

Elevated Runway Edge Light (Type II)

EBL-RE- II (PBL-620)

Operation Manual



Please read this manual carefully before construction, installation and operation of the product.
Please keep this manual properly for further reference.

This manual is subject to change without prior notice.

Airsafe Airport Equipment Co., Ltd.

Revision Description

No.	Description	Version No.	Revised by	Approved by	Date
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1.0 Foreword

ICAO Airport Service Manual Part 9 “Airport Maintenance Practices” and FAA AC150/5345-26 Maintenance of Airport Visual Aid Facilities are the highest criteria for site installation and maintenance of such lighting fixtures. This manual was compiled with considerable reference to these two criteria.

The content stated in this manual is absolutely important, so construction personnel must read it carefully before construction. After properly understanding the entire content of this manual, construction personnel should carry out the construction in strict accordance with the methods specified herein, to ensure that the product is safely and properly installed in place.

Routine airport maintenance personnel should carry out the routine maintenance in strict accordance with the methods specified by relevant provisions, to ensure that the lighting fixtures are in the best operation condition.

Related personnel must strictly follow safety criteria. Any personnel without specialized training is strictly forbidden to touch the lighting fixtures and devices. Live line work should be avoided under any circumstances. Construction or maintenance personnel should get acquainted with first-aid knowledge, in case of any unexpected events.

1.1 Illustrations and Meanings

- Following illustrations will appear in this manual where necessary to remind or warn construction or maintenance personnel.
- Please continue reading the subsequent content of this manual after properly understanding the meanings of these illustrations.



- To remind that the behavior may cause serious injury or death.
- ※ Detailed description will be given in the box.



- To remind that the behavior may cause injury to people or damage to product.
- ※ Detailed description will be given in the box.



- To notify that the behavior is prohibited.
- ※ Detailed description will be given in the box.

1.2 Safety Rules and Notices



- Using the light fixtures outside of airport is strictly prohibited.
- ※ Inadequate maintenance or casual touch will cause light faults.



- Using power supply other than CCR is strictly prohibited.
- ※ Other power supply may cause damage to the lamp or other component of the lighting fixtures, or even malfunctions of power supply.



- Making sure that CCR is on power-off state before the installation or maintenance of the lighting fixtures.
- ※ Current surge produced during the installation of the lighting fixtures may cause damage to the lamp.



- Non-professional electricians are strictly forbidden to maintain any electrical fault of the lighting fixtures.
- ※ It may damage any electrical component of the lighting fixtures or cause bigger fault.



- Live line maintenance of the lighting fixtures is strictly prohibited; in case of lightning and/or thunderstorm, maintenance of the lighting fixtures is prohibited.
- ※ It may cause electric shock accident.



- Be careful when handling the lighting fixtures.
- ※ Falling to the ground may cause damage of the optical cover or other internal components of the lighting fixtures and injury of personnel.



- Replace the lead immediately in case the jacket of second cable is damaged.
- ※ It may cause short circuit, electric shock or other failure.



- Don't touch the damaged optical cover or other glass directly with hands.
- ※ Glass fragments may scratch hands.



- Touching the lighting fixtures with wet hand is strictly prohibited.
- ※ It may cause electric shock or other accident.

1.3 Quality Assurance and Responsibility

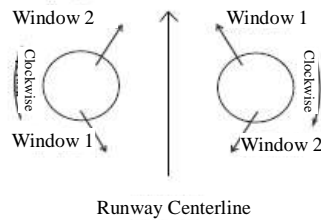
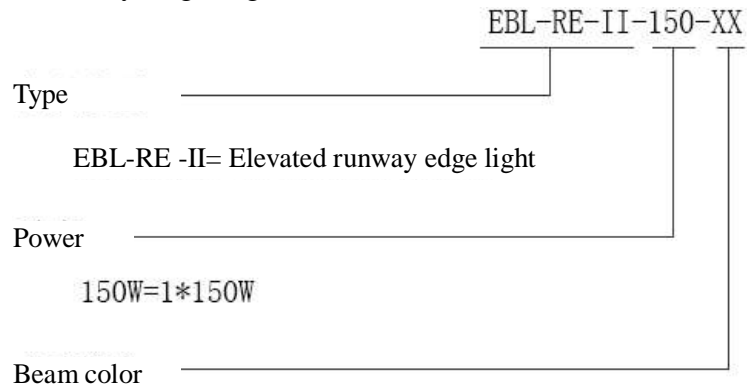
Any defect in design, material or workmanship, which may occur during proper and normal use over a period of one year from date of installation but less than 15 months from date of shipment, or within the warranty period of the tender, will be repaired or replaced by manufacturer free of charge. The warranty doesn't cover the failures resulting from lamp burnt out, improper maintenance, installation or operation, or damages due to snow ploughs. Manufacturer shall not be liable to any further claims or particularly claims for damages not affecting the goods themselves.

2.0 Introduction

This manual involves the following series lighting fixtures:

EBL-RE-II-----Elevated Runway Edge Light

Type of Elevated Runway Edge Light (EBL-RE-II):



- YC = window 1– yellow and window 2– white
- CY = window 1– white and window 2– yellow
- CC = window 1– white and window 2– white
- CR = window 1– white and window 2– red
- RC = window 1– red and window 2– white

2.1 Technical Specifications

This product conforms to the provisions of the following standards or technical specifications. For dated standards or technical specifications, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- International Electrotechnical Commission (IEC) TS 61827;
- Convention on International Civil Aviation Annex 14- *Aerodromes* Volume 1;
- International Civil Aviation Organization (ICAO)- *Aerodrome Design Manual*- Part 4: Visual Aids;
- Federal Aviation Administration (FAA) AC150/5345-46;
- Federal Aviation Administration (FAA) EB 67;
- GB/T 7256 *General Requirements of Lighting Fixtures for Civil Airport*;
- Department of Airport of Civil Aviation Administration of China: Advisory Circular, *Technical Requirements for Runway and Taxiway Aid Lighting Fixtures* (AC-137-CA-2015-03) ;
- Department of Airport of Civil Aviation Administration of China, Advisory Circular, *General Technical Requirements for Civil Airport LED Aid Lighting Fixtures* (AC-137-CA-2015-01) ;

2.2 Application Environment

- Altitude: below 4,000m;
- Outdoor: -55°C ~ +55°C;
- Relative air humidity: not more than 95%;
- In rain, snow, ice and water;
- Expose to corrosive salt atmosphere.
- Basic earthquake intensity VII.

2.3 Application Scope

Elevated runway edge light can be used for Category I, II and III airports.



- Using the lighting fixtures beyond the specified scope is strictly prohibited.
- ※ Application beyond the specified scope will cause damage or risk to any component.

2.4 Technical Parameters

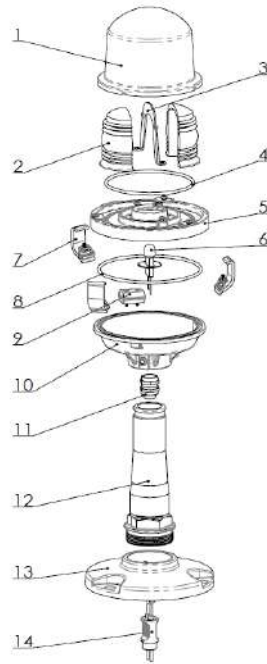
Description	Type	Rated Power	Life of Light Source at 6.6A
Runway edge light	EBL-RE-II-150-XX	150W	≥1,500h

2.5 Technical Features

- Optical cover made of the high borosilicate glass makes good optical performance and heat resistance;
- The filter employs advanced coating technology, with high light transmittance, firm coating and good thermostability;
- International standard PK30D preset focus lamp has accurate positioning and high light distribution accuracy;
- Optical parts have self-positioning design and recalibration is unnecessary for replacing the optical components and lamp;
- Compact structure, attractive appearance, small windward area and strong wind resistance capability;
- Main body of the lighting fixtures is made of aluminum alloy material with special anodizing surface treatment, and all fasteners are made of stainless steel, thus being applicable to all kinds of harsh environment;
- High precision components machining ensures dimensional quality and precision of the lighting fixtures;
- Forged frangible device with precise machining, complying with FAA standards and ensuring stable and reliable performance;
- The overall IP rating of the lighting fixtures reaches IP65, and it is difficult for the dust to be deposited in them;
- The lighting fixtures can be connected to 1 inch or 2 inches frangible tube, which ensures convenient and secure installation;
- The lighting fixtures may be maintained without tools, which are easily dismantled. The lamp may be replaced on site with a hand;

2.6 Structure

1. Optical cover
2. Color filter lens
3. Optical cover
4. Optical cover gasket
5. Optical cover holder
6. Lamp
7. Hinge
8. Body gasket
9. Fixed base of terminal
10. Light body
11. Waterproof Gland
12. Frangible pole
13. Flange
14. Plug



3.0 Installation

Requirements for installation should be learned thoroughly before installation including installation tools and site requirement, etc., to avoid malfunction of the light due to incorrect installation.

3.1 Installation Methods

- Mounted on L- 867 deep base (Figure 3-1).
- Directly mounted with flange (Figure 3-2).
- Mounted on embedded pipe (Figure 3-3).

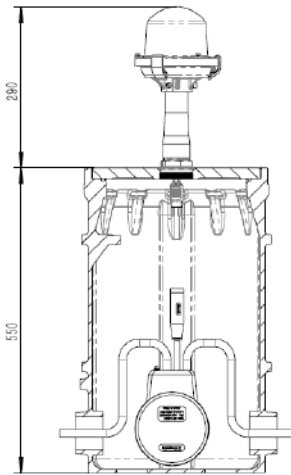


Figure 3-1

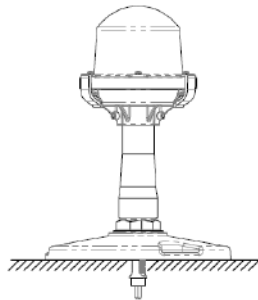


Figure 3-2

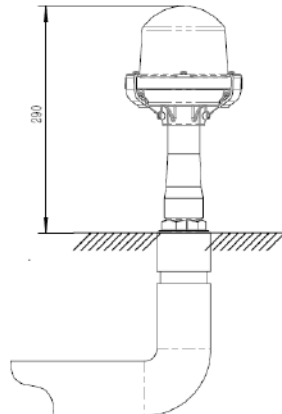


Figure 3-3



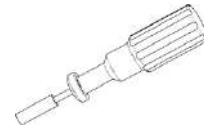
■ Confirm window color and lighting direction before installation.

※ To avoid rework or any other problem.

3.2 Installation Tools

Choosing right tools not only can ensure the correct and reliable installation of the lighting fixtures, but also can reduce unnecessary safety accidents. *Special Tools* listed in the table may be purchased from the manufacturer or any distributor. Universal tools are available on local hardware market. Please pay attention to measurement range during procurement.

- Special tool- Elevated light nut wrench: be used to dismount the lighting fixtures, and available directly from the manufacturer or any distributor.
- Universal tool- Torque screwdriver: be used to dismount screw, equipped with PH2 cross screwdriver, and sellable in various hardware stores.



Recommended range is 1-6N.m.

3.3 Screw and Torsion

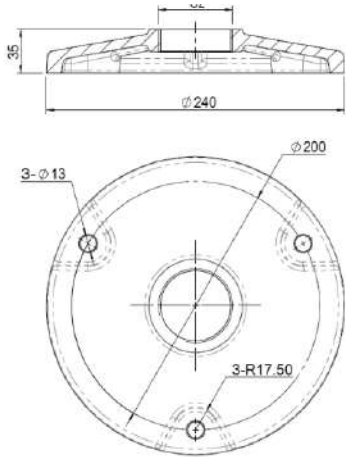
The torque listed in this section is only for reference by maintenance personnel. Correct fastening force of screw can ensure normal operation of the lighting fixtures. If screw is too tight, it will easily damage the lighting fixtures; on the contrary, if screw is easy to fly out, it may cause an accident.

Serial No.	Screw Type	Tool	Torque
1	M6 screw	Internal hexagonal wrench	5 N·m
2	M4 screw	Force measuring screwdriver with cross screwdriver (PH2)	1.5 N·m



- Please use torque wench or other special tool for installation.
- ※ Informal tools may cause damage to fasteners or personal injury.

3.4 Direction Installation of Flange



- Install the flange onto the base, with its dimension shown in Figure above;
- After the flange is installed (see Figure 3-4), connect the secondary cable according to the construction requirements and screw the frangible pole of the lighting fixture into the threaded hole of its chassis (see Figure 3-5).
- After pre-tightening the lighting fixtures, screw down the lighting fixtures with special wrench. (See Figure 3-6 and Figure 3-7).

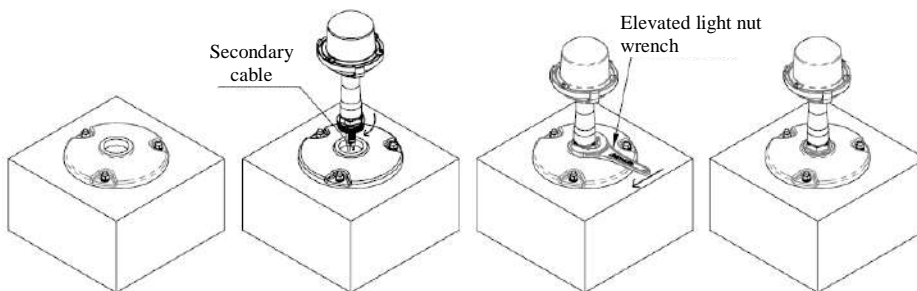


Figure 3-4 Figure 3-5 Figure 3-6 Figure 3-7

- Unscrew the set screw with a socket head wrench (see Figure 3-8).
- The arrow on the outer cover of the lighting fixtures points at the runway centerline and the inner cover partition may be perpendicular to the centerline (see Figure 3-8).
- Then tighten screw. (See Figure 3-9).

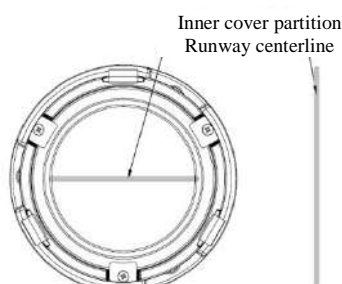


Figure 3-8

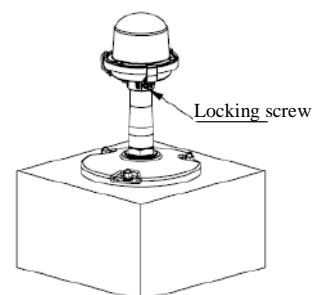
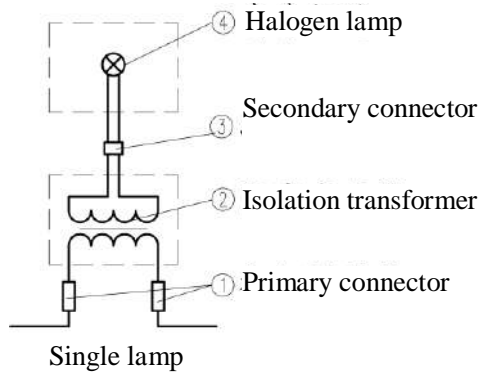


Figure 3-9

4.0 Operation and Control

The lighting fixtures are applicable to CCR power supply 6.6A circuit special for airports, which forms a secondary circuit with the lighting fixtures through secondary outgoing line of isolation transformer connected on primary circuit. Due to the use of isolation transformer, the damage of lamp of single lighting fixture will not affect whole series circuit.

