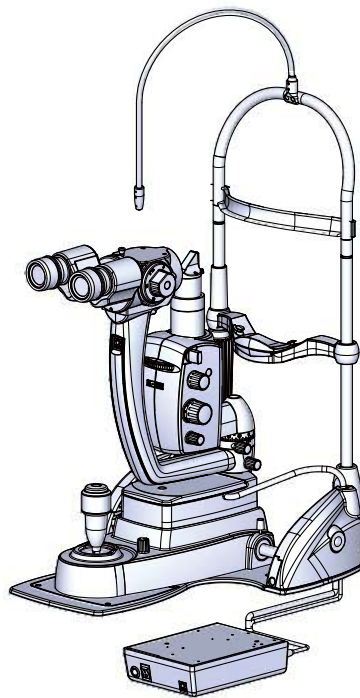


NIDEK

SLIT LAMP SL-2000

INSTALLATION MANUAL



This manual is for use by service personnel during installation.
The contents are not intended for customer use and should only be
conducted by qualified personnel.

Original instructions

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Before Use

This installation manual is intended for qualified personnel installing the SL-2000.

This installation manual contains unpacking procedure, precautions, installation procedure, and setting procedures.

Before installation, be sure to read this installation manual and the operator's manual carefully and thoroughly understand the contents.

Refer to this manual as necessary.

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FOR SAFE INSTALLATION

1.1 Read Before Use

1



BEFORE INSTALLATION, READ THIS MANUAL.

Be sure to read this manual and operator's manual carefully and understand their contents before installation.

1.2 Signal Words for Safety

In this manual, signal words are used to designate the degree or level of safety alerting. The definitions are as follows.



WARNING

Indicates a potentially hazardous situation which, if not avoided, might result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, might result in minor or moderate injury or property damage accident.

Even situations indicated by  **CAUTION** may result in serious injury under certain conditions.

Safety precautions must be followed strictly at all times.

1.3 During Installation

WARNING

- Be sure to use an outlet equipped with a ground terminal.
Electric shock or fire may occur in the event of malfunction or power leakage.
- Avoid any bumping or shocks during installation.

CAUTION

- Only personnel authorized by NIDEK or an authorized distributor can install the device.
- Do not modify the device. Do not touch the interior of the device.
 - Electric shock or malfunction may result.
- Unpack the package with at least two persons wearing protective gloves.
- Install the device in a location with sufficient space, ensuring the safety of surroundings.
- When moving or transporting the device, be sure to follow the precautions below.
 - Handle the device carefully to avoid shock.
 - Use the dedicated packing materials.
- Store the packing materials as they will be necessary for repacking.
- Install the device in an environment that meets the following conditions:
 - Use conditions
Temperature: 10 to 35°C (50 to 95°F)
Humidity: 30 to 90% (no condensation)
Atmospheric pressure: 800 to 1,060 hPa
- Install the device in a location that meets the following conditions.
Failure to do so may result in malfunction, electric shock, or fire.
 - A location not exposed to water.
 - A stable and level location free from vibration or shock.
 - A location with little external light
 - A location with little dust
 - A location free from condensation
- When handling the power supply or electric devices, be sure to follow the precautions below.
Failure to do so may result in malfunction, electric shock, or fire.
 - Be sure to use a power outlet that meets the power specification requirements.
Power supply voltage: AC 100 to 240 V, 50/60 Hz
Power consumption: 75 VA
 - Fully insert the main power plug into a power outlet.
 - Install the device in an area where the outlet that the power plug is inserted into is easily accessible during use. In addition, ensure that the power plug can be disconnected without the use of any tool.
 - Do not place heavy objects on the power cord.
 - Do not use a multiple socket-outlet or extension cords for the power supply.
 - Be sure to use the supplied power cord. Also do not connect the provided power cord to any other device.

 CAUTION

- In the event of smoke or strange odors, immediately stop the use of the device. Turn off the power switch, disconnect the power cord from the power outlet, and confirm that the odor or smoke is no longer being produced.

Continued use may result in electric shock or fire. In case of fire, use a dry chemical (ABC) extinguisher.

- Immediately replace the power cord if any of the following abnormalities is found.

- The internal wires are exposed.
- Power is intermittent when the power cord is moved.
- The power cord or plug is excessively hot.

Electric shock or fire may result.

- In the event of malfunction, disconnect the power cord from the power outlet and never touch the device.
-

2

UNPACKING AND INSTALLATION

2.1 Tools Necessary for Unpacking and Installation

Tool name	Use
Utility knife	For unpacking and installation
Hexagonal wrench (accessory)	For installation
Phillips screwdriver (accessory)	For installation
Electric drill (for screw holes: 3 mm, 6 mm, 20 mm)	For installation

After installing the device, be sure to fill out the checklist.

➡ *"4.1 SL-2000 Installation Checklist" (page 21)*

2.2 Unpacking Procedure

- This section explains the procedure to unpack the device and accessories packaged in the shipping carton.



CAUTION

- Unpack the package with at least two persons wearing protective gloves.
Two persons should lift the device by holding the base plate.
- Install the device in a location with sufficient space, ensuring the safety of surroundings.
- Store the packing materials as they will be necessary for moving, transporting, or repacking the device.

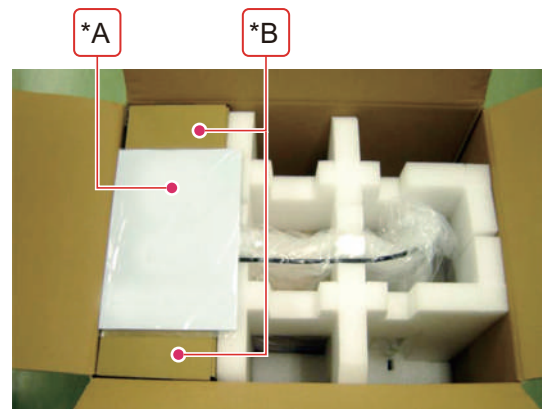
- 1** Open the outer box, and take out the shipping carton.

Remove the packing supports. Two persons should lift the shipping carton.

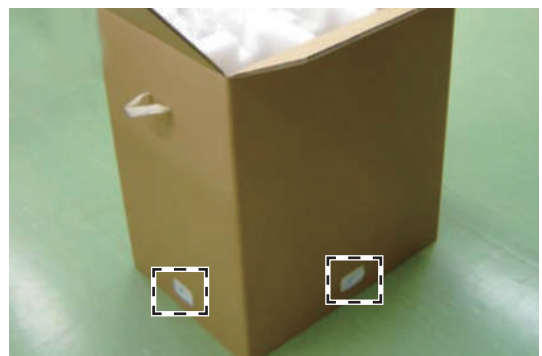


- 2** Open the shipping carton, and take out the documents (*A) and accessory boxes (*B).

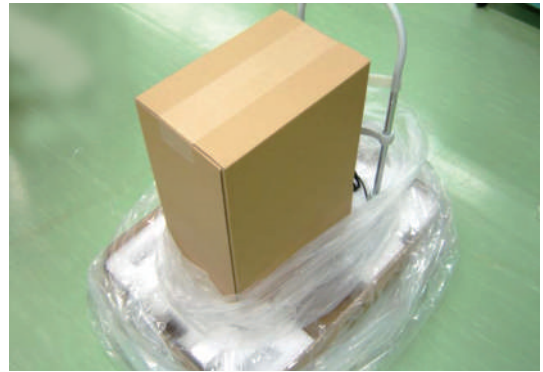
The accessories are packed in the accessory boxes with characters printed on them. The accessory boxes with no characters printed on them are empty.



- 3** Remove the four joints that secure the bottom box to the outer box, then remove the outer box.



- 4** Remove the packing support and plastic covering the device.

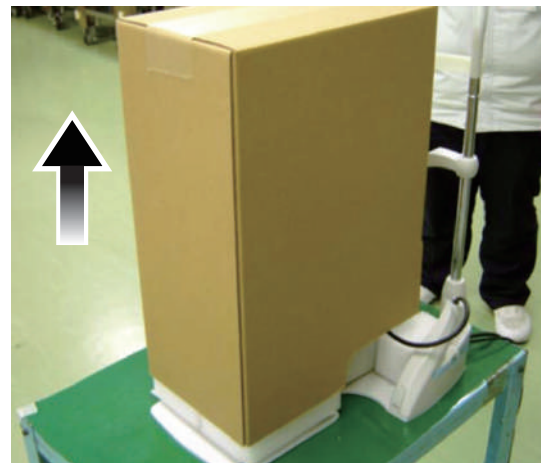


- 5** Two persons should lift the device by holding the base plate and place the device on the prepared optical table.

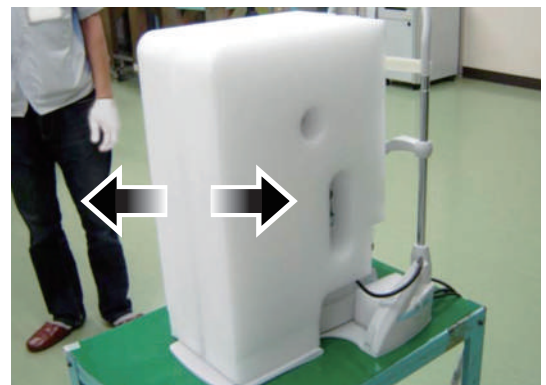


- 6** Remove the packing support covering the main unit.

