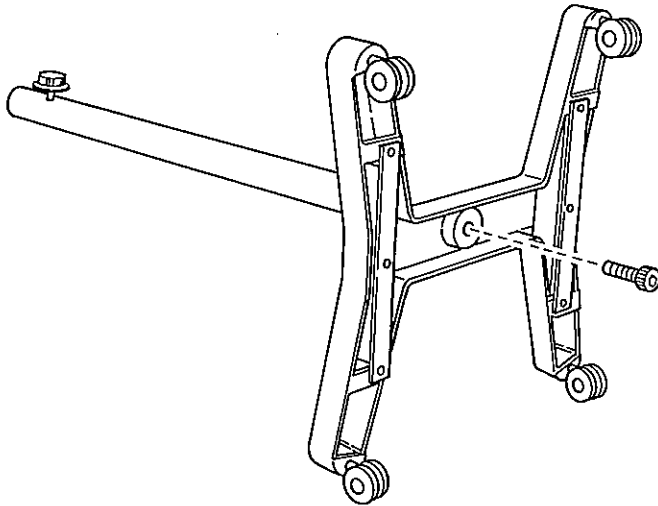
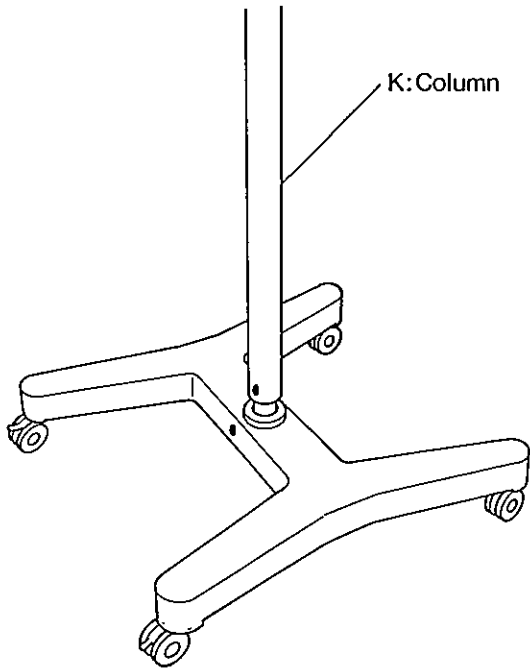
c-1. Magnification Change Handle Sterilized Cap	2
f-1. Indication Fastening Handle Sterilized Cap	1
f-2. Microscope Operating Handle	1
f-3. Bolt with a Hexagonal Hole	4
f-4. Hexagonal Spanner	1
h-1. Light Guide and Cord Cover	1
i-1. First Arm Slip-prevention Screw	1
i-2. Hexagonal Spanner	1
i-3. Coaxial Electric Lamp Unit	1
1-1. Bolt with a Hexagonal Hole	3
1-2. Hexagonal Spanner	1



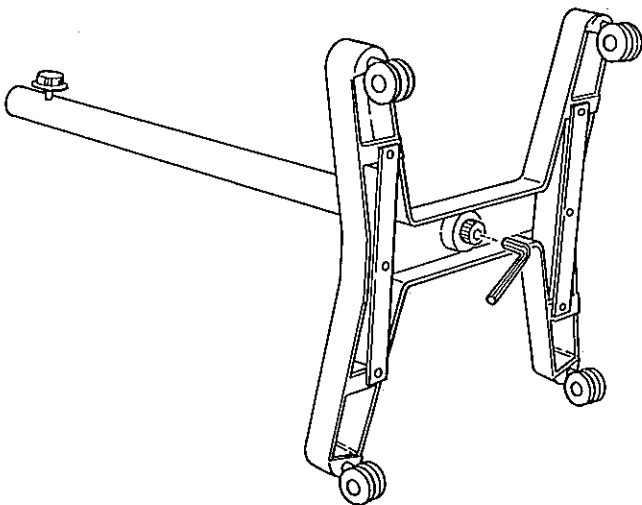
## 1-2 Assembling Procedure

### (1) Assembling Column

Gently place the column K. on the base. Then you have to coincide with the blue mark which we located on the column and four legs.

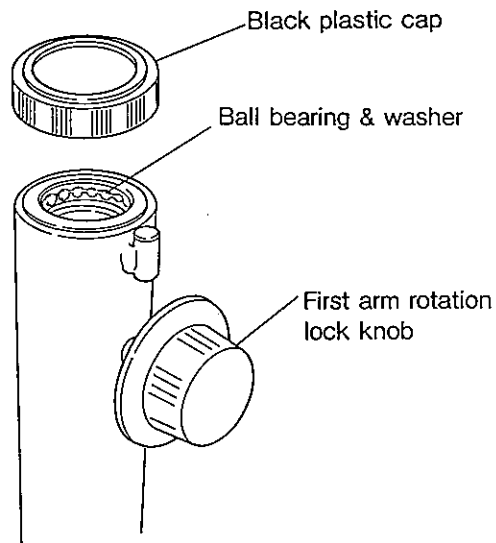


Screw manually "Bolt with a Hexagonal Hole" and secure with hexagonal spanners.

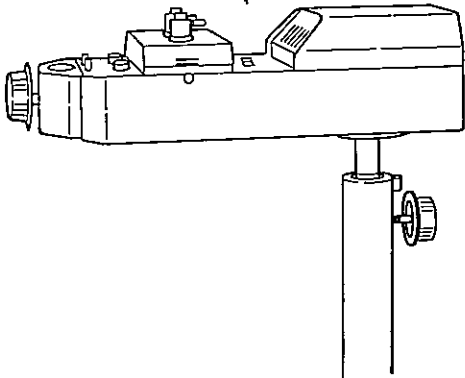


## (2) Assembling First Arm

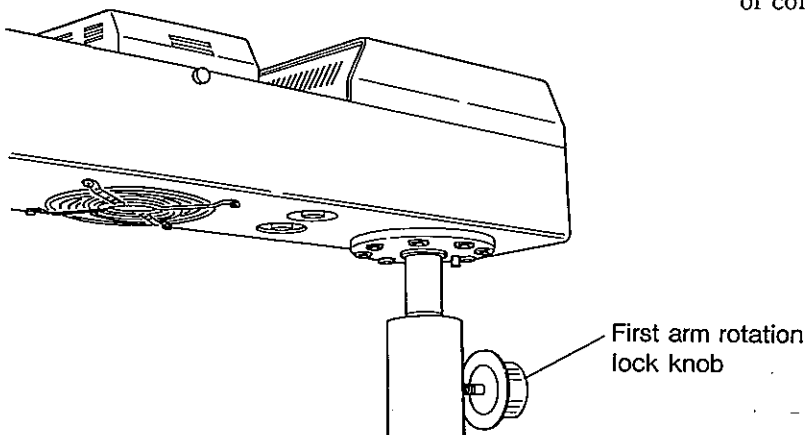
Take-off the black plastic cap.  
Loosen the first arm rotation lock knob  
of the column.  
Also take care for the falling down of  
the ball bearing and washer.

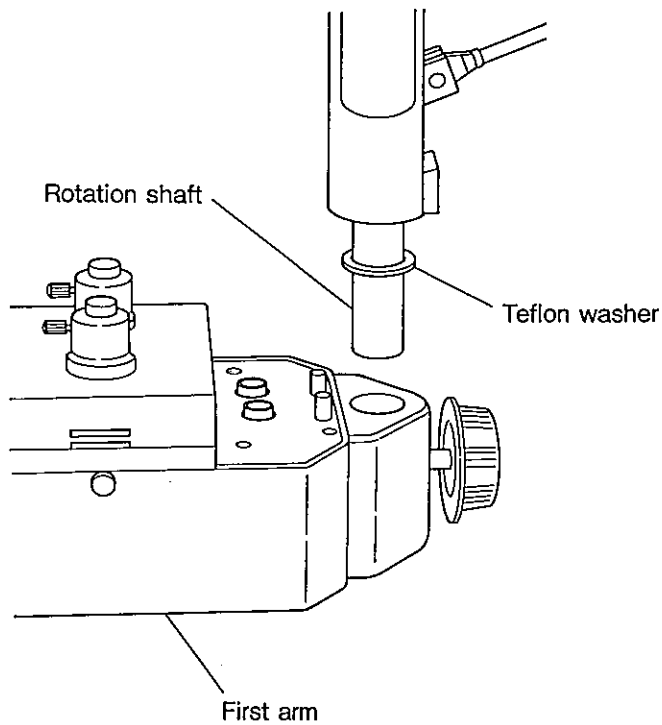


Level the first arm and insert the first  
arm gently in the column.



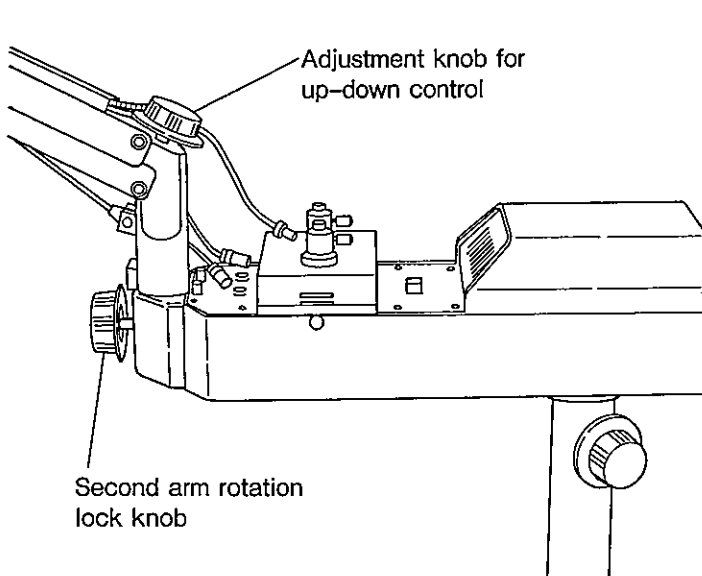
Tighten the first arm rotation lock knob  
of column.



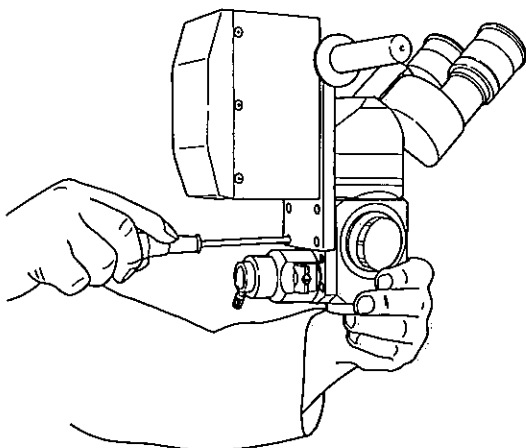


### (3) Assembling Second Arm

Take the second arm and insert it in the first arm gently.  
Just then you must place the teflon washer between second arm column and receptacle of it's column.



Tighten the second arm rotation lock knob lightly.  
Adjust the balance of the up-down of second arm.  
The balance should be changed with the accessories to be adapted.

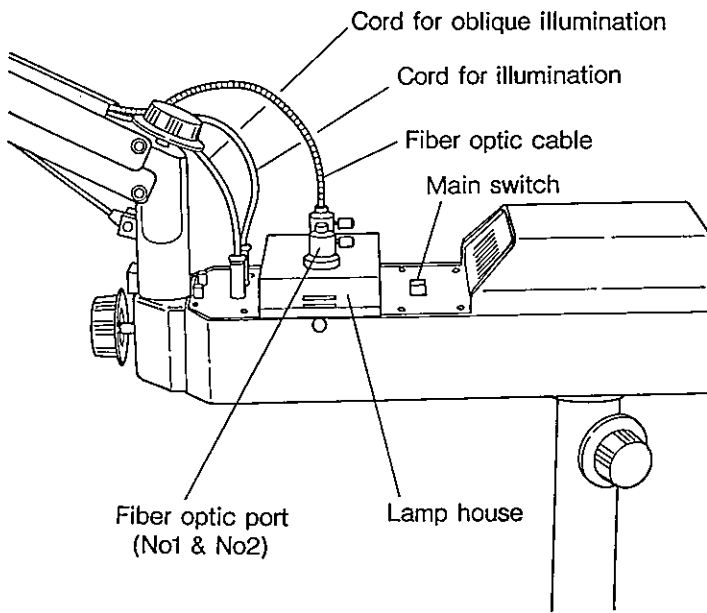


### (4) Mounting Microscope

Normally microscope head is mounted with the motorized fine focus plate, however in case of different packages then you have to mount as follows.

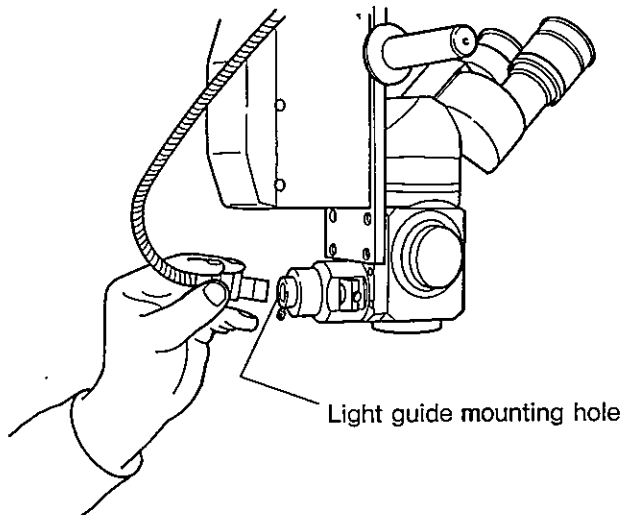
Mount the microscope head by tightening the four screws as per figure.  
Current models are already adapted with fine adjustment motor.



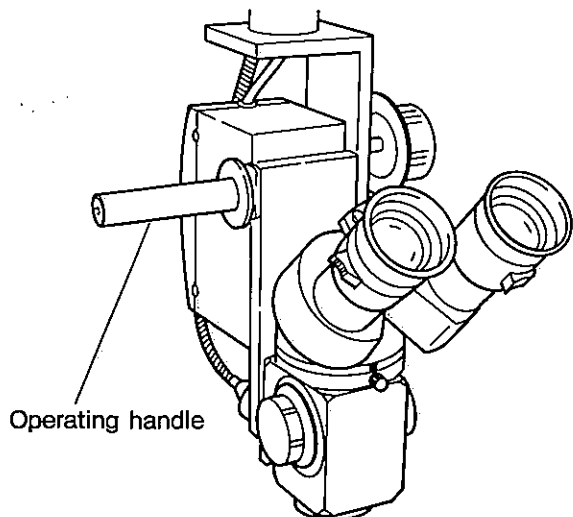


**(5) Mounting Light Guide**

Take off the cap of the terminal hole at the top of the lamp house. Insert the fiber optic cable into port No.1 or 2, and also the main switch must be followed the No.1 or 2. Also plug in the cord for illumination.



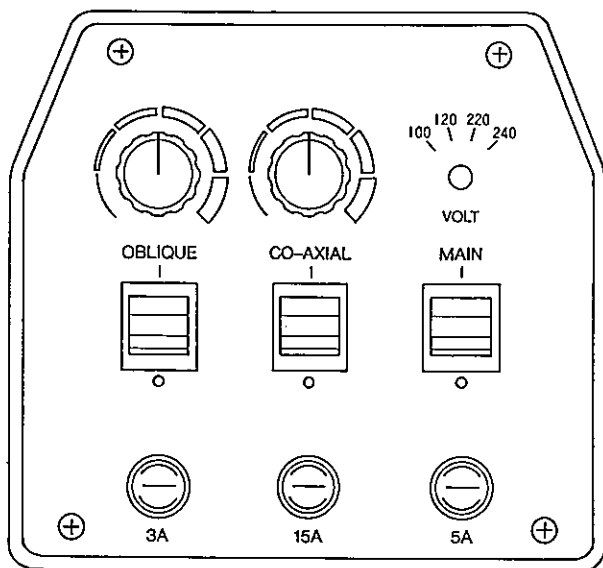
Insert the other side of the light guide into the mounting hole. And tighten the screw. The focus of the illumination is adjusted with the light guide with fixed position.



**(6) Mounting Microscope Operating Handle**

As you find from figure, screw the microscope operating handle to the upper part of the vertical fine control.

Note: This microscope operating handle will be removed when sterilize it.



