Nikon

ZOOM SLIT LAMP MICROSCOPE NS-1V

Instructions

NIKON CORPORATION

CONTENTS

CAUTION

1. This instrument is designed for diagnosis for use in the field of ophthalmology.

2. Make certain that the input power voltage coincides with the indication of the voltage selector.

3. Install the unit on a flat surface and place on a clean and air-conditioned room.

4. Take enough care for handling of cord. Avoid bending the electrical cord near the connector. When disconnecting the unit, hold the plug and pull; do not pull on the cord for disconnection.

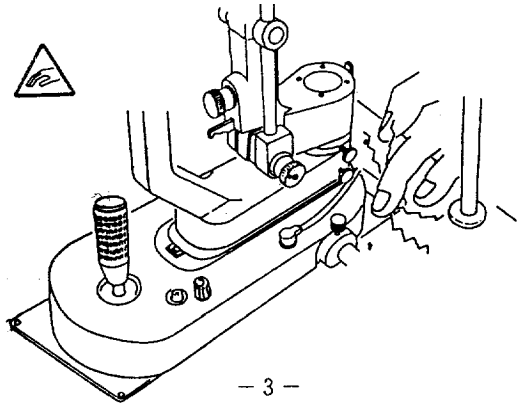
5. Do not use other types of fuses than those specified. When replacing a fuse, be sure to turn the power off and disconnect the power cord from power outlet.

6. Do not touch the glass surface of the illumination lamp (Halogen lamp) directly with fingers. If the lamp is dirty, wipe off with alcohol before use.

7. The halogen lamp becomes very hot during use. When replacing the lamp, wait (at least 10min) until they have cooled off, then replace it. If immediate replacement is required, hold the lamp with thick cloth with care.

8. Be sure to turn the power off for illumination and cover the instrument with the vinyl cover provided, after use.

9. Take care not to hit or catch patient's fingers, when sliding the instrument forward or laterally, as shown in figure. Instruct the patient to place hands on knees or outside of chin rest column for their own safety. Take special care in case of a child or low-vision patient in dark room.



Description of icons on this product

~	Alternating current	○	OFF (Power: disconnection from the power source)
	Fuse	|	ON (Power: connection to the power source)
	Warning (See instructions manual)		Output
	Type B instrument		

 Caution	This indication shows that a personal injury or a damage only to a material might occur if you disregard this indication and use the equipment improperly.
	This sign shows a warning (including a caution). The contents of a warning is drawn in a triangle.

	Risk of burn Do not replace lamp until 10 minutes after power is turned off.		Risk of wound. Do not put a hand in the moving unit.

1. NOMENCLATURE & OPERATION

EYESIGHT ADJUSTMENT RING:
Adjust this ring before observation. (→Page 14)

ZOOM MAGNIFICATION CONTROL KNOB:
Continuous zoom magnification change is possible by turning this knob.

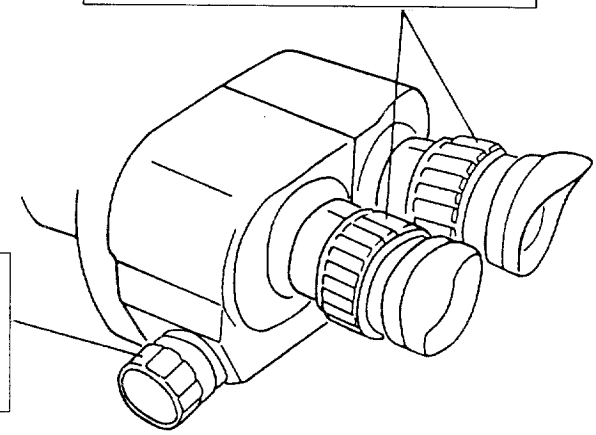


Fig.1-1

PATIENT EYE LEVEL INDEX:
Upper index is a guide for patient eye level.

CHIN REST ELEVATION HANDLE:
Turn it to adjust patient's eye level.

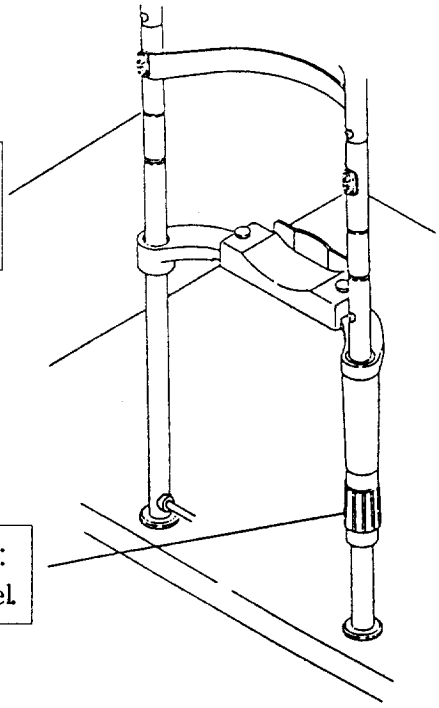
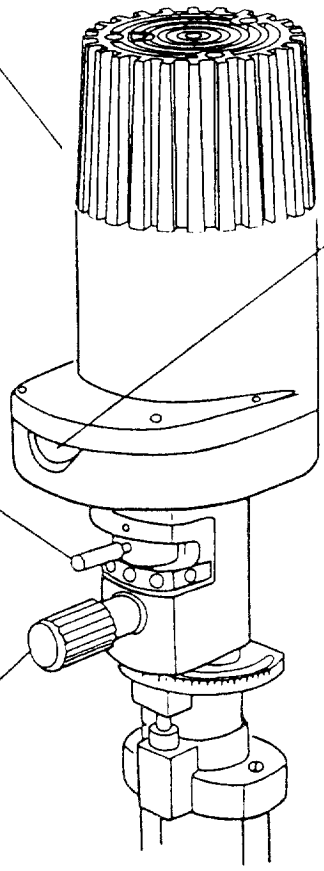


Fig.1-2

LAMP CAP:
Remove this cap to replace the lamp. (→ Page 17)

LAMP CAP FIXATION KNOB:
Loosen this knob when removing the lamp cap. (→ Page 17)



SLIT LENGTH WINDOW:
Scale is divided in mm.

