DENTAL LIGHT

INSTRUCTIONS FOR USE

Belmont

Dear Customers

Dear Customers
Thank you for purchasing our product.

This booklet explains how to use DENTAL LIGHT.
Before using DENTAL LIGHT, carefully read the operating instructions and make sure to use the product correctly.
Using the product without reading these instructions may lead to an accident.

This document describes the full version of the system. It may therefore cover components that are not included in the system you purchased.
The specification is subject to change without notice.

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1 General Information

1-1 Intended Use of the Product

This product is an active therapeutic device intended for the exclusive use for diagnoses, treatments and relative procedures of dentistry.
The product must be operated or handled by the qualified dentists or by dental staffs under the supervision of the dentist. Such dentists or dental staffs should instruct and/or assist the patients to approach to and leave from the product.
Patients should not be allowed to operate or handle the product unless he/she is so instructed.

1-2 Compliance with Regulation and Directive

This product complies with MDR (EU) 2017/745 and RoHS Directive 2011/65/EU.

1-3 How to Dispose of the Device

When disposing of this product and parts replaced, carefully take infection control measures, pay attention to physical hazards such as from sharps, and handle them properly in accordance with the relevant laws and regulations (including local ordinances).
In the EU area, EU Directive 2012/19/EU (Directive on Waste Electrical and Electronic Equipment [WEEE Directive]) applies to this product. Environment-conscious recycling/disposal is mandatory under this Directive.

1-4 Recomendation to user

A notice to the user and/or patient that any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

1-5 Symbols

	Switch (ON)		Switch (OFF)
	Direct current		Alternating current
	Protective earthing		Functional earthing
	Instruction to ground the product appropriately	CE	Compliance with MDR (EU) 2017/745, RoHS Directive 2011/65/EU
	Name and address of the manufacturer		Date of manufacture
	Separate collection of electrical and electronic equipment	EC REP	European Authorized Representative
SN	Serial number	REF	Catalog number
	Caution		General warning sign
	Flammable warning symbol		Generally prohibited activity
	Follow instructions for use		Instructions for mandatory actions in general
	Disassembly, repair or modification prohibited	MD	Medical Device
MODEL	Product name	R.V.	Rated voltage
R.I.	Rated input	JPN	Product of Japan
CLASS I	Classification		

1-6 Technical Description

The following are explained in the documents listed below:

Item	Document
How to install this product	Installation instructions
Wiring	Installation instructions

2 Safety Consideration

2-1 Risk Level Interpretation

Precautions before use

Make sure to carefully read the Safety Precautions and Operating Precautions and use the product correctly.

These precautions are intended to ensure the safe use of the product and prevent harm or damage to users or other people. According to the magnitude of harm and damage and the degree of urgency, an incident that may be caused by misuse of the product is classified into one of the following categories: CONTRAINDICATION, WARNING, and CAUTION.
All of these categories are important for safety. Always follow the instructions provided.
We assume no responsibility for any accident due to failure to follow the Safety Precautions or Operating Precautions even in the event of harm or damage to users or other persons.
In such case, users or other persons who use the product without observing the Safety Precautions and Operating Precautions are responsible for any harm or damage incurred.
The graphical symbols are explained in detail below.
Once you have fully understood this explanation, read the text.

Classification by degree of harm or damage and urgency

CONTRAINDICATION

Use of the product without regard to this indication will create a hazardous condition that may result in death or serious injury.

WARNING

Improper handling of the product without regard to this indication will create a hazardous condition that may result in death or serious injury.

CAUTION

Improper handling of the product without regard to this indication will create a potentially hazardous condition that may result in moderate or slight injury or property damage.

The following graphical symbols are used to explain your responsibilities for using the product safely:

Graphical symbols for prohibited activity

Generally prohibited activity

Disassembly, repair or modification prohibited

Graphical symbol for mandatory instructions

Instructions for mandatory actions in general

2-2 Safety Precautions

CONTRAINDICATION

Installing or transferring the product

Precautions regarding installation
Do not install the product near electromagnetic sources such as communication facilities or elevators.
Malfunction of this product may occur in the presence of electromagnetic interference waves.

Use and maintenance of the product

Do not use the product for purposes other than dental diagnosis and treatment.
Only dentists or dental professionals may use this product.

Do not use the equipment in an explosive atmosphere (e.g., in the presence of inflammable gases).
Improper use in such an atmosphere may cause injury or fire.

Use with caution in the presence of electromagnetic waves.
Do not use equipment generating electromagnetic waves, such as mobile phones, around this product.
Malfunction of the product may occur.

Be sure to turn off the main switch (or the main switch of the unit) when HF surgical equipment is in use.
Be sure to turn off the main switch (or the main switch of the unit) when HF surgical equipment is in use because the noise generated from HF surgical equipment may cause incorrect operation of this product.

Never disassemble, repair or modify the product.
Individuals other than your local authorized Belmont dealer should not disassemble or repair the product.
This could lead to an accident, failure, electric shock, or fire.
Never modify the product as it is extremely dangerous.

⚠ WARNING

Installing or transferring the product

Precautions for installation
Ask your local authorized Belmont dealer to install the product.

Be sure to ground the product securely. (Ask a professional to ground the product.)
Failure or electric leak may result in electric shock.

Use and maintenance of the product

Do not directly expose human eyes to LED light.
Exposure may hurt human eyes.

Do not apply excessive load to the arm part, or handle it violently.
Otherwise, the arm part may be damaged, causing injury.

Do not wash the product with water.
This may cause failure or electric shock.

Use and maintenance of the product

Pay attention to patients and children.
Keep your eyes on the patient when this product is in use. Patients (especially children) may touch the control switch or system inadvertently, leading to an accident due to incorrect operation of the product.

Pay close attention to a patient who has a cardiac pace-maker or defibrillator implanted.
If any abnormality occurs, immediately turn off the main switch (or the main switch of the unit) and discontinue use of the product. The product may affect the function of the pacemaker or defibrillator, leading to an accident.

Prohibition of using this equipment adjacent to or stacked with other electronic equipment
Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary,this equipment and the other equipment should be observed to verify that they are operating normally.

Prohibition of placing portable RF communications equip-ment adjacent to this product
Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm(12 inches) to any part of 900 DENTAL LIGHT/ EURUS LIGHT/300 LED DENTAL LIGHT, including cables specified by the manufacturer. Otherwise,degradation of the performance of this equipment could result.

Clean the product thoroughly.
Poor cleaning may cause bacteria to grow, posing a health risk.

Use and maintenance of the product

⚠ WARNING

Be sure to conduct maintenance.
Use of the product without maintenance may cause injury or damage to peripheral devices.

Discontinue use of the product if it is broken.
In the case of a broken product, immediately discontinue use and turn off the main switch (or the main switch of the unit). Then, ask your local authorized Belmont dealer to repair the product.

Turn off the main switch (or the main switch of the unit) during cleaning.
Failure to follow this instruction may cause electric shock or ignition. The product may also move unexpectedly, causing injury.

Action taken for power failure
To prevent unexpected operation of the product after recovery from power failure, turn off the main switch (or the main switch of the unit).

Be sure to turn off the breaker for devices when the product is not used for a long period of time.
Make sure to turn off the breaker for devices in a clinic when the product is not used for a long time for reasons such as closing time and non-consultation day.
If the breaker is not turned off, a fire may be caused by a leakage of electricity due to insulation deterioration.

⚠ CAUTION

During use or care

Do not hit or rub the product.

This may cause damage to the cover or operational failure. Repeated impact to the light head may severely reduce the service life of the LED.

Confirm the normal operation of each part before use.

Always inspect the product for abnormal findings such as loose components, backlash, tilting, vibration, sound, abnormal temperature, or bad odors.
If you feel something is wrong, immediately discontinue use of the product and turn off the main switch. Then, contact your local authorized Belmont dealer.

Confirm that the lens cover is properly attached before use.

Otherwise, the lens cover may come off and fall onto the patient, causing injury.

Read the the Instructions for use.

Before use, make sure to carefully read the instructions for use and use the device correctly.

Be sure to operate switches manually.

Failure to operate the switches by hand may cause damage or malfunction.

Handling of LED light source

The LED light source used in this product emits intense light, which may cause hypersensitive physical reaction, resulting in dizziness, nausea, etc. Take precautions not to expose human eyes to the intense light for a prolonged time period, by turning down the illuminance or turning off the light when unnecessary.

Precautions for use of a patient mirror

Do not apply strong impact to the patient mirror, such as by hitting it with a hard object. Otherwise, the patient mirror may be damaged, causing injury.

Do not remove the mirror frame that holds the mirror. Otherwise, the mirror may fall, causing damage or injury.

Immediately wipe off any drug solutions or water adhered to the product.

Adherence of drug solutions or water to the product may cause operational failure or electrical leak. If drug solutions or water are adhered, immediately turn off the main switch (or the main switch of the unit) and wipe them off with a dry, soft cloth.

⚠ CAUTION

During use or care

Do not greas and cleaning of grease leak
Do not apply grease (when you hear noise from arm section).
Newly applied grease may cause chemical reaction with factory applied grease. This may cause oil (grease) leak.
If grease leaks from arm section, please wipe grease off.

Turn off the main switch (or the main switch of the unit) at the end of day or during a recess.
Malfunction due to contact with the product will cause damage or injury.

2-3 EMC Information

This product complies with EMC Standard EN60601-1-2:2015.

1. Precautions regarding EMC and compliance with accompanying documents

Medical electrical equipment requires special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this booklet.

2. Effects of RF communication devices

Portable and mobile RF communication devices can affect medical electrical equipment.

3. Installation exclusion environment

Hospitals except for near active HF SURGICAL EQUIPMENT and the RF shielded room of an ME SYSTEM for magnetic resonance imaging,where the intensity of EM DISTURBANCES is high.

4. Electromagnetic emission declaration

Guidance and manufacturer's declaration—electromagnetic emissions		
This product is intended for use in the electromagnetic environment specified below. The customer or user of this product should ensure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment—guidance
RF emissions CISPR 11	Group 1	This product only uses RF energy for its internal functions. Therefore, its RF emissions are very low and are not likely to cause any interference with nearby electronic equipment.
RF emissions CISPR 11	Class B	This product 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	Class A	
Voltage fluctuations/ Flicker emissions IEC 61000-3-3	Complies	

⚠ WARNING

Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary,this equipment and the other equipment should be observed to verify that they are operating normally.

5. Electromagnetic immunity declaration 1

Guidance and manufacturer's declaration—electromagnetic immunity			
This product is intended for use in the electromagnetic environment specified below.The customer or user of this product should ensure 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	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Flooring should be wood, concrete, or ceramic tiles. If the floor is covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	The mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV common mode	The mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% UT ; 0.5 cycles 0°,45°,90°,135°, 180°, 225°, 270° and 315° 0% UT ; 1cycle and 70% UT ; 25/30 cycles at 0°, single phase 0%UT ; 250/300 cycles	0% UT ; 0.5 cycles 0°,45°,90°,135°, 180°, 225°, 270° and 315° 0% UT ; 1cycle and 70% UT ; 25/30 cycles at 0°, single phase 0%UT ; 250/300 cycles	The mains power quality should be that of a typical commercial or hospital environment. If the user of this product requires continued operation during mains power interruptions, it is recommended that this product be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30A/m	30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note U_T is the AC mains voltage prior to the application of the test level.			

6. Electromagnetic immunity declaration 2

Guidance and manufacturer's declaration—electromagnetic immunity			
This product is intended for use in the electromagnetic environment specified below.The customer or user of this product should ensure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment —guidance
Conducted RF IEC 61000-4-6	3V 0.15MHz～ 80MHz 6V 0.15MHz～ 80MHz in ISM and amateur radio bands	3V 0.15MHz～ 80MHz 6V 0.15MHz～ 80MHz in ISM and amateur radio bands	Warning: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of 900 DENTAL LIGHT/EURUS LIGHT/300 LED DENTAL LIGHT, including cables specified by the manufacturer. Otherwise,degradation of the performance of this equipment could result.
Radiated RF IEC 61000-4-3	3V/m 80MHz～ 2.7GHz 80% AM (1 kHz)	3V/m 80MHz～ 2.7GHz 80% AM (1 kHz)	
Near electromagnetic field caused by RF wireless communication devices IEC61000-4-3	See the next table	See the next table	

⚠ WARNING

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm(12 inches) to any part of 900 DENTAL LIGHT/EURUS LIGHT/300 LED DENTAL LIGHT, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Near electromagnetic field caused by RF wireless communication devices

Test frequency (MHz)	Modulation	IEC 60601 test level	IEC 60601 compliance level
385	Pulse modulation [a)] 18Hz	27V/m	27V/m
450	Frequency modulation ±5kHz shift 1kHz sine wave	28V/m	28V/m
710 745 780	Pulse modulation [a)] 217Hz	9V/m	9V/m
810 870 930	Pulse modulation [a)] 18Hz	28V/m	28V/m
1720 1845 1970	Pulse modulation [a)] 217Hz	28V/m	28V/m
2450	Pulse modulation [a)] 217Hz	28V/m	28V/m
5240 5500 5785	Pulse modulation [a)] 217Hz	9V/m	9V/m
Note a) The carrier is modulated by a square wave with a 50% duty cycle.			

2-4 Devices Connectable to the Product

Use this product in combination with the unit marked with a circle.

	Devices connectable					
TYPE	SP-CLEO II	tbCOMPASS	VOYAGER III	CLESTA II	CLESTA eIII	EURUS
900 DENTAL LIGHT	○	○	○	○		○
EURUS LIGHT				○	○	○
300 LED DENTAL LIGHT		○	○	○	○	

3 Precautions for Use

3-1 Operating Precautions

Immediately wipe off any drug solutions adhered to this product.

Otherwise, they may cause deterioration or discoloration.

Do not apply heat to this product.

This may cause deterioration or discoloration.

Discoloration of resin

Resin materials are used in external components of this product. Carefully selected materials are used; however, discoloration may occur for reasons such as natural deterioration or the adherence of drug solutions.
To ensure use of the product for as long as possible, immediately wipe off any drug solutions adhered and avoid sunlight.

LED lens

A random pattern, which may appear on the back of the lens when turning on the light, is not defect. It does not affect the product functions like illuminance.

Avoid the use of gloves in thick colors.

The sensor of the touchless switch may be slow to respond to dark colors. Avoid the use of gloves in thick colors.

4 Specifications and Operation

4-1 900 DENTAL LIGHT

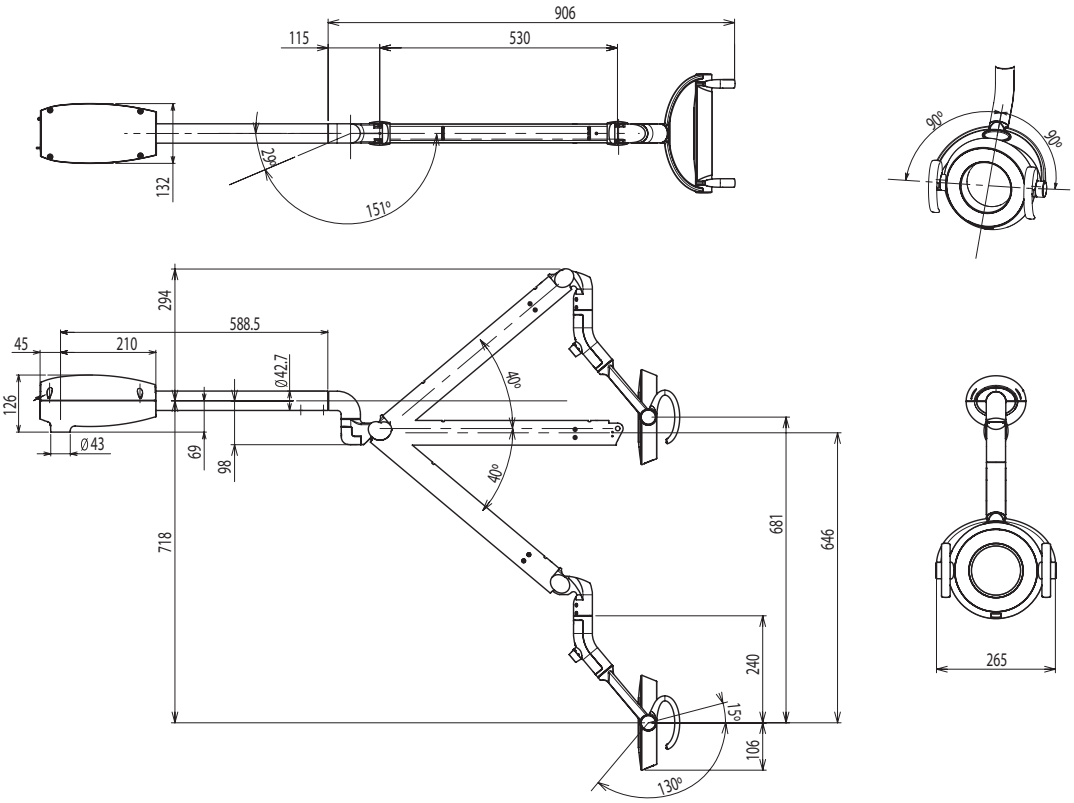
4-1-1 Technical Data

Model	AL-901R-EU AL-902*-EU-* AL-905R-EU-* AL-920S-EU* AL-921W-EU (* represents single or multiple strings or numbers.)
Classification by type of protection against electric shock	Class I Equipment
Illuminance pattern	Pattern dimensions (length x width): 85 x 155 mm
Environment for use	Temperature: 0-40ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Environment for transport and storage	Temperature: -20-70ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Adaptability to high oxygen-level environment	Not for use in a high oxygen-level environment
Rated voltage	TYPE 901/902/905 AC 230V 50/60Hz TYPE 920/921 DC 20V
Rated input	TYPE 901/902/905 0.26 A TYPE 920/921 1.2 A
Fuse	TYPE 901/902/905 0.8A / 250V (Interrupting capacity 35A / 250VAC) Operating speed:Time lag Size:6.4 x 31.8mm
Weight	TYPE 901 8.4 kg TYPE 902 (pole length) 8.6 kg (340mm) 8.8 kg (440mm) 9.4 kg (680mm) 10.0 kg (940mm) 10.2 kg (1000mm) 11.4 kg (1500mm) TYPE 905 (pole length) 20.8 kg (380mm) 21.0 kg (480mm) 21.5 kg (680mm) 22.3 kg (1000mm) TYPE 920 4.6 kg TYPE 921 4.6 kg
Light source	10 LED lamps
Optical performance	Standard irradiation distance: 650 mm In treatment mode Central illuminance: 4,000–35,500 lx Correlated color temperature: 5,000 K In Composite Safe mode Central illuminance: 5,500 lx Correlated color temperature: 5,000 K

Refer to the rating plate for the capacity of power supply.

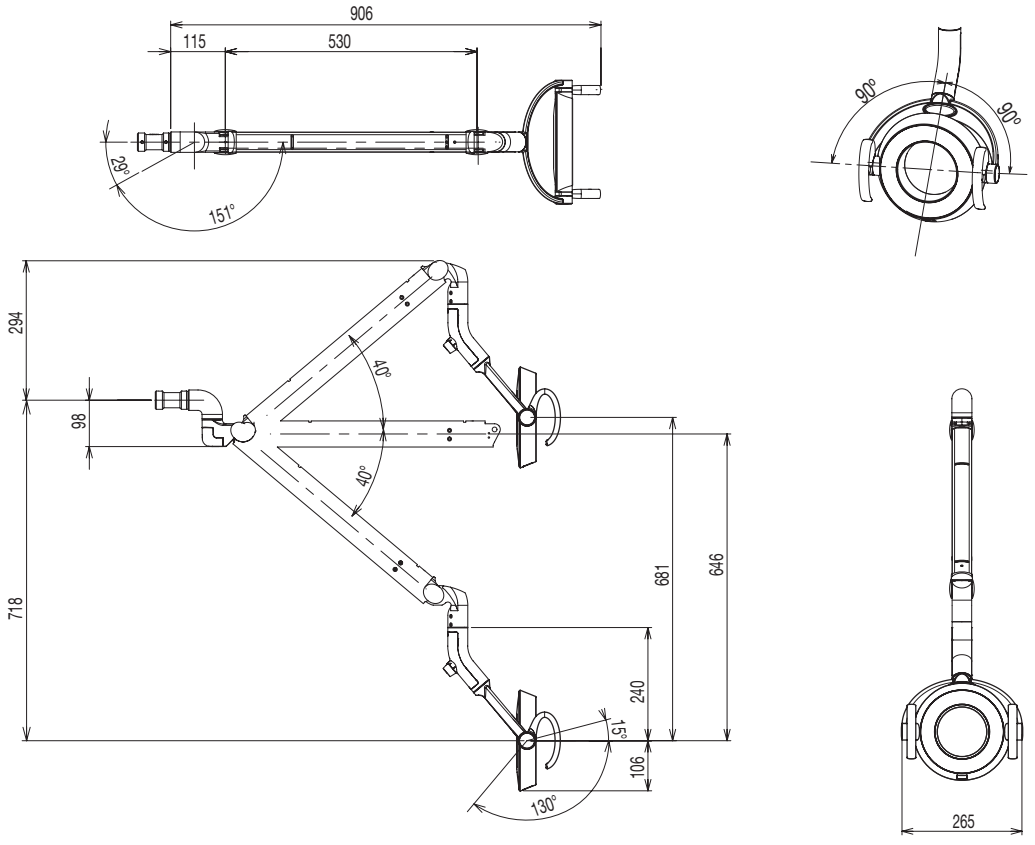
POLE MOUNT TYPE (Type 901)

Dimensions (mm)



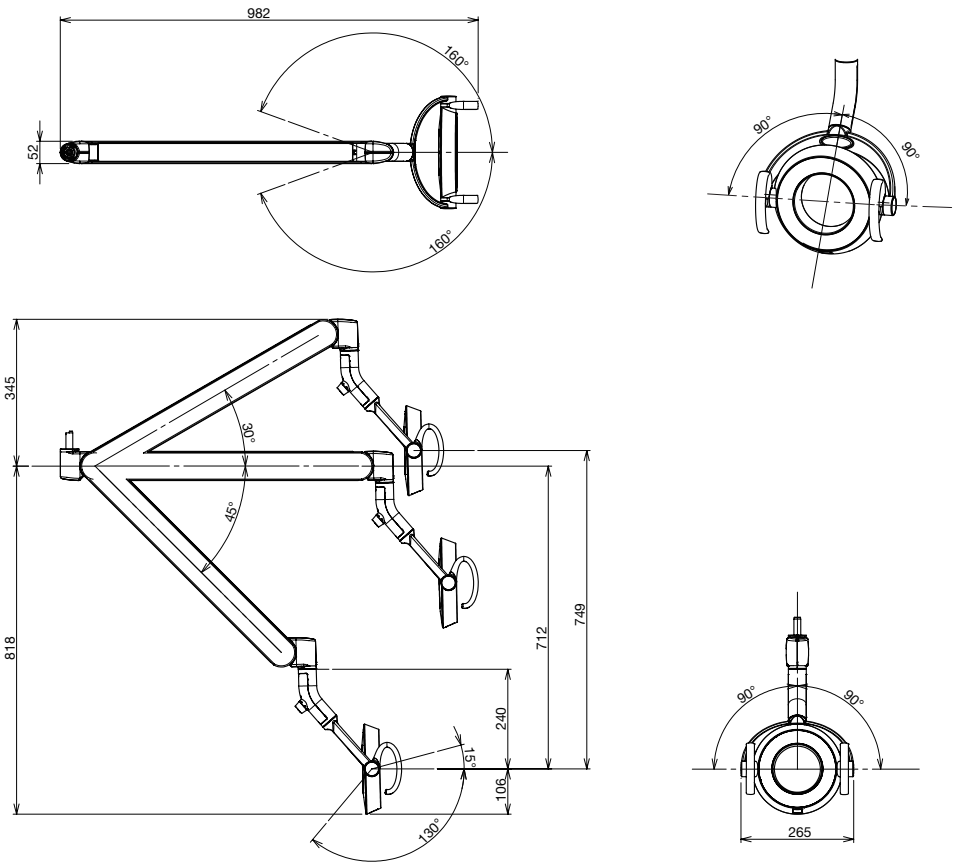
UNIT MOUNT TYPE (Type 920)

Dimensions (mm)



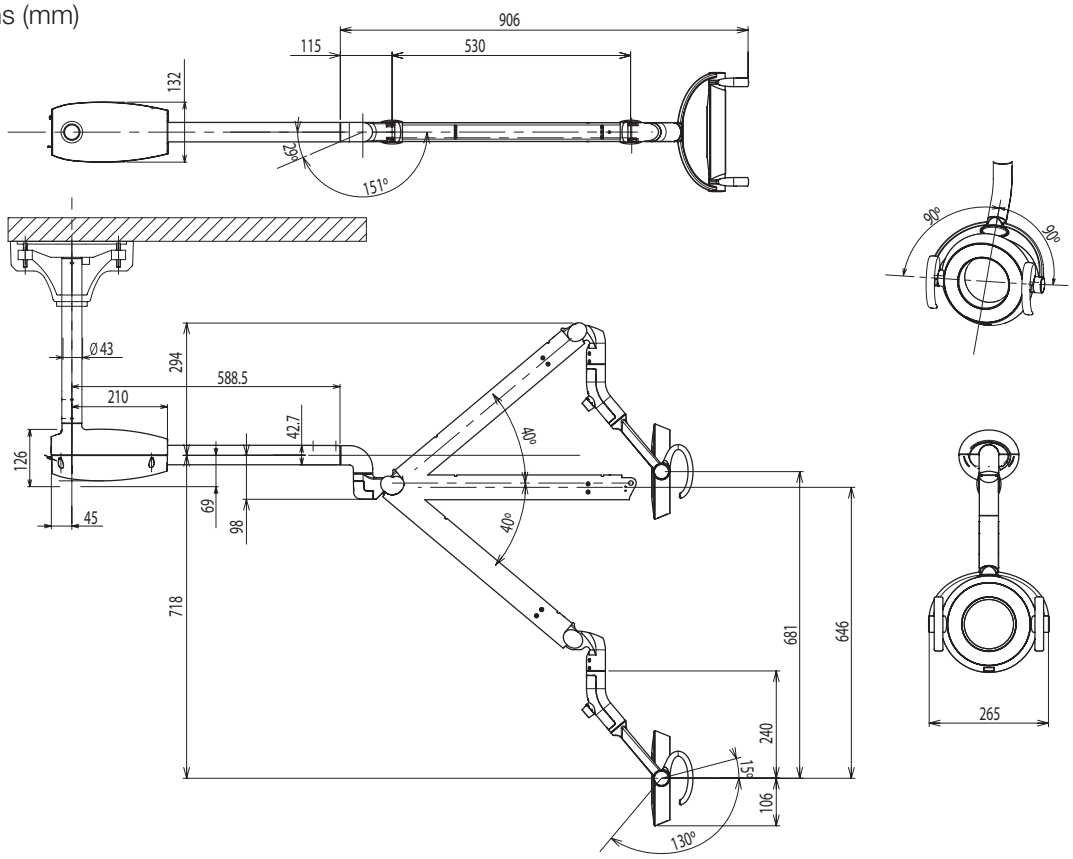
EURUS MOUNT TYPE (Type 921)

Dimensions (mm)



CEILING MOUNT TYPE (Type 902)

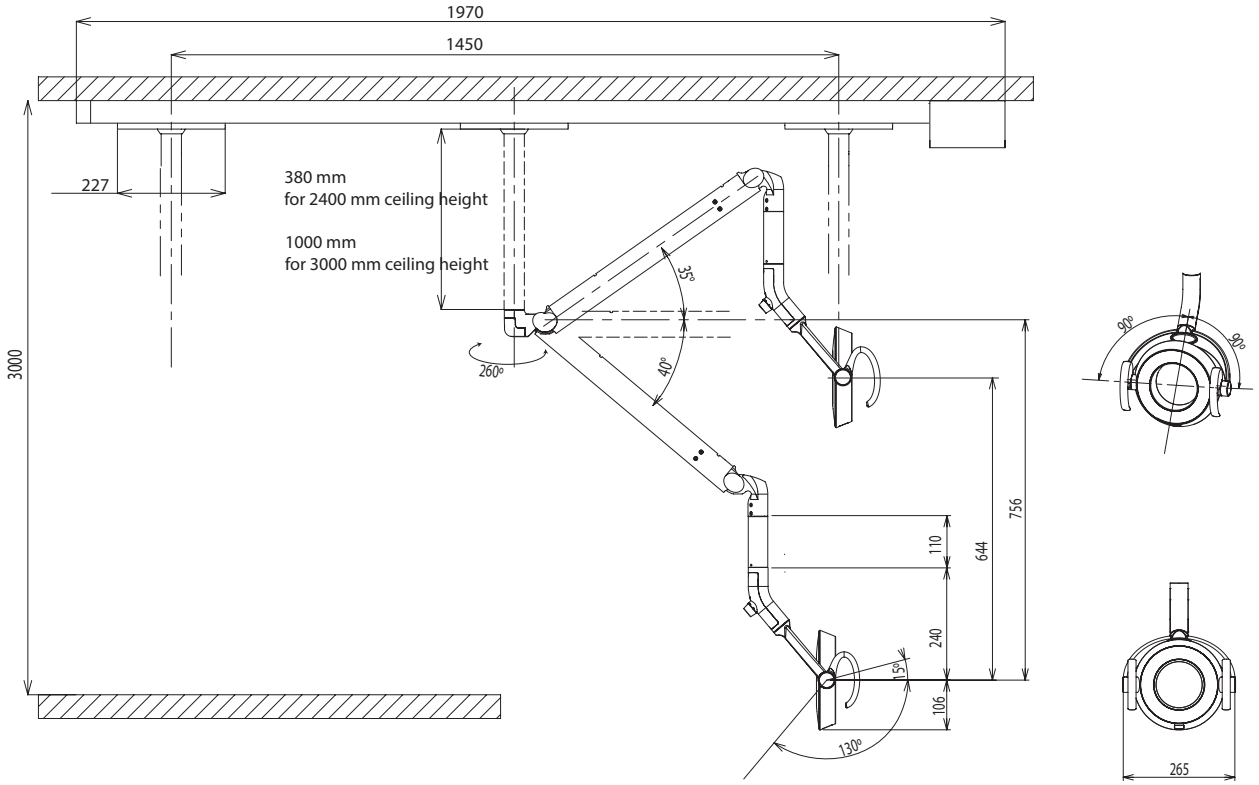
Dimensions (mm)



4 Specifications and Operation

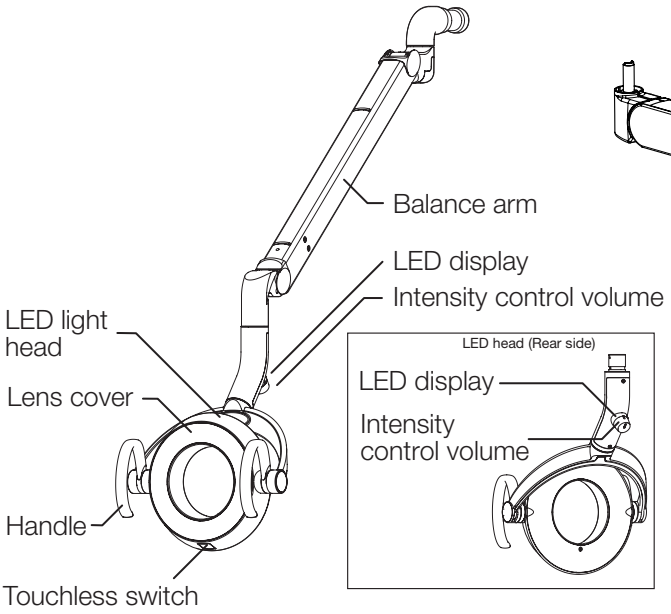
TRACK MOUNT LIGHT (Type 905)

Dimensions (mm)

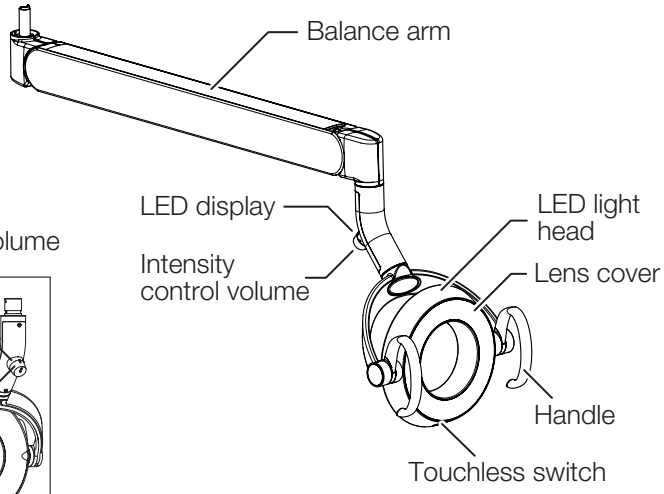


4-1-2 Major Components

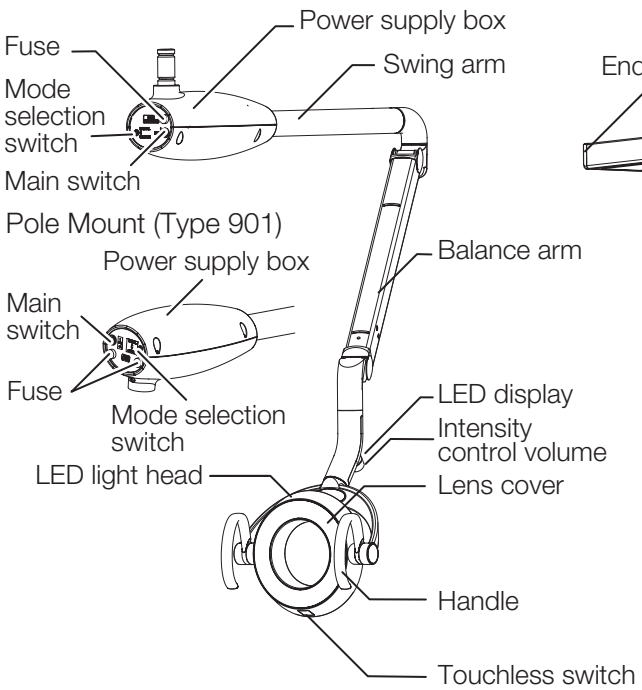
Unit Mount (Type 920)



EURUS Mount (Type 921)

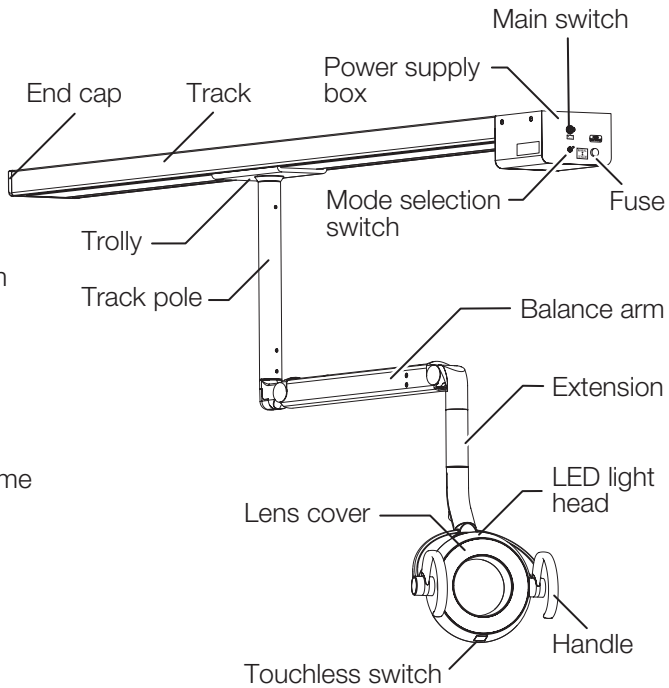


Ceiling Mount (Type 902)



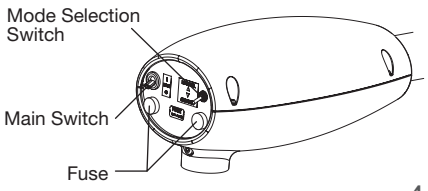
Pole Mount (Type 901)

Track Mount (Type 905)



4-1-3 Power Supply

Pole Mount Type



Main Switch

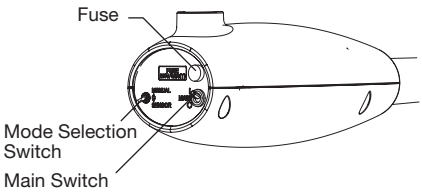
Turn on the main switch to the side marked with ' I '

Power on : ' I ' Mark

Power off : ' O ' Mark

4-1-4 Description of Functions

Ceiling Type



Mode Selection Switch

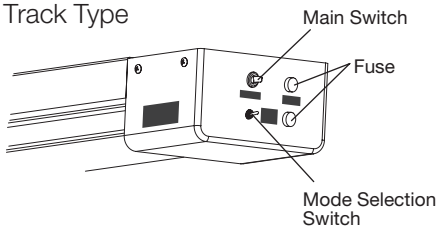
Switching modes can be changed by this switch.

This switch is located on power supply box.

Sensor : Touchless ON/OFF and composite mode

Manual : Manual Mode (ON only)

Track Type



Touchless Switch

The light can be turned on/off with a touchless switch. The intensities are regular operation mode and composite mode.

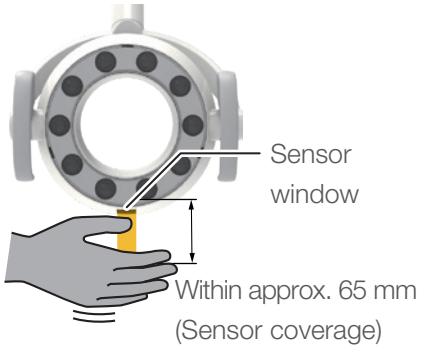
⚠ WARNING

Be sure to turn off the main switch upon completion of work or during breaks. This prevents incorrect operation due to accidental and associated hazards.

Be sure to turn off breakers for equipment in the clinic when this product will not be used for a long period of time (following the completion of work, during the suspension of business, etc.). Insulation degradation may cause electrical fire.

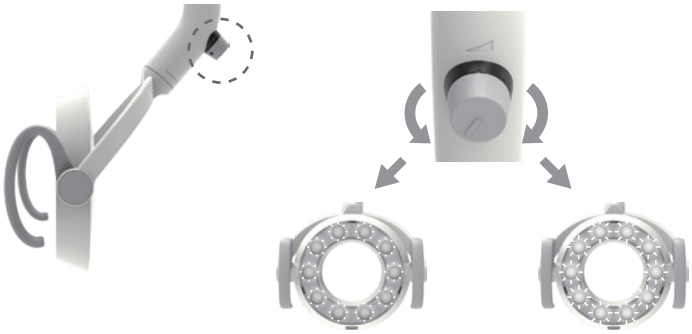
4-1-5 Operating Methods

(1) Method for turning the light on/off

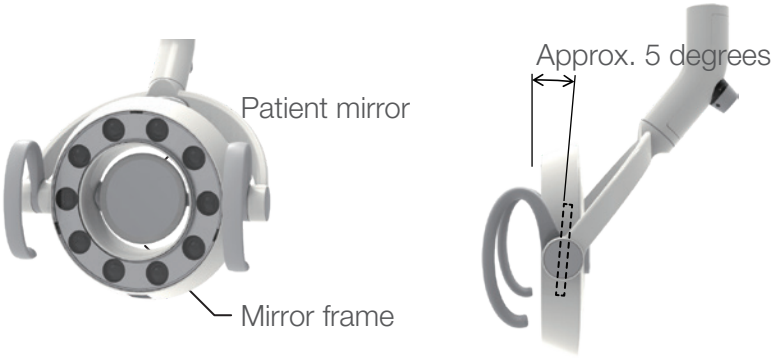


(2) Method for switching modes

(3) Method for adjusting illuminance in the treatment mode



4-1-6 How to Use the Patient Mirror



⚠ WARNING

Do not wash the product with water. Otherwise, failure or electric shock may result.

⚠ CAUTION

Do not apply strong impact to the patient mirror, such as hitting it with a hard object. Otherwise, the patient mirror may be damaged, causing injury.

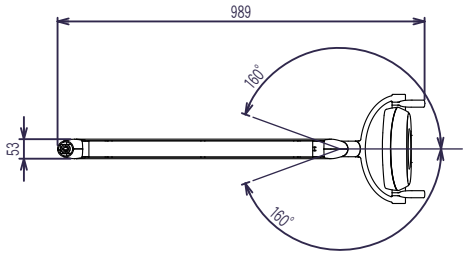
Do not remove the mirror frame that holds the mirror. Otherwise, the mirror may fall, causing damage or injury.

Do not hit or rub the product hard.
This may cause damage to the cover or operational failure. Repeated impact to the light head may severely reduce the service life of the LED.

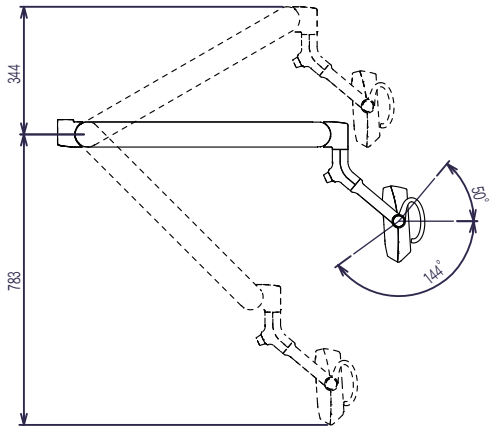
4-2 EURUS LIGHT

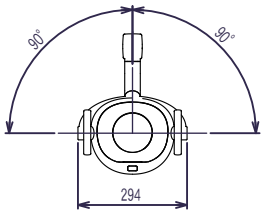
4-2-1 Technical Data

Model	AL-D100W / AL-D109W
Classification by type of protection against electric shock	Class I Equipment
Illuminance pattern	Pattern dimensions (length x width): 85 x 155 mm
Environment for use	Temperature: 0-40ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Environment for transport and storage	Temperature: -20-70ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Adaptability to high oxygen-level environment	Not for use in a high oxygen-level environment
Rated voltage	DC 19 V
Rated input	1.3 A
Operation mode	Continuous operation
Weight	4.2 kg
Light source	6 LED lamps
Optical performance	Standard irradiation distance: 650 mm In treatment mode Central illuminance: 3,000–28,000 lx Correlated color temperature: 5,000 K In Composite Safe mode (Compliant with ISO 9680: 2014 5.2.10) Central illuminance: 9,000 lx Correlated color temperature: 2,700 K



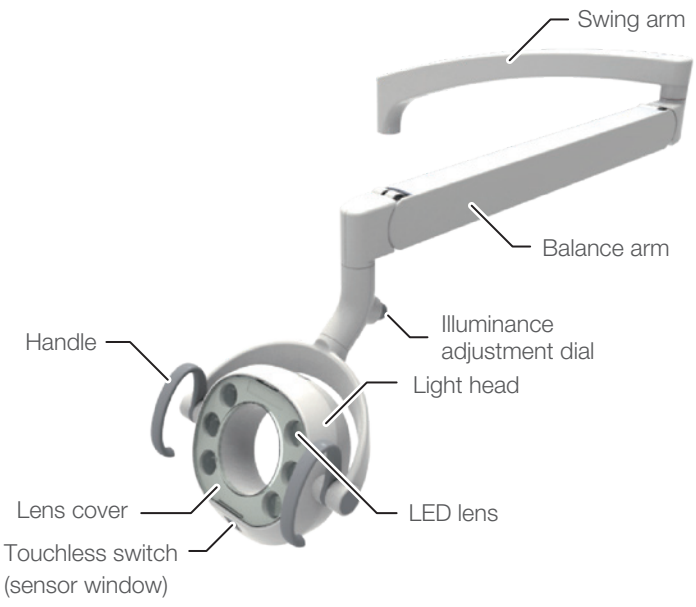
Unit：mm (tolerance in dimensions: ±10%)
* The dimensions and specifications are subject to change without notice.





4-2-2 Major Components

AL-D100W



AL-D109W

4-2-3 Power Supply

Turn on the main switch of the unit to turn on the light, and operate the touchless switch in the light head and the illuminance adjustment dial.
Turn off the main switch of the unit to turn off the light. For the procedure to switch on the unit, see the instruction for use of the unit.

4-2-4 Description of Functions

This product has a treatment mode and a Composite Safe mode.

Treatment mode :

Composite Safe mode :

This product is equipped with a touchless switch, enabling users to turn the light on and off and switch modes without touching the product. The touchless switch can be manually operated within the sensor coverage (within approx. 65 mm from the surface of the sensor window and within the width of the sensor window).

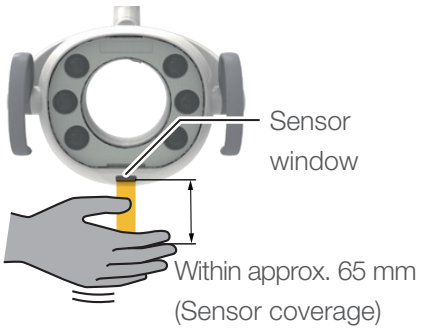
⚠WARNING

Be sure to turn off the main switch upon completion of work or during breaks. This prevents incorrect operation due to accidental and associated hazards.

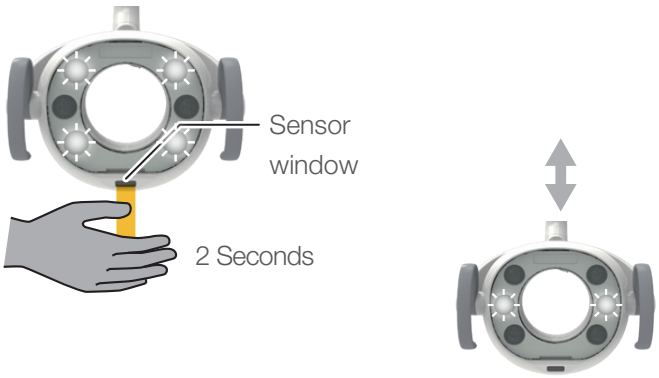
Be sure to turn off breakers for equipment in the clinic when this product will not be used for a long period of time (following the completion of work, during the suspension of business, etc.). Insulation degradation may cause electrical fire.

