

# Labolight DUO

**[EN]** LED Dual Mode Light Curing Unit for Indirect Composite Resin

**[DE]** Lichthärtungs-Gerät mit dualer LED-Lichtquelle für indirekte Komposite

**[FR]** Unité lumineuse LED à mode dual pour la photopolymérisation des résines composites indirectes

**[IT]** Lampada LED a foto-polimerizzazione duale per resine composite da restauro indiretto

**[ES]** Unidad de Fotopolimerización LED dual para resinas de composite indirecta

**[PL]** Dwumodułowa lampa LED do polimeryzacji światowej żywic kompozytowych w technice pośredniej

## Instructions for Use

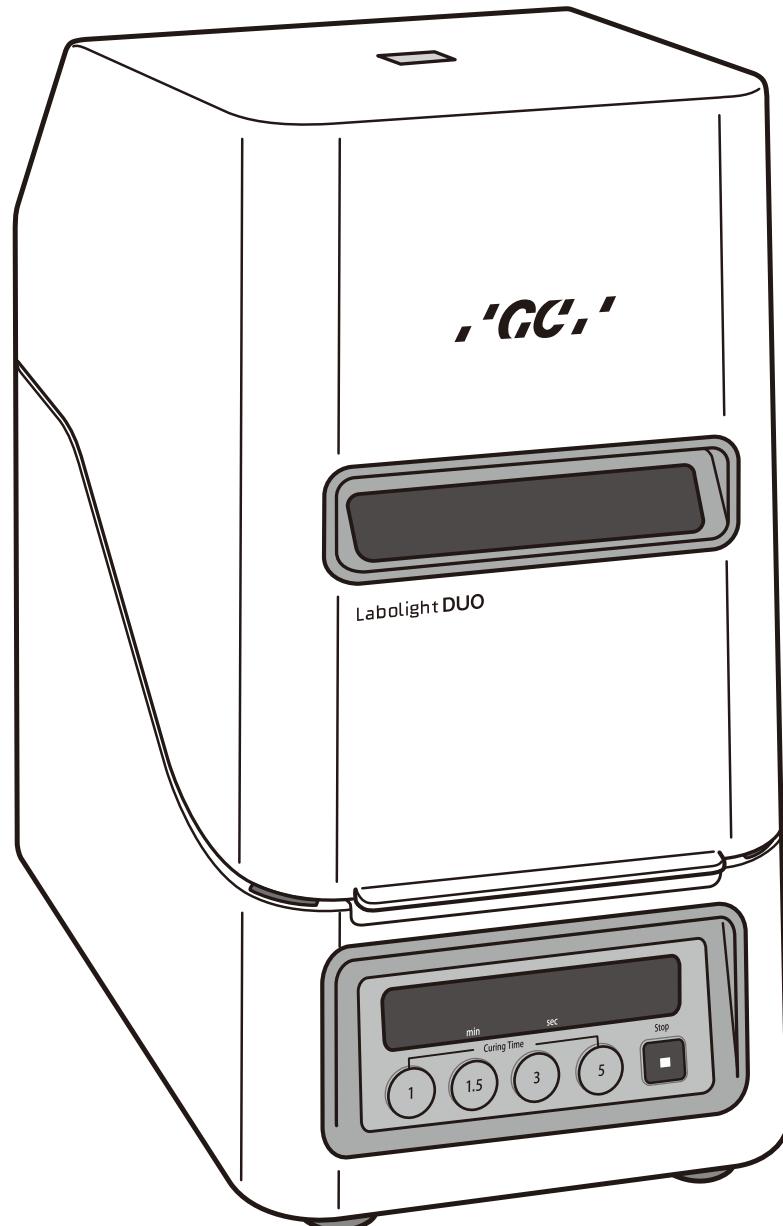
Gebrauchsanweisung

Mode d'emploi

Istruzioni per l'uso

Instrucciones de uso

Instrukcja obsługi



**,'GC,'**

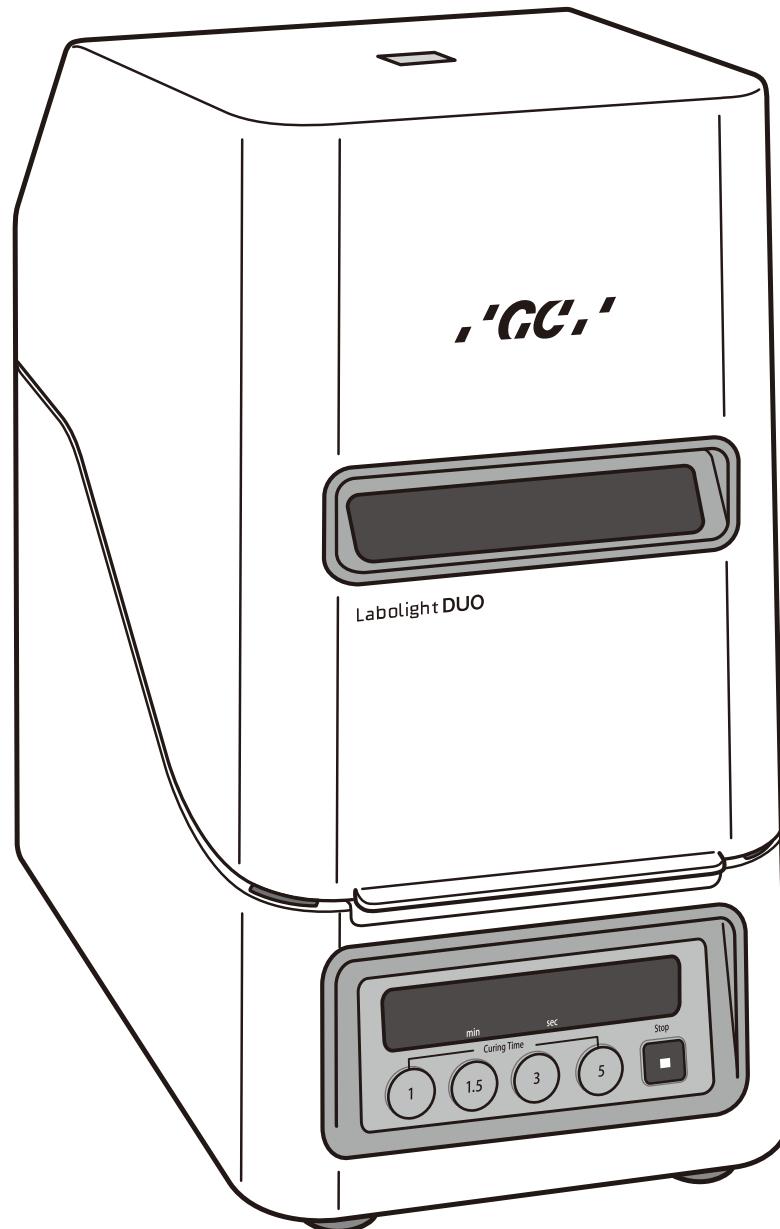


# Labolight DUO

LED DUAL MODE LIGHT CURING UNIT FOR INDIRECT COMPOSITE RESIN

Prior to use, carefully read  
the instruction for use.

## Instructions for Use



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,'GC,'

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**EC DECLARATION OF CONFORMITY**  
**According to Machinery Directive 2006/42/EC**

19 June 2015

**GC EUROPE N.V.**  
**Research Park**  
**Interleuvenlaan 33**  
**B-3001 Leuven**  
**Belgium**

We ensure and declare under our sole responsibility that the product :

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**Name/model: Labolight DUO**

to which this declaration relates, meets the provisions of Council Directive

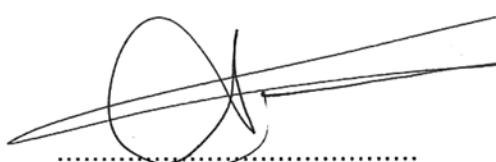
**2006/42/EC for Machinery**  
**2014/30/EU for Electromagnetic Compatibility and**  
**2014/35/EU for Low-Voltage**

and is in conformity with the following standards or other normative documents:

IEC 61326-1:2012	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
IEC 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
IEC 62471:2006	Photobiological safety of lamps and lamp systems

and is manufactured in accordance with the technical documentation.

Leuven, .....19/06/2015.....  
Date



M. Aydin  
Head Quality Assurance and  
Regulatory Affairs  
On behalf of GC EUROPE N.V.

, 'GC', '

GC Europe Head Office  
Interleuvenlaan 33  
B-3001 Leuven

# 1. Introduction

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Thank you very much for purchasing our Labolight DUO.

 **Note**

- Follow these Instructions for Use prepared for proper and safe use of the unit. Store the Instructions for Use in a place easily accessible.

 **WARNING**

- Be sure to observe the description of the Instructions for Use to ensure safety of the user and proper use of the unit. If the unit is used in a manner not specified by this instructions, the protection provided by the unit may be impaired.

We as a manufacturer are not responsible for any event such as damage caused by use incompatible with this unit or noncompliant with these instructions.

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## 1.1 Intended use

The unit is used for light-curing dental composites.

 **WARNING** 

- Only personnel qualified for dental treatment are allowed to use the unit.

 **Note**

- Only use Labolight DUO for dental composites, as it is essentially designed for this purpose.

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## 1.2 Features

- 1) Labolight DUO is a curing unit for dental professionals using LEDs as a light source.
- 2) Labolight DUO is mounted with 12 blue LEDs and 3 violet LEDs, enabling curing of any GC's composite product.
- 3) Labolight DUO allows preliminary curing with the door open (step mode).

### 1.3 Symbols

The symbols provided on this unit indicate the following meanings:

Symbols	Provision locations	Meanings
	Caution Label	Consult instruction for use.
	Caution Label	<b>CAUTION</b> : Visible radiation Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to the eyes.
	Caution Label	<b>NOTICE</b> : Ultraviolet radiation UV emitted from this product. Minimise exposure to eyes or skin. Use appropriate shielding.
	LED Unit	<b>CAUTION</b> : Surface may be hot. ■ Do not touch the LED unit and its surroundings after using the unit for a long time. Otherwise, burn injury could be caused.
	Main Switch	ON (Power)
	Main Switch	OFF (Power)
	AC adapter	Alternating current
	Rating Plate AC adapter	Direct current
	Rating Plate AC adapter	Polarity of Direct current power connector

\* For names of respective portions, see Chapter 3.

The symbols appearing in these instructions indicate the following meanings:

Symbols	Meanings
	<b>WARNING:</b> - As there is a risk of serious personal injury or property damage, be sure to use the unit by observing the description of the warning. <b>CAUTION:</b> - As there is a possibility of minor personal injury or property damage, be sure to use the unit by observing the description of the caution.
	<b>CAUTION</b> : Visible radiation Possibly hazardous optical radiation emitted from this product. Do not stare at operating lamp. May be harmful to the eyes.
	<b>NOTICE</b> : Ultraviolet radiation UV emitted from this product. Minimise exposure to eyes or skin. Use appropriate shielding.
	<b>CAUTION</b> : Surface may be hot.
	<b>CAUTION</b> : Risk of electric shock.
	Prohibition
	<b>Notes</b> : Important information and notes for using this unit

Symbols	Meanings
	Refer to this instructions for use.
	Disconnect mains plug from electrical outlet.
	Connect an earth terminal to the ground.

## 2. For Safe Use of the Unit

Observe the following warnings and cautions for using the unit safely.

### **WARNING**

- Only personnel qualified for dental treatment are allowed to use the unit.
- Light-sensitive personnel such as those allergic to light are prohibited to use the unit. In addition, care must be taken for irradiation light not to shine on light-sensitive people such as those allergic to light.
- Personnel equipped with a heart pacer should not use the unit. Otherwise, the pacer could malfunction.
- When repairing a prosthesis removed from patient's oral cavity, disinfect it prior to placement in the unit. Otherwise, infection could be caused. If flammable disinfectant is used (e.g. Isopropyl alcohol based), there is risk of ignition/explosion if lamp is started with vapors in the chamber.
- Never disassemble or modify the unit. Otherwise, heat generation, ignition, or rupture could be caused.
- Be sure to observe the description of the Instructions for Use to ensure safety of the user and proper use of the unit. If the unit is used in a manner not specified by this instructions, the protection provided by the unit may be impaired.

### RISK GROUP 2 (IEC 62471)

### **CAUTION**

Possibly hazardous optical radiation emitted from this product.  
Do not stare at operating lamp. May be harmful to the eyes.

- Do not directly look at the irradiation light. Otherwise, eyes could be damaged.
- Do not look in the unit for monitoring irradiation light in the step mode. Otherwise, eyes could be damaged.
- Avoid continuously looking at reflected lights by appropriately taking intermission when working on the unit in the step mode for a rather long time. Otherwise, discomfort could be felt.
- Do not continuously look inside the curing chamber through the window for a long time in the full mode. Otherwise, discomfort could be felt.
- Wear suitable protective equipment such as glasses that cut off light with a wavelength of 500 nm or less when continuously working on the unit for a long time or if you are sensitive to light or have a cataract or damaged retina, for example.
- Do not irradiate light on an object located closer to the light source than being recommended. Otherwise, the object could be heated.

### **NOTICE**

UV emitted from this product.  
Minimise exposure to eyes or skin. Use appropriate shielding.

- Do not bring your hands close to the irradiating light source. Otherwise, burn injury could be caused.
- When irradiating a prosthesis in the step mode, avoid locating your hands between the light source and the turntable as much as possible by using a crown clamp, for example. Otherwise, tanning could be caused due to a prolonged use.

## CAUTION

- Do not touch the LED unit and its surroundings after using the unit for a long time. Otherwise, burn injury could be caused.
- Maintenance, if intended after a prolonged use, should be conducted after the unit temperature sufficiently lowers.

## CAUTION

### < General >

- Take care to ensure the stability of the unit in relation to inclination, vibration, and impact, for example.
- In case the unit fails or damages, stop using the unit immediately, turn off the main switch, and pull out the power plug.
- Do not attempt to repair the failed unit by yourself but request an expert to do it after providing an appropriate indication thereon.
- Do not use the unit with wet hands. Otherwise, the unit could fail.
- Do not splash water (or other liquids) on the unit.
- Do not handle liquid or metal powder in the curing chamber. In case liquid or dangerous material accidentally enters into the chamber, stop using the unit and request for repair.

### < Installation, assembly, and storage >

- Do not install the unit in a place where chemicals are stored or gas is generated.
- Do not place flammable objects near the main body. Otherwise, fire could be caused.
- Do not place any equipment susceptible to light or heat in the unit's surroundings.
- Pay attention to the power source in terms of its frequency, voltage, and allowable current (or power consumption).
- Use the attached dedicated power cord and AC adapter.

### < Usage >

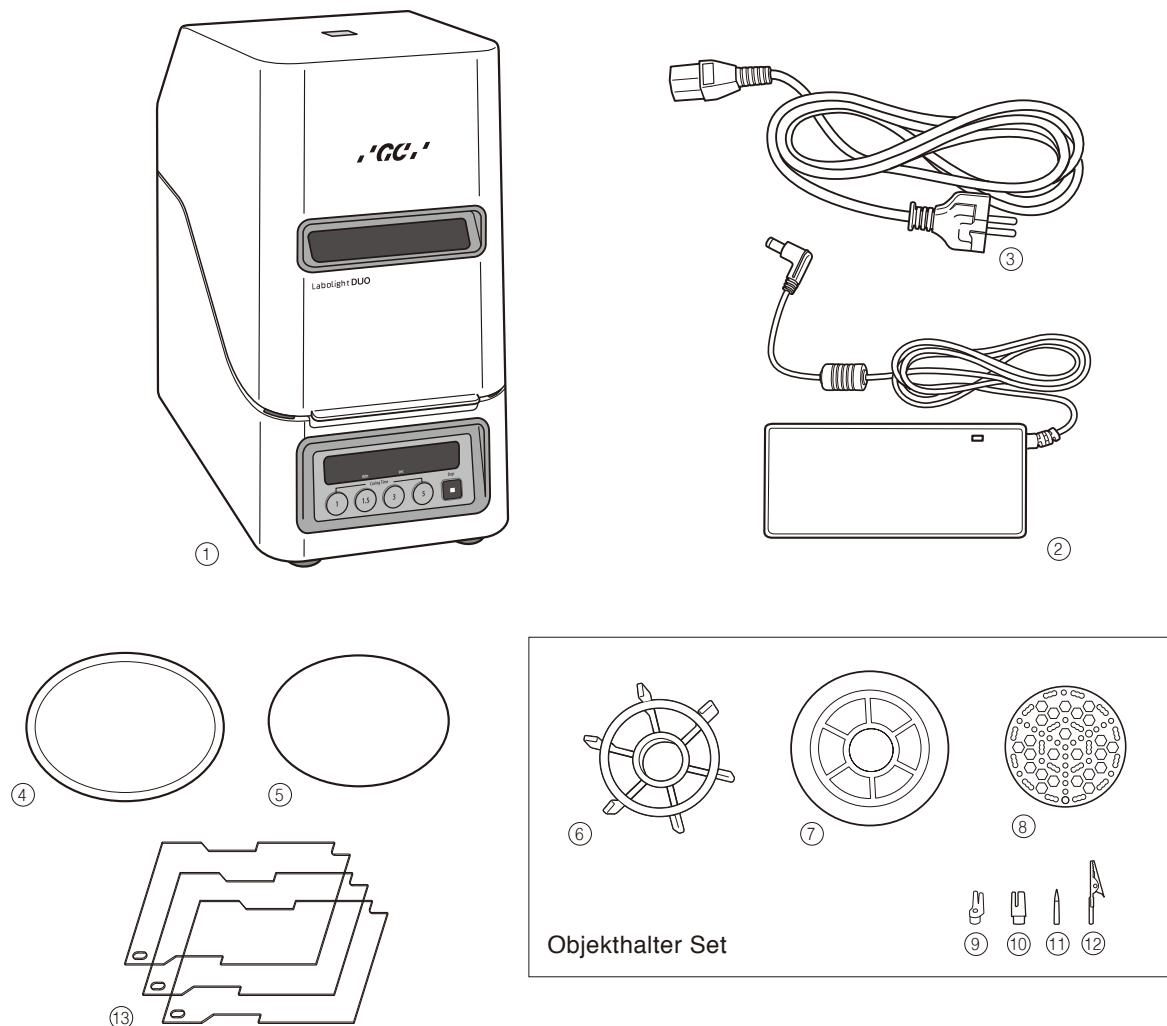
- Do not open/close the door swiftly. Otherwise, the door or the object inside the curing chamber could be damaged.
- When opening/closing the door, do not allow your hand or part of your body or the object to enter into below the door or the gap. Otherwise, personal injury or property damage could be caused.
- Do not touch the rotating turntable. Otherwise, your fingers could be caught or the turntable could be damaged.
- If anything is caught by the turntable, stop the turntable rotation by pressing the stop switch or turning off the main switch before removing the caught object.
- Clean off contamination of the lens cover or replace the contaminated cover. Otherwise, the contaminated portion is heated to cause deformation or melting of the cover.
- Arrange an object subject to curing with its curing surface facing the light source.
- Set curing time suitably for the use material.
- Be sure to verify the material for perfect curing upon the completion of curing. In case of insufficient curing, additionally irradiate light.
- Do not directly hold and cure a composite in hands in the step mode. Otherwise, burn injury could be caused by the hot composite.
- Do not remove a composite immediately after curing directly with hands in the full mode. Otherwise, burn injury could be caused by the hot composite.

### < Maintenance >

- Be sure to perform regular checkup of the equipment and components.
- Be sure to clean the curing chamber regularly, as otherwise, the contaminated chamber could not exercise sufficient curing performance. If flammable disinfectant is used (e.g. Isopropyl alcohol based), there is risk of ignition/explosion if lamp is started with vapors in the chamber.
- Replace the lens cover regularly. Otherwise, the performance could be deteriorated due to aging and contamination.
- If the unit is used without the lens cover mounted, the performance could be deteriorated due to insufficient protection of the lens. Be sure to use the unit with the cover mounted.

### 3. Product Description

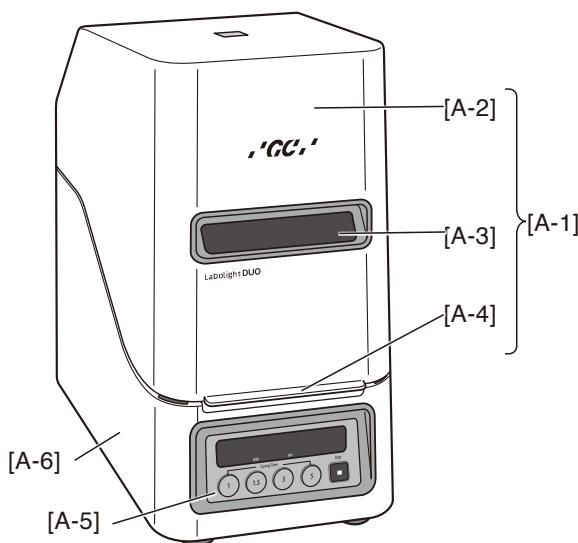
#### 3.1 Content of the package



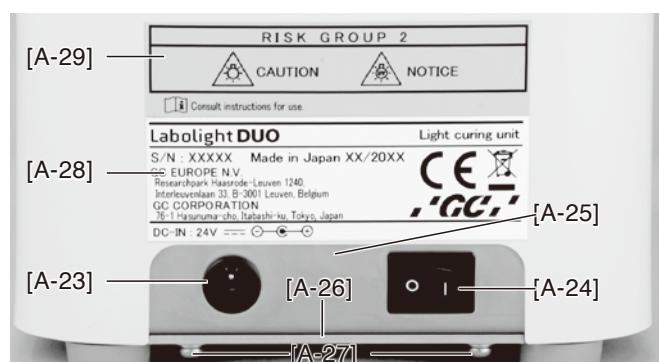
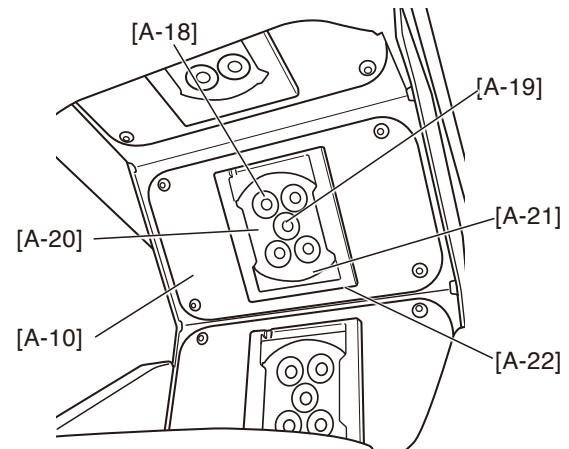
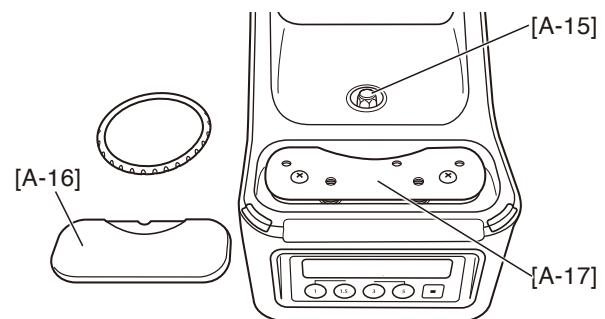
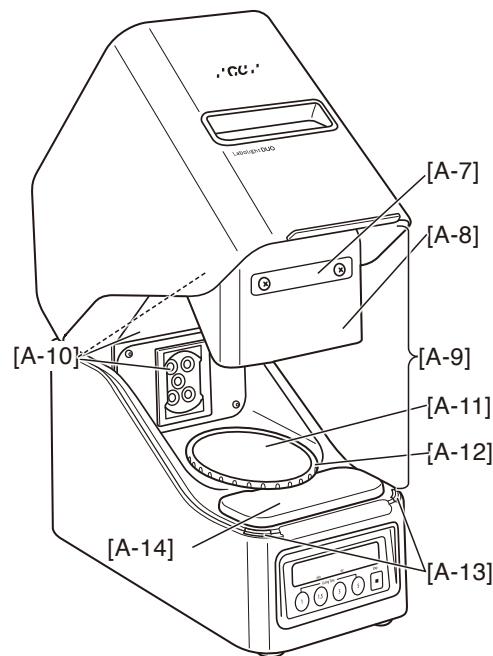
No.	Contents	Quantity
①	Labolight DUO Main body	1
②	AC adapter	1
③	Power cord	1
④	Turntable	1
⑤	Tray	1
⑥	Curing stand holder	2
⑦	Curing Plate	1
⑧	Curing Stand	1
⑨	Silicone post for anterior	4
⑩	Silicone post for posterior	3
⑪	Metal post	4
⑫	Clip	1
⑬	Lens cover (Spare/3-pack)	1
	Instruction for Use	1

## 3.2 Names and functions of Parts

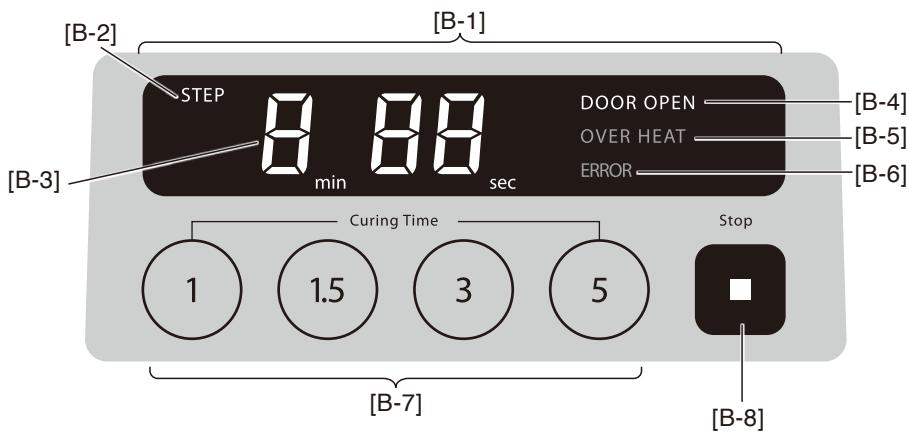
### 3.2.1 Main body



No.	Name
[A-1]	Door
[A-2]	Upper housing
[A-3]	Window
[A-4]	Handle
[A-5]	Control panel
[A-6]	Lower housing
[A-7]	Visor fixing plate
[A-8]	Visor
[A-9]	Curing Chamber
[A-10]	LED Unit (Upper/Middle/Lower)
[A-11]	Tray
[A-12]	Turntable
[A-13]	Door cushioning(buffer)
[A-14]	Step mode switch
[A-15]	Turntable axis
[A-16]	Step mode switch cover
[A-17]	Step mode switch plate
[A-18]	Blue LED (4 lamps circumferentially on each unit)
[A-19]	Violet LED (1 lamp at the center on each unit)
[A-20]	Lens
[A-21]	Lens cover
[A-22]	Lens cover holder
[A-23]	Power connector
[A-24]	Main Switch
[A-25]	Main Switch stay (Back plate)
[A-26]	Base plate
[A-27]	Rubber foot
[A-28]	Rating Plate
[A-29]	Caution Label



