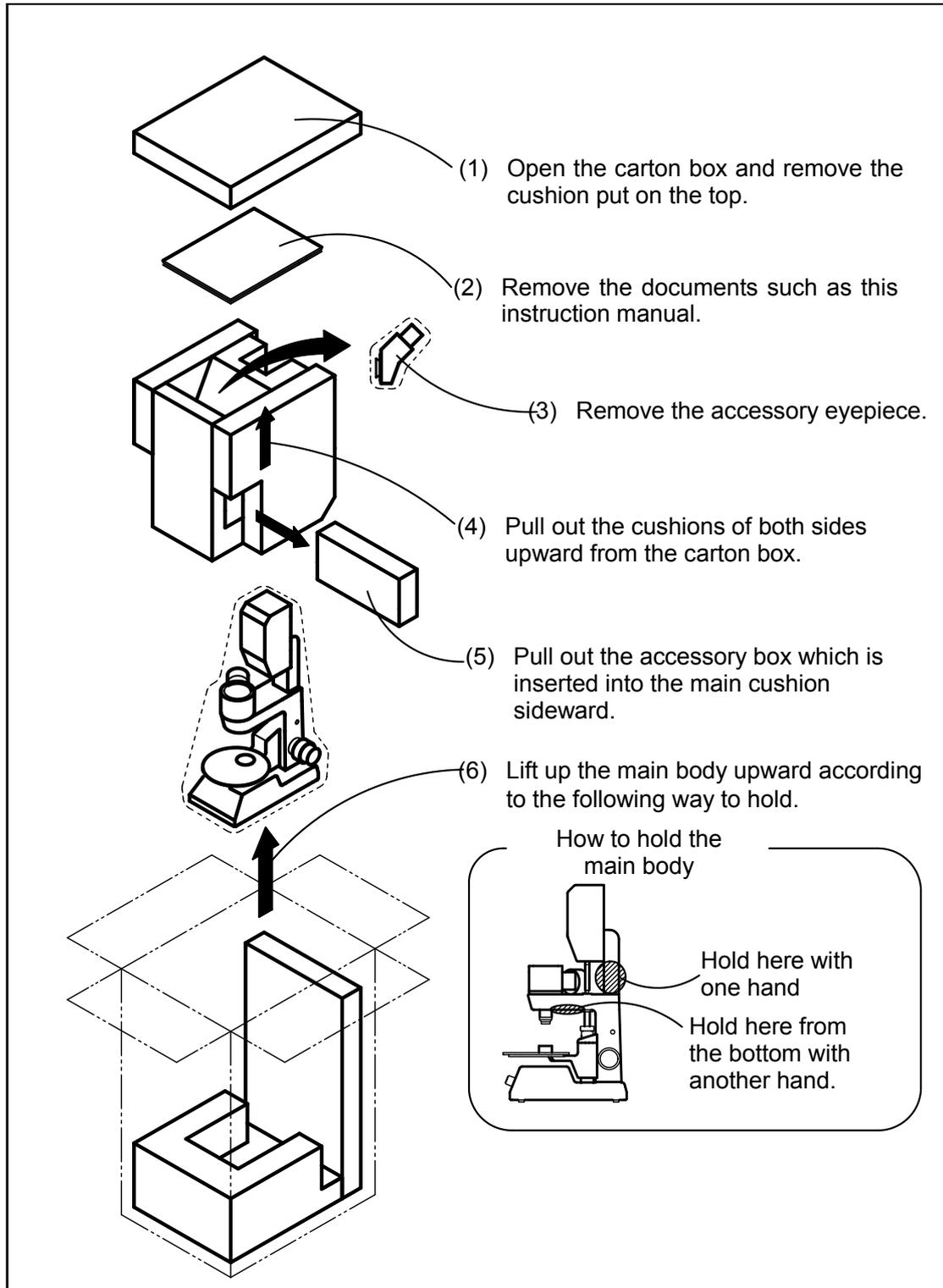


# UNPACKING PROCEDURE

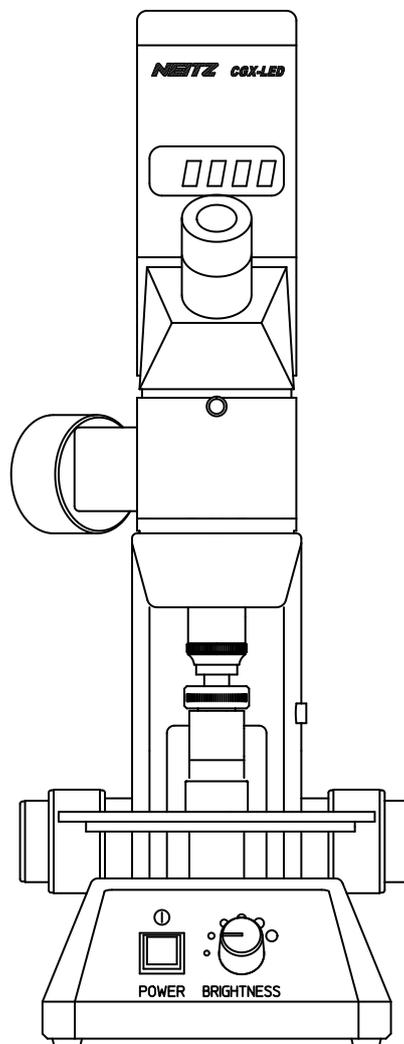
The NEITZ Contact Gauge (CGX-3 LED or CGX-4 LED) is packaged as shown in the following figure. Unpack the package in the sequential order mentioned below. When repackaged, repackage in the reverse order.



# NEITZ Contact Gauge

CGX-LED (CGX-3 LED and CGX-4 LED)

## Instruction Manual



**NEITZ**

TD11-12700002US-1

# Introduction

Thank you for purchasing the NEITZ Contact Gauge series (CGX-3 LED/CGX-4 LED, hereinafter, called as “CGX LED”). For your convenience for measuring radius of curvature of contact lens, the model CGX-3 LED which consists of monocular or the model CGX-4 LED which consists of binocular is provided. They are AC-powered devices.

Read this instruction manual carefully before use to avoid unexpected accidents.

Keep the instruction manual in accessible and safe place for future reference.

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## Important Information

For the U.S. Market;

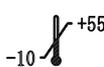
CAUTION: Federal law restricts this device to sale by or on the order of a physician or practitioner licensed by the law of the State.

### 1) Intended Use

This is an ophthalmic contact lens radius measuring device which is an AC-powered device that is a microscope and dial gauge intended to measure the radius of a contact lens.

### 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.

	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	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.
	Consult the instructions for warning and safety precautions that could not be presented on the device.
	Serial number
	Manufacturer's name and address
	This symbol shows that a product can be recycled separately from other household waste under the WEEE directive.
	Consult the instructions of the device for information on how to properly use it.
	The permissible environmental conditions for transport and storage is indicated. In this case the lower temperature limit is -10°C and the upper temperature limit is +55°C.

# 1. Safety Notice

The following notice strictly is obeyed for safety.

To fail in obeying them may affects safety and ability of the device.

	This Symbol means Death or Severe injury, in case of inconformity.
	This symbols means Injury and/or Material Damage, in case of inconformity.

**These Symbols below are explanation for items those which should be complied.**

 Never do	Things never do!
 Instruction	Instruction to action which is compulsory (things that have to be done).
 No Disassembling	Do not disassemble.
 Disconnect to Power	Disconnect the Connector of the Power Cable firstly.
 No Wet Hand	Handle with wet hands is banned.

	
 Prohibit	Don't use device in the place where there are extreme moisture and/ or salinity and /or the place where water can splash. Otherwise, it causes an electric shock.
 Prohibit	Don't use the device near the flammable-vapors and/or the fine particles such as propane gas and/or gasoline. Otherwise, it can cause a fire and/or an explosion.
 Prohibit	Don't install the device in the unstable place and the inclined place. Otherwise, it causes not only incomplete performance also machine trouble and/or falling of the device.
 Prohibit	Don't load on to the body of device by hand or by any object. Otherwise, it causes being unbalance, falling and/or injury.
 Prohibit	Don't use a power Cable other than the one in accessory. Otherwise, it causes the fire, the machine trouble.
 Prohibit	Be sure not to leave dust and/or alien in the inlet or in the connector of Power Cable. Otherwise, it causes a fire.
 Prohibit	When the Power Cable is damaged, don't use it. Otherwise, it causes an electric shock and/or a fire.
 Prohibit	Don't connect Power Cable in starburst connection. The cable has to surely be put orderly. Otherwise, it may cause the destruction of the device and/or injury.
 Prohibit	Don't put alien substance in the gap in the body of the device. Otherwise, it causes a fire and/or the machine trouble.
 Prohibit	Don't give strong impact and/or throw a thing to the Device. Otherwise, it causes an injury, a machine trouble and/or a fire.