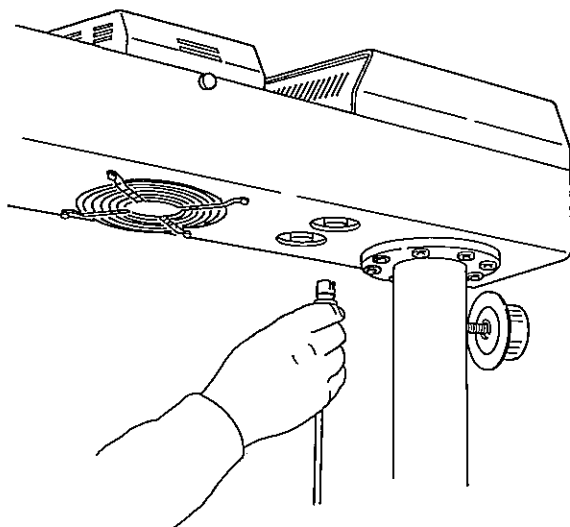
### (7) Voltage Selector

Make sure that the input voltage applicable, 100, 120, 220, 240V has an allowance range of  $\pm 10\%$ .

Make sure that the selector switch matches well with the input voltage. The voltage level is shown by indicator. If the power comes out of ranges, use a stabilizer to keep a constant voltage power.

Stepless adjustment of main/oblique illuminations.

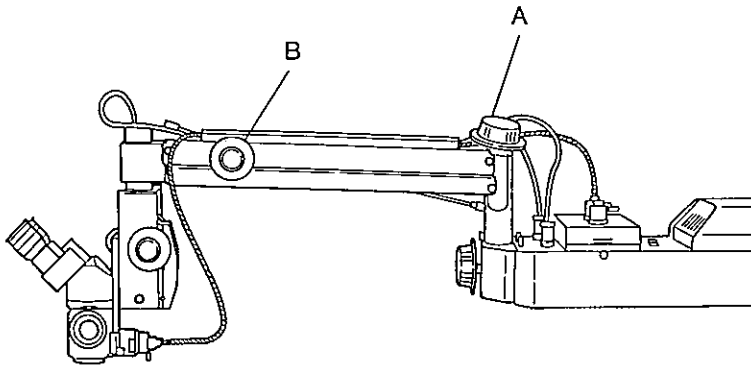
Two illumination systems are available so that either or both of them can be used to meet the condition of the surgical area: main coaxial, and oblique (9V 2A tungsten lamp) illuminators. Luminosity is independently controllable for each source by turning the intensity knob. Fuses are separately provided for the power line (5A), coaxial (15A) and oblique(3A) illuminators.



### (8) Attaching Cords for Vertical Fine Control with Foot Switch and Main Illuminations.

Plug-in the cord from the foot switch to the connector at the back side of the first arm and for illuminations.

## 2. OPERATING PROCEDURES



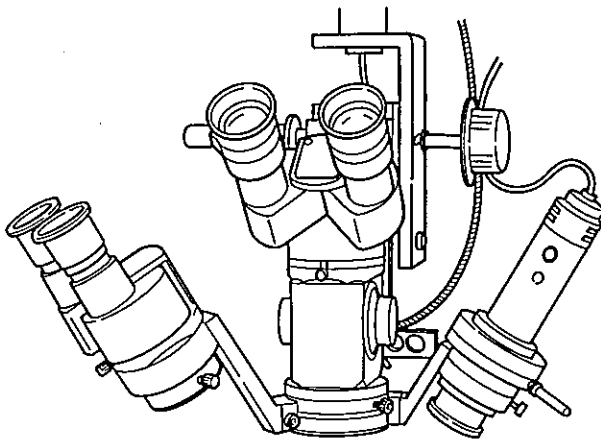
If you finish the set-up of microscope, you have to adjust the balance of second arm.

If you move second arm vertically and the arm rises too easily or lowers too easily you have to adjust the balance of arm with knob (A).

After that in operation, you can fix the position with knob (B).

### Adjusting of Height

Loosen the vertical adjusting knob (B) and keep the place where the object is almost focused. And fine focusing can be done by foot switch.



### Adjusting Eyepieces (Diopter)

Two eyepieces are equipped with a scale. Focus the eyepieces in the manner as follows.

- 1). Set the ring with  $\pm 0$  and adjust it to minus or plus according to your eye.
- 2). Read the scale to determine the dioptic setting.

### Pupillary Distance Adjustment

View through the eyepieces with both eye while holding the prism box to adjust the pupillary distance. If the value of your known in advance, set the pupillary distance scale to the value.

### Adjusting Light Level

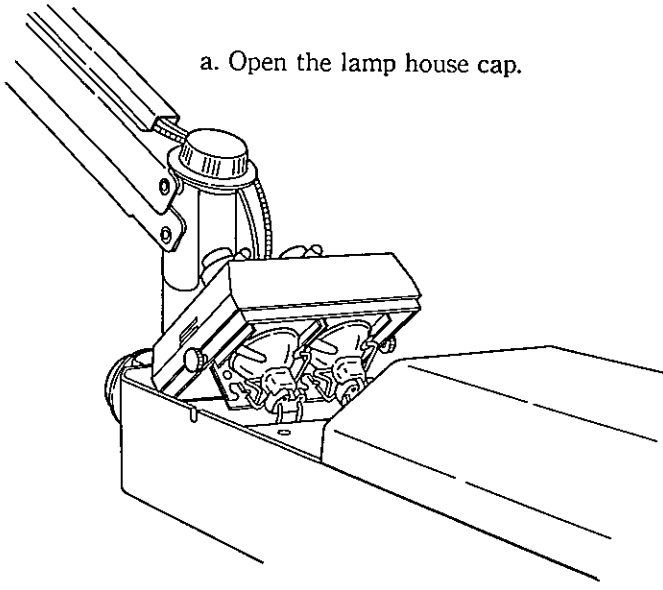
Turn the coaxial illuminator switch to on and turn the intensity knob accordingly.

### Attaching Sterilized Cap

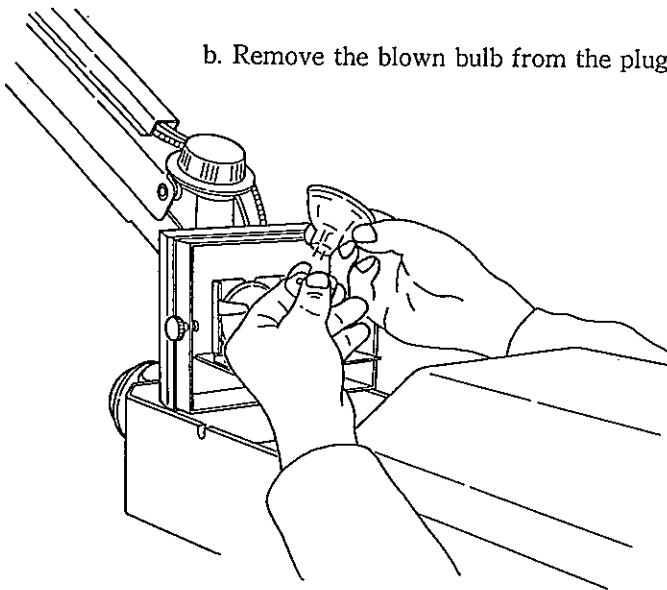
Sterilized caps can be fitted on magnification change knob and inclination fixing screw.

### The way of replacement of the bulbs

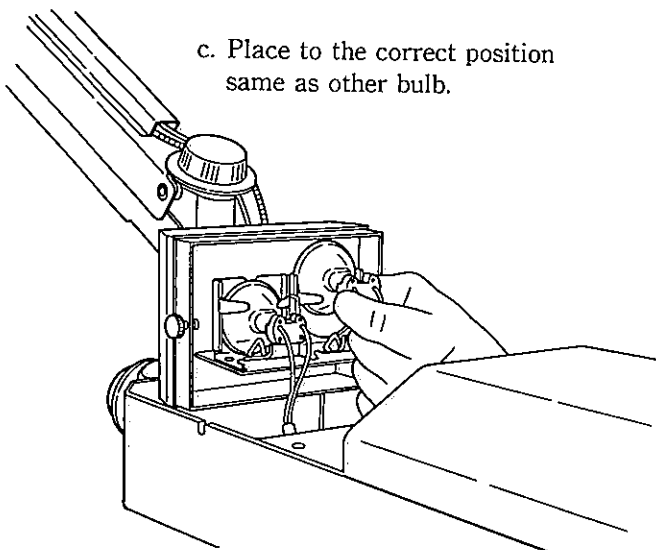
a. Open the lamp house cap.



b. Remove the blown bulb from the plug.



c. Place to the correct position same as other bulb.



## 3. MAINTENANCE

### Replacing Coaxial Illuminator Bulb

Main illuminator employs two sets of bright and cool 15V, 150W halogen lamps: one is used for actual illumination and the other is a spare in case of emergency. Its lighting is guided to the optical head through a fiber optic cable.

Should the filament of the lamp in use be blown during surgery, the illumination source can be immediately switched to the other lamp by pulling off the light guide and attaching it to the second lamp.

Further, replacement of the burnt lamp after the surgical process is very simple.

\*Halogen bulb (E450)

15V, 150W (Phillips made)

## 4. STANDARD ACCESSORIES

Fuse (3A, 5A, 15A)	1 p.c. each	Power cord	1 p.c.
Spare bulb	1 p.c.	Foot switch	1 p.c.
Dust cover	1 p.c.	Operation/Maintenance manual	1 copy
Operating handle	1 p.c.	Hexagonal spanner	1 p.c.

## 5. OPTIONAL ACCESSORIES

Assistant binocular microscope (L-0967)	Oblique illuminator-slit (L-0965)
Coupling (L-0966)	Beam splitter module (L-0541)
Observation tube (L-0542)	Binocular observation tube (L-0542-B)
Camera Adaptor w/mount (L-0543)	35mm Camera body (L-0555)
Auto winder (L-0556)	TV Adaptor (L-0544)

## 6. SPECIFICATIONS

### Main Microscope

#### L-0960

Model:	Galileo type
Magnification changes:	Drum type, with 5 changes
Objective lens:	F=175mm
Eyepiece:	Fields of view at 12.5X-17mm diameter Adjusting range of visibility diopter-below -6dp - +5dp or more.

Total magnification and Field of view:

Objective lens	F=175mm (51 $\phi$ , 43 $\phi$ )				
Total magnification (X)	4	6	10	16	25
Field of view (mm)	55.0	35.5	22.0	13.5	8.5
Brightness (max)	120,000 Lux (6 $\phi$ ), 80,000 Lux (5 $\phi$ )				
Coaxial illumination field (mm)	33				

Light source:	Halogen lamp (15V, 150W) with cold mirror filter equipped.
Range of pupillary distance:	50-75mm

### Vertical Fine Control

Model:	Electric type, using a motor
Focusing distance:	36mm
Focusing speed:	2mm per second
Microscope inclination:	0° to 30°

### Foot Switch

Model:	Floor placement type, stepping type
Weight:	1.3kg

#### L-0970

Objective lens:	F=250mm
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Total magnification and Field of view:

Objective lens	F=250mm (43 $\phi$ )				
Total magnification (X)	4	6	10	16	25
Field of view (mm)	78	50	31	19	12.5
Brightness (max)	40,000 LuX (6 $\phi$ ), 35,000 LuX (5 $\phi$ )				
Coaxial illumination field (mm)	44				

## 7. REMARKS FOR OPERATION & MAINTENANCE

1. Follow the checkup points to keep the instruments with good condition for daily operations.
2. Store the instrument with care, keeping the optical parts free from moisture.
3. To move the instrument, fold the arms, secure the fastening handles well and hold the main column and the first arm, then gently move the instrument as necessary.
4. Never use the device in the place where strong vibration or shocks occur.  
(The same care should be followed when transporting this device.)
5. Keep the device away from dust, high temperature, or humid condition.
6. The ground wire of power cord should be connected to the ground terminal of wall outlet. When this device has not been used for an extended amount of time, plug out the power cord.
7. Never touch the device with wet hand.
8. Never touch the inner optical part of the prisms to keep away from fingerprints and dusts; such things may affect the result of mis-alignment.
9. Use the specified cables for connecting each unit of the device.
10. Never make the short circuit for each connectors on the equipment. It may cause overheat and the damage of the instrument or the operator may get burned.
11. Never disassemble the device.
12. Never look into fiber illumination directly.
13. Never touch the lamp housing during in operation.
14. Never put anything into cooler-fan.
15. If this device should for any reason malfunction, do not touch the inner structures, but contact your authorized distributor.