AXON Omni Protected Inset Lights
12-inch and 8-inch

User Manual

UM-5091, Rev. 1.2, 2022/06/23

ADB SAFEGATE

A.0 Disclaimer / Standard Warranty

CE certification

The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

ETL certification

The equipment listed as ETL certified means that the product complies with the essential requirements concerning safety and FAA Airfield regulations. The FAA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

All Products Guarantee

ADB SAFEGATE will correct by repair or replacement per the applicable guarantee above, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE furthers reserves the right to require the return of such goods to establish any claim.

ADB SAFEGATE's obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB SAFEGATE's liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB SAFEGATE, warranty is limited to that extended by the original manufacturer. This is ADB SAFEGATE's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Standard Products Guarantee

Products manufactured by ADB SAFEGATE are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

Note

See your sales order contract for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

FAA Certified products manufactured by ADB SAFEGATE

ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE LED products (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition). These FAA certified constant current (series) powered LED products must be installed, interfaced and powered with and through products certified under the FAA Airfield Lighting Equipment Program (ALECP) to be included in this 4 (four) year warranty. This includes, but is not limited to, interface with products such as Base Cans, Isolation Transformers, Connectors, Wiring, and Constant Current Regulators.

Note

See your sales order contract for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

Liability

WARNING

Use of the equipment in ways other than described in the catalog leaflet and the manual may result in personal injury, death, or property and equipment damage. Use this equipment only as described in the manual.

ADB SAFEGATE cannot be held responsible for injuries or damages resulting from non-standard, unintended uses of its equipment. The equipment is designed and intended only for the purpose described in the manual. Uses not described in the manual are considered unintended uses and may result in serious personal injury, death or property damage.

Unintended uses, includes the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine ADB SAFEGATE replacement parts or accessories.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB SAFEGATE equipment.
- Allowing unskilled personnel to perform any task on or with the equipment.

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1.0 Safety

Introduction to Safety

This section contains general safety instructions for installing and using ADB SAFEGATE equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

1.1 Safety Messages

HAZARD Icons used in the manual

For all HAZARD symbols in use, see the Safety section. All symbols must comply with ISO and ANSI standards.

Carefully read and observe all safety instructions in this manual, which alert you to safety hazards and conditions that may result in personal injury, death or property and equipment damage and are accompanied by the symbol shown below.

	WARNING Failure to observe a warning may result in personal injury, death or equipment damage.
	DANGER - Risk of electrical shock or ARC FLASH Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage. ARC Flash may cause blindness, severe burns or death.
	WARNING - Wear personal protective equipment Failure to observe may result in serious injury.
	WARNING - Do not touch Failure to observe this warning may result in personal injury, death, or equipment damage.
	CAUTION Failure to observe a caution may result in equipment damage.
	ELECTROSTATIC SENSITIVE DEVICES This equipment may contain electrostatic devices.

Qualified Personnel

	Important Information The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements. Always use required personal protective equipment (PPE) and follow safe electrical work practice.

1.1.1 Introduction to Safety

CAUTION

Unsafe Equipment Use
This equipment may contain electrostatic devices, hazardous voltages and sharp edges on components

- Read installation instructions in their entirety before starting installation.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

Failure to follow this instruction can result in serious injury or equipment damage

Additional Reference Materials

Important Information

- IEC - International Standards and Conformity Assessment for all electrical, electronic and related technologies.
- IEC 60364 - Electrical Installations in Buildings.
- FAA Advisory: AC 150/5340-26 (current edition), Maintenance of Airport Visual Aid Facilities.
- Maintenance personnel must refer to the maintenance procedure described in the ICAO Airport Services Manual, Part 9.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- National and local electrical codes and standards.

1.1.2 Intended Use

CAUTION

Use this equipment as intended by the manufacturer
This equipment is designed to perform a specific function, do not use this equipment for other purposes

- Using this equipment in ways other than described in this manual may result in personal injury, death or property and equipment damage. Use this equipment only as described in this manual.

Failure to follow this instruction can result in serious injury or equipment damage

1.1.3 Material Handling Precautions: Storage

CAUTION

Improper Storage
Store this equipment properly

- If equipment is to be stored prior to installation, it must be protected from the weather and kept free of condensation and dust.

Failure to follow this instruction can result in equipment damage

1.1.4 Operation Safety

CAUTION

Improper Operation
Do Not Operate this equipment other than as specified by the manufacturer

- Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.
- Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

Failure to follow these instructions can result in equipment damage

1.1.5 Maintenance Safety

DANGER

Electric Shock Hazard
This equipment may contain electrostatic devices

- Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.
- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Failure to follow these instructions can result in death or equipment damage

1.1.6 Material Handling Precautions: Fasteners

DANGER

Foreign Object Damage - FOD
This equipment may contain fasteners that may come loose - torque properly.

- Only use fasteners of the same type as the one originally supplied with the equipment.
- Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create safety risk .
- You need to know what base the light fixture will be installed in, in order to chose the correct gasket, bolts and nuts.
- Bolt type, length, and torque value are determined by type of base, height of spacers used, and clamp force required in FAA Engineering Brief No 83 (latest revision).
- Due to the risk of bolts vibrating loose, do not use any type of washer with the fixing bolts (such as split lock washers) other than an anti-vibration washer. Anti-vibration washers as defined in FAA EB 83 (latest edition) must be used. For installations other than FAA, use the base can manufacturer's recommendations.
- Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench and apply the recommended adhesive type.
- Obey the instructions of the adhesives necessary for the fasteners.

Failure to follow these warnings may cause the fasteners to loosen, damage the equipment, potentially to loosen the equipment. This can lead to a highly dangerous situation of FOD, with potential lethal consequences.

Note

To minimize the risk of errors, the ADB SAFEGATE Sales Representative will have information on which gasket goes with which base. This information is also provided in the product Data sheets, the User Manuals and the Spare Part Lists.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

To obtain a safe and watertight installation the O-ring and retaining bolt stated in the document must be used.

You need to know what base the light fixture will be installed in, in order to choose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD.

1.1.7 Material Handling Precautions, ESD

CAUTION

Electrostatic Sensitive Devices
This equipment may contain electrostatic devices

- Protect from electrostatic discharge.
- Electronic modules and components should be touched only when this is unavoidable e.g. soldering, replacement.
- Before touching any component of the cabinet you shall bring your body to the same potential as the cabinet by touching a conductive earthed part of the cabinet.
- Electronic modules or components must not be brought in contact with highly insulating materials such as plastic sheets, synthetic fiber clothing. They must be laid down on conductive surfaces.
- The tip of the soldering iron must be grounded.
- Electronic modules and components must be stored and transported in conductive packing.

Failure to follow this instruction can result in equipment damage

2.0 About this Manual

This document includes AXON runway inset light fixture information with a focus on safety, installation and maintenance procedures.

For more information, see www.adbsafegate.com.

Note
It is very important to read this document before any work is started.

This manual covers the following 8- and 12-inch fixtures:

- Taxiway Edge, L-852T(L)
- Apron Maneuvering

2.1 How to work with the Manual

- Familiarize yourself with the structure and content.
- Carry out the actions completely and in the given sequence.

2.2 Abbreviations and terms — AGL

Abbreviations and terms	Description
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organization
IEC	International Electrical Committee
ISO	International Standardization Organization
ANSI	American National Standards Institute
NFPA	National Fire Protection Association
AC	Advisory Circular (FAA)
ESD	Electro-Static Discharge; Electrostatic-Sensitive Devices
LED	Light Emitting Diode
PPE	Personal Protective Equipment
FOD	Foreign Object Debris
Mounting support	A piece of equipment, on which the fixture is installed.
Toe-in	The toe-in angle is the angle the beam of light makes with the longitudinal axis of the runway or taxiway.

2.3 Abbreviations and Terms

This document may include the abbreviations and terms listed below.

Abbreviation and term	Description
ASP	Airfield Smart Power
A-SMGCS	Advanced Surface Movement Guidance and Control System
CAA	Civil Aviation Authority
CCR	Constant Current Regulator
FAA	Federal Aviation Administration
ICAO	International Civil Aviation Organization
IEC	International Electrotechnical Committee
ILCMS	Individual Light Control and Monitoring System
LED	Light Emitting Diode
LMS	Light Monitor and Switch unit
NATO	North Atlantic Treaty Organization
NCU	Network Concentrator Unit
SCF	Series Circuit Filter
SCM	Series Circuit Modem
SMGCS	Surface Movement Guidance and Control System
SSU	System Switch Unit
STAC	Service Technique de l'Aviation Civile (France)
STANAG	Standardization Agreement (NATO)

3.0 Introduction

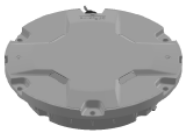
AXON — The all in one revolution

The 12-inch and 8-inch ranges are bi- or unidirectional low protrusion light-emitting diode (LED) inset light fixtures, available in multiple versions:

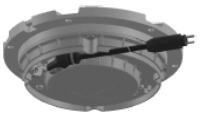
Non-MON	Basic operation providing power only
MON (Fail-open)	A LED light fixture with integrated fail open technology with CCR monitoring compatibility
EQ	Fixture with integrated ILCMS remote utilizing orthogonal frequency-division multiplexing (OFDM) technology providing superior communication interfacing with LINC 360 System.

NOTICE

All our light fixtures are equipped with failed LED detection monitoring as required by FAA Engineering Brief 67.



AXON inset Omni 12"



AXON inset Omni, 12" with Style 1 jacketed cord set

AXON inset Omni, 12" with Style 6 cord set

AXON inset Omni 8"

AXON inset Omni, 8" with Style 1 jacketed cord set

AXON inset Omni, 8", with Style 6 cord set

Note

EQ light fixtures are not fail-open light fixtures. The monitoring as well as the control functionality is handled by the ILCMS system.

3.1 Product Information

Compliance and Standards

Compliance	Description	Application:	TE	AM
		Reference DS-XXXX:	**5024**	**4002**
FAA	AC 150/5345-46 and the FAA Engineering Brief No. 67		X	
ICAO	Annex 14 Volume 1		X	X
EASA	CS-ADR-DSN		X	X
Australia	MOS 139		X	X
Canada	TP 312		X	X
IEC	61827		X	X
NATO	STANAG 3316		X	
STAC	PRO/STAC/SE/VIS			
UK	CAP 168			
US Navy	NAVAIR 5150AAA-2, WP 006-04		X	
UFC	3-535-01		X	
CE			X	X

Uses TE

- L-852T(L) Taxiway Edge
- NAVAIR Edge
- UFC Edge
- Intermediate Holding Position (MOS)

Uses AM

The AXON 8-inch omnidirectional low-protrusion inset LED light fixture is provided with red or yellow LEDs. This fixture can be used in the following applications:

- Aircraft Stand Maneuvering Guidance

Features and Benefits TE

Efficiency

- EQ has an integrated ILCMS remote for use with the LINC 360 system providing high data capacity and resisting degradation from various types or radio effects to provide a superior communication platform
- Precision aimed optics enhancing photometric performance and complementing extended LED life
- Reduced bottom pan profile allowing for very shallow base can installation
- LEDs pulse width modulated (PWM) at 400 Hz optimizing LED performance and eliminating perceptible flicker to a moving human observer throughout the range of brightness steps
- Operates at all steps of constant current regulator technologies designed in compliance with IEC or FAA requirements
- Fully dimmable lights, conforming to the dimming curve of traditional halogen lights
- Low protrusion, high-intensity, Style 3 (≤ 6.35 mm) inset light fixtures
- No negative slope in front of the prisms

Sustainability

- Fully encapsulated all-in-one universal power supplies for Runway, Taxiway, Approach and Omni inset families
- Latest generation LEDs providing a long-lasting light source with high efficiency and low power consumption
- Reinforced top cover substantially exceeding standards to improve durability and longevity
- One single family of fixtures covering all runway, taxiway and approach applications
- IP68 rated enclosure designed for harsh environments; all fastenings are stainless steel
- Compatible with existing infrastructure allowing for direct replacement of existing LED inset fixtures

Safety

- Improved mechanical design to strengthen and consolidate components, improving the customer maintenance experience
- Fail-open option for compatibility with legacy monitoring systems and optimization of advanced control and monitoring systems
- Failed-LED Detection as required by Engineering Brief 67D
- Robust lightning protection complying with ANSI/IEEE C62.41-1991;
  Location Category C2 as required by FAA Eng. Brief 67. Category C2 is defined as a 1.2/50µS – 8/20 µS combination wave, with a peak voltage of 10,000 V and a peak current of 5,000 A

Features and Benefits AM

Efficiency

- IQ with integrated intelligence
- Integrated fail-open technology
- Non-MON, non monitored lights
- Operates on CCRs designed in compliance with IEC or FAA requirements
- Easy maintenance due to modular design, few mechanical parts
- No visual flicker. PWM is used for some applications to optimize the LED performance and light fixtures show no visual flickering.

Sustainability

- Light-emitting diode (LED) technology that offers a long-lasting light source with low power consumption
- IP68 protected, aluminum housing designed for harsh weather environments (all fastenings in stainless steel)
- Protected top cover for improved durability and protection from external forces
- Compatible with existing infrastructure
- Fixture compatible with all ADB SAFEGATE 8-inch bases

Safety

- Light engine protected against towbar impact and high load from maneuvering vehicles and aircrafts
- Shorted LED detection according to FAA Engineering Brief No.67D
- Available with IR as an option

TE

Power Supply

- Non-Monitored — Power only
- Monitored — integrated Fail-open technology
- EQ with integrated ILCMS with OFDM technology for use with LINC 360 system.

Maintenance and Installation

The light fixture can be installed on an 8-inch or 12-inch base. Gaskets are sold separately. Check what gasket and bolts to order depending on base and installation.

Operating Conditions

Operating temperature	-60 °C to +55 °C / -76 °F to +131 °F
Storage temperature	-60 °C to +80 °C / -76 °F to +176 °F
Humidity	Up to 100%

AM

Power Supply

An integrated, encapsulated 6.6A electronic converter. Two-pole L-823 FAA Style 6 (2-pin) plug for connection to the transformer. Power factor typically > 0.95 at 6.6 A. Power consumption 35 W.

French (flat 3-pin) plugs are also available for the French market.

Maintenance and Installation

Refer to the AXON Omni inset user manual for 12- and 8-inch lights and to the interoperability information for installation in a specific base.

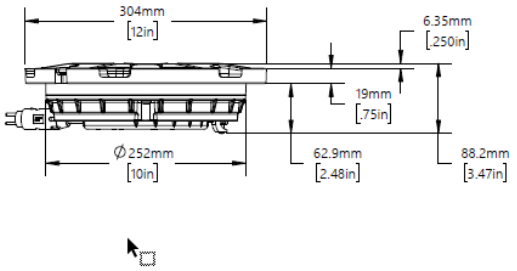
Operating Conditions

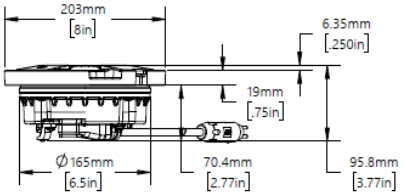
Operating temperature	-60 °C to +55 °C / -76 °F to +131 °F
Storage temperature	-60 °C to +80 °C / -76 °F to +176 °F
Relative humidity	Up to 100%

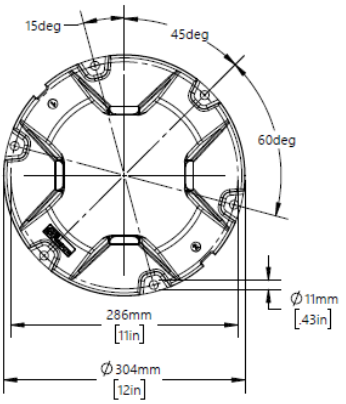
3.2 Dimensions and Weight

The weight and measurement [A] depends on version of the light fixture.

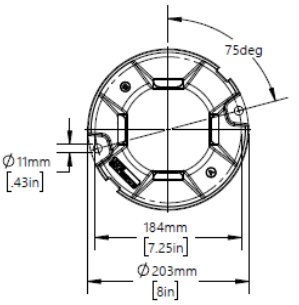
Version	Weight	Dimension
Taxiway Edge, L-852T(L)	kg / lb (8 in)	203 mm / 8 in
Apron Maneuvering	kg / lb (12 in)	304 mm / 12 in







12" Omni



8" Omni

4.0 Installation

Install the inset light fixture in a base provided by ADB SAFEGATE as follows:

Figure 1: 12-in shallow base, class 1, direct-mounted fixtures

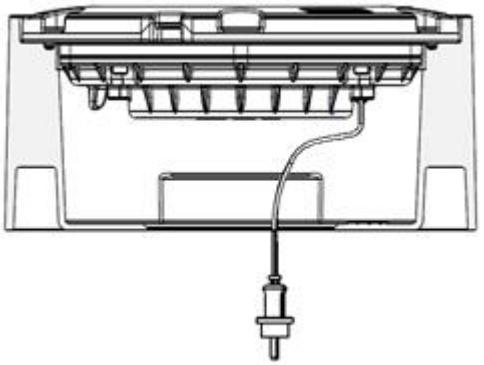
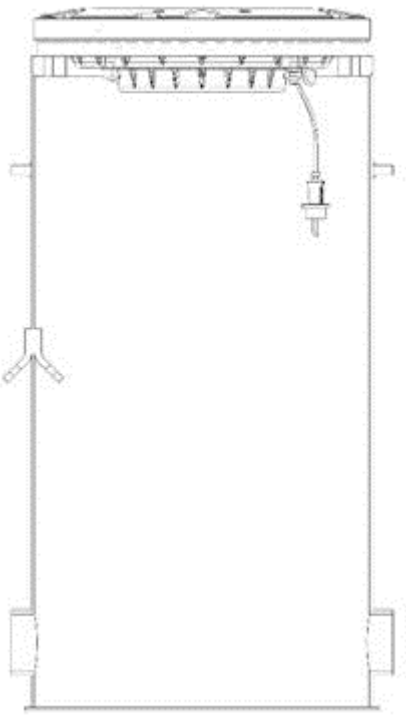


Figure 2: FAA deep can, class 2, base-mounted fixtures



Note

If the inset light fixture is to be installed on another type of base or adapter ring not provided by ADB SAFEGATE, contact ADB SAFEGATE. The inset light fixture is fixed in the base by six M10 lock nuts or by six M10×25 or M10×22 bolts dependent on base installation.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

To obtain a safe and watertight installation the O-ring and retaining bolt stated in the document must be used.

You need to know what base the light fixture will be installed in, in order to choose the correct gasket, bolts and nuts.

4.1 Unpacking the Unit

To reduce the possibility of damaging the light assembly, unpack the light fixtures at the installation site. If damage to any equipment is noted, file a claim form with the carrier immediately.

When receiving the light fixture, open the box and verify that the characteristics of the light fixture correspond to the design requirements, such as type, color etc. When installing a light fixture where the control and monitoring function is to be activated at a later stage, make sure to register product information, such as PID/SN and position of the light fixture in, for example, a site documentation table. The information is required for remote activation and administration of control and monitoring functionality from a substation.

4.2 Tools Required

The following tools are recommended for installation.

- One Box spanner 16/17 mm
- One torque wrench with a 16/17 mm socket
- Two large flat headed screwdrivers for lifting the light fixture
- One T20 Torx key
- One brush or cloth

NOTICE

Provided that the base intended to receive the light fixture has been properly installed, no other specific tool is required.

4.3 Installation and Removal of the 12-inch Light Fixture

Install the light fixture in a base, class 1, direct-mounted fixtures

Figure 3: 12-in shallow base, class 1, direct-mounted fixtures

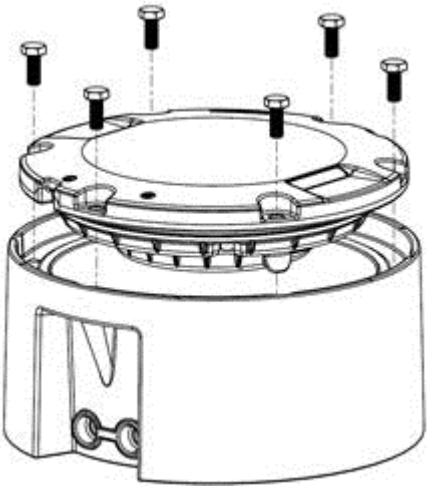


Figure 4: FAA deep can, class 2, base-mounted fixtures

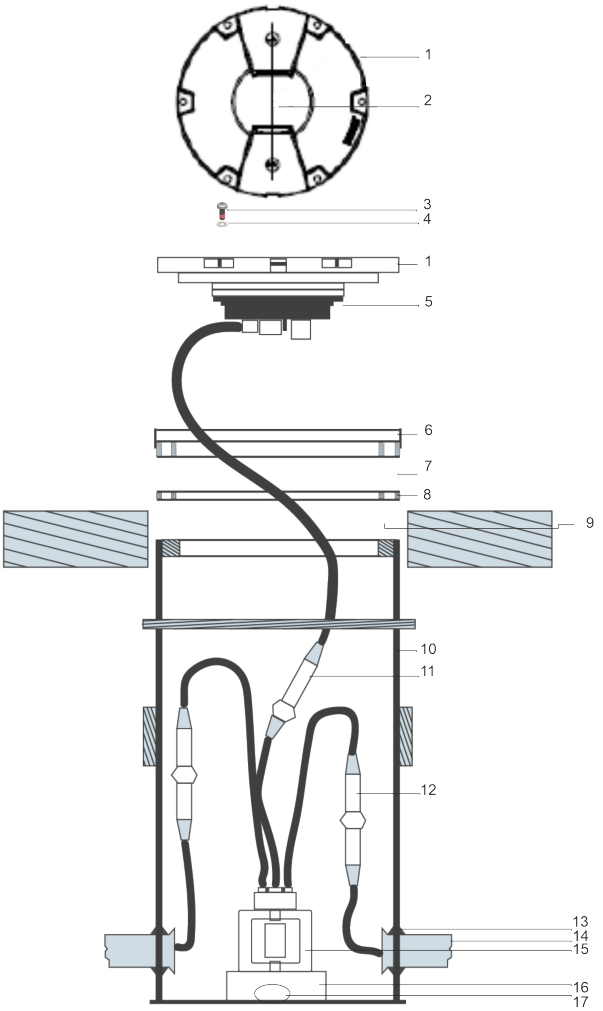


Table 1: Figure legend

Call-out	Description	Call-out	Description
1	Light fixture	9	Ground wire to be connected (6 GA. or larger), if needed — not shown here
2	Parallel with Runway Centerline	10	L-868 light base
3	3/8-16 Hex cap screw	11	L-823 secondary connector
4	Two-part clamping lockwasher	12	L-823 primary connector (typ.), heat-shrink optional
1	Addition: Fixture top edge to be TO 1/16" (1.5 mm) below grade — dimensions: .75 [19 mm]	13	Grommet
5	¼" (6.3 mm wide X 1-1/2" (38.1 mm) deep groove (typ.)	14	2"-PVC conduit WT Bell end
6	L-858B flange ring 12.35" (311.2 mm) O. D. ¾" (19 mm) thick, 5402/12Y with O-ring gasket (typ.)	15	Isolation transformer (size as required)
7	dimensions: 1-1/2" (38.1 mm) (typ.)	16	Transformer support (typ.)
8	L-868 spacer ring(s)	17	¾" (19 mm) drain hole (centered)

1. Carefully clean all contact surfaces of the light fixture and the base.
2. Put the O-ring gasket in the gasket track on the base.

Note
Not for class 2.

3. Connect the connector(s) of the light fixture to the base supply cable(s). Check that the sides 1 and 2 are connected to corresponding circuit if two connectors are used.
4. Align the position of the light fixture in one line with the holes.
5. Mount light fixture to the base.

Note
Make sure the secondary cables are below the light and not quenched between the light and base.

6. For an installation on bases, use a torque limiting box spanner of 16/17 mm, install and tighten the two, four or six fixing bolts (version-dependent) or nuts to a torque value according to specification, see INTEROPERABILITY. For other base manufacturers, refer to their specifications.

Note
Do not use high speed for tightening, the recommended speed is 10 - 40 rpm. Do not used an impact driver/ wrench.

7. After installation, make sure that each light fixture functions properly.
8. In order to bond the light fixture to ground, use the supplied ground lug or grounding screw (torque 2.5 Nm) to attach the braided ground strap or ground wire to the grounding point on the light fixture. The grounding point is indicated by a grounding symbol and located on the bottom side.

Remove the fitting from the base

CAUTION

Fall- and trip hazard! When a light fixture has been removed, the base must be fitted with a cover designed for this purpose or with a spare light fixture.

1. Remove the light fixture from the base using two large flat blade screwdrivers.
2. Disconnect the secondary supply connector.
3. Remove and check the gasket (O-ring or labyrinth).

Note

It is recommended to change the gasket, lock nuts or bolts each time the light fixture is removed or dismounted from the base. For more information, see INTEROPERABILITY.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

Make sure to know what base the light fixture will be installed in, in order to chose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD. For more information, see INTEROPERABILITY.

5.0 Maintenance

This section describes different steps for maintenance of the light fixture.

Before you start, make sure you have read and understand Safety instructions.

Find out the location of the light unit that needs maintenance. If the purpose is to replace an existing light unit with new one, make sure that corresponding unit is available. Find the type information on the identification tag with details of name.

Spare parts are available, if required. For more information, see www.adbsafegate.com and the Spare Parts List document, or contact ADB SAFEGATE for assistance.

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

You need to know what base the light fixture will be installed in, in order to chose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD. For more information, see INTEROPERABILITY.

CAUTION

When a light fixture has been removed from its base, the base must be either fitted with a cover or a spare light fixture put in its place. It is recommended that only authorized personnel disassemble fittings with prior agreement from ADB SAFEGATE.

5.1 Basic Maintenance Program

It is important to understand that even though a LED fixture requires substantially lower maintenance in regard to the replacement of the light bulbs, some parts of the light fixture remain the same and still require the same level of maintenance (prisms, top cover, bolts).

There are recommended maintenance tasks to ensure that the equipment is in correct operating condition.

Maintenance tasks

Weekly	• Visual inspection of the light fixture. • Removal of dust from external surfaces of the light fixture.
Monthly	• Check optical window for cleanliness, mechanical damage or moisture/condensation on the inside of the prism • Check for improper torque on mounting bolts. Re-torque if needed.
Yearly	• Detailed inspection of the light fixture • Check of the body resistance, check for mechanical damage (for example cracks around the prism windows). • Clean optical windows
Bi-yearly	• Check for presence of water in mounting support by unscrewing and lifting light fixture from base and check for water ingress and corrosion. Replace gasket between light fixture and base.
After snow removal	• Check for damaged light fixtures. Any damaged light fixtures should be replaced and brought in and properly investigated and repaired.

A daily function check is referred to in the document:

ICAO, Airport Services Manual Part 9, Airport Maintenance Practice and FAA AC 150/5340-26A, Maintenance of airport visual aids facilities.

Any issues found during maintenance tasks should be corrected accordingly and properly documented.

A proper asset management system such as ADB Safegate's ALIS can help to store/document data and can provide valuable information on local presiding conditions for preventive maintenance planning. This can then be used to minimize the need for reactive maintenance.

ALIS, ADB Safegate's new digital asset tracking, inspection and service solution, helps airports easily register airside assets, electronically schedule and track maintenance, and record maintenance and inspection tasks in compliance with ICAO and FAA standards.

Visit alis.adbsg.com.

5.2 Recommended Maintenance Program for optimal Service Life

Service Life and Inspection intervals

All products have an expected service life. Service life is the lifetime of the product and reaching the end means that it is no longer serviceable and should be replaced.

There are several key external factors that influences the service life of a product.

- Aircraft traffic movements
- Location on the airfield
- Maintenance
- Chemical usage

Air Traffic Movements (ATM)

The expected lifetime of a light fixture will be highly impacted by the traffic volume and the number of aircraft that are mechanically putting stress on the light fixtures. Airports with a higher traffic volume will have a light fixture with a shorter expected lifetime than an airport with a lower traffic volume.

The ATM can be divided into three categories for the recommendation of inspections as well as for the expected lifetime of a light fixture [*].

- 0-100k movements/ year
- 100k-200k movements/ year
- >200k movements/ year

Location on the airfield

The expected lifetime of a light fixture is highly dependent on the location where it is installed on an airfield. Three different areas have been defined by color categorization that are exposed to different degree of mechanical impact. These three categories are used as a basis for the recommendation of inspections as well as for the expected lifetime of a light fixture.

- **RED** – Touch Down Area defined as 6m either side of the runway centerline for a distance starting 50m before the TDZ markings and extending to 200m beyond the TDZ markings as seen from the landing direction.
- **RED** – Rapid Exit Taxiway centerline lights from the runway centerline to 50m beyond the edge of the runway.
- **Amber** – All runway areas outside of the red areas. Also includes taxiway intersections for which more than 50% of the aircraft traffic turn more than 45 degrees.
- **Green** – Areas outside Red and Amber areas

Tip

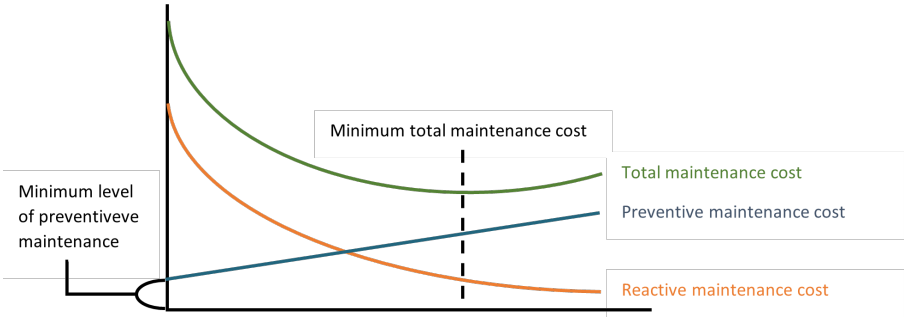
It is recommended that there is a reliable means of recording the location history of fittings (similar to ADB Safegate ALIS) to ensure that the maximum duration in critical areas (RED) of the runway are not exceeded.

Preventive maintenance

[*] Based on ADB SAFEGATE's field experience and investigation made together with an independent consultant and airport.

Preventive maintenance and inspections will help to prolong the service life of a light fixture. By finding issues (e. g., bad gaskets or broken prisms) at an early stage you can mitigate and fix issue before they cause more damage and reduce the cost of the repair. You can also increase the service life of a light fixture by rotating the installation location of light fixtures in critical areas.

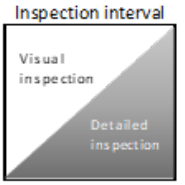
Regular inspections and well-defined preventive maintenance planning will help to reduce the overall maintenance cost and reduce downtime from reactive maintenance tasks.



5.2.1 Recommendation

Based on the air traffic volume and location on the airfield, a matrix was created for recommended inspection intervals.

Location / ATM	RED	Amber	Green
0-100k movements	2 Months / 1 Year	6 Months / 3 Years	1 Year / 3 Years
100k-200k movements	2 Months / 1 Year	4 Months / 2 Years	1 Year / 3 Years
Above 200k movements	1 Months / 6 Months	2 Months / 1 Year	1 Year / 3 Years



Visual inspection: Visually inspect the light fixture and make sure that

- Prism is clean and no cracks are visible
- Gaskets are ok and are not deteriorating
- No moisture or condensation can be seen on the inside of the prism
- Corrosion on top cover, around the prism and bolts.
- Torquing of nuts/bolts are according to specification

Detailed Inspection: Includes visual inspection tasks and additionally the following tasks

- Unbolt the light fixture and lift it from the base for the detailed inspection
- Check for water ingress (watertight installation) and corrosion on light fixture and base (especially around the mating surfaces)
- For deep base installation (L-868) check for water ingress, if more than 6 inches please have it removed.
- Inspect light and base for damage
- Replace gasket between light fixture and base

Tip

We recommend any maintenance work that requires the light fixture to be opened to be done back in the dedicated maintenance area.

- We recommend that inspection intervals are halved for aging units that have reached more than 75 % of their expected lifetime.
- We recommend that AGL in critical areas are rotated.
- To achieve a proper location rotation and individual asset, data needs to be recorded.
- To relax the recommended frequencies of some maintenance tasks i.e. torque management, data is needed for justification.
- Policies have a direct link with the age of the AGL and should also be tracked and recorded.

Below is the recommended service life. With a proper asset management (ALIS or similar) and data capturing strategy, the below guidelines could be extended or shortened as deemed necessary via presiding local conditions.

Expected service life (only critical areas defined)

• RED Zone -, ATM < 100k	Service Life 15 years
• RED Zone -, ATM > 100k < 200K	Service Life 10 years
• RED Zone -, ATM > 200k	Service Life 7 years

Note

Talk to your local sales representative if you have any questions or would require some assistance to go through local conditions and see how we can help establish a well-defined maintenance planning to optimize the expected service life of your investment.