FILTER CHANGING LEVER:
Swing this lever to right or left to change the filter.
Following filters are built in.
-Transparent filter
-Heat absorption filter
-ND (28% transmission) filter
-Green filter
-Cobalt blue filter

SLIT ADJUSTMENT KNOB:
Swing this knob right or left to rotate the slit. Turn it to change illumination aperture to ∅ 0.2, 1, 2, 5, 10, 14mm, and to change the slit height continuously from 1 to 12mm. If it is turned further, the cobalt blue filter is automatically set.

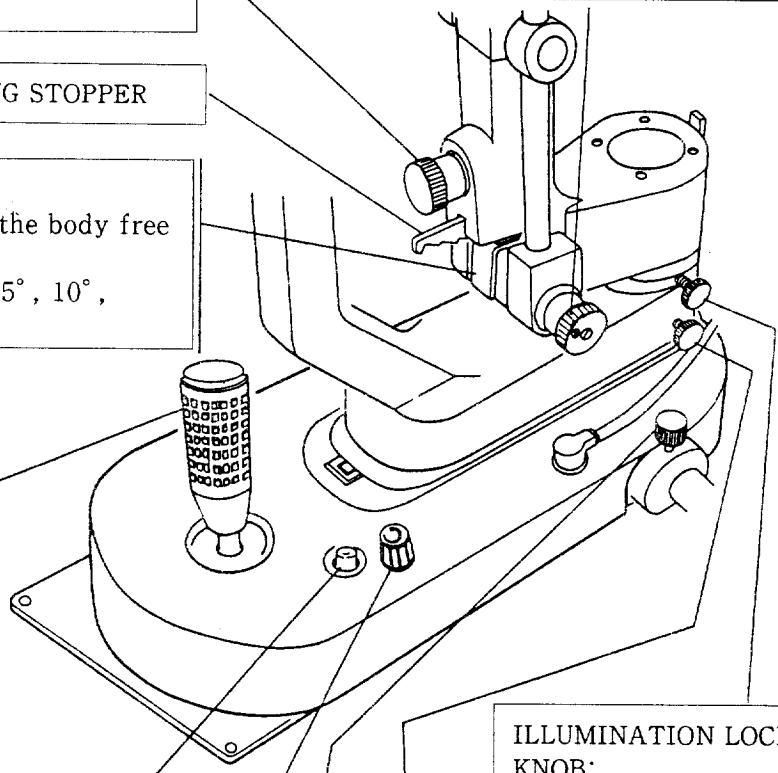
Fig.1-3

CENTERING KNOB:
When turning this knob counterclockwise, the slit image can be swung to right and left.
When turning it clockwise, the slit image will return to its initial position.

SLIT WIDTH ADJUSTMENT KNOB:
Turn it for continuous adjustment of slit width.

TILTING STOPPER

TILTING LEVER:
Press this lever to make the body free from the stopper.
Tilting can be set at 0°, 5°, 10°, 15°, 20°.



JOYSTICK LEVER:
Tilt to adjust the position of the base.
For coarse movement, just hold the lever and slide the base.
Turn the lever for height adjustment.

ILLUMINATION LOCK KNOB:
Turn this knob clockwise to lock the angle between the illumination and observation systems.

BOOST SWITCH:
Brightness will be set to maximum, while depressing this switch.

OBSERVATION LOCK KNOB:
Turn this knob clockwise to lock the observation system.

ILLUMINATION CONTROL:
Turn clockwise to increase brightness, and counterclockwise to decrease brightness.

CROSS-SLIDE LOCK KNOB:
Turn this knob clockwise to lock the cross-slide.
This also locks the slit lamp into position.

Fig.1-4

2. INSTALLATION

2−1. NECESSARY TOOLS

1. Phillips screwdriver
2. Hex wrench (for size M6 5㎜)
3. Spanner

} These tools are not provided at shipment from factory.

2−2. MAIN BODY AND CROSS-SLIDE TABLE

2-2-1. TABLE 1

1) TABLE TOP

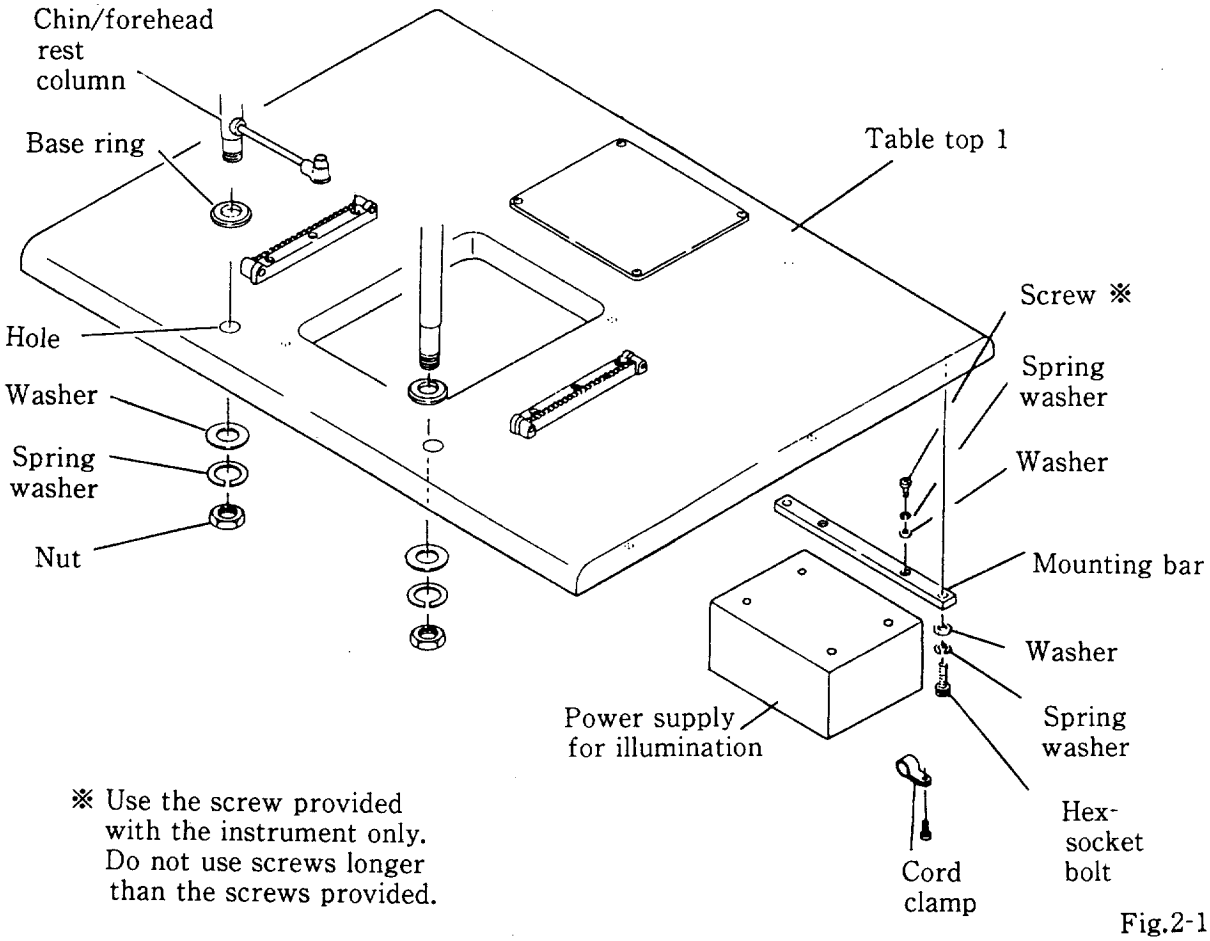
(1) Attach the mounting bar to the power supply for illumination with the Phillips screws (provided).

(2) Fix it to the reverse side of the Table top 1 with hex-socket-head bolts.

(3) Fix the Table top 1 to Nikon power table (See instructions of power table).

2) CHIN AND FOREHEAD REST

Fix the chin/forehead rest to the Table top.



※ Use the screw provided with the instrument only. Do not use screws longer than the screws provided.

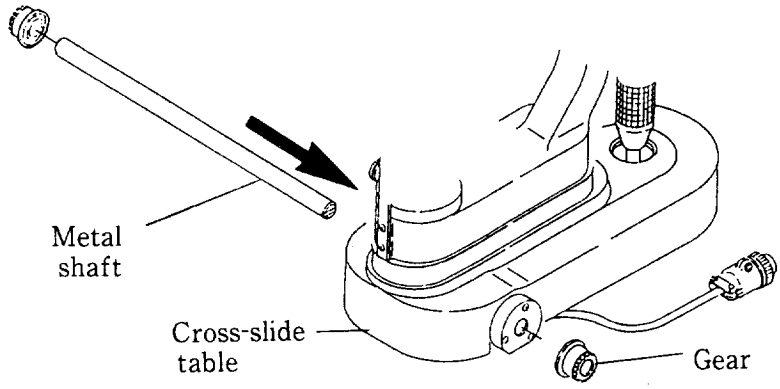
Fig.2-1

3) MAIN BODY

(1) Insert the metal shaft in the hole of the cross-slide table.

(2) Tighten the clamp screw.

(3) Position the gears at both ends of the shaft. Rotate slightly the gears, so that the protruding part inside the gear will be caught by the groove at the end of the shaft.



(4) Place the main body on the Table top 1.

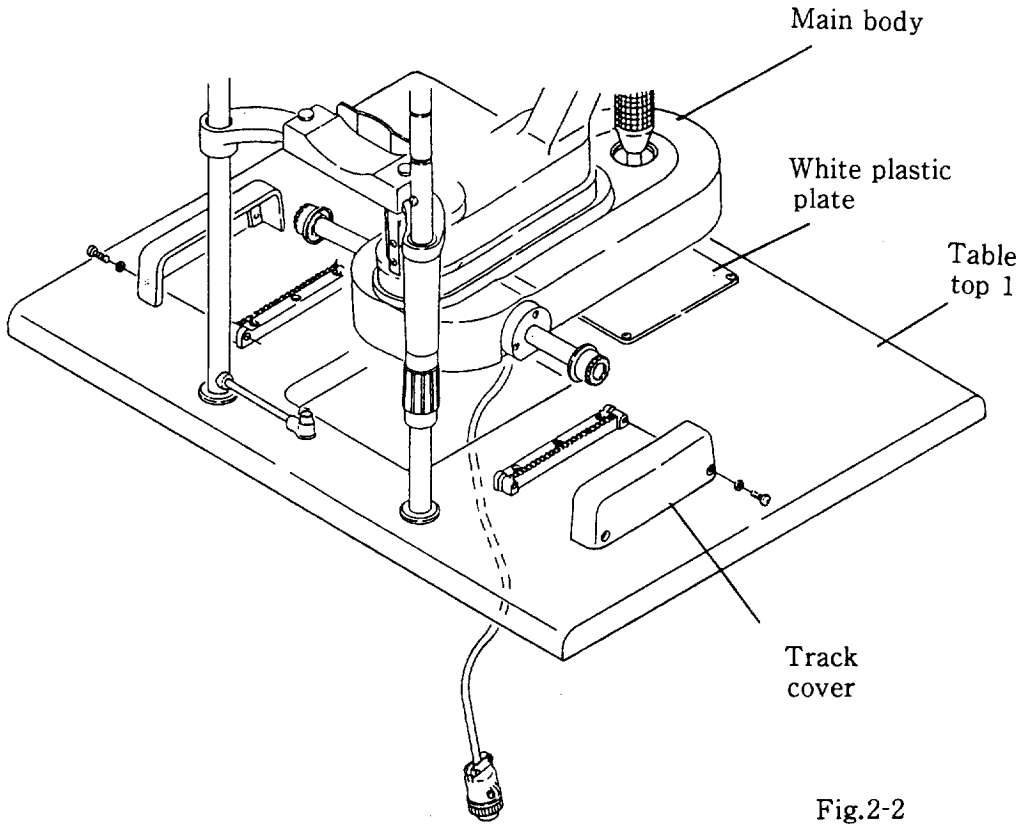
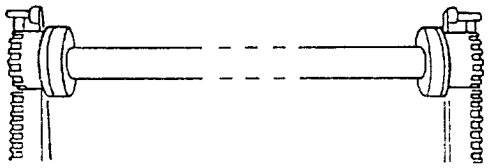


Fig.2-2

Make sure that the edge of the cross-slide table will be positioned in parallel to the edge of the white plastic plate.

Good position



Poor position

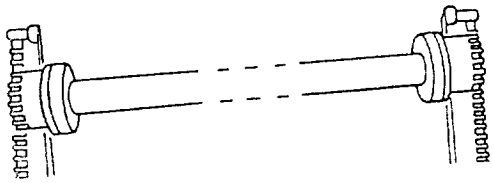


Fig.2-3

(5) Secure the track covers with the screws provided.

2-2-2. TABLE 2

(1) Fix the chin/forehead rest to the Table 2.
Use the two-pins fixing tool provided.

(2) Fix the power cord for illumination from the bottom of the cross-slide table with the cord clamp provided.

(3) Fix the ground cord to the bottom of the cross-slide table and to the surface of the Table 2 with screws provided.
(These cords can be fixed to either side of the Table 2.)

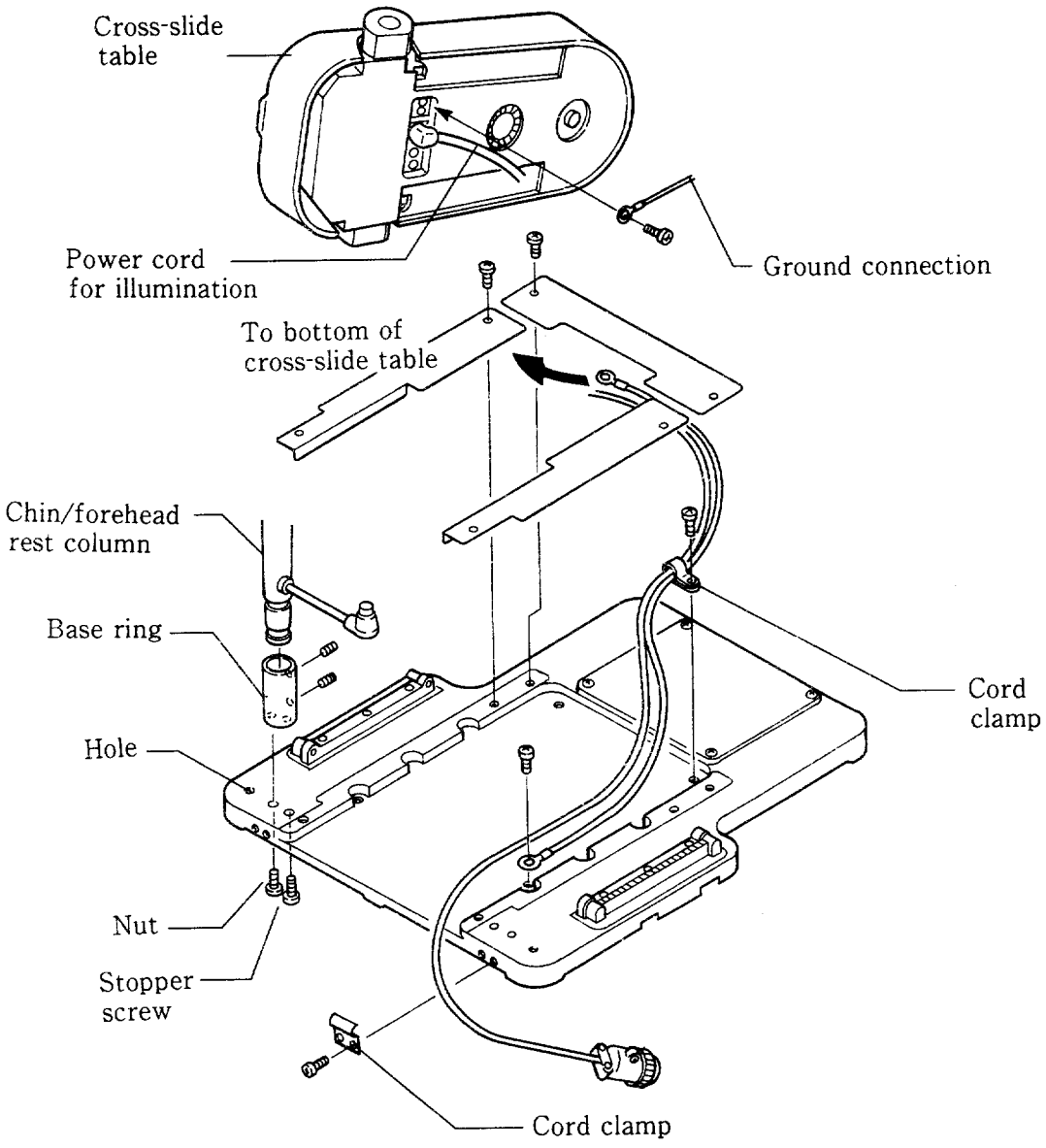


Fig.2-4

2—3. MIRROR

Two types of mirror are provided.
Insert either one as shown in figure.

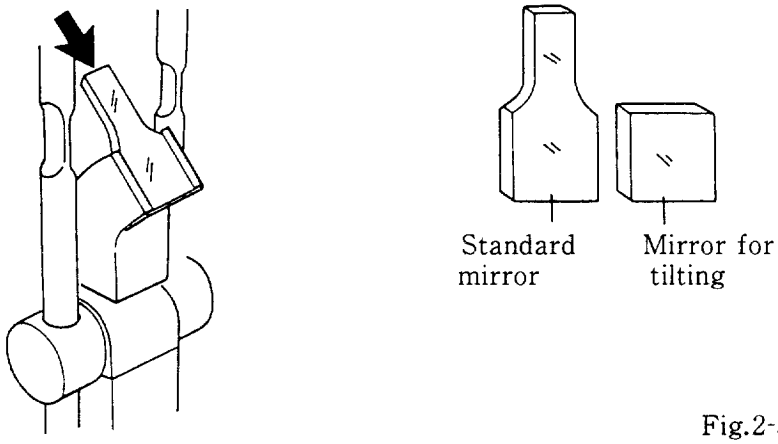


Fig.2-5

2—4. ILLUMINATION CORD

(1) Connect plug from the lamp house to the socket of the forehead rest.
(2) Connect plug from the bottom of the column to the socket of the cross-slide table.

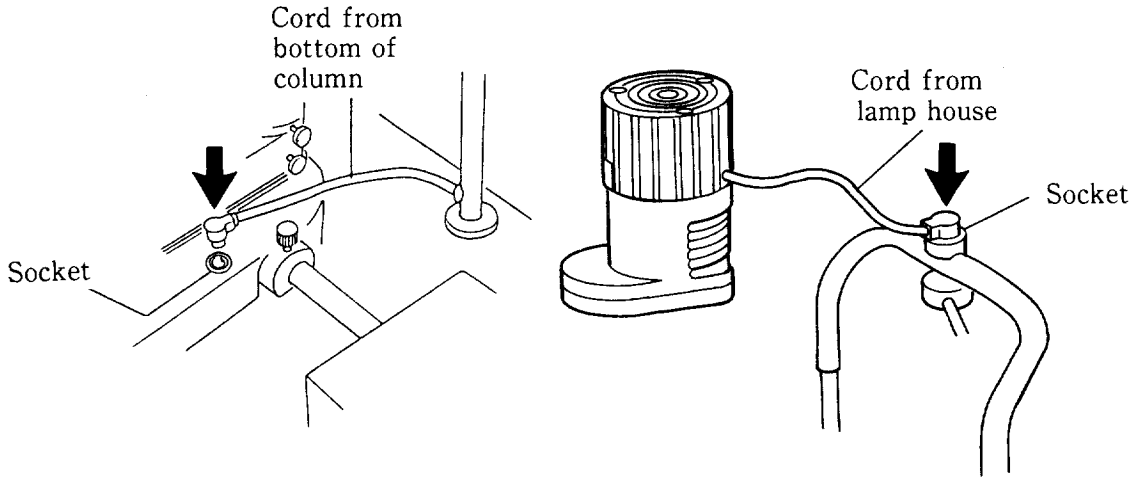
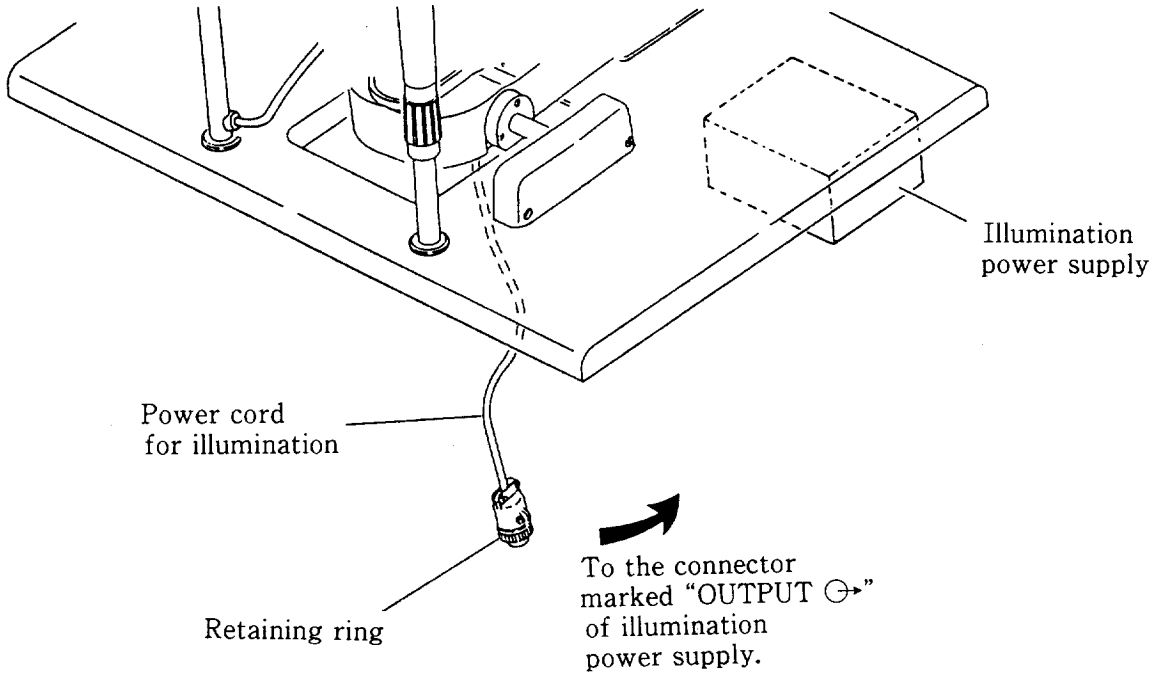


Fig.2-6

2−5. CONNECTING TO ILLUMINATION POWER SUPPLY

Connect the plug of the power cord for illumination from the bottom of the cross-slide table to the socket of the illumination power supply.



Turn the retaining ring fully so as to secure connection.

Fig.2-7

3. CROSS-HAIR ADJUSTMENT

Adjust cross-hairs before observation and especially prior to photography. If this is not done, the resulting photograph will be out of focus.

(1) Insert end of the target rod into the central hole of rotation axis. Place the flat section to be faced the objective lens.

(2) Set the illumination tower to the 0° position.

(3) Turn power on (depress the " | " side of ON/OFF switch.)

(4) Select the lowest magnification available.

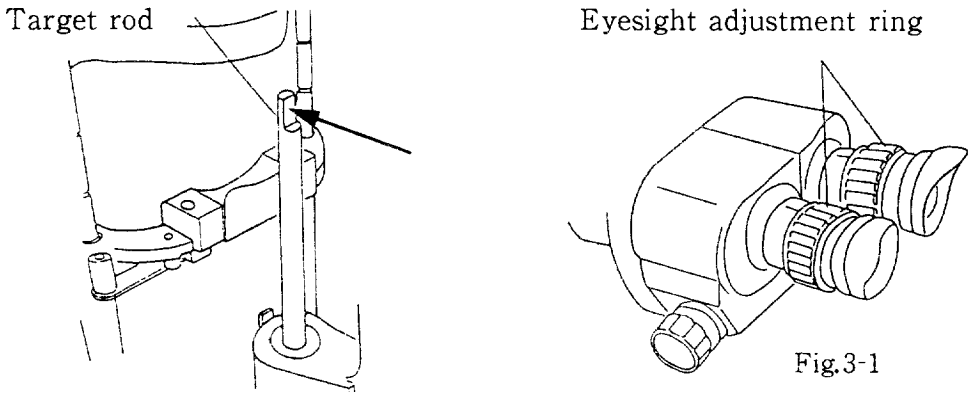


Fig.3-1

(5) Adjust the pupilary distance to your setting.

(6) Turn the eyesight adjustment ring of right-side eyepiece counterclockwise to its end.

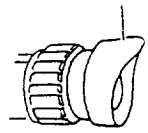
(7) Then, looking into the eyepiece with your right eye, turn the eyesight ring of right-side eyepiece clockwise until the cross-hair reticle of eyepiece is seen most sharply.
(If the ring is turned too far, turn the ring counterclockwise again to its end and repeat adjustment.)

(8) Turn the eyesight adjustment ring of left-side eyepiece counterclockwise to its end.

(9) Next, looking into the eyepiece with your left eye, turn the eyesight adjustment ring of left-side eyepiece clockwise until the flat surface of the target rod is seen most sharply.
(If the ring is turned too far, turn the ring counterclockwise again to its end and repeat adjustment.)

When the rubber eyecups are folded out, disturbing light artifacts from outside may be blocked.

Rubber eyecup



In case of spectacle wearer, collapse the rubber eyecups.

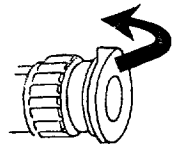


Fig.3-2

4. MAINTENANCE

4−1. FUSE REPLACEMENT

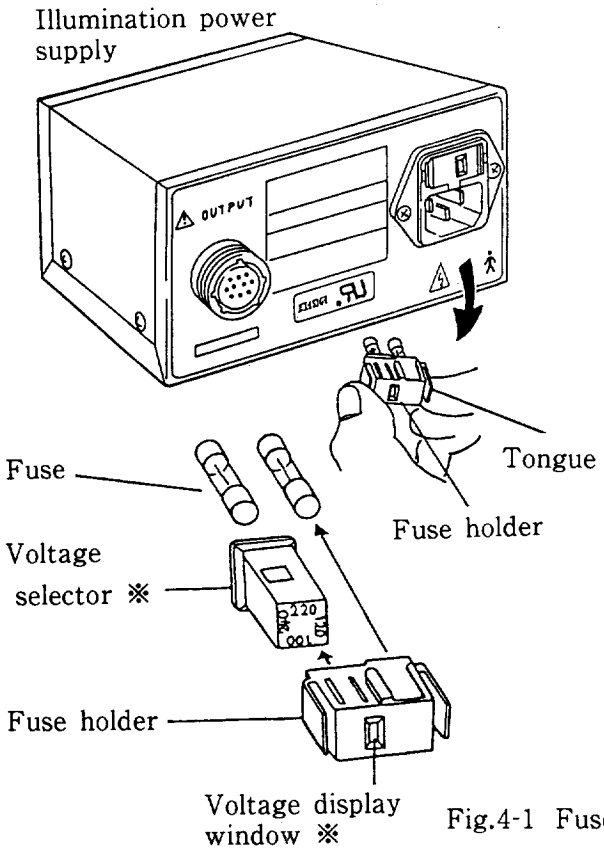
Always turn power off in advance.

(1) Push the tongue located on the sides of the fuse holder with flat-tip fuse holder with flat-tip screwdrivers and pull the fuse holder out.

(2) Change for new fuses as specified below.

100V. 120V area
……T 0.8A／250V

※ The voltage selector is incorporated on one side of the fuse holder in case of power supply for 100V and 120V area.
Set the holder in correct position as shown in figure.
The voltage display window will then coincide with the actual input power voltage used.



230V area
……T 0.5A／250V

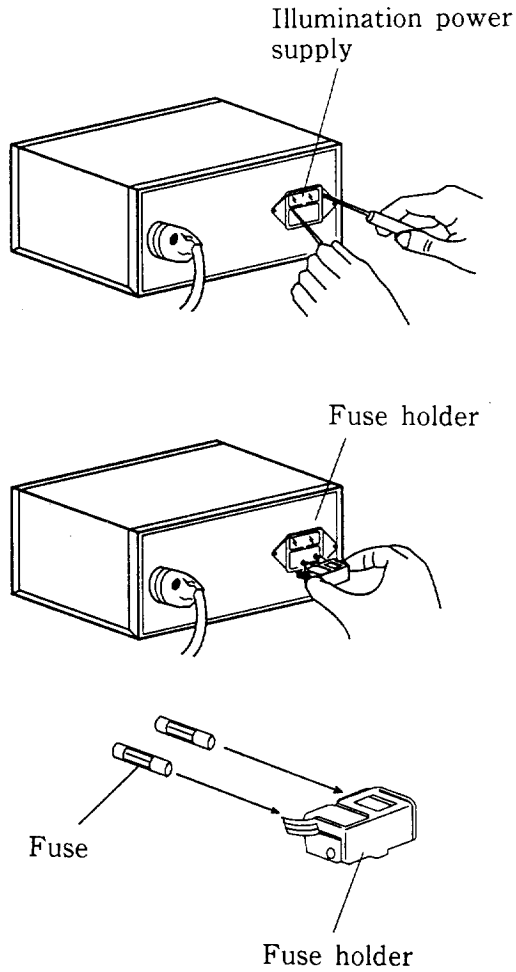


Fig.4-1 Fuse replacement

4−2. LAMP REPLACEMENT

Always turn power off in advance.

Caution

The halogen lamp becomes very hot during use, therefore, take care not to touch the heated lamp surface. Risk of burn. Do not replace lamp until 10 minutes after power is turned off. Hold it with thick cloth when immediate replacement is required.

(1) Turn the lamp cap fixation knob counterclockwise and remove the lamp cap.

(2) Loosen the lamp retaining screw counter-clockwise. Push the retaining plate aside. Then pull the lamp socket out. Pull the lamp from the lamp socket.

(3) Set the new lamp, so that the notch of the lamp base will catch the spring plate of the lamphouse.

Use the halogen lamp 12V 30W for exclusive use of the model NS-1V.

Do not touch the glass part of the lamp directly with fingers. Fingerprint or any dirt on it may shorten lamp's life.

(4) Set the lamp retaining plate as Fig.4-2 and fix the retaining screw as before.

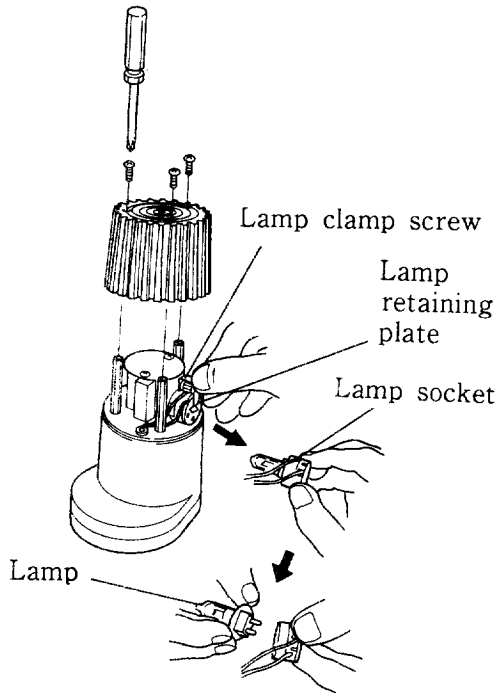


Fig.4-2 Lamp replacement

4−3. WORKING WITH A NARROW SLIT ILLUMINATION

If the slit width is narrow during observation, the central screw of the slit width adjustment knob may be loosened. Slightly turn this screw with a flat-tip screwdriver clockwise.

- Do not turn the center screw too tight clockwise, as the movement will become difficult.
- Do not turn the central screw counterclockwise to the end and do not remove the central screw.

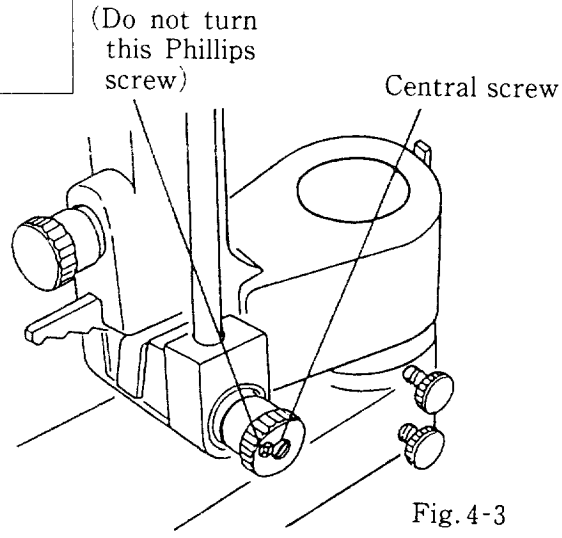


Fig.4-3

5. 90D Holder (Optional)

When you observe the fundus, etc. with 90D lens made by Nikon, stabilized observation can be done when installing 90D lens as shown in figure.

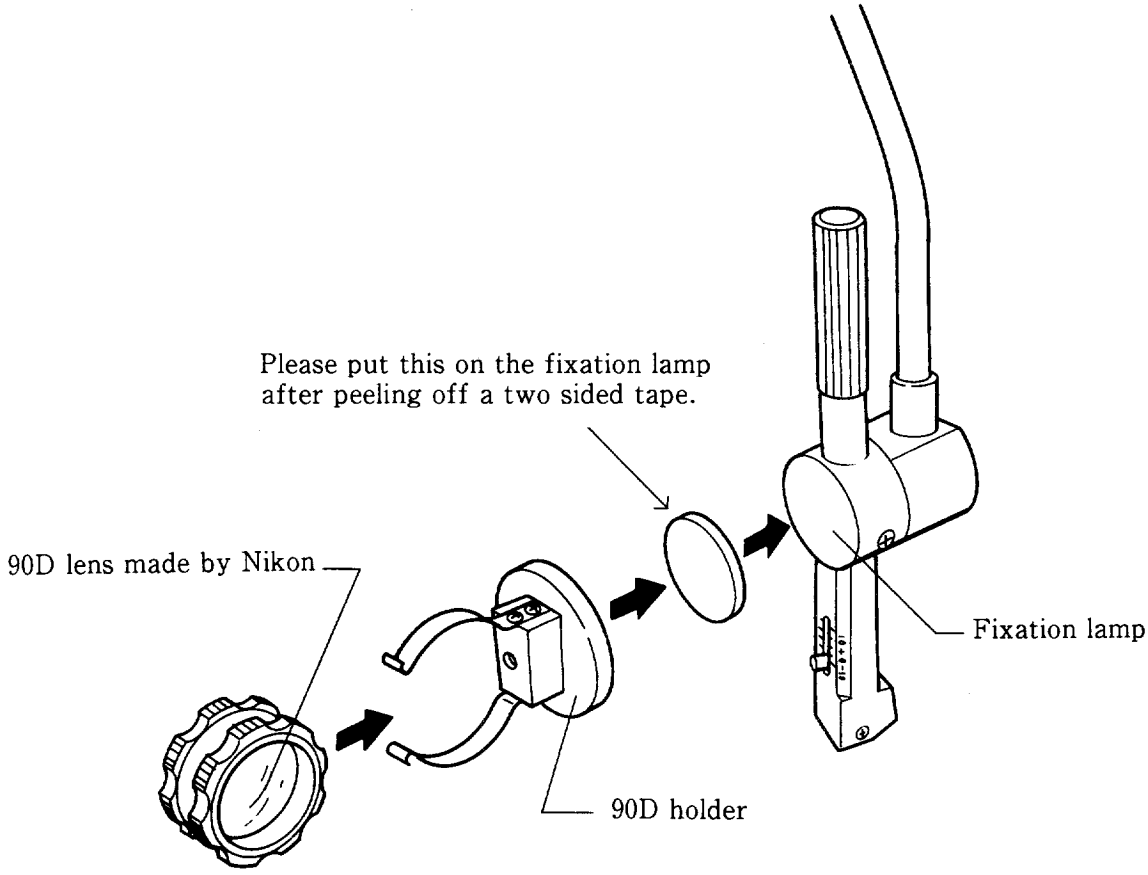


Fig. 5

6. CHECKING

1. If the lamp does not turn on, check the following points :
   (1) Both of the pilot lamp of power supply for illumination and the halogen illumination lamp do not illuminate ;
   -Check fuse.
   -Check connection of the power supply cord to the outlet.
   -Check connection of the power supply cord and receptacle of the illumination power supply.
   -Check power supply cord for any wire-cut.

   (2) Although the pilot lamp of power supply for illumination is on, the halogen illumination lamp does not illuminate ;
   -This slit is closed unnecessarily!
   -The illumination field is set to 0.2㎜ in diameter with the illumination field adjustment turret.
   -The lamp is burned out. Replace lamp.

2. The microscope can not be focused ;
   -Check if the eyepieces are inserted fully in the sleeves to the end.

3. The illumination is blurred ;
   -Check if the halogen lamp is set properly. If lighting is still blurred after correction of setting the lamp, replace the bulb with a new one.

4. Others ;
   (1) The shape of slit is I (uneven) ;
   Even if the shape of slit is seen like I , it is not a mulfunction, because the unit is designed to realize a large diameter of 14㎜ and thus the shape of slit may look like as such.

   Such a shape is not a mulfunction so far as the slit looks sharp at its center part through the eyepiece.

   (2) Slit illumination is not seen; in this case the illumination field may be set at a diameter of ∅ 0.5㎜.

7. SPECIFICATIONS

Microscope

Type : Stereoscopic microscope with converging (12°) optics
Objective lens : Magnification rations of 0.5× to 2.15×
Observation magnification : 7.5× to 32.1×
Eyepiece eyesight adjustment compensation range : -8D to + 6D
Interpupillary distance adjustments : 55 to 73㎜
Working distance : 100㎜
Reaching distance : 317㎜ (with 15× eyepiece)
Optional eyepieces : 10×, 20×, 33×
Total magnification : 5× to 70.8× with optional eyepieces

Illumination

Slit width : 0 to 14㎜ (continuously variable)
Slit length : 0.2㎜, 1㎜, 2㎜, 5㎜, 10㎜, 14㎜ (preset) and 1 to 12㎜ (continuously variable); 14㎜ ø cobalt blue filter is mounted on the aperture length select turret
Slit rotation : Up to 90° on either side of vertical position
Mirror rotation : 4.5㎜ in either direction on the target plate
Slit tilting : 0° , 5° , 10° , 15° and 20° steps
Filter : Transparent, Heat absorbing, ND (28% transmission), Red free, Cobalt blue
Light source : 12V30W halogen lamp (precentered)

Cross-Slide Table

Vertical motion : 30㎜ (±15㎜) by revolving joystick
Horizontal fine motion : 16㎜ (±8㎜) in any direction by moving joystick
Horizontal coarse motion : Longitudinal travel of 100㎜ (30㎜ forward and 70㎜ backward) and lateral travel of 110㎜ (±55㎜)

Size

Table top 1 : Nikon table enabling electrically powered up and down movement
Dimensions : 600㎜ × 450㎜
Table top 2 : General type used with regular tables
Dimensions : 330㎜ × 405㎜
Table top 3 : For use on instrument stands
Dimensions : 410㎜ × 450㎜

Weight

Main body (with illumination power supply unit) : Approx. 11kg
Table top 1 : Approx. 6.2kg
Table top 2 : Approx. 4.4kg

Optional accessorries

-Nikon Applanation tonometer
-Adapter for other manufacturer's pachometer
-Adapter for other manufacturer's Hruby lens
-Guide for other manufacturer's applanation tonometer and Hruby lens

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