4-2-5 Operating Methods

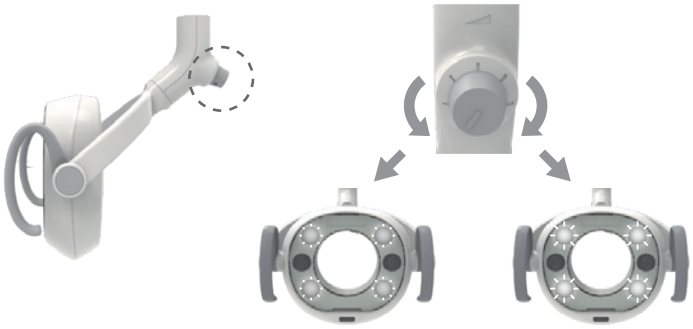
(1) Method for turning the light on/off



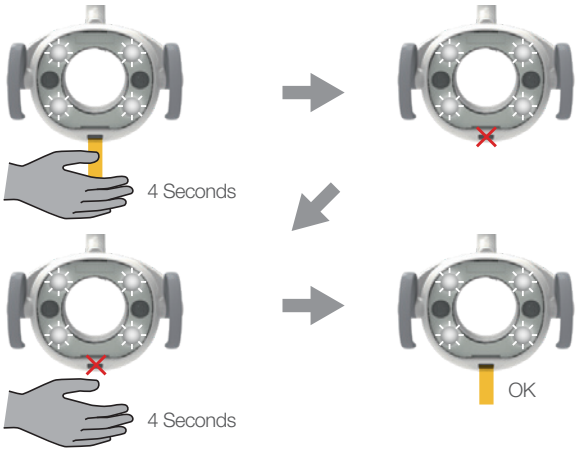
(2) Method for switching modes



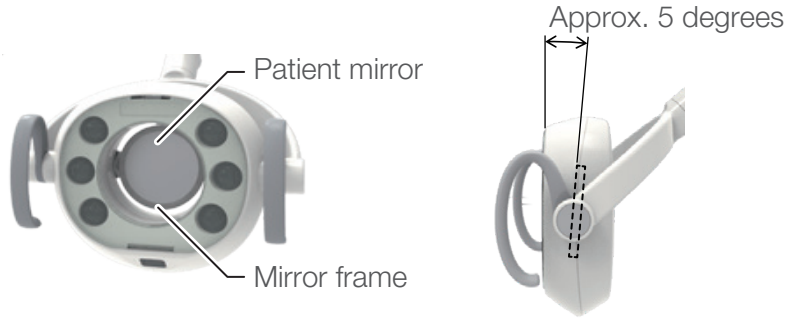
(3) Method for adjusting illuminance in the treatment mode



(4) No-sensor mode (AL-D109W)



4-2-6 How to Use the Patient Mirror



⚠ CAUTION

Do not apply strong impact to the patient mirror, such as hitting it with a hard object. Otherwise, the patient mirror may be damaged, causing injury.

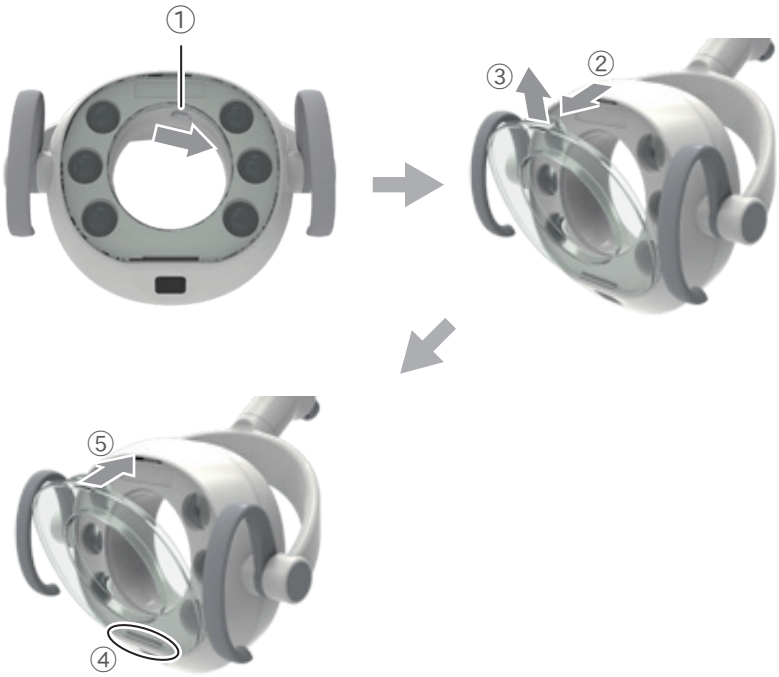
Do not remove the mirror frame that holds the mirror. Otherwise, the mirror may fall, causing damage or injury.

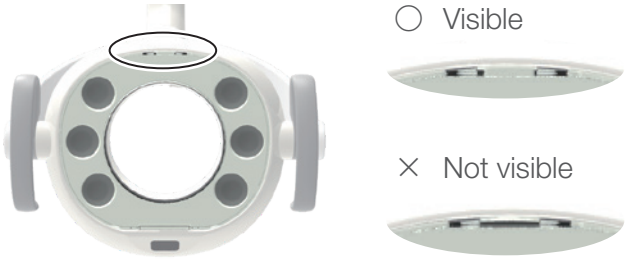
⚠ WARNING

Turn off the main switch of the unit before care. Otherwise, electric shock or combustion may result.

Do not wash the product with water. Otherwise, failure or electric shock may result.

Perform sufficient cleaning. Insufficient cleaning may cause bacteria to grow and pose a health risk.





⚠ CAUTION

Confirm that the lens cover is properly attached before use. Otherwise, the lens cover may come off and fall onto the patient, causing injury.

Do not hit or rub the product hard.
This may cause damage to the cover or operational failure. Repeated impact to the light head may severely reduce the service life of the LED.

4-3 300 LED DENTAL LIGHT

4-3-1 Technical Data

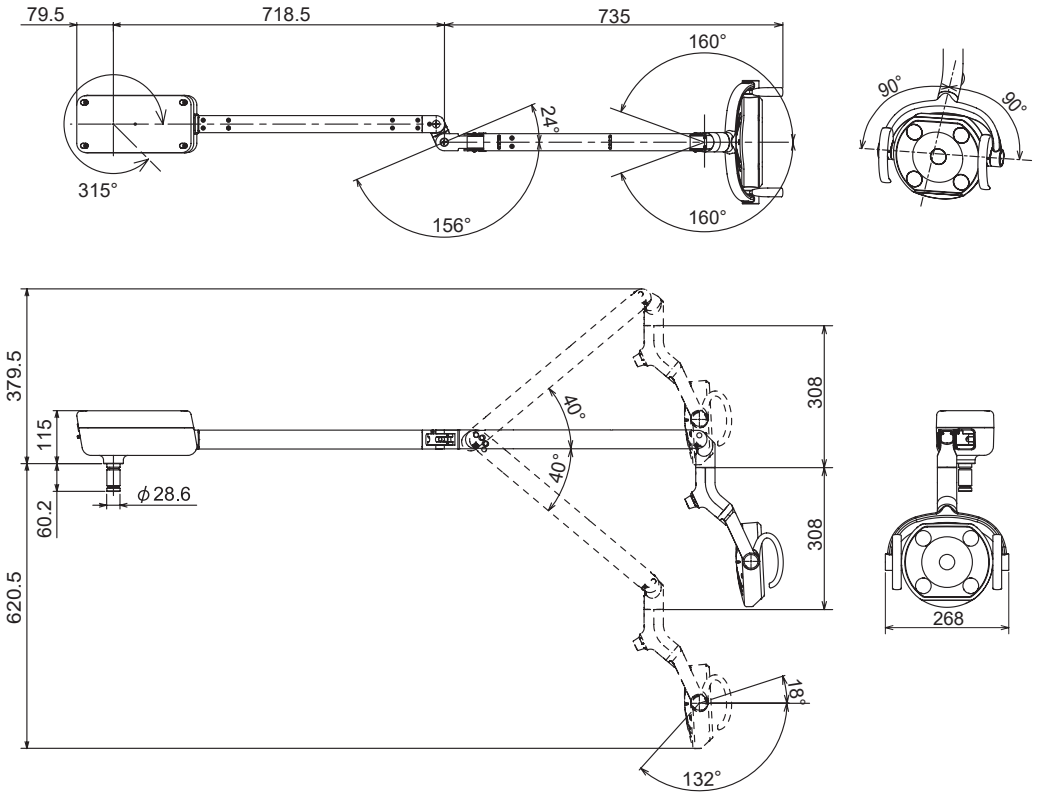
Model	AL-301R-EU* AL-302R-EU-* AL-305R-EU-* AL-320S-* AL-320PAS* AL-320MR-EUN (* represents single or multiple strings or numbers.)
Classification by type of protection against electric shock	Class I Equipment
Illuminance pattern	Pattern dimensions (length x width): 85 x 155 mm
Environment for use	Temperature: 0-40ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Environment for transport and storage	Temperature: -20-70ºC Humidity: 10-95% Atmospheric pressure: 700-1,060 hPa
Adaptability to high oxygen-level environment	Not for use in a high oxygen-level environment
Rated voltage	TYPE 301/302/305 AC 230V 50/60Hz TYPE 302S/320M DC 19V
Rated input	TYPE 301/302/305 0.16 A TYPE 302S/320M 0.72 A
Fuse	TYPE 301/302/305 0.8A / 250V (Interrupting capacity 35A / 250VAC) Operating speed:Time lag Size:6.4 x 31.8mm
Weight	TYPE 301 6.5 kg TYPE 302 (pole length) 11.0 kg (340mm) 11.2 kg (440mm) 11.8 kg (680mm) TYPE 305 (pole length) 15.0 kg (380mm) 15.2 kg (480mm) 15.7 kg (680mm) 16.5 kg (1000mm) TYPE 320S/320M 3.5 kg
Light source	5 LED lamps
Optical performance	Standard irradiation distance: 650 mm In treatment mode Central illuminance: 3,100–28,000 lx Correlated color temperature: 5,000 K In Composite Safe mode Central illuminance: 4,300 lx Correlated color temperature: 5,000 K

Refer to the rating plate for the capacity of power supply.

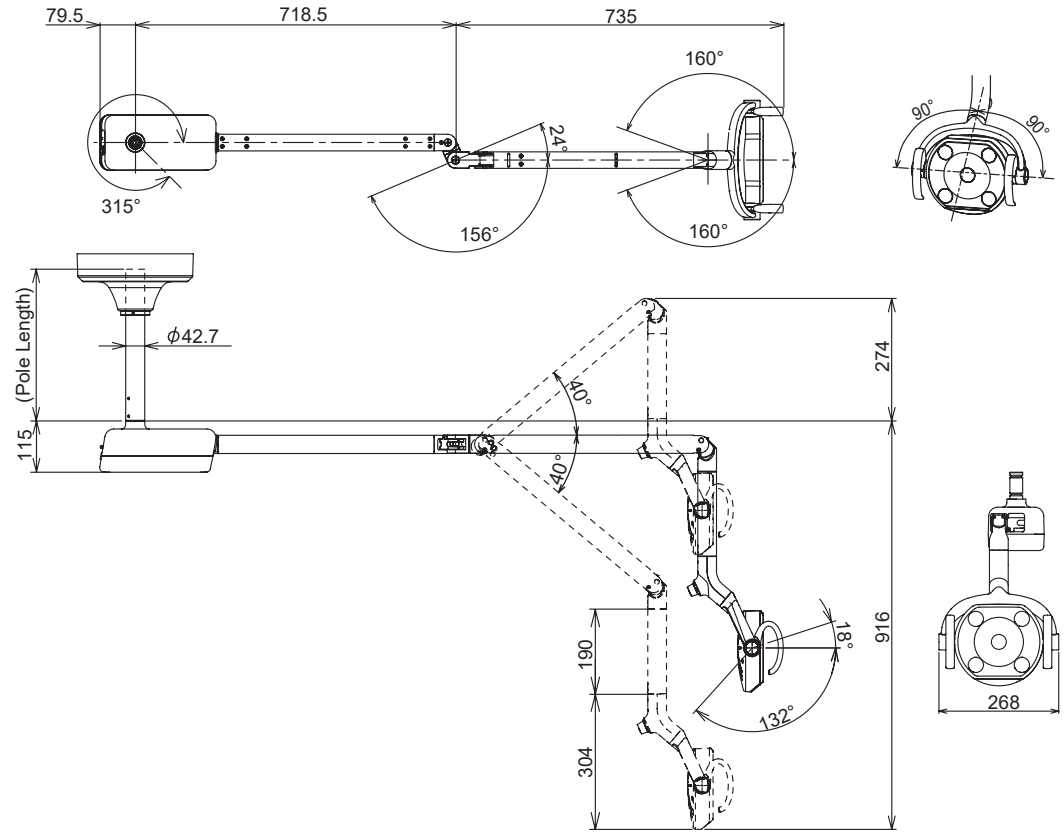
Dimensions

*Values are the standard values. (Unit: mm)
Dimensional tolerance: ±10%

TYPE 301



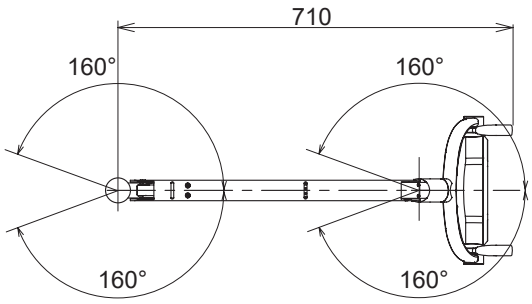
TYPE 302

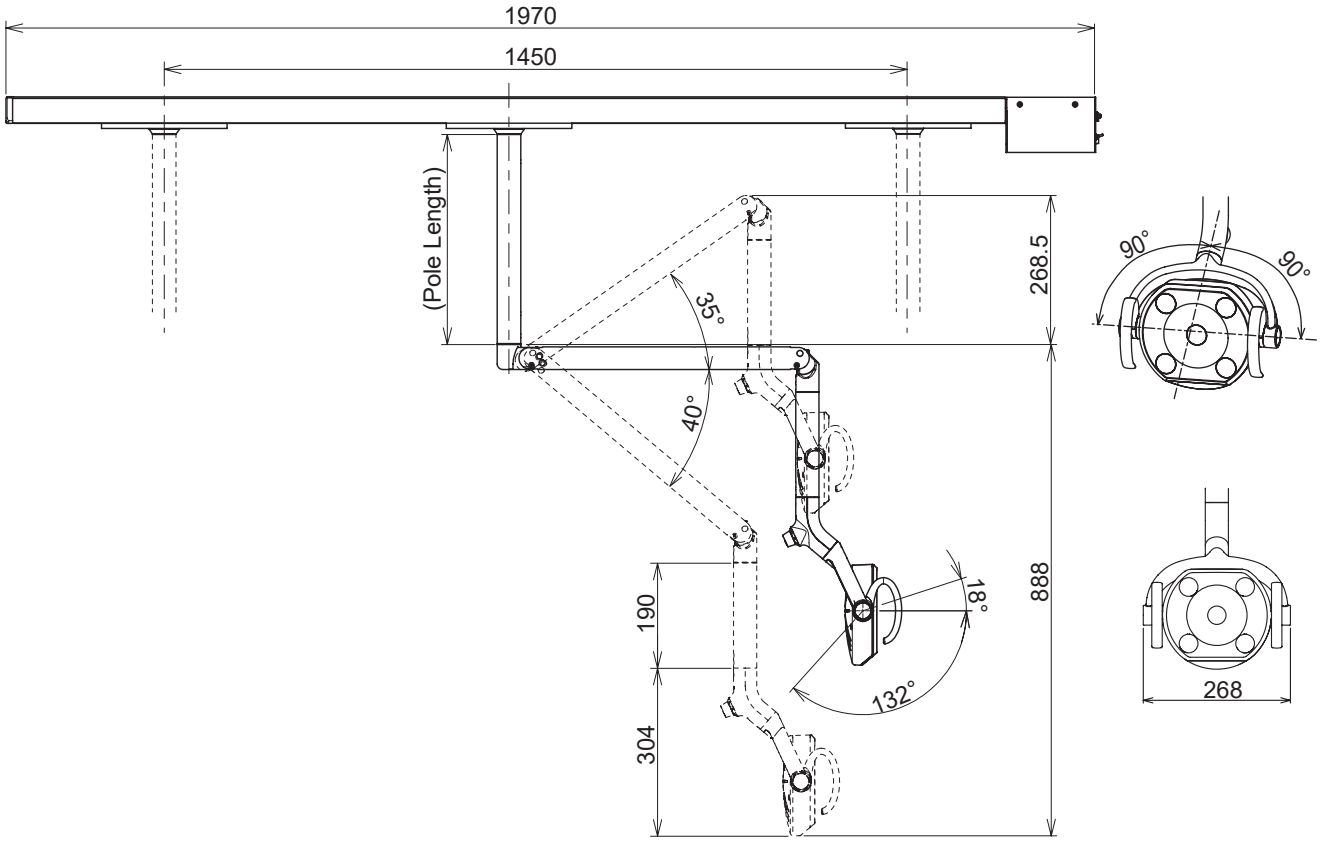


Dimensions

*Values are the standard values. (Unit: mm)
Dimensional tolerance: ±10%

TYPE 305



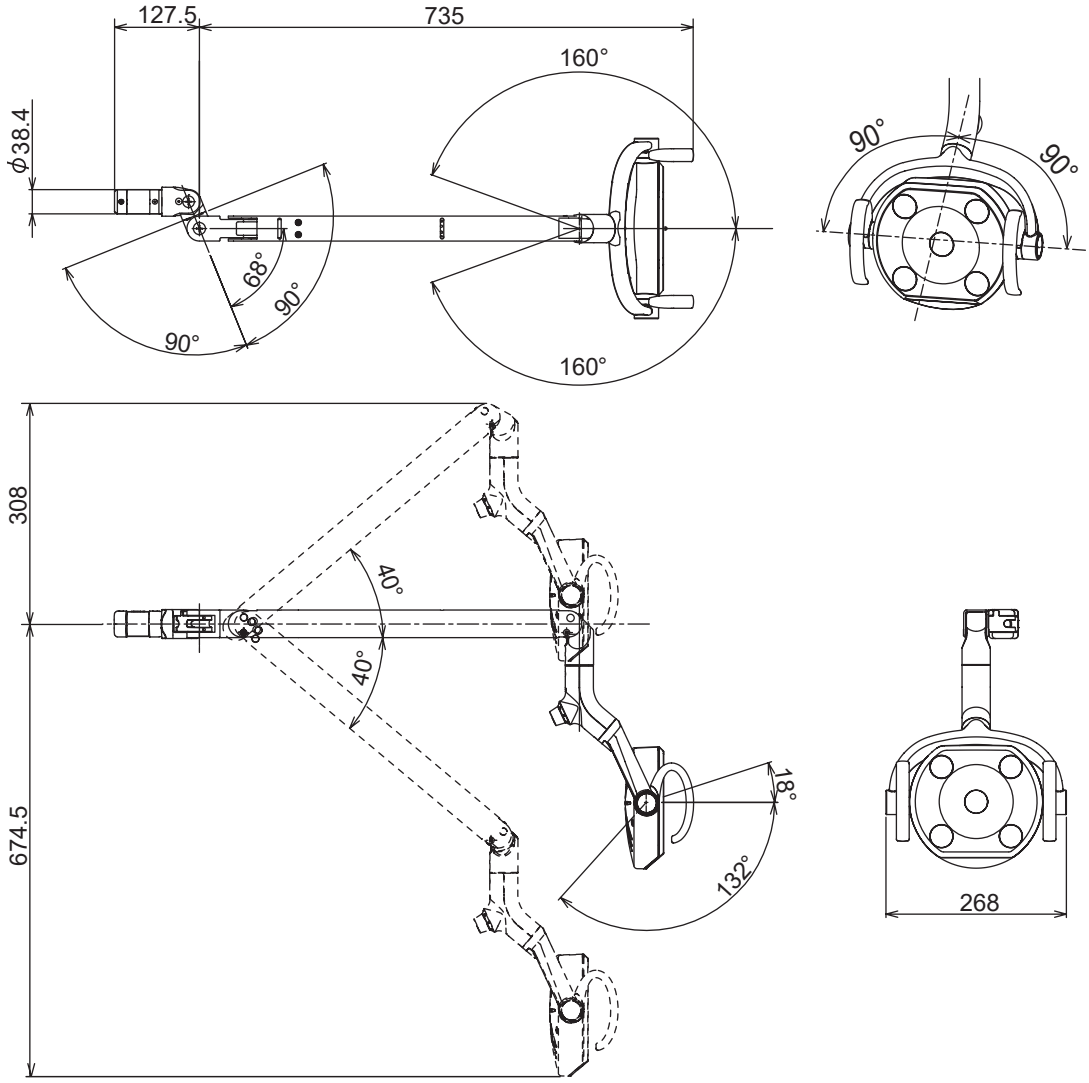


Dimensions

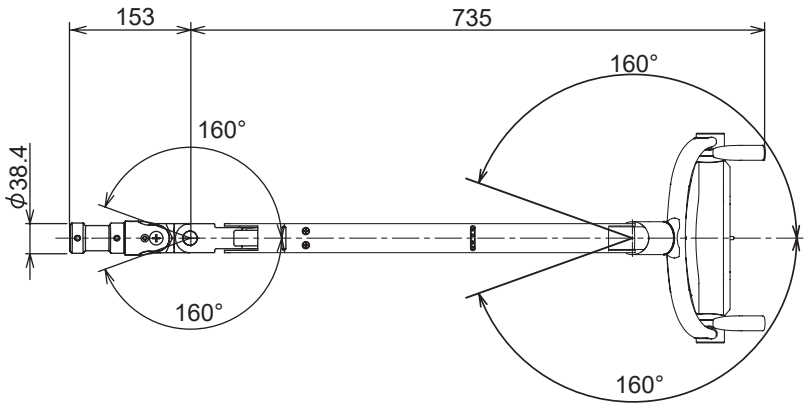
*Values are the standard values. (Unit: mm)
Dimensional tolerance: ±10%

TYPE 320S

Product code：AL-320S*



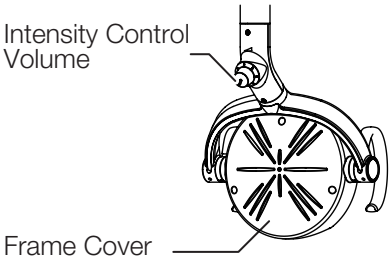
Product code：AL-320PAS* (Same as AL-320S except below figure)



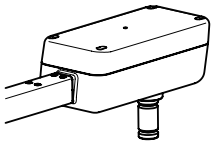
4-3-2 Major Components

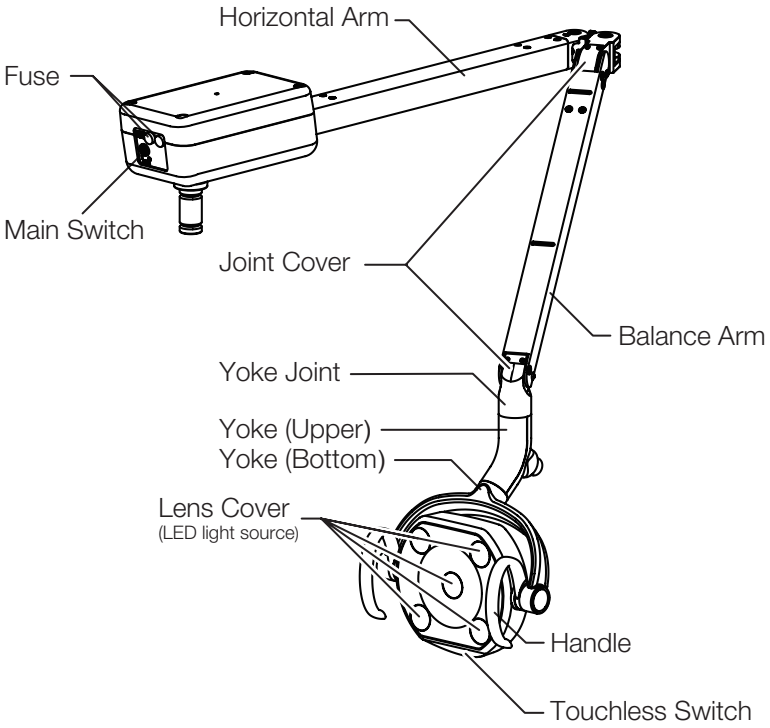
TYPE 301

Light Head (Rear side)



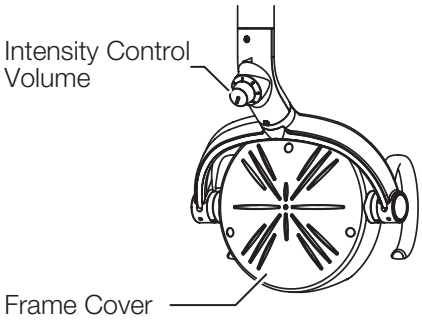
Power Supply Box



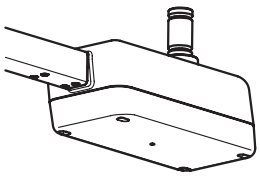


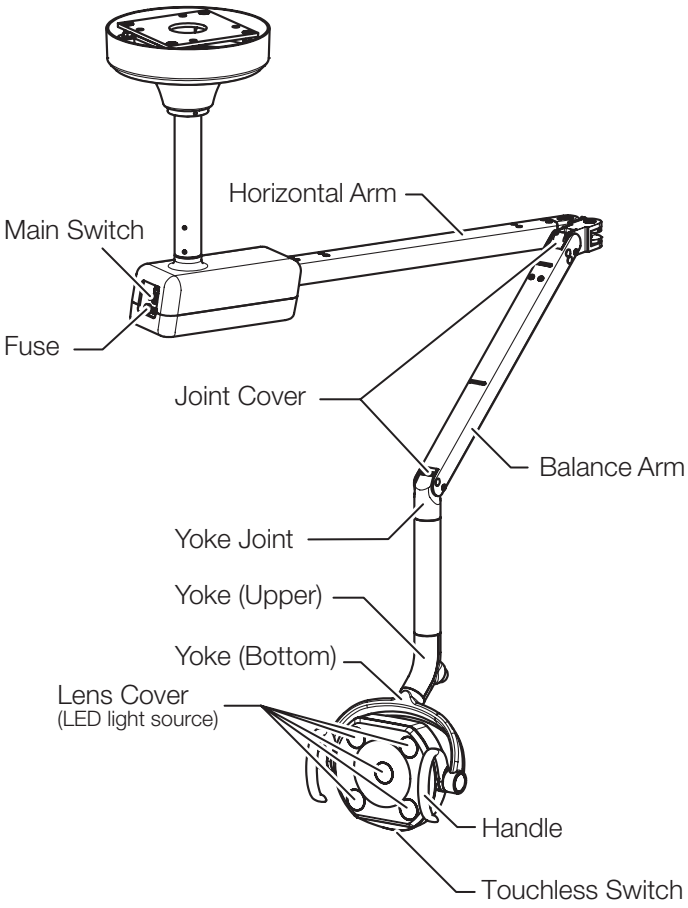
TYPE 302

Light Head Section (Rear side)



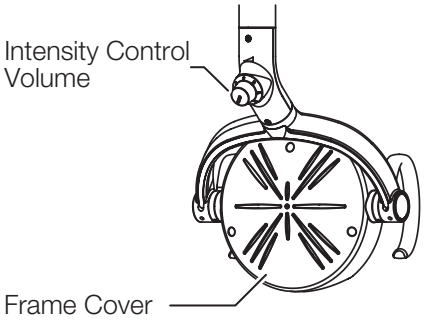
Power Supply Box Section

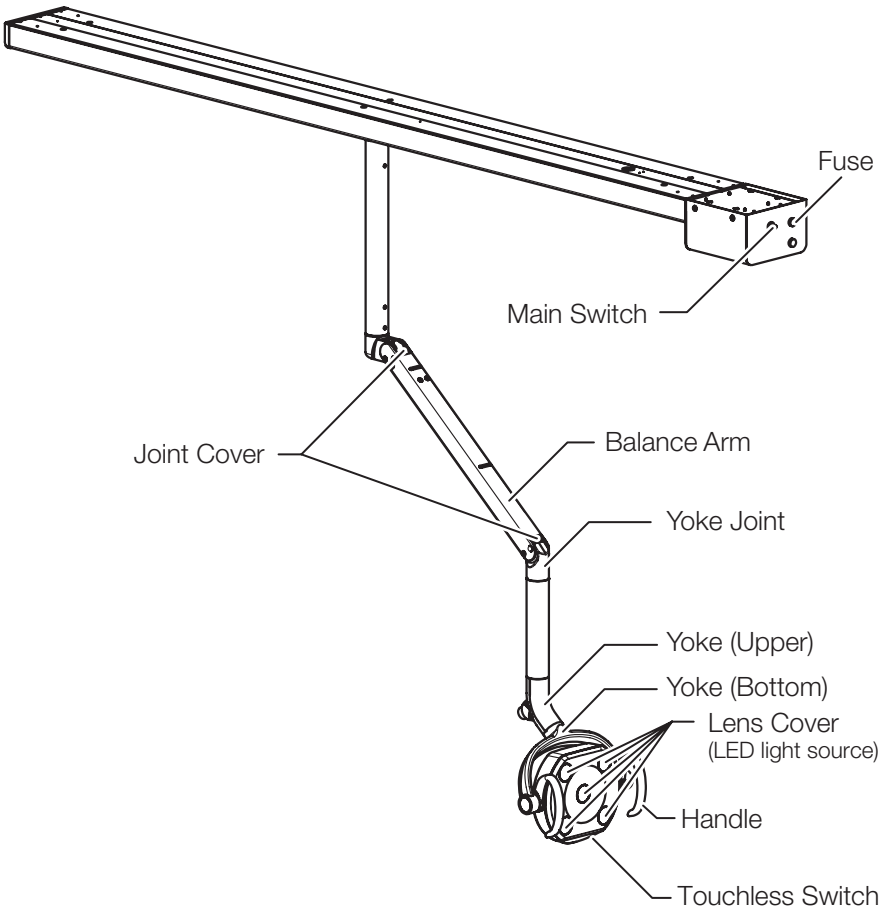




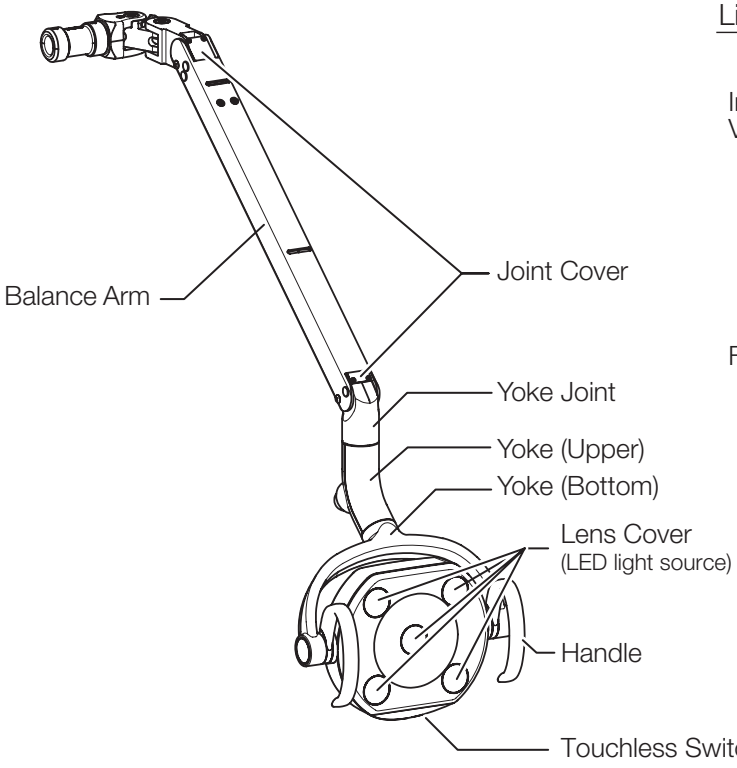
TYPE 305

Light Head Section (Rear side)

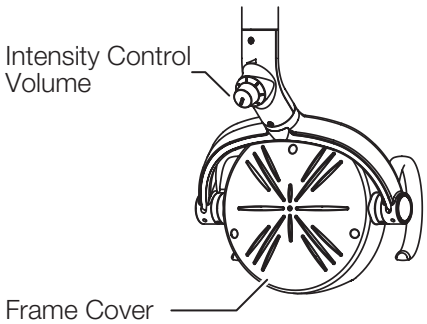




TYPE 320S



Light Head Section (Rear side)



4-3-3 Power Supply

TYPE 301, 302, 305
Turn on the main switch to the side marked with [I] and switch to the side marked with [○] for turn off.
Position of the main switch, see [Overview and Major Components] section.

TYPE 320S
Turn on the main switch of the unit side to the side marked with [I] and switch to the side marked with [○] for turn off.

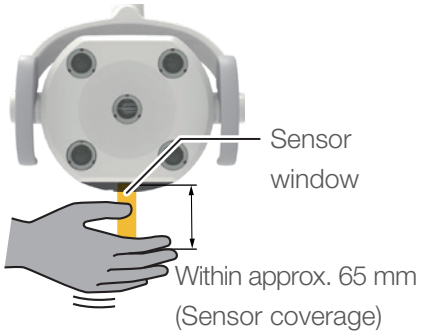
⚠ WARNING

Be sure to turn off the main switch upon completion of work or during breaks. This prevents incorrect operation due to accidental and associated hazards.

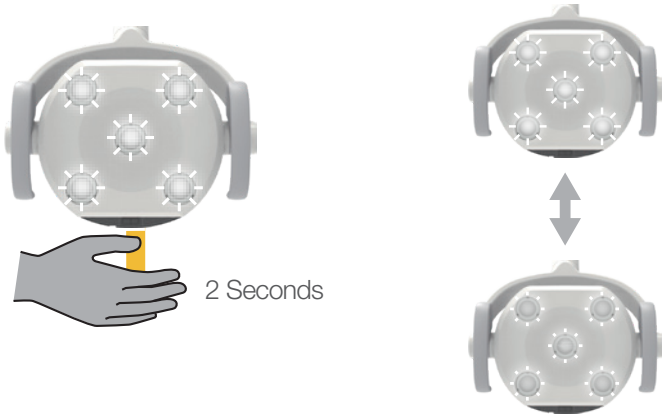
Be sure to turn off breakers for equipment in the clinic when this product will not be used for a long period of time (following the completion of work, during the suspension of business, etc.). Insulation degradation may cause electrical fire.

4-3-4 Operating Methods

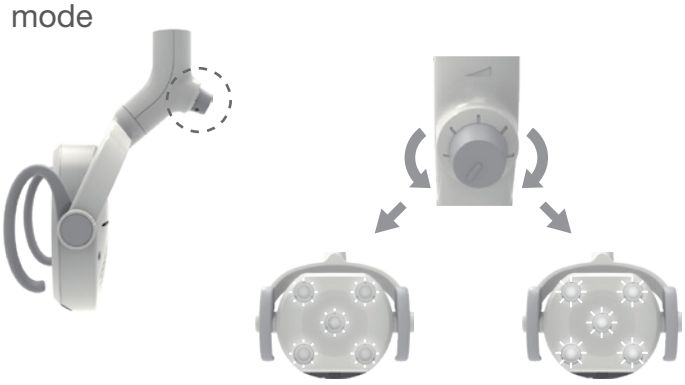
(1) Method for turning the light on/off



(2) Method for switching modes



(3) Method for adjusting illuminance in the treatment mode



5 Care/Cleaning/Maintenance by dental staff

5-1 Methods for Care

Take care of the product after use to maintain it in a clean state for use.

Method for cleaning (except the LED lens)

Lightly dry wipe the product with a dry soft cloth.
If it is heavily stained, wipe it with a soft cloth dipped in neutral detergent diluted to approx. one-tenth strength with water. Subsequently, wipe it with a cloth dipped in water, then wipe dry thoroughly.

Method for cleaning the LED lens

Lightly wipe it with a soft cloth for wiping glasses, etc.
Alternatively, remove any dust from the surface with an air duster.

Do not use water or chemicals (including FD366 produced by DÜRR and neutral detergents) to clean the LED lens. Otherwise, deformation, discoloration or compromised optical performance of the LED lens may result.

Removal of bacteria from the exterior

To remove bacteria from the exterior of the product, wipe the surface with a soft cloth or paper towel dipped in FD366 produced by DÜRR, and then wipe dry.

Never conduct any of the following acts during care.
In particular, any of the following acts performed on the lens cover or LED lens may not only cause damage or staining, but also compromise the optical performance.

Use of the following items
Thinner, butanol, isopropyl alcohol, enamel remover, gasoline, kerosene or other volatile agents; acid, alkaline or chlorine-based detergents; disinfectants with strong metal corrosiveness (e.g., povidone iodine, sodium hypochlorite); waxes containing abrasive; sponges containing abrasive; etc.

Use of (scrub) brushes
May damage the product or render stains unremovable.

Leaving water or residual water containing cleanser on the product
May cause rust and failure in electrical parts.

Direct spraying of cleanser, etc.
The liquid may enter the product and cause malfunction or failure.

5-2 Maintenance and Inspection

5-2-1 Notes on daily maintenance and inspection (by the user)

It is the responsibility of the user (medical institution) to ensure that the medical device is correctly maintained and inspected. To ensure safe use of this product, the product must be inspected at the specified intervals as described in the table below:

If the product does not operate normally, immediately stop using the product, turn off the main switch (or the main switch of the unit), and contact your local authorized Belmont dealer.

No	Inspection item	Inspection frequency	Inspection method & diagnosis	Possible result of not implementing inspection	Maintenance required if a problem is identified in inspection
1	Status check of lens cover	Every time (before work)	Upper and lower part of the lens cover is attached properly, and there is no deterioration or damaged part.	The lens cover may come off, and optical performance may be compromised.	If it is not attached properly, attach it properly. If there is any deterioration or damage, the lens cover must be replaced. Contact your local authorized Belmont dealer.
2	Light switch	Every time (before work)	Set Mode Selection switch to Manual. Confirms the light turns on.	Light doesn't function.	Contact your dealer or your local authorized Belmont dealer.
3	Operation check of touchless switch	Every time (before work)	The light can be turned on/off and switches modes normally.	The unit may not operate normally.	Clean the sensor window of the touchless switch using a soft cloth. If the problem is not solved after cleaning, contact your local authorized Belmont dealer.
4	Operation check of illuminance adjustment dial	Every time (before work)	The illuminance can be adjusted using the illuminance adjustment dial.	The unit may not operate normally.	Turn off the main switch of the unit, stop using the product, and contact your local authorized Belmont dealer.
5	Lifting/ lowering check of the arm part	Every time (before work)	The arm part can be lifted/low ered and stopped at any point. (It should not slide down or jump up.)	The arm part cannot be fixed in the intended position, resulting in the risk of an accident.	Contact your local authorized Belmont dealer.
6	Yoke joint cover	Every time (before work)	Confirm the yoke joint cover. It's not come out from balance arm. Make sure the yoke cover is securely fastened to the balance arm with two screws.	It may result in injury such as pinching a finger in a joint area if the yoke cover is not attached securely.	If unable to securely attach the yoke cover. Contact your dealer or your local authorized Belmont dealer.
7	Turning/ stop check of the light head part	Every time (before work)	The light head part can be turned upward/downward, and can be stopped at any point.	The light head part cannot be fixed in the intended position.	Contact your local authorized Belmont dealer.
8	Light head angle	Every time (before work)	Confirms the light head is vertically aligned.	Light head doesn't stay at the desired position.	Adjust the angle of the light head.

5 Care/Cleaning/Maintenance by dental staff

No	Inspection item	Inspection frequency	Inspection method & diagnosis	Possible result of not implementing inspection	Maintenance required if a problem is identified in inspection
9	Turning check of the light head	Every time (before work)	The light head part can be turned to the left snd right, and is stopped at a range of 160 degrees to the left or right.	If the turning of the light head part cannot be stopped, disconnection may result.	Contact your local authorized Belmont dealer.
10	Movement of the trolly (Track light)	Every time (before work)	Check the movement of the trolly. Make sure the trolly run smoothly.	Light head doesn't stay at the desired position.	If the light malfunctions, contact your dealer or your local authorized Belmont dealer.
11	Track section (Track light)	Every time (before work	Make sure that no wobble the track section when the product is operated.	There is a possibility that the light falls.	If the light malfunctions, contact your dealer or your local authorized Belmont dealer.
12	Check of movable parts	Every time (before work)	When each movable part is moved, no noise, wobbliness, or other errors are observed.	The product may not operate normally, resulting in the risk of an accident.	Turn off the main switch of the unit, stop using the product, and contact your local authorized Belmont dealer.
13	If not used for a long time	Before start	If the light has not been used for a long time, make sure the light functions correctly and safely.	It may cause the difficulty at dental practice.	If the light malfunctions, Contact your dealer.
14	Removal of stain and chemicals	Every time (after work)	Clean the entire product, whether or not there are any stains or chemicals adhered.	Discoloration, deterioration or damage to the resin parts, etc. may result.	Clean the product in accor dance with the “Methods for Care” .
15	Patient mirror	Before start	Check crack of the mirror surface	a mirror crack may advance to breakage and it may cause injury with a fragment.	Contact your dealer or your local authorized Belmont dealer.
16	Other 1	Once every week	Make sure that no abnormal noise occurs when the product is operated.	Light may not function right.	Turn off the light. Contact your dealer or your local authorized Belmont dealer.
17	Other 2	As needed	If the light has not been used for a long time, make sure the light functions correctly and safely.		If the light malfunctions Contact your dealer.

⚠ WARNING

Be sure to implement daily maintenance and inspection, referring to these instructions.
Use without implementing daily maintenance and inspection may result in injury or damage to the surrounding devices/equipment.

Notes for periodic inspection

The product contains parts that stop functioning or wear depending on the use frequency, and therefore it is important to carry out maintenance in a periodic inspection once a year (including replacement of consumables) and safety checks. Service parts required for the periodic inspection (including consumables) are listed in the table below. However, depending on the specifications of your device, there may be alternative parts available that differ from those listed in the table below.

Maintenance and inspection can be outsourced to qualified persons such as authorized repairers of medical devices.
If you have any question about periodic inspection, contact your local authorized Belmont dealer.

Table of maintenance parts/sections that require periodic inspection

Part name	Standard service ife	Part name	Standard service life
Light head movable part	8 yrs	Electric wiring of moving part	5 yrs
Moving part	7 yrs	Electric wiring part	4 yrs
Illuminance adjustment part	7 yrs	Control PCBs.	5 yrs
Arm part spring	7 yrs	Boards	5 yrs
Switches	5 yrs	Trolly for track light	4 yrs

List of consumables that require periodic inspection

Part name
Lens cover

⚠ WARNING

Always entrust periodic inspection to your local authorized Belmont dealer.
If you do not carry out periodic inspection, use of the product may cause injury or damage to nearby devices.

5-3 Detachable Parts

Part name
Lens cover

5-4 Storage Instructions

If the product is not to be used for a long time at the time of closing or at the time of closure, be sure to turn off the main switch of the unit.

6 Maintenance by Service Engineers

6-1 After-sales Service

When you request for repair

Refer to ‘Troubleshooting’ before you check the device. If the problem persists, turn off the main switch (or the main switch of the unit), and contact your local authorized Belmont dealer to request a repair.

6-2 Service Life

The service life of this product is 10 years on condition that maintenance and inspection are properly conducted [according to our self-certification (our data)].
However, the standard service lives of service parts that require periodic inspection vary according to the part.

6-3 Period of Parts Retention

We hold service parts such as consumables for products for 10 years from the time of purchase.

* Service parts are parts required for repair to return the product to the original state and functions or to maintain its functions.

7 Troubleshooting

7-1 Troubleshooting

If you encounter any of the problems listed below, take the countermeasures described below before requesting a repair. If the problem persists even after troubleshooting, stop using the product immediately, turn off the main switch (or the main switch of the unit), and contact your local authorized Belmont dealer.

Trouble	Check point	How to handle
The light is not turned on.	Is the unit powered on?	Switch on the unit.
The light is not switched on or off.	Are you holding your hand farther than 65 mm from the surface of the sensor window?	Hold your hand within 65 mm from the surface of the sensor window.
	Is the surface of the sensor window stained?	Clean the surface of the sensor window.
	Is no-sensor mode activated?	Cancel the no-sensor mode.
The light is turned on or off at an unintended time.	Is there an instrument with a mirror surface (e.g., a hand mirror) nearby?	Move the instrument with a mirror surface away.
The illuminance cannot be adjusted using the illuminance adjustment dial.	Is the unit in the Composite Safe mode?	Switch to the treatment mode.
The light head cannot be moved gently (upward/downward or leftward/rightward turning).	Has the unit not been moved for several days?	Move the unit several times.

8 Accessories and Consumables

8-1 Accessories

・IFU information
・Installation Instructions
・Adjustment rod

8-2 Consumables

Consumables are parts that will normally wear or deteriorate, change their appearance, or become damaged after use. Please note that repair or replacement of consumables are not covered by the warranty and will be charged for.
(* Degree of wear, deterioration or damage and timing for replacement depends on the use environment and conditions at the customer's premises.)

Consumables (Parts listed below are out of the guarantee coverage and charged parts.)
・Lens cover

Scratches or stains on the exterior parts (including metal parts or resin parts), deterioration or discoloration thereof, etc. are not covered by warranty.

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