5.3 Workshop Maintenance

CAUTION

Before you start, make sure you have read and understand Safety instructions.

The following standard tools and accessories are required for maintenance of the unit:

- One angled socket spanner of 16 or 17 mm [1]
- One Torque limiting spanner with 16 or 17 mm socket [1]
- One hexagonal key (Allen key) of 3, 4, and 5 mm
- Torx 10, 20, 25, and 30
- Two large flat blade screwdrivers
- Silicone grease
- CC-Patron grease
- One brush or cloth
- Non-alcohol based cleaner

Note

A compressor, or a manual car tire pump, equipped with a manometer is required to check the light fixture for water-tightness.

Design may differ from picture depending on application. Please follow described work flow and torque level specified as they are generic.

The workshop maintenance refers to following:

1. Replace a light fixture
2. Check the light fixture for water-tightness
3. Replace a light engine
4. Replace a prism and its gasket
5. Replace the bottom cover and converter
6. Reset the fail-open converter

[1] Depending on type and size of nuts and bolts

5.3.1 Exploded View

Figure 5: Omnidirectional Light, 4 prisms, 8-inch

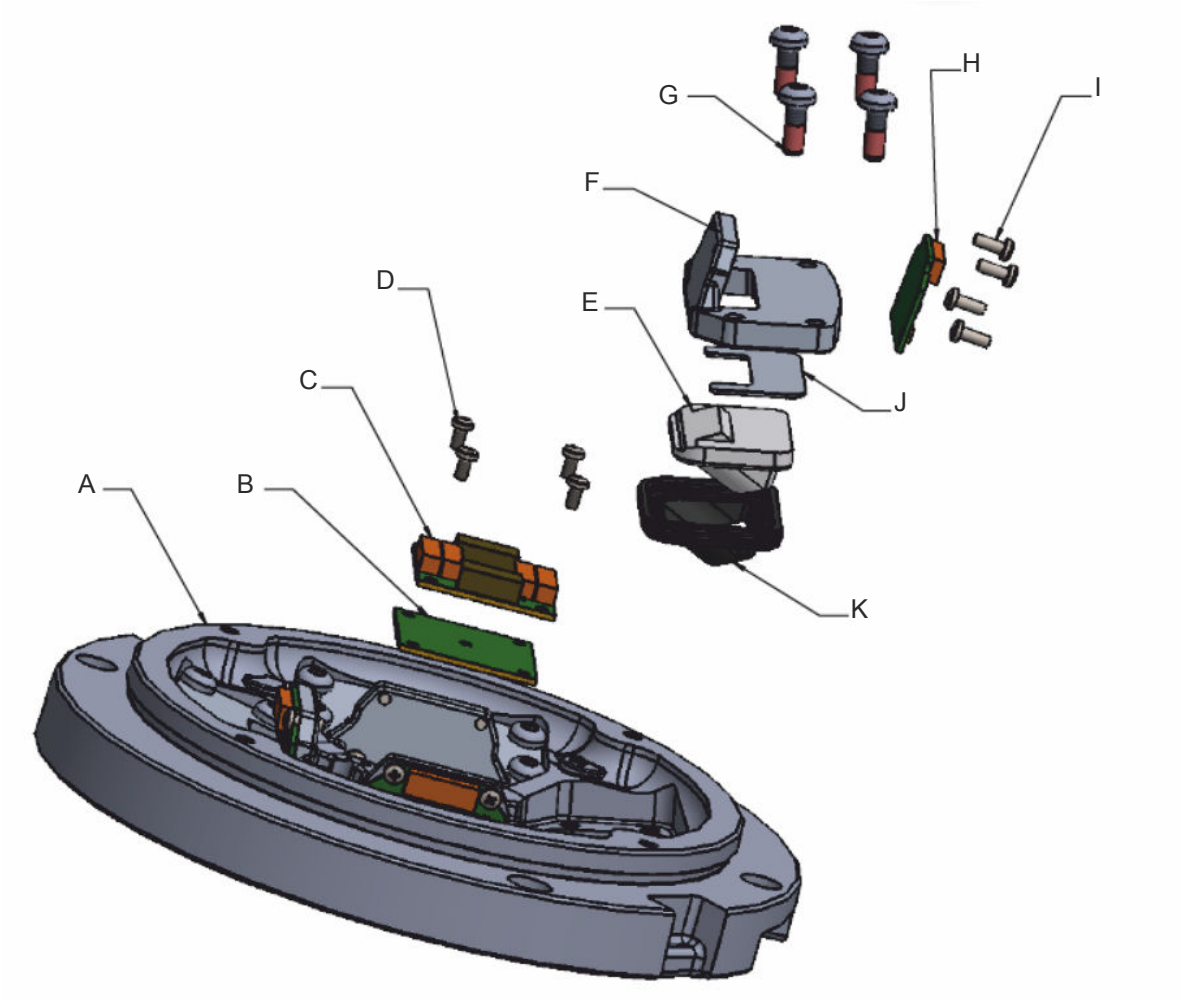


Table 2: Legend Exploded View

Call-out number	Description	Quantity
A	Top cover	1 pc
B	Isolation board	1 pc
C	Connection board	1 pc
D	Screw M3x8 DIN7985-T-A2	4 pcs
E	Prism	4 pcs
F	Holder prism	4 pcs
G	Screw M4 x6	16 pcs
H	LED board	4 pcs
I	Screw M3x8 DIN7985-T-A2	4 pcs
J	Protection prism plate	16 pcs
K	Gasket	4 pc

5.3.2 Open and close a 12-inch Fixture

Remove

1. Place the light fixture upside down and remove the four screws for the bottom cover using an Allen key 5 mm, see Figure 6.
2. Lift up the housing and disconnect the LED board cable connector from the LED boards in the top cover, see Figure 7.

> **Note**
> Open the light fixture cautiously, be careful not to damage the LED-board cables.

3. Remove the top cover from the bottom cover.
4. Remove the O-ring gasket from the bottom cover, see Figure 8.

Figure 6: Fixture upside down

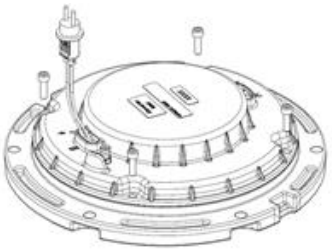


Figure 7: Lift up housing

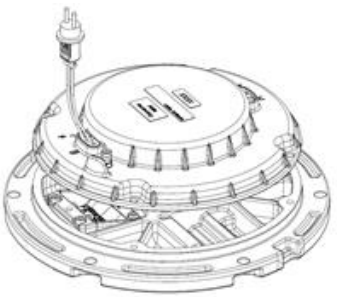


Figure 8: Remove gasket

Replace

1. Carefully clean all contact surfaces of the light fixture and of the housing.
2. Install a new O-ring gasket on the bottom cover.

> **Note**
> The O-ring gasket must be changed each time the light fixture is disassembled.

3. Connect the LED board cable connector(s) to the Supply Terminal(s) of the converter in the housing. Note the orientation and alignment of the LED board cables, which are different between 1 connector and 2 connector versions.

   Converters with 1 connector: the cables should have colored wires towards each other and crossed.

Converters with 2 connectors: the cables should have colored wires away from each other and crossed. Light fixtures with only one LED-board need to have its LED-board connected to the LED B channel, see Figure 9. Place the top cover over the bottom cover, align A and B sides on the top cover with the corresponding sides on the bottom cover.

Note

Before closing the light fixture, it is important to make sure the O-ring is placed correctly in the groove of the bottom cover to prepare the light fixture for water tightness checks and use in the airfield. For more information, see INTEROPERABILITY.

Figure 9: Converter with 1 connector

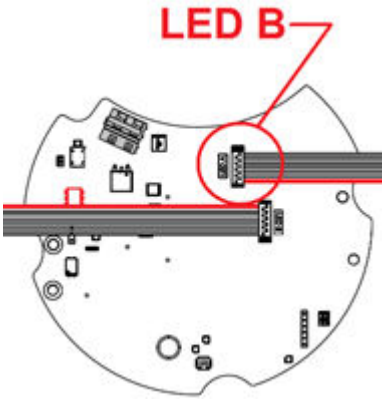
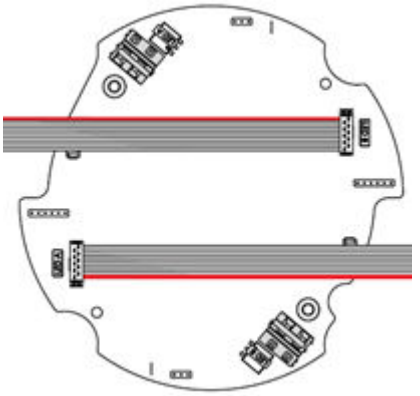


Figure 10: Converter with 2 connectors



4. Put the light fixture on a surface with the top cover facing down, see Figure 11.
5. Tighten the four screws using a torque limiting spanner 5 mm Allen key or Torx key size 30 to a torque of 10 Nm (equivalent to 1.0 kg m or 10 g cm), see Figure 12.

Figure 11: Fixture facing down

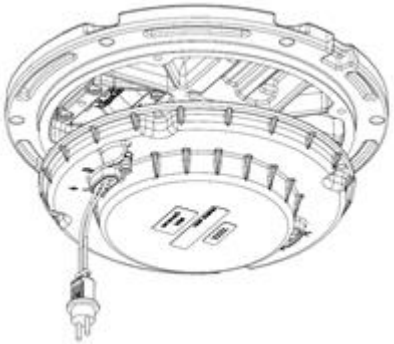
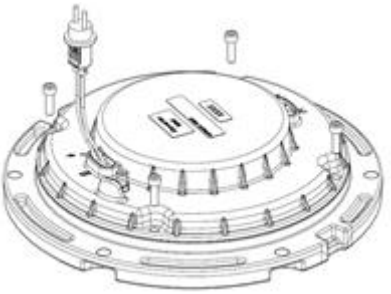


Figure 12: Tighten screws



6. Check the light fixture for water-tightness. For more information, see Checking the Light Fixture for Water-Tightness.

5.3.3 Closing an 12-inch Light Fixture

Replacement

1. Carefully clean all contact surfaces of the light fixture and of the housing.
2. Install a new inner pan gasket on the bottom cover.

Important

The inner pan gasket must be changed each time the light fixture is disassembled.

3. Connect the LED board cable connector(s) to the supply terminal(s) of the converter in the housing.

NOTICE

Note the orientation and alignment of the LED board cables, which are different between 1 connector and 2 connector versions.

Converters with one connector: The cables should have colored wires towards each other and crossed.

Converters with two connectors: The cables should have colored wires away from each other and crossed.Light fixtures with only one LED-board need to have its LED-board connected to the LED B channel.

Note

Refer to Figure 13 figure.

4. Place the top cover over the bottom cover, align A and B sides on the top cover with the corresponding sides on the bottom cover.

Figure 13: Converter with 1 connector

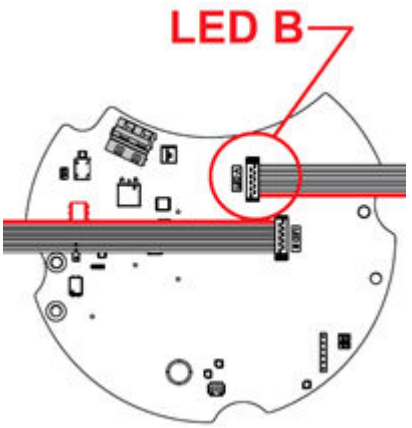
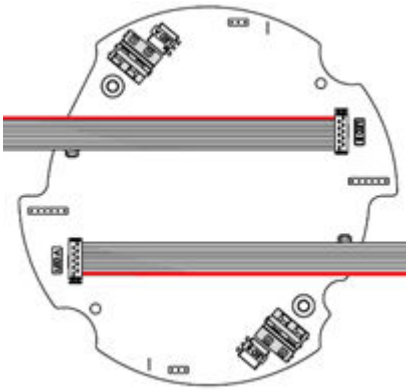


Figure 14: Converter with 2 connectors



Important

Before closing the light fixture, it is important to make sure the inner pan gasket is placed correctly in the groove of the bottom cover to prepare the light fixture for water tightness checks and use in the airfield.

5. Put the light fixture on a surface with the top cover facing down.

Note

Refer to Figure 15 figure.

6. Tighten the four screws using a torque limiting spanner 4 mm Allen key to a torque of 8 Nm (equivalent to 0.8 kg m or 8 g.cm).

Note

Refer to Figure 16 figure.

Figure 15: Fixture facing down

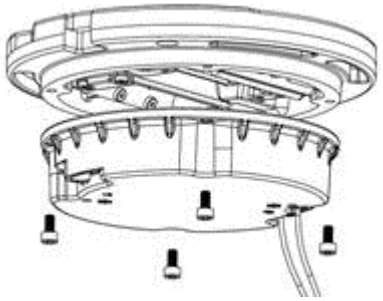
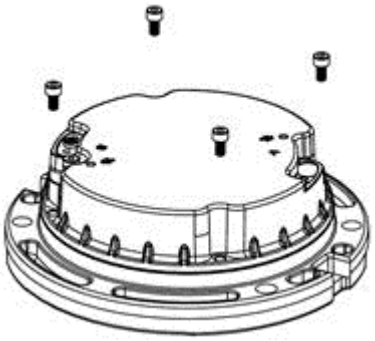


Figure 16: Tightening screws



7. Check the light fixture for water-tightness.

Note

Refer to Checking the Light Fixture for Water-Tightness section for more information.

5.3.4 Opening an 8-inch Fixture

Removal

1. Place the light fixture upside down and remove the four screws for the bottom cover using an Allen key 4 mm.

Note
Refer to Figure 17 figure.

2. Lift up the housing and disconnect the LED board cable connector from the LED boards in the top cover.

Note
Refer to Lifting Figure 18 figure.

NOTICE
Open the light fixture carefully so that you do not damage the LED-board cables.

3. Remove the bottom cover from the top cover.
4. Remove the O-ring gasket from the bottom cover.

Note
Refer to Figure 19 figure.

Figure 17: Fixture upside down

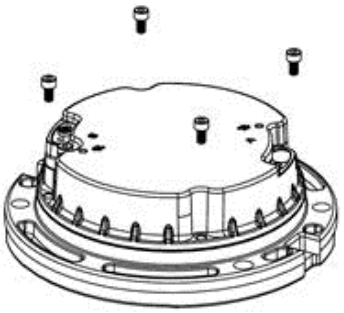


Figure 18: Lifting up housing

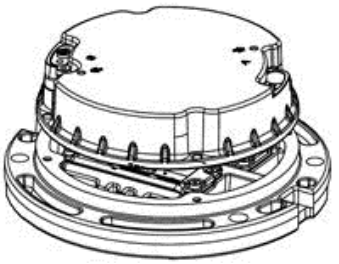
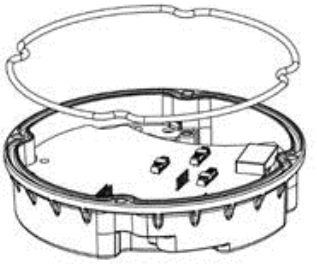


Figure 19: Removing gasket



5.3.5 Closing an 8-inch Light Fixture

Replacement

1. Carefully clean all contact surfaces of the light fixture and of the housing.
2. Install a new inner pan gasket on the bottom cover.

Important

The inner pan gasket must be changed each time the light fixture is disassembled.

3. Connect the LED board cable connector(s) to the supply terminal(s) of the converter in the housing.

NOTICE

Note the orientation and alignment of the LED board cables, which are different between 1 connector and 2 connector versions.

Converters with one connector: The cables should have colored wires towards each other and crossed.

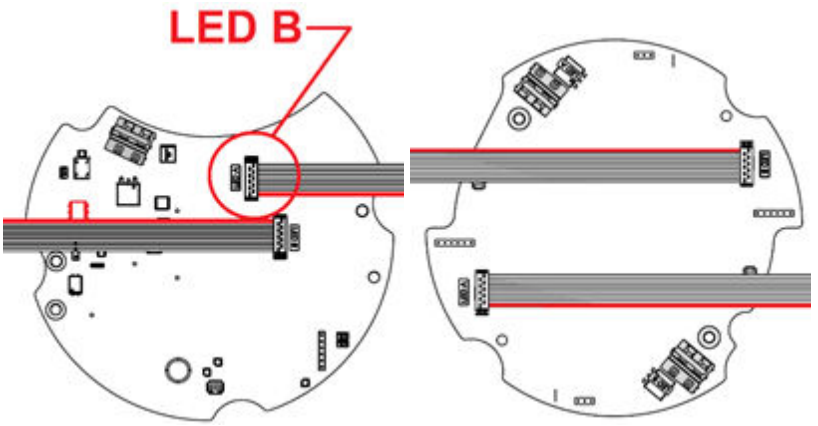
Converters with two connectors: The cables should have colored wires away from each other and crossed.Light fixtures with only one LED-board need to have its LED-board connected to the LED B channel.

Note

Refer to Figure 20 figure.

4. Place the top cover over the bottom cover, align A and B sides on the top cover with the corresponding sides on the bottom cover.

Figure 20: Converter with 1 connector and with 2 connectors



Important

Before closing the light fixture, it is important to make sure the inner pan gasket is placed correctly in the groove of the bottom cover to prepare the light fixture for water tightness checks and use in the airfield.

5. Put the light fixture on a surface with the top cover facing down.

Note

Refer to Figure 21 figure.

6. Tighten the four screws using a torque limiting spanner 4 mm Allen key to a torque of 8 Nm (equivalent to 0.8 kg m or 8 g.cm).

Note
Refer to Figure 22 figure.

Figure 21: Fixture facing down

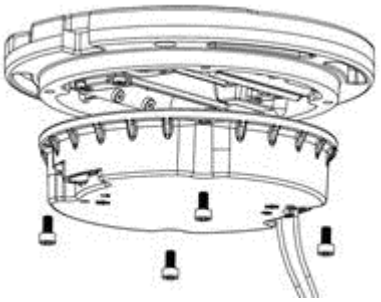
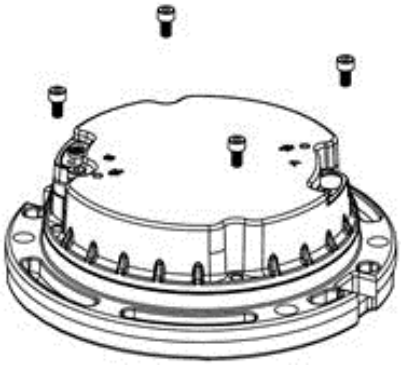


Figure 22: Tightening screws



7. Check the light fixture for water-tightness.

Note
Refer to Checking the Light Fixture for Water-Tightness section for more information.

5.3.6 Checking the Light Fixture for Water-Tightness

If Maintenance is carried out in a workshop, check the water-tightness of the light.

Prepare

1. Remove the Water-tightness test valve cap.
2. Fill up the light fixture with compressed air (test pressure = 130 kPa).

Test

1. Put the light fixture in water wait 3 minutes, and check if air leaks out of the light.
   a. - If air leaks out of the light fixture (between bottom cover and top plate or between prism and top plate or water-tightness valve and top plate), the light fixture is not watertight and must be repaired. Release the air from

the light. Disassemble the light fixture and re-check the mating surfaces and gaskets. Assemble the light fixture and perform the water-tightness test again.

b. - If the light fixture is water tight, release the compressed air from the light fixture and assemble the cap on the test valve.

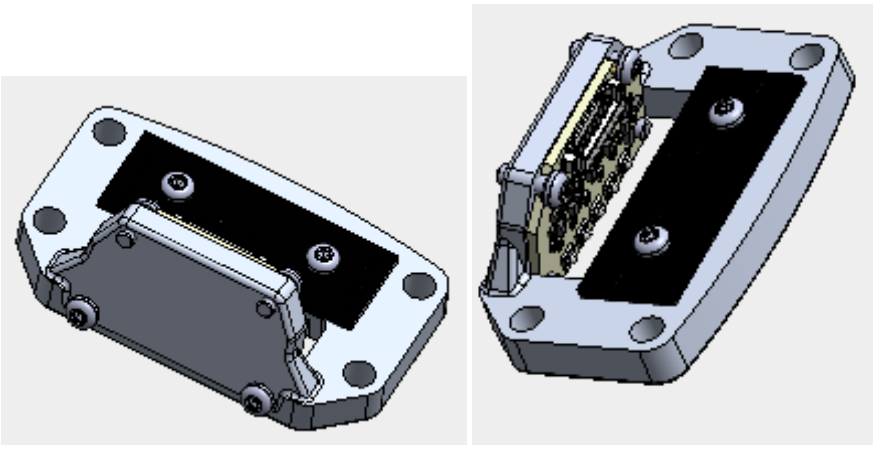
2. The light fixture is ready to be reinstalled in the field. ***IMPORTANT!*** *Never exceed pressure of 150 kPa inside the light* fixture *as this may lead to personal injuries and damage the light.*

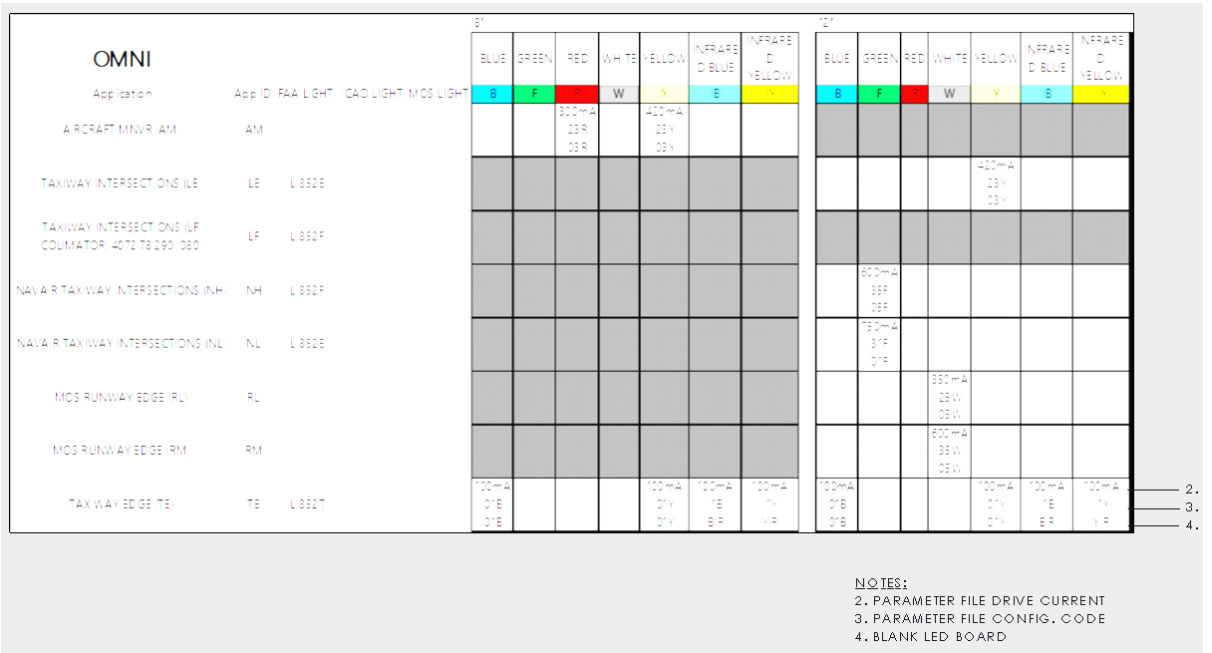
5.3.7 Replace a Light Engine in a 12-inch and an 8-inch Fixture

Remove

1. Disassemble the light fixture.
2. Detach and remove the LED board holder, including 4 screws from the body, using a 4 mm Allen key.

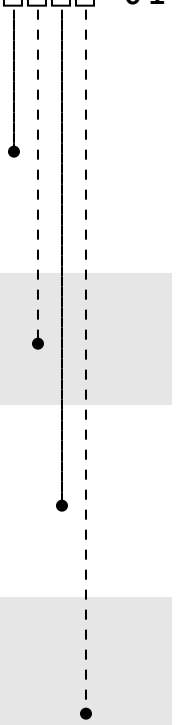
Figure 23: Light engine





Light Engine Assembly

AS00143-□□□□-01



Intensity Level
0 = Ultra low
1 = Low
2 = Medium
3 = High
4 = Ultra high
E = Enhanced
I = Infrared

LED Quantity
1 = One
3 = Three
5 = Five

Color
B = Blue
G = Green
Y = Yellow
R = Red
W= White

Arctic Kit
N = No Arctic Kit
0 = EQ Arctic Kit
1 = FO Arctic Kit (28 V)
2 = FO Arctic Kit (35 - 50 V)
3 = FO Arctic Kit (50 - 55 V)
4 = HPC Arctic Kit

Light Engine Assembly AS00137-□□□-01

Optical Block Configuration
0 = None
D = Taxiway L-852D(LCurved Top Cover
W= Taxiway wide
C = Taxiway curved
N = Taxiway narrow
S = FAA L-852S(L)

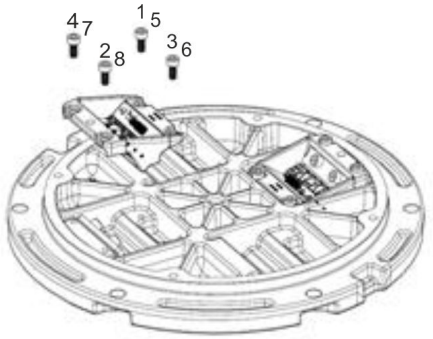
2 LED Color
F = (FAA/ ICAO) Green
G = (ICAO/ MOS) Green
R = Red
W= White
Y = Yellow
B = Blue
O= Orange
I = Infrared

Other 2 LED Color
N = None
F = (FAA/ ICAO) Green
G = (ICAO/MOS) Green
R = Red
W= White
Y = Yellow
B = Blue
O= Orange
I = Infrared

Replace

1. Attach the new LED board holder, including screws. The screws on the LED holder shall be tightened gently in sequence, following number 1-4, see Figure 24.
2. Tighten the same screws to a torque of 4.5 Nm, following number 5-8, see Figure 24.

Figure 24: Tighten screws



3. Connect the LED-cable(s) to the LED-board(s), note the cable orientation.
4. Assemble the light fixture.

5.3.8 Replacing the Top Cover of a 12-inch Fixture

NOTICE

Top covers are delivered without the LED boards. LED boards have to be ordered separately.

Note

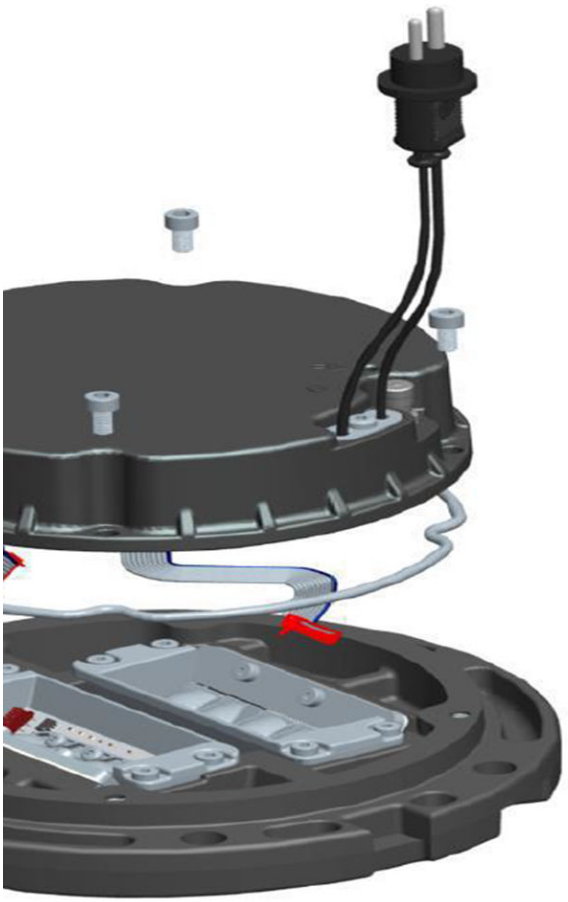
When a top cover is replaced, new LED boards (which are mounted on the brackets) have to be mounted. For LED board replacement new gaskets and blue spacers are required. They are available separately.

1. Open the light: Disconnect the top cover from the bottom cover.

   Note

   Refer to the Figure 25 figure.

   Figure 25: Top cover with bottom cover

2. Remove the cables from the assembly.
3. Disconnect the inner pan gasket, the prism gasket, the prism protection plate (blue spacer), the prism and the LED kit from the cover. The gaskets and the prisms have to be replaced after delivery.

   You have to remove the prism holder (bracket) to mount the LED board.

   Note

   Follow the instruction on mounting a LED board in the Replacing the LED Board section.

4. Place the components on the bottom cover.
5. Reconnect the parts and the cables.
6. Place the bottom cover on the top cover with component and connect them with the screws and connectors.
7. Close the fixture.

5.3.9 Replacing the Top Cover of an 8-inch Fixture

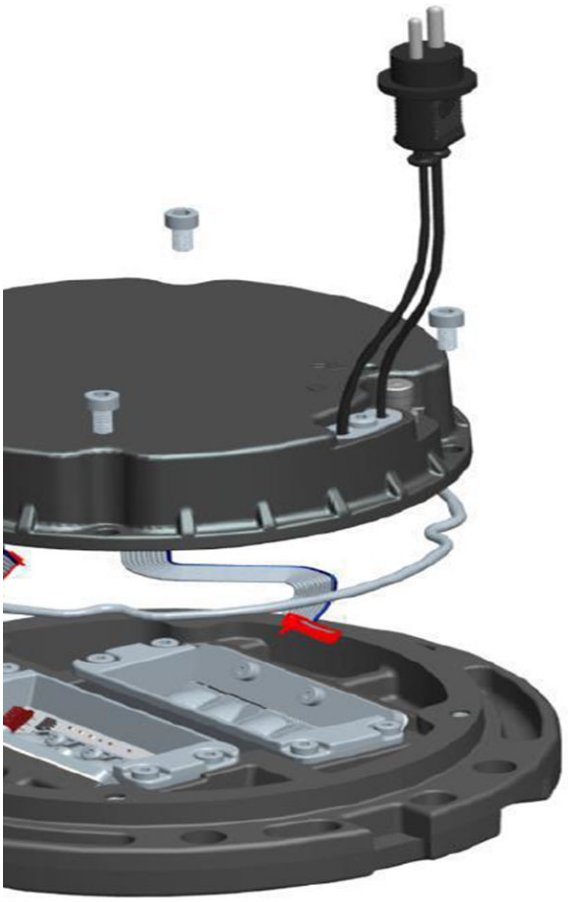
NOTICE
Top covers are delivered without the LED boards. LED boards have to be ordered separately.

Note
When a top cover is replaced, new LED boards (which are mounted on the brackets) have to be mounted. For LED board replacement new gaskets and blue spacers are required. They are available separately.

1. Open the light: Disconnect the top cover from the bottom cover.

   Note
   Refer to the Figure 26 figure.

   Figure 26: Top cover with bottom cover



2. Remove the cables from the assembly.
3. Disconnect the inner pan gasket, the prism gasket, the prism protection plate (blue spacer), the prism and the LED kit from the cover. The gaskets and the prisms have to be replaced after delivery.

   You have to remove the prism holder (bracket) to mount the LED board.

Note

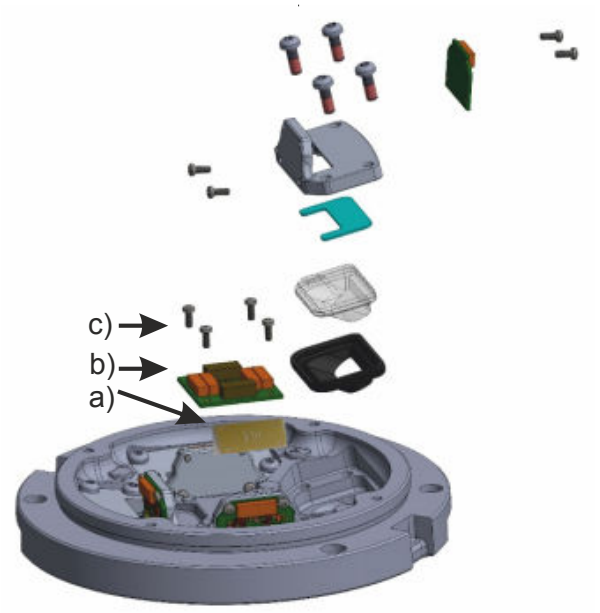
Follow the instruction on mounting a LED board in the Replacing the LED Board section.

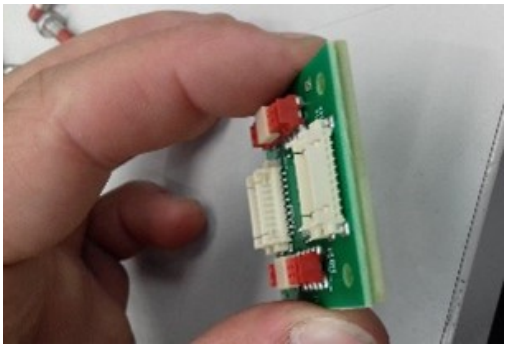
4. Place the components on the bottom cover.
5. Reconnect the parts and the cables.
6. Place the bottom cover on the top cover with component and connect them with the screws and connectors.
7. Close the fixture.

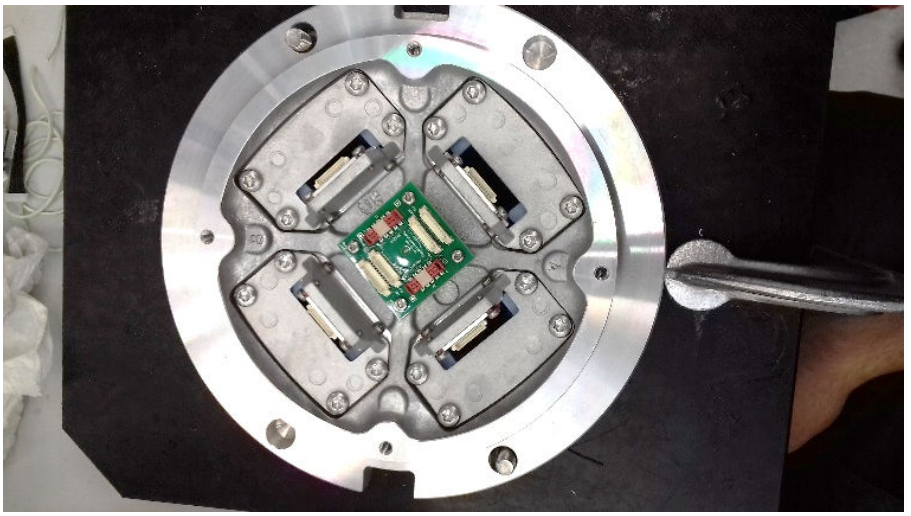
5.3.10 Replacing the Connection Board of an 8-inch fixture

The connection board number b) is included in the converter board assembly kit. The connection board is assembled with the isolation board (split board) number a) on the top cover. This combination is fixed together with 4 screws (call-out c)).

Figure 27: Replacing the connection board







1. Disconnect the red connectors from the connection board.
2. Loosen the cables.
3. Remove the old connection board with the isolation board from the top cover.
4. Insert the new connection board with the isolation board on the top cover.
5. Connect the cables to the connection board.
6. Connect the connection board with the isolation board on the top cover.

Note

There are two different types of connectors (entry cables) that are led from the converter to the LED board (and not to the LED modules). The black one (4 pieces of 70 mm each) connect the connection board with the LED boards and the red connectors (2 pieces of 180 mm each) connect the connection board with the converter. The cables are available separately in a cable kit.

Figure 28: Two connector types (replaceable)

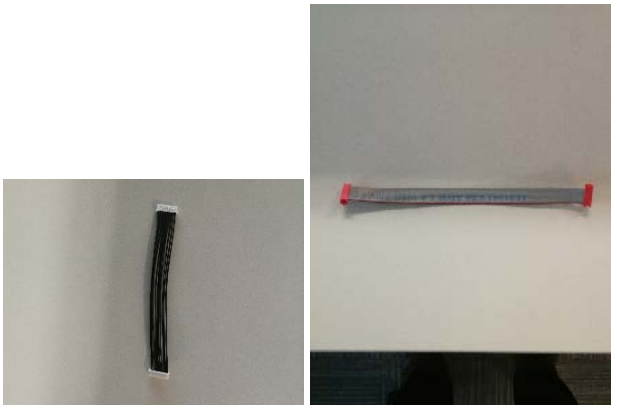
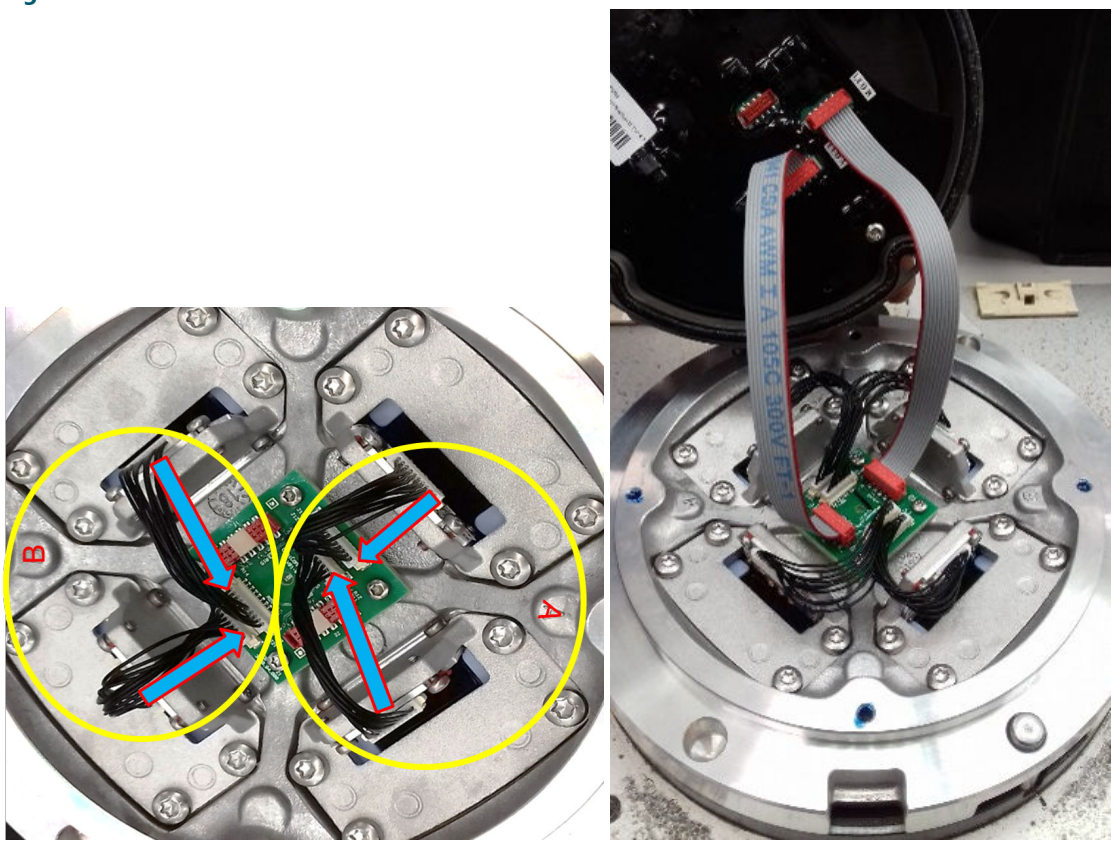


Figure 29: Red and black cable connections

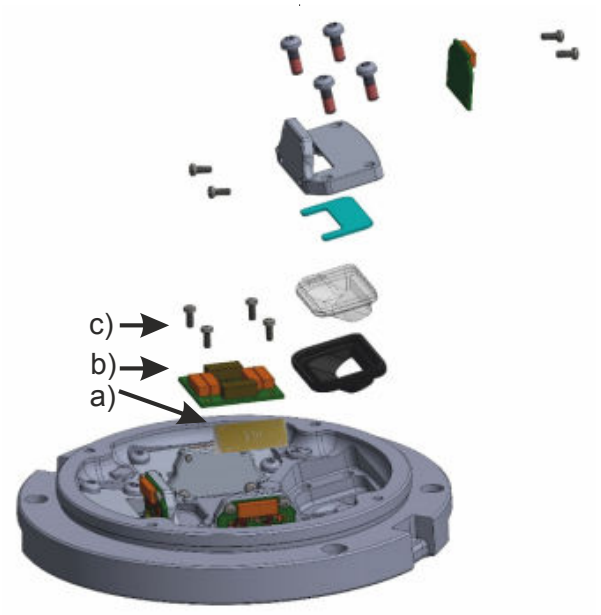


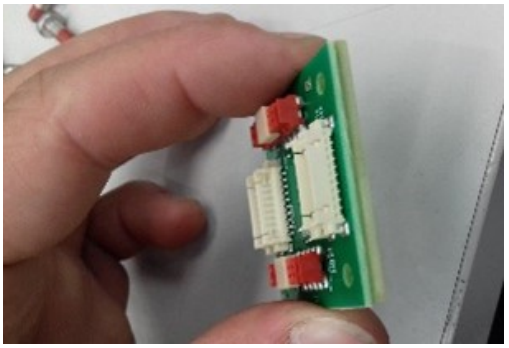
7. Close the fixture.

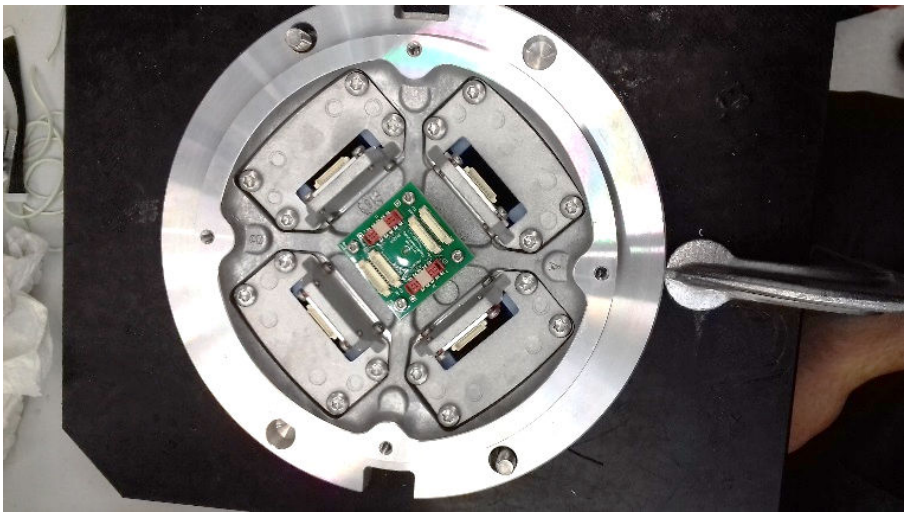
5.3.11 Replacing the Connection Board of a 12-inch fixture

The connection board number b) is included in the converter board assembly kit. The connection board is assembled with the isolation board (split board) number a) on the top cover. This combination is fixed together with 4 screws (call-out c)).

Figure 30: Replacing the connection board







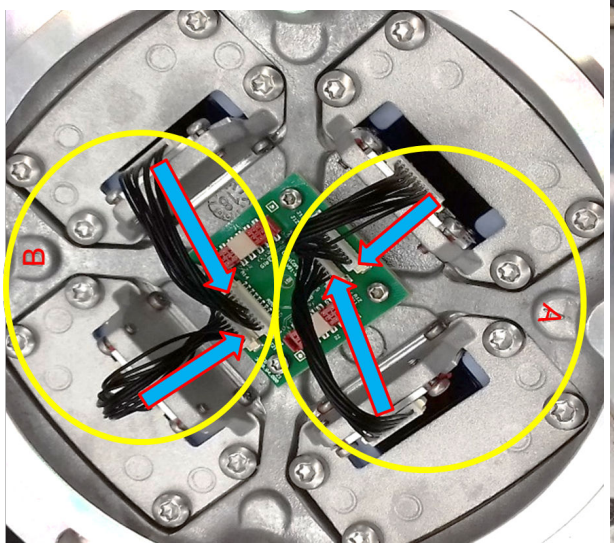
1. Disconnect the red connectors from the connection board.
2. Loosen the cables.
3. Remove the old connection board with the isolation board from the top cover.
4. Insert the new connection board with the isolation board on the top cover.
5. Connect the cables to the connection board.
6. Connect the connection board with the isolation board on the top cover.

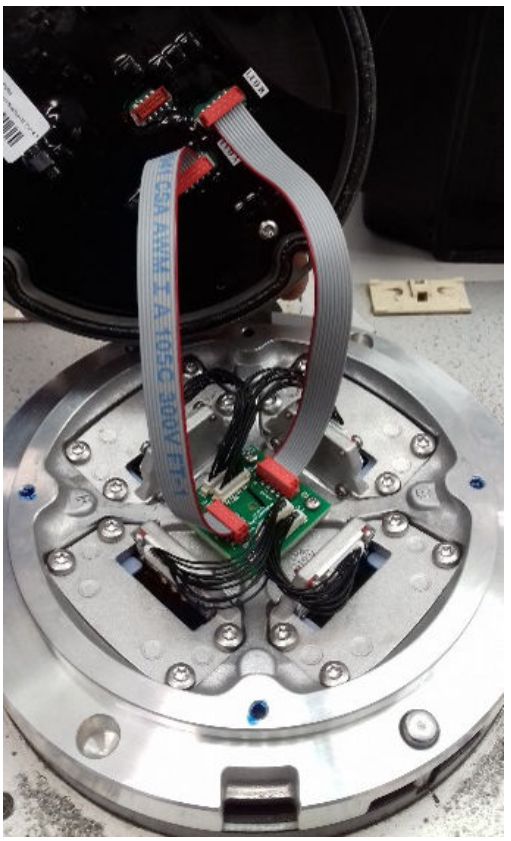
Note

There are two different types of connectors (entry cables) that are led from the converter to the LED board (and not to the LED modules). The black one (4 pieces of 70 mm each) connect the connection board with the LED boards and the red connectors (2 pieces of 180 mm each) connect the connection board with the converter. The cables are available separately in a cable kit.

Figure 31: Two connector types (replaceable)

Figure 32: Red and black cable connections





7. Close the fixture.

5.3.12 Replacing the LED Board

The LED board is included in the LED kit. LED boards are delivered mounted on the LED prism holders (brackets).You can mount the LED board without disassembling the connection board.

NOTICE

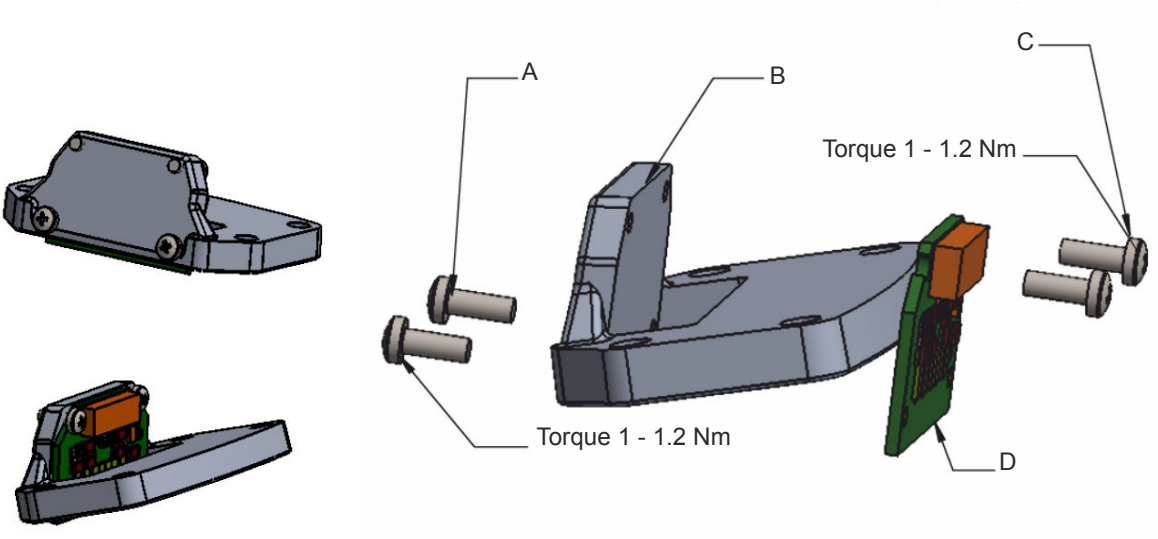
Replace blue spacer and prism gasket to mount the LED board when a new fixture is delivered. The spacers and gasket that are mounted upon receipt are only mounted as a transportation protection. Make sure you throw them away!

1. Remove the brackets from the prisms being ih place when they are delivered to mount the LED board.

Note

Refer to Figure 33 figure.

Figure 33: LED sub assembly (Optical assembly)



2. Put the new LED board (call-out D) onto the assembly with cables.
3. Connect the cables with the LED board.
4. Set the LED optical assembly with the prism protection plate and the prism on the gasket (prism assembly kit).
5. Put the prism assembly onto the top cover.
6. Close the fixture.

5.3.13 Replace a Prism and its Gasket in a 12-inch Fixture

Remove

1. Disassemble the light fixture.
2. Detach and remove the LED board holder, including 4 screws from the body, using a 4 mm Allen key, see [fig 1.x].

3. Remove the Teflon and steel protective plates from the LED board holder.
4. Remove the prism and its gasket, see [fig 1.x].

Figure 34: Remove LED board holder

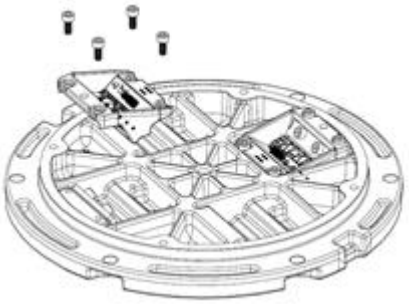


Figure 35: Remove prism and gasket

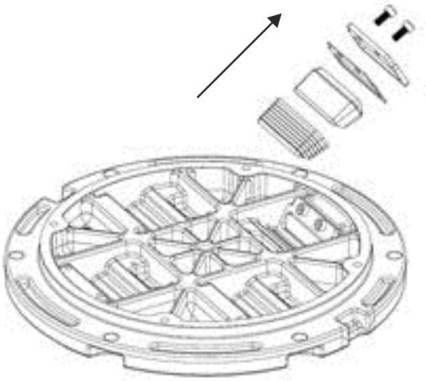


Figure 36: Exploded View

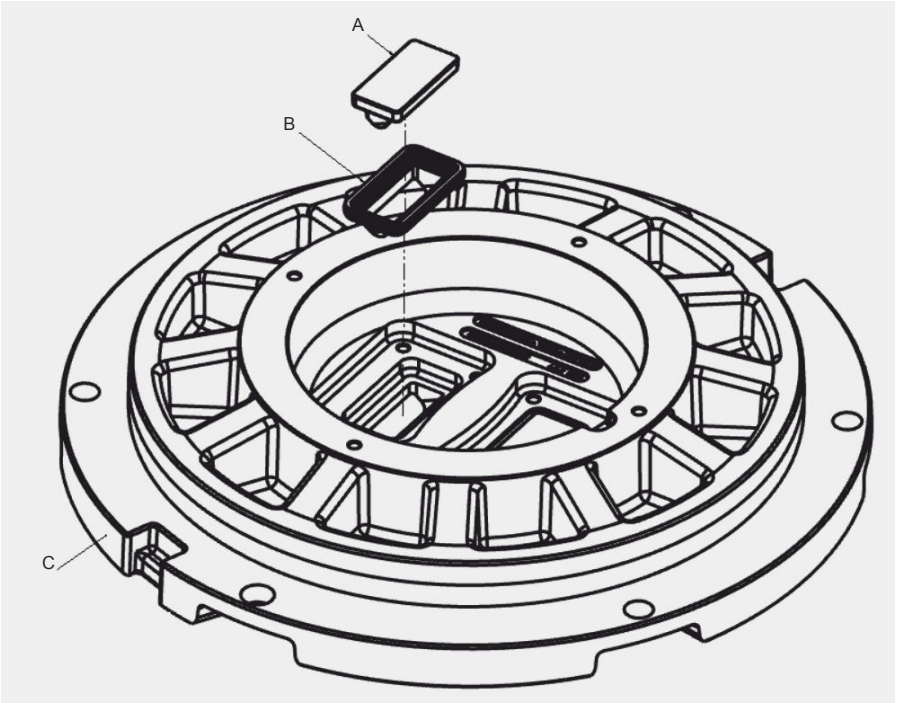


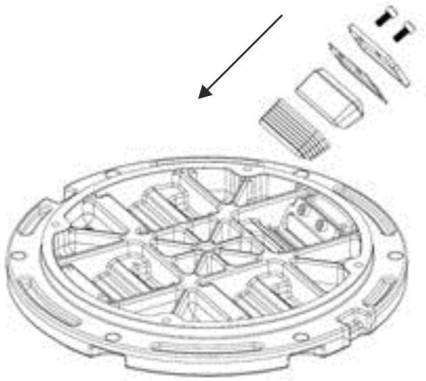
Table 3: Exploded View Legend — Top Cover Assembly, 12 inch

Call-out	Description	Part Number
A	Prism See BOM for specific part number for 4072.4X.XXX prism.	4072.4X.XXX
B	Prism Gasket	4072.40.421
C	Top Cover See BOM for specific part number for MC000XX-XXX-01 top cover.	MC00084-XXX-01

Replace

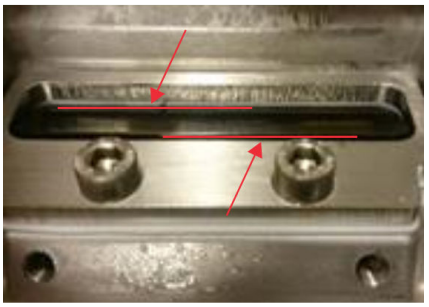
1. Lubricate the new prism gasket with CC Patron grease.
2. Place the prism gasket in the prism opening in the top cover.
3. Put the new prism into the new prism gasket, then push it all the way into the opening and hold for about a minute. See Figure 37.

Figure 37: New prism into prism gasket



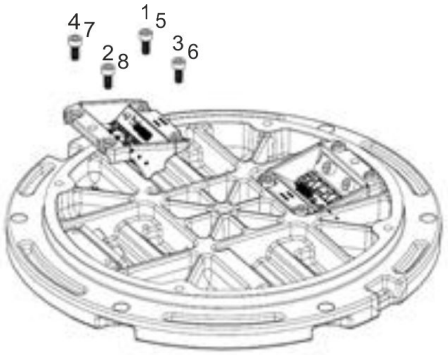
4. Check that the O-ring of the prism gasket is even in the chambered area.
5. Place the new Teflon protective plate and steel plate over the prism and prism gasket and tighten the two M5x12 screws to a torque of 4.5 Nm.
6. Looking from above, make sure the prism edge is parallel with the prism holder, see Figure 38.

Figure 38: Prism holder edge



7. Use alcohol based cleaner to remove any grease or dust from the prism.
8. Attach the LED board holder, including screws, and gently tighten the screws on the LED holder in sequence following number 1-4, see Figure 39.
9. Tighten the same screws to a torque of 4.5 Nm following number 5-8, and re-tighten the two screws on the steel plate to 4.5 Nm. See Figure 39.

Figure 39: Tighten screws in sequence



10. Assemble the light fixture.

11. Cut off any protruding prism gasket on the outside of the top cover.

5.3.14 Replacing a prism, its gaskets and the blue spacers (prism protection plates) in a 8-inch fixture

Removal

Important

Make sure that you replace all 4 prisms in case you replace a prism. It is required to replace them when there is water in the fixture or when the prism is cracked!

NOTICE

Preventive maintenance info: Make sure that you replace all 4 prisms when one LED is defective.

1. Disassemble the light fixture:

   a) Dissemble the prism prism holder (bracket) from the top cover.

   NOTICE

   Every time the prism holders are replaced, the prism protection plates (blue spacers) require replacement, too.

   b) Remove bracket number d) and replace parts a), b) and c).

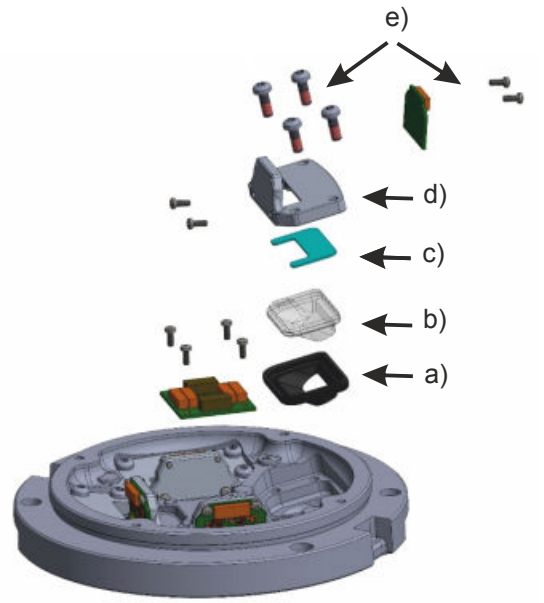
   Note

   Refer to Figure 40 figure.

   Restriction

   As soon as part d) is replaced, part a) and c) must be replaced, too. If this action is not executed, the fixture will not be watertight any more!

Figure 40: Exploded view - prism replacement



2. Detach and remove the LED board holder, including 4 screws from the body, using a 3 mm Allen key. See Figure 41.

Remember

Never reuse the screws Screws! The screws number e) are included in the kit (not as spare parts).

Note

Refer to Figure 40 figure.

3. Remove the Teflon and steel protective plates from the LED board holder.
4. Remove the prism and its gasket, see Figure 42.

Figure 41: Remove LED board holder

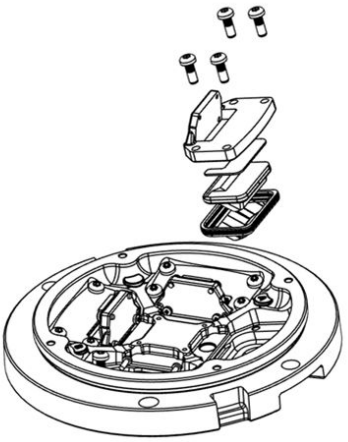
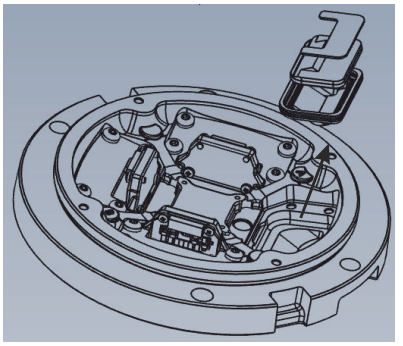


Figure 42: Remove prism and gasket



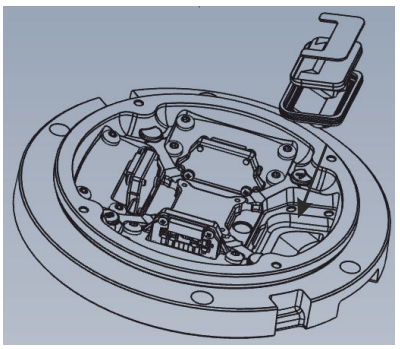
Replacement

NOTICE

The prism gaskets and the protection prism plate require replacement every time a prism is replaced. That means that when 4 prisms have to be replaced, 4 gaskets and prism protection plates require replacement, too.

1. Lubricate the new prism gasket with CC Patron grease.
2. Place the prism gasket in the prism opening in the top cover.
3. Put the new prism into the new prism gasket, then push it all the way into the opening and hold for about a minute. See Figure 43.

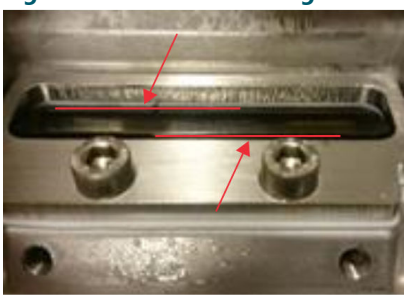
Figure 43: New prism into prism gasket



4. Check that the O-ring of the prism gasket is even in the chambered area.
5. Place the new Teflon protective plate and steel plate over the prism and prism gasket and tighten the two M4 screws to a torque of 4.5 Nm.

6. Looking from above, make sure the prism edge is parallel with the prism holder, see Figure 44.

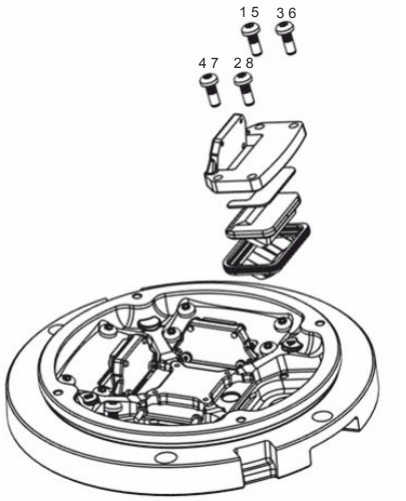
Figure 44: Prism holder edge



7. Use alcohol based cleaner to remove any grease or dust from the prism.
8. Attach the LED board holder, including screws. The screws on the LED holder shall be tightened to a torque of 4.5 Nm, in sequence 1-4. Tighten the same screws again to a torque of 4.5 Nm, in sequence 5-8. See Figure 45.

Note
The torquing sequence must be respected as it ensures correct positioning of the prism.

Figure 45: Tighten screws in sequence

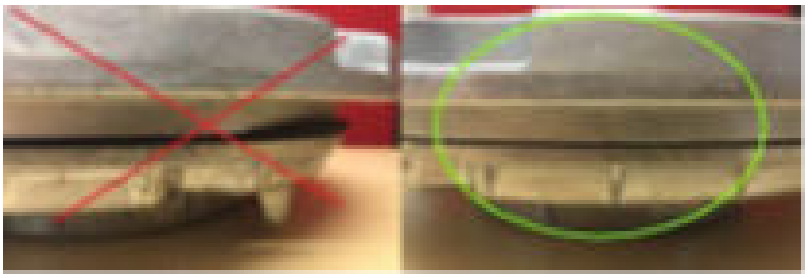


9. Re-tighten the two screws on the steel plate to 4.5 Nm. See Figure 45.
10. Assemble the light fixture.

Make sure the gasket is fitted in correctly.

Note
Refer to Figure 46 figure.

Figure 46: Correct gasket position



11. Cut off any protruding prism gasket on the outside of the top cover.

Note
Make sure you check the fixture for watertightness very time you have to replace a spare part!

5.3.15 Replace the Bottom Cover and Converter of a 12-inch Fixture

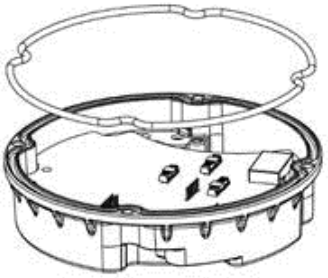
Remove

1. Disassemble the light fixture.
2. From inside the housing, disconnect all cables from the LED board.

Replace

1. Place the new gasket on the new bottom cover with converter, see Figure 47.

Figure 47: Gasket



2. Connect the LED board cable(s). Note the orientation and alignment of the cables in Figure 48 and Figure 49.

Note
Make sure that light fixtures with only one LED board cable is connected to the LED B-channel.

Figure 48: Converter with 1 connector

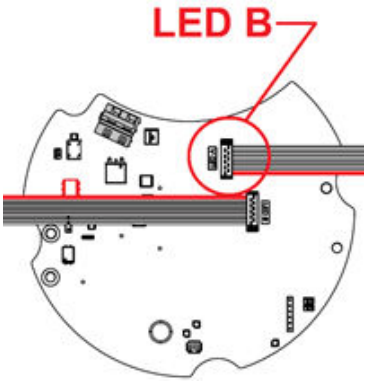
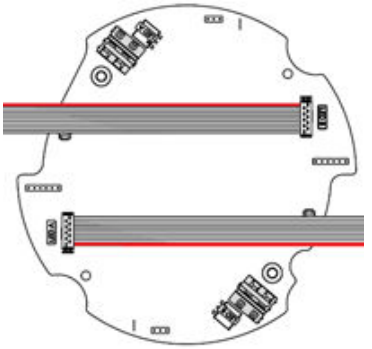


Figure 49: Converter with 2 connectors



3. Assemble the light fixture.

5.3.16 Replace the Bottom Cover and Converter of a 8-inch Fixture

Removal

1. Disassemble the light fixture.
2. From inside the housing, disconnect all cables from the LED board.

Replacement

1. Place the new gasket on the new bottom cover with the converter.
2. Connect the LED board cable(s). Note the orientation and alignment of the cables in Figure 50 and Figure 51 figures.

NOTICE

Make sure that light fixtures with only one LED-cable is connected to the LED B-channel.

Figure 50: Converter with 1 connector

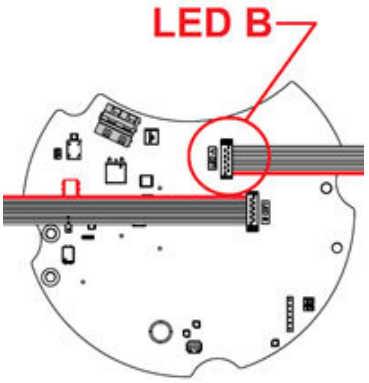
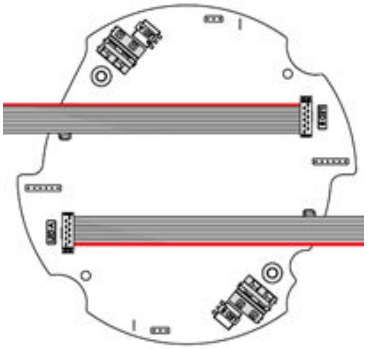


Figure 51: Converter with 2 connectors



3. Assemble the light fixture.

5.3.17 Reset the Fail-Open Converter 2.3

Open

1. Disconnect and disassemble the light fixture.
2. Make sure you have a 2-way electrical shunt/jumper (2.54 mm/0.100-inch spacing), see Figure 52.

Figure 52: 2-way electrical shunt/jumper

Reset

1. Locate the 3-pin reset connector(s) on the converter. For the two-connector converter, there is one reset connector for each side.
2. Place the 2-way electrical shunt (2.54 mm spacing) over the **two pins** marked red, see Figure 53 and Figure 54.

Figure 53: Converter with 1 connector

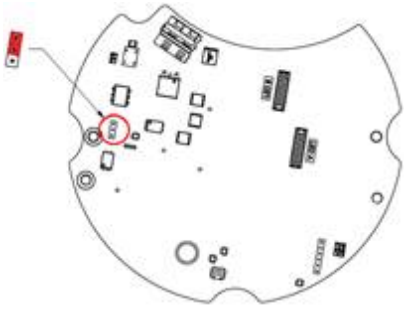
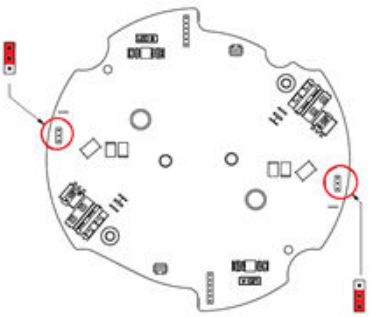


Figure 54: Converter with 2 connectors



3. Close the light fixture and connect it to a CCR.

4. Energize the light fixture until there is a steady light, then turn the CCR off and unplug the light fixture.
5. Disassemble the light fixture, then remove the two-way electrical shunt (2.54 mm spacing) from the pins.
6. Assemble the light fixture and perform a functional test.

5.3.18 Reset the Fail-Open Converter 48010921 and 48011111

Parts

- Fuse resistor spare part kit: 6132.00.250 (20pcs)

Info

- Converter with 1 connector have 2 fuse resistors
- Converter with 2 connectors have 4 fuse resistors

Reset / replace the fuse resistors

1. Disconnect and disassemble the light fixture.
2. Locate the fuse resistors, see Figure 55 and Figure 56.

Figure 55: Converter with 1 connector

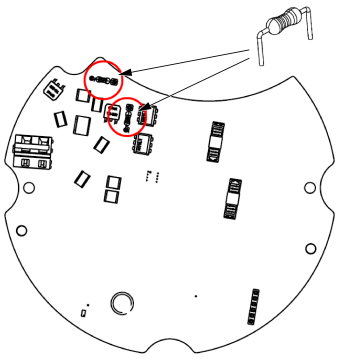
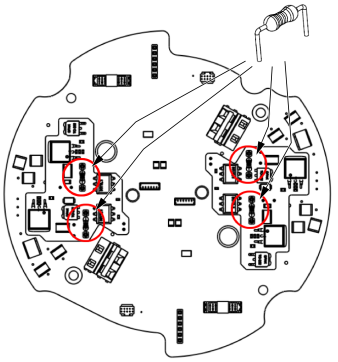


Figure 56: Converter with 2 connectors



3. Remove the fuse resistors by pulling away from the converter.
   a. For converters with 1 connector, always replace both fuse resistors at the same time.
   b. For converters with 2 connectors, always replace both fuse resistors related to the A/B channel that needs to be reset. If both A and B channel needs a reset, replace all 4 fuse resistors.
4. Dispose the old fuse resistor.
5. Place the legs of the new fuse resistors in the sockets.
6. Assemble the light fixture and perform a functional test.

6.0 Spare Parts

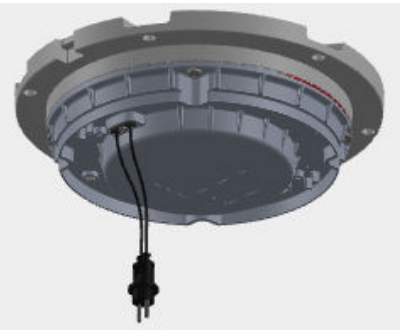
Spare parts are available for inset light fixtures with and without IQ. For more information, see www.adbsafegate.com and the spare part lists, or contact ADB SAFEGATE for assistance.

6.1 Versions and Exploded View

Versions, 12-inch Insets

Figure 57: Omni Protected Inset, 12 inch, with Style 1 jacketed cord set

Figure 58: Omni Protected Inset, 12 inch, with Style 6 cord set



Exploded View, 12-inch Insets

Figure 59: Exploded View, Top Cover, 12-inch fixtures

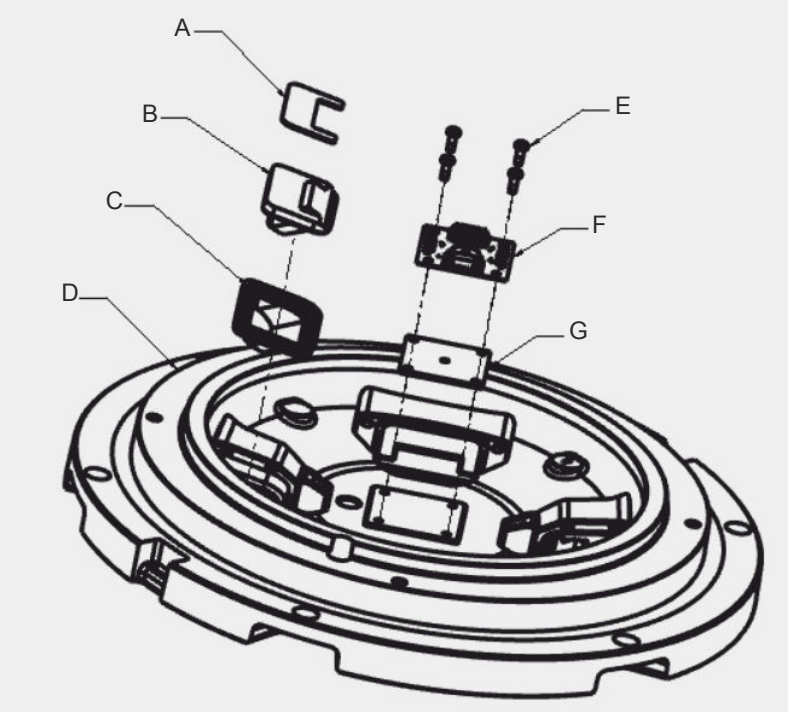


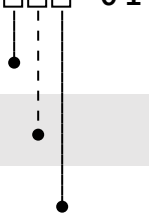
Table 4: Exploded View Legend — Top Cover Assembly, 12 inch

Call-out	Description	Part Number
A	Protection Prism Plate (4 pcs)	4072.78.040
B	Prism (4 pcs)	4072.78.021
C	Prism Gasket (4 pcs)	4072.78.030
D	Top Cover	4072.78.070
E	M3 X 5 X 8 PAN A2 6 LOBE LP ISO 7045 (4pcs)	MFPM3PT-708-01
F	Connection Vis	EP00074-000-01
G	Isolation Board	1593.31.300

Ordering Code, 12-inch insets

Top Cover Assembly

AS00188-□□□-01



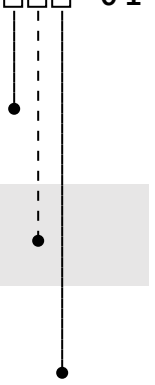
Fixed Digit
0 = Reserved

Fixed Digit
0 = Reserved

Prism
S = Standard Prism

Bottom Cover Assembly

AS00024-□□□-01



Power
M= Fail-open
P = IQ power disabled (HPC)
R = EQ
S = Non-MON

Cord set quantity
1 = 1 connector
2 = 2 connectors

Cord set type
6 = Cable style 6 (600 mm)
3 = Cable style 6 (300 mm)
F = French plug, 3 poles
J = Cable style 1 (jacketed)

Versions, 8-inch Insets

Figure 60: Taxiway Inset, 8 inch, with Style 1 jacketed cord set

Figure 61: Taxiway Inset, 8 inch, with Style 6 cord set

Exploded View, 8-inch Insets

Figure 62: Exploded View, Top Cover, 8-inch fixtures

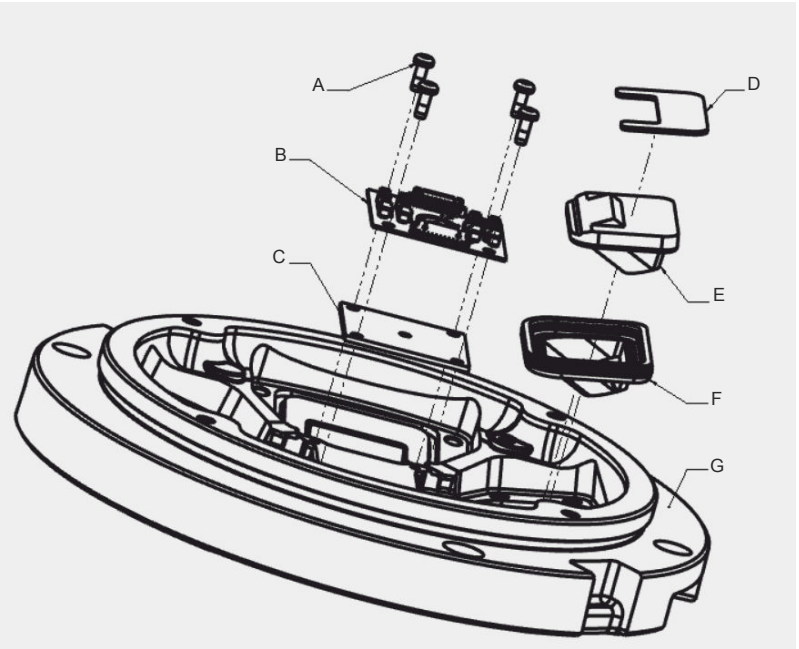


Table 5: Exploded View Legend — Top Cover Assembly, 8 inch

Call-out	Description	Part Number
A	M3 X 5 X 8 PAN A2 6 LOBE LP ISO 7045 (4pcs)	MFPM3PT-708-01
B	Connection Vis	EP00074-000-01
C	Isolation Board	1593.31.300
D	Protection Prism Plate (4 pcs)	4072.78.040
E	Prism (4 pcs)	4072.78.021
F	Prism Gasket (4 pcs)	4072.78.030
G	Top Cover	4072.78.010

Exploded View, 8-inch Insets

Figure 63: Exploded View, 8-inch fixtures — Part 2

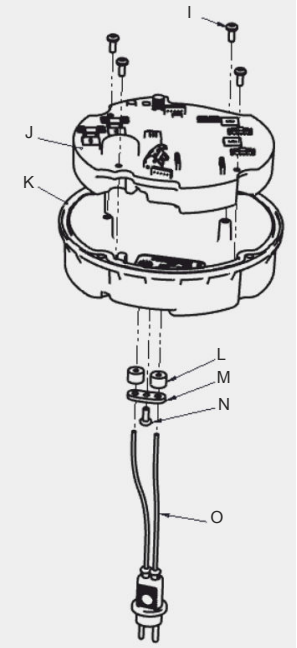


Table 6: Exploded View Legend — Bottom Pan Assembly, 8 inch

Call-out	Description	Part Number
I	M4x7 x 10 PAN A2 6 LOBE LP DIN 7985	MFPM4PT-710-01
J	Power converter	EP000XX-XXX-XX (See Table 8)
K	Inner pan	M C00003-XXX-02
L	Cable gasket, silicone	M S00016-000-01

Table 6: Exploded View Legend — Bottom Pan Assembly, 8 inch (Continued)

Call-out	Description	Part Number
M	Cord retaining disc	XXXXXX (See Table 7)
N = I	M4x7 x 10 PAN A2 6 LOBE LP DIN 7985	MFPM4PT-710-01
O	Cord set	XXXXXX (See Table 7)

Table 7: Cord set options — Bottom Pan Assembly, 8 inch

Configuration	Part Number	Description	Cord set disc
AS00021-XX6-01	73A0136/24 or SGE96253351_600MM	FAA Cable Style 6 2, 5^2 ZYRAD - 600 MM	SGE48000253
AS00021-XX3-01	73A0136/12 or SGE96253351_300MM	FAA Cable Style 6 2, 5^2 ZYRAD - 300 MM	SGE48000253
AS00021-XXF-01	SGEFR500160	Plug 3 Poles 2,5^2 L=400	SGE48000253
AS00021-XXJ-01	73A0193/1	L-823 Style 1, SO JACKETED CORD SET	60A4679

Table 8: Converter options — Bottom Pan Assembly, 8 inch

Configuration	Part Number	Description	MFPM4PT-710-01 Screw Quantity
AS00021-L1X-01	EP00017-100-02	Non-MON (LCC) 1 CON	3
AS00021-L2X-01	EP00016-100-01	Non-MON (LCC) 2 CON	4
AS00021-M1X-01	EP00017-000-02	FAIL-OPEN MON - 1 CON	3
AS00021-M2X-01	EP00016-000-01	FAIL-OPEN MON - 2 CON	4
AS00021-P1X-01	EP00042-000-01	HPC 6 - IQ DISABLED	3
AS00021-R1X-01	EP00028-000-01	Non-MON (US) 1 CON	4
AS00021-S1X-01	EP00028-001-01	EQ 1 CON	4

Ordering Code, 8-inch insets

Top Cover Assembly

AS00187-□□□-01

Fixed Digit
0 = Reserved

Fixed Digit
0 = Reserved

Prism
S = Standard Prism

Bottom Cover

AS00021-□□□-01

Power
M= Fail-open
P = IQ power disabled (HPC)
R = EQ
S = Non-MON

Cord set quantity
1 = 1 connector
2 = 2 connectors

Cord set type
6 = Cable style 6 (600 mm)
3 = Cable style 6 (300 mm)
F = French plug, 3 poles
J = Cable style 1 (jacketed)

6.2 Exploded View

Figure 64: Omnidirectional Light, 4 prisms, 12-inch

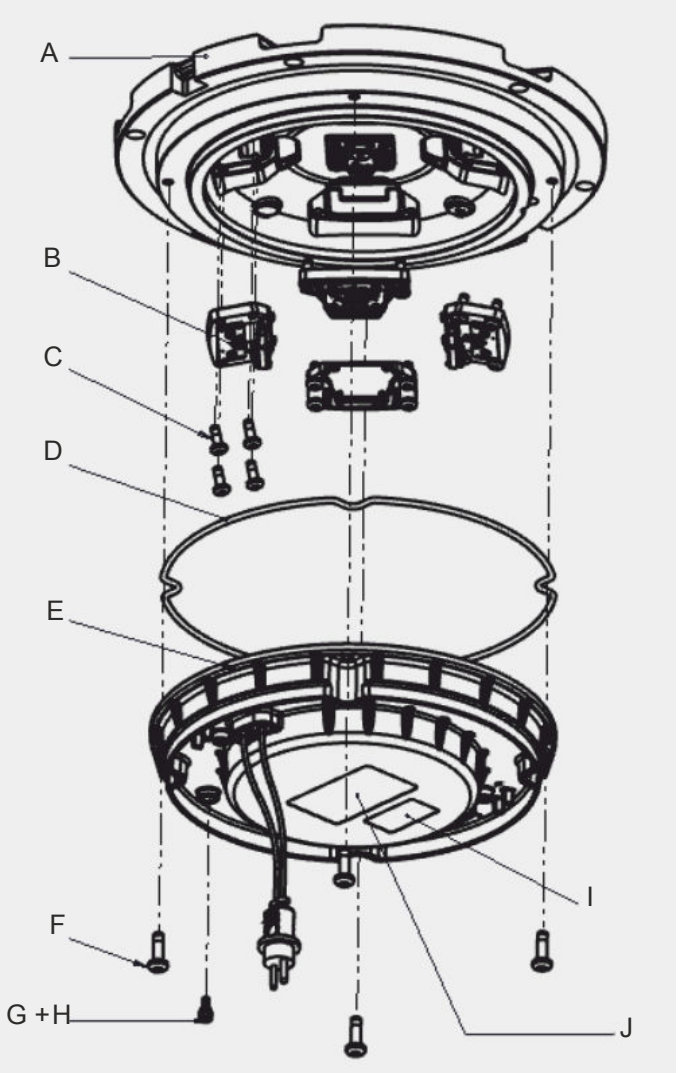


Table 9: Legend Exploded View

Call-out number	Description	Part Number	Quantity
A	Top Cover Assembly	AS000188-005-01	1 pc
B	Light Engine Assembly	AS00143	4 pcs
C	M5 x 8 x 14 PAN A2 6 LOBE LP DIN 7985	MFP M 5PT-714-01	16 pcs
D	O-ring	MS00006-000-01	1 pc
E	Bottom Pan Assembly	AS00024-XXX-01	1 pc
F	M6 x 1 x 20 PAN A2 6 LOBE LP DIN 7985	MFP M 6PT-720-01	4 pcs
G	Pressure Release Screw	MF00090-000-01	1 pc

Table 9: Legend Exploded View (Continued)

Call-out number	Description	Part Number	Quantity
H	O-ring, size 008	MS00001-008-01	1 pcs
I	Power supply label (if applicable)		
J	Product label		

Figure 65: Omnidirectional Light, 4 prisms, 8-inch

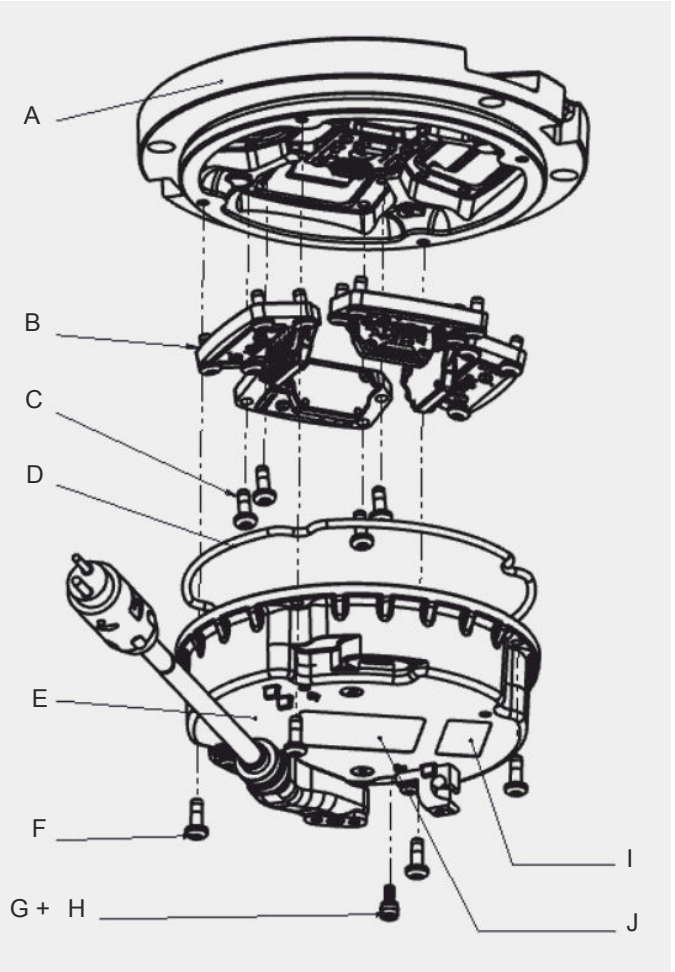


Table 10: Legend Exploded View

Call-out number	Description	Part Number	Quantity
A	Top Cover Assembly	AS00187-005-01	1 pc
B	Light Engine Assembly	AS-00143-XXXX-01	4 pcs
C	M5 x 8 x 14 PAN A2 6 LOBE LP DIN 7985	MFP M 5PT-714-01	16 pcs
D	Bottom Cover Gasket	MS00005-000-01	1 pc
E	Bottom Pan Assembly	AS00021-XXX-01	1 pc
F=C	M5 x 8 x 14 PAN A2 6 LOBE LP DIN 7985	MFP M 5PT-714-01	4 pcs
G	Pressure Release Screw	MF00090-000-01	1 pc

Table 10: Legend Exploded View (Continued)

Call-out number	Description	Part Number	Quantity
H	O-ring, size 008	MS00001-008-01	1 pc
I	Power supply label (if applicable)		
J	Product label		

6.3 Ordering Code L-852T(L) LED Taxiway Edge

Ordering Code RSTE□□□□□□□□□□□□

Primary Standard
1 = FAA / ICAO[1]

Market Specific
0 = None
1 = Buy American Preference (BAP)[2]

Dimensions
1 = 8 inch (203 mm) diameter
2 = 12 inch (305 mm) diameter, 11.25 inch BC (285 mm; L-868B mount)[3]

Prism
P = 4 protected prisms

Beam Orientation
3 = Omnidirectional

Toe-in
N= Not applicable

Color
B = Blue
Y = Yellow[5]
1 = Infrared Blue[5]
2 = Infrared Yellow[5]

N= Not applicable

Power and Monitoring
S = 2.8 - 6.6 A, non-monitored — power only
M= 2.8 - 6.6 A, Fail-open monitoring
R = 2.8 - 6.6 A, EQ integrated LINC 360

Connector and Cable
1 = 1 x Style 6 2-pole plug, 2 individual wires[4]
2 = 1 x Style 1 2-pole plug, 2-core cable [4]
5 = 1 x Flat 3-pole plug, 3 individual wires[5]

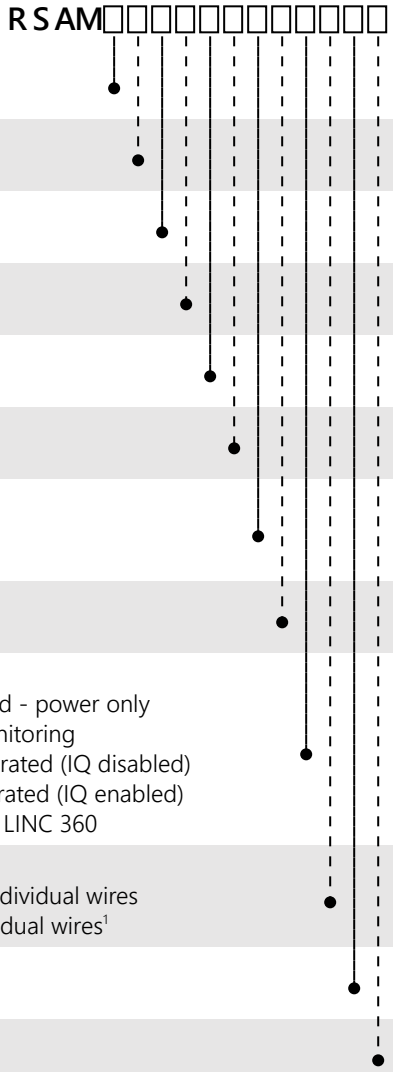
Options
0 = None
1 = Arctic Kit

Version Control
1 = First version

Note

- See user manual UM-5091 for other power supplies.
- EQ fixtures:
  - The isolation transformer must have an additional 8 VA available above the fixture load for communication bandwidth. Size transformer to next size up to assure additional 8 VA coverage. Transformers can be safely overloaded by 10 %.
  - Legacy BRITE II or AGLAS 2 systems — Order "M" power supply
- Fail-open fixtures:
  - The maximum rating for the isolation transformer is 200 W
- Additional voltage loss when longer secondary cables are used is not included in above table; these additional losses may result in a larger size isolation transformer requirement and must be factored into the circuit load calculation
- Additional voltage loss in primary cable is not included in above table; this additional loss will result in a higher CCR load and must be factored into the circuit load calculation
- Efficiency of the isolation transformer depends on the manufacturer of the transformer

6.4 Ordering Code Apron Maneuvering



Notes

1 French 3-pin plug (1F)

Note

- Deep base and / or adapter rings to be ordered separately.
- The IQ-functionality allows control and monitoring of the IQ. IQ1 fittings are pre-configured for the specific position at delivery. This function is disabled in IQ0 fittings but could be enabled in a later state. IQ light fixtures are only available as one connector option but both sides can be controlled individually if they are configured as IQ1 with an ILCMS.

7.0 INTEROPERABILITY

Base installation – O-ring selection and retaining bolts for 12-inch

CAUTION

Use of incorrect combination of gaskets, bolts and nuts can create severe damages to the product installation and create multiple safety risks.

To obtain a safe and watertight installation the O-ring and retaining bolt stated in the document must be used.

You need to know what base the light fixture will be installed in, in order to choose the correct gasket, bolts and nuts.

Failure to follow these cautions can result in equipment damage or aircraft FOD.

Table 11: Interoperability matrix

Base type	Required O-ring	Bolt installation		Stud installation	
		Required dimension	Recommended torque	Required nut	Recommended torque
ADB 8" Eurobase	Blue O-ring SGE48001263 SGE.SP24521 / 10 pc. SGE.SP24524 / 100 pc.	Metric screw kit 25 mm 1411.20.522	21 Nm + Loctite 2701	Self-locking nut kit H100 1411.20.430	21 Nm + Loctite 2701
ADB 8" HPI	Grey O-ring SGE48001264 SGE.SP24522 / 10 pc. SGE.SP24525 / 100 pc.	Metric screw kit 25 mm 1411.20.522	21 Nm + Loctite 2701	Self-locking nut kit H100 1411.20.430	21 Nm + Loctite 2701
Safegate 8" - 135 mm; RELIANCE BASE 8" - 135 mm; Thorn 8" - 100 mm; Thorn 8" - 133 mm; Thorn 8" - MK2 133 mm	Red O-ring SGE48001298 SGE.SP24523 / 10 pc. SGE.SP24526 / 100 pc.	Metric screw kit 25 mm 1411.20.522	40 Nm (No Loctite)	Self-locking nut kit H100 1411.20.430	40 Nm (No Loctite)
ERNI 8" EE08 - 150mm; ERNI 8" ED08 - 133 mm	Blue O-ring SGE48001263 SGE.SP24521 / 10 pc. SGE.SP24524 / 100 pc.	Metric screw kit 25 mm 1411.20.522	40 Nm (No Loctite)	Self-locking nut kit H100 1411.20.430	40 Nm (No Loctite)

Table 11: Interoperability matrix (Continued)

Base type	Required O-ring	Bolt installation		Stud installation	
		Required dimension	Recommended torque	Required nut	Recommended torque
IDM 6494 (120mm)	Red O-ring SGE48001298 SGE.SP24523 / 10 pc. SGE.SP24526 / 100 pc.	Metric screw kit 25 mm 1411.20.522	40 Nm (No Loctite)	Self-locking nut kit H100 1411.20.430	40 Nm (No Loctite)
Adapter ring ADB 8"-12"	Blue O-ring SGE48001263 SGE.SP24521 / 10 pc. SGE.SP24524 / 100 pc.	Metric screw kit 25 mm 1411.20.522	21 Nm + Loctite 2701	Self-locking nut kit H100 1411.20.430	21 Nm + Loctite 2701
Adapter ring SG/Thorn/ID 8"-12"	Red O-ring SGE48001298 SGE.SP24523 / 10 pc. SGE.SP24526 / 100 pc.	Metric screw kit 25 mm 1411.20.522	40 Nm (No Loctite)	Self-locking nut kit H100 1411.20.430	40 Nm (No Loctite)

8.0 POWER TABLE

LED L-852T(L) Taxiway Edge

(TE), 8- and 12-inch **without** Arctic Kit

Fixture type – 1 cord set [1]	Fixture load	Isolation transformer		CCR load
		Wattage	Load	
Taxiway Edge, L-852(T), omnidirectional	9.6 VA	15 W	5.1 VA	14.7 VA

(TE), 8- and 12-inch **with** Arctic Kit

Fixture type – 1 cord set [1]	Fixture load	Isolation transformer		CCR load
		Wattage	Load	
Taxiway Edge, L-852(T), omnidirectional	66 VA	65 W	14 VA	80 VA

Notes

1 Values provided are for the "S" option non-monitored power only.

(AM), 8- and 12-inch

Fixture type	Fixture load	Isolation transformer			CCR load
		Rating	Loss	Efficiency	
RS -AM (omnidirectional, inset)	35 VA	45 W	7 VA	0.85	45 VA

Note

- Extra losses in secondary cables or due to extra equipment (e.g. ILCMS remotes) are not included in above table; these extra losses will result in a higher required size of isolation transformers.
- Extra losses in primary cables are not included in above table; these extra losses will result in a higher required CCR load.
- Efficiency of the transformer may vary depending on manufacturer.

9.0 CABLE LOSS

The cable resistance R (ohms) for 1 conductor is calculated with following formula:

- R (ohms) = resistivity of material (ohm m) × length (m)/cross sectional area (m^2)
- For copper conductors the resistivity is 1.72 10-8 (m^2)

Example; for 1 km 2.5 mm^2 copper conductor, the resistance R is calculated as follows:

1.72 10-8 × 1000 / 2.5 10-6 m^2= 6.88 ohms

The loss (Watt) is then R × I^2 or 6.88 ohms × 6.6^2 A^2= 299.69 W/km or 0.299 W/m.

The loss (Watt) for a secondary cable with 2 conductors is thus 2 × 0.299 = 0.599 or 0.6 W/m.

As such we can calculate:

- Secondary cable for a 2.5 mm^2 Cu-wire (2 conductors): 0.6 W/m
- Secondary cable for a 4 mm^2 Cu-wire (2 conductors): 0.4 W/m
- Primary cable for a 6 mm^2 Cu-wire (1 conductor): 0.12 W/m

The cable between the isolation transformer and the lamp adds losses that cannot be ignored when dimensioning the circuits and selecting rating for secondary transformers and regulators.

WARNING

Cable lengths should not exceed 100 meters.

For a secondary cable of e.g., 20 m of 2.5 mm^2 CU-wire, 20 m × 0.6 W/m = 12 W equals the additional loss to be taken into account.

For a primary cable of e.g., 100 m of 6 mm^2 CU-wire, 100 m × 0.12 W/m = 12 W equals the additional loss to be taken into account.

10.0 SUPPORT

Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

ADB SAFEGATE Support

Live Technical Support - Americas
If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.
ADB SAFEGATE **Americas Technical Service & Support (US & Canada): +1-800-545-4157**
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304
During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!

Before You Call
When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.

- The *airport code*
- If not with an airport, then company name (prefer customer id number)
- Contact phone number and email address
- Product with part number preferable or product number
- Have you reviewed the product's manual and troubleshooting guide
- Do you have a *True RMS* meter available (and any other necessary tools)
- Be located with the product ready to troubleshoot

Note
For more information, see www.adbsafegate.com, or contact ADB SAFEGATE Support via email at support@adbsafegate.com or
Brussels: +32 2 722 17 11
Rest of Europe: +46 (0) 40 699 17 40
Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.
China: +86 (10) 8476 0106

10.1 ADB SAFEGATE Website

The ADB SAFEGATE website, www.adbsafegate.com, offers information regarding our airport solutions, products, company, news, links, downloads, references, contacts and more.

10.2 Recycling

10.2.1 Local Authority Recycling

The disposal of ADB SAFEGATE products is to be made at an applicable collection point for the recycling of electrical and electronic equipment. The correct disposal of equipment prevents any potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of products, contact your local authority city office.

10.2.2 ADB SAFEGATE Recycling

ADB SAFEGATE is fully committed to environmentally-conscious manufacturing with strict monitoring of our own processes as well as supplier components and sub-contractor operations. ADB SAFEGATE offers a recycling program for our products to all customers worldwide, whether or not the products were sold within the EU.

ADB SAFEGATE products and/or specific electrical and electronic component parts which are fully removed/separated from any customer equipment and returned will be accepted for our recycling program.

All items returned must be clearly labeled as follows:

- For *ROHS/WEEE* Recycling
- Sender contact information (Name, Business Address, Phone number).
- Main Unit Serial Number.

ADB SAFEGATE will continue to monitor and update according for any future requirements for *EU directives* as and when *EU member states* implement new *regulations* and or *amendments*. It is our aim to maintain our *compliance plan* and assist our customers.

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