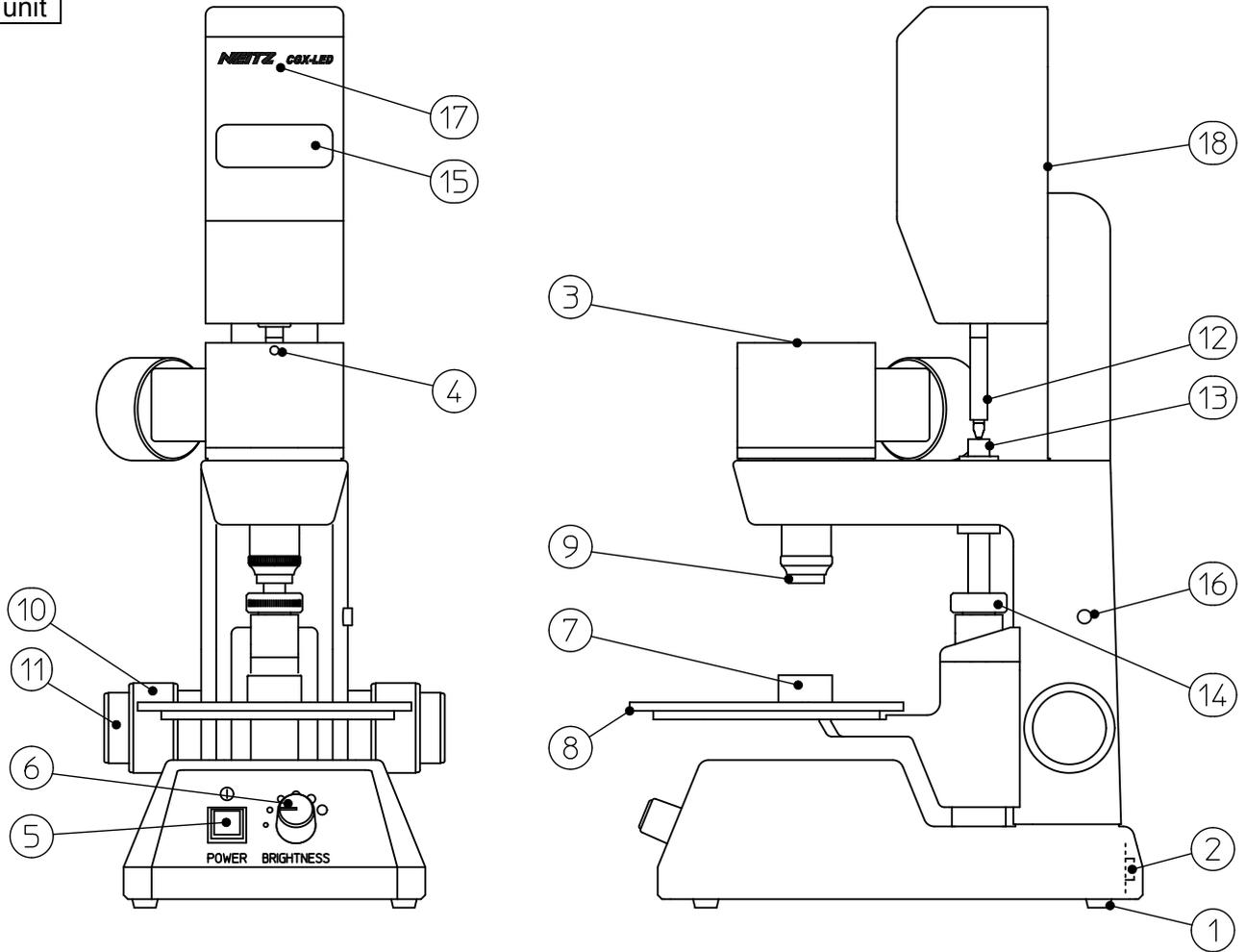
 Prohibit	Don't install this device in a place where difficult to plug in/out to/from the wall outlet since the plug-out from the outlet is one of the separation methods between the device and power source.
 Not Disassemble	Don't disassemble the device. Otherwise, it causes an electric shock, a fire and/or machine trouble.
 No wet hand	Don't touch a cable, an electric outlet, device with the wet hand. Otherwise, it causes an electric shocked.
 Unplug Power Cable	When not using the device long, disconnect the Connector of the Power Cable. Otherwise, it causes an electric shock, a fire and/or machine trouble.
 Unplug Power Cable	When moisture and/or liquid come in inside the device, or when the abnormality such as unusual smell or smoke comes out, disconnect the Connector of the Power Cable at once. Otherwise, it causes an electric shock, a fire and/or machine trouble.
 Instruction	When connecting the connector of the Power Cable, make sure not to have some metal material touching to it, and be certain the connection to the end. Otherwise, it can cause an electric shock and/or a fire.
 Instruction	When disconnecting the connector of the Power Cable, make sure not to pull the cable, hold the plug and pull it out. Otherwise, it can damage the cable and can cause an electric shock and/or fire.
 Instruction	When replacing and re-install the device, hold the device at the handles in the device in the right posture. Otherwise it can cause injury and/or a machine trouble.

**CAUTION**

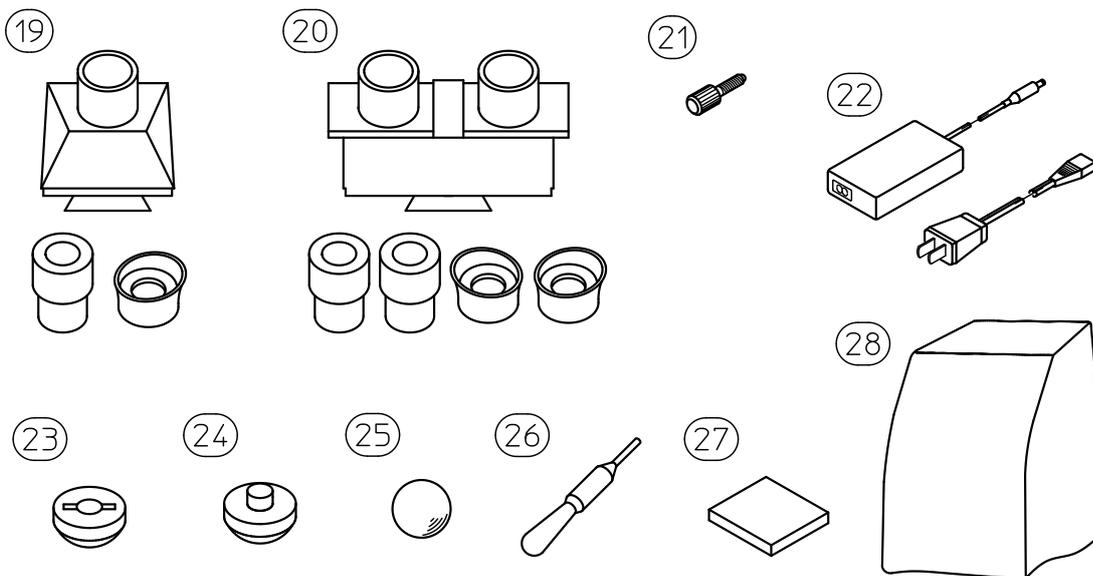
 Banning	Don't use the device in such environment, like a place where the temperature changes rapidly, the wind of the air-conditioner is directly blew to the device and/or the device have dewfall. It can cause an electric shock and/or a machine trouble.
 Banning	Don't use device in the place which the direct sunlight and/or any harmful light emits on to the device. That can cause the machine trouble and/or can affect measured value.
 Banning	Don't press the Digital Indication panel with excessive power. It causes a deformation of it and the machine trouble.
 Banning	Don't use Paint thinner, the polish and/or boiling water for the maintenance? Otherwise it causes deformation and/or the machine trouble.
 Instruction	It is recommended that before using the device, make sure if it works normally by test measurement with Test Ball and checking each part of the device.
 Instruction	When the device was in the environment which is out of the operating temperature limit, use device after keeping enough time to match up to a temperature. It can cause the machine trouble and/or can affect measured value.
 Instruction	To perform measurement in the high reliability, we recommend to check the measured value regularly with using some test piece. Otherwise It is to refrain from affecting measured value.
 Instruction	In movement and transportation of the device, use the original package. Otherwise it can cause deformation and/or machine trouble.

## 2. Name of Parts and Function

### Main unit



### Accessory



## MAIN UNIT

### ① Rubber Foot

There are 4 of it in the base of the device. It is necessary to place the device so that all the foot touches stably on the flat surface.

### ② DC Adapter Receptacle

The plug of AC Adapter is connected to it for DC Power. There is the indication of DC5V, which shows the Input Voltage.

### ③ Optic Part Mount

Place and fix the Optic Part on it.

### ④ Fixture Screw Hole

Screw in the Fixture Screw included to the hole to fix the Eye Piece.

### ⑤ Power Switch

To push it lights up itself into green and turns power on. To push it again turns power off.

The indication of ① means a push-push button.

### ⑥ Intensity Adjustment Volume (Brightness Control)

It adjusts the brightness in 6 steps. There are ●markings graphically as indication for the degree of intensity.

### ⑦ Mount Tray

Place included Lens Mount on to it.

### ⑧ Stage

It slides to light and left, back and forth together with Mount Tray.

### ⑨ Objective Lens

It projects and magnifies target.

### ⑩ Coarse Focus Adjustment Knob

It moves the Stage quickly up or down.

### ⑪ Fine Focus Adjustment Knob

It moves the Stage slowly up or down.

### ⑫ Plunger of Gauge

It moves up and down, while the Contact Gauge measuring base curve.

### ⑬ Shaft

It push up the Plunger in relay to moving of the stage.

### ⑭ Shaft Level Adjusting Screw

It adjusts the height in which the Shaft touches Gauge Plunger.

### ⑮ Digital Indication

It indicates the value of movement of Plunger of Gauge (=base curve of measured lens surface) in millimeter.

### ⑯ Reset Button

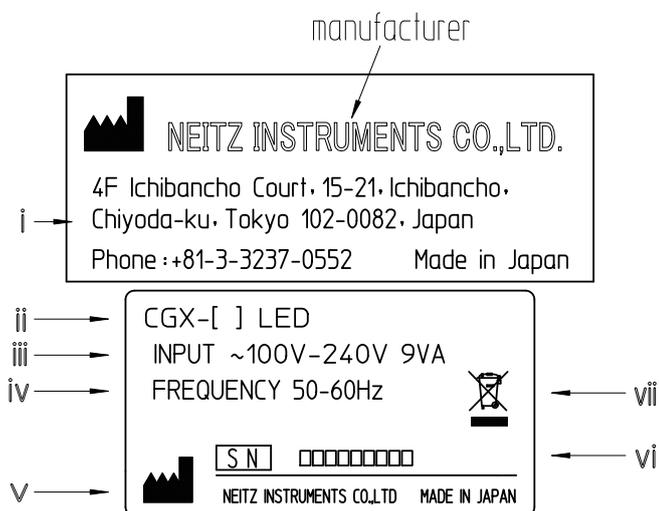
It resets Measured Value shown in the Digital Indication to zero.

### ⑰ Logo

It is the name of the manufacturer and the model name.

## 18 Back Plate

A plate showing some of the information and notes for the Device is affixed.



- i: It indicates the contact address of manufacturer.
- ii: It indicates the name and model name of this device.

For monocular type: CGX-3 LED

For binocular type: CGX-4 LED

- lii: It indicates the range of AC power and power consumption to be used in this device.
- iv: It indicates the frequency of AC power to be used in this device.
- v: It is the logo of manufacturer. Following it the manufacturer's name and the country of origin are indicated.
- vi: It indicates a serial number. (Numbers continue after the symbol S.N. ).
- vii: It indicates that a product can be recycled separately from other household waste under the WEEE directive in the European Union in order to preserve, protect and improve the quality of the environment.

## Accessory

### 19 20 Optic Part (Either monocular or binocular is included)

The set of lens barrel(s) and the eye shield(s) is included.

### 21 Fixture Screw

Fix the **Optic Part** with the screw.

### 22 AC Adapter (with power cable)

It is connected to outlet for DC Power.

### 23 Concave Lens Mount

It is used for measuring the concave surface of a contact lens being measured.

### 24 Convex Lens Mount

It is used for measuring the convex surface of a contact lens being measured.

### 25 Test Ball (7.5R)

It is used for test measurement.

### 26 Syringe

It is used for pouring water in Lens Mount.

②⑦ **Surface Mirror** (Included in the binocular model)

It is used for adjustment of stereoscopic view on the binocular model.

②⑧ **Dust Cover**

It is to cover the Contact Gauge while it is not in use for long.

### 3. Operation

#### 3-1. Preparation

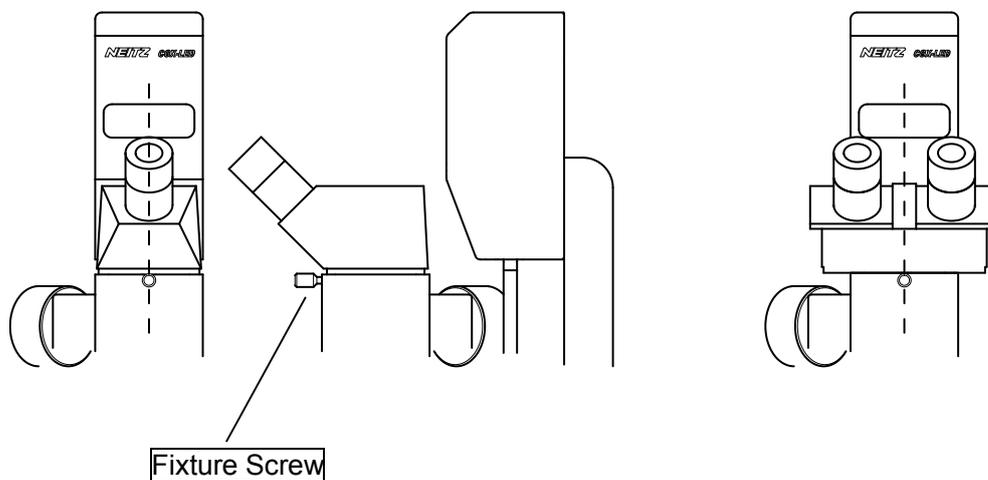
1. Put CGX LED main unit in even and stable place. Connect power-cord to ②② AC adapter, connect the AC adapter to any outlet, and connect the Power-cord to ② DC adapter Receptacle in the Main Unit.
2. Put **Optic Part** to Optic Part Mount. When Optic part mount is covered with dust protection, remove it.

Adjust to place Eye Piece of Optic part to front and fix it with Fixture Screw by screwing it to ④ Fixture Screw Hole.

Put Eye Shield to the scope, if it is necessary in consideration for room light and preference.

Monocular type CGX-3 LED

Binocular type CGX-4 LED



#### 3-2. Adjustment of stereoscopic view on the binocular model

(This adjustment is unnecessary in the monocular type)

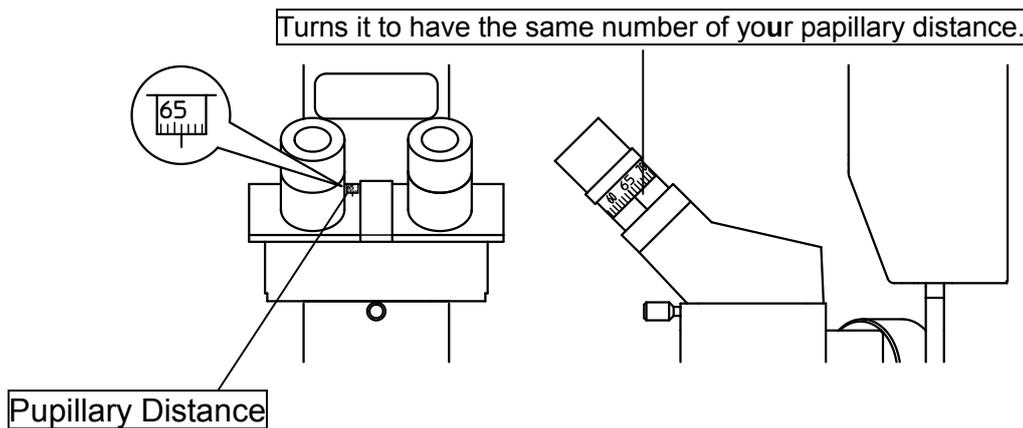
1. Move the ⑦ Mount Tray to below the Objective lens and place the ②⑦ Surface Mirror on it and turn on the unit.
2. Look in the Scope and find out the Target, focus to it by elevating the stage with operating the ⑩ Coarse Focus Adjustment Knob or ⑪ Fine Focus Adjustment Knob.(refer the next clause for detailed information of “Target”.)

