

NIDEK

SLIT LAMP

Model SL-1600

OPERATOR'S MANUAL



NIDEK CO., LTD.

* Specifications are subject to change without notice for improvement.



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BEFORE USE, READ THIS MANUAL.

This manual contains information necessary for correct and effective operation of NIDEK Slit Lamp Model SL-1600, and provides procedures for operation, cautions, specification, and procedures for maintenance.

In this manual, IEC 60601 and UL standards are applied.

For correct use, it is necessary that this manual, in particular the operating procedures, be thoroughly understood before using this instrument.

Keep the manual handy to verify use.

There are no user-serviceable parts inside the instrument except illumination bulb, fixation bulb, fuses and chinrest tissue. If you find any problem or question about the instrument during the operation, please contact your authorized distributor.



Table of Contents

| | Page |
|--|------------|
| §1 INTRODUCTION | 1-1 |
| 1.1 Outline | 1-1 |
| 1.2 Classifications | 1-1 |
| 1.3 Symbol Information | 1-2 |
| §2 SAFETY | 2-1 |
| 2.1 Operation | 2-1 |
| 2.2 Storage | 2-2 |
| 2.3 Placement | 2-2 |
| 2.4 Installation | 2-3 |
| 2.5 Wiring | 2-4 |
| 2.6 After Use | 2-4 |
| 2.7 Maintenance and Checks | 2-4 |
| 2.8 Disposal | 2-5 |
| 2.9 Others | 2-5 |
| 2.10 Labels | 2-6 |
| §3 CONFIGURATIONS | 3-1 |
| §4 OPERATING PROCEDURES | 4-1 |
| 4.1 Operation | 4-1 |
| §5 MAINTENANCE | 5-1 |
| 5.1 Replacement of Illumination Bulb | 5-1 |
| 5.2 Replacement of Fixation Bulb | 5-2 |
| 5.3 Replacement of Fuses | 5-3 |
| 5.4 Cleaning Exterior | 5-4 |
| 5.5 List of Parts for Replacement | 5-4 |
| §6 SPECIFICATIONS | 6-1 |
| §7 UNPACKING AND MOUNTING | 7-1 |
| 7.1 Standard Type | 7-1 |
| 7.2 Without Table Top | 7-5 |

§1 INTRODUCTION

1.1 Outline

The operation of the joystick makes focusing and positioning of SL-1600 for forward, backward, and right to left movement easy and smooth. SL-1600 is easy to operate due to its functional design. Light weight mechanism and improvement of stability exists. Equipped chinrest has enough clearance. The built-in microscope has high resolving power and gives a sharp stereo image. Installing of the optional accessories makes the usage of the instrument more varied.

1.2 Classifications

[Form of protection against electric shock] Class I

The SL-1600 is classified as a Class I equipment.

The class I equipment is an equipment in which the protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution that provides for a connection of accessible conductive parts to the protective (earth) conductor in the fixed wiring of the installation. Therefore, accessible conductive parts cannot become activated in the event of failure in the basic insulation.

[Degree of protection against electric shock] Type B

The SL-1600 is classified as a Type B equipment.

The type B equipment provides an adequate degree of protection against electric shock, particularly regarding :

- allowable leakage currents
- reliability of the protective earth connection (if present)

[Degree of protection against liquid entry] IP20

The SL-1600 is classified as a ordinary equipment (IP20), which is provided with an enclosure not completely water proof.

Avoid water splash on the equipment.

[Method(s) of sterilization or disinfection recommended by the manufacturer]

The SL-1600 does not have any part to be sterilized or be disinfected.

[Degree of protection against flammability]

The SL-1600 is classified as an equipment not suitable to be used in a potentially flammable environment.

Do not use near flammable materials.

[Operation mode]

The SL-1600 is classified as an equipment which operates continuously.

1.3 Symbol Information



This symbol on the body indicates that caution should be taken. Refer to the operator's manual before use.



This symbol means degree of protection against electric shock is for Type B instrument.



This symbol on the main switch indicates that the power is ON.



This symbol on the main switch indicates that the power is OFF.



This symbol indicates that the alternating current should be applied to the instrument.



This symbol indicates the protective earth.



This symbol indicates the out put.



This symbol indicates the brightness control.



This symbol means the fuse rating.

§2 SAFETY

Signal Words are used to designate a degree or level of safety alerting, whose definitions are as follows. In this manual, only ⚠ CAUTION is used.

- ⚠ **DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
- ⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- ⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

2.1 Operation

⚠ CAUTION

- Never disassemble or touch the inside of the instrument.
This may result in an electric shock or instrument malfunction.
- Do not touch the lamp house cover since it is hot while a lamp is illuminated.
If not, you may get burned.
- Never yank the power cord to disconnect from wall outlet but hold the plug while disconnecting.
This can weaken the metal core of the cord and may result in a short circuit or an electric shock.
- Do not place the instrument on the power cord.
The sheath of the cord becomes ragged and may cause an electric shock or a short circuit.
- If the metal core of the power cord is exposed, power turns on and off by shaking the cord, or cord/plug gets so heated that one cannot hold it, it means that the cord is damaged. Immediately replace the cord.
This may cause an electric shock or a fire.
- Do not use the instrument for other than the intended purpose.
NIDEK will not be responsible for accidents or malfunction caused by carelessness.
- In the event of a malfunction, do not touch the inside of the instrument, but remove the power cord and contact your authorized distributor.

 **CAUTION**

- In advance of an observation of each patient, wipe the foreheadrest and chinrest with a clean cloth. Moreover, remove one chinrest paper for each patient if a bunch of the chinrest papers is fixed on the chinrest. If necessary, wipe the foreheadrest and chinrest using a cloth dampened with rubbing alcohol.
- Set a light intensity as low as possible. The light intensity depends on the slit lamp settings such as voltage of illumination lamp, slit width, slit length, slit angle, selection of the filters and illumination time.
High light intensity may cause thermal and photochemical damages onto the patient's retina.

2.2 Storage

NOTE

- Do not store the instrument in a place where it may get wet or where poisonous gas or liquid is stored.
- Avoid storing the instrument in an area with excessive heat, humidity, or dust.
To preserve the appearance or internal parts of the instrument, avoid direct exposure to sunlight.

2.3 Placement

 **CAUTION**

- Before transferring the instrument, tighten each locking knob to fix the main body, microscope arm and illumination body.
Accidental move of the base unit, microscope arm, illumination body may result in injury and failure of the instrument.
- Before transferring the instrument, disconnect the power cord from the inlet of the instrument.
Stepping on the cord or catching it on any objects may fall the instrument or break the cord.

NOTE

- When transferring the instrument, hold the table unit to move.
Holding the microscope arm, illumination body, chinrest and fixation lamp will deform the holding part or will result in malfunction of the instrument.

2.4 Installation

CAUTION

- Perform assembling work on a level floor with enough space.
Collision between the arm or microscope and a personnel will result in injury or failure of the instrument.
- Do not install the instrument near water.
If water gets into the internal structure, there is the possibility of electrical shock or instrument malfunction.
- Install the instrument in a stable and level place where vibration or shock does not occur.
The instrument may not perform observation correctly or may malfunction. Also, if the instrument is tripped over because of any accidental shock, it may result in possible injury.

NOTE

- Install the instrument in the following conditions.
A low dust environment
A low light interference environment
A vibration and shock free environment
- Install the instrument in the environment whose condition can be set to the following.
Use the instrument under the following temperature and humidity.
Use environment Temperature : 10 - 40 °C
 Humidity : 30 - 75 % (non-condensing)

2.5 Wiring

CAUTION

- Be sure to use the wall outlet which meets the requirements of power specification.
If the line voltage is too high or too low, the instrument may not give full performance.
Malfunction or a fire also may occur.
- Be sure to use a power outlet equipped with a grounding terminal.
Otherwise, this may cause electric shock when it breaks or power leaks.
- Be sure to securely plug in the power cord.
Insecure connections may cause a fire.

2.6 After Use

CAUTION

- If the instrument is not be used for a long time, disconnect the power cord from the wall outlet.
This may cause a fire.

NOTE

- If the instrument will not be used during an extended period of time, turn off the main switch and put the dust cover over the instrument.
If not, settled dusts may impair visibility through the microscope.

2.7 Maintenance and Checks

CAUTION

- As the illumination bulb can get quite hot, replace it when it is cool.
Otherwise, it may cause an injury.

NOTE

- Disassembling for service is not permitted except at NIDEK or authorized distributor.
- Be careful not to leave fingerprints or dust on the lenses.
This may impair visibility through the microscope.
- Never use an organic solvent such as paint thinner to wipe the exterior.
This may ruin the surface.

2.8 Disposal**NOTE**

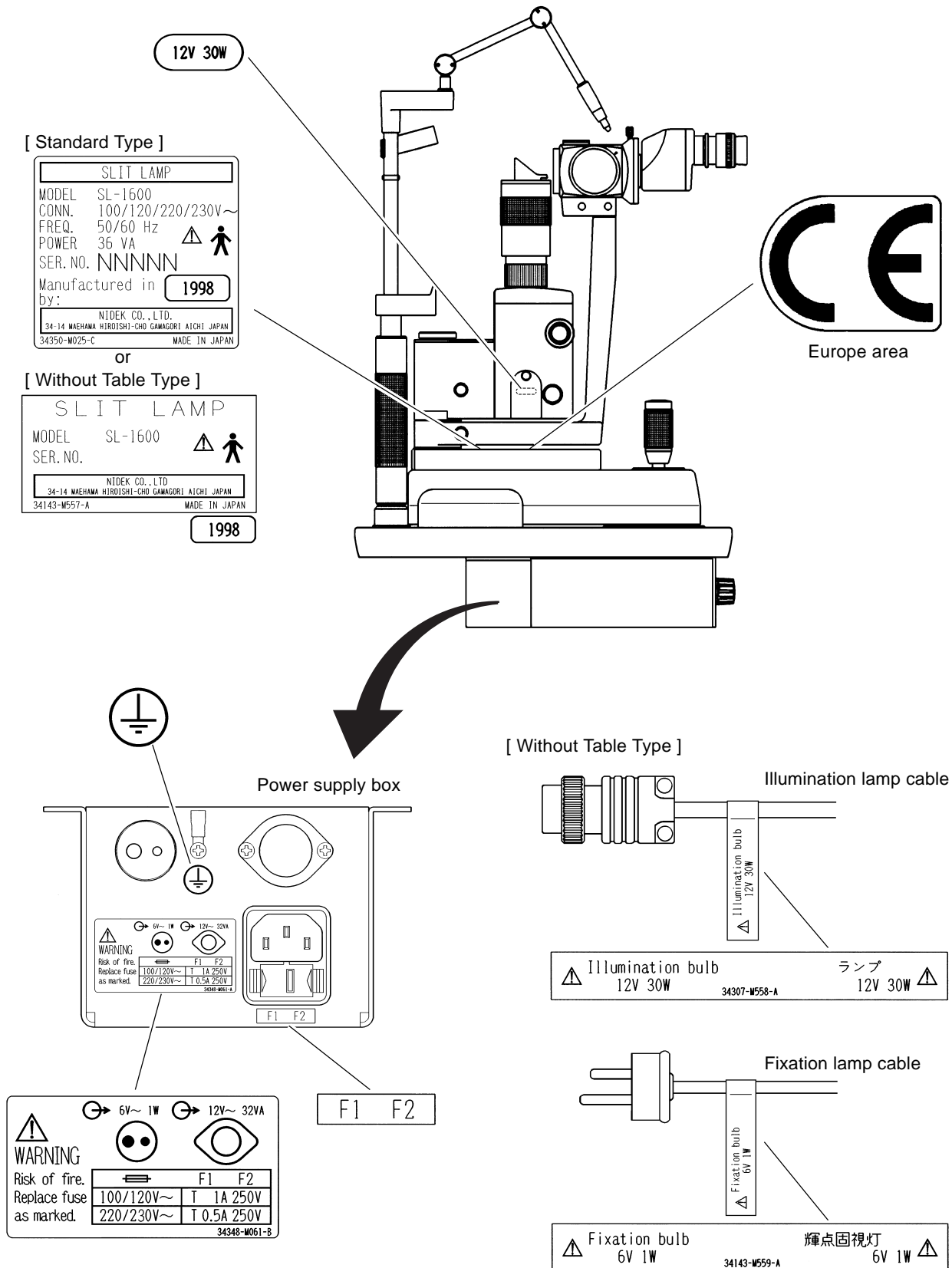
- Follow local governing ordinances and recycling plans regarding disposal or recycling of device components.
- When disposing packing materials, sort them by the materials and follow local governing ordinances and recycling plans.

2.9 Others**NOTE**

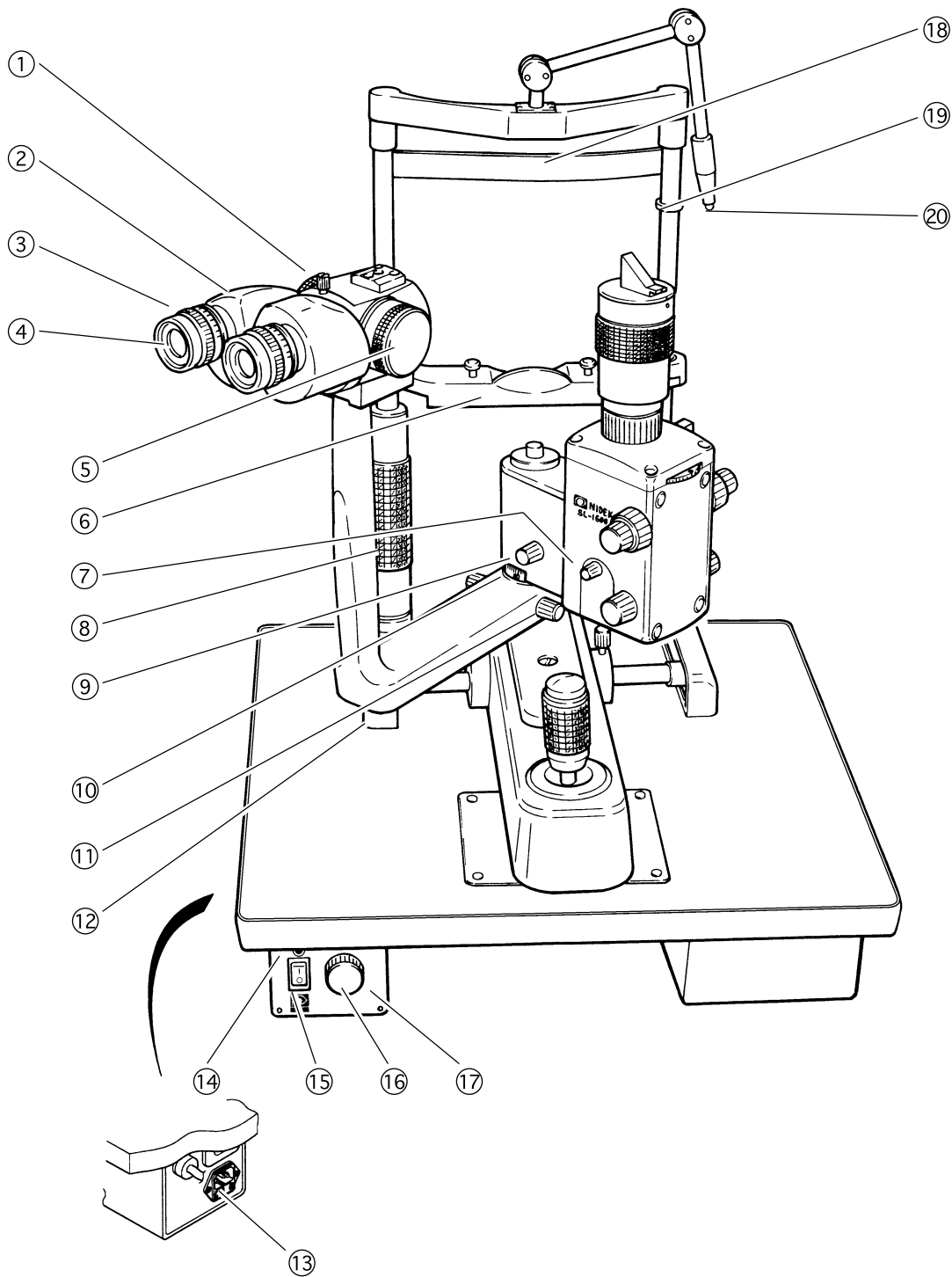
- When the instrument is sent back to NIDEK for repair or maintenance, wipe the surface (especially, the area where the patient's skin contacts) of the instrument with a clean cloth immersed in ethyl alcohol for disinfection.

