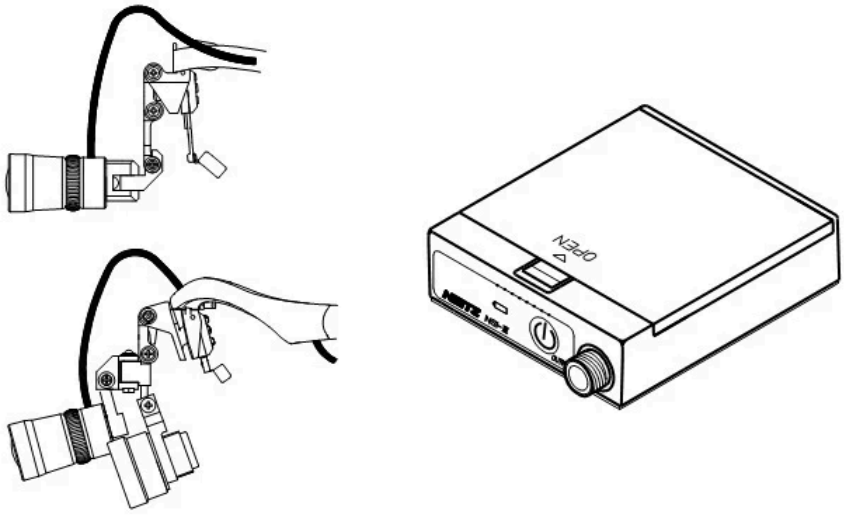
NEITZ

Spot Illuminator NSI-III
Instruction Manual



Thank you for purchasing the NEITZ Spot Illuminator NSI-III. This is a battery-powered lamp designed to be worn on the operator's head to provide a light direct into the field of vision during surgical, diagnostic, or therapeutic procedures. This device has been designed for use with the NEITZ Binocular Loupe series and/or NEITZ Frame series. When necessary, please refer to the NEITZ Loupe instruction manual as needed.

Please read this instruction manual carefully before use to avoid unexpected accidents, and store it in a safe place for future reference.

TD11-12690001E-8

Table of Contents

1. Important Information 1
   1-1 Intended Use 1
   1-2 Symbols 1
   1-3 Safety Information 2
      1-3-1 Common Precautions to All Devices 2
      1-3-2 Precautions for Battery Charger and Battery 4
   1-4 Labeling on Outer Package 5
2. Checking Package Contents 6
3. Nomenclature and Function 7
   3-1 Spot Illuminator 7
   3-2 Battery Pack 8
   3-3 Battery Charger 9
4. Preparation and Inspection 10
   4-1 Preparation 11
   4-2 Inspection of Illuminator 11
   4-3 Inspection of Battery 11
   4-4 Inspection of Battery Charger 11
5. Operation 12
   5-1 Charging Batteries 12
   5-2 Mounting Illuminator on Frame 13
      5-2-1 Mounting Illuminator on Titanium Frame 13
      5-2-2 Mounting Illuminator on BETA Frame 15
      5-2-3 Mounting Illuminator on NEO Frame 16
      5-2-4 Mounting Illuminator on Headband 17
   5-3 Wearing Frame with Illuminator 18
      5-3-1 Positioning Titanium Frame with Illuminator 18
      5-3-2 Placing BETA Frame or NEO Frame Illuminator 19
   5-4 Connecting Illuminator to Battery Pack 21
      5-4-1 Inserting Batteries in Battery Pack 21
      5-4-2 Connecting Illuminator to Battery Pack 21
   5-5 Setup of Illuminator 22
      5-5-1 Turning Illuminator ON/OFF 22
      5-5-2 Setting Illumination Brightness 22
      5-5-3 Adjusting Illumination Field 23
6. Troubleshooting 24
7. Maintenance 25
   7-1 Cleaning 25
   7-2 Tightening Screws 25

7-3 Storage and Transportation 25
7-3-1 Storage and Operation Conditions 25
7-3-2 Safekeeping and Transportation 25
7-4 Disposal 26
7-4-1 Illuminator and Accessories (except Rechargeable Battery) 26
7-4-2 Rechargeable Battery 26
8. Specifications 27
9. Contact Information 28
ANNEX A 29
Alarm System for Spot Illuminator NSI-III 29
ANNEX B 30
EMC Guidance for Spot Illuminator NSI-III 30
(1) Guidance and Manufacturer's Declaration - Electromagnetic Emissions 30
(2) Guidance and Manufacturer's Declaration - Electromagnetic Immunity 31
(3) Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the NSI-III 33
(4) Essential Performance of Equipment 33

1. Important Information

For the U.S. Market;

CAUTION: Federal law restricts this device to sale by or on the order of a medical or dental professional; associated healthcare professionals; medical, dental and associated healthcare students.

1-1 Intended Use

The Spot Illuminator NSI-III is a battery-powered device intended to be worn on the user's head to provide a light source to aid visualization during surgical, diagnostic, or therapeutic procedures.

Do not use this device for any purpose other than its intended use.

1-2 Symbols

The following symbols are used on this manual and/or package to assist you in proper handling and using this device, and to warn and caution you of potential hazards to yourself and others.

⚠WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	Used with the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices that may cause property damage.
 Prohibited	Prohibited action (must not be performed).
 Instruction	Required actions (that must be performed) based on the instructions.
SN	Serial number. This symbol should be accompanied by the serial number of the device.
	Manufacturer. This symbol should be accompanied by the name and address of the manufacturer.
	This symbol shows that this device may not be disposed of together with general household waste and can be recycled separately from other household waste under the WEEE directive.
	This symbol instructs to consult the instructions of the device for information on how to properly use it.
	This symbol shows the lower and upper temperature limits for storage and transport.

	This symbol shows the lower and upper relative humidity limits for storage and transport
	This symbol shows the lower and upper atmospheric pressure limits for storage and transport
	This symbol shows the device is fragile and must be handled with care.
	This symbol instructs to keep the device dry.
	Symbol of Nickel-Metal Hydride Secondary Battery to be recycled.
	Symbol showing that the device emits potentially hazardous levels of non-ionizing radiation or RF transmitters (not applicable to the NSI-III)
	Barcode for traceability purposes. The figure to the left is an example.

1-3 Safety Information

1-3-1 Common Precautions to All Devices

⚠WARNING	
	Do not apply a strongly impact nor throw it. It may cause injury or device failure.
	Do not place on an unstable nor sloped surface. It may result in rollover, malfunction, or damage.
	Do not use in extremely humid place or come in contact with salt water, or allow water to come in contact with the device. It may cause an electric shock or severe damage.
	Do not use at the place where the cord and the strap are rolled up and might fall. It may cause injury or device failure.
	Do not illuminate when the plastic cover is over the Illuminator. It may cause the inside of the illuminator to become extremely hot and may cause injury, damage or a fire.
	Do not intentionally illuminate into the retina. It may cause injury or damage.

 Prohibited	Do not peel off or damage the outer battery casing. This may cause an explosion or a fire by the electrolyte contained inside the battery.
 Prohibited	Do not attempt to disassemble or modify the device. Electrical shock, a fire or serious injury may result.
 Instruction	Do not wear the illuminator before mounting to the frame through a hinge. This may cause serious damage or cause a fire.
 Instruction	Be sure to turn on the light after mounting on the frame or the like through a hinge without fail. It may cause injury, device failure or fire.

⚠CAUTION	
 Prohibited	Do not use together with parts other than standard accessories including in this package. Problems or damage may occur.
 Prohibited	Do not operate in direct sunlight or harmful light. Doing so may create high heat or damage of the device.
 Prohibited	Do not sterilize the device. It may cause deformation or device failure.
 Prohibited	Do not use thinner, cleaning agents, or boiled water to clean the device. It may cause deformation or device failure.
 Instruction	Be sure to tighten all screws firmly. Not doing so may cause breakage or injury.
 Instruction	Remove the battery when the device will not be used for long periods of time to prevent from electrolyte leakage.
 Instruction	Be sure to use original Carrying case during movement or transportation. Not doing so may cause deformation or device failure.

1-3-2 Precautions for Battery Charger and Battery

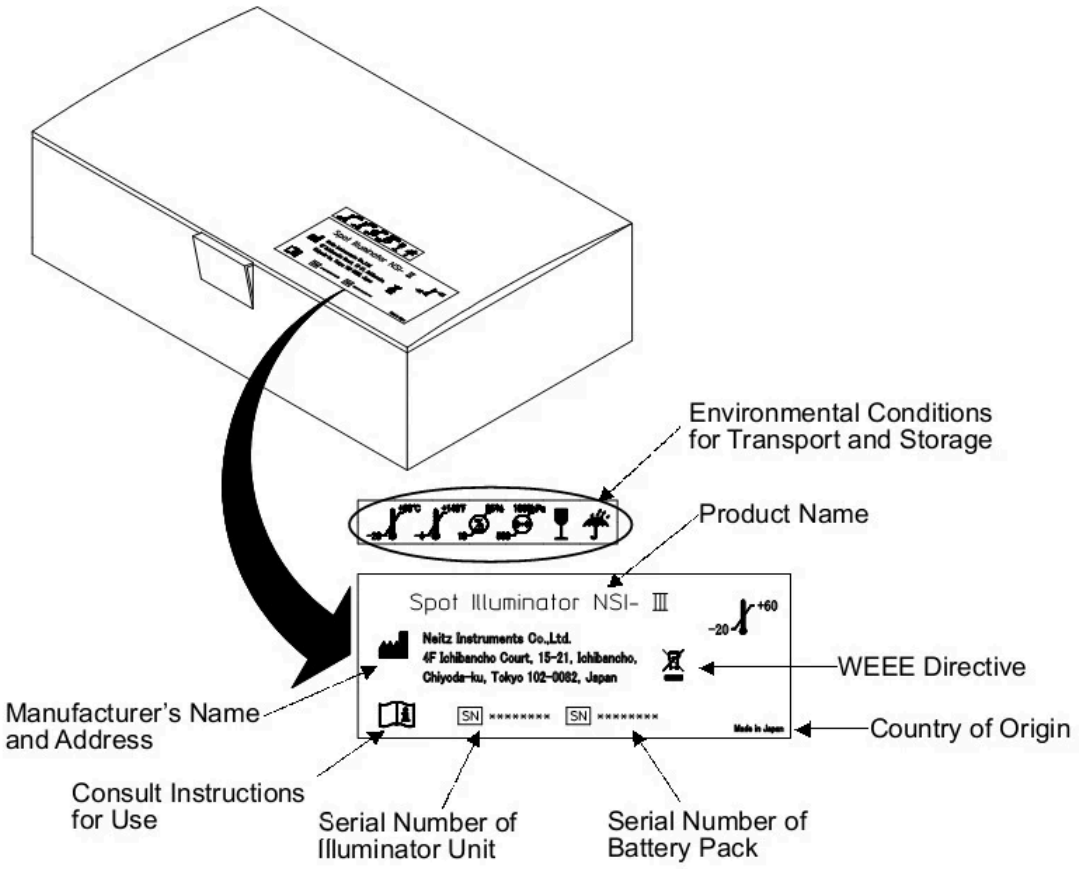
⚠WARNING	
 Prohibited	Do not allow liquid leaked from battery to come in contact with eyes. If this occurs, flush eyes with clean water and consult a physician immediately. If leaked liquid gets on the skin or clothing, wash off with clean water immediately. Not doing so may cause personal injury.
 Prohibited	Do not peel off or damage the outer battery casing. This may cause an explosion or a fire by the electrolyte contained inside the battery.

⚠CAUTION	
 Prohibited	Do not use near flammable materials such as propane gas or the gasoline and where the air contains chemicals, fumes or particles from grain, dust or metal powders. This may cause a fire and explosion.
 Prohibited	Do not connect to electrical current outlet exceeding specifications. This may cause extreme heat, start a fire, electric shock, or bodily injury.
 Prohibited	Do not install the device in a place where difficult to plug in/out to/from the wall outlet since the plug-out from the outlet is one of the separation methods between the device and the battery charger.
 Prohibited	Do not use the charger or standard accessories other than attached to this package. It may cause fire or device failure.
 Prohibited	Do not use the power plug with dust or foreign matter. It may cause fire.
 Prohibited	Do not use the damaged cord. It may cause electric shock or fire.
 Prohibited	Do not connect the cords in the starburst connection. The cords must be surely put orderly. It may cause the destruction of the device, tumble or injury.
 Prohibited	Do not insert any foreign materials into the gaps of device. It may cause fire or device failure. Otherwise, it may cause the destruction of the device and/or injury.
 Prohibited	Do not touch the cord, outlet and the device with wet hands. It may cause electric shock.
 Instruction	Unplug the power plug from outlet when the device will not be used for long periods of time or will be cleaned. Not doing so may cause electric shock, fire or device failure.

Instruction	Unplug the power plug from outlet immediately when water or liquid entered, and stop using. Not doing so may result in electric shock, fire, or device failure.
Instruction	Do not touch the metal parts of the plug with any metal when plug is inserted into an electrical outlet. This may cause an electric shock or fire.
Instruction	Disconnect the power plug of Illuminator from the battery case when the device will not be used for long periods of time to prevent from electrolyte leakage.

1-4 Labeling on Outer Package

The following label has been adhered to the packaging to assist you in proper handling of the device.

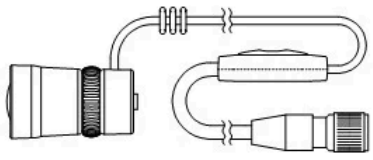


2. Checking Package Contents

Make sure to match all items in the package with the components shown below. Inspect each item for damage. If any items are missing or damaged, do not use the device and immediately contact your local dealer.

The Spot Illuminator NSI-III consists of the Spot Illuminator (including the Hinge, hereinafter, called as “Illuminator”) and Battery Pack.

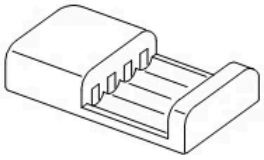
Before using this device for the first time, clean it according to the instructions given in this manual.



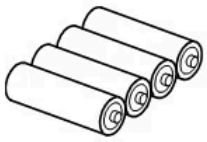
- Spot Illuminator NSI-III (1)



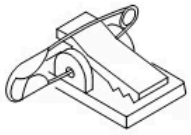
- Battery Pack (1)



- Rechargeable Battery Charger (1)



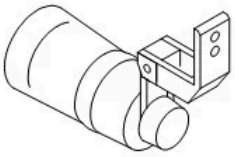
- Rechargeable Battery (4)



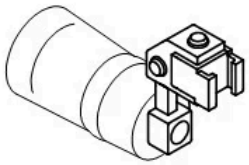
- Middle Switch Clip (1)



- Wiring Band (2)



- Hinge for Titanium Frame (1) Note 1



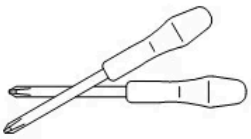
- Hinge for β or NEO Frame (1) Note 1



- Instruction Manual (1)



- Long type Screw (1) Note 2



- Phillips Head Screwdriver (2) Note 3

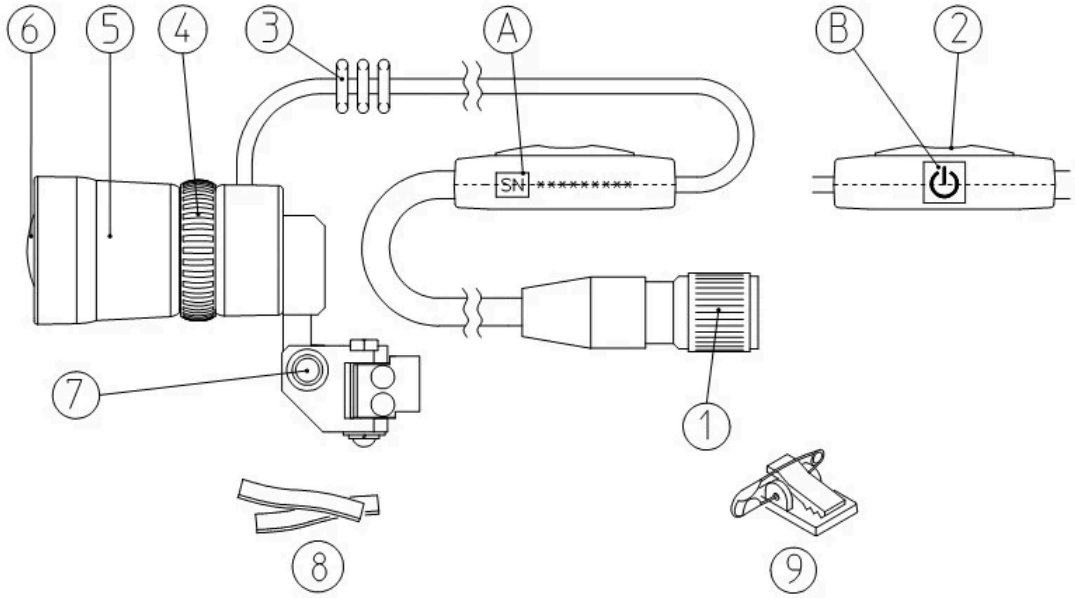
Note 1: Two types of hinge are available, one is for Titanium Frame and another is for BETA Frame or NEO Frame. Either type of hinge has been mounted on the Illuminator as per your order.

Note 2: Provided with the NEITZ Binocular Loupe with Titanium Frame.

Note 3: Provided with the NEITZ Binocular Loupe with BETA Frame or NEO Frame.

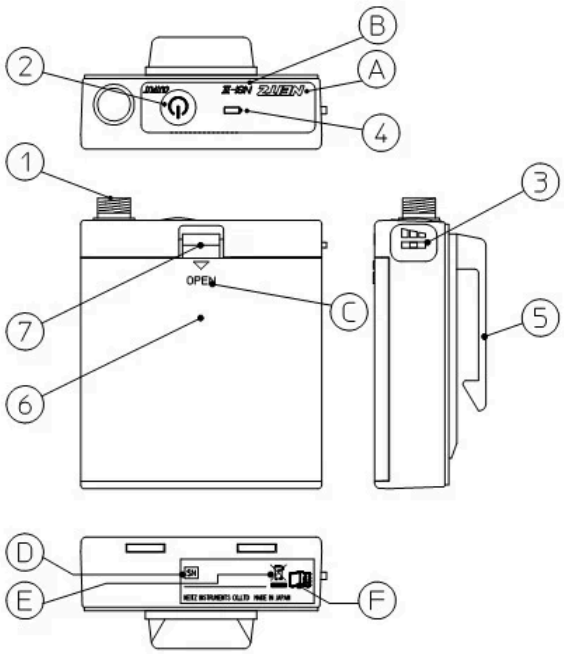
3. Nomenclature and Function

3-1 Spot Illuminator



A SN Label:	Serial Number of Illuminator
B Switch Label:	Indicates the Push-Push switch
① Light Plug:	Connects to the Light jack on Battery pack
② Middle Switch:	Performs the same function as the Power switch of Battery pack. Press to turn on and off (see 5-5-1 Turning Illuminator ON/OFF and 5-5-2 Setting Illumination Brightness)
③ Wiring Ring:	Used to fix the Cord on the Temple
④ Diaphragm Ring:	Changes the illumination field diameter by turning (see 5-5-3 Adjusting Illumination Field.
⑤ Lens Barrel:	Holds the LED bulb
⑥ Lens:	Used to converge transmitted light
⑦ Hinge:	Used to affix on the Loupe. Either type of hinge has been mounted to the Illuminator as per your order.
⑧ Wiring Band:	Used to fix the Cord.
⑨ Middle Switch Clip:	Used to attach the Middle Switch on the Cord to clothing.

3-2 Battery Pack



A Manufacturer's Logo

B Model Logo

C Battery compartment "OPEN" mark

D Serial Number of Battery pack

E WEEE Directive mark

F Consult User's Manual

① Light Jack:
Connects to the Light plug of Illuminator.
Indicated as "*OUTPUT*" (see 5-4 Connecting Illuminator to Battery Pack).

② Power Switch:
Press to turn Illuminator ON/OFF (see 5-5-1 Turning Illuminator ON/OFF).

③ Light Adjustment Switch:
Selects light intensity of "High", "Middle" or "Low" (see 5-5-2 Setting Illumination Brightness).

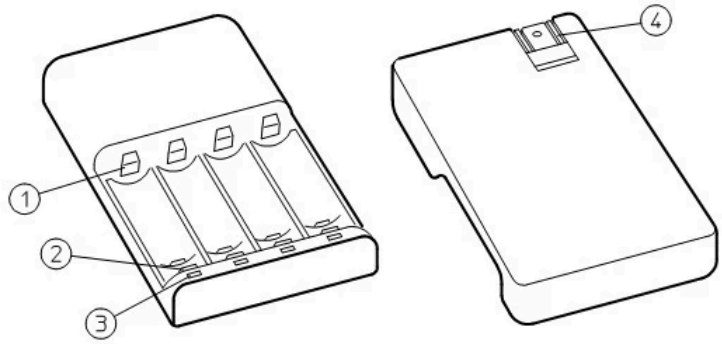
④ Indicator for Residual Quantity Light:
Lights while illumination is ON. The color of indicator changes to demonstrate residual quantity of light (see 5-5-2 Setting Illumination Brightness).

⑤ Belt Clip:
Used to attach Battery pack to belt.

⑥ Battery Compartment Lid:
Lid for battery compartment. Remove it to replace batteries.

⑦ Lid Holder:
Holder of Battery compartment lid. Pull while depressing to remove.

3-3 Battery Charger



① AA (+) Contact Surface: Contacts the + terminal of the battery.

② AA (-) Contact Surface: Contacts the - terminal of the battery.

③ Charge Indicator: Lightens when charging and turns off when charging is complete.

Note: The number of Indicator lights varies with the model of the charger provided.

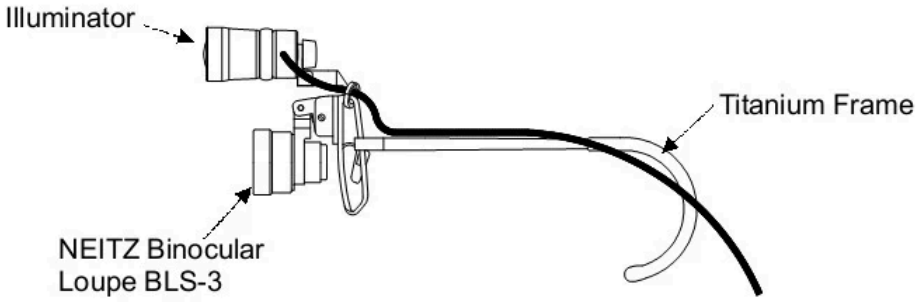
④ Plug: To use, swing the Plug out on the rear side of charger and plug into AC100-240V outlet.

4. Preparation and Inspection

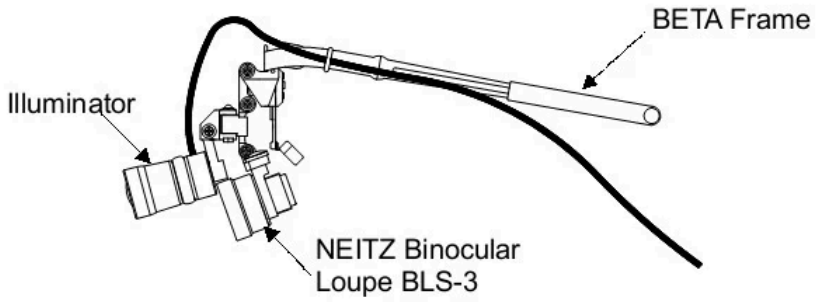
This device has been designed for use with the NEITZ Binocular Loupe and NEITZ Frame.
Combinations with various Loupes and various Frames are available. If necessary, refer to the instruction manual for the specific Loupe with Frame purchased.

Examples of Combinations with Loupe BLS-3 and Various Frames

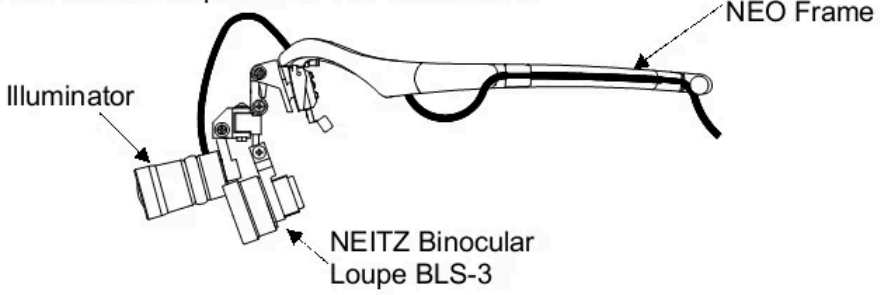
(1) NEITZ Binocular Loupe BLS-3 with Titanium Frame



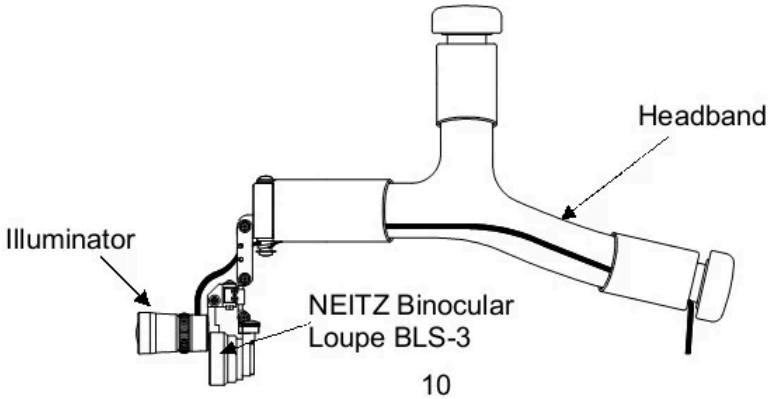
(2) NEITZ Binocular Loupe BLS-3 with BETA Frame



(3) NEITZ Binocular Loupe BLS-3 with NEO Frame



(4) NEITZ Binocular Loupe BLS-3 with Headband



4-1 Preparation

To prepare, start with NEITZ Binocular Loupe with Frame, dry lint-free cloth, lint-free soft cloth slightly moistened with diluted neutral detergent, and cotton swabs for cleaning.

4-2 Inspection of Illuminator

Clean the surface of Illuminator in accordance with the Section "6.1 Cleaning" before inspection. If necessary, disinfect it as well.

Confirm that there is no damage on the Illuminator including Lens, Cord, Light plug, Middle switch, including other parts as well as the Battery pack. If any items are damaged, do not use the Illuminator and immediately contact to your local dealer.

4-3 Inspection of Battery

Confirm that the battery does not leak organic electrolyte which is contained in the battery. If electrolyte leakage occurs, do not make contact with leakage and clean up with absorbent cloth and move the battery away from any fire. Actions described below are required if contacted.

Eye contact:	Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Obtain medical treatment. If appropriate procedures are not taken, eye irritation may develop.
Skin contact:	Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, injury and sever irritation to skin may develop.
Inhalation:	Move to fresh air immediately. Obtain medical treatment.

4-4 Inspection of Battery Charger

Confirm that the body of the charger is not damaged and that batteries can be inserted firmly in place without becoming loose.

5. Operation

5-1 Charging Batteries

Note: 1) The accessory Battery Charger is able to quick charge the supplied rechargeable battery. To achieve 2x quick charge, put 2 rechargeable batteries into both sides of charger compartments as indicated on the front face of the charger. For a 3x quick charge, put 1 rechargeable battery into either side of charger compartments under “QUICK”.

2) Refer to the Product Safety Data Sheet of battery manufacturer, if necessary.

(1) Notice the + and – terminal of the rechargeable battery with the charger’s + and – contact surface.

(2) Insert from the + terminal of battery and push in on the – terminal of it as shown in Fig. 5-1-1.

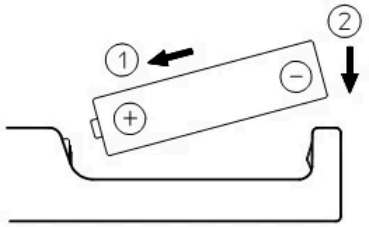


Fig. 5-1-1

(3) Put all of batteries into the charger compartments, taking care to observe polarity (+/-) as indicated inside the charger.

(4) Swing out the Plug on the rear side of charger and plug into AC100-240V outlet as shown in Fig. 5-1-2.

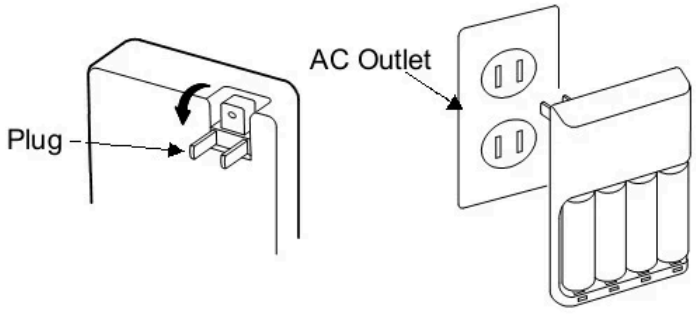


Fig. 5-1-2

(5) Confirm that the indication lights flash for a moment and are continuously on. Do not plug the charging unit in upside down. If plugged in upside down, charger will finish charging before batteries are fully charged.

(6) When charging is complete, the indicator lights will turn off.

Note: Fully charge time for 4 pcs. is approx. 4 hours.

(7) After charging is done, unplug the charger from the outlet and swing the plug back into place.

(8) Take the batteries out from the charger compartments to be used in the Battery pack.

5-2 Mounting Illuminator on Frame

Since mounting methods vary by frame types, make sure of the type to be used and follow the procedure as described below as well as referring to the instruction manual of the Binocular Loupe used.

5-2-1 Mounting Illuminator on Titanium Frame

(1) Remove the large screw and the washer that fix the Loupe to the Frame in the center (shown in Fig. 5-2-1).

Note: The removed washer shall be reused when the Illuminator will be mounted onto the Frame, do not throw away.

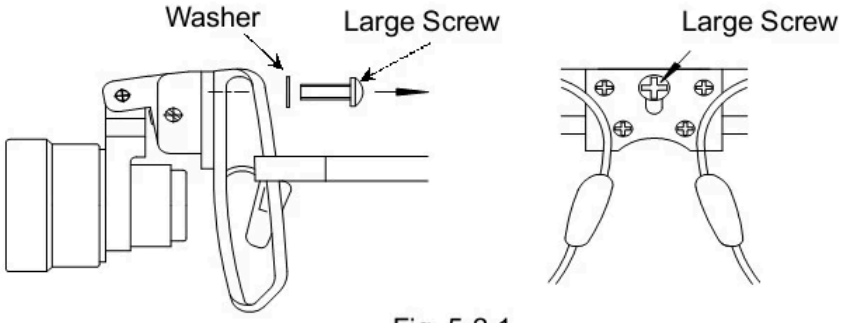


Fig. 5-2-1

(2) Affix the hinge on the Illuminator to both the Frame and Loupe together by using the Long type screw provided with the Frame and the washer removed in the above step (1). In case of using the Illuminator closer to the Loupe (underneath of the Loupe), tighten the screw with the washer as shown in Fig. 5-2-2.

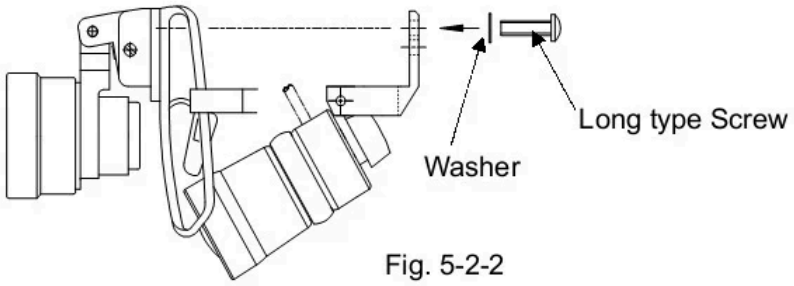


Fig. 5-2-2

(3) You may mount the illuminator above the Loupe if the Illuminator obstructs user's view or if user adjusts the Pupillary Distance to a narrow distance. In this case, affix the hinge on the Illuminator to the both Frame and Loupe together as shown in Fig. 5-2-3.

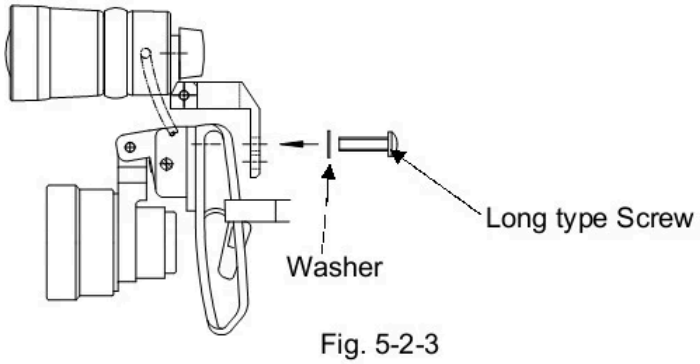


Fig. 5-2-3

(4) Loosely attach the Cord of Illuminator along the left temple (bow) not so as to become stiff by using the supplied Wiring band as shown in Fig. 5-2-4 in order to allow the Illuminator to move up and down (vertically) and right and left (horizontally). Handle the Cord with care. Never pull it hard nor bend it sharply.

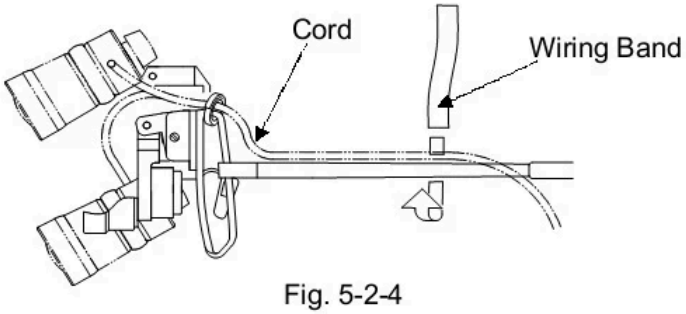


Fig. 5-2-4

(5) After mounting the Illuminator and adjusting the Loupe, adjust the positions of Illuminator and Loupe, by changing the angle of the Illuminator up and down and/or right and left when the Illuminator is turned on.

5-2-2 Mounting Illuminator on BETA Frame

(1) Loosen two screws mounted on the hinge of Illuminator, shown in Fig. 5-2-5, approximately 3mm. Do not remove them from the hinge.

(2) Put the hinge of Illuminator onto the hinge of the Loupe and firmly tighten the loosened two screws.

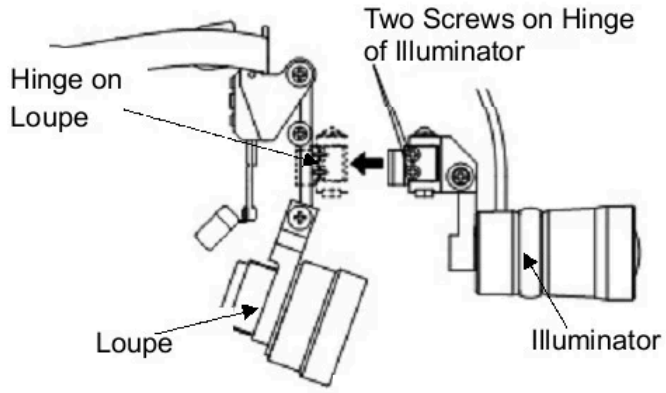


Fig. 5-2-5

(3) For wiring the Cord of Illuminator, if a frame strap is previously attached, remove it temporarily.

(4) Insert the Wiring ring from end of the left temple (bow) and fix it as shown in Fig. 5-2-6. Loosely attach the Cord along the left temple (bow) so as to allow the Illuminator to move up and down (vertically) and right and left (horizontally). If necessary to fix the Cord more, add the Wiring ring or the Wring band(s) onto the strap as shown in Fig. 5-2-6. Handle the Cord with care. Never pull it hard nor bend it sharply.

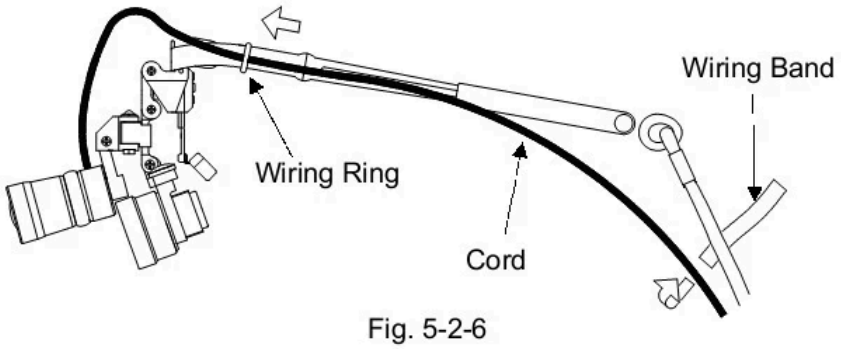


Fig. 5-2-6

(5) Be sure that the Illuminator can move up and down (vertically) and right and left (horizontally) freely and smoothly without any tension.

(6) Replace the removed strap to the frame.

(7) After mounting the Illuminator and adjusting the Loupe, adjust the positions of Illuminator and Loupe, by changing the angle of the Illuminator up and down and/or right and left while turning the Illuminator on.

5-2-3 Mounting Illuminator on NEO Frame

(1) Loosen two screws mounted on the hinge of Illuminator, shown in Fig. 5-2-7, approximately 3mm. Do not remove them from the hinge.

(2) Put the hinge of Illuminator onto the hinge of the Loupe and firmly tighten the loosened two screws.

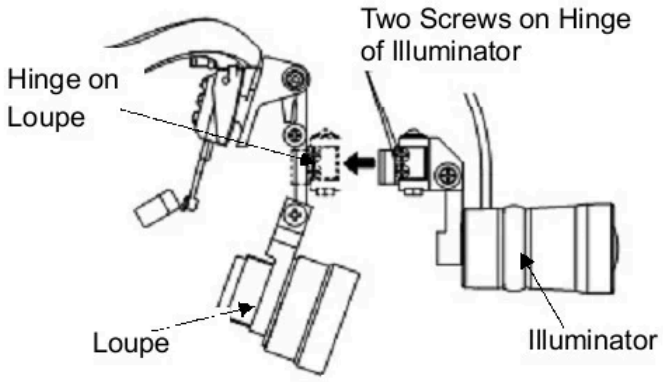


Fig. 5-2-7

(3) For wiring the Cord of Illuminator, if a frame strap is previously attached, remove it temporarily.

(4) Pull the Forehead Cushion out of the center as shown in Fig. 5-2-8 to remove it. Set the Cord inside of the Forehead cushion as shown in Fig. 5-2-9, then put back the cushion again. Loosely set the Cord, so that the Illuminator can move up and down (vertically) and right and left (horizontally) freely and smoothly without any tension.

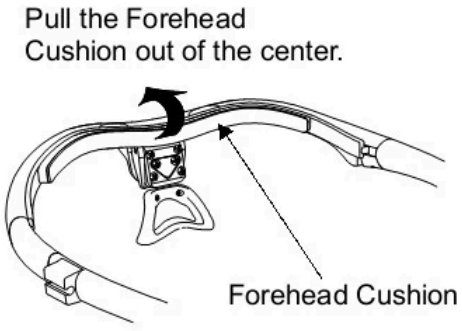


Fig. 5-2-8

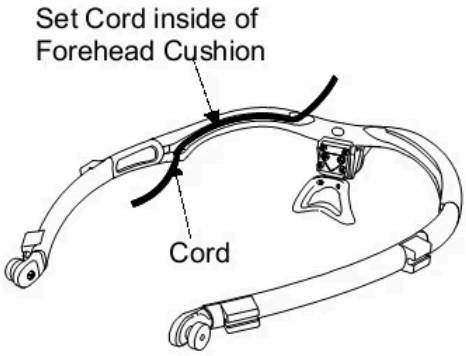


Fig. 5-2-9

(5) Pass the Cord through the Cord guide in two places and fix with the Wiring ring at the position shown in Fig. 5-2-10. Handle the Cord with care. Never pull it hard or bend it sharply. If necessary to fix the Cord more, add the Wiring ring or the Wring band(s).

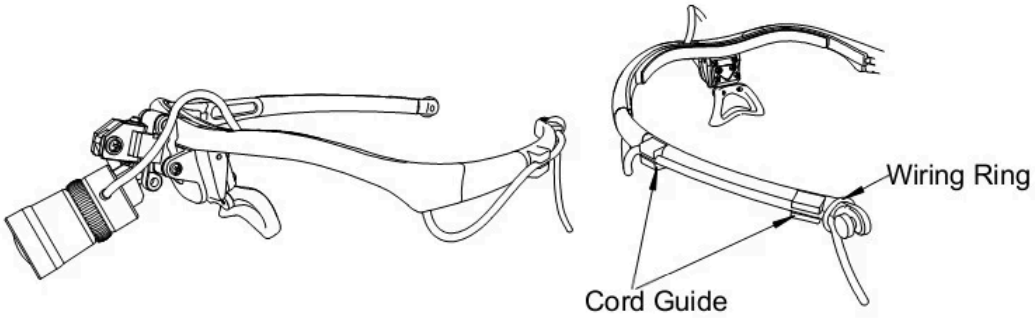


Fig. 5-2-10

(6) Be sure that the Illuminator can move up and down (vertically) and right and left (horizontally) freely and smoothly without any tension.
(7) Replace the removed strap to the frame.
(8) After mounting the Illuminator and adjusting the Loupe, adjust the positions of Illuminator and Loupe, by changing the angle of the Illuminator up and down and/or right and left while turning the Illuminator on.

5-2-4 Mounting Illuminator on Headband

(1) Loosen two screws mounted on the hinge of Illuminator, shown in Fig. 5-2-11, approximately 3mm. Do not remove them from the hinge.
(2) Put the hinge of Illuminator onto the hinge of the Loupe and firmly tighten the loosened two screws.

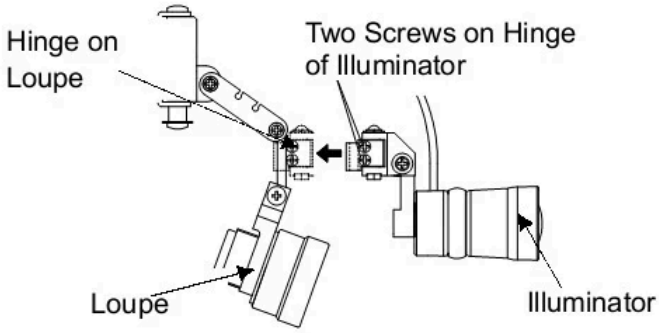


Fig. 5-2-11

(3) Put the Illuminator Cord on the groove of the Hinge and the protrusion of the Headband by using the Wiring ring.
(4) Open the Cloth pad and pass the Illuminator Cord through the Cloth pad.
(5) Close the Cloth pad after wiring

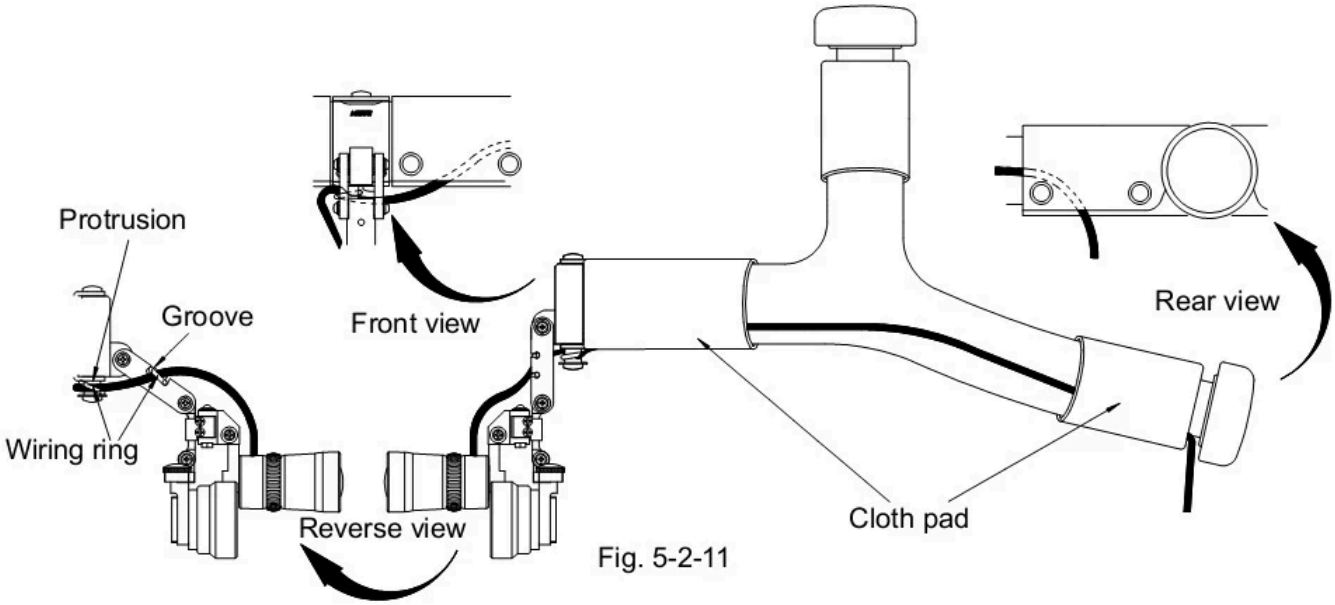


Fig. 5-2-11

5-3 Wearing Frame with Illuminator

5-3-1 Positioning Titanium Frame with Illuminator

(1) Position the Titanium Frame with Illuminator in place on your head after loosening the Strap if provided, then adjust for the optimum position of Illuminator.

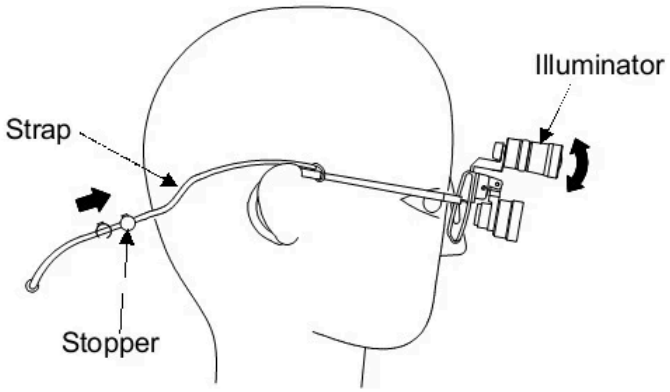


Fig. 5-3-1

(2) If the Strap is used, squeeze the stopper of Strap to position the main body section of the Frame is fitted to your head securely after attaching the Strap to the Strap holder of the Frame.

(3) Adjust the position of Illuminator by moving it up and down to obtain the optimum position.

(4) If the Loupe has been supplied, adjust the position of Loupe at the same time when adjusting the position of the Illuminator, referring to the Instruction Manual of the Loupe. In order to observe with less shadow, bring the Illuminator closer to the Loupe's optics.

5-3-2 Placing BETA Frame or NEO Frame Illuminator

(1) Place the main body of the Frame on your head after loosening the Strap, then adjust for optimum position of the Forehead pad and Nose pad. The Nose pad position is adjustable by sliding up and down and also forming the Nose pad to match your nose shape. Since 2 types of Nose pads are provided with the Fame, choose either one for your comfort and convenience, according to your preference and the procedure to be performed.

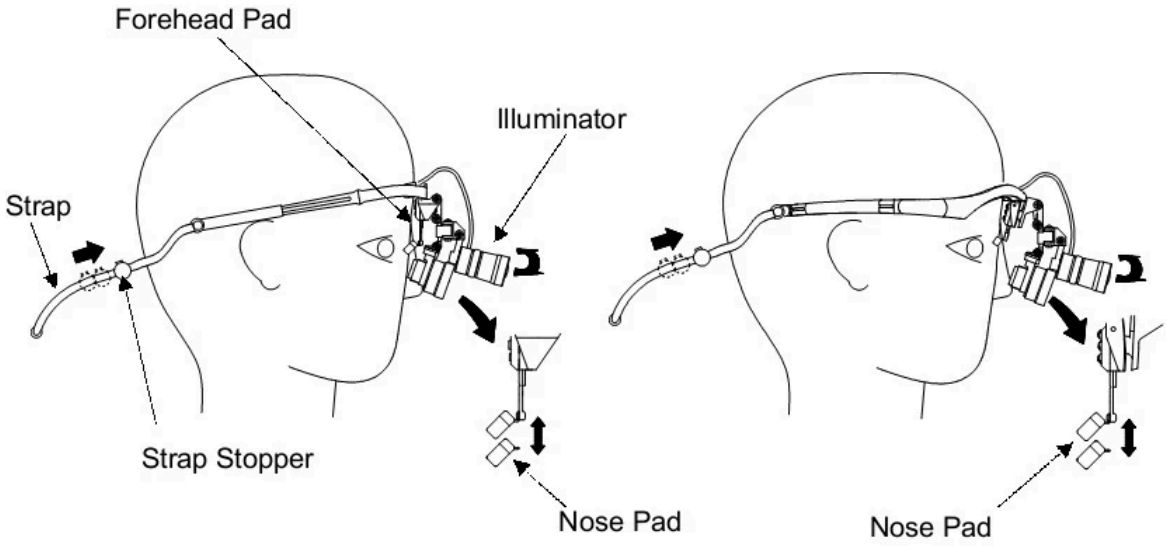


Fig. 5-3-2

(2) Squeeze the stopper of Strap to fit the body section of Frame to your head securely.

(3) Adjust the position of Illuminator by moving it up and down and/or right and left to obtain the optimum position. The position can be freely adjusted by bending the hinges.
When the Illuminator is not necessary to use, you can keep the Lens Barrel flipped up.

(4) If the Loupe has been supplied, adjust the position of Loupe at the same time when adjusting the position of the Illuminator, referring to the Instruction Manual of the Loupe.
In order to observe with less shadow, bring the Illuminator closer to the Loupe's optics.

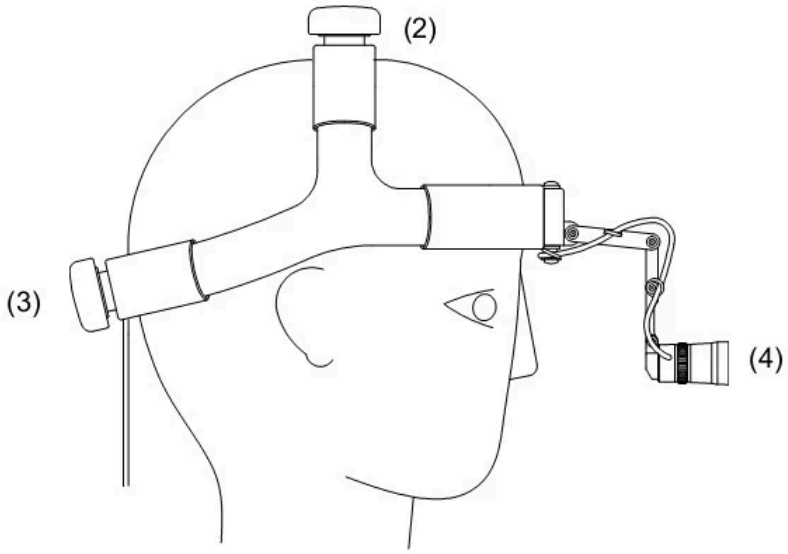
5-3-3 Placing Headband

(1) Place the Headband on your head so that the Lens Barrel will be situated at the center of your face.

(2) Adjust the height by turning the Adjustment Knobs located at the top of the Headband to place the band above your eyebrows.

(3) Turn the Adjustment Knobs located at the rear of the Headband to tighten and fix the Headband.

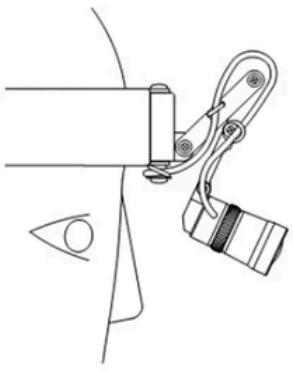
(4) Adjust the position of Illuminator by moving it up and down and/or right and left to obtain the optimum position. The position can be freely adjusted by bending the hinges.



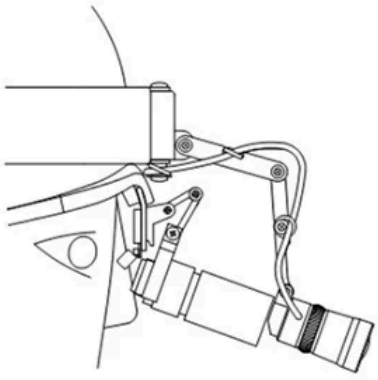
When the Illuminator is not necessary to use, you can keep the Lens Barrel flipped up.

Adjustment examples

By bringing the Illuminator close to the visual axis, you can observe with less shadow.



Adjustment close to the visual axis.



Adjustment fully extended to the loupe (when used with a binocular loupe).

5-4 Connecting Illuminator to Battery Pack

The Battery Pack may conveniently carried by clipping onto your belt or by putting in your pocket.

5-4-1 Inserting Batteries in Battery Pack

It is strongly recommended to use the enclosed batteries. When using other types of batteries such as alkaline dry cells, performance will deteriorate causing reduced illumination time.

(1) Pull down the Lid holder on the Battery compartment lid to open.

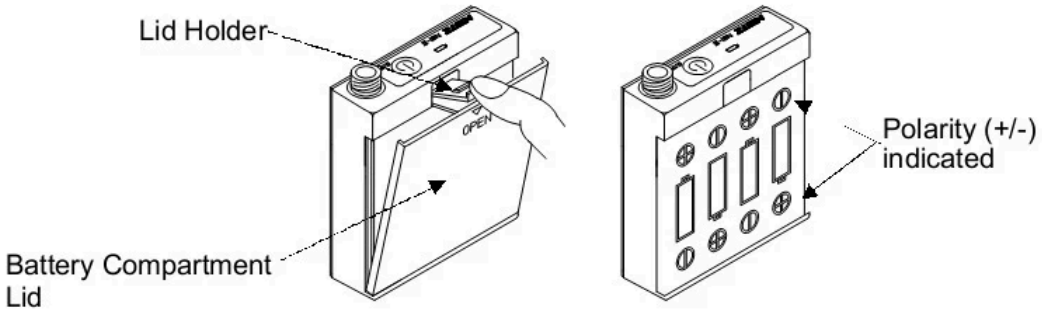


Fig. 5-4-1

(2) Put the batteries (4 pcs.) into the battery compartments according to the polarity (+/-) as indicated inside the Battery pack as sown in Fig. 5-4-1.

(3) Replace the battery compartment lid in place.

5-4-2 Connecting Illuminator to Battery Pack

(1) To connect the Cord to the Battery pack, gasp the black rubber part of Light plug of Cord with fingers while holding the Battery pack as the Light jack faces upward as shown in Fig. 5-4-2. Position the Light plug and the Light jack together and push the Light plug downward while slowly turning clockwise until the Light plug connects securely with the Light jack, the Light plug can only connect in one position. When properly connected, screw the Metal ring to lock in place by turning it clockwise.

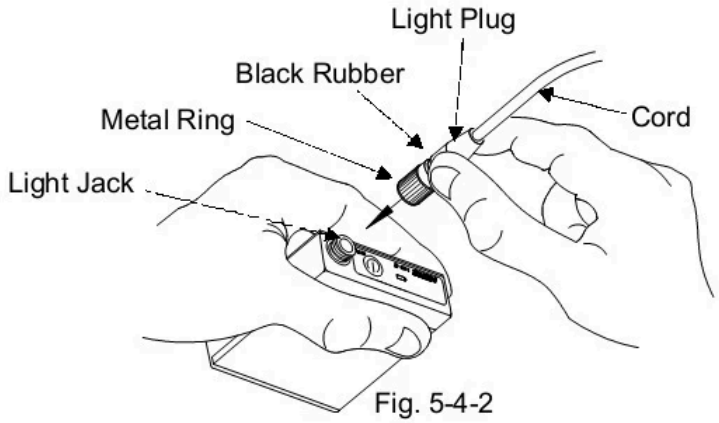


Fig. 5-4-2

(2) In order to disconnect the Light plug from the Battery pack, unscrew the Metal ring by turning it counterclockwise and lift it upward to pull up.

5-5 Setup of Illuminator

5-5-1 Turning Illuminator ON/OFF

By using the Power Switch of Battery Pack;

Depress the Power switch on Battery pack to turn the Illuminator on, and the Indicator for residual quantity light on Battery pack is lighted in green when the batteries are fully charged. Depress the Power switch again to turn the Illuminator off.

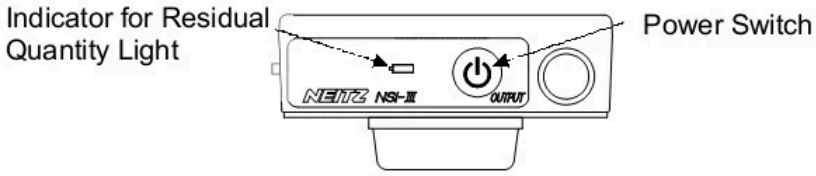


Fig. 5-5-1

By using the Middle Switch on the Cord;

The Middle switch works the same as the Power switch. Each time the Middle switch is depressed the Illuminator is turned on and off repeatedly.
It is possible to pin the Middle switch on clothes by using the supplied Middle switch clip for your convenience. To use the Clip remove the release paper on the Clip and position it on the backside of the Middle switch.

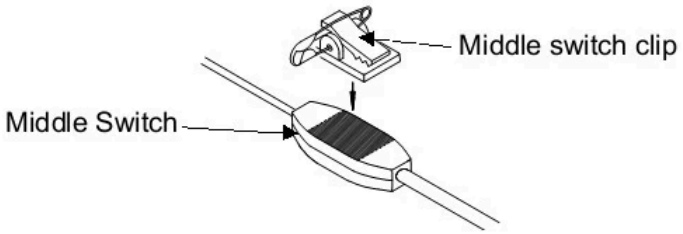


Fig. 5-5-2

5-5-2 Setting Illumination Brightness

There are three levels of illumination which may be selected by using the Light adjustment switch on the top of Battery pack, also the remaining available battery time may be monitored with the Indicator on the Battery pack. Approximate light intensity and available illumination time are as follows.

Illumination Level	Light Intensity at 40 cm distance (*lux*)	Approx. time until end of use			
		Steady Illumination		Decreased Illumination	Batteries Empty
		Green Lamp lit	Green and Orange Lamp lit	Orange Lamp starts to blink	Green Lamp fades
High	14,000	4 hours Orange Lamp lights with 30 min. left		Several minutes	Illuminator does not light
Middle	9,500	7 hours Orange Lamp lights with 35 min. left			
Low	5,000	17 hours Orange Lamp lights with 50 min. left			

Note: The available illumination time becomes approximately 4, 7 and 17 hours at the “High”, “Middle” and “Low” brightness levels, respectively. When the available illumination time decreases and the remaining available time of use becomes 30, 35 and 50 minutes at the “High”, “Middle” and “Low” brightness levels respectively, the orange lamp will light.
When the available illumination time elapses, the orange lamp will start blinking. Charge the batteries immediately or replace with fully charged batteries. When the batteries have been fully discharged, the green lamp will fade out.

5-5-3 Adjusting Illumination Field

The illumination field size can be changed continuously by turning the Diaphragm ring on the Illuminator. The field size may be adjusted from 48 to 100mm approximately at a 40cm of distance. By turning the Diaphragm ring clockwise, a wider illumination field size may be achieved as shown in Fig. 5-5-4.

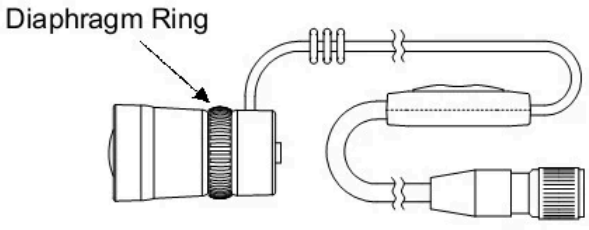


Fig. 5-5-3

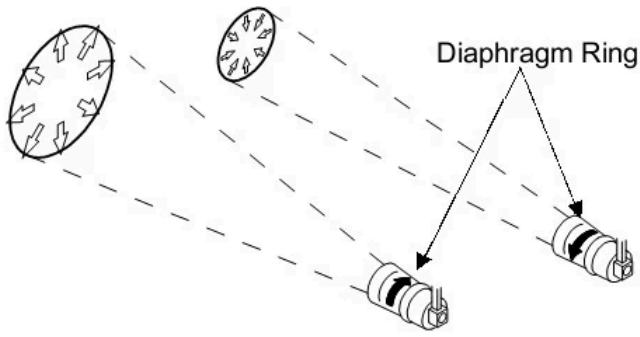


Fig. 5-5-4

6. Troubleshooting

If the Illuminator or the Battery pack does not function properly, some problems may be solved by referring to the following chart. If the problem cannot be resolved, stop and contact to your local dealer or Neitz immediately.

The following table shows the possible causes and troubleshooting solutions.

Problem	Possible Cause	Solution
The Indicator for residual quantity light does not illuminate.	Batteries is not inserted. Polarity of batteries are incorrect Batteries were not charged.	Insert the 4 pcs. of batteries.. Insert batteries correctly. Charge batteries.
Illuminator cannot be used for a long time, even though the Indicator for residual quantity of light is green.	Battery performance deteriorates over time. The battery is a consumable. Repeated charging and discharging shortens the life time of battery as well as depreciates the charging efficiency, as a result, available illumination time is reduced.	Replace all batteries with new ones.
Illuminator does not lighten, even though the indicator for residual quantity light is lightened in green.	Illuminator is not properly connected to the Battery pack.	Connect them properly. Or, take the batteries out from Battery pack and turn the Power switch on, and then re-insert them and turn on the power.
Illumination is dark.	Indicator for residual quantity light blinks orange.	Replace batteries with charged ones.
Indicator for residual quantity light flickers for 1-2 seconds, when the power is not turned on.	When replacing batteries, the indicator may flash due to output of stored electricity. This is not a problem but a normal reaction.	
Illumination light field is uneven.	The lens of Illuminator is dirty. The Illumination light is obscured with cord or another object.	Clean the lens. Arrange the position of Illuminator not so as to be blocked.
The Illuminator becomes hot.	This is normal. The inside LED generates heat and the temperature may increase to the level that it may feel warm or hot to the touch.	

7. Maintenance

7-1 Cleaning

(1) Disconnect the Illuminator from the Battery pack and other connections before cleaning.
(2) Wipe the surface with dry lint-free cloth or lint-free soft cloth slightly moistened with diluted neutral detergent, and then dry all surfaces completely.
(3) Wipe the terminal contacts with cotton swabs.
(4) Safely dispose of used cleaning materials in accordance with local regulations and/or environmental guidelines to avoid bodily injury or infection since the cleaning materials may contain infectious matter.
(5) Do not operate the Illuminator until thoroughly dry.
(6) Do not touch the lens with finger(s) at any time and always keep lens clean. Fingerprints on the optical surface may increase the scatter of light on the area being viewed.
(7) If lens cleaning is required, first blow off the surface of lens and wipe with lens tissue or pure cotton moistened with optical grade cleaning solution.

7-2 Tightening Screws

When movement of a hinge part moves too freely or any connection part is loosened, tighten up screws with Phillips (+) screwdriver(s) (which is supplied with the NEITZ Frame). Especially, tighten the two screws on the hinge that fixes the Illuminator to the Frame. Fasten screws slowly from both sides if they are idling, while observing the connection parts carefully.

7-3 Storage and Transportation

7-3-1 Storage and Operation Conditions

	Operation	Storage	Transport
Temperature	+10 °C to +35 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative Humidity	30 % to 90 %	10 % to 95 %	10 % to 95 %
Atmospheric Pressure	800 hPa to 1060 hPa	500 hPa to 1060 hPa	500 hPa to 1060 hPa

7-3-2 Safekeeping and Transportation

Disconnect the Cord from the Battery pack and then remove the batteries from the Battery pack. Keep the Illuminator and all of accessories in the original carrying case avoiding direct pressure or impact during storage and transporting. Accidental powering-on of device may result in damage or a fire since the temperature inside of Illuminator increases.

7-4 Disposal

7-4-1 Illuminator and Accessories (except Rechargeable Battery)

Safely dispose of the Illuminator and accessories except rechargeable batteries in accordance with local regulations and/or environmental guidelines.

Safely dispose of used cleaning materials in accordance with local regulations and/or environmental guidelines to avoid bodily injury or infection since the cleaning materials may contain infectious matter.

7-4-2 Rechargeable Battery

All rechargeable batteries contain precious resources that can be reused. Do not discard but recycle used rechargeable batteries in accordance with your local rules, regulations and/or guidelines.

.

The right figure is a symbol of Nickel-Hydrogen Secondary Battery to be recycled.



8. Specifications

Illuminator	
Light Source	3W White-colored LED
Dimensions (Main body)	φ 21.4 × 36.2 mm (φ 0.84 × 1.42 in)
Length of Cord	1.5 m (59.06 in)
Weight (including Cord but not hinge)	Approx. 50 g (including Cord, not including Hinge)
Illumination Field Diameter	φ48 to φ100 mm variable
Light Intensity (at 40cm distance)	High: 14,000 *lux* Middle: 9,500 *lux* Low: 5,000 *lux*
Light Intensity (at 25cm distance)	High: 40,000 *lux* Middle: 25,000 *lux* Low: 13,000 *lux*
Battery Pack	
Dimensions (excluding protrusions)	72.5 × 65 × 20 mm (2.85 × 2.56 × 0.79 in)
Weight (excluding batteries)	70 g (not including batteries)
Operation Time	4 hours at High mode 7 hours at Middle mode 17 hours at Low mode
Rechargeable Battery	Ni-MH AA size battery (4 pcs.)
Output Voltage	DC 3.5V, 2.5VA
Battery Charger	
Input Voltage	AC100-240V, 50-60Hz, 10-15VA
Output Voltage	AA: 2/4 x DC 1.2V, 300mA
Safety Standards	
Electric Safety Standard	IEC 60601-1:2005 Ed.3.1:2012
EMC	IEC 60601-1-2:2007
Protection form for electrical hazard	Internally Powered ME Equipment
Applied parts	No applied parts
Degree of Protection against Harmful Ingress of Water and Particulate Matter	IPX0

9. Contact Information

If you have any questions or need technical support~~s~~, contact your local dealer or NEITZ located at the following address.

[LOCAL DEALER]

Neitz Instruments Co. Ltd.
4F Ichibancho Court, 15-21, Ichibancho, Chiyoda-ku,
Tokyo 102-0082, Japan
Phone: +81-3-3237-0552; Fax: +81-3-3237-0554
E-mail: neitz-global@neitz.co.jp
URL: https://www.neitz.co.jp/en/

ANNEX A

Alarm System for Spot Illuminator NSI-III

The NSI-III incorporates a Residual Quantity Light Alarm system as illustrated below to call attention to the user of the remaining battery capacity. Refer to the instructions below to take the appropriate measures.

Condition of the Battery Alarm Lamp	Operational Illumination		Depleted Illumination	
				
	Green Lamp lit	Green and Orange Lamp Lit	Orange Lamp Blinking	Green Lamp Depleted
Alarm Condition Priority		Low Priority	Medium Priority	
Required Operator Action	N/A	Charging advised*	Charge or change Batteries promptly*	

Note: The Alarm system will be reset once fully charges batteries are inserted.

ANNEX B

EMC Guidance for Spot Illuminator NSI-III

The Spot Illuminator NSI-III is a medical device. Be sure to install and use it in accordance with the following EMC (Electromagnetic Compatibility) information.
Be careful that a portable or mobile RF communications equipment may affect the NSI-III. Do not use it nearby the NSI-III.

⚠WARNING
● Do not use together with parts other than standard accessories or replacement parts provided by manufacturer. It may result in increasing emission and decreasing immunity of NSI-III. ● Do not use nearby the electronic equipment or together with it. It may cause malfunction or problem. If it is necessary to use it, be sure to verify the normal operation under the same condition beforehand.

(1) Guidance and Manufacturer's Declaration - Electromagnetic Emissions

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
The NSI-III is intended for use in the electromagnetic environment specified below. The customer or user of the NSI-III should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR11	Group 1	The NSI-III uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The NSI-III is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

(2) Guidance and Manufacturer's Declaration - Electromagnetic Immunity

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
The NSI-III is intended for use in the electromagnetic environment specified below. The customer or user of the NSI-III should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6kV contact ±8kV air	±6kV contact ±8kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	Not applicable	Not applicable	
Surge IEC 61000-4-5	Not applicable	Not applicable	
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	Not applicable	Not applicable	
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3A/m	30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Guidance and Manufacturer's Declaration - Electromagnetic Immunity			
The NSI-III is intended for use in the electromagnetic environment specified below. The customer or user of the NSI-III should assure that it is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the NSI-III, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance
Conducted RF IEC 61000-4-6	3Vrms 150kHz to 80MHz	10Vrms	$d = 1.2\sqrt{P}$ 150kHz to 80MHz
Radiated RF IEC 61000-4-3	3V/m 80MHz to 2.5GHz	10V/m	$d = 1.2\sqrt{P}$ 80MHz to 800MHz $d = 2.3\sqrt{P}$ 800MHz to 2.5GHz
			where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey [a], should be less than the compliance level in each frequency range [b]. Interference may occur in the vicinity of equipment marked with the following symbol. 
NOTE 1: At 80MHz and 800MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situation. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

a) Filed strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the NSI-III is used exceeds the applicable RF compliance level above, the NSI-III should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the NSI-III.

b) Over the frequency range 150kHz to 80MHz, field strengths should be less than 3V/m.

(3) Recommended Separation Distances between Portable and Mobile RF Communications Equipment and the NSI-III

Recommended Separation Distances between
Portable and Mobile RF Communications Equipment and the NSI-III

The NSI-III is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the NSI-III can help to prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the NSI-III as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter [W]	Separation Distance according to Frequency of Transmitter [m]		
	150kHz to 80MHz $d = 1.2\sqrt{P}$	80MHz to 800MHz $d = 1.2\sqrt{P}$	800MHz to 2.5GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80MHz and 800MHz, the separation distance for the higher frequency range applies.
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

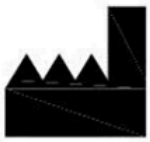
(4) Essential Performance of Equipment

No.	Essential Performance	Operating Mode
1	Illumination is stably carried on, that is, it is lightened with no blinking and no shading.	Illumination mode at DC input

Notes:

Notes:

Notes:



Manufactured by

NEITZ INSTRUMENTS CO., LTD.

4F Ichibancho Court, 15-21, Ichibancho, Chiyoda-ku,
Tokyo 102-0082, Japan
Phone: +81-3-3237-0552; Fax: +81-3-3237-0554
E-mail: neitz-global@neitz.co.jp
URL: https://www.neitz.co.jp/en/

Distributed by

As part of our policy of continued product improvement we reserve the right to alter and/or amend specifications at any time without prior notice.

TD11-12690001E-8
202010
Printed in Japan