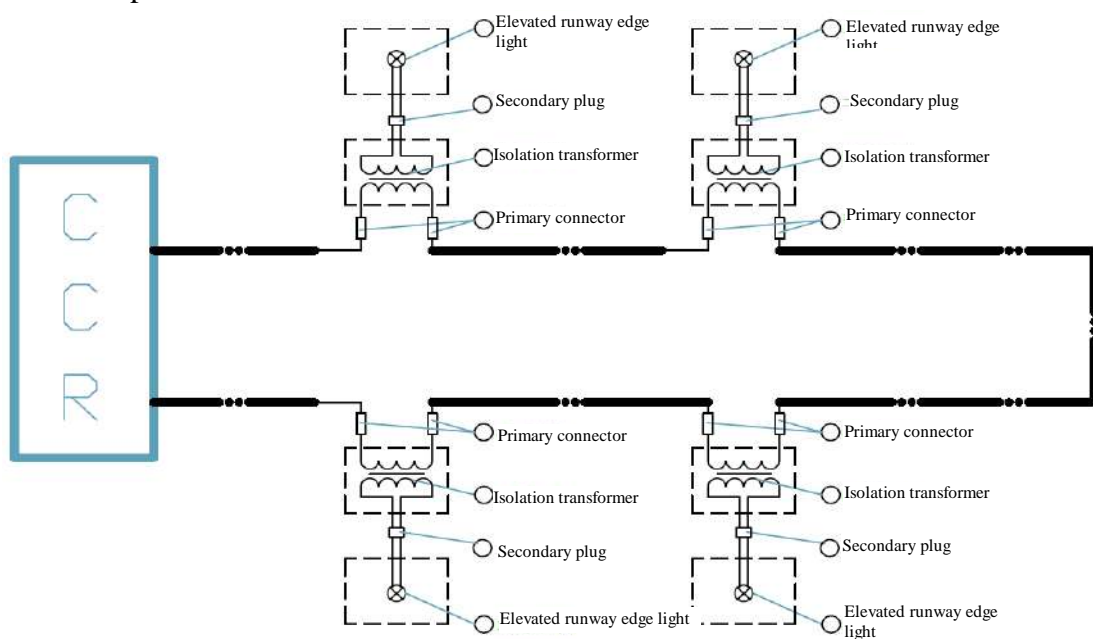
4.1 Light Wiring Schematic Diagram



4.2 Light Intensity Adjustment and Control

In actual use, according to weather visibility, light intensity of the lighting fixtures may be adjusted through different current output by CCR, and varies significantly.

If it is used on occasion of lower than rated current (6.6A), it may greatly improve the service life of lamp.



5.0 Replacement of Components of Lighting Fixtures

When any damage or failure occurs to any consumable or other component of the lighting fixtures, it is required to timely dismantle the lighting fixtures for replacement of the component. Replacement of components needs to dismount the lighting fixtures, so any minor error will cause adverse consequences. The manufacturer requires users to attach importance to the following warnings. It is required to be careful during disassembly, to conduct comprehensive inspection of lighting fixtures, to replace some vulnerable parts as required, and to ensure the performance of the lighting fixtures after disassembly.



- Replacement of components must be conducted by personnel who have received professional training.
- ※ To avoid various failures of the lighting fixtures.



- It is suggested that maintenance of the lighting fixtures be carried out in lighting station or workshop.
- ※ Any impurities mixed in the lighting fixtures may cause any failure of the lighting fixtures.



- The manufacturer suggests that various gaskets should be replaced during each maintenance of the lighting fixtures.
- ※ Aging and damage of gaskets are the main reasons for the leakage of lighting fixtures.

5.1 How to Replace Optical Cover

- Unscrew the M4×10 screws with a cross screwdriver to remove the pressing bracket and take out the outer cover (see Figure 5-1).
- Loosen the steel wire fixing the inner cover to take out the inner cover (see Figure 5-2).
- Put a new inner cover into the holder and fix it with a steel wire; the outer cover is aligned with the set hinge on the holder and then fix it with the pressing bracket and M4×10 cross pan head screws (see Figure 5-3).



- Touching the inner and outer covers directly with hands is strictly prohibited. During operation, the clean white gloves shall be worn.
- ※ Prevent the glass edge from scratching the fingers.
- ※ The fingerprint may be left on the glass to impact the optical property.

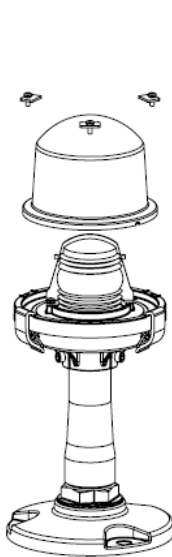


Figure 5-1

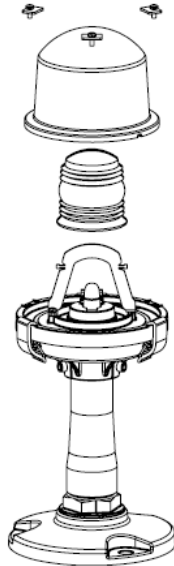


Figure 5-2

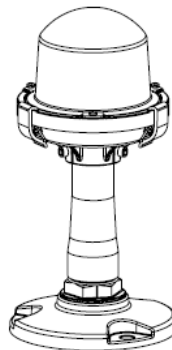


Figure 5-3

5.2 How to Replace Lamp

- Open the hinge in the direction indicated by the arrow, remove the optical cover holder and pull the lamp pin out of the ceramic wire holder (Figure 5-4).
- Push the lamp in the arrow direction to make it leave the neck on the other end, overturn it downwards and take it down (see Figure 5-5).
- Fetch a new lamp to make its square opening stick to the gasket and make its the other end enter the neck and press it down; after the lamp is fixed, insert its pin into the wire holder; finally buckle the hinge. Please note that the lamp wire shall not be pressed (see Figure 5-6).

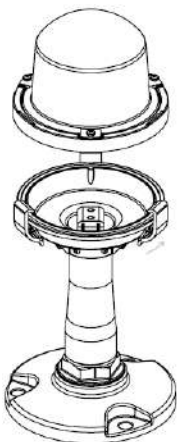


Figure 5-4

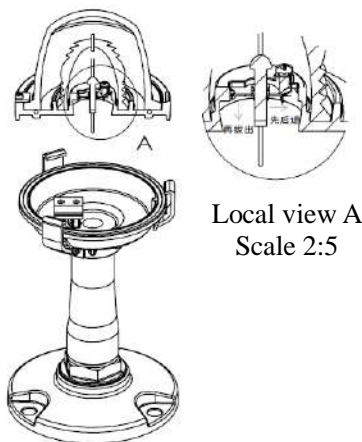


Figure 5-5

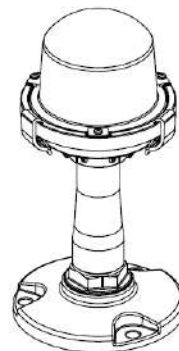


Figure 5-6



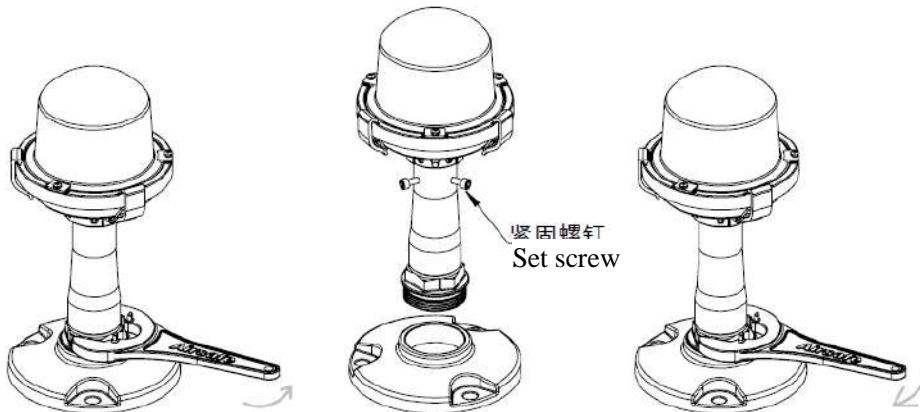
- The lamp wire shall not be pressed by any other articles.
- ※ The wire is easily damaged, which causes electric shock.



- Touch the lamp with hands directly is strictly prohibited. The clean white gloves shall be worn during operation.
- ※ The oil and fat on skin may cause crack of the lamp during use.

5.3 How to Replace Frangible Pole

- Separate the lighting fixture from the base with a nut wrench of the elevated light, pull out the lighting fixture and separate the secondary connector (see Figure 5-7).
- Unscrew the set screw on the light body with a socket head wrench and pull out the frangible pole (see Figure 5-8).
- Fetch a new frangible pole, insert it into the connecting sleeve of the lighting fixture and tighten the set screw with a socket head wrench (see Figure 5-9).
- Insert the lighting fixture into the base and fix it on the base with a nut wrench of the elevated light (see Figure 5-9).



- Please use torque wrench or other special tool for installation.
- ※ Informal tools may cause damage to fasteners or personal injury.



- Force of the wrench must be applied to the lower part of the frangible groove.
- ※ Applying force on the upper part of the frangible groove may make the frangible pole broken.

6.0 Maintenance of Lighting Fixtures

Suggestions for daily maintenance provided in this section are only for reference. Airports may formulate their own daily maintenance guidelines with reference to other provisions or maintenance experience of airport staff; the manufacturer does not provide any hard-and-fast rules.

Maintenance of the lighting fixtures for airports shall be conducted by professionals as stated in 1.0 Foreword.