2.10 Labels

The following labels provide safety information about each part.



§3 CONFIGURATIONS



① Fixing screw for binocular tube

The binocular tube can be attached or detached by this screw and it makes the installation of the optional accessories (Beam splitter and so on) possible.

② Binocular tubes**③ Visual power control****④ Eyepieces****⑤ Magnification control**

Change the magnification of the microscope. Magnifications of 6×, 10×, 16×, 25× and 40× can be set. (With 16× eyepieces)

⑥ Chinrest**⑦ Fixing screw for Lamp house cover**

To open or close the lamp house cover when replacing the lamp, this screw is used.

⑧ Chinrest elevation control

Moves the chinrest up and down.

⑨ Illumination body locking knob

Locks the illumination body.

⑩ Scale

Indicates the angle between the illumination body and the microscope arm. There is a click-stop at 0 position.

⑪ Microscope arm locking knob

Locks the microscope arm.

⑫ Wheel covers**⑬ Voltage selector**

Please set this at the supplied-voltage area.

⑭ Pilot Lamp

Lights when the power is ON.

⑮ Main switch**⑯ Illumination control**

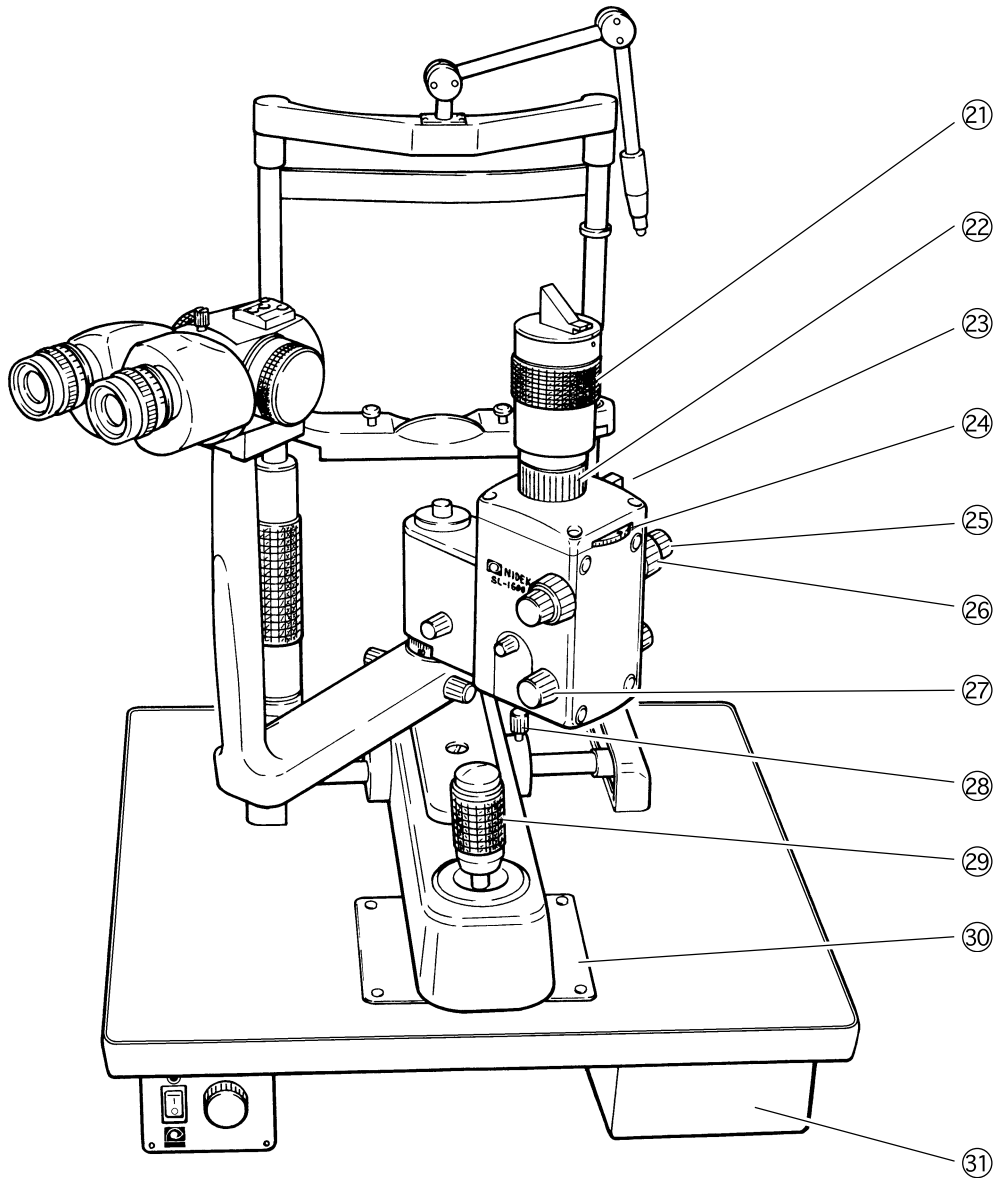
Changes the voltage of the illumination lamp to 6V, 8V, 10V, or 12V.

⑰ Power supply box**⑱ Foreheadrest****⑲ Eye level control**

An indication mark to adjust for the patient's eye level.

⑳ Fixation lamp

For the patient's eyes to be concentrated on.



⑳ Grip

By turning this, one can set the illumination reflected angle to the range between 0° and 15°.

㉑ Tightening ring

Locks the prism holding cylinder to the illumination body.

㉒ Slit scanning lever

By pressing down and sliding forward and back ward on this, the slit image can be shifted within 10° to the right or left. It is locked at the center.

㉓ Filter disk

The filters are selected by turning this disk. There are three kinds of filters in the filter disk.

| DOT COLORS ON THE DISK | FILTERS |
|------------------------|-------------|
| WHITE | OPEN |
| RED | HEAT ABSORB |
| GREEN | RED FREE |
| BLUE | BLUE |

㉔ Slit width control

By turning this, one can change the slit width from 0 to 14mm.

㉕ Slit angle control

Alters the angle of the slit from vertical to horizontal.

㉖ Diaphragm diameter control

By turning this, one can select the diaphragms of $\phi 0.2$, $\phi 1$, $\phi 3$, $\phi 5$, $\phi 9$, and $\phi 14$ mm.

㉗ Main body locking screw

Locks the main body.

㉘ Joystick

Controls movement of the main body for forward and backward as well as for rightward and leftward movement. Tilting the joystick controls fine movement of the main body and turning its handle creates the up-and-down movement of the main body except for the base.

㉙ Sliding plate

To enable the main body to move, the bottom part of the joystick slides on this plate. Always keep this plate clean.

㉚ Accessory box

§4 OPERATING PROCEDURES

4.1 Operation

1. Turn the illumination lamp ON.

Turn the main switch ON.

2. Adjust the visibility of the eyepiece.

1) Set a focusing rod on the center of the swivel part where the illumination body and the microscope arm are installed, then face its flat side toward the microscope.

2) Project the slit image on the focusing rod.

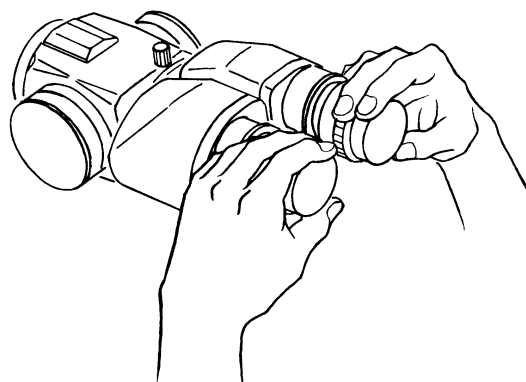
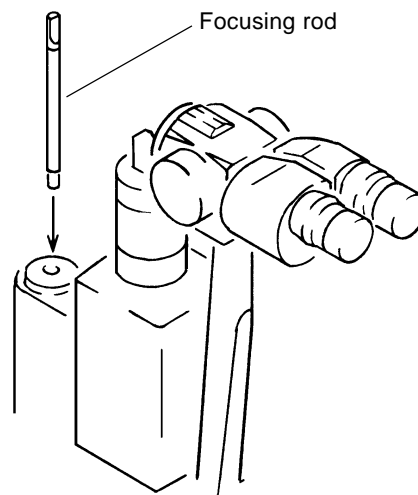
3) Turn the visual power control fully counterclockwise (+ side) at first, and look through the eyepieces to see the slit image.

4) Turn the visual power control clockwise (- side) slowly till one gets a sharp image.

* Adjust the visibility of the eyepieces individually.

* If you turn the visual power control conversely or turn backward, adjusting for visibility correctly will not be obtained.

* The area in front of the visual power control is graduated in diopter. To adjust for visibility of the eyepieces promptly when one do it at the next time, one had better write down the scales of the visibility.



3. Adjust the pupil distance.

In order to make individual left and right images verge into one image, adjust the binocular tubes at the proper pupil distance.

4. Remove the focusing rod.

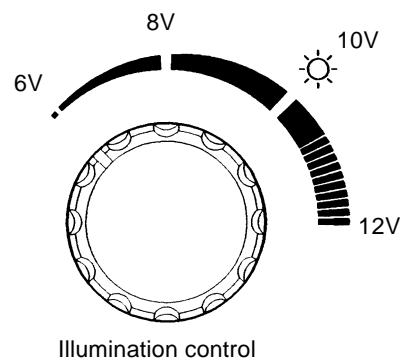
5. Clean the foreheadrest and chinrest prior to observing a patient.

Wipe out the stains of the foreheadrest and chinrest with a clean cloth. If necessary, wipe the foreheadrest and chinrest using a cloth dampened with rubbing alcohol.

6. Place the patient's eye at the height of the eye level marker.

- 1) Turn the illumination control to set the voltage of the illumination lamp to 6V.

* This will protect the patient against excessive brightness at the beginning of the observation.



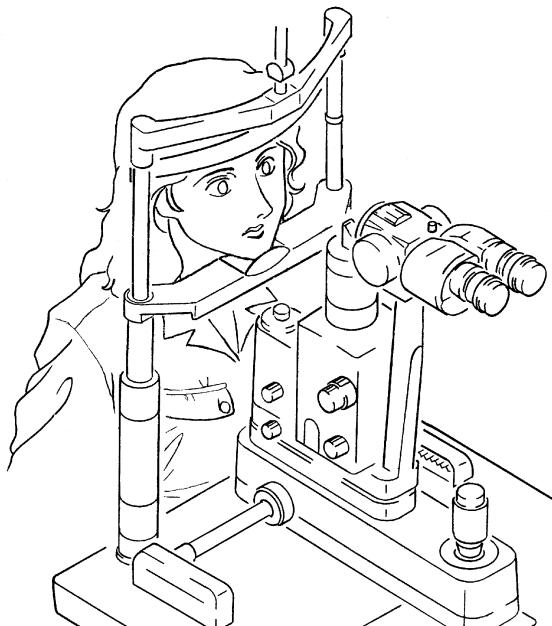
- 2) Instruct the patient to take his/her spectacles or contact lenses off and to take a seat.

- 3) Place the patient's chin on the chinrest and instruct him/her to touch his/her forehead to the foreheadrest.

* To maintain proper hygiene, tear chinrest paper off piece by piece every time the patient changes.

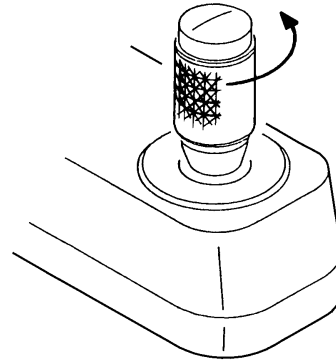
* Adjust the height of the chair or the motorized table if the patient does not sit in a comfortable position.

- 4) Bring the patient's eye to the height of the eye level marker of the headrest by turning the chinrest elevation control.



7. Adjust the focal point of the microscope.

- 1) Without looking through the microscope, adjust the height of the slit lamp by turning the handle of the joystick in order to coincide the height of its beam with the patient's eye.
- 2) Without looking through the microscope, make the coarse adjustment of the focal point on the patient's cornea by operating the joystick.
- 3) With looking through the microscope, make the fine adjustment of the focal point by operating the joystick.



8. Observe the patient's eye.

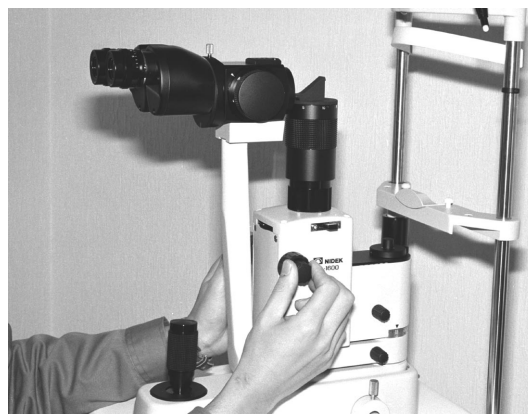
According to demand, make the proper adjusting operations as follows.