### 3.2.2 Control panel

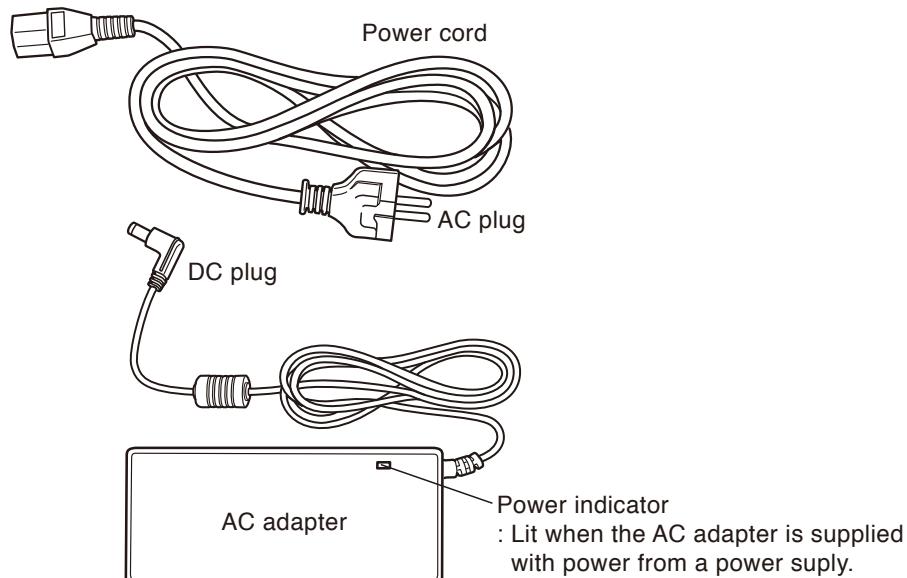


No.	Name	Information
[B-1]	Display	Displays statuses of various devices.
[B-2]	Step mode indicator	Lit during irradiation in the step mode.
[B-3]	Time display	<ul style="list-style-type: none"> <li>– Displays remaining time of irradiation in the step or full mode.</li> <li>– Blinking display of time indicates a temporary halt.</li> </ul> <p>Standby status with the door opened (= standby status in the step mode)</p>  <p>Standby status with the door closed (= standby status in the full mode)</p>  <p>When the full mode is properly completed, "Fin" is displayed.</p>  <p>If an error occurs, an error number is displayed.</p> 
[B-4]	Door open indicator	Unlit: Indicates the door closed. Lit: Indicates the door opened.
[B-5]	Over heat indicator	<p>Blinking: Temperature alarm</p> <ul style="list-style-type: none"> <li>– Alerts high temperature of LEDs due to continuous use.</li> <li>– Ensure a sufficient intermission, as the LEDs are nearly overheated.</li> </ul> <p>Lit: Overheat</p> <ul style="list-style-type: none"> <li>– Lit if irradiation is temporarily halted due to high LED temperature.</li> </ul>
[B-6]	Error indicator	Lit if an error occurs. (For details of errors, see Chapter 7, "Troubleshooting.")
[B-7]	Curing time key (1/1.5/3/5)	<p>A press starts irradiation in the full mode.</p> <p>The time of irradiation is 1, 1.5, 3, and 5 minutes, respectively.</p> <p>Successive presses add time, enabling continuous irradiation for as long as 10 minutes.</p>
[B-8]	Stop key	Press it when stopping irradiation in the step or full mode or when resetting a temporary halt.

#### Other operating unit

[A-13]	Step mode switch	A press starts irradiation for 10 seconds in the step mode. Successive presses add time, enabling continuous irradiation for as long as 30 seconds.
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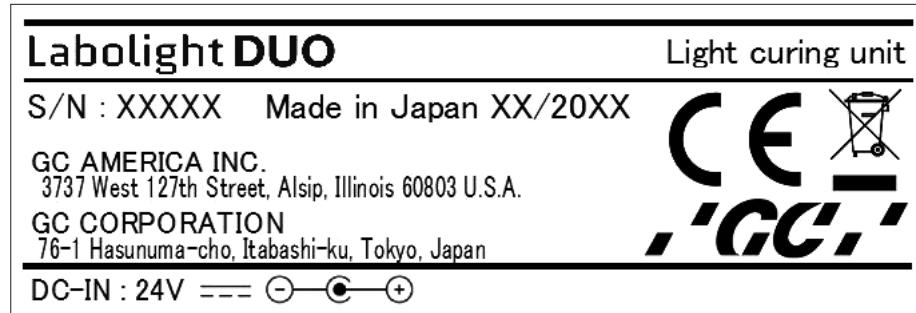
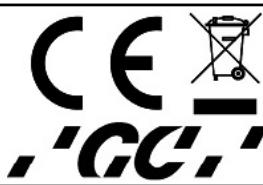
### 3.2.3 AC adapter and Power cord



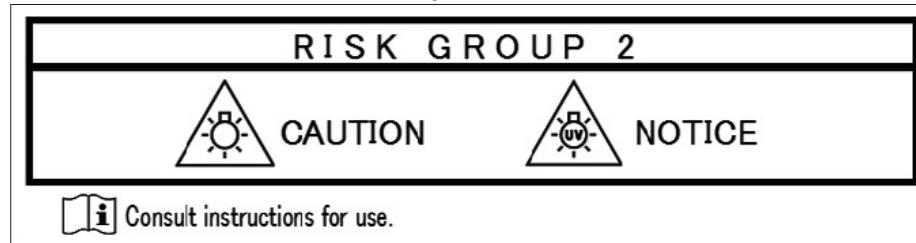
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### 3.2.4 Rating Plate/Caution Label

#### < Rating Plate of the Main body >



#### < Caution Label of the Main body >



## 4. Installation Method

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### 4.1 Transportation

#### Note

- Care should be taken for avoiding impact on the unit by arranging it at level during transportation.
- Use dedicated packing materials.

For the safe disposal and recycling of the packaging, please ensure that all packing materials are properly disposed of according to current recycling regulations.

### 4.2 Unpacking

Verify all components are delivered prior to installation and assembly (see Section 3.1, “Content of the package”). In addition, check for any damage of the unit during transportation. Contact the dealer or GC in case any missing or damaged component is found.

### 4.3 Installation

1) Install the unit with care being taken for the following:

- Place the unit on a level and fire-resistant bench or platform.
- For temperature, humidity, and atmospheric pressure in the use environment, see Chapter 9, “Specifications.”
- For dimensions and weight of the unit, see Chapter 9, “Specifications.”

Area of installation: Approx. 200mm x 350mm

#### CAUTION

- Do not install the unit in a place where chemicals are stored or gas is generated.
- Do not place flammable objects near the main body. Otherwise, fire could be caused.
- Do not place any equipment susceptible to light or heat in the unit's surroundings.

#### CAUTION

- Take care to ensure the stability of the unit in relation to inclination, vibration, and impact, for example.

#### Note

- When carrying the main body, hold it on the bottom by both hands with the door closed.
- Use the unit indoor.
- Install the main body on a level place.
- Install the unit in a place where not receiving any adverse effect from direct sunlight, dust, dampness, air containing salt and sulfur, or a heater nearby.
- Install the unit in a place where no water splashes.
- Install the unit in a well-ventilated place.

2) Verify that a movable range of the door is ensured.

#### CAUTION

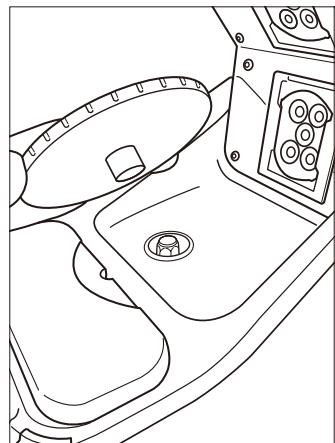
- When opening/closing the door, do not allow your hand or part of your body or the object to enter into below the door or the gap. Otherwise, personal injury or property damage could be caused.

#### 4.4 Assembly

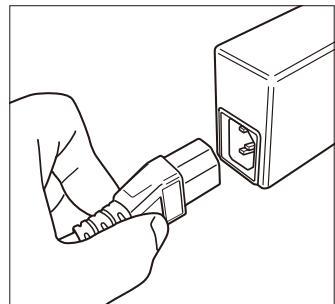
- 1) Pull the door slowly and rotationally upward by holding the handle.
- 2) Set the turntable in alignment with the turntable shaft.  
\*Six aligning positions are provided at an interval of 60 degrees where the turntable can be pushed deeply to the bottom. Select one of the six positions.
- 3) Set a tray in the concave provided on the top surface of the turntable.

 **CAUTION** 

- When opening/closing the door, do not allow your hand or part of your body or the object to enter into below the door or the gap. Otherwise, personal injury or property damage could be caused.



- 4) Connect the power cord to the AC adapter.
- 5) Connect the DC plug of the AC adapter to the power connector located on the rear surface of the main body.
- 6) Connect the power cord to the 3P outlet(100-240 AC).  
\*see Chapter 10 ,“Specifications”.
- 7) Verify that the power indicator is lit on the AC adapter.  
→ If unlit, recheck the connections



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 **CAUTION** 

- Be sure to provide grounding when connecting the power plug.

 **CAUTION**

- Pay attention to the power source in terms of its frequency, voltage, and allowable current (or power consumption).
- Use the attached dedicated power cord and AC adapter.

 **Note**

- Only use genuine parts and accessories. Using other than genuine parts and accessories will cause termination of warranty and no more liability from GC.

## 4.5 Startup and Checkup

1) Turn on the main switch with the door closed to verify the following:

Time appears on the display. (see Item 3.2.2)
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2) Press the step mode switch once with the door opened to verify the following:

The step mode switch can be pressed. When released, the switch returns to the original position.
The LEDs only in the upper row are lit. * Do not directly look at the LEDs during this operation.
The step mode indicator is lit on the display. The time indicated on the display is counted down by 10 seconds.
No strong irradiation or reflection light shines on surrounding people or objects.



\* If any fault is observed with the unit, press the stop key to stop irradiation.

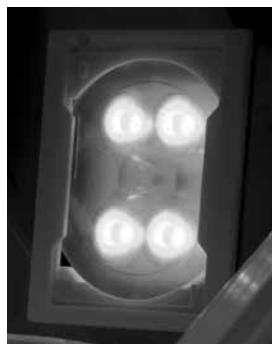


■ Despite the low emission rate, do not look in the unit for monitoring irradiation light in the step mode. Do not introduce any object which might impose light into the eyes. Otherwise, eyes could be damaged.

3) Press the curing time key (one minute) with the door opened to verify the following:

\* Complete the verification within 20 seconds since the unit is stopped due to determination of an open door error if the time longer than 20 seconds elapses.

At least any one of the four blue LEDs in each of the upper, middle, and lower rows is lit dimly. * The violet LED is unlit at this time. * At least any one of the four LEDs being lit is acceptable even though in a very rare case, the LED may not be lit at all due to only faint current flowing.
The turntable rotates.
Irradiation stops in 20 seconds.



\* If any fault is observed with the unit, press the stop key to stop irradiation.

4) Press the curing time key (one minute) with the door closed to verify the following:

The LEDs in the middle and lower rows are lit when observing through the window.
The turntable rotates when observing through the window. (If making a judgment is difficult, use the appended curing stand.)
The displayed time is counted down.
Irradiation stops in one minute.



\* If any fault is observed with the unit, press the stop key to stop irradiation.

 **CAUTION** 

- Do not continuously look inside the curing chamber through the window for a long time in the full mode. Otherwise, discomfort could be felt.

 **CAUTION** 

- In case the unit fails or damages, stop using the unit immediately, turn off the main switch, and pull out the power plug.

 **Note**

- Before using the unit after a prolonged stoppage, be sure to verify that the unit operates normally and safely.

#### 4.6 Stoppage and Storage

- 1) Close the door and turn off the main switch.

 **Note** 

- When not using the unit for a long time, unplugging the power cord is recommended for energy saving.

 **CAUTION** 

- Do not insert or pull out the plug with wet hands. Otherwise, electric shock could be caused.
- When disconnecting cords, do not exert excessive force thereon by, for example, holding them for pullout.

- 2) Clean the unit to prepare for smoothly starting the next operation (see Chapter 6, "Maintenance").

 **CAUTION**

- Be sure to clean the curing chamber regularly, as otherwise, the contaminated chamber could not exercise sufficient curing performance.

- 3) Store the unit with care for the following:

- For temperature, humidity, and atmospheric pressure in the storage environment, see Chapter 9, "Specifications."

 **CAUTION**

- Take care to ensure the stability of the unit in relation to inclination, vibration, and impact, for example.

 **Note**

- Install the unit in a place where not receiving any adverse effect from direct sunlight, dust, dampness, air containing salt and sulfur, or a heater nearby.
- Install the unit in a place where no water splashes.

## 5. Use Method

### 5.1 Basic use method

#### Note

- Verify normal operation of the unit prior to use.
- Pay special attention to the following during use of the unit:
  - Monitor the entire unit for any fault at all times.
  - In case of any fault found on the unit, take appropriate action such as shutting down the unit.

#### **WARNING**

- Light-sensitive personnel such as those allergic to light are prohibited to use the unit. In addition, care must be taken for irradiation light not to shine on light-sensitive people such as those allergic to light.
- Personnel equipped with a heart pacer should not use the unit.
- Otherwise, the pacer could malfunction.

#### **WARNING**

- When repairing a prosthesis removed from patient's oral cavity, disinfect it prior to placement in the unit. Otherwise, infection could be caused.

- 1) Turn on the main switch and verify that something appears on the time display.(see Item 3.2.2)
- 2) Cure a composite in the step mode (see Section 5.2) or full mode (see Section 5.3).

#### **CAUTION**

- Do not directly look at the irradiation light. Otherwise, eyes could be damaged.
- Do not irradiate light on an object located closer to the light source than being recommended. Otherwise, the object could be heated.
- Do not bring your hands close to the irradiating light source. Otherwise, burn injury could be caused.

#### **CAUTION**

- Wear suitable protective equipment such as glasses that cut off light with a wavelength of 500 nm or less when continuously working on the unit for a long time or if you are sensitive to light or have a cataract or damaged retina, for example.

#### **CAUTION**

- To operate the switch, use your fingers but not any sharp tool.

#### **CAUTION**

- When opening/closing the door, do not allow your hand or part of your body or the object to enter into below the door or the gap. Otherwise, personal injury or property damage could be caused.

#### **CAUTION**

- Arrange an object subject to curing with its curing surface facing the light source.
- Set curing time suitably for the use material.
- Be sure to verify the material for perfect curing upon the completion of curing. In case of insufficient curing, additionally irradiate light.
- Clean off contamination of the lens cover or replace the contaminated cover. Otherwise, the contaminated portion is heated to cause deformation or melting of the cover.

3) After use, close the door and turn off the main switch. (see Section 4.6)

 **CAUTION** 

- Do not touch the LED unit and its surroundings after using the unit for a long time. Otherwise, burn injury could be caused.

 **Note** 

- When not using the unit for a long time, unplugging the power cord is recommended for energy saving.

## 5.2 Step mode

 **Note**

- Use the step mode only for pre-curing.

1) Open the door and verify the door open indicator being lit.  
(Standby status in the step mode)



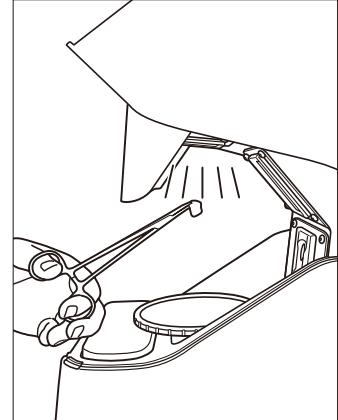
2) Place an object subject to curing in the recommended curing position (described below) and press the Step mode switch.  
- Light irradiation only by upper LEDs immediately starts and remaining time appears on the time display.  
- Ten seconds is added to the remaining time by additionally pressing the Step mode switch with light irradiation in progress.  
- The maximum 30 seconds of addition is possible.

  **CAUTION** 

- Do not look in the unit for monitoring irradiation light in the step mode. Otherwise, eyes could be damaged.
- Avoid continuously looking at reflected lights by appropriately taking intermission when working on the unit in the step mode for a rather long time. Otherwise, discomfort could be felt.
- Do not bring your hands close to the irradiating light source. Otherwise, burn injury could be caused.

  **CAUTION**

- When irradiating a prosthesis in the step mode, avoid locating your hands between the light source and the turntable as much as possible by using a crown clamp, for example. Otherwise, tanning could be caused due to a prolonged use.



 **CAUTION** 

- Do not directly hold and cure a composite in hands in the step mode. Otherwise, burn injury could be caused by the hot composite.

3) Upon the completion of light irradiation, remove the object subject to curing.

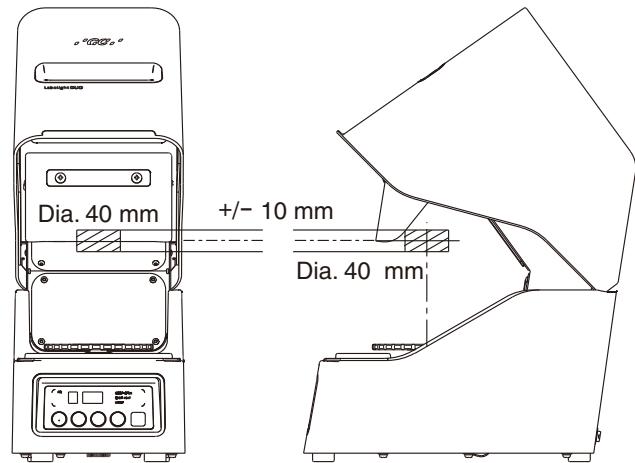
\* Using the unit for a long time may result in blinking of the overheat indicator due to excessively high temperature of LEDs (temperature warning). With the occurrence of temperature warning, taking intermission for the period equivalent to the previous curing time is recommended.