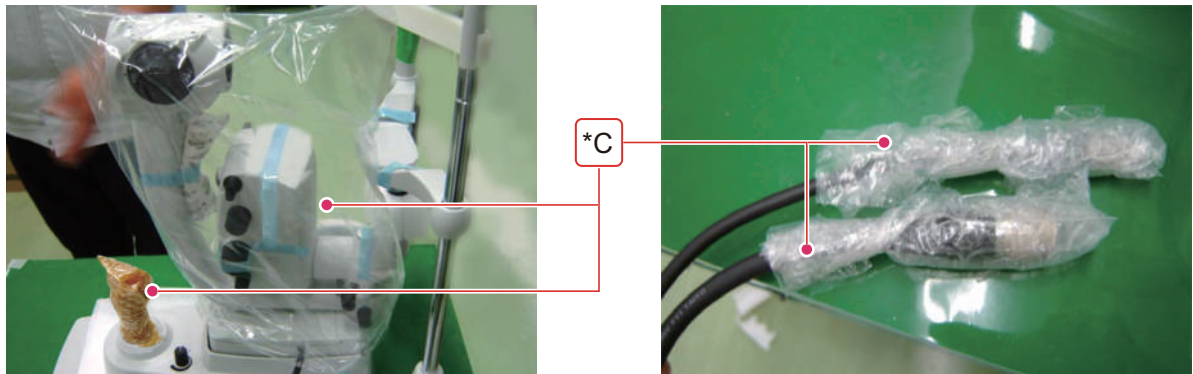
1) Lift the shipping carton to remove it.



2) Remove the right and left packing supports.



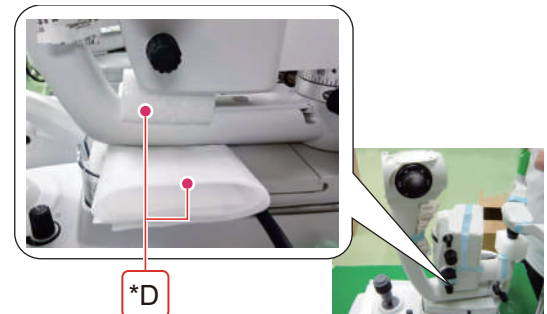
7 Remove the plastic (*C) covering the parts.



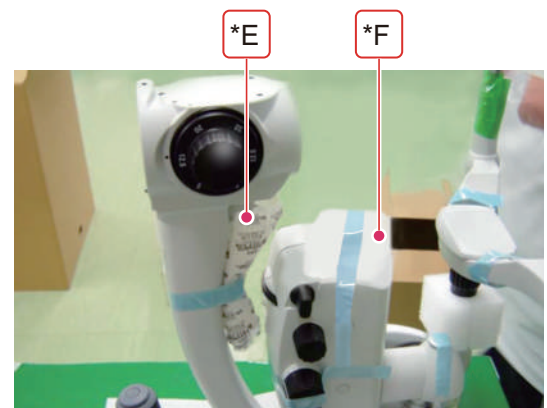
8 Remove the packing material securing the parts.

• Main unit

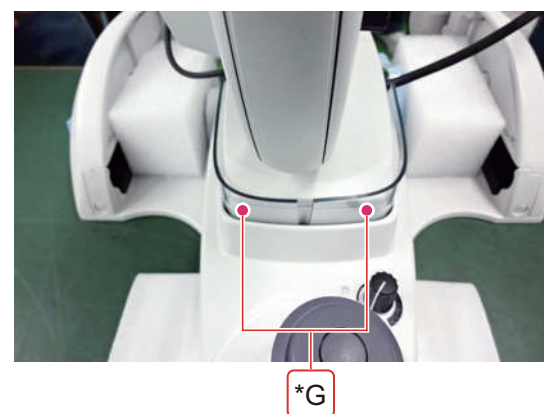
- 1) Remove the packing material (*D) securing the microscope arm.



- 2) Remove the silica gel (*E) and protective sheet (*F).

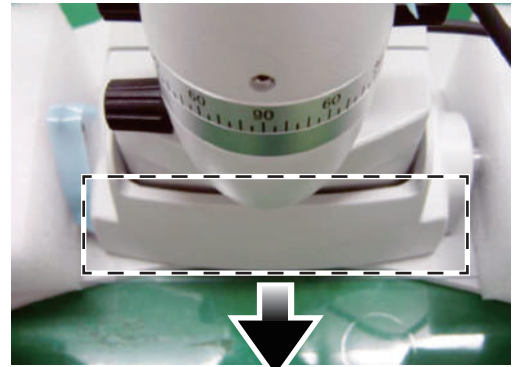
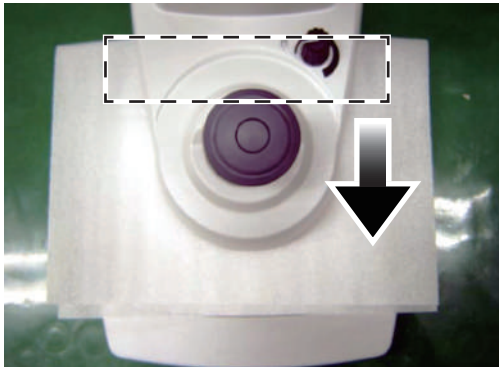


- 3) Remove the spacers (*G) (2 pieces) inserted into the gap in the main unit.



- Sliding parts

- 1) Remove the spacers (2 pieces) holding the sliding parts from moving backwards or forwards.

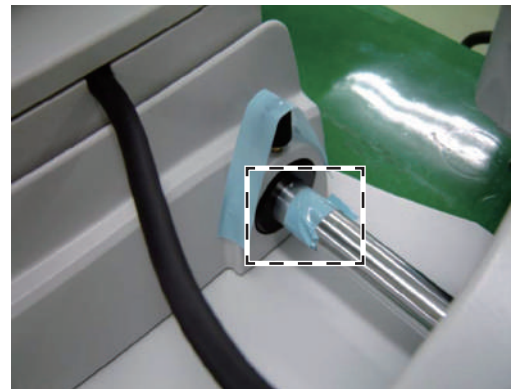
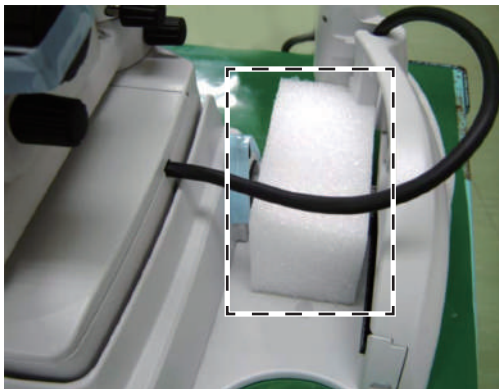


2

- 2) Remove the packing material and protective sheet holding the sliding parts from moving right or left.

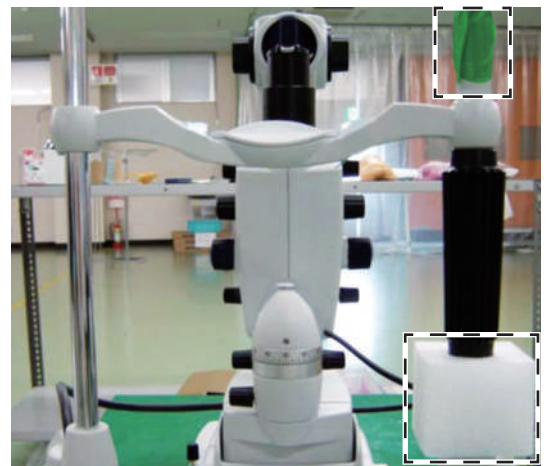
Remove the protective sheet together with the tape.

Remove the packing material on the other side in the same manner.



- Chinrest elevation control

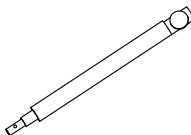
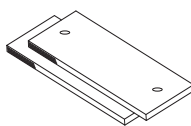
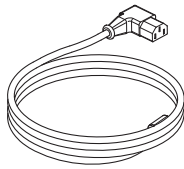
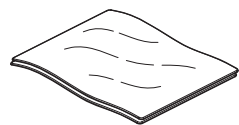
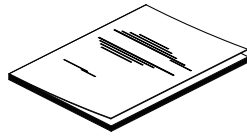
Remove the packing material and tape.



- 9 Remove the blue tape securing the parts.

2.3 Packed Contents

The following are included in the standard configuration. Check the contents before use.

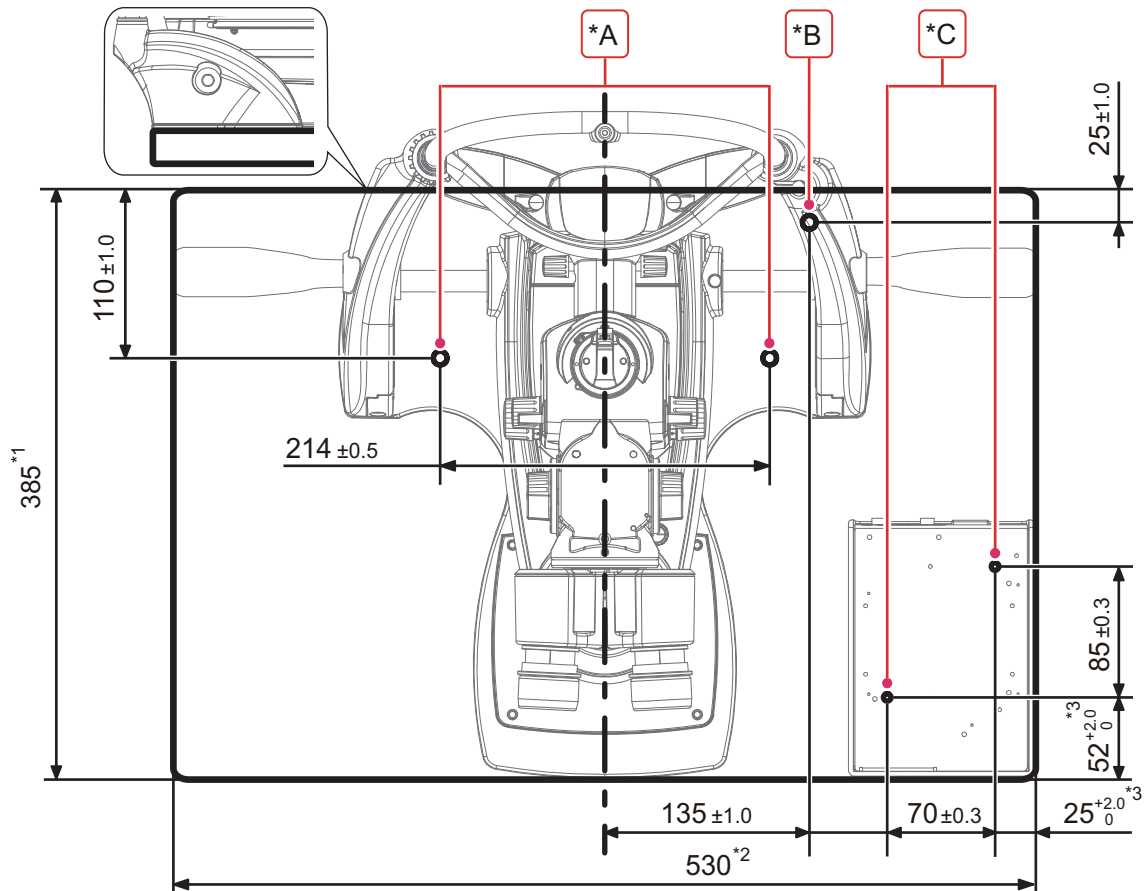
Part name	Quantity	Appearance
Focusing rod	1 unit	
Cap	1 unit	
Chinrest paper	2 packs	
Power cord	1 unit	
Hexagonal wrench (2 mm)	1 unit	
Phillips screwdriver	2 units	
Round head wood screws (4.1 x 13, 3.8 x 20)	2 units each	
Dust cover	1 unit	
Operator's manual	1 volume	

2.4 Installation

Secure the device on the optical table, then attach the parts.

- 1 Drill holes in the optical table surface on which the device will be installed with an electric drill.

Recommended dimensions of an optical table: 530 mm × 385 mm or more



Tag	Outline
*A	- When the device is fastened by screws from above the table Hole diameter: 3 mm, hole depth: 15 mm or less - When the device is fastened by screws from below the table*4 Hole diameter: 6 mm, hole depth: through hole
*B	To run the illumination lamp cord under the optical table, drill a screw hole. Hole diameter: 20 mm, hole depth: through hole
*C	Drill screw holes from below the table. Hole diameter: 3 mm, hole depth: 10 mm or less

*1: Minimum depth for which the main body does not extend off of the table

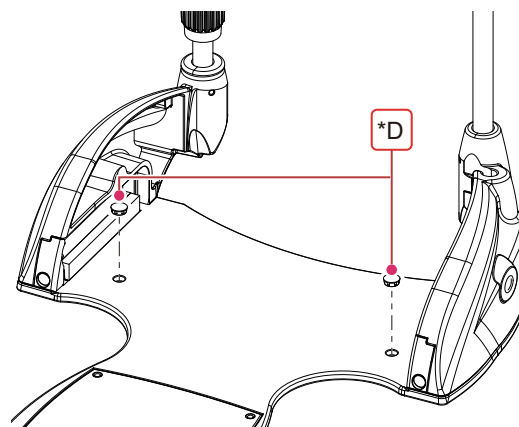
*2: Minimum width for which the optional grips do not extend off of the table

*3: Dimensions when the ends of the optical table and power supply box are aligned

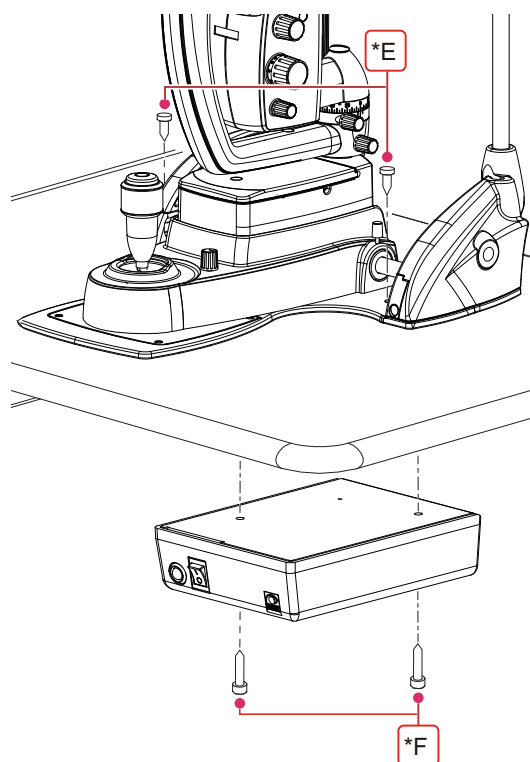
*4: When the device is fastened by screws from below the table, additional screws are necessary. For details, contact NIDEK or your authorized distributor.

2 Secure the main body of the device and the power supply box to the prepared optical table.

- 1) Install the device so that it aligns with the holes drilled in Step 1.
- 2) Remove the caps (*D) on the screw holes on the base plate unit.



- 3) Secure the base plate unit using the round head wood screws (3.8 x 20) (*E).
- 4) Attach the caps on the screw holes in the reverse order of how they were removed.
- 5) To run the cords under the optical table, pass the cords through the screw hole drilled in Step 1.
- 6) Secure the power supply box using the round head wood screws (4.1 x 13) (*F).



3 Confirm that the main body and power supply box are secured to the optical table.

4 Attach the parts.

Attach the prism head, binoculars, cords, and optional accessories.

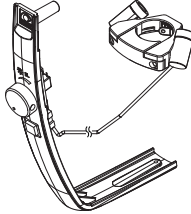
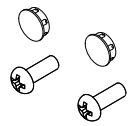
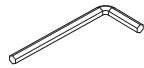
For attachment of the parts, refer to "Attachment Instructions" in the operator's manual of the device.

Note

- The prism head, binoculars, and optional accessories are packed separately from the main body of the device.

2.5 Optional External Illumination Installation

○ Packed contents

Part name	Quantity	Appearance
External Illumination ASSY (Arm cover, external illumination)	1 unit	
Mounting screws for arm cover (BT3 × 8), caps on screw holes	2 units each	
Fastening screw for cable (HC3 × 6)	1 unit	
Hexagonal wrench (4 mm)	1 unit	



Note

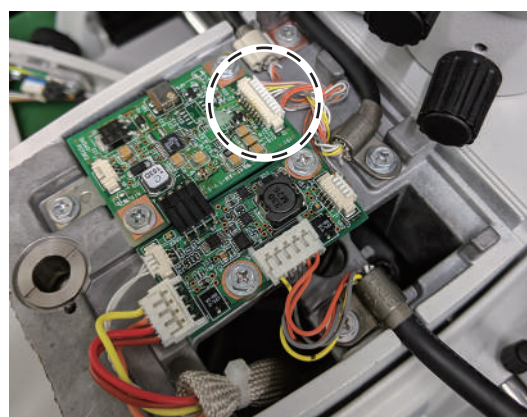
- When the optional external illumination is shipped, the arm cover is removed from the microscope arm.



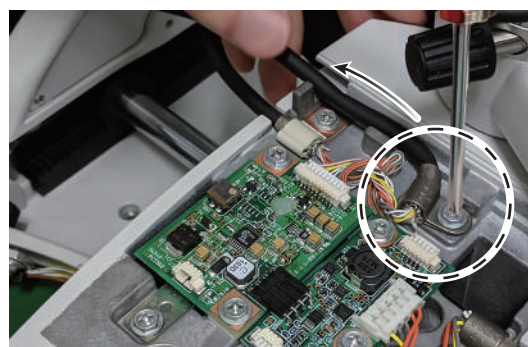
- 1** Swing the microscope arm and illumination unit arm to the left.
- 2** Remove the cap on the screw hole and the screw (BS3 × 8) to open the lid (*A) of the stage.



- 3** Connect the cable connector of the external illumination.



- 4** Attach the cable clamp with the screw (HC3 × 6) and route the cable along the notch.

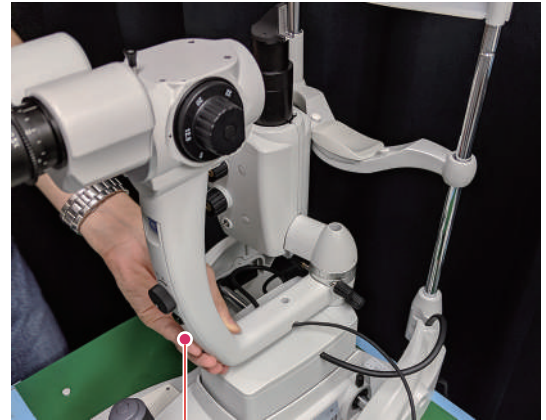


- 5** Close the lid of the stage and reattach the screw (BS3 × 8) and the cap on the screw hole.

Let the cable of the external illumination extend from the notch of the stage. Then close the lid.



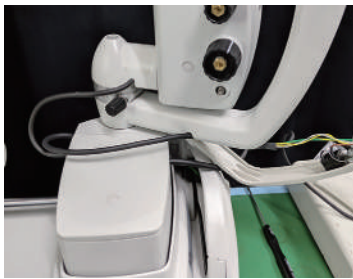
6 Attach the arm cover (*B).



*B

2

- 1) Swing the microscope arm and illumination unit arm to the right.
- 2) Route the cable along the groove.



- 3) Attach the arm cover and secure it with the mounting screws for arm cover (BT3 × 8) and the caps on screw holes (in two positions).

- Pay attention to the cable length during assembly. Be careful that the cable does not become pinched.

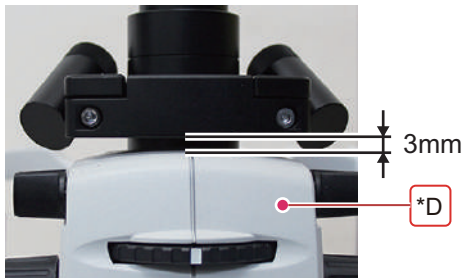
Adjust the cable length to swing the microscope arm and illumination unit arm smoothly to the right and left.



7 Mount the external illumination on the illumination tower (*C).

- 1) Loosen the two SB4 × 8 screws.
- 2) Mount the external illumination on the illumination tower.

Provide an approximately 3 mm of clearance above the bottom of the illumination tower to prevent the external illumination from contacting the lamp house cover (*D) during scanning.



- 3) Adjust the position of the external illumination so that the external illumination faces the patient side. Then tighten the two SB4 × 8 screws.



3.1 Selecting Setting Mode

Turning on power to the device while pressing the joystick button sets the device to the setting mode.

- Setting mode

Setting mode	Details
Initialization function	Select whether to turn on/off the function to automatically move the main unit up and down to roughly the middle position accompanied by a beep at device start-up.
Beep sound volume setting	Set the volume of the beep that sounds at device start-up.
Packing mode	Select this mode before transporting the device for maintenance or repair.

- Selection methods

Turn on power to the device while pressing the joystick button.

After 5 seconds

Releasing the joystick button after a beep sounds sets the device to the initialization function setting mode.

➡ [“3.2 Initialization Function” \(page 18\)](#)

After a beep sounds, press and hold the joystick button for another 5 seconds.

After 10 seconds

Releasing the joystick button after a beep sounds sets the device to the beep sound volume setting mode.

➡ [“3.3 Beep Sound Volume Setting” \(page 19\)](#)

After a beep sounds, press and hold the joystick button for another 5 seconds.

After 15 seconds

Releasing the joystick button after a long beep sounds automatically sets the device to the packing mode.

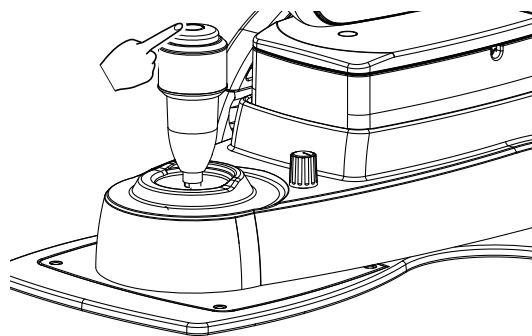
➡ [“3.4 Packing Mode” \(page 20\)](#)

3.2 Initialization Function

This function is to automatically move the main unit up and down to roughly the middle position accompanied by a beep at device start-up.

○ How to enable the initialization function setting

- 1 While pressing the joystick button, turn on (**I**) the power switch.



- 2 After 5 seconds, check that a beep sounds, then release the joystick button.

The initialization function setting is enabled.

- 3 Select whether to turn on/off the initialization function.

Pressing the joystick button toggles between ON and OFF. A beep sounds each time the joystick button is pressed.

Factory setting: ON

ON/OFF	Beep	Outline
ON	Once	When the power switch is turned on, the main unit automatically moves up and down to roughly the middle position accompanied by a beep. If the device is at roughly the middle position when the power switch is turned on, a beep sounds without changing the height of the device.
OFF	Twice	When the power switch is turned on, a beep sounds. However, the height of the device does not change.

Note

- When the beep sound volume is set to off, a beep does not sound at device start-up.

 [“3.3 Beep Sound Volume Setting” \(page 19\)](#)

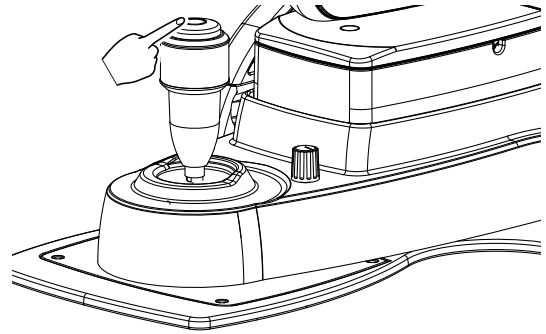
- 4 Turn off (**O**) the power switch to save the setting.

3.3 Beep Sound Volume Setting

Set the volume of the beep that sounds at device start-up.

○ How to enable the beep sound volume setting

- 1 While pressing the joystick button, turn on (I) the power switch.



3

- 2 After 10 seconds, check that a beep sounds, then release the joystick button.

A beep sounds after 5 and 10 seconds.

The beep sound volume setting is enabled.

- 3 Select the beep sound volume.

Pressing the joystick button changes the sound volume (off/quiet/loud). A beep sounds each time the joystick button is pressed.

Factory setting: Loud

Note

- When errors occur, or the setting modes are selected, the beep sound is loud regardless of the volume setting.
- When the beep sound volume is set to off, a beep does not sound at device start-up.

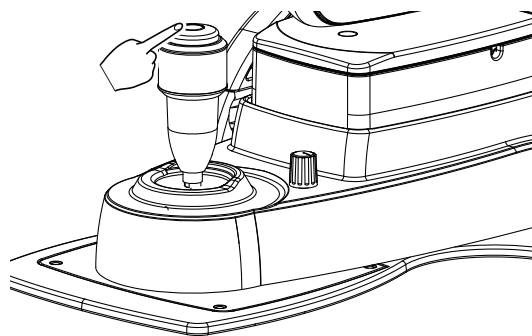
- 4 Turn off (O) the power switch to save the setting.

3.4 Packing Mode

Select this mode before transporting the device for maintenance or repair. In packing mode, the main unit is automatically set in the transport position (lowest position).

○ How to enter the packing mode

- 1** While pressing the joystick button, turn on (**I**) the power switch.



- 2** After 15 seconds, check that a long beep sounds, then release the joystick button.

A beep sounds after 5, 10, and 15 seconds.

The main unit is automatically set in the transport position (lowest position).

4

CHECKLIST

4.1 SL-2000 Installation Checklist

- After the installation is complete, make a copy of this checklist and fill it out. The personnel in charge of the installation are required to store this form.

Customer		S/N	
Installation date		Installation location	
Installed by			

4

○ Checklist

After installation is complete, check the parts.

Check box	Check items
☐	The main body and power supply box are secured to the optical table.
☐	The parts are secured.
☐	The cords are secured.
☐	The pilot lamp illuminates when the power switch is on ().
☐	The fixation lamp illuminates.
☐	The following movements are smooth. • Vertical and horizontal movement of the main unit • Vertical movement of the chinrest • Swing of the illumination unit arm • Swing of the microscope arm • Insertion of the yellow filter • Rotation of illumination light • Change of the internal filters • Scanning • Turning on/off the external illumination button of the optional external illumination • Turning on/off the external illumination by turning the external illumination control of the optional external illumination until a click is felt

Check box	Check items
☐	The adjustment of the following is smooth. • Pupillary distance • Eyepiece diopter • Illumination light intensity • Slit width • Change of the aperture diameter and slit length • Illumination light intensity of the optional external illumination
☐	The following settings are proper. • Initialization function (ON / OFF) • Beep sound volume (off / quiet / loud)
Note	