Slide the both scopes with hands and adjust the distance between eye-pieces so as to have

stereoscopic view.

3. Your pupillary distance is indicated in the gauge shown in the drawing below. Adjust the number in the gauge in the base of the eye-piece on the right by turning it to have same number of the pupillary distance.

Then look the target in the right scope with using your right eye only, focus target by elevating the stage with operating the ⑩ Coarse Focus Adjustment Knob and ⑪ Fine Focus Adjustment Knob.



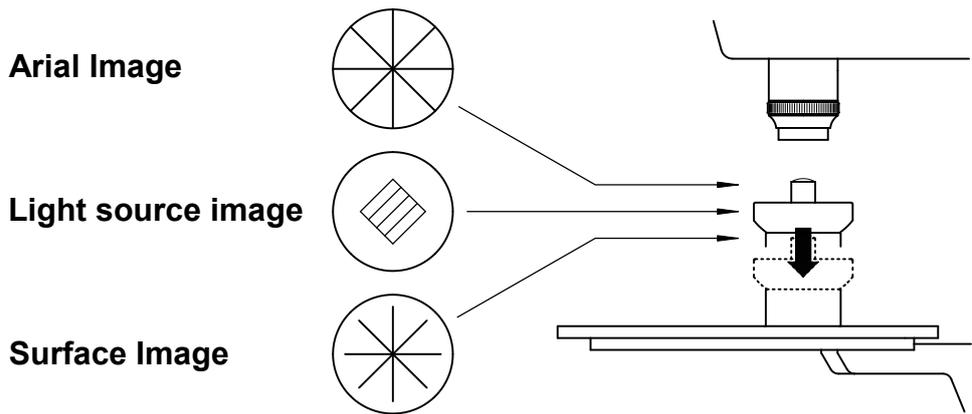
4. Look the target in the left scope with using your left eye only, focus the target by rotating the base of the scope on the left. These procedure completes the adjustment for stereoscopic view.

### 3-3. Measurement of convex base curve.

1. Turn on the unit with Power Switch. Adjust the Intensity Adjustment Volume to Maximum.
2. Put ②④ Convex Lens Mount onto ⑦ Mount Tray and pour some water to a dipping in the mount by Syringe. Put the contact lens in the water with the convex surface of the lens up. (Water deletes the reflection from back surface of the contact lens. Make sure that there have no bubble remains under the lens.)
3. Slide the Stage with hands so that the Green light from the Objective Lens light down on the center of the contact lens.
4. Lower the ⑬ Shaft to the lowest by rotating the ⑭ Shaft Level Adjusting Screw and let down the Stage to the highest by rotating ⑩ Coarse Focus Adjustment Knob. Make sure that the lens do not touch to Objective Lens.

With checking in the scope, lower the Stage, you find out the Target, like the drawing below. It is **Arial Image**, made by the reflection from contact lens. If you see the target is not in the center of view, slide the Stage to center the target in the view.

The image of Target seen in the scope



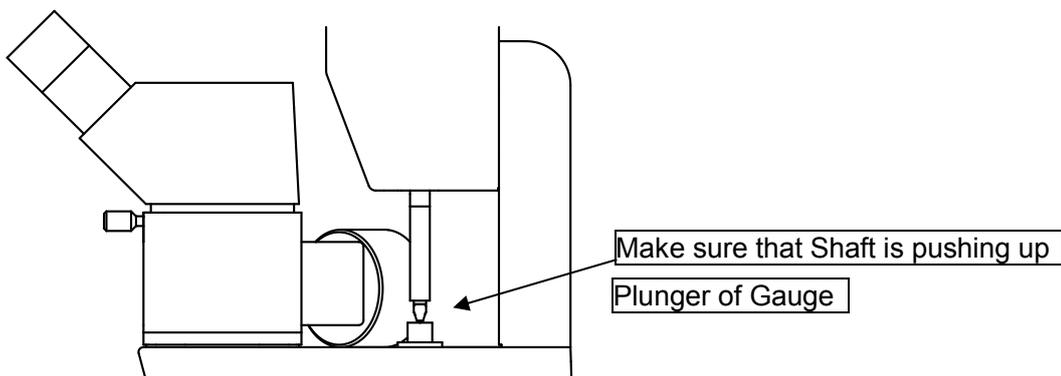
5. Adjust ⑪ Fine Focus Adjustment Knob so as to take the best focus to the target.  
The line in the target focused at best depends on the lens.
6. Push the Reset Button to have the value in the ⑮ Digital Indication to "0.00".
7. Let the Stage lower by rotating **Focus Adjustment Knob**, a Light Source Image will be seen in sight.

As lowering the Stage more again, another Target will be in sight.

This is the image projected on the upper surface of the contact lens (**Surface Image**).

The value indicated in ⑮ **Digital Indication** is the value of the base curve (in mm) of the contact lens, when the target is focused best. When the adjustment was done while lowering the stage, it is a minus value.

When you have the value of the base curve after the procedure, make sure that the Shaft is pushing up the Plunger of Gauge.



If the Shaft is not pushing up the Plunger of Gauge, adjust the height of the Shaft so that it is surely pushing up the Plunger of Gauge and measure the lens again.

At the moment, it is possible to observe the condition of the surface of contact lens around the Target.

### 3-4. Measurement of concave base curve

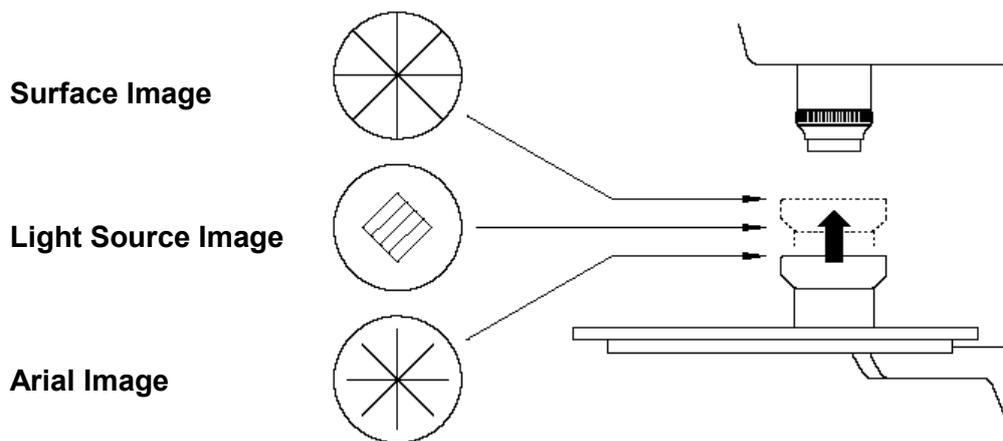
1. Turn on power switch and adjust Intensity Adjustment Volume at max position.
2. Put **Concave Lens Mount** onto **Mount Tray** and pour some water to a dipping in the mount by Syringe. Put the contact lens in the water with the concave surface of the lens up.  
(Water deletes the reflection from back surface of the contact lens.)
3. Move stage by both hand so that the green light from the objective lens comes to the center of the contact lens.
4. Bring stage to the lowest level by turning Coarse Focus Adjustment Knob.

With checking in the scope, raise the Stage, you find out the Target, like the drawing below.

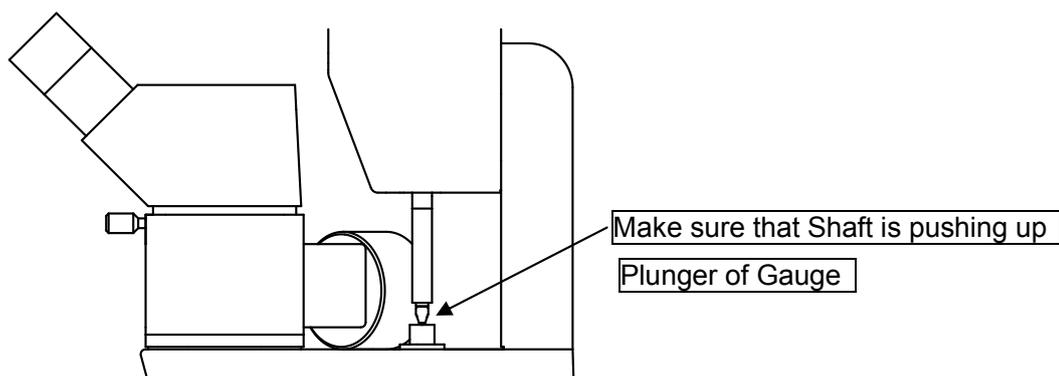
This is an aerial image made by the reflection from contact lens. If you see the target is not in the center of view, slide the Stage to center the target in the view.

If the field of view is too bright, adjust Intensity Adjustment Volume so as to have view comfortably.

The image of Target seen in the scope



5. Adjust Fine Focus Adjustment Knobs so as to take the sharpest focus to the target  
When the contact lens is distorted or is toric lens, the line of the target focused sharpest may vary. After the above adjustment is completed, see CGX LED unit from a side and adjust height of shaft. Move the shaft to the position where the shaft push up the plunger of the gauge firmly by turning Shaft Level Adjusting Screw.



When the shaft level is too high, stage may come to upper limit before next measurement and measurement cannot be done. In such case, adjust the height of shaft again.

6. Push the Reset Button to have the value in the **⑮ Digital Indication to “0.00”**.
7. Let the Stage raised by rotating **Focus Adjustment Knob**, a Light Source Image will be seen in sight.

As raising the Stage more again, another Target will be in sight.

This is the image projected on the upper surface of the contact lens (**Surface Image**).

The value indicated in **⑮ Digital Indication** is the value of the base curve (in mm) of the contact lens, when the target is focused best.

At the moment, it is possible to observe the condition of the surface of contact lens around the Target.

### **3-5 When measurement is completed**

Turn the power button to OFF position to finish the measurement. Whenever the device is not used for a long time plug the power cable out of the wall outlet

### **3-6 Maintenance**

1. Cleaning of each part

When the surface of CGX LED is soiled, wipe out the contamination with damped squeezed cloth with water or mild detergent. However, it is not possible to clean the back side of Stage basically, because it is coated with grease for sliding. Also do not wipe out and press the part of digital indication strongly.

2. Removal of dust foreign matter

Take care not to adhere dust and foreign matter on the surrounding part and the contact part with the shaft and plunger of gauge and wipe out them with blower and cloth.

3. Inspection

Run inspection periodically before operating of the device whether there is any defect on connection code and each part.

4. Proofreading

In order to keep precise measurement, a measurement test with attached 7.5R steel test ball is required before start-up of actual measurement. Work out the measurement test with the same manner as 3-4. Measuring concave radius of curvature of contact lens. In this case, water is not necessary for the measurement test. Furthermore, proofreading of test piece is recommended to be done periodically.

### **3-7 Consumables and disposal**

1. Consumable parts and spare parts

LED which is used as the light source has a lifetime of Approximately 50,000 hours and almost free from exchange of bulb. Also CGX LED has no exchange of other consumable parts and spare parts.

2. In case of disposal of CGX LED, safely dispose it in accordance with local regulations and/or environmental guidelines.

## 4. Troubleshooting

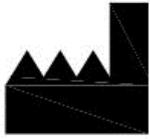
In case of trouble, do the following handling. When the trouble is not solved, contact to the address mentioned in the end of the book.

Trouble	Cause	Cure
Power switch and the digital indication don't light up (or indicate).	<ul style="list-style-type: none"> <li>•AC adapter isn't connected with DC adapter receptacle.</li> <li>•Power-cord isn't connected with the electric outlet.</li> <li>•AC adapter and a power-cord aren't connected.</li> </ul>	Connect firmly.
Target image is dark and measurement is not possible.	<ul style="list-style-type: none"> <li>•Illumination Intensity is not sufficient.</li> </ul> <p>With the condition of the lens to measure, appropriate illumination intensity can changes.</p>	Increase illumination intensity with <b>Intensity Adjustment Volume</b> .
	<ul style="list-style-type: none"> <li>•Lens is out of position from just under of objective lens.</li> </ul>	Move stage with hand and adjust the position.
Measured value is something wrong. (The value is too small or other.)	The Plunger of Gauge does not touch to Shaft in somewhere in the range of its movement.	It turns a screw at the top and the bottom of the shaft. It adjusts to the contacting height.
	Dust adheres to the plunger and/or shaft.	Remove dust and clean the part.
Stage doesn't rise that the measurement is not possible.	Shaft is rose too high that it is up to the upper limit.	Lower the Shaft by rotating Shaft Level Adjusting Screw.

## 5. Main specification

- Dimensions (Lx W x H) : 240×175×420mm
- Weight :      Approximately 5.5kg (Monocular type CGX-3 LED)  
                  Approximately 5.7kg (Binocular type CGX-4 LED)  
                  Each weight does not include any accessories
- Power source : 50/60 Hz of power AC adapter type from 100V to 240V
- Power consumption: 9 VA
- Measuring-beam light source: White LED + Green filter (534 nm of dominant wavelengths)
- Dimmer: 6 steps
- Magnifications: Approximately 75 times
- Measurement unit : 0.01 mm
- Measurement range : 0-24 mm
- Outside terminal : DC receptacle
- Product structure
  - ① CGX LED main unit
  - ② Eyepiece part (Either monocular or binocular type)
  - ③ Set control
  - ④ AC adapter
  - ⑤ Concave lens mount
  - ⑥ Convex lens mount
  - ⑦ Test ball (7.5R)
  - ⑧ Syringe
  - ⑨ Surface mirror (Only for binocular type).
  - ⑩ Dust cover
- System requirements      Temperature from 10°C to 30°C  
                                  Less than 75% of relative humidity
- Standard                    Safety standard              IEC60601-1 Ed3.1:2005 Amd 1:2012  
                                  EMC standard                IEC60601-1-2 Ed3.0:2007

## 6. Contact Address



**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: [int@neitz.co.jp](mailto:int@neitz.co.jp) URL: <http://www.neitz-ophthalmic.com>

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