\* A further rise in temperature will result in a forced stop of operation for allowing the LEDs to cool down, thereby irradiation being disabled.

### < Recommended curing position in the step mode >

Place a composite within the hatched area as shown in the diagram.

(Hatched area: Inside the circle of about 40mm diameter directly above the turntable and besides  $\pm 10\text{mm}$  from the visor rim)



### 5.3 Full mode

1) Open the door and place an object subject to curing on the turntable (see Section 5.4).

#### Note

- Use the turntable to irradiate light on a composite entirely.
- When concurrently curing multiple composites, arrange them such that no shade is formed on each other.

2) Upon verifying the door open indicator being unlit, close the door.

(Standby status in the full mode)



3) Select and press a Curing timer key that matches recommended time for the object subject to curing .

- Light irradiation immediately starts and remaining time appears on the time display.
- By additionally pressing the Curing timer key with light irradiation in progress, time corresponding to the key is added to the remaining time. The maximum 10 minutes of addition is possible.

#### Note

- In the full mode, monitor the turntable rotation through the window.

#### CAUTION

- Do not continuously look inside the curing chamber through the window for a long time in the full mode. Otherwise, discomfort could be felt.
- Do not irradiate light on an object located closer to the light source than being recommended. Otherwise, the object could be heated.

#### CAUTION

- If anything is caught by the turntable, stop the turntable rotation by pressing the stop switch or turning off the main switch before removing the caught object.

\* For stopping curing in the middle of the process, press the stop key. A standby status is established accordingly.

\* A temporary halt of curing is established by opening the door during curing or pressing the timer key with the door remaining opened. In this event, only the blue LEDs are dimly lit and the turntable continues to rotate.  
- In 15 seconds, alert sound starts and in 20 seconds, error sounds and operation stops.  
- By closing the door within 20 seconds, the temporary halt is released and full mode irradiation restarts.

\* Using the unit continuously for a long time may result in blinking of the overheat indicator due to excessively high temperature of LEDs. (Temperature warning)  
With the occurrence of temperature warning, it is recommended to conduct light irradiation for the maximum 5 minutes and then take intermission for the period equivalent to the irradiation time. The maximum settable time is 5 minutes with temperature warning being displayed.

\* A further rise in temperature results in a temporary stop of the full mode for giving the LEDs intermission, and operation restarts automatically when the LEDs sufficiently cool down. Pressing the stop key or leaving the door opened resets the remaining time.

4) The remaining time of "0" indicates the end of curing.  
The end is also indicated by finish sound and display of "Fin."  
Upon verifying the display, open the door and remove the object.

Fin  
min sec

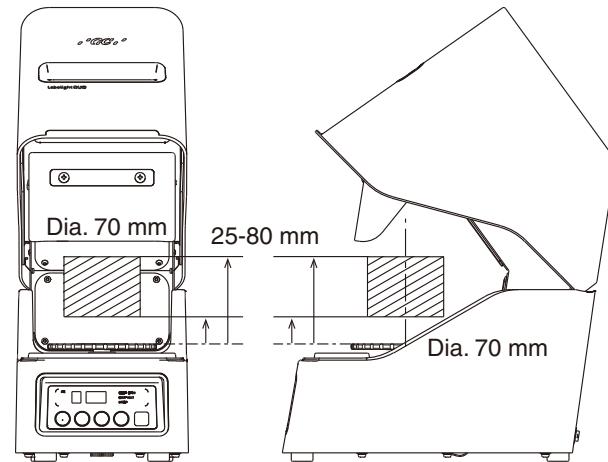
**CAUTION**

■ Do not remove a composite immediately after curing directly with hands in the full mode. Otherwise, burn injury could be caused by the hot composite.

**< Recommended curing position in the full mode >**

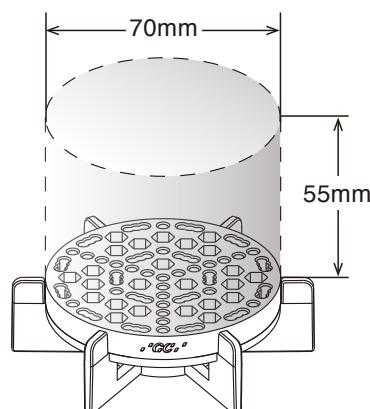
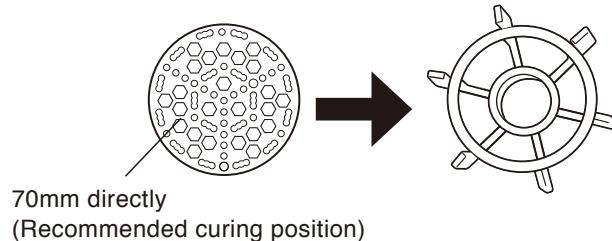
Place an object subject to curing within the hatched area as shown in the diagram.

(Hatched area: Inside the circle with a diameter of about 70mm directly above the turntable, and a height of 25 to 80mm from the upper surface of the turntable)



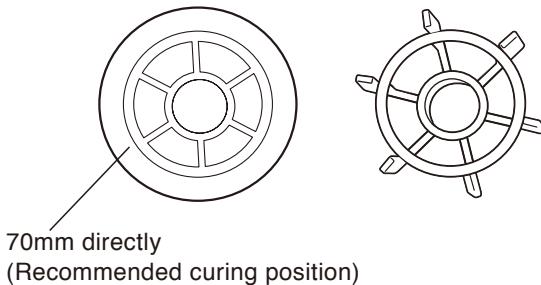
1) A prosthesis alone such as crown and bridge  
/ A prosthesis placed on a model equipped with dowel pin

Use "Curing stand" and "Curing stand holder"  
(For more detail on the Curing stand, see Section 5.4)

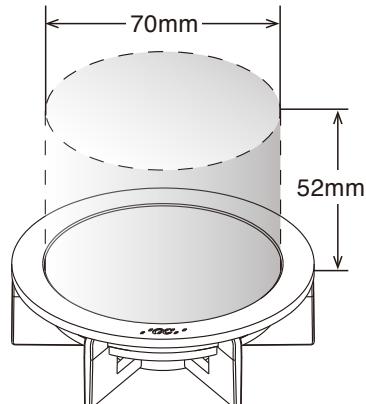


2) A prosthesis or artificial tooth with a height of 52mm or less placed on a model

Use "Curing plate" and "Curing stand holder"



70mm directly  
(Recommended curing position)



3) A prosthesis or artificial tooth with a height of 52mm or more placed on a model

Place it together with the model on the turntable.

**i** Note

- When placing an object subject to curing outside the recommended curing range, set curing time rather larger since light may not sufficiently shine on the object.
- Care should be taken that if a prosthesis or model placed outside the 100mm outer diameter of the turntable or higher than 80mm, interference of the object subject to curing or model with the visor or the curing chamber wall occurs, thereby causing improper or unable rotation of the turntable.

#### 5.4 Use method of the Curing stand set

For a prosthesis alone, such as crown and bridge, or that placed on a model equipped with dowel pin, set it in combination with the curing stand and various posts by referring to the following examples of use.



Clip

Fixes a prosthesis and inserted into a round hole or three consecutive round holes provided on the curing stand.



Metal post

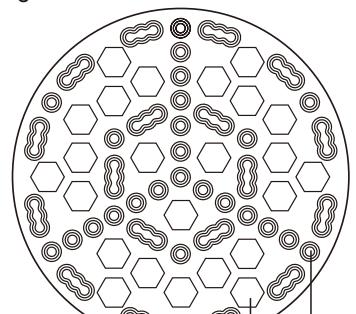
Receives a prosthesis and inserted into a round hole or three consecutive round holes provided on the curing stand.



Silicone post

Receives a prosthesis and inserted into a hexagonal hole provided on the curing stand. Cut the protrusion for use, as needed.

Curing stand



Three consecutive round hole

Hexagonal hole

Prosthesis placed on a model equipped with a dowel pin

The model with a prosthesis thereon is placed on the curing stand by inserting the dowel pin into the hexagonal hole provided on the stand.

## 6. Maintenance

### 6.1 Checkup

Perform checkup and maintenance by taking the following recommended intervals as an indication:

#### CAUTION

- Be sure to perform regular checkup of the equipment and components.

	Contents	Details
Daily checkup	Verifying LEDs being lit Verifying state of the turntable	After pressing the timer key with the door opened, verify lighting of respective LEDs and proper rotation of the turntable. With any failure existing, a curing defect occurs. (For details, see Section 4.5, "Startup and checkup.")
	Checking the lens cover for contamination	Clean the lens cover if contaminated. (See Section 6.2, "Cleaning and replacement of respective portions.")
Weekly checkup	Whether the connections are sound	Verify the sound connection of the AC adapter and power cord, and check them for accumulation of dust.
	Checking the step mode switch for contamination	Clean the step mode switch if attached with dust and dirt. (See Section 6.2, "Cleaning and replacement of respective portions.")
	Checking inside the curing chamber for contamination	Clean the curing chamber if contaminated. (See Section 6.2, "Cleaning and replacement of respective portions.")
Parts replacement	Replacing the lens cover (Replacement interval as an indication: 1 year *depends on frequency of usage)	Heavy discoloration, contamination or scratches of the lens might result in a curing defect. When checkup of the lens cover is performed and find discoloration, contamination or scratches which cannot be cleaned, replace the lens cover. *Lens cover potentially be discolored by aging. (See Section 6.2, "Cleaning and replacement of respective portions.")

#### CAUTION

- Be sure to clean the curing chamber regularly, as otherwise, the contaminated chamber could not exercise sufficient curing performance. If flammable disinfectant is used (e.g. Isopropyl alcohol based), there is risk of ignition/explosion if lamp is started with vapors in the chamber.

#### Note

- In case a LED unit fails, other LED units can still properly irradiate light. However, as the total amount of light is reduced, the curing time should be extended and curing status should be sufficiently monitored. The failed LED unit should be promptly repaired.

### 6.2 Cleaning and Replacement of parts

Be sure to plug off the power cord so that the unit is not activated during cleaning or replacement work.

#### CAUTION

- Maintenance, if intended after a prolonged use, should be conducted after the unit temperature sufficiently lowers.

**CAUTION**

- Turn off the main switch and plug off the power cord prior to cleaning or parts replacement.

### 6.2.1 Cleaning method of respective portions

**CAUTION**

- Be sure to clean the curing chamber regularly, as otherwise, the contaminated chamber could not exercise sufficient curing performance.

Contents	Details
Lens cover	<p>Wipe off with a soft cloth wetted with a small amount of water or alcohol.</p> <ul style="list-style-type: none"> <li>* In case of any discoloration, contamination or scratches cannot be cleaned, replace the lens cover.</li> <li>* Lens cover potentially be discolored by aging.</li> </ul> <p><b>CAUTION</b></p> <ul style="list-style-type: none"> <li>■ Clean off contamination of the lens cover or replace the contaminated cover. Otherwise, the contaminated portion is heated to cause deformation or melting of the cover.</li> <li>■ If the unit is used without the lens cover mounted, the performance could be deteriorated due to insufficient protection of the lens. Be sure to use the unit with the cover mounted.</li> </ul>
Turntable	<p>Wipe off with a soft cloth wetted with a small amount of water or alcohol.</p> <ul style="list-style-type: none"> <li>* Pull up the turntable for removal.</li> <li>* When remounting the turntable, rotate it to find one of the six positions (provided at an interval of 60 degrees) where the turntable enters deeply into the bottom.</li> </ul>
Step mode switch	<p>Wipe off with a soft cloth wetted with a small amount of water or alcohol.</p> <p>For dirt accumulated in a clearance, remove the step mode switch cover and clean by using a cotton swab, for example.</p> <p>(for removal method, see Item 6.2.3)</p> 
Visor	Wipe off with a soft cloth wetted with a small amount of water or alcohol, in principle.
Housing, Curing Chamber	Wipe off with a soft cloth wetted with a small amount of water or alcohol, in principle.
Curing stand holder	Wipe off with a soft cloth wetted with a small amount of water or alcohol, in principle.
Tray Metal post Clip	<p>Wipe off with a soft cloth wetted with a small amount of water or alcohol, in principle.</p> <ul style="list-style-type: none"> <li>* Disinfection with chemical solution allowed.</li> <li>* Autoclave sterilization possible</li> </ul>
Curing plate Curing stand Silicone post	<p>Wipe off with a soft cloth wetted with a small amount of water or alcohol, in principle.</p> <ul style="list-style-type: none"> <li>* Disinfection with chemical solution allowed.</li> <li>* Autoclave sterilization possible (However, repetitive operation causes deterioration.)</li> </ul>

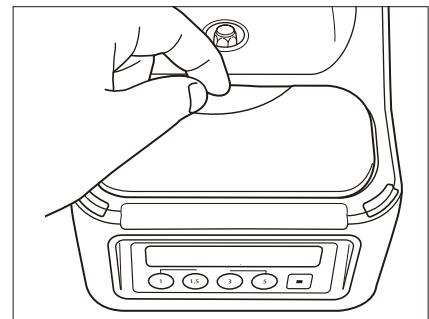
**Note**

- For cleaning the unit, use a soft cloth wetted with a small amount of water or alcohol. In addition, do not use organic solvent (thinner, benzine, etc.).
- Care should be taken for the unit being possibly whitened in the portion where organic solvent attaches. Immediately wipe off such a solvent if attached.

## 6.2.2 Method of removing/remounting the Step mode switch cover

### < Removal method >

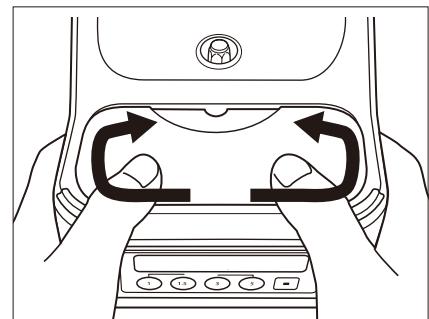
With the turntable removed, remove the cover by hooking the notches thereof on your fingers.



### < Mounting method >

Align the protrusion of the step mode switch cover with the hole of the step mode switch plate and insert the protrusion into the hole.

\* Going over the plate circumference with the cover protrusion makes the work easy before pressing the protrusion into the hole.

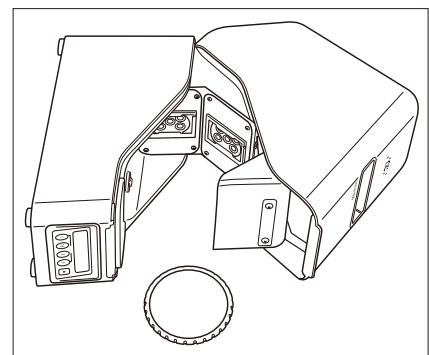


EN

## 6.2.3 Method of replacing the lens cover

### < Preparation >

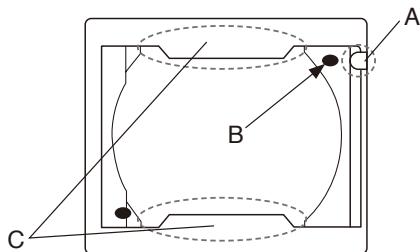
- 1) Turn off power and pull out the AC adapter.
- 2) Remove the turntable and lay the main body laterally.



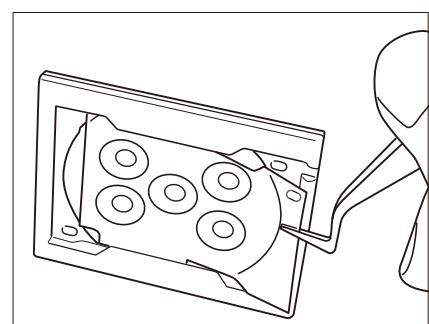
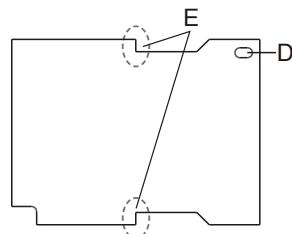
### < Removal method >

- 3) Insert your fingernail or tweezers into the clearance formed [A] between the lens holder and the lens cover through the concave on the holder, and then slide the cover toward the concave [A].

Lens cover holder

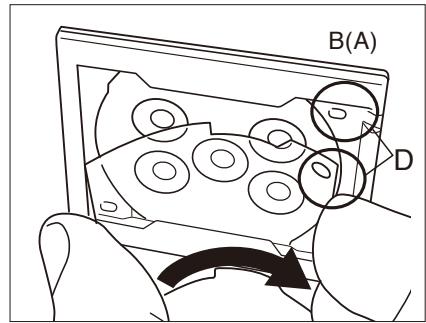


Lens cover

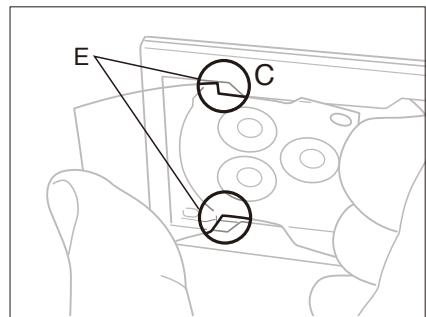


**< Mounting method >**

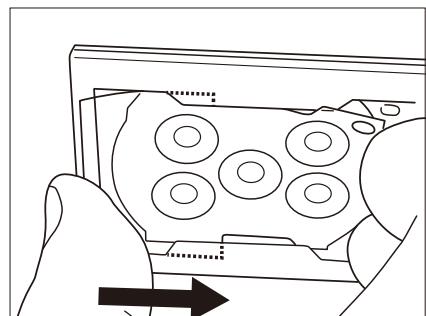
4) As the front and back surfaces of the lens cover has a difference in profiles, ensure the proper orientation where the hole of the lens cover [D] aligns with the protrusion of the lens cover holder near the concave [B(A)].



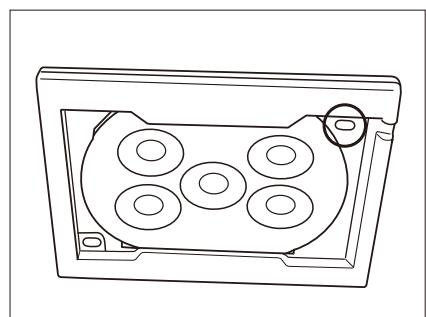
5) By slightly bending the lens cover outward, insert the notch [right angle] of the lens cover [E] into the wing of the lens holder [C].



6) Slide the lens cover for mounting.



7) Verify that the protrusions of the lens cover holder [B] engage with the lens cover hole [D].



## 7. Troubleshooting

Before requesting for repair based on your judgment of a failure on an event, conduct checking as follows. If nothing matches the following, contact your dealer or our branch or sales office.

Symptoms	Causes	Measures
Turning on the main switch does not result in power on (nothing appears on the display).	Pulled out cords	Check the main body, AC adapter, power cord, and outlet for unsound connection.
	Use of different power cord and AC adapter	Check that it's used the attached dedicated power cord and AC adapter.
	Defect of the AC adapter or power cord	The AC adapter and/or power cord must be replaced. Contact your dealer or our branch or sales office.
	Blown fuse	The fuse mounted inside the unit must be replaced. Contact your dealer or our branch or sales office.
No light is irradiated in the step mode.	The overheat indicator is lit.	Temporary halt due to overheat of LED(s) Wait for the LED(s) to cool down before restart. In case the trouble frequently occurs, contact your dealer or our branch or sales office.
	The door open indicator is unlit.	Malfunction or failure of the open/close detection sensor of the door Widely open the door and check again.
	Even though display is normal, the upper row LEDs are unlit.	Failure or disconnection of LED(s) The LED unit must be replaced. Contact your dealer or our branch or sales office. For the checking method of LEDs, see Chapter 6.
No light is irradiated in the full mode.	The overheat indicator is lit and the remaining time blinks on the display.	Temporary halt due to overheat of LED(s) (Irradiation is temporarily halted.) Wait for the LED(s) to cool down before restart. In case the trouble frequently occurs, contact your dealer or our branch or sales office.
	The overheat indicator is lit and "Fin" is displayed on the display.	Temporary halt due to overheat of LED(s) (Irradiation is completed.) Wait for the LED(s) to cool down before restart. In case the trouble frequently occurs, contact your dealer or our branch or sales office.
	Even though display is normal, the LEDs are unlit.	Failure or disconnection of LED(s) The LED unit must be replaced. Contact your dealer or our branch or sales office. For the checking method of LEDs, see Chapter 6.
Light is excessively dim in the full mode, or curing performance is deteriorated.	The door indicator is lit upon start of irradiation in the full mode, and the set time is not counted down.	Temporary halt due to the open door Check the door for anything caught in a clearance. Completely close the door before use.
	Display is normal and all LEDs are lit.	Contamination or scratches of optical components Light output might be reduced due to contamination or scratches of the optical components. Clean inside the curing chamber and lens cover, or replace the lens cover, as needed (see Chapter 6).
	Even though display is normal, no LED is lit.	Failure or disconnection of LED(s) The LED unit must be replaced. Contact your dealer or our branch or sales office. For the checking method of LEDs, see Chapter 6.
The turntable does not rotate.	Interfered turntable	Remove the turntable and check it for intrusion of foreign material into the rear surface or the shaft.
The turntable does not rotate.	Failed turntable motor	The motor must be replaced. Contact your dealer or our branch or sales office.

Symptoms	Causes	Measures
An error is generated and no operation is possible (the error indicator is lit).	“E01” is displayed on the display.	Defective temperature sensor  The unit may have detected excessively low or high temperature, or the temperature sensor may have failed. Immediately stop using the unit and check it for any defect. Use the unit in a temperature range of 10 to 40°C. In case the trouble is persistent even after turning on the main switch under the normal temperature environment, contact your dealer or our branch or sales office.
	“E02” is displayed on the display.	Disconnection of LEDs in the upper row or suspected defect of temperature sensor  An error is being notified after irradiation is completed, as a temperature fault of LEDs in the upper row was detected during irradiation in the full mode. Check the upper row LEDs upon the occurrence of this error (see Chapter 6). The error is reset by turning on the main switch again.
	“E03” is displayed on the display.	Step mode switch remaining pressed  Foreign material such as dirt may be caught to cause the switch remaining pressed. Clean the switch (see Chapter 6). Turning off the switch releases the error.
	“E04” is displayed on the display.	Failure or disconnection of Violet LED in the upper LED unit  The error is reset by turning on the main switch again. If the same error occurs every time a Full mode / Step mode use, the LED unit must be replaced. Contact your dealer or our branch or sales office.
	“E05” is displayed on the display.	Failure or disconnection of Violet LED in the middle LED unit  The error is reset by turning on the main switch again. If the same error occurs every time a Full mode use, the LED unit must be replaced. Contact your dealer or our branch or sales office.
	“E06” is displayed on the display.	Failure or disconnection of Violet LED in the lower LED unit  The error is reset by turning on the main switch again. If the same error occurs every time a Full mode use, the LED unit must be replaced. Contact your dealer or our branch or sales office.

\*Since any symptoms other than those listed above probably indicate product's failure, contact your dealer or our branch or sales office.

 **Note**

- In case a LED unit fails, other LED units can still properly irradiate light. However, as the total amount of light is reduced, the curing time should be extended and curing status should be sufficiently monitored. The failed LED unit should be promptly repaired.

 **WARNING** 

- Never disassemble or modify the unit. Otherwise, heat generation, ignition, or rupture could be caused.

 **CAUTION** 

- In case the unit fails or damages, stop using the unit immediately, turn off the main switch, and pull out the power plug.
- Do not attempt to repair the failed unit by yourself but request an expert to do it after providing an appropriate indication thereon.

## 8. Warranty and Repair

We take all possible care for manufacturing and quality of our product. Still, if you experience any failure of the product during the warranty period, we repair it without charge within the scope of the warranty as described. Contact your dealer or our branch or sales office as needed.

We as a manufacturer are not responsible for any event such as damage caused by use incompatible with this unit or noncompliant with these Instructions for Use.

The warranty period of the unit is as follows. In addition, note that consumables (see the following list) are not subject to warranty.

**Warranty period : 1 year**

### Note

- It is expressly prohibited to open, disassemble or remodel the unit, or use the device in a manner not covered by these instructions, as this will be used below.

< List of consumables >

Description	Code
Curing stand holder 1 pcs	009139
Curing plate 1 pcs	009140
Curing stand 1 pcs	009141
Silicone post for anterior 1 pcs	009142
Silicone post for posterior 1 pcs	009143
Metal post 1 pcs	009144
Clip 1 pcs	009145
Lens cover 3 pcs	009146
Step mode switch cover 1 pcs	009147
Turntable 1 pcs	009148
Tray 1 pcs	009149
Curing stand set (Curing stand holder×2, Curing plate×1, Curing stand×1, Silicone post for anterior×4, Silicone post for posterior×3, Metal post×4, Clip×1)	009138

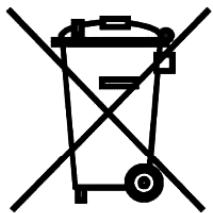
### Note

- Only use genuine parts and accessories. Using other than genuine parts and accessories will lead to the termination of the warranty, guarantee and liability of the manufacturer.

## 9. Disposal

Your product is marked with this symbol for an environmentally responsible recycling / disposal of your product. Do not discard it with normal waste.

Please be aware that this product is compliant with the European Directive 2012/19/EC (WEEE) and the laws applicable in your country for environmentally responsible recycling / disposal. Please ask GC Europe or your GC dealer when and where your product will have to be disposed of.



## 10. Specifications

Name / Model		Labolight DUO
Light source	Number of light source	Blue LED : 12 (4 x 3 Units) Violet LED : 3 (1 x 3 Units)
	Peak wavelength	Blue LED : 465nm-485nm Violet LED : 390nm-400nm
	Wavelength range	380nm – 510 nm (Typical)
Power supply	Input of the AC adapter	100-240V AC , 50-60 Hz , 1.2A MAX
	Output of the AC adapter	24V DC , 3.75A
	Input of the main body	24V DC (+/- 5%) , 60VA
Dimensions	Door closed	Width 159mm x Depth 290mm x Height 297mm
	Door open	Width 159mm x Depth 307mm x Height 418mm
Weight	Body : 5.3 kg (without "Curing stand set") AC adapter : 0.4 kg Power cord : 0.2 kg	
Environmental conditions in use		For indoor use only
		Temperature : 10°C - 40°C
		Relative Humidity : 30%-75% RH
		Altitude up to 2000 m or Barometric pressure 700hPa-1060hPa
		Installation category (Overvoltage category) II
		Main supply voltage fluctuation +/- 10%
Environmental conditions at transport and storage		Pollution degree 2
		Temperature : -10°C - 50°C
		Relative Humidity : 30%-75% RH
		Altitude up to 2000 m or Barometric pressure 700hPa-1060hPa

\* Note that the specifications of the product are subject to change for improvement without prior notice.

**,'GC,'**

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