6.1 Daily Maintenance

Interval	Check	Activity
Every day	No light output or flashing	Replace LED lamp assy.
	Light output is lower	<ol style="list-style-type: none"> 1. If optical cover surface is dirty, wipe it up. 2. Check deviation or moisture of the lighting fixtures. 3. Check aging or displacement of LED.
Every week	Obstacles to light output channel	Clean surface of route and optical cover.
Every month	Existence of moisture and water (Visual check of internal surface of prism)	<ol style="list-style-type: none"> 1. Open the body. 2. Clean, dry and check. 3. Replace gasket and any other damaged components.
Every two months	Tighten the screws	Check whether screw for tightening light body is locked.
After snow removal	Damage to lighting fixtures	<ol style="list-style-type: none"> 1. Replace seriously damaged light.
After snow removal	Light output is lower	<ol style="list-style-type: none"> 1. Sweep snow on the optical cover away. 2. If optical cover surface is dirty, wipe it up. 3. Check deviation or moisture of the lighting fixtures. 4. Check aging or displacement of LED.



- The manufacturer suggests that times of daily maintenance should be increased in rainy season.
- ※ To ensure normal operation of lighting fixtures.



- The manufacturer suggests that LED lamp assy should be systematically replaced when service life of LED lamp is up to 80%.
- ※ To ensure the consistency of light intensity of whole circuit.



- It is necessary to use torque wrench. Power wrench is strictly prohibited.
- ※ Otherwise, it may damage screw and thread, and thus cause an accident.

6.2 Regular Spot Check and Troubleshooting

Serial No.	Failure Phenomenon	Possible Reasons	Countermeasures
1	LED lamp assy failure	LED aging or other unknown failure	Replace LED lamp assy or send lighting fixtures back to factory for repair.
2	The lighting fixtures is darker	There are some stains on optical cover surface	Clean up stains on optical cover surface.
3	Existence of moisture and water	Damage to front glass or gasket	Replace front glass or gasket.

7.0 List of Components and Ordering of Spare Articles and Accessories

The table in this chapter lists the components, spare articles and accessories of this product and relevant ordering information. Spare articles and accessories of this product needs to be ordered additionally, and the manufacturer accepts the order in assembly mode and separate order of components. When ordering, please contact the manufacturer or any distributor according to order number listed in the table. The manufacturer suggests that some important components should be purchased from original factory to ensure various indicators of the lighting fixtures.

List of components and spare articles:

Structure No.	Component Name	Order No.	Description
1	Optical cover	34104	Outer cover of elevated runway edge light
2	Color filter lens	34203-C	Inner cover of elevated runway edge light (white)
		34203-Y	Inner cover of elevated runway edge light (yellow)
		34203-R	Inner cover of elevated runway edge light (red)
3	Lens partition	46604	Inner cover partition
4	Optical cover gasket	41146	O-gasket 107.54×3.53 For the outer cover and light body holder
5	Optical cover holder	241C1	Optical cover holder
6	Lamp	L64361	150W 6.6A
7	Hinge (Assy)	945519	Rear cover hinge (Assy)
8	Light body gasket	41147	O-gasket 126.59×3.53 For the light body and its holder
9	Fixed base of terminal	41221	Elevated lighting fixture receptacle-fixed base of terminal JJD
10	Body	241B1-01	Body
11	Waterproof Gland	48401	Metal waterproof gland MG20×1.5
12	Frangible pole	24211	Frangible pole -04
13	Plug	HT70603	Secondary cable connector-A6 twin-core plug (flat)- high temperature



- Please order the inner and outer covers from us if they are damaged.
- ※ They impact the luminous angle and light intensity of the lighting fixtures.



- If secondary plug is damaged, please order it from our company.
- ※ Other brand plug may cause light leakage and other failures.

List of supporting accessories of this product is as follows (needing additional order):

Serial No.	Order No.	Description
1	276A1	Flange 240mm
2	70703	Secondary receptacle A7
3	54101	Elevated light nut wrench
4	ITF-150-066	Isolation transformer 150W

8.0 Packaging, Transportation and Storage

8.1 Packaging and Weight

Packaging: 4 pcs / box

Gross weight: 8.75 KG / box

Volume: 350*285*365 mm³

8.2 Transportation Mode

Well packed products may be transported in three modes- railway, highway and air according to factors such as transportation distance, quantity of lights and delivery cycle.

8.3 Storage

This product shall be stored in a place which is dry, well ventilated and far away from heat source and has no caustic gas. Custody should be checked on a regular basis.

The final right to interpret this manual is reserved by Airsafe Airport Equipment Co., Ltd.

Thanks for your purchasing and using AIRSAFE product!

Address: No. 38, Anxin Road, Xuhang Town, Jiading
District, Shanghai, China
Postal Code: 201800
Tel.: 021-53540453
Fax: 021-63643114
E-mail: sales@airsafe.com.cn