DRE-LP, ITCL-LP, ISTBLP (Low Protrusion) and L-852-S Stop Bar Light

User Manual

96A0473, Rev. J, 2022/02/15

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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TABLE OF CONTENTS

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.

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 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.

1.1.5 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, 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

1.1.7 Arc Flash and Electric Shock Hazard

DANGER

Series Circuits have Hazardous Voltages
This equipment produces high voltages to maintain the specified current - Do NOT Disconnect while energized.

- Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks.
- Only persons who are properly trained and familiar with ADB SAFEGATE equipment are permitted to service this equipment.
- An open airfield current circuit is capable of generating >5000 Vac and may appear OFF to a meter.
- Never unplug a device from a constant current circuit while it is operating; Arc flash may result.
- Disconnect and lock out electrical power.
- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in the product manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved ADB SAFEGATE replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check the interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with airfield electrical equipment.

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

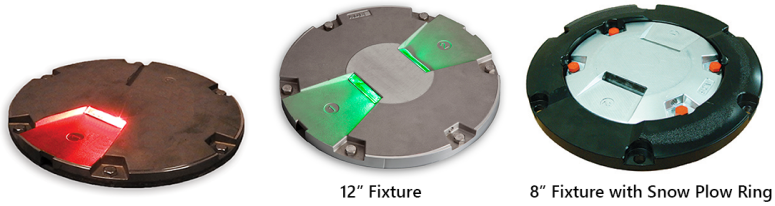
2.0 ITCL-LP (Low Protrusion)

ITCL-LP airfield lights are part of a complete range of LED in-pavement lights, featuring innovative characteristics, including low protrusion with no negative slope and double protection for key elements of the fixture. The fixture's limited height above pavement of ≤6.3 mm (0.25 in) reduces the risk of damage during winter operations and reduces vibrations caused by aircraft landing gear, increasing fixture life and making the ITCL-LP ideal for taxiway centerline applications. And despite the low protrusion, no part of the prism is below ground level, avoiding loss of photometry during rainfall and sedimentation on the bottom of the prism.

The innovative design of the cable entry allows replacement without the need to open the light, eliminating the risk of water leakage due to a pinched cable. The design also includes additional water tightness barriers along the prism, protecting both the electronics and the LEDs from accidental water ingress.

The ITCL-LP LED Taxiway Centerline Light has an average LED life of 56,000 hours under high-intensity conditions and more than 150,000 hours under actual operating conditions, which significantly reduces ongoing maintenance, resulting in increased traffic efficiency and availability of the taxiways. The ITCF-LP operates on both 3-step and 5-step CCRs and can be powered with any CCR architecture type. When quartz-incandescent fixtures are replaced with LED fixtures, airport staff can add more lights without increasing CCR size. And, the LED fixtures offer longer maintenance intervals and require fewer spare parts, resulting in lower life cycle cost.

2.1 Introduction



12" Fixture

8" Fixture with Snow Plow Ring

2.1.1 LED In-pavement Stop Bar & Runway Entrance Light (REL)

Compliance with Standards

FAA:	L-852S(L) AC 150/5345-46 (Current Edition) and the FAA Engineering Brief No. 67. ETL Certified. Complies with FAA Runway Status Light System Runway Entrance Light (REL) requirements in FAA AC 150/5340-30 Appendix 7 and FAA Engineering Brief No. 64.
ICAO:	Stop bar: Annex 14, Vol. 1, Ed. 7 par. 5.3.20
T/C:	Stop bar: Transport Canada TP 312, par. 5.3.23

Uses

FAA L-852S(L)	• Stop bar, controlled and uncontrolled
RWSL REL	• Runway Status Light (RWSL) REL applications
ICAO & T/C	• Stop bar, controlled and uncontrolled

Features

- The evolution of the most successful LED lights in the world, fully adapted to the characteristics of an LED lighting source.
- Very low energy consumption.
- Greatly reduced maintenance: calculated MTBF of 56,000 hours at 6.6A.
- Style 3–Low protrusion above ground of ≤0.25 inch (6.35 mm) reduces vibrations in both the light fixture and the landing gear, increasing fixture life.

- Increased traffic efficiency and availability of the taxiways due to the reduction of maintenance.
- Optimum and homogenous light distribution along the lights installed on the same taxiway.
- High discrimination between functions thanks to the saturated colors, their stability at the different brightness steps and under all viewing angles.
- Full compatibility with existing airfield lighting series circuits. No need to replace CCRs, series transformers, or cables.
- Fully dimmable lights, respecting the response curve of traditional halogen lights. Operates on the full range of 2.8 A to 6.6 A.
- Installation on the same bases as 8- or 12-inch tungsten-halogen lights for a straightforward replacement. Optional snow plow rings are available.
- Substantial investment reduction for new installations, resulting from a lower installed load.
- When turned on, light rise time is low. The light is perfectly adapted for any incursion protection system.
- Very low working temperature, ensuring longer component life.
- Rugged lightning protection complies with ANSI/IEEE C62.41-1991 Location Category C2 given in 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.
- Environment-friendly, precision-cast aluminum alloy top, intermediate and bottom covers.
- Optional monitoring function of the individual light source. In case of a defect, the LED light automatically disconnects from the secondary side of the isolation transformer, resulting in an open circuit condition.
- Corrosion-resistant stainless steel hardware. Use of Torx screws ensures ease of maintenance.
- Includes a UL 467 rated ground lug, which accepts an AWG 6 earth ground wire.

ISTB-LP(L) / DRE-LP lights are part of a complete range of LED in-pavement lights, featuring innovative characteristics, as a leverage for:

Reliability

- Additional watertightness barriers, protecting both the electronics and the LEDs in case of accidental water ingress, along the prism or the gaskets as well as along the cables.
- Prisms of small dimensions installed in a deep optical channel with no negative window slope: optimal protection against rubber deposit, scratches and shocks.

Modularity

- High commonality of components between the various models. Stock management is easier.
- Field customization according to the application is straightforward: a light can be transformed into another model by swapping components.
- Same tools and same procedures to maintain the whole range, reducing the risk of mistakes and time loss.

Optional scratch-resistant prisms

- A higher hardness protective layer can be applied to the prism, making it much more resistant to scratches and sand-blasting.

Low protrusion without negative slope

- Limited height above pavement of 6.3 mm (0.25 in) reduces the risk of damage during winter operations or by towbarless tugs.
- Despite the low protrusion, no part of the prism is below ground level, avoiding loss of photometry during rainfall and sedimentation on the bottom of the prism.

Maintenance Friendliness

- Maintenance-friendly: components subject to wear or damage like prisms and cables can easily be replaced. Neither sealing compounds nor resin are required.
- Reduced number of components for maintenance simplicity.

- Innovative design of the cable entry, permitting replacement without the need to open the light. This eliminates the risk of water leakage due to a pinched cable.
- Pressure-release plug for water-tightness testing of fixture after overhaul.

Operating Conditions

Temperature:	-40 °C to +55 °C / -40 °F to +131 °F
Altitude:	Sea level to 10,000 feet / 3000 m
Relative Humidity:	Up to 100%

Power Supply

It is recommended that the ISTB-LP / DRE-LP LED fixture be powered from a dedicated CCR and that separate remote controls are available. The LED lights have been designed to work with any FAA-compliant transformer up to 150 W without affecting the performance or lifetime of the light fixture or transformer. See data sheet 3033 for more details on recommended isolation transformers specified below.

ISTB-LP / DRE-LP	Fixture Load [1]	Isolation Transformer	Isol. XF Load	CCR Load
Controlled				
Without Heater	37 VA	30/45 W	6 VA	43 VA
With Heater	52 VA	65 W	13 VA	65 VA
Uncontrolled				
Without Heater	17 VA	20/25 W	6 VA	23 VA
With Heater	32 VA	30/45 W	6 VA	38 VA

Notes
1 Load includes ADB Safegate BRITE III Remote device.

Dimensions

Top cover outside diameter:	11.94 in / 30.33 cm
Top cover bolt-circle diameter (L-868B):	11.25 in / 28.58 cm
Bottom cover outside diameter (max.):	9.94 in / 25.25 cm
Depth [1]	4 in / 10.16 cm

Notes
1 From the bottom of the top cover to the bottom of fixture

Packaging

In cardboard box:	7 × 13 × 13 in / 17.8 × 33 × 33 cm
Weight with packing:	22 lb / 9.98 kg
Weight without packing:	17.75 lb / 8.05 kg

2.1.2 TP-312 LED In-pavement Taxiway Centerline Light

Compliance with Standards

ICAO:	Taxiway Centerline: Annex 14, Vol. 1, Ed. 7 par. 5.3.17 and Appendix 2, Figure A2-12 to A2-16.
T/C:	Taxiway Centerline: Transport Canada TP 312, par. 5.3.21.

Uses

ICAO & T/C

- Taxiway Centerline Light on straight and curved sections and on rapid exit taxiways in CAT I, II and III applications

Features

- Style 3 - Low protrusion above ground of ≤0.25 in (6.3 mm) reduces vibrations caused by aircraft landing gear, increasing fixture life.
- Greatly reduced maintenance: MTBF of 56,000 hours at 6.6 A.
- Increased traffic efficiency and availability of the runways due to the reduction of maintenance.
- Optimum and homogeneous light distribution along the lights installed on the same runway.
- High discrimination between functions due to the saturated colors, crisp white light, their stability at the different brightness steps and under all viewing angles.
- Fully dimmable lights, respecting the response curve of traditional halogen lights. Operates on the full range of 2.8 A to 6.6 A.
- Operates on either 3- or 5-step ferroresonant or thyristor CCRs that are designed in compliance with IEC or FAA requirements.
- Full compatibility with existing airfield lighting series circuits. No need to replace the CCRs, series transformers, or cables.
- Installation on the same bases as 8- or 12-inch tungsten-halogen lights for a straightforward replacement. Optional snow plow rings are available.
- Substantial investment reduction for new installations using smaller CCR size and series transformers due to a lower installed load.
- Very low working temperature, ensuring longer component life.
- Rugged lightning protection complies with ANSI/IEEE C62.41-1991 Location Category C2 given in 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.
- When turned on, light rise time is low. The light is perfectly adapted for any incursion protection system.
- Optional monitoring function of the individual light source. In case of a defect, the LED light automatically disconnects from the secondary side of the isolation transformer, resulting in an open circuit condition.
- Light channel in front of prism windows protects prisms from damage and prevents rubber buildup thereby maintaining optimal light output.
- Environment-friendly, precision-cast aluminum alloy top, intermediate and bottom covers.
- Corrosion-resistant stainless steel hardware. Use of Torx screws ensures ease of maintenance.
- Optional UL 467 rated ground lug, which accepts an AWG 6 earth ground wire

ITCL-LP lights are part of a complete range of LED in-pavement lights, featuring innovative characteristics, as a leverage for:

Reliability

- Additional water-tightness barriers, protecting both the electronics and the LEDs in case of accidental water ingress along the prism or the gaskets as well as along the cables.

Low protrusion without negative slope

- Limited height above pavement of 6.33 mm (0.25 in) reduces the risk of damage during winter operations
- Despite the low protrusion, no part of the prism is below ground level, avoiding loss of photometry during rainfall and sedimentation on the bottom of the prism.

Features (Continued)

Maintenance friendliness

- Maintenance-friendly: components subject to wear or damage like prisms and cables can easily be replaced. Neither sealing compounds nor resin are required.
- Innovative design of the cable entry, permitting replacement without the need to open the light. This eliminates the risk of water leakage due to a pinched cable.
- Reduced number of components for maintenance simplicity.
- Pressure-release plug for water-tightness testing of fixture after overhaul.

Optional scratch-resistant prisms

- A higher hardness protective layer can be applied to the prism (see Winter Options in ordering code), making it much more resistant to scratches and sand-blasting.

Dimensions

8" Fixture	
Outside diameter	202 mm (7.97 in)
Bolt-circle diameter	184 mm (7.24 in)
Overall height	78.4 mm (3.1 in)

Power Supply

6.6A through one or two series transformer(s). ITCL-LP lights have been designed to work with any IEC- or FAA-compliant transformer up to 100 W without affecting the performance or the lifetime of the light or transformer. However, use of a non-matched transformer will reduce its efficiency.

See data sheet 3033 for more details on recommended isolation transformers.

Fixture Type	**Fixture Load** [1]	**Isolation Transformer**	**Isol. XF Load**	**Primary CCR Load**
D2C - No heater				
Unidirectional	5 VA	10/15 W	109 VA	15 VA
Bidirectional [2]	7 VA	10/15 W	9 VA	16 VA
Bidirectional [3]	5 VA	10/15 W	10 VA	15 VA
D2C - With heater				
Unidirectional	30 VA	30/45 W	6 VA	36 VA
Bidirectional [2]	32 VA	30/45 W	6 VA	38 VA
Bidirectional [3]	30 VA	30/45 W	6 VA	36 VA
DCT - No heater				
Unidirectional	12 VA	20/25 W	8 VA	20 VA

Fixture Type	Fixture Load [1]	Isolation Transformer	Isol. XF Load	Primary CCR Load
Bidirectional [2]	18 VA	20/25 W	11 VA	29 VA
Bidirectional [3]	12 VA	20/25 W	8 VA	20 VA
DCT - With heater				
Unidirectional	31 VA	30/45 W	6 VA	37 VA
Bidirectional [2]	59 VA	65 W	13 VA	72 VA
Bidirectional [3]	31 VA	30/45 W	6 VA	37 VA

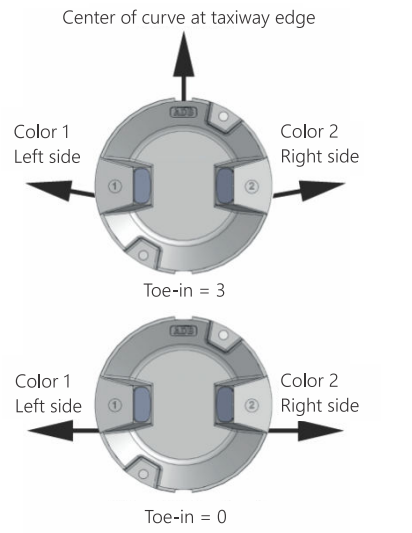
Notes

1 Fixture load varies depending on color(s). The maximum fixture load is provided. Fixture load does not include isolation transformer load.

2 One cord set

3 One cord set per side (2 total)

Toe-in Color Coding



Packaging

12" Fixture	
In cardboard box	177.8 × 330 × 330 mm (7 × 13 × 13 in)
Weight with packing	5.9 kg (13.15 lb)
Weight without packing	5.4 kg (11.95 lb)
8" Fixture	
In cardboard box	177.8 × 330 × 330 mm (7 × 13 × 13 in)
Weight with packing	4.4 kg (9.8 lb)
Weight without packing	3.9 kg (8.6 lb)
8" Fixture with Snow Plow Ring	

In cardboard box	177.8 × 330 × 330 mm (7 × 13 × 13 in)
Weight with packing	19 kg (42 lb)
Weight without packing	18.5 kg (40.8 lb)

2.1.3 FAA LED In-pavement Taxiway Centerline Light

Compliance with Standards

FAA:	L-852(L) Series AC 150/5345-46 (Current Edition) and FAA Engineering Brief No. 67 (Current Edition). ETL Certified.

Uses

FAA L-852A(L)	• Taxiway centerline on straight sections and clearance bar in category I and II applications, ≥1,200 ft RVR
FAA L-852B(L)	• Taxiway centerline on curved sections in category I and II applications, ≥1,200 ft RVR
FAA L-852C(L)	• Taxiway centerline on straight section and clearance bar in category III applications, <1,200 ft RVR
FAA L-852D(L)	• Taxiway centerline on curved sections in category III applications, <1,200 ft RVR • White/white or white/yellow used on MIRL runway edge for intersections where runway edge spacing >400 ft (122 m)
FAA L-852J(L)	• Taxiway centerline on curved sections in category I and II applications, ≥1,200 ft RVR
FAA L-852K(L)	• Taxiway centerline on curved sