Bel-Nova

INSTALLATION INSTRUCTIONS

Belmont

Mount type

AL-D101G / AL-D101W (POST MOUNT)

AL-D102G (CEILING MOUNT)

AL-D105G (TRACK MOUNT)

AL-D106G (UNIT MOUNT)

AL-D109W (UNIT MOUNT)

AL-D107G (CABINET MOUNT)

AL-D108G (WALL MOUNT)

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1 Cautions regarding installation

1-1 Precautions for installation

1. During lifting of the dental light, make sure to hold the place shown in the figure below. If not, it may lead to physical injury or property damage.

AL-D101G / AL-D101W

AL-D102G

AL-D106G / AL-D109W

AL-D105G / AL-D107G / AL-D108G

1 Cautions regarding installation

2. Do not drop the product, let it crash into something, or apply strong impact.

3. Do not connect an input power supply other than with the rated power level.

4. Make sure to connect ground wires.

5. Have the clinic equipped with double-pole switch at the power outlet or the switchboard.

6. Adjust the levels of the unit and chair so that the light stops in the required position.
   Read the installation instructions for the unit and chair concerning the level adjustment.
   (AL-D106G / AL-D109W)

7. Once all work is completed, confirm that each part operates normally.

⚠ WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.
Failure or electric leak may result in electric shock.

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

2 Specifications of the Product

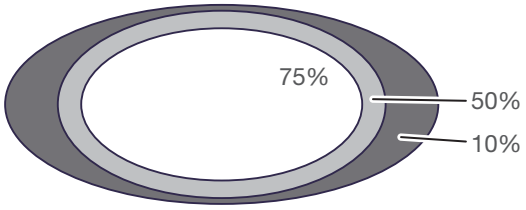
2-1 Intended Use of the Product

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.

2 Specifications of the Product

2-2 Technical Data

Model	AL-D101G / AL-D101W / AL-D102G / AL-D105G / AL-D106G / AL-D107G / AL-D108G / AL-D109W
Classification by type of protection against electric shock	Class I Equipment
Rated voltage.....	AC100-240V 50 / 60Hz
Rated input.....	0.30-0.15A
Fuse	0.8A / 250V (Interrupting capacity 35A / 250VAC) Operating speed:Time lag Size:6.4 x 31.8mm
Operation mode	Continuous operation
Mass	7.2kg (AL-D101G / AL-D101W) 11.2kg (with 340mm pole) (AL-D102G) 16.2kg (with 380mm pole) (AL-D105G) 4.2kg (AL-D106G / AL-D109W) 12.1kg (AL-D107G) 21.7kg (AL-D108G)
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
Illuminance pattern	Pattern dimensions (length x width): 85 x 155 mm

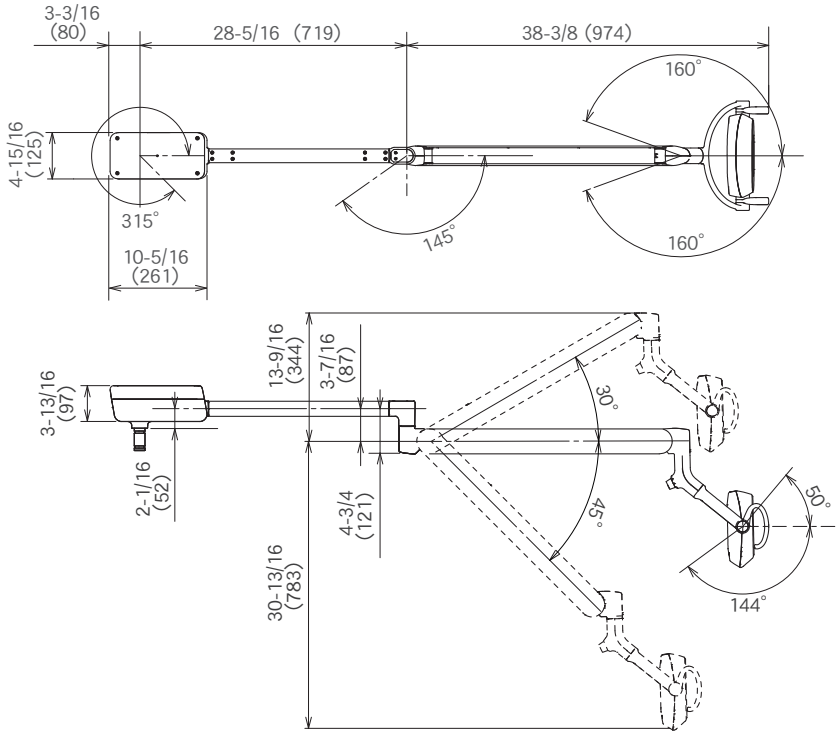


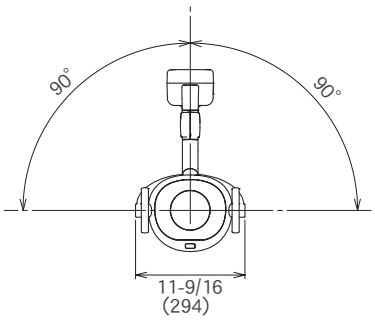
75%/50%/10%: 75%/50%/10% areas of maximum illuminance

Environment for use	Temperature: 32-104ºF (0-40ºC) Humidity: 10-95% Atmospheric pressure: 10.2-15.4psi (700-1,060 hPa)
Environment for transport and storage...	Temperature: -4-158ºF (-20-70ºC) Humidity: 10-95% Atmospheric pressure: 10.2-15.4psi (700-1,060 hPa)
Adaptability to high oxygen-level environment	Not for use in a high oxygen-level environment

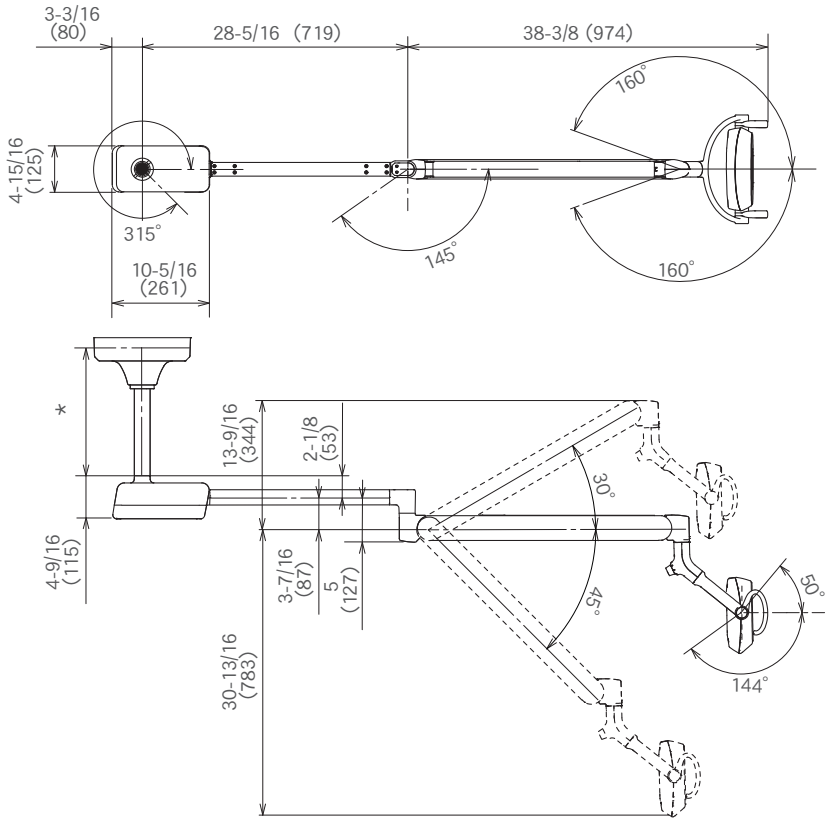
AL-D101G / AL-D101W

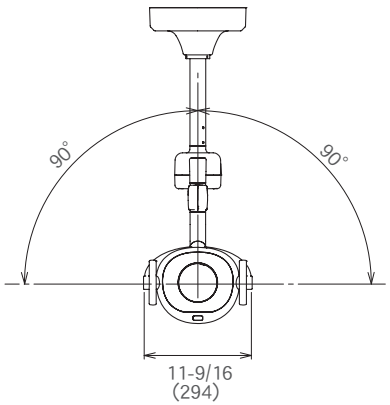
Unit：inch (mm)
Tolerance in dimensions: ±10%
* The dimensions and specifications are subject to change without notice.





AL-D102G



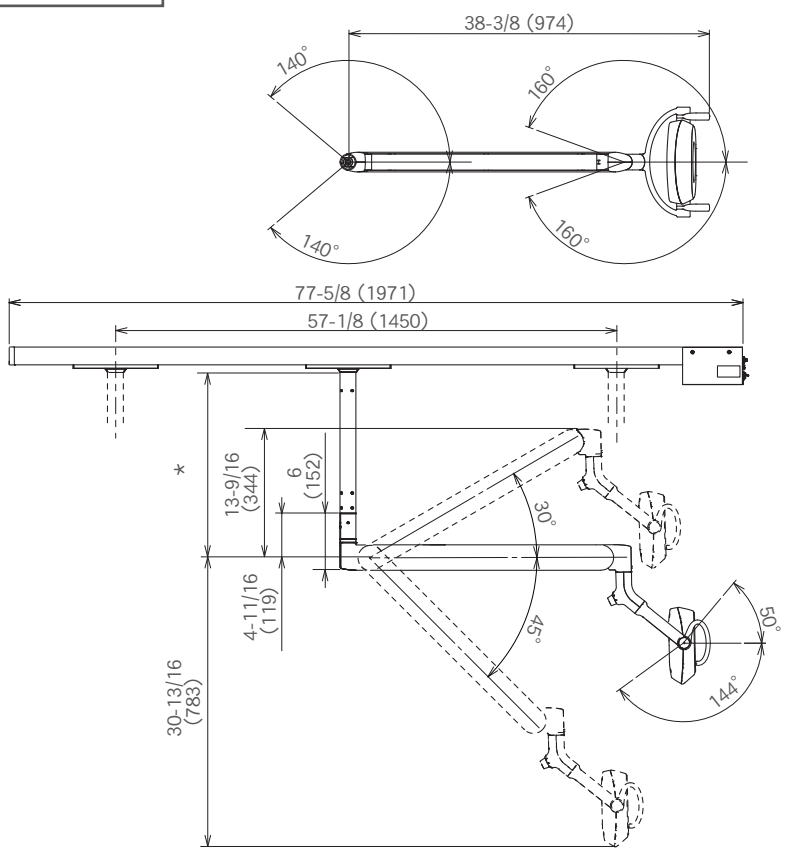


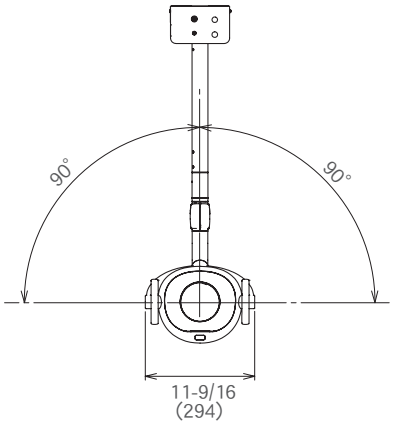
*Select suspension tube length based upon ceiling height.

2 Specifications of the Product

AL-D105G

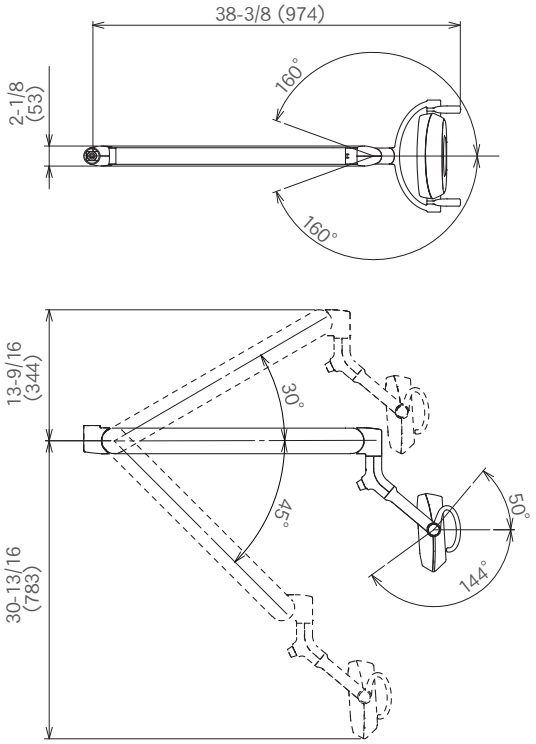
Unit：inch (mm)
Tolerance in dimensions: ±10%
* The dimensions and specifications are subject to change without notice.

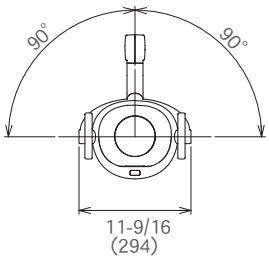




*Select suspension tube length based upon ceiling height.

AL-D106G / AL-D109W

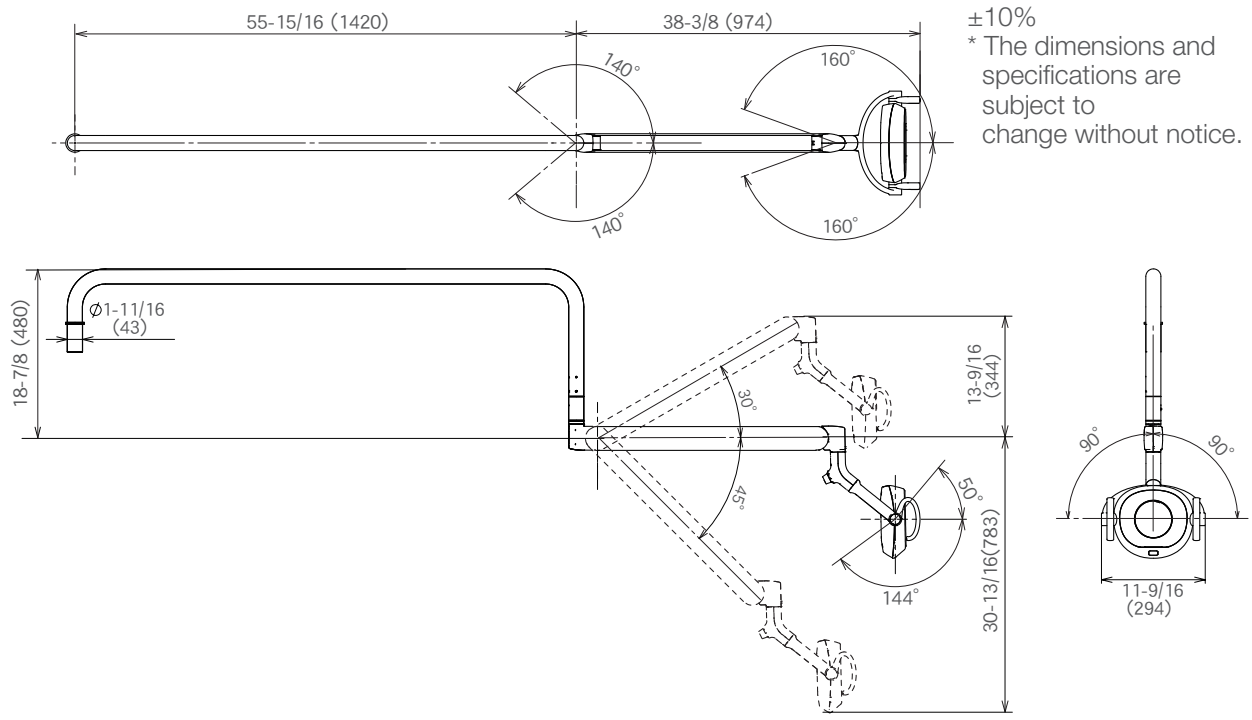




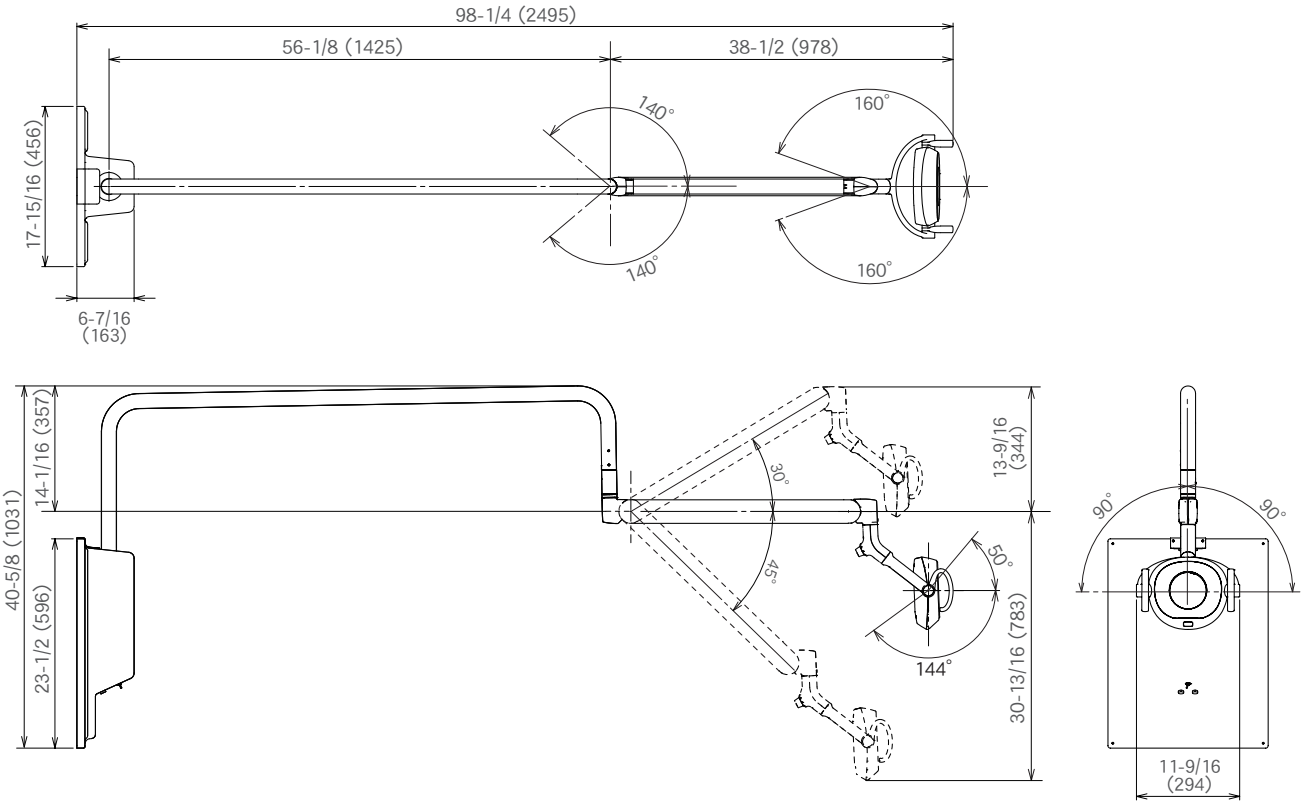
2 Specifications of the Product

AL-D107G

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

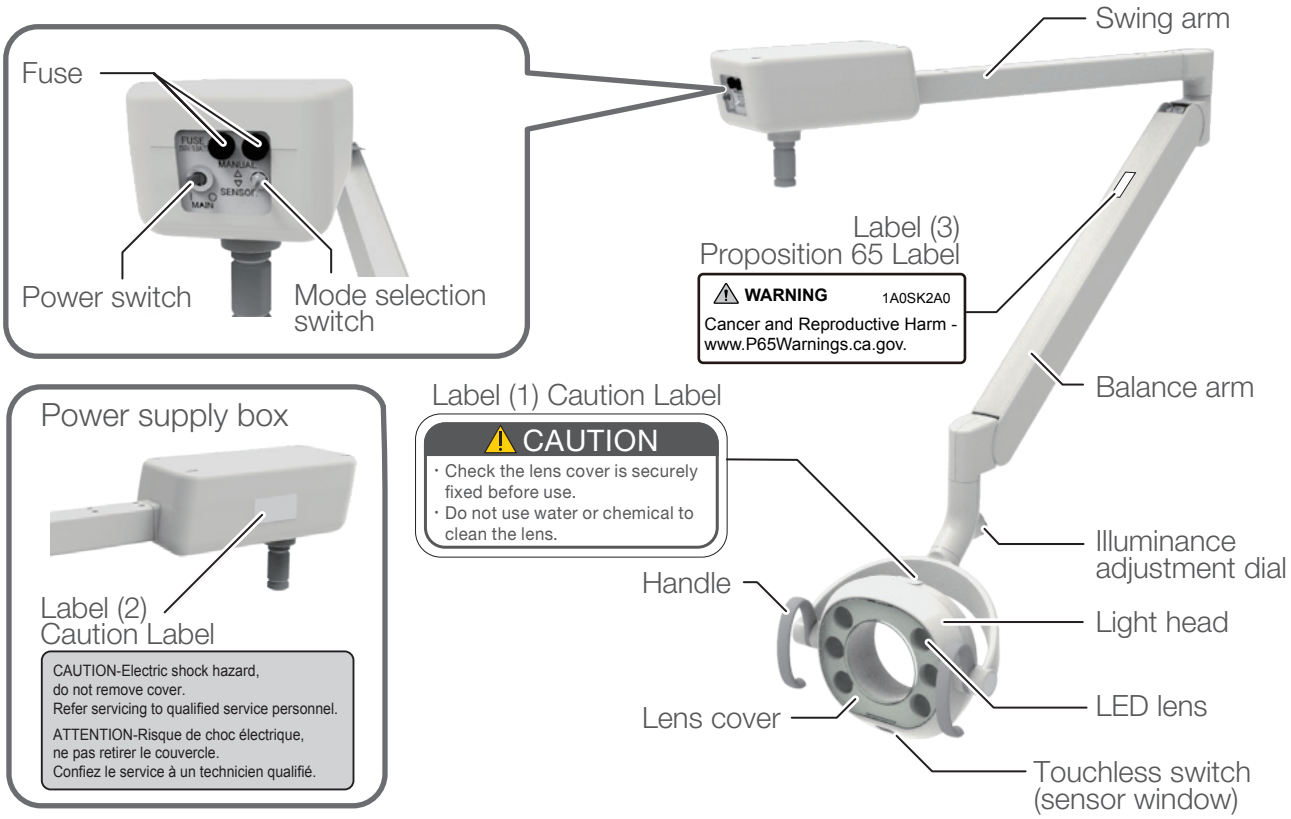


AL-D108G

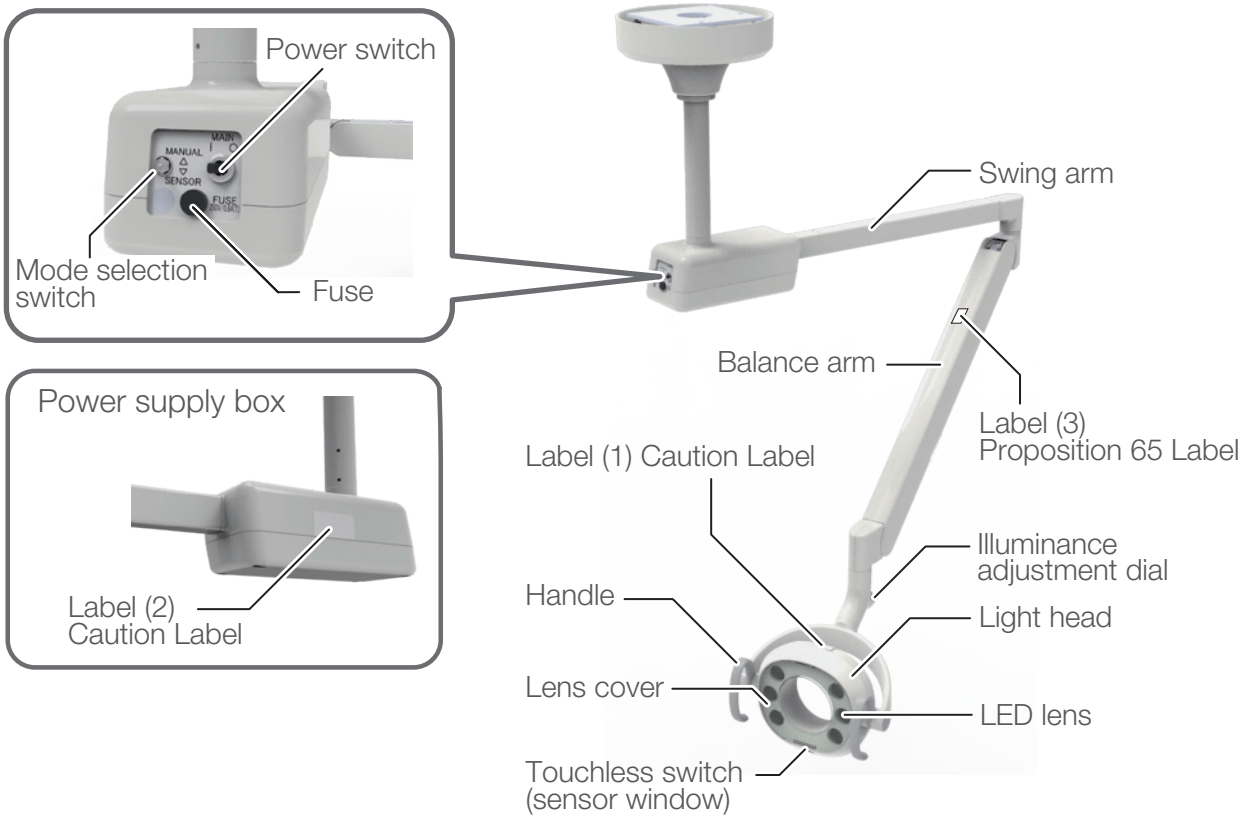


2-3 Major Components

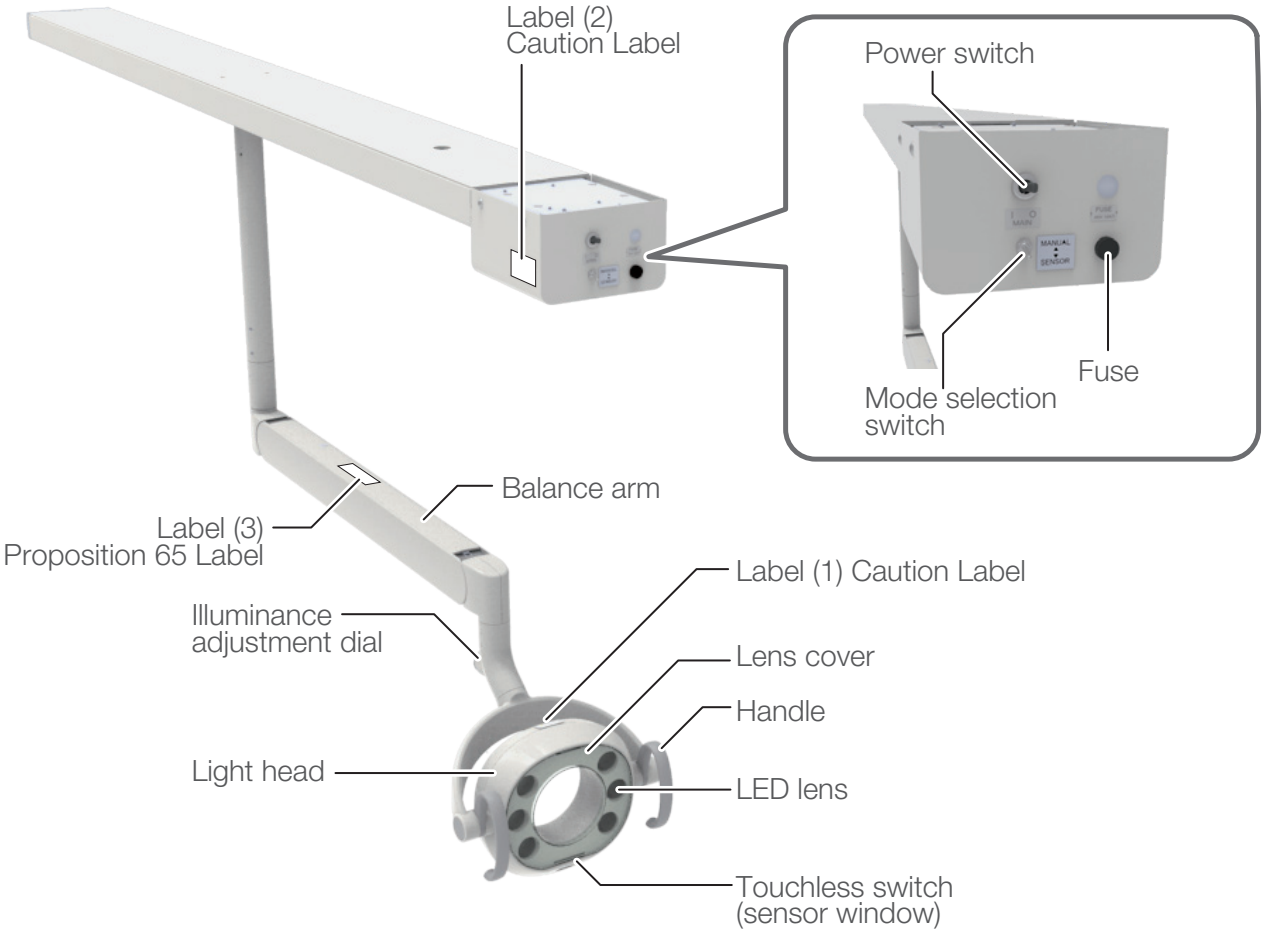
AL-D101G / AL-D101W



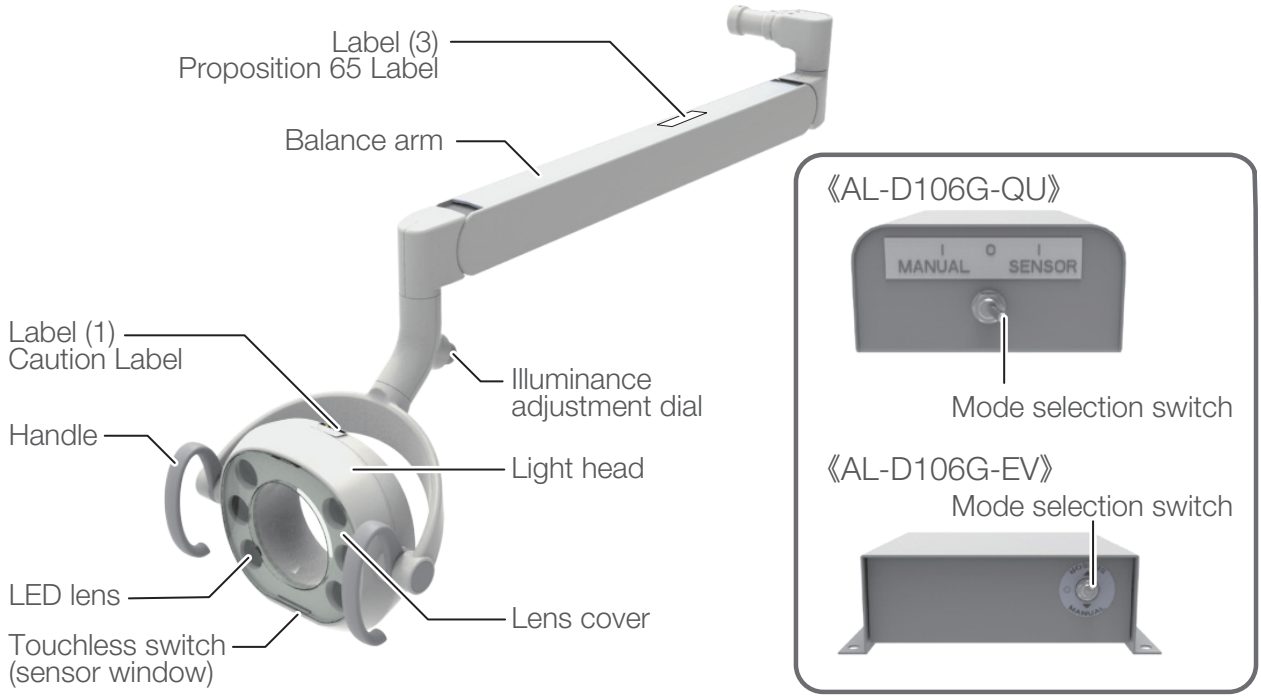
AL-D102G



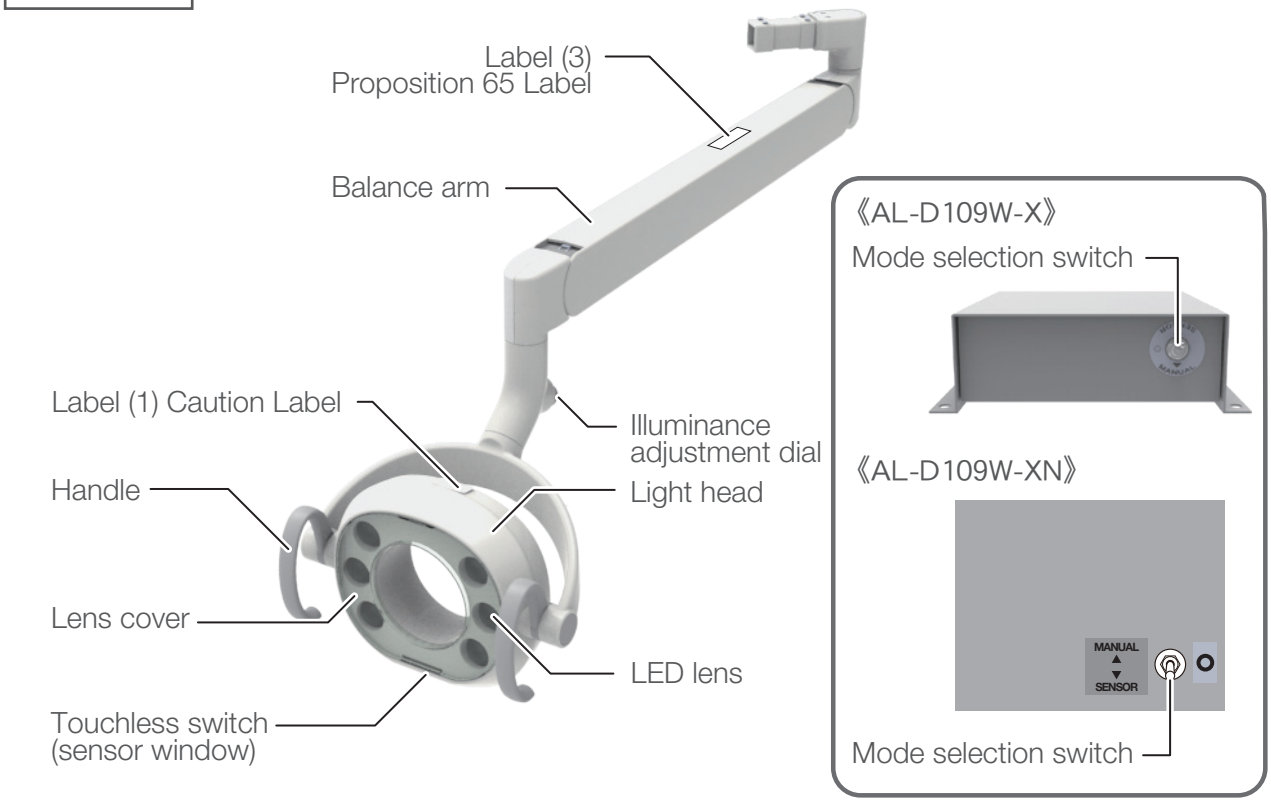
AL-D105G



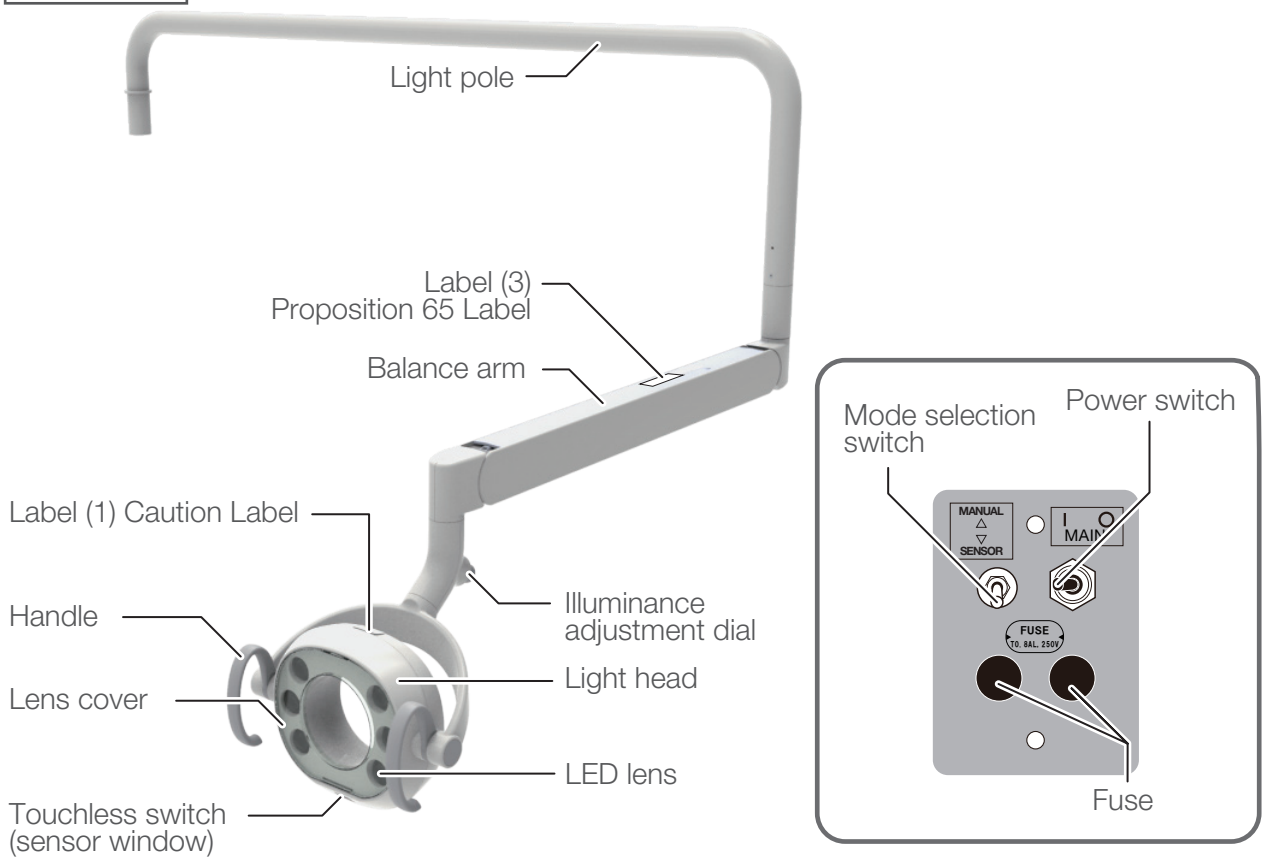
AL-D106G



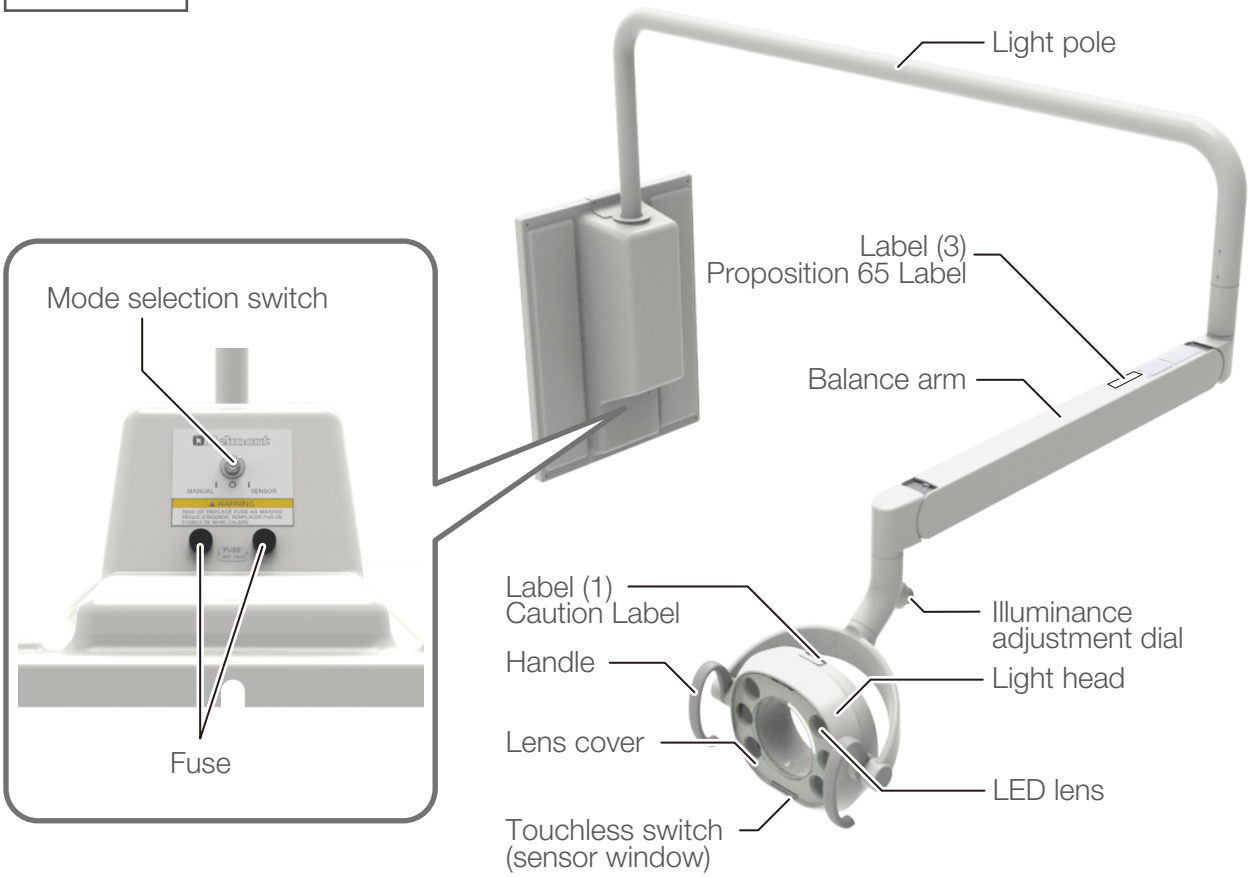
AL-D109W



AL-D107G



AL-D108G


Light pole
Label (3)
Proposition 65 Label
Balance arm
Mode selection switch
Fuse
Label (1)
Caution Label
Handle
Lens cover
Touchless switch
(sensor window)
Illuminance
adjustment dial
Light head
LED lens

3 Installation

3-1 Supplied parts

No.	Part name	QTY.
1	Adjustment rod	1

* Use of the adjustment rod is shown on pages 47 to 49.

3-2 Assembly procedure for installation

3-2-1 AL-D101G / AL-D101W

Necessary tools

Phillips screwdriver No. 1, 2

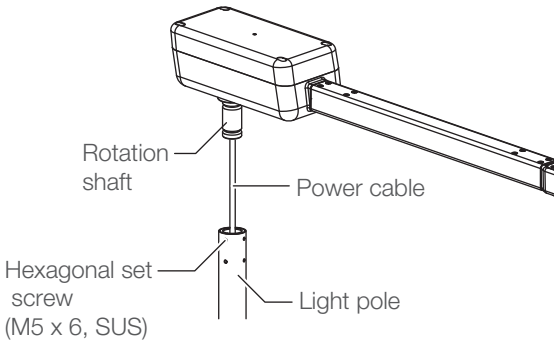
Hex key wrench; width across flats: 2 mm / 2.5mm / 4mm)

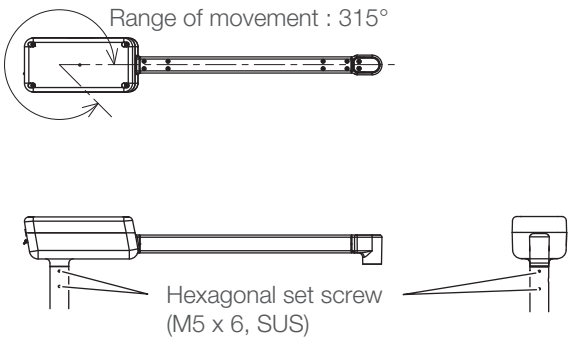
Attach the arm assembly to the light pole

1. Pass the power cable through the light pole. Insert the rotation shaft to the light pole and fix with four hexagonal set screws (M5 x 6, SUS) .
   * The light pole is included with the dental unit section.
   * Rotate the rotation shaft to the right end and fix it so that the hexagonal set screw (M5 x 6, SUS) position is in the below figure. See below figure for range of movement of the rotation shaft.

2. Fix the light pole to the dental unit.
   * Refer to the installation instructions attached to the dental unit for installation of the light pole.

3. Connect the power cable into suitable power supply.





3-2-2 AL-D102G

Necessary tools

Phillips screwdriver No. 1, 2
Hex key wrench; width across flats: 2 mm / 2.5mm / 4mm)
Hammer, Socket wrench (13mm, 17mm)

Precaution for Installation

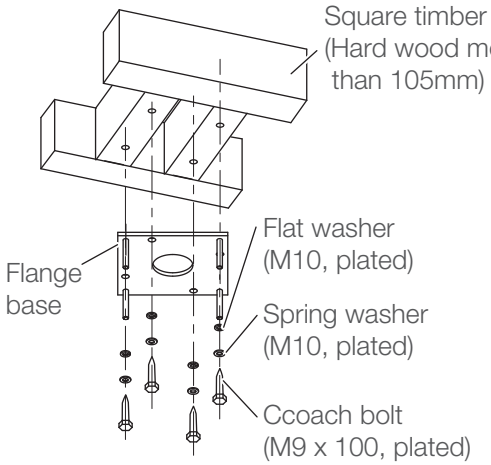
(1) For safety in operation as well stability of the light source, the importance of proper ceiling structure can not be overemphasized. The ceiling structure capable of supporting 220lb (100kg) dead weight is requires.
(2) Be sure request specialized electric construction person accompanied by indoor electric wiring work.

(1) Installation of Ceiling

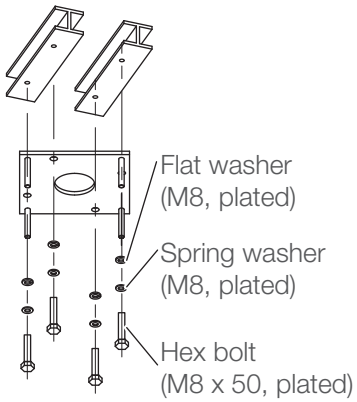
1. Lead out the power supply cable (for indoor wiring 0.75m/m x 2 wires power cable or mode) from the ceiling as necessary length (Approx.60cm) where the ceiling light is mounted.

2. Secure flange base to the ceiling referring to below figure. Refer to "Flange base template" (18 page) for the flange base fixing hole dimensions.

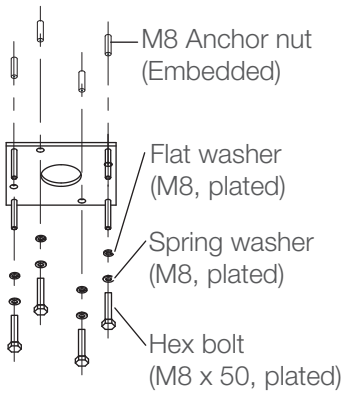
Wood Ceiling



Steel Frame Ceiling

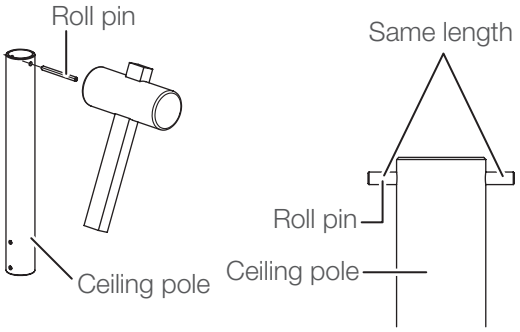


Concrete Ceiling

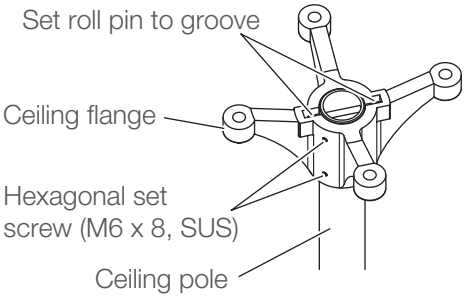


Ceiling material	Wood	Steel Frame	Concrete
Prepared hole diameter (mm)	ϕ 5	ϕ 10	M8 (Embedded Anchor nut)
Fixing bolt	Coach bolt (M9 x 100, plated)	Hex bolt (M8 x 50, Plated)	Hex bolt (M8 x 50, plated) / M8 Anchor nut

3. Atach the ceiling pole
   (1) Attach the roll pin to the ceiling pole with hammer.
   (2) Insert the ceiling pole into the ceiling flange and set the roll pin to groove on the c eiling flange.
   (3) Fix it with two hexagonal set screw (M6 x 8, SUS).

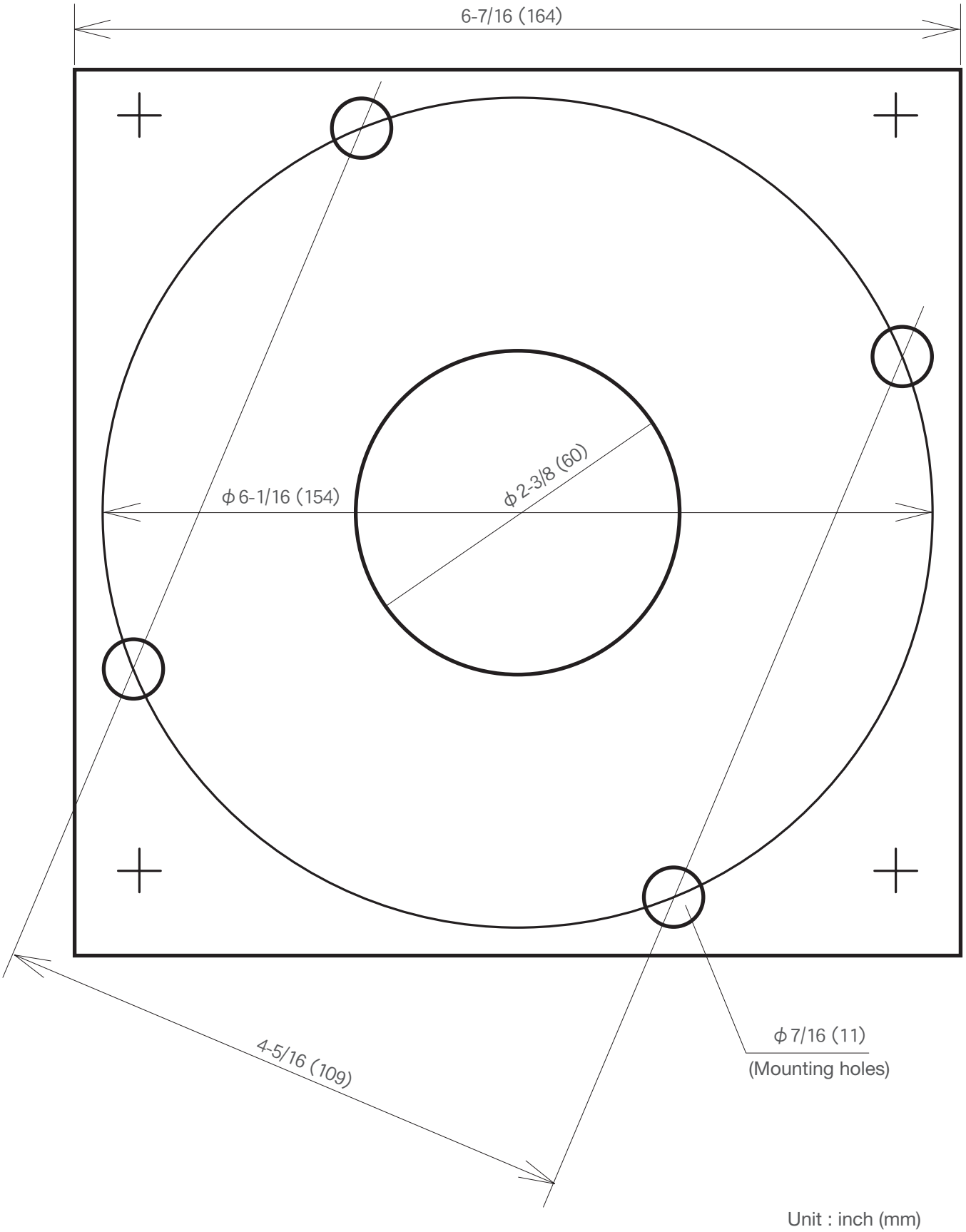


How to fix the roll pin to the ceiling pole



How to set the ceiling pole to the ceiling flange

Flange base template



Unit : inch (mm)

(2) Attach the Light Arm Assembly

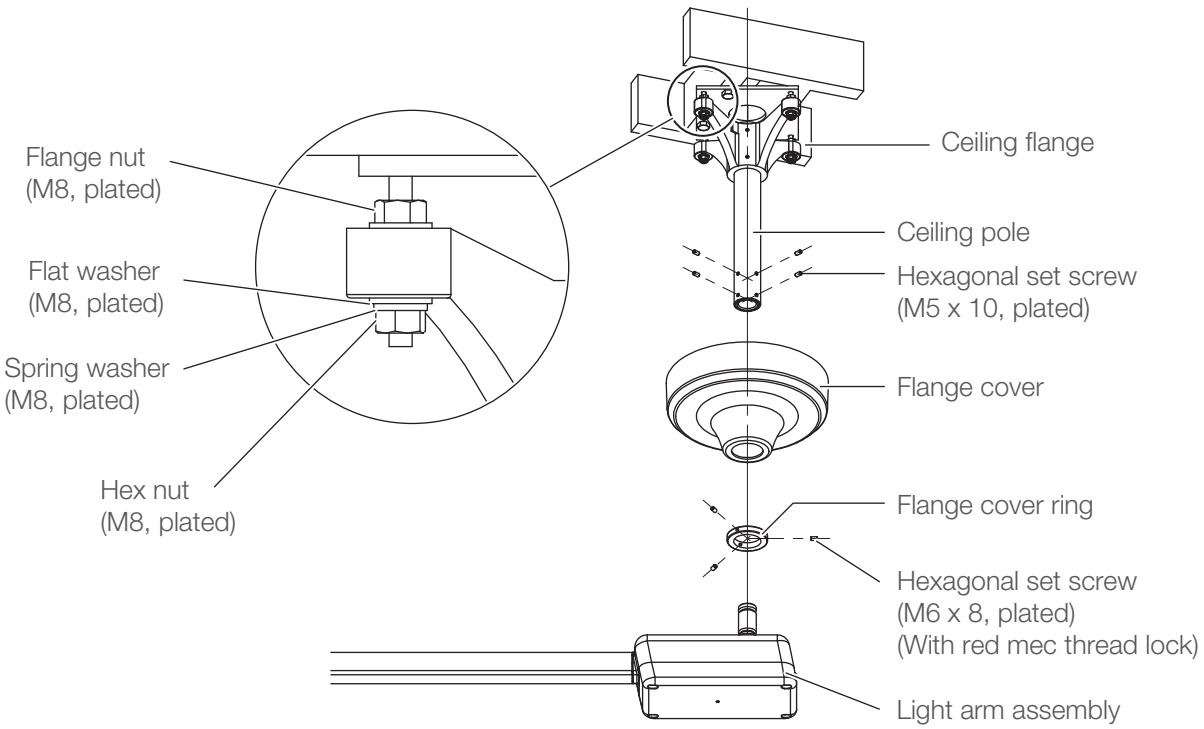
1. Be sure the ceiling pole is plumb. Adjust vertical level of the ceiling pole with leveling flange nuts (M8) and secure ceiling flange to flange base with fixing hex nuts (M8).

2. Slide the flange cover and flange cover ring (flat side up) over the ceiling pole and secure them about half way up the pole. Use only one set screw as you will be moving the on final installation.

3. Install the light assembly to the ceiling pole running the 3 wires cord up through the pole to the ceiling flange.
   Secure it with 4 hexagonal set screws (M5 x 10, plated). (Be careful not fall off the light assembly.)

4. Connect the incoming power to the 3 wires cord from the light assembly.
   Be sure to follow the local electrical codes.

5. Reposition the flange cover and secure it with the flange cover ring.
   Secure three hexagonal set screws (M6 x 8, plated).



3-2-3 AL-D105G

Necessary tools

Phillips screwdriver No. 1, 2
Hex key wrench; width across flats: 2 mm / 2.5mm / 4mm)
Hammer, Socket wrench (13mm, 17mm)

Precaution for Installation

For safety in operation as well stability of the light source, the importance of proper ceiling structure can not be overemphasized. The ceiling structure capable of supporting 200lb (90kg) dead weight is requires.

(1) About construction of the ceiling

(A) In conventional ceilings with joists perpendicular to the center line of the light

Attach the pallet by at least six coach bolts (M8 x 75, plated) .
Suitable holes are provided in pallet for most installations, utilizing 16"(406 mm) or 24"(610 mm) center to ceiling joists. For other spacings or locations, additional holes can be cut in pallet. (See the figure on the next page.)

Locate transformer end of track at headrest end of chair. - Not legrest.

(B) In conventional ceilings with joists parallel to the center line of the light

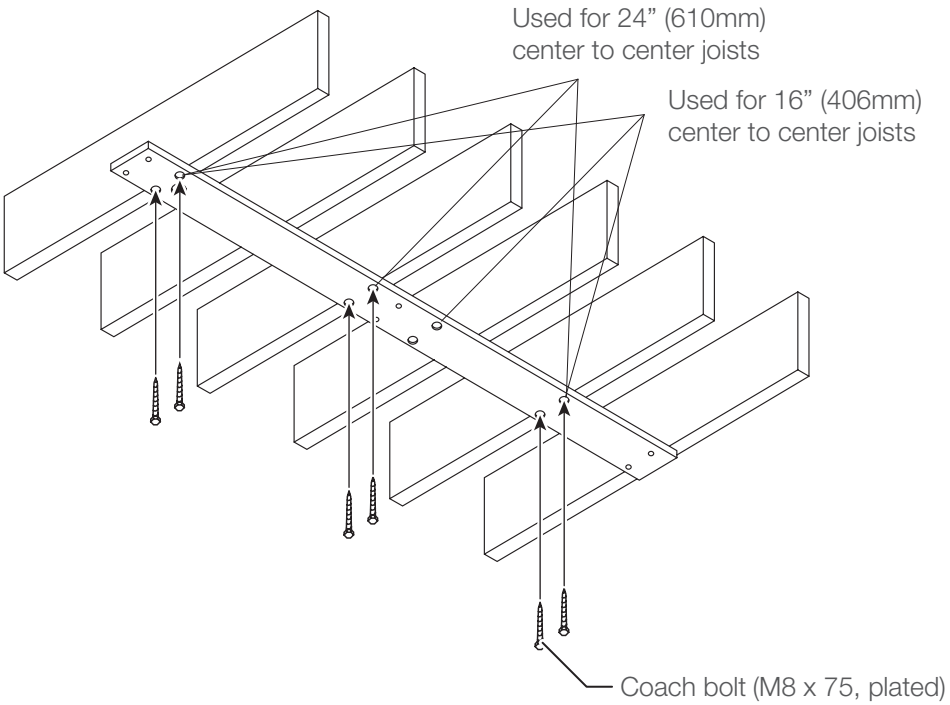
Attach the cross blocks in 3 places, and attach the pallet by at least six coach bolts (M8 x 75, plated) .
Suitable holes are provided in pallet for most installations, utilizing 16"(406 mm) or 24"(610 mm) center to ceiling joists. For other spacings or locations, additional holes can be cut in pallet. (See the figure on the next page.)

Locate transformer end of track at headrest end of chair. - Not legrest.

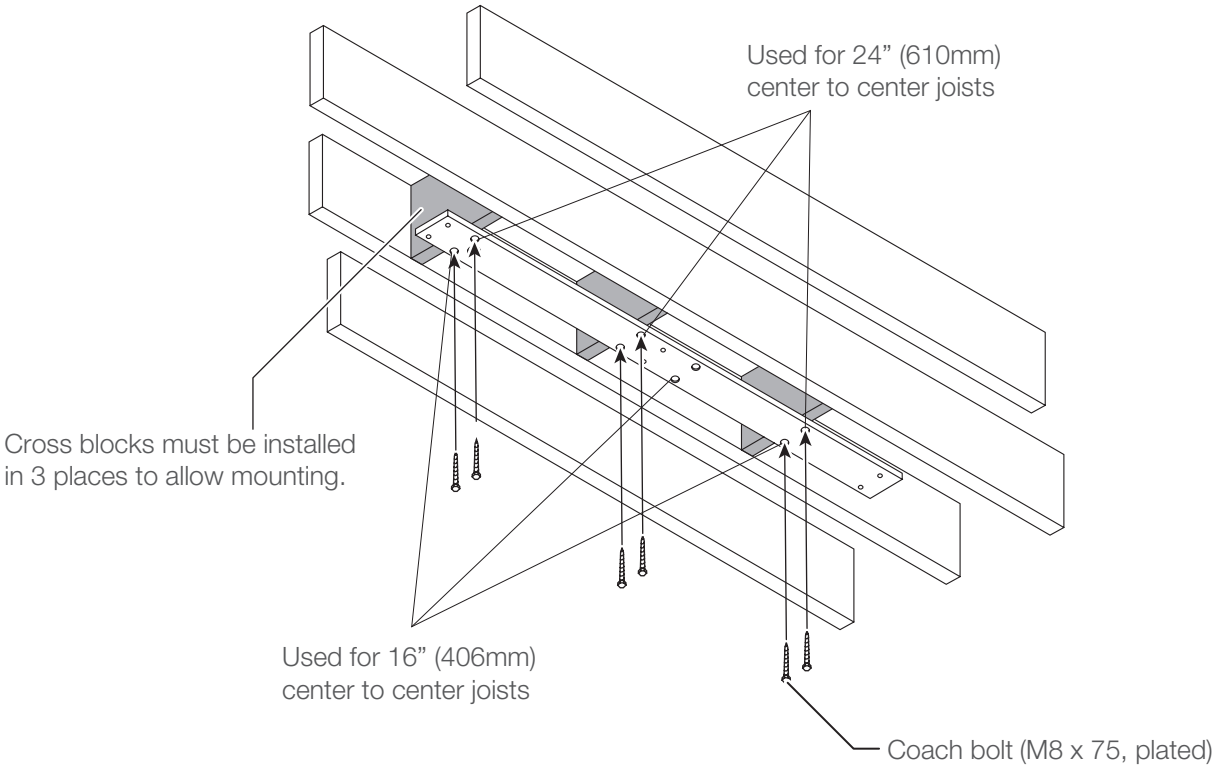
(C) In suspended ceilings

For suspended ceilings, appropriate rigid structure must be attached to the ceiling framework to provide 200lb (90kg) dead weight capacity. (See the figure on page 22.)

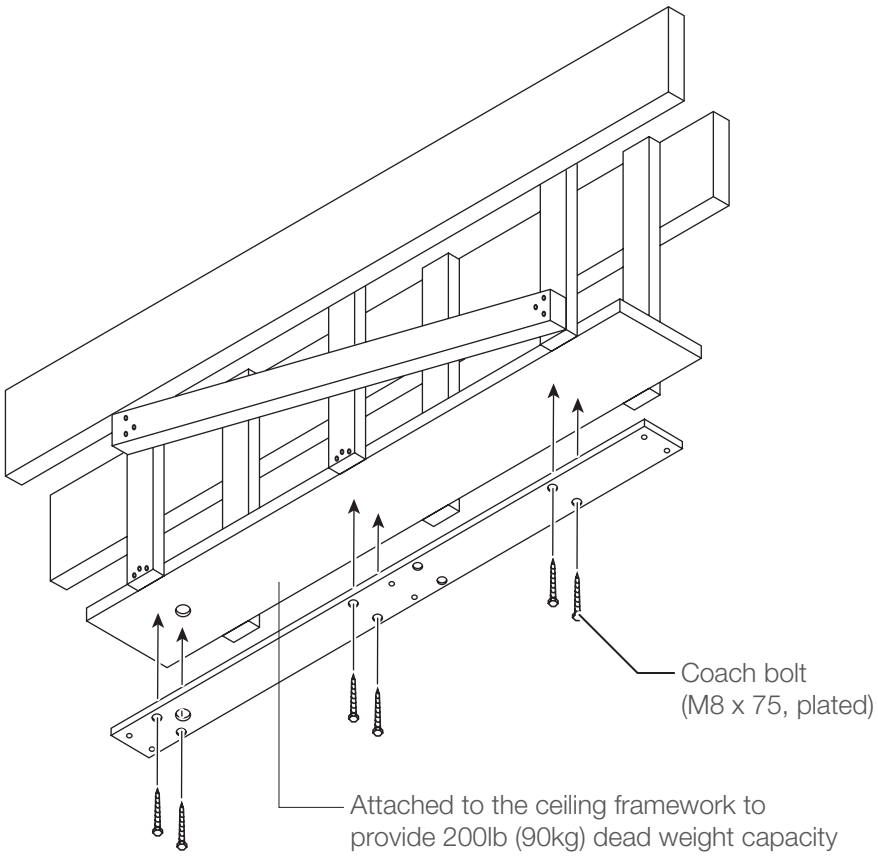
(A) In conventional ceilings with joists perpendicular to the center line of the light



(B) In conventional ceilings with joists parallel to the center line of the light

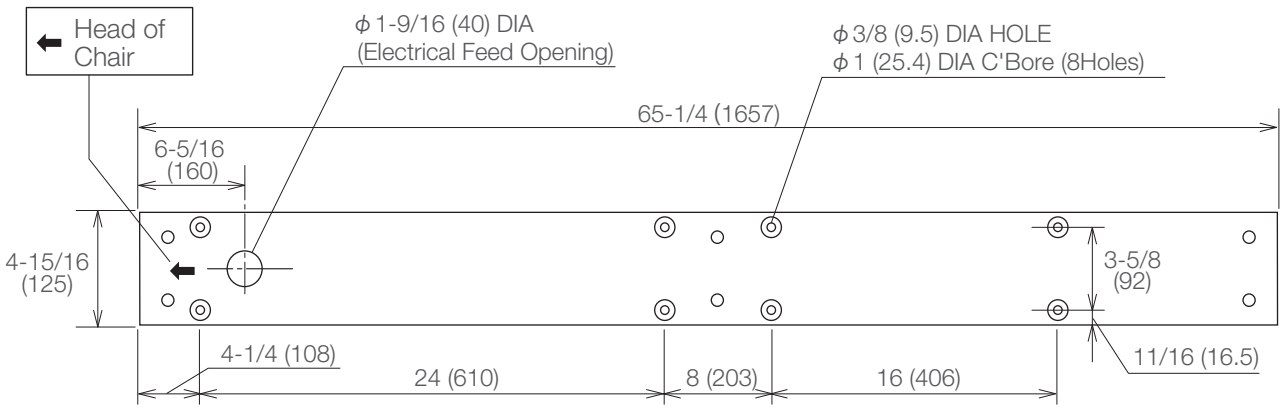


(C) In suspended ceilings



(2) Electrical preparation

Refer to below figure for the location of electrical feed opening in pallet, provide 3 wire, circuit (fuse or breaker) through flexible conduit with enough slack to protrude at least 2" (50mm) below the pallet when installed.
A readily accessible shut-off switch for this circuit is recommended. Use wiring suitable for 194℉ (90℃) service.



Unit : inch (mm)

(3) Installation Instructions

1. Lead out the power supply cable from the ceiling where the track light is mounted.

2. Run the power supply cable through the pallet and mount the pallet.

3. Place track against the pallet and slightly engage two hex bolts (M8 x 25, plated) and two flat washers (M8, plated) at the end opposite to the electrical opening.

4. Allowing the free end to hang down slightly for access, install the conduit box connector to the track.

5. Attach the track to the pallet.
   Fix the track with six hex bolts (M8 x 25, plated) and six flat washers (M8, plated).

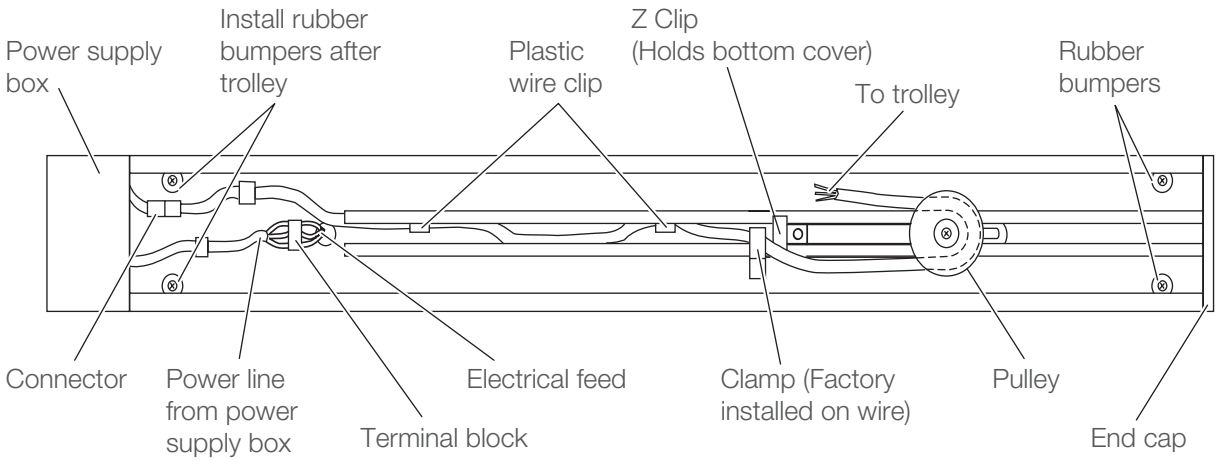
6. Connect the wires from the feed to the terminal block.

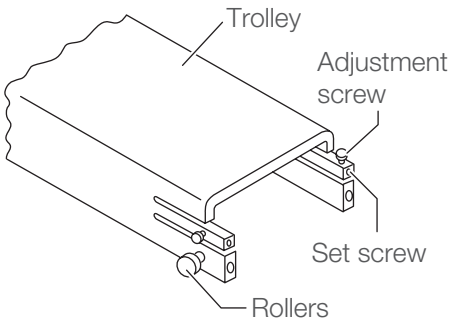
7. Slide the trolley onto the track (end near electrical opening) with the arrow on the trolley oriented toward the pulley on the track.

8. Carefully guide the wire from the trolley, around the spring-loaded pulley and back toward the end of track.

9. Attach retainer clamp to small screw in track. Clip the free end of the trolley wire into the plastic clip near end.

10. Install rubber bumpers at the end of the track in the holes provided.





11. Check operation of the trolley.
    It is factory adjusted to provide smooth effortless travel, without play, however rollers can be readjusted if necessary. Loosen the set screw and adjust the socket cap screw to vary roller clearance.

12. Attach the power supply box.
    Fix the power supply box with pan head screws (4P, M4 x 15, plated).

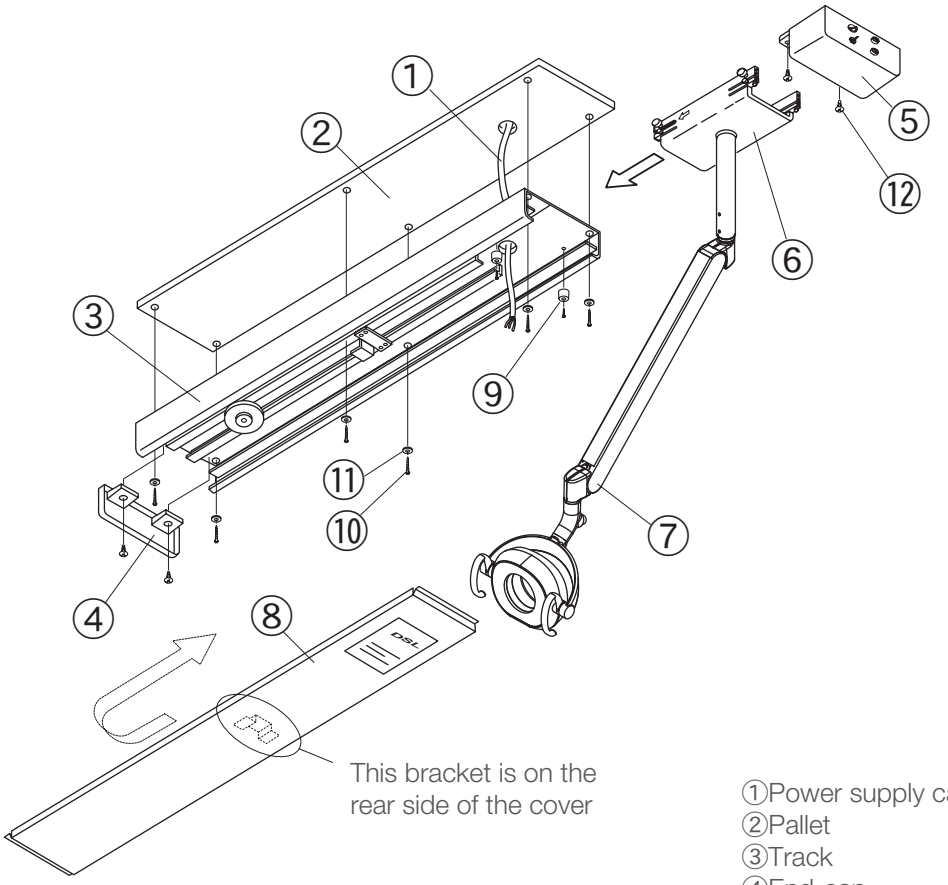
13. Attach the pigtail leads to the corresponding power line wires at the terminal block.
    Retain the wires under the plastic clip.

14. Connect the plug-in connector to the trolley wire.

15. Carefully slide bottom cover onto the track from free end.
    Be sure to engage lip onto Z bracket.

16. Attach the end-cap with the pan head screws (M4 x 15, plated).

17. Slide the trolley back and forth, checking for binding or rubbing.



①Power supply cable
②Pallet
③Track
④End-cap
⑤Power supply box
⑥Trolley
⑦Light assembly
⑧Bottom cover
⑨Rubber bumper
⑩Hex bolt (M8 x 25, plated)
⑪Flat washer (M8, plated)
⑫Pan head screw (4P, M4 x 15, plated)

3-2-4 AL-D106G-QU

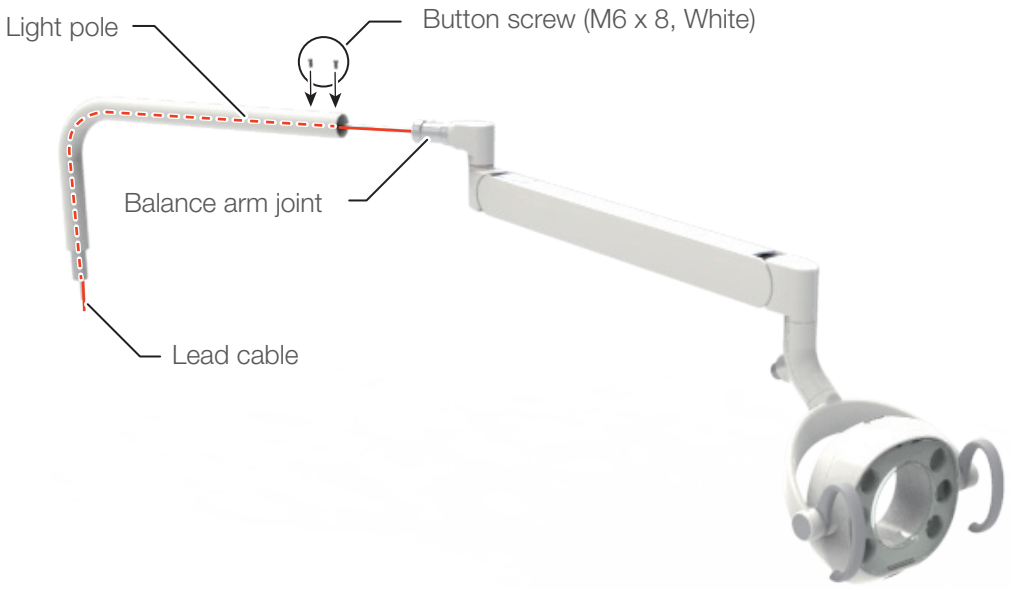
Necessary tools

Phillips screwdriver No. 1,2,3
Hex key wrench; width across flats: 2 mm,3 mm,4 mm
Long nose pliers

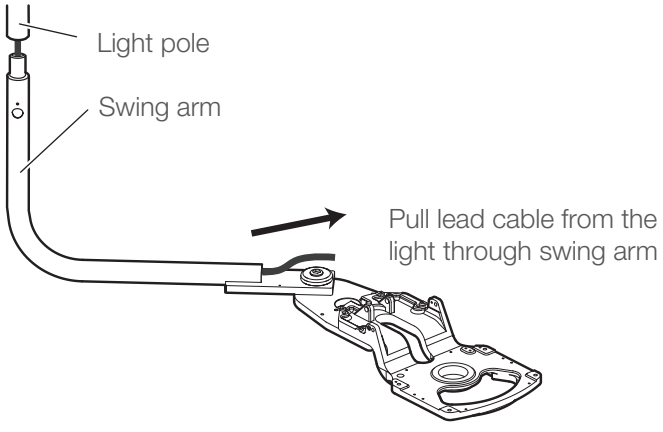
(1) Attach the dental light

Also refer to dental unit installation instructions for installation of the dental light.

1. Remove the two button screws (M6 x 8, White) from the balance arm joint.
2. Pass the lead cable through the light pole.
   The light pole is packed with the dental unit section.
3. Insert the balance arm joint into the light pole and fix it with two button screws (M6 x 8, White) .

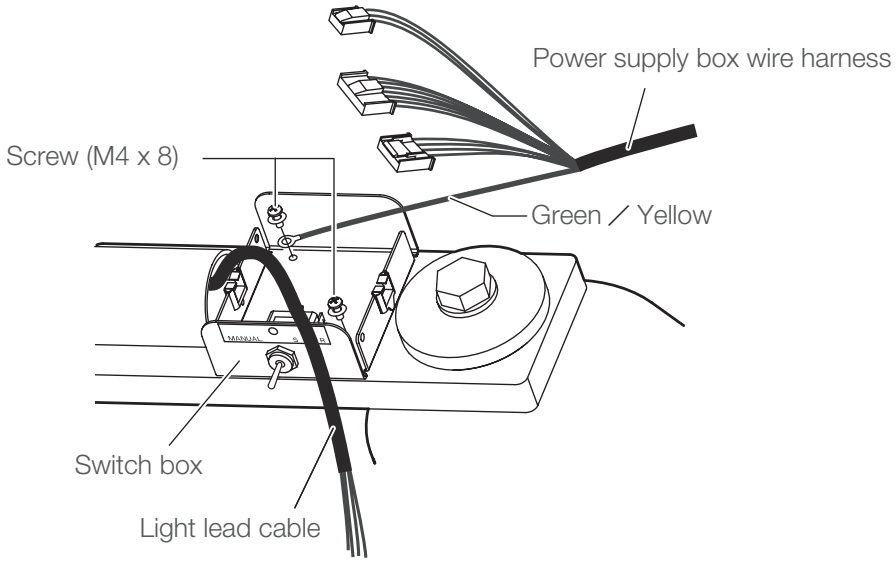


4. Feed the light cable through the swing arm and pull the end of the light cable from the lower end of the swing arm.
5. Mount the light pole onto swing arm.

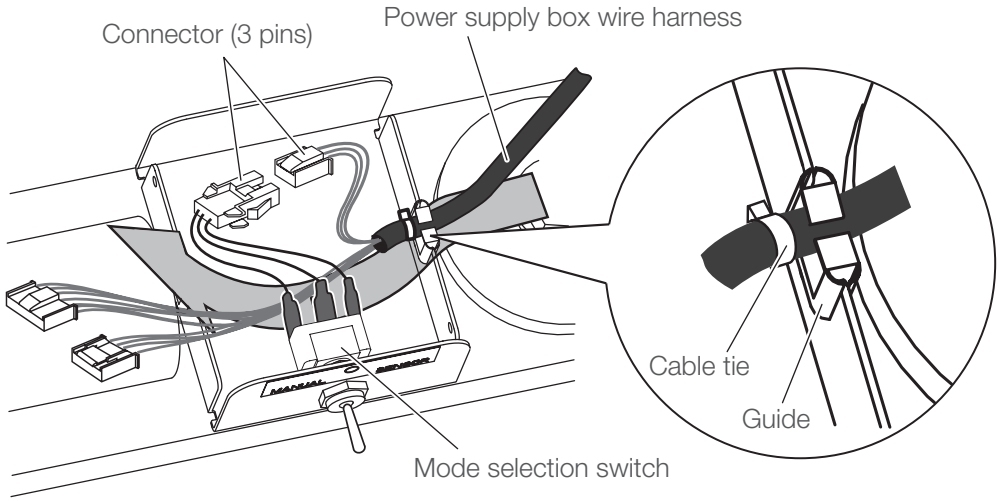


(2) Attach the switch box

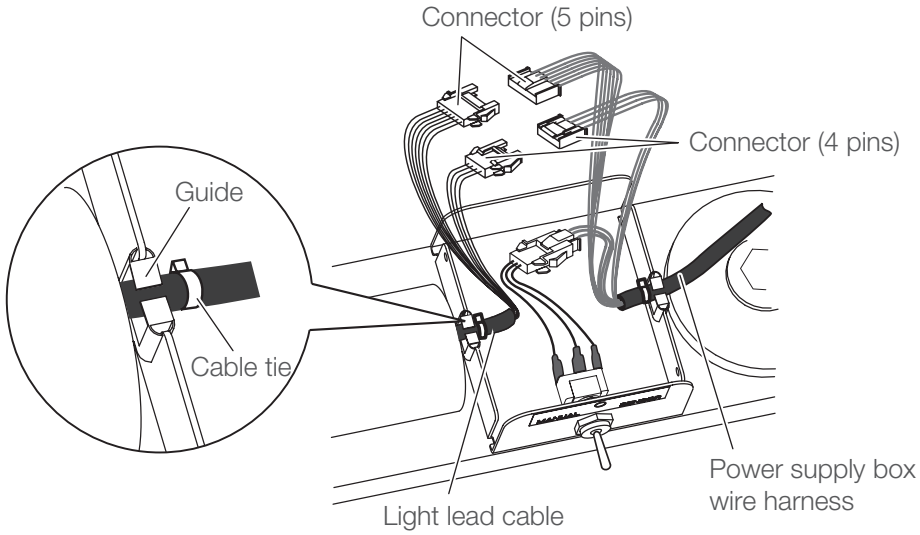
1. Attach the switch box onto the swing arm with two screws (M4 x 8).
   Fix the Green/Yellow line from power supply box wire harness together with same screw as shown in figure.



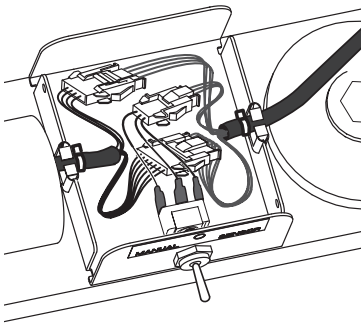
2. As illustrated below, place the wire harness inside the guide.
   The part with the cable tie should be inside the box.
   Lead all the wires underneath the switch, and connect the connectors (3 pins) from the power supply box wire harness and the mode selection switch.

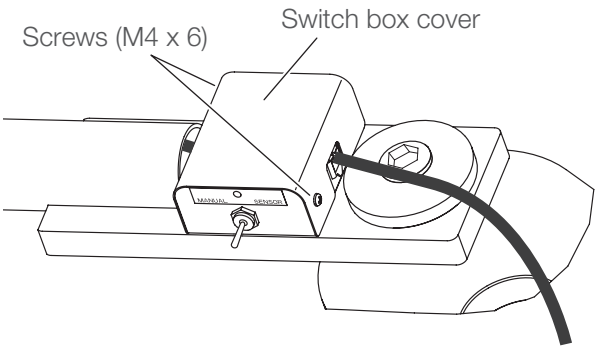


3. As illustrated below, place the light lead cable inside the cable guide.
   The part with the cable tie should be inside the box.
   Make sure that the light lead cable should be above that from the power supply box.
   Connect the connectors (4 pins and 5 pins) of the wire harnesses.



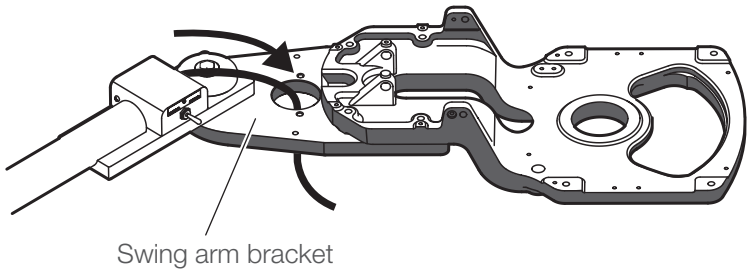
4. Put all the wires inside the switch box.
   Place the switch box cover on the switch box and fix it with two screws (M4 x 6).



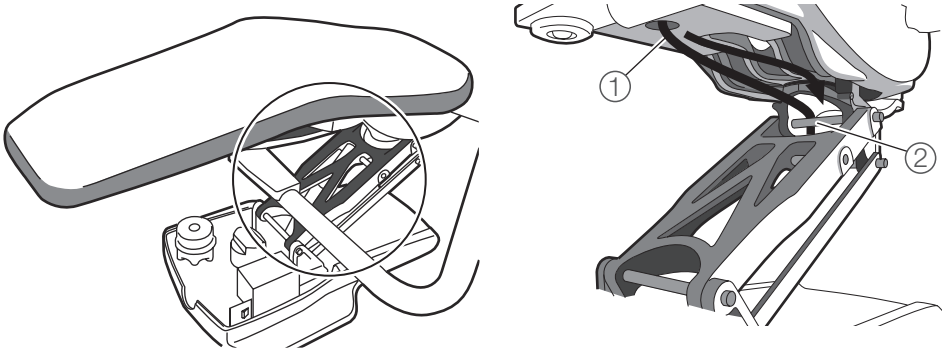


(3) Wiring between switch box and power supply box assembly

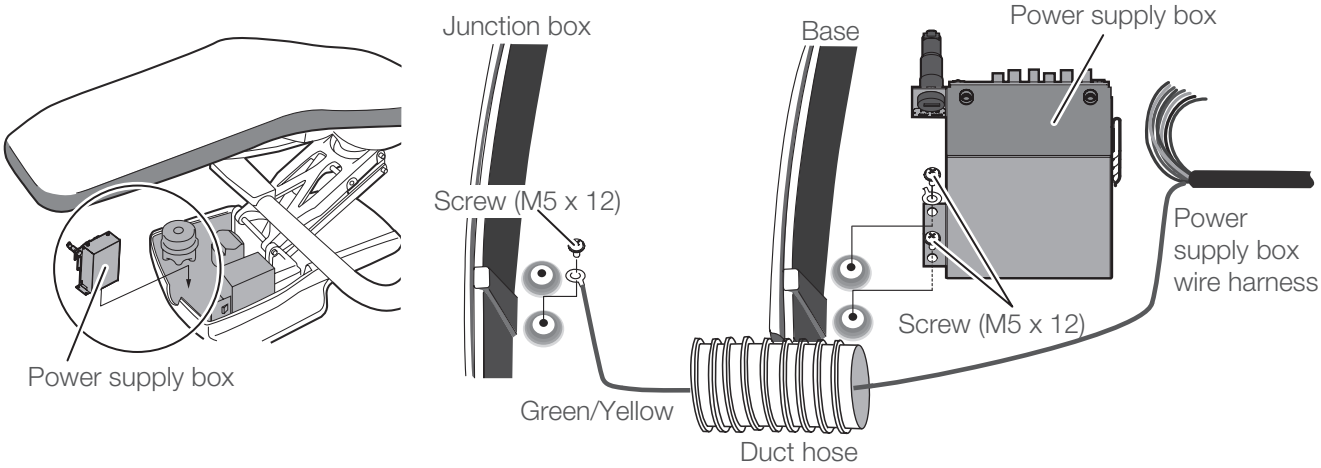
1. Insert the wire harness down through the hole of the swing arm bracket.



2. Feed the wire harness through the flange parts as described below.

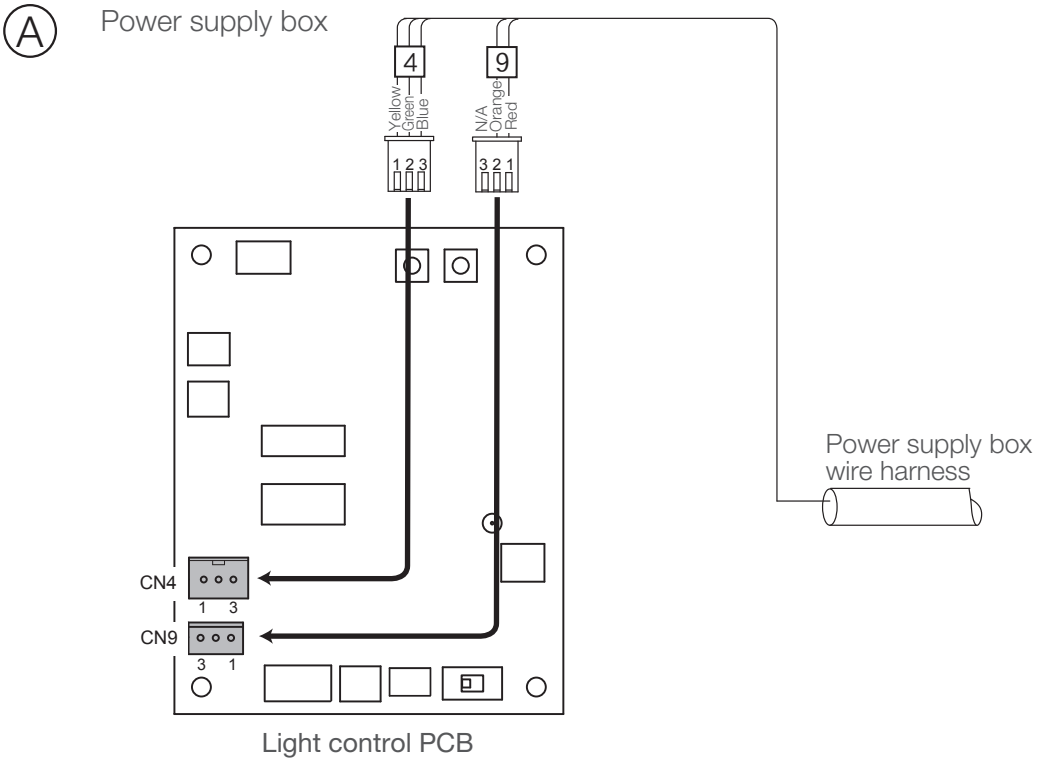


3. (1) Attach the power supply box by the motor pump of the chair with two screws (M5 x 12).
(2) Fix the Green/Yellow line from power supply box wire harness to junction box with screw (M5 x 12).

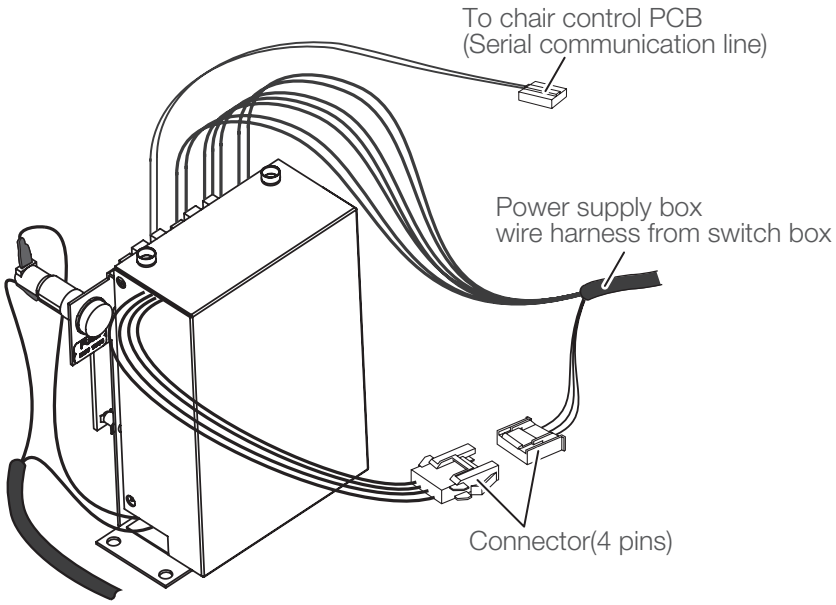


4. Attach the connectors onto the light control PCB of the power supply box.
   A : Connect the connectors (3 pins, 3pins) from power supply box wire harness to light control PCB.
   B : Connect the connector (4pins).

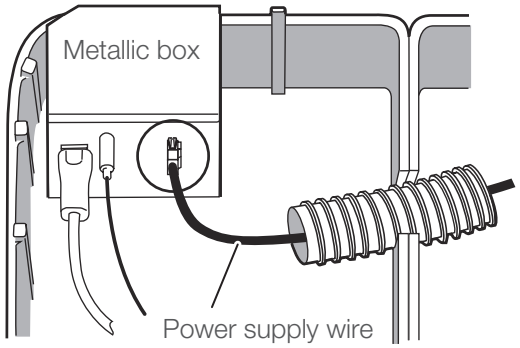
Ⓐ



Ⓑ

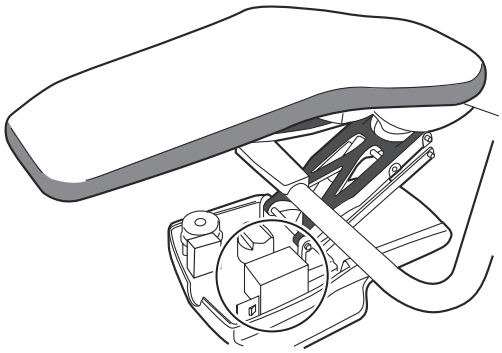


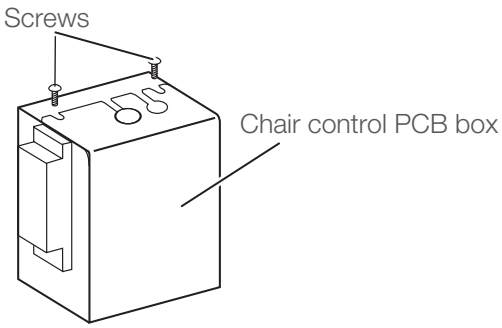
5. Connect the power supply wire from power supply box to the connector on the metallic box inside the junction box.



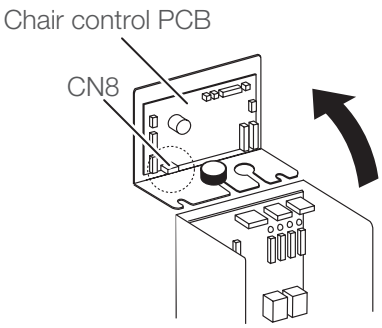
(4) Wiring between light control PCB and chair control PCB

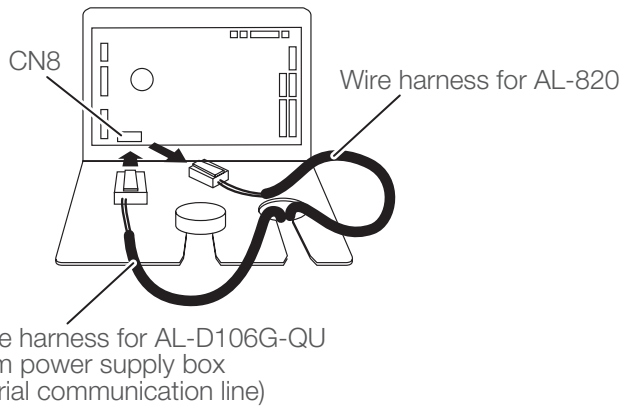
1. Remove two screws for chair control pcb box.

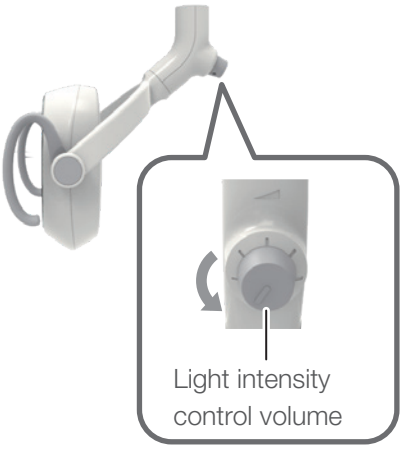




2. Open the lid to access to the chair control PCB.
   Remove the connected wire harness for AL-820 from CN8.
   Replace with the wire harness for AL-D106G-QU that comes out from power supply box.
   Close the lid and fix with 2 screws.







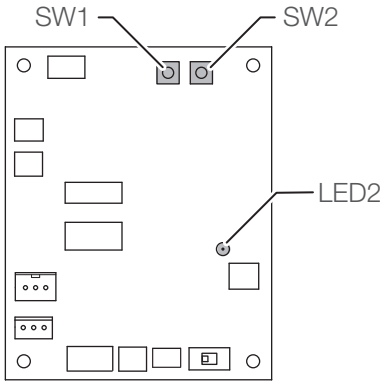
(5) Setting the lower volume limit of the dental light intensity

1. Turn on the power of the unit.

2. Turn the light intensity control volume of the dental light counterclockwise to its lowest setting.

3. Push the switch (SW1, CHECK) on the light control PCB in the power supply box.
   LED2 (Yellow) on the light control PCB brinks.

4. Push the switch (SW2, ON_OFF) on the light control PCB.
   LED2 (Yellow) on the light control PCB turns off.



Light control PCB

3-2-5 AL-D106G-EV / AL-D109W-X / AL-D109W-XN

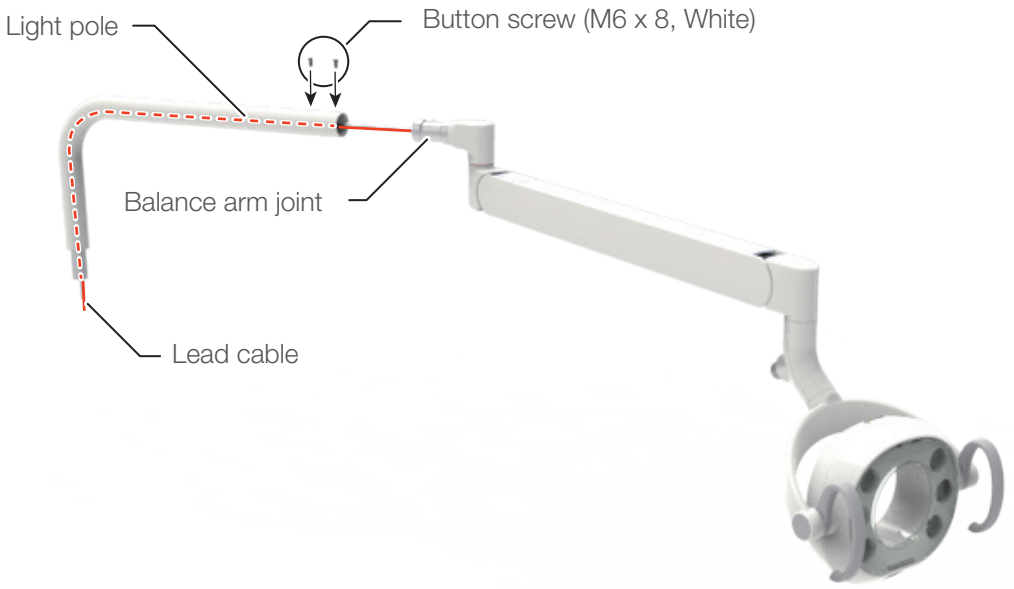
Necessary tools

Phillips screwdriver No. 1,2,3
Hex key wrench; width across flats: 2 mm,3 mm,4 mm
Long nose pliers

(1) Attach the light to the light pole

Also refer to dental unit installation instructions for installation of the dental light.

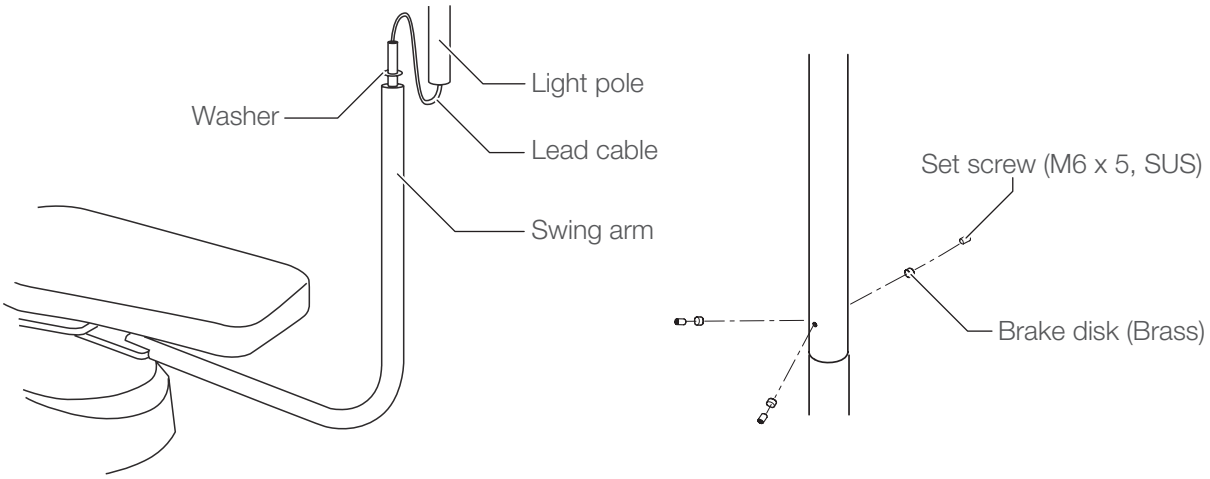
1. Remove the two button screws (M6 x 8, White) from the balance arm joint.
2. Pass the lead cable through the light pole.
   The light pole is packed with the dental unit section.
3. Insert the balance arm joint into the light pole and fix it with two button screws (M6 x 8, White) .



(2) Attach the light to the dental unit

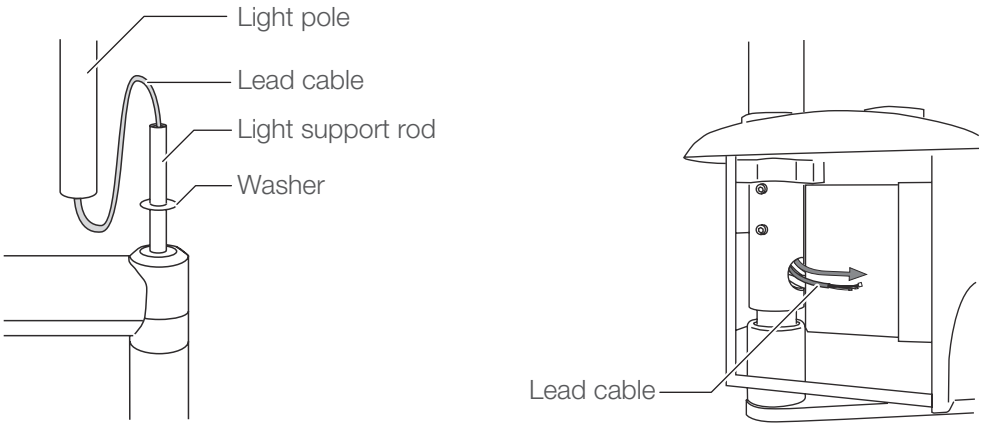
Attach the light to the X-Calibur Unit
(For Swing Arm Mount : AL-D109W-X)

1. Feed the light lead cable through the swing arm and pull the end of the lead cable from the lower end of the swing arm.
2. Mount the light pole onto swing arm.
3. Insert the brake disks, set screws (M6 x 5, SUS) in to the light pole and adjust the brake with set screws.



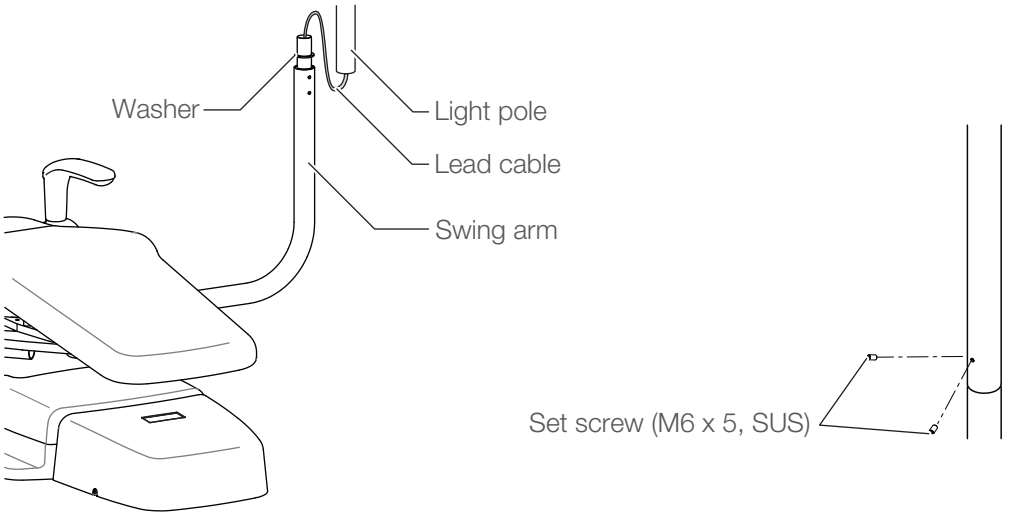
Attach the light to the X-Calibur Unit
(For Cuspidor Mount : AL-D109W-XN)

1. Feed the light lead cable through the light support rod and pull the end of the lead cable from side of the cuspidor post .
2. Mount the light pole onto light support rod.
3. Insert the brake disks, set screws (M6 x 5, SUS) in to the light pole and adjust the brake with set screws.
   (See above figure)



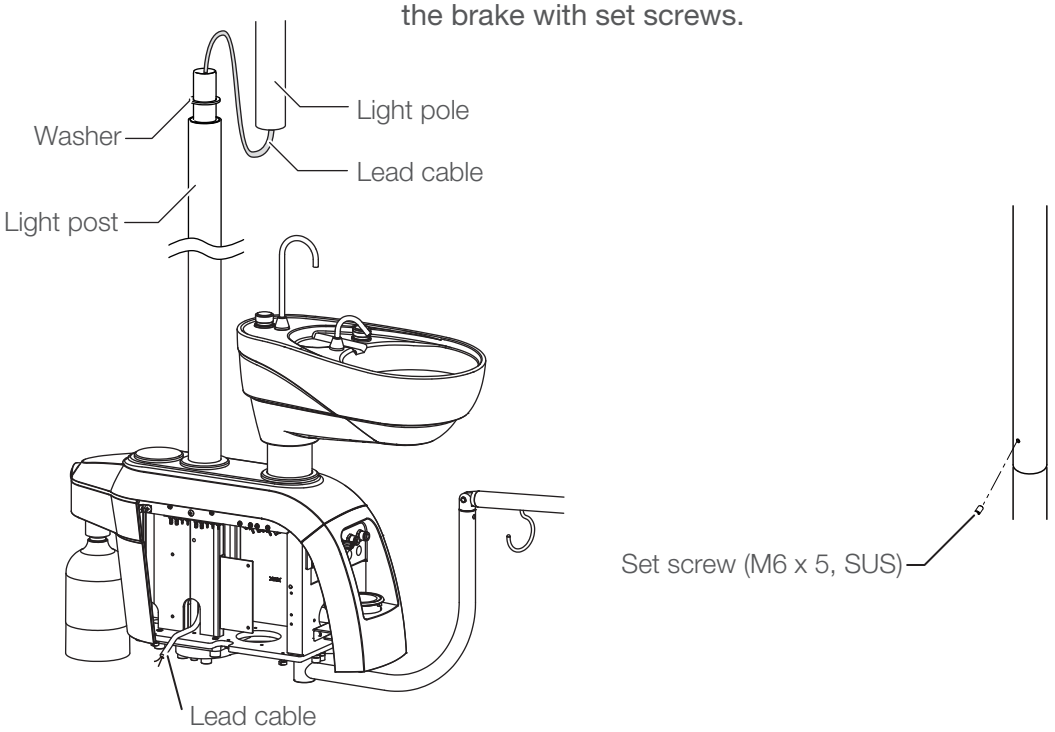
Attach the light to the Evogue Unit
(For Swing Arm Mount : AL-D106G-EV)

1. Feed the light lead cable through the swing arm and pull the end of the lead cable from the lower end of the swing arm.
2. Mount the light pole onto swing arm.
3. Set screws (M6 x 5, SUS) in to the light pole and adjust the brake with set screws.



Attach the light to the Evogue Unit
(For Cuspidor Mount : AL-D106G-EV)

1. Feed the light lead cable through the light post and pull the end of the lead cable from side of the cuspidor post .
2. Mount the light pole onto light post.
3. Set screws (M6 x 5, SUS) in to the light pole and adjust the brake with set screws.



(3) Install the power supply box

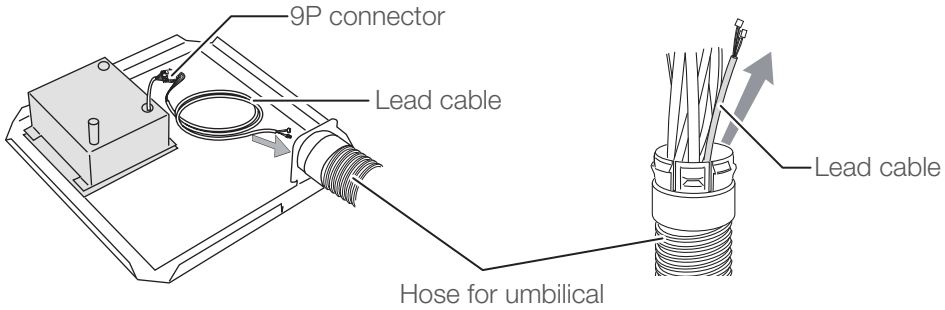
Place the power supply box inside junction box.

Connect 9P connector of power supply box and lead cable.

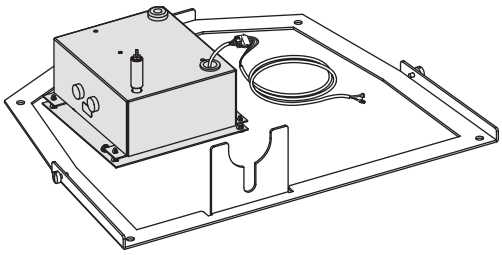
Feed the lead cable through the hose for umbilical.

For Quolis chair, feed the wire harness to the chair side.

Combine with BEL-50 Chair

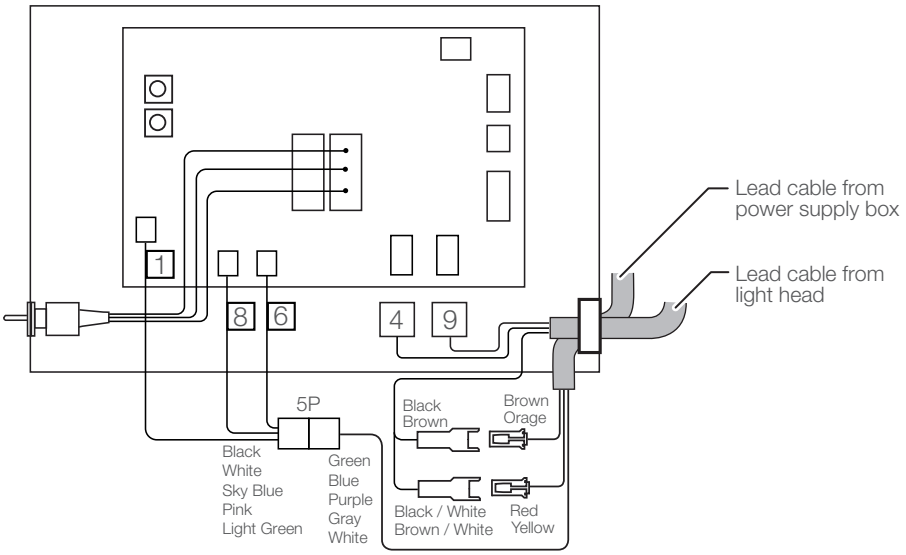


Combine with Quolis Chair



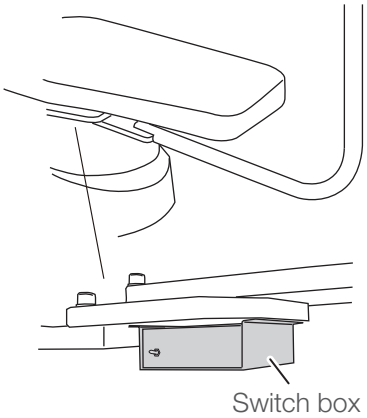
(4) Install the switch box

1. Open the control box and connect the connectors with the lead cable from the light head and the other lead cable from the power supply box.

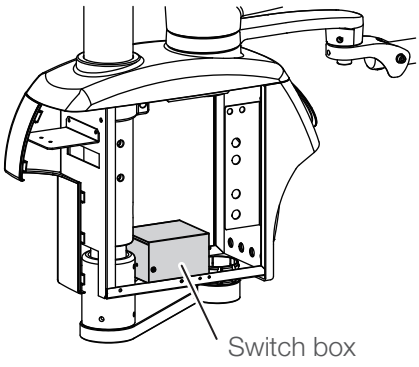


2. Attach the control box as shown in figure below.

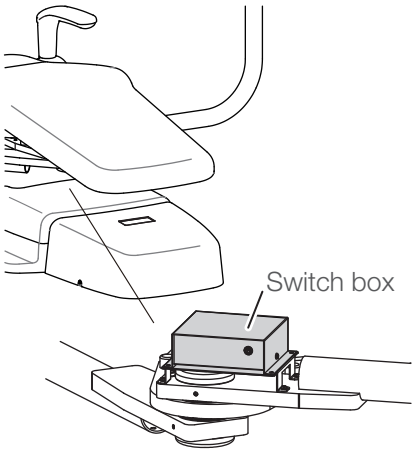
X-Calibur Swing Arm Mount (AL-D109W-X)



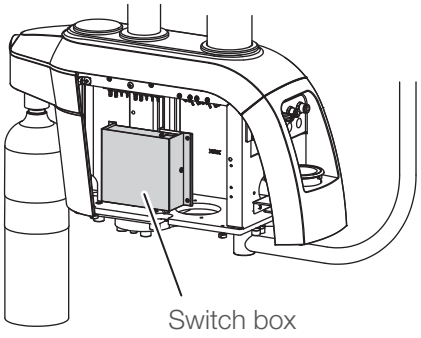
X-Calibur Cuspidor Mount (AL-D109W-XN)



Evogue Swing Arm Mount (AL-D106G-EV)



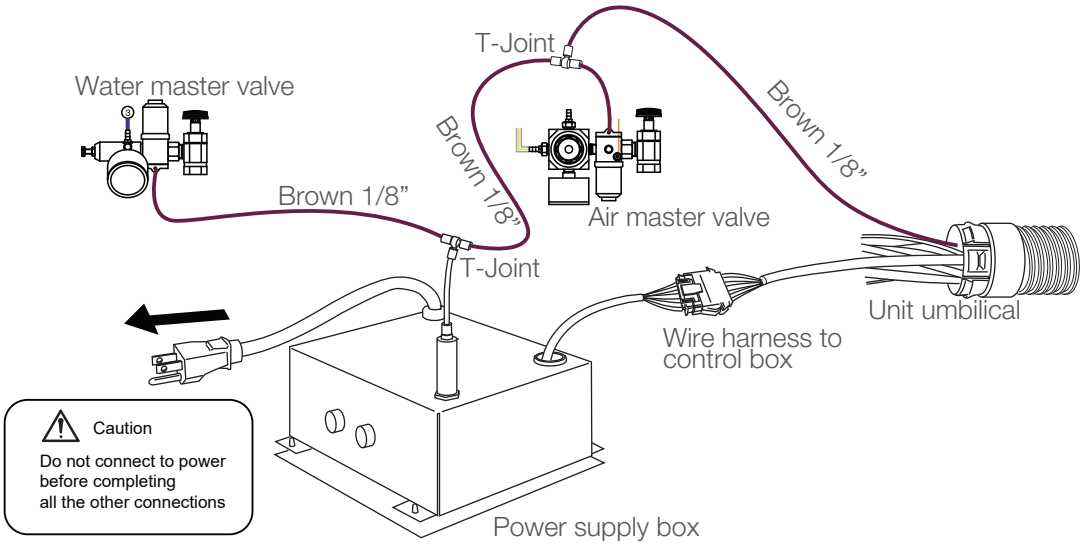
Evogue Cuspidor Mount(AL-D106G-EV)

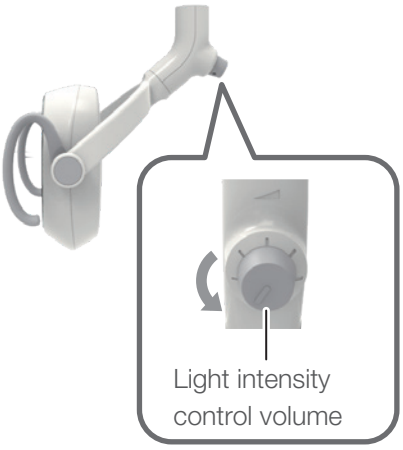


(5) Connection of power supply box

Connect the wire harness, brown tubing as per the following diagram.

After all the connection is completed, connect the power plug.





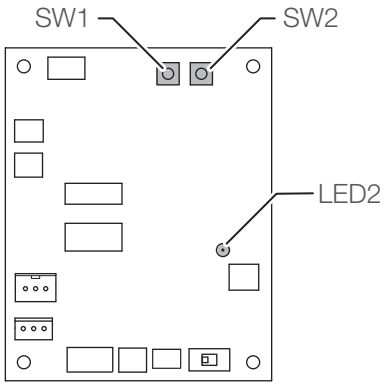
(6) Setting the lower volume limit of the dental light intensity

1. Turn on the power of the unit.

2. Turn the light intensity control volume of the dental light counterclockwise to its lowest setting.

3. Push the switch (SW1, CHECK) on the light control PCB in the power supply box.
   LED2 (Yellow) on the light control PCB brinks.

4. Push the switch (SW2, ON_OFF) on the light control PCB.
   LED2 (Yellow) on the light control PCB turns off.



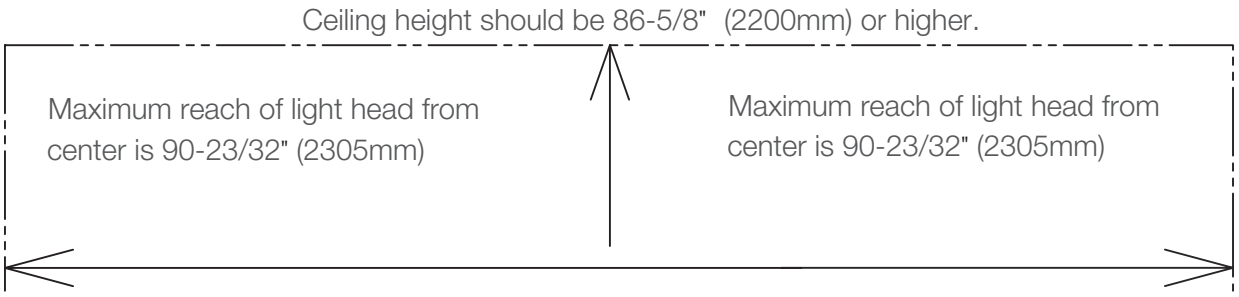
Light control PCB

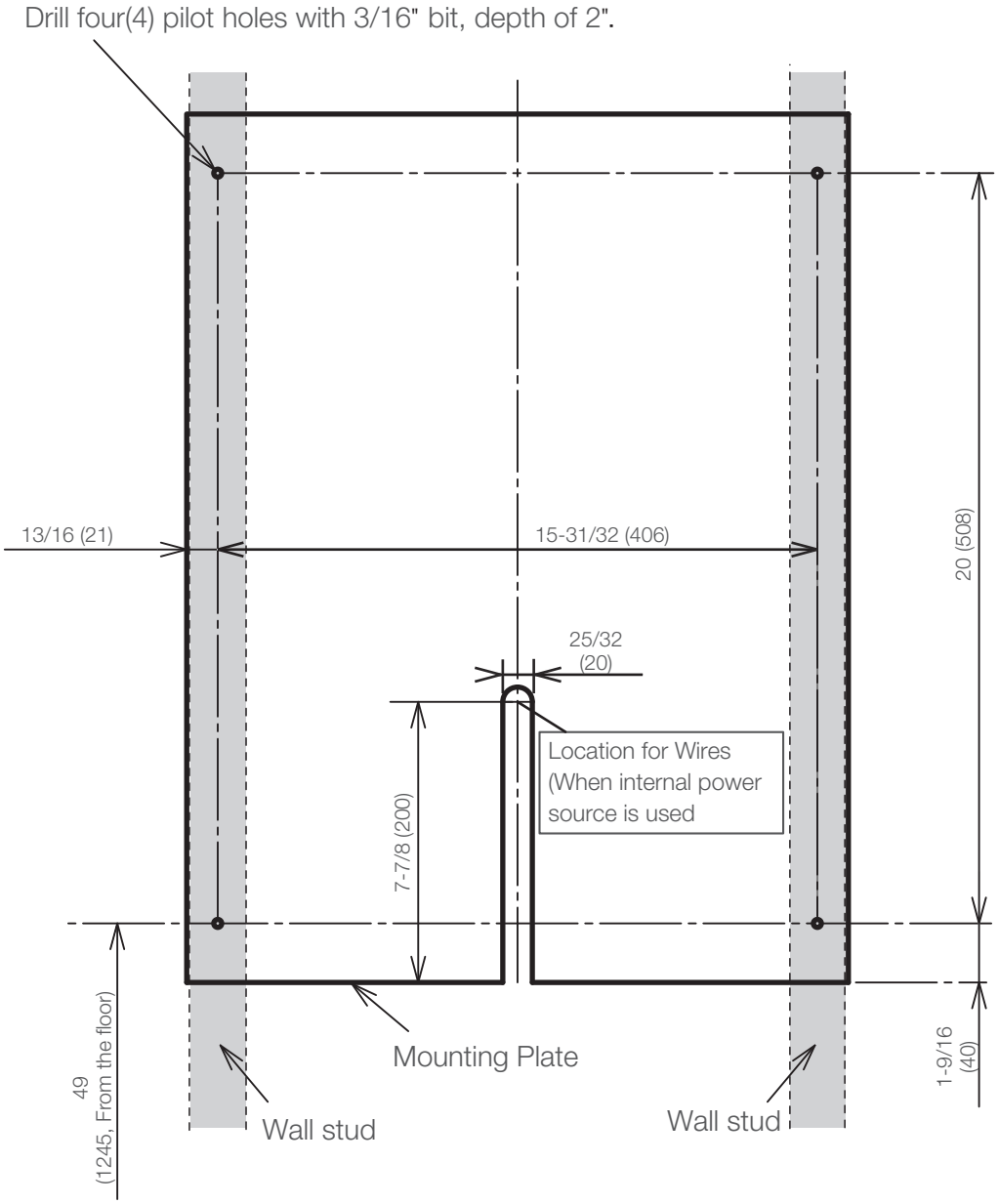
3-2-6 AL-D107G

Installation instruction, see in cabinet installation instractions.

3-2-7 AL-D108G

Mounting plate pre-installation requirement





Unit: inch (mm)

Necessary tools

Phillips screwdriver No. 1,2,3
Hex key wrench; width across flats: 2 mm,3 mm,4 mm
Long nose pliers

Precaution for Installation

(1) The light backboard must be securely mounted to the wall studs.

DO NOT mount to metal studs.

(2) For electrical code compliance, confirm code requirements in your area.

Mounting to the backboard

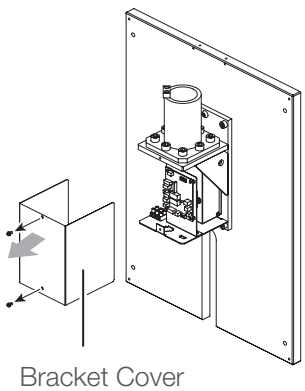
1) A maximum of 71” to the top of the backboard from the floor.
2) A minimum of 8” from the top of the backboard to the ceiling.
3) It is important to locate the backboard no closer than 50” to the perpendicular wall.
4) The backboard should be approximately mid-line of the dental chair.

INSTALLATION

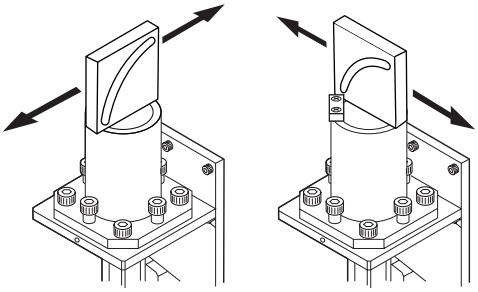
1. With a 3/16” drill, drill four (4) pilot holes approximately 2” depth. See page 40.

2. Mount Wall Plate Assembly to the studs, with four (4) lag bolts and washers (Supplied).

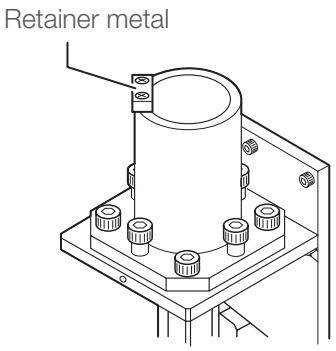
3. Remove Bracket Cover by removing two (2)screws from it. This cover will be attached later on.



Bracket Cover



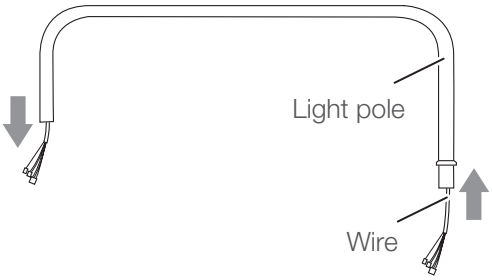
4. Place a level on top of Pole Receptacle left to right and front to back, and adjust the level with four leveling bolts.

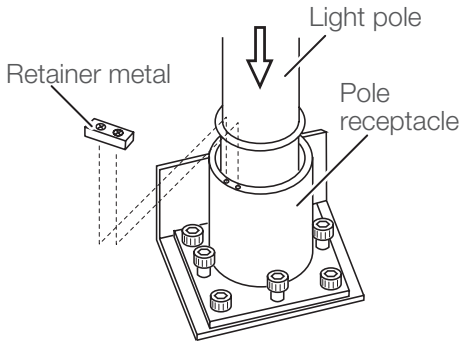


5. Remove the retainer metal from top of pole receptacle .
(This metal must be installed later on)

6. Light Pole Mounting

(1) Insert the wires from the longer end of light pole through light pole receptacle.

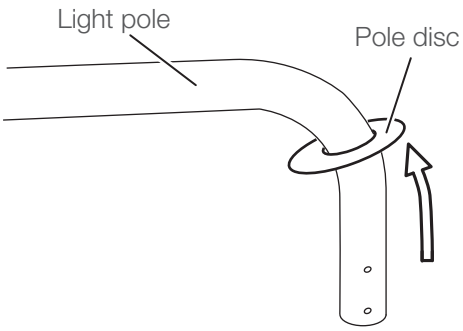




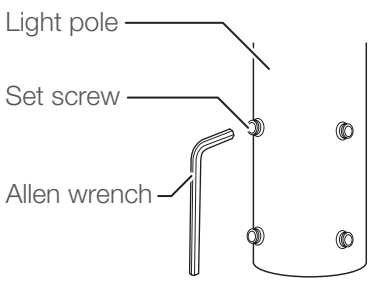
(2) Mount light pole onto the receptacle. To make this job easier, hold the light pole horizontally, and swing it right and left while inserting into pole receptacle.

7. Re-attach retainer metal which was removed in step 5.

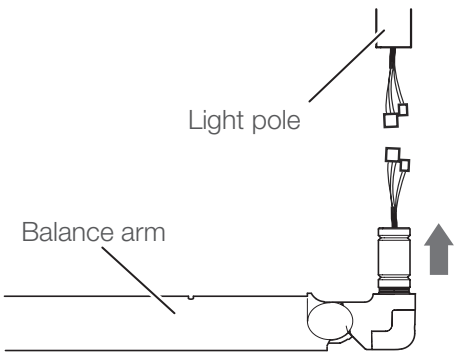
8. Connection of wiring
   (1) 4P connector (Black, Black/White, Brown, Brown/White) from light pole to 4P connector from power pcb box.
   (2) 3P connector (Yellow,Green, Blue) from light pole to CN4 on PCB.
   (3) 3P connector (Red, Orange) from light pole to CN9 on PCB.



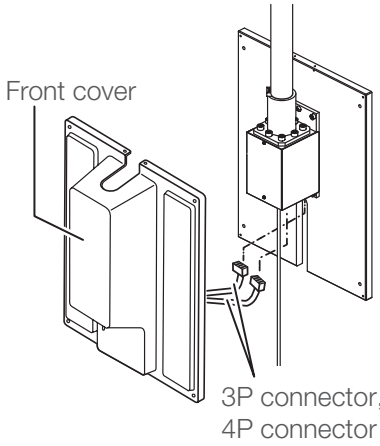
9. Slide pole disc onto the light pole from the shorter end of the pole.



10. Loosen four (4) set screws on the light pole (DO NOT remove set screws).

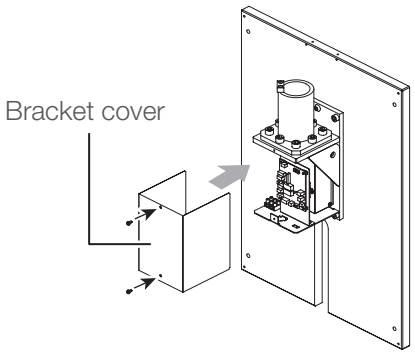


11. Attach ligth assembly to ligth pole :
   (1) Join connectors from light poie to those from balance arm
   (2) Insert balance arm stem into ligth pole.(If wires stick, pull wires from wall bracket inside)
   (3) Tighten four (4) set screws loosened in step 10. These screws also limit the swing range of balance arm.

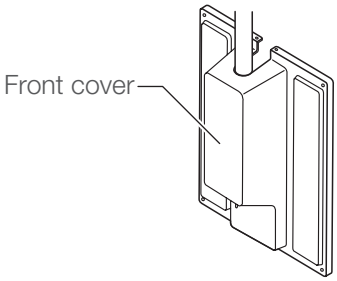


12. Connect power supply cable to proper source.

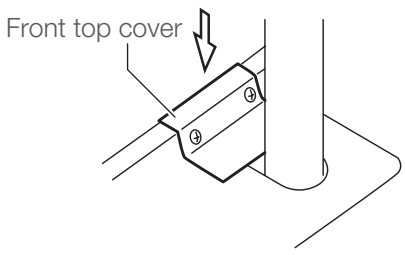
13. Connect 3P connector and 4P connector from front cover to connector on wall bracket.



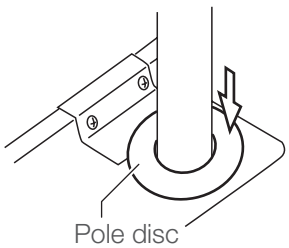
14. Re-attach the bracket cover witch was removed in step3.



15. Place front cover over the wal plate (from upper side first, then bottom) and secure it with tapping screws with washers supplied.

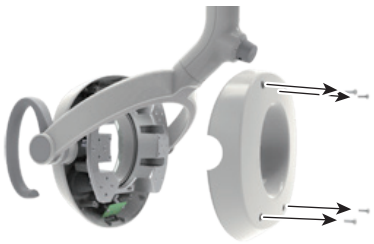


16. Attach front top cover and secure it with two (2) self tapping screws with washers supplied.



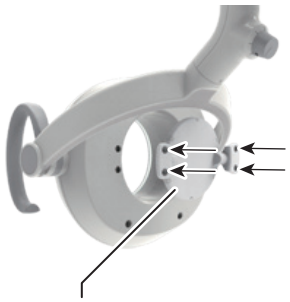
17. Slide pole disk down to cover the opening around light pole on the front top cover.

3-3 Attaching the patient mirror

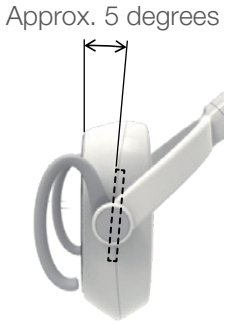


1. Detach the back cover of the light head
   Remove the four pan head screws (M4 x 10, plated).

2. Attach the back cover of the light head enclosed with the patient mirror.
   Fix it in place using the screws detached in Step 1.



3. Attach the patient mirror.
   When viewed from behind, ensure that a curved washer comes at the right side of the mirror. Then fix it with the four pan head screws (M4×10, white), which is contained in the mirror.
   *If the rotation of the mirror is too loose, tighten the screws further while pressing the both mirror brackets.
   *After the attachment is completed, make sure that the mirror can be tilted and held at around 5° as shown in the figure.



4. Confirm the raising/lowering balance of the balance arm.
   Make sure the light head stops at each position in the range of raising/lowering operation of the balance arm.
   If the light head doesn't stop, refer to the "Adjusting the raising/lowering balance of the balance arm"[page 49] and adjust its balance.

3-4 Confirmation guideline following installation

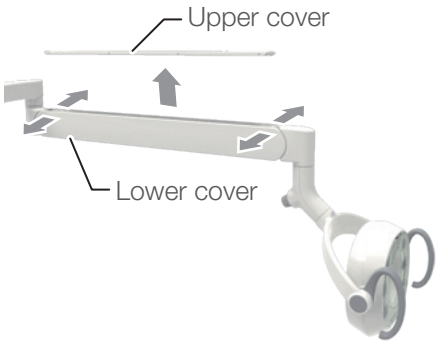
After completing the installation process, confirm normal operation for each item below.

Confirmation item	Check points	Confirmation method
Sensor response	The light can be turned on and off by moving a hand across the perception range of the touchless switch sensor window within a distance of 65 mm.	Operate the parts
	While the light is on, the unit can be switched between operation mode and resin mode by holding a hand for a specified time within a distance of 65 mm from the touchless switch sensor window.	Operate the parts
Brightness adjustment with the dial	During operation mode, the brightness can be adjusted by turning the brightness adjustment dial.	Operate the parts
Unit operation	The light head is retained in any position. There is no noise or looseness while operating the light head. * Following unpacking, the light head movement (vertical turn or lateral turn) may be heavy. This is normal, and the light head becomes lighter after moving it several times.	Operate the parts

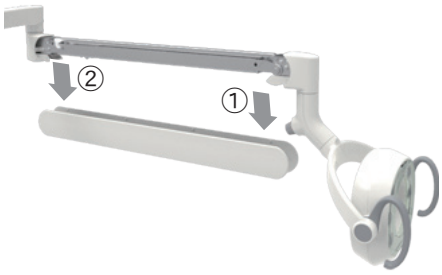
⚠ WARNING Do not directly expose human eyes to LED light. Exposure may hurt human eyes.

4-1 Adjusting the upper limit position of the balance arm

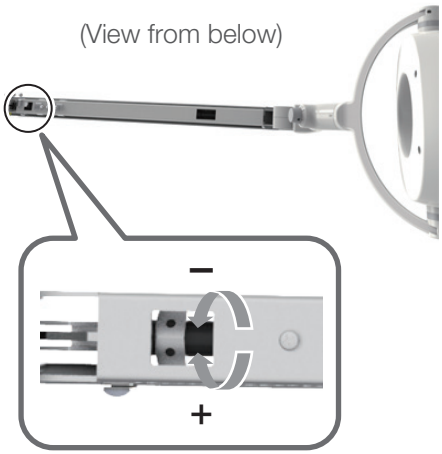
Upper limit position of the balance arm can be adjusted 0°-30°. Upper limit position of the balance arm is set at 30° when shipped.



1. Detach the upper cover of the balance arm
   The upper cover is fixed to the lower cover of the balance arm at four points on both ends. It can be detached by lifting the end of the upper cover while opening the lower cover to left and right.



2. Detach the lower cover of the balance arm
   The lower cover is fixed to the main link of the balance arm at the two projections on the left and two on the right.
   1) First, move the lower cover downward while opening both the sides nearer the light head to the left and right.
   2) Next, detach the lower cover by moving it downward, while opening both the sides nearer the swing arm.



When raising the arm's upper limit position
-> Turn the nut toward the + side
When lowering the arm's upper limit position
-> Turn the nut toward the – side

3. Loosen the hexagonal set screw fixed to the adjustment nut nearer the swing arm, using a hex key wrench (width across flats: 2 mm), and adjust the upper limit position of the arm by turning the adjustment nut using the attached adjustment rod.

Damage could result if the adjustment nut is turned without loosening the hexagonal set screw.

4. Fasten the hexagonal set screw after adjusting

If the hexagonal set screw is not fastened, the upper limit position of the balance arm may be changed unintentionally.

5. Reattach the lower cover of the balance arm
   In the reverse order of Step 2, first reattach the lower cover end nearer the swing arm, and then reattach its end nearer the light head.
   In this process, confirm the indication inside the lower cover, so that the arrow "<- HEAD" points toward the light head.

6. Reattach the upper cover of the balance arm
   Reattach it in the reverse order of Step 1.

4-2 Adjusting the raising/lowering stiffness of the balance arm

1. Detach the upper cover of the balance arm
   (See Step 1 in “Adjusting the upper limit position of the balance arm” [page 47].)

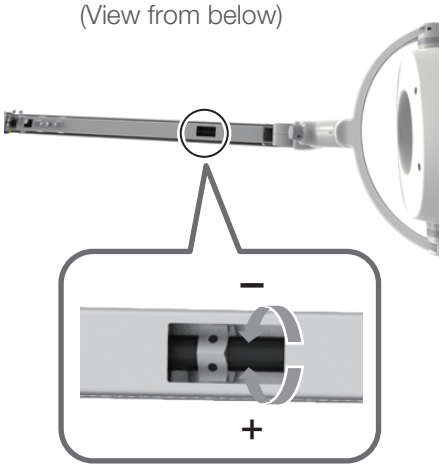
2. Adjust the raising/lowering stiffness by turning the hexagonal set screw fixed to the shaft guide, using a hex key wrench (width across flats: 2 mm)
   The movement becomes stiffer by fastening the hexagonal set screw, and becomes less stiff by loosening it.

3. Reattach the upper cover of the balance arm.
   Reattach it in the reverse order of Step 1.

4-3 Adjusting the raising/lowering balance of the balance arm

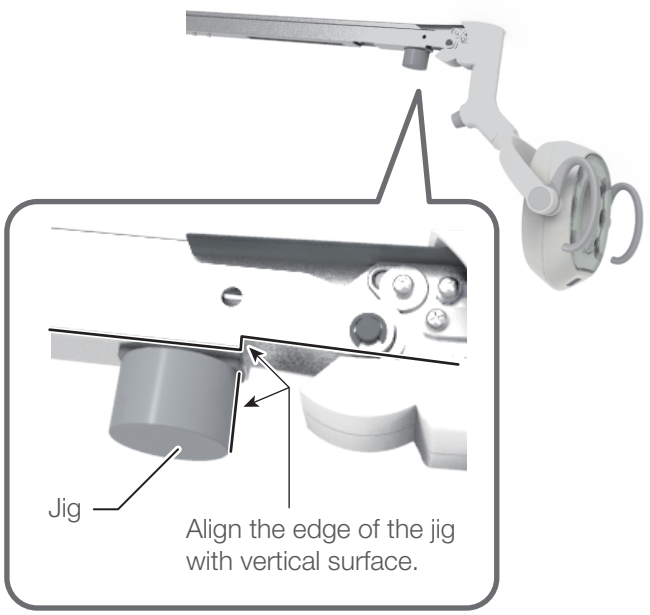
1. Detach the upper cover and lower cover of the balance arm
   (See Step 1,2 in “Adjusting the upper limit position of the balance arm” [page 47].)

(View from below)



When the arm is raised excessively
-> Turn the nut toward the – side
When the arm is lowered excessively
-> Turn the nut toward the + side

2. Adjust the raising/lowering balance of the balance arm by turning the adjustment nut nearer the light head, using the attached adjustment rod.
   When adjusting the balance arm with the jig (optional), attach the jig at the position shown in the figure below.

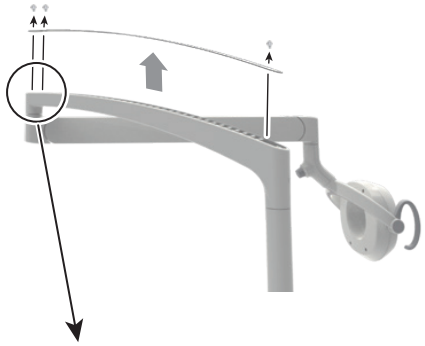


In case of adjusting the balance arm without a jig, adjust the balance arm to make it tilt slightly upward so that the arm will balance horizontally when equipped with the upper and lower covers. If the arm still doesn't balance, detach the upper and lower covers, then readjust the arm again.

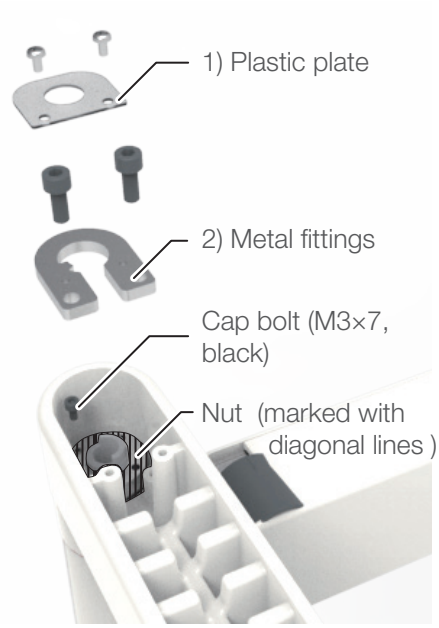
3. Reattach the upper cover and lower cover of the balance arm
   (See Step 5,6 in “Adjusting the upper limit position of the balance arm” [page 47].)

4-4 Adjusting the turning stiffness of the balance arm

AL-D106G



1. Detach the cover of the swing arm
   Remove the three truss head screws (M4 x 6, white).



2. 1) Remove the plastic plate
   Remove the two panhead screws (3P M3 x 6, SUS).

   2) Remove the metal fittings
   Remove the two cap bolts (M5 x 12, black).

3. Remove the one cap bolt (M3×7, black) fixed to the nut.

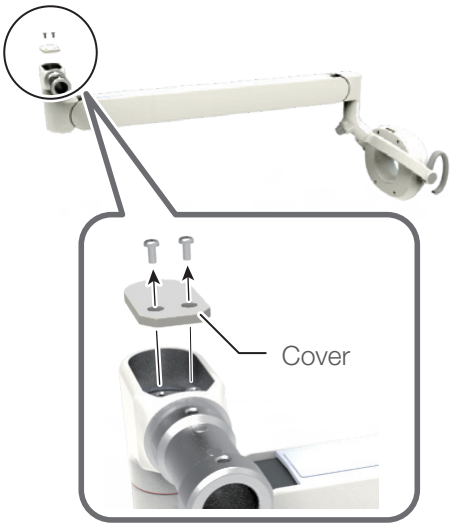
4. Adjust the turning stiffness of the balance arm by turning the nut, using round nose pliers
   The movement becomes stiffer by fastening the nut, and becomes less stiff by loosening it.

5. Reattach the one cap bolt (M3×7, black) removed in Step 3.
   When contacting the head of the cap bolt to the nut, rotate the cap bolt three-fourths turn.

6. Attach the metal fittings and the plastic plate in the reverse order of Step 2.
   * Reattach the metal fittings in the same direction as before.

7. Reattach the cover of the swing arm in the reverse order of Step 1.

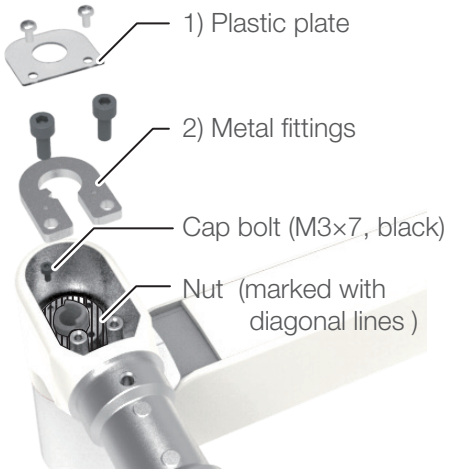
AL-D109W



1. Detach the cover of the balance arm joint
   Remove the three truss head screws (M4 x 6, white).

2. 1) Remove the plastic plate
      Remove the two panhead screws (3P M3 x 6, SUS).

   2) Remove the metal fittings
      Remove the two cap bolts (M5 x 12, black).



3. Remove the one cap bolt (M3×7, black) fixed to the nut.

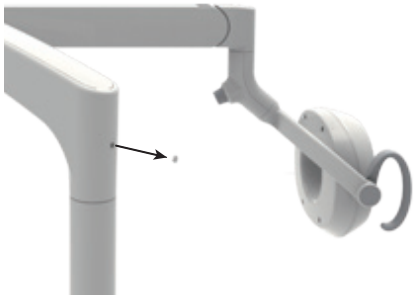
4. Adjust the turning stiffness of the balance arm by turning the nut, using round nose pliers
   The movement becomes stiffer by fastening the nut, and becomes less stiff by loosening it.

5. Reattach the one cap bolt (M3×7, black) removed in Step 3.
   When contacting the head of the cap bolt to the nut, rotate the cap bolt three-fourths turn.

6. Attach the metal fittings and the plastic plate in the reverse order of Step 2.
   * Reattach the metal fittings in the same direction as before.

7. Reattach the cover of the balance arm joint in the reverse order of Step 1.

4-5 Adjusting the turning stiffness of the swing arm (AL-D106G)



1. Detach the cover of the swing arm, located in the illustrated position.

2. Adjust the turning stiffness of the swing arm by turning the hexagonal set screw inside, using a hex key wrench (width across flats: 3 mm)
   The movement becomes stiffer by fastening the hexagonal set screw, and becomes less stiff by loosening it.

3. Reattach the cover that was detached in Step 1.

4-6 Readjust the swing angle of the swing arm (AL-D106G)

Move the cap bolt to this position.

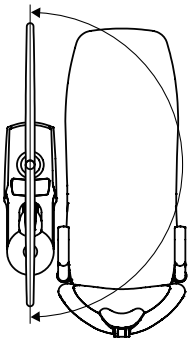
1. Detach the cover of the swing arm
   Remove the three truss head screws (M4 x 6, white).

2. Remove the cap bolt (M3 x 8, plated), and attach it to the illustrated position.

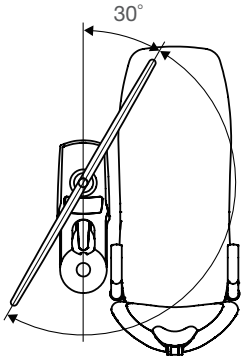
3. Reattach the cover of the swing arm in the reverse order of Step 1.

Angle of swing arm rotation (standard/after adjustment)

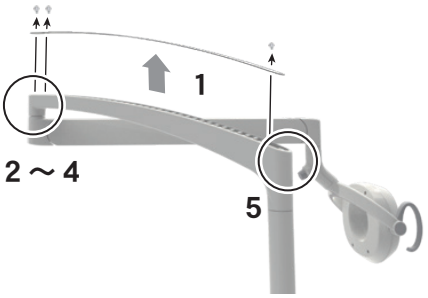
Standard



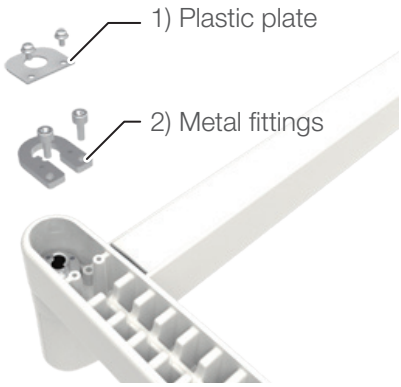
After adjustment



4-7 Changing the unit to a left-mounted style (AL-D106G)



1. Detach the cover of the swing arm
   Remove the three truss head screws (M4 x 6, white).

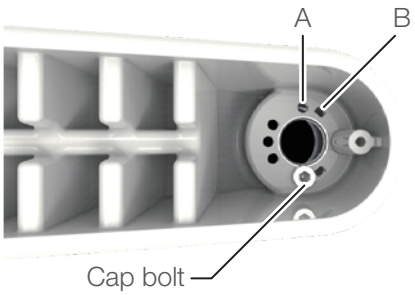


2. 1) Remove the plastic plate
   Remove the two panhead screws (3P M3 x 6, SUS).

   2) Remove the metal fittings
   Remove the two cap bolts (M5 x 12, black).

3. Reattach the metal fittings removed in Step 2-2), facing backward.

4. Reattach the plastic plate in the reverse order of Step 2-1).

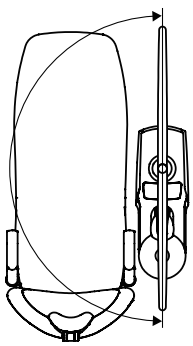


5. Remove the cap bolt (M3 x 8, plated), and attach it to position A or B.

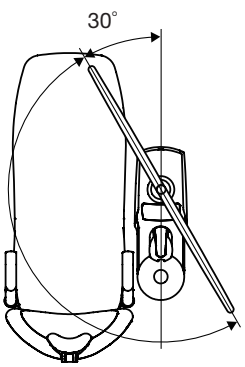
6. Reattach the cover of the swing arm in the reverse order of Step 1.

Swing angle of the swing arm after changing to the left -mounted style.

Cap bolt position A



Cap bolt position B



NOTE

NOTE

2020-01 (1st Edition)	
REF	1E07PEAE

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TAKARA BELMONT CORPORATION
2-1-1, Higashishinsaibashi,Chuo-ku,Osaka, 542-0083, Japan
TEL : +81-6-6213-5945
FAX : +81-6-6212-3680