CAUTION

- Set a light intensity as low as possible. The light intensity depends on the slit lamp settings such as voltage of illumination lamp, slit width, slit length, slit angle, selection of the filters and illumination time.
High light intensity may cause thermal and photochemical damages onto the patient's retina.
- The illumination control should be set to a minimum (6V) on completion of each observation. This will protect the patient against excessive brightness at the beginning of the observation.

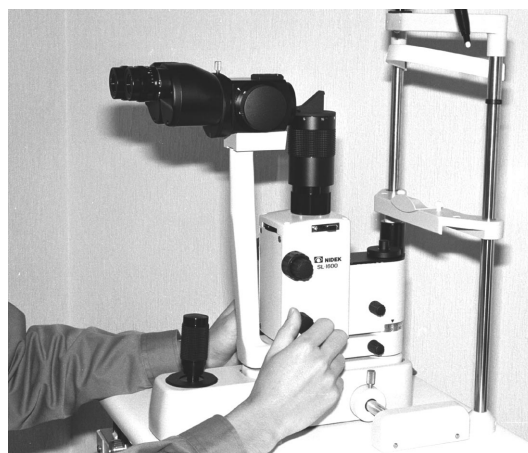
A. Adjustment of slit width

Select the proper width from the variable range of 0 to 14mm by turning the slit width control.



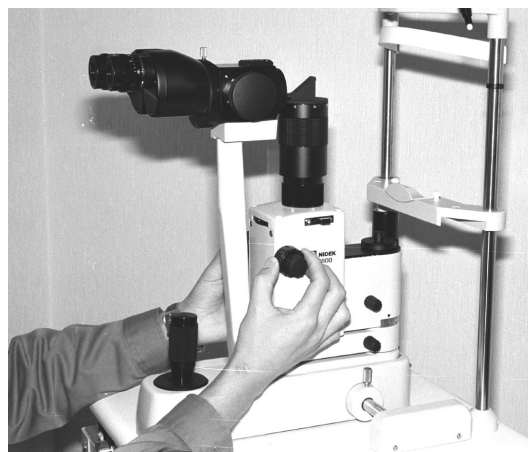
B. Adjustment of diaphragm diameter and slit length

Select the proper diaphragm diameter by turning the diaphragm diameter control. The diaphragm diameter can be selected from the diaphragms of $\phi 0.2$, $\phi 1$, $\phi 3$, $\phi 5$, $\phi 9$ and $\phi 14$ mm.



C. Adjustment of slit angle

Select the proper slit angle from the vertical to the horizontal by turning the slit angle control.
(There are click-stops at the position where the slit image becomes vertical or horizontal.)



D. Selection of the filters

The following three filters can be selected by turning the filter disk.

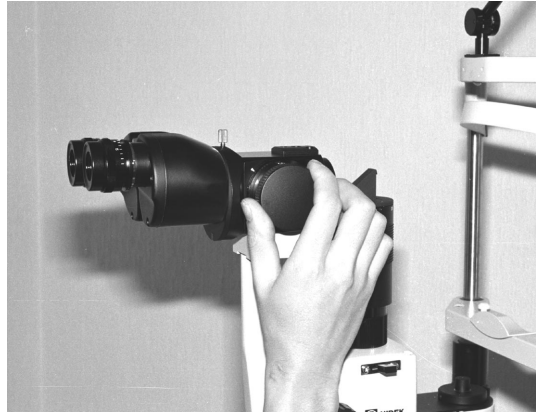
| DOT COLORS ON THE DISK | FILTERS | USE |
|------------------------|-------------|--|
| WHITE | OPEN | |
| RED | HEAT ABSORB | Decrease heat by decreasing infrared rays. |
| GREEN | RED FREE | Red free and fundus observation |
| BLUE | BLUE | Fluorescence and color reaction |

E. Selection of the magnification of the microscope

The magnification of the microscope is selected by turning the magnification control.

| COMBINED MAGNIFICATION | FIELD OF VIEW |
|------------------------|---------------|
| 6× | φ 9mm |
| 10× | φ 25mm |
| 16× | φ 16mm |
| 25× | φ 10mm |
| 40× | φ 6.5mm |

(With 16× eyepieces)



F. Fixing of the patient's eyes directions

Set the fixation lamp at certain position to position and keep the patient's eye in the desired directions. Fix his/her unexamined eye on the fixation lamp securely.

● Observation by elevated illumination

The illumination can be elevated by turning the grip.

When the grip is turned fully counterclockwise, the inclination of the illumination is 0°, then the illumination can be inclined to 15° by turning the grip clockwise.



● Observation of retroillumination and indirect illumination

The slit image can be shifted from the center by moving the slit scanning lever back and forth while pressing down on it. It is locked at the center.

(The movable range of the slit is from -10° to +10°.)



SLIT SCANNING LEVER

§5 MAINTENANCE

5.1 Replacement of Illumination Bulb

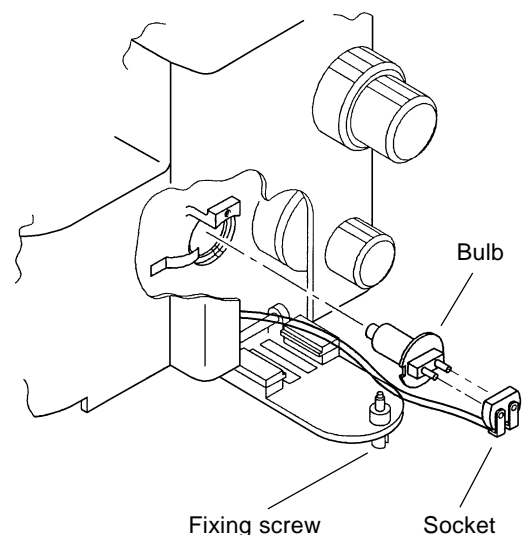
⚠ CAUTION

- As the illumination bulb can get quite hot, replace it when it is cool. Otherwise, it may cause an injury.

1. Turn OFF the main switch.
2. Unplug the power cord from the wall outlet.
3. Turn the illumination body approx. 40° to the left from the microscope arm.
4. Loosen the fixing screw for lamp house cover, then open the lamp house cover.
5. Remove the old bulb from the lamp house and detach it from the socket.
6. Set the new bulb into the socket then fit them into the lamp house.

* Take care not to touch the glass surface of the new bulb by bare hand. Use gloves, a cloth and so on to replace the bulb. If the bulb get dirty, wipe it off with a cloth which is soaked into acetone.

* Set the groove on the flange of the lamp to the spring in the lamp house.



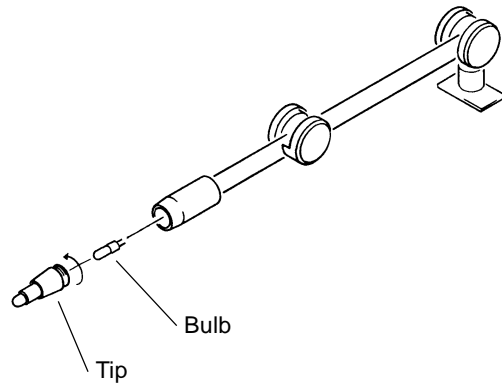
7. Shut the lamp house cover as before and tighten the screw.

⚠ CAUTION

- In replacement of the lamp, do not touch the inside of the instrument except the bulb and socket. An electric shock may occur.

5.2 Replacement of Fixation Bulb

1. Turn OFF the main switch.
2. Hold the tip of the fixation lamp and remove it by turning counterclockwise.
3. Remove the old bulb.
4. Fit the new bulb in the reverse order of removal.



5.3 Replacement of Fuses

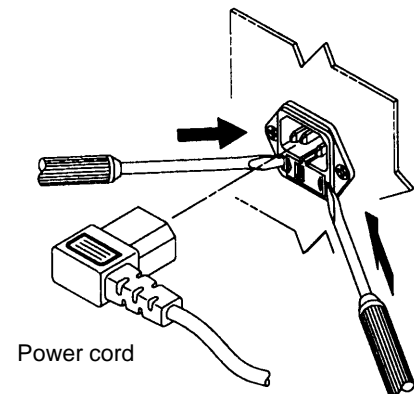
⚠ CAUTION

- Be sure to use specified fuses.
Substitutes may cause a fire.

| Net Voltage | Fuse rating |
|-------------|-------------|
| 100/120V~ | T 1A 250V |
| 220/230V~ | T 0.5A 250V |

1. Turn OFF the main switch.
2. Unplug the power cord from the power connector.
3. Replace the fuses with the new ones.

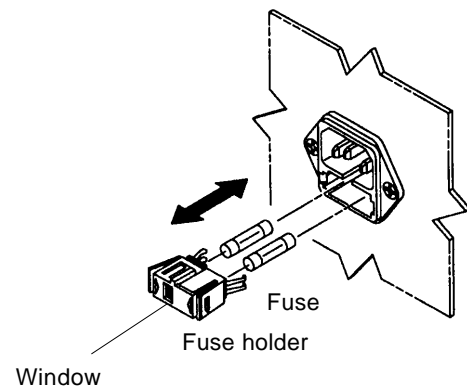
- 1) Push both sides of the fuse holder with thin screwdrivers to release the fixing lips, while pulling the holder out.



⚠ CAUTION

- The fuse holder is also used as a voltage selector. Be careful not to change the numbers indicated in the voltage indication window.
If the voltage setting does not match the supplied power voltage, this may cause a fire or malfunction.

- 2) Replace the fuses with the new ones and fit the fuse holder to the original position.



NOTE

- If the fuses often blow out, contact your authorized distributor.

5.4 Cleaning Exterior

When the exterior parts of the instrument become dirty, wipe with a dry and soft cloth. For stubborn dirt, immerse the cloth in a neutral detergent, wring well and wipe. Finally wipe off with a dry and soft cloth.

NOTE

- Never use an organic solvent such as paint thinner to clean the instrument as it may ruin the surface of the instrument.

5.5 List of Parts for Replacement

| Articles | Order Number |
|-------------------|--------------|
| Illumination blub | 804-26-00015 |
| Fixation bulb | 34138-E005 |
| Fuse (100/120V~) | 804-02-02039 |
| Fuse (220/230V~) | 804-02-02037 |

* After replacing the bulb and fuses, be sure to provide the spare ones.

§6 SPECIFICATIONS

Microscope

| | |
|-------------------------------|---|
| Variable magnification system | : Drum revolving system, 5-step magnification |
| Objective lenses | : $f = 130\text{mm}$ |
| Eyepieces | : $16\times$ |
| Combined magnification | : $6\times$ ($\phi 39\text{mm}$) |
| (Field of view) | $10\times$ ($\phi 25\text{mm}$) |
| | $16\times$ ($\phi 16\text{mm}$) |
| | $25\times$ ($\phi 10\text{mm}$) |
| | $40\times$ ($\phi 6.5\text{mm}$) |
| Eyepiece focusing | : $\pm 8\text{D}$ |
| P.D. adjustment | : 55 to 75mm |
| Working distance | : 124.7mm |

Slit illumination

| | |
|-------------------------------|---|
| Slit projection magnification | : $1\times$ |
| Slit width | : 0 to 14mm (Continuously variable) |
| Slit length | : $0.2, 1, 3, 5, 9$ and 14mm |
| Aperture diaphragm | : $\phi 0.2, \phi 1, \phi 3, \phi 5, \phi 9$ and $\phi 14\text{mm}$ |
| Filters | : Blue, Red free and Heat absorbing filters |
| Slit rotation | : $\pm 90^\circ$ |
| Slit scanning | : $\pm 10^\circ$ |
| Tilting | : 0° to 15° |
| Illumination bulb | : $12\text{V } 30\text{W}, \text{PG22-8.25}$ (Halogen lamp) |

Base and headrest

| | |
|----------------------------|---|
| Forward movement | : 80mm |
| Lateral movement | : 100mm |
| Fine movement | : 10mm |
| Vertical movement | : 30mm |
| Chinrest vertical movement | : 50mm |
| Fixation bulb | : $6\text{V } 1\text{W}, \text{T-1 } 1/4$ |

Power source

| | |
|--------------|--|
| Line voltage | : $\text{AC } 100, 120, 220, 230\text{V} \pm 10\% \text{ } 50/60\text{Hz}$ |
| Output | : $6, 8, 10$ and 12V |

Dimensions : $468(\text{H}) \times 450(\text{W}) \times 410(\text{D})\text{mm}$

Weight : 20kg

Power consumption : 36VA



Environmental condition

| | |
|-------------|---|
| Temperature | : 10 - 40 % (In usage) |
| | -40 - 70 % (In storage/ Transference) |
| Humidity | : 30 - 75 °C (Non-condensing)(In usage) |
| | 10 - 100 °C (In storage/ Transference) |

Standard accessories

| | |
|--------------------------------|--------|
| : Focusing rod | 1 pc. |
| Cap | 1 pc. |
| Hexagonal wrench | 1 pc. |
| Screwdriver | 1 pc. |
| Dust cover | 1 pc. |
| Spare illumination bulb | 1 pc. |
| Spare fixation bulb | 1 pc. |
| Spare fuse | 2 pcs. |
| Chinrest tissue | 1 pad |
| Guide plate | 1 pc. |
| (For tonometer and hruby lens) | |
| Operator's manual | 1 pc. |

Optional accessories

| |
|---|
| : Beam splitter |
| Observation scope |
| TV camera set |
| Hruby lens and its carrier |
| 10× eyepiece |
| Measuring eyepieces (10×) |
| easuring eyepieces with axis indication (10×) |

Remark ; Adaptable Goldmann Applanation Tonometer (R900, T900)

§7 UNPACKING AND MOUNTING

7.1 Standard Type

The following is included in the shipping carton :

A : Table unit

B : Main unit

C : Accessories and others

| | |
|---------------------------|---------|
| Focusing rod | 1 |
| Hexagonal wrench | 1 |
| Dust cover | 1 |
| Chinrest tissue | 1 sheaf |
| Spare illumination bulb | 1 |
| Spare fixation bulb | 1 |
| Spare fuse | 2 |
| Guide plate | 1 |
| Pinion | 2 |
| Pinion cover | 2 |
| Screws for fixing pinions | 4 |
| Power cord | 1 |
| Cap | 1 |

These are in the accessories' box under the table.

———— This is fixed on the table pad with a tape.

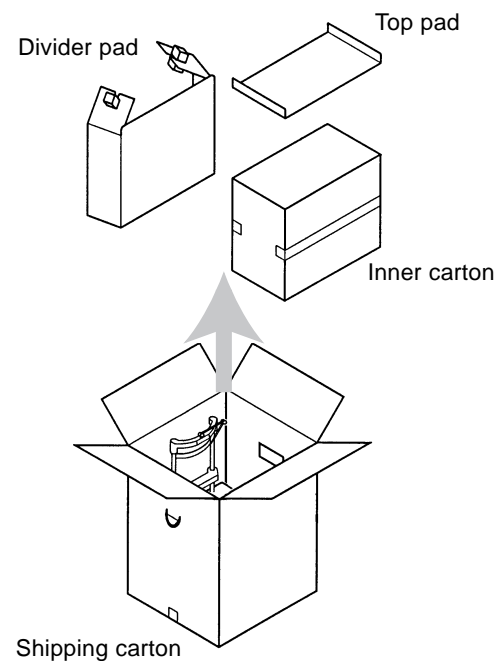
———— This is attached on the main unit.

1. Take out the top and partition pad from the shipping carton.

2. Take out the inner carton from the shipping carton.

NOTE

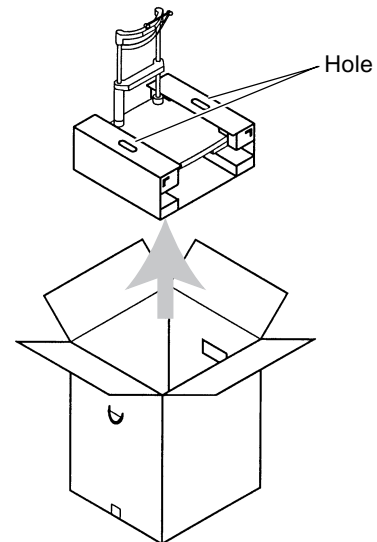
- The main unit is in the inner carton.
Handle the carton with care.
Dropping or handling it carelessly will result in malfunction of the main unit.



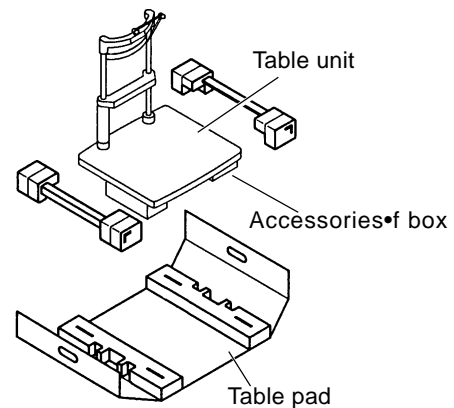
3. Take out the table unit from the shipping carton.

NOTE

- Insert the fingers into the holes to hold and lift the table unit.
Holding the forehead rest, chinrest and fixation lamp will result in the deformation of the head rest unit, or malfunction.

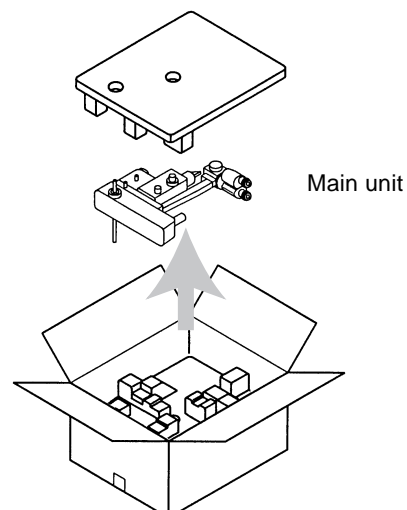


4. Unfold the table pad, and take out the table unit.



5. Pull out the accessories' box, and confirm that there are all the necessary accessories in it and on the table pad.

6. Open the inner carton, and take out the main unit.



7. Mount the table unit on the motorized table or table stand.

- 1) Loosen the screw located at the flange at the base of the table unit.
- 2) Insert the shaft into the flange and fix the shaft with the screw.

8. Fit the pinions onto both ends of the shaft of the main unit.

- 1) Remove a cushioning material around the shaft.
- 2) Fit the pinions on both ends of the shaft.

NOTE

- Insert the pinions fully to their limits.
Incorrect insertion of the pinions will cause rough movement of the main unit.

9. Mount the main unit on to the table.

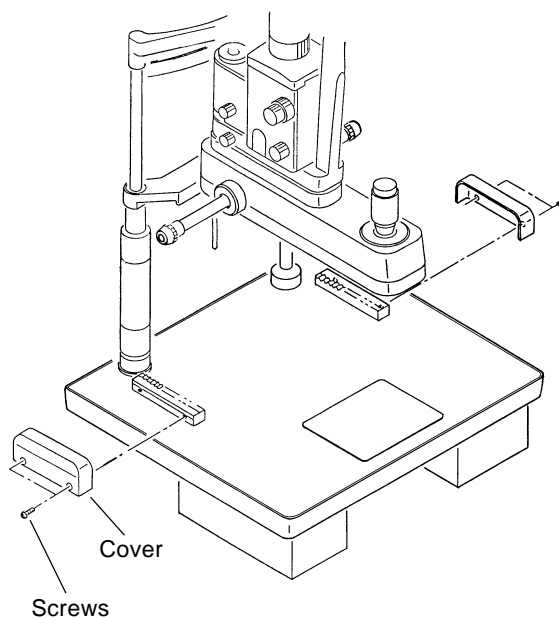
- 1) Engage a slotted-pinions into both racks on the table top.

Confirm that the engaged positions of left and right pinions are roughly aligned.

- 2) Put the covers over both racks, and fix the covers with the screws.

The covers and screws are in the accessories' box.

- 3) Tighten the main body locking screw to lock the main unit.





10. Insert the plug for illumination lamp coming from the base of the main unit into a receptacle at the back of the power supply box.

11. Plug the power code into a power connector at the back of the power supply box.

12. Set the chinrest tissue onto the chinrest.

1) Remove two pins from the chinrest.

2) Insert the pins into the holes of the chinrest tissue, and attach the pins to the chinrest again to fix the chinrest tissue.

* The following screws are used in the above assembling work.

In the event of loss of those parts, order them from NIDEK using the following order numbers inside the parentheses.

Fixing screw for table (HB6 × 20, 1 pc.)

Fixing screws for rack cover (PC3 × 8, 4 pcs.)

Fixing pin for chinrest tissue (34101- M112, 2 pcs.)

7.2 Without Table Top

The followings are included in the shipping carton :

A : Headrest unit

B : Main unit

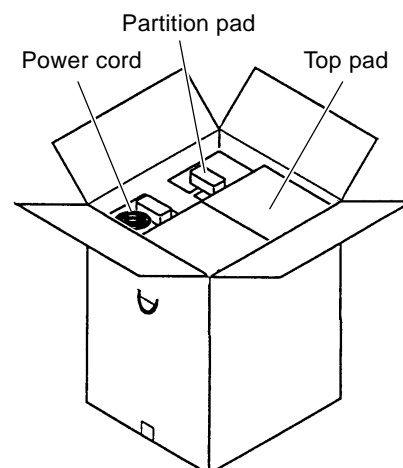
C : Accessories and others

| | | |
|---------------------------------|---------|--------------------------------------|
| Focusing rod | 1 | } These are in the top pad. |
| Hexagonal wrench | 1 | |
| Screwdriver | 1 | |
| Dust cover | 1 | |
| Chinrest tissue | 1 sheaf | |
| Spare illumination bulb | 1 | |
| Spare fixation bulb | 1 | |
| Spare fuses | 2 | |
| Guide plate | 1 | |
| Pinions | 2 | |
| Pinion covers | 2 | |
| Screws for fixing pinion covers | 4 | |
| Screws for fixing headrest | 5 | |
| Toothed lock washers | 2 | |
| Racks | 2 | |
| Screws for fixing racks | 4 | |
| Grounding cable | 1 | |
| Sliding plate | 1 | |
| Screws for fixing sliding plate | 4 | |
| Cable clamp | 1 | |
| Power cord | 1 | — This is on the partition pad. |
| Cap | 1 | — This is attached on the main unit. |

1. Take out the accessories in the top pad and the power cord on the partition pad.

Check the accessories.

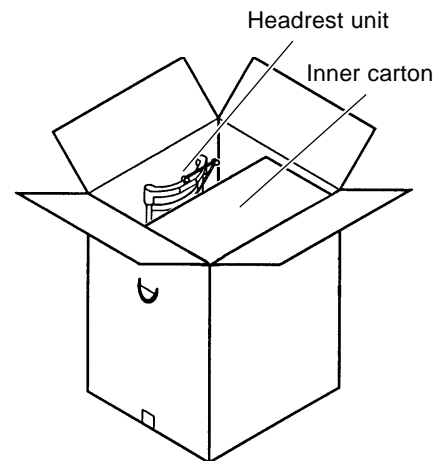
2. Take out the top and partition pad from the shipping carton.



3. Take out the headrest unit from the shipping carton.

NOTE

- Do not hold the fixation lamp unit.
It may cause a deformation or malfunction.

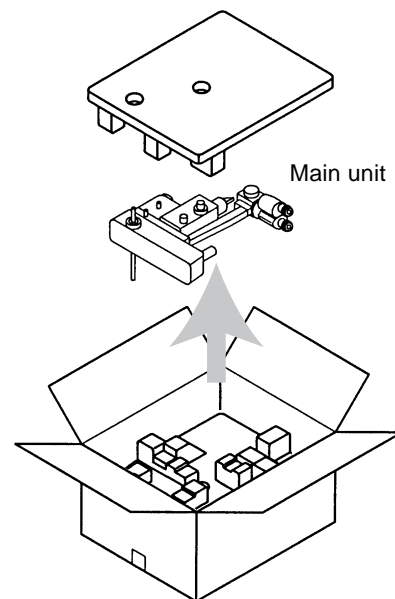


4. Take out the inner carton from the shipping carton.

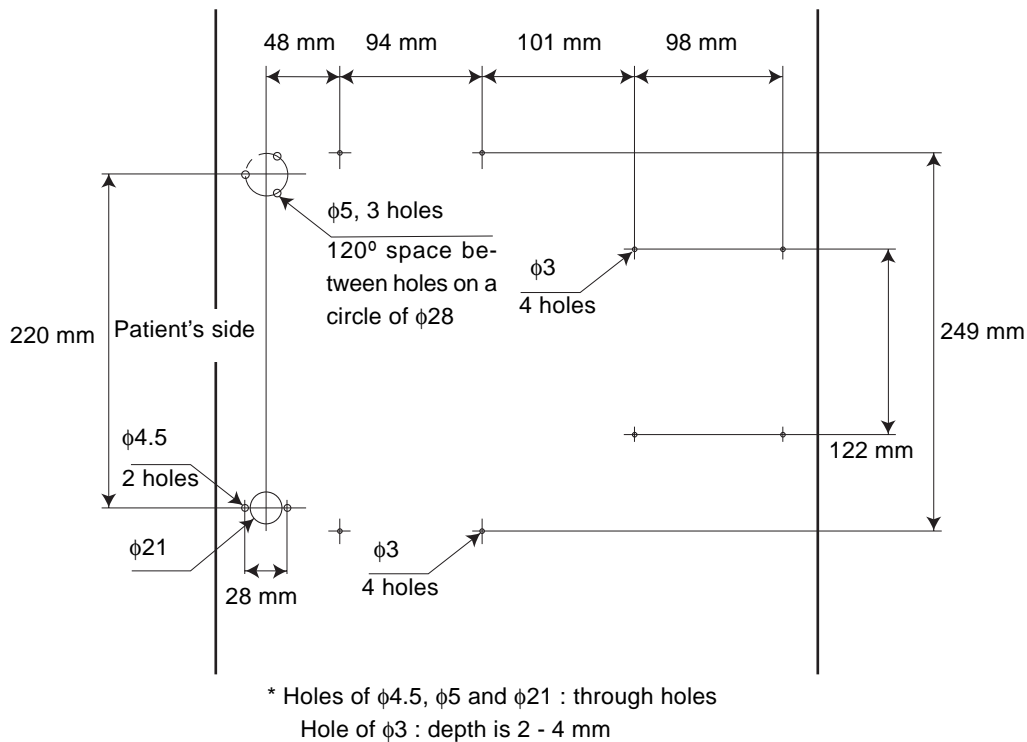
NOTE

- The main unit is in the inner carton.
Handle the carton with care.
Dropping or handling it carelessly will result in malfunction of the main unit.

5. Unfold the inner carton and take out the main unit.



**6. Mount the headrest unit, sliding plate and racks on your table with the attached screws.
[Example of hole layout]**



Connect between one of fixing screws for headrest and the grounding terminal or the cover of your power supply unit with the attached grounding cable.

7. Fit the pinions onto both ends of the shaft of the main unit.

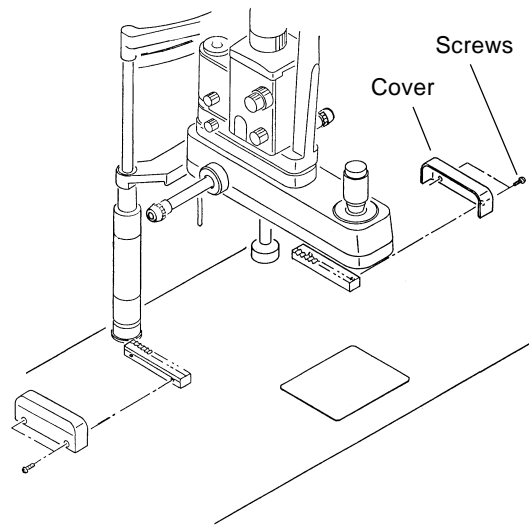
- 1) Remove a cushioning material around the shaft.
- 2) Fit the pinions on both ends of the shaft.

NOTE

- Insert the pinions fully to their limits.
Incorrect insertion of the pinions will cause rough movement of the main unit.

8. Mount the main unit on to the table.

- 1) Engage a slotted-pinions into both racks on the table top.
Confirm that the engaged positions of left and right pinions are roughly aligned.
- 2) Put the covers over both racks, and fix the covers with the screws.
- 3) Tighten the main body locking screw to lock the main unit.



9. Connect the plug for fixation lamp coming from the headrest unit into your power supply unit.
10. Connect the plug for the illumination lamp coming from the base of the main unit to your power supply unit.

CAUTION

- Connect the plugs for fixation lamp and illumination lamp to your power supply unit which can apply the specified power to each lamp.
(Lamp for illumination lamp : 12V 30W, lamp for fixation lamp : 6V 1W)
Otherwise, it may shorten the life span of the lamp or cause a fire.

11. Set the chinrest tissue onto the chinrest.

- 1) Remove two pins from the chinrest.
- 2) Insert the pins into the holes of the chinrest tissue, and attach the pins to the chinrest again to fix the chinrest tissue.

* The following screws are used in the above assembling work.

In the event of loss of those parts, order them from NIDEK using the following order numbers inside the parentheses.

| | |
|--------------------------------|----------------------|
| Fixing screw for headrest | (SB4 × 35, 5 pcs.) |
| Fixing screw for sliding plate | (FL2.4 × 13, 4 pcs.) |
| Fixing screw for racks | (PL4.1 × 25, 4 pcs.) |
| Fixing screw for pinion covers | (PC3 × 8, 4 pcs.) |
| Fixing pin for chinrest tissue | (34101-M112, 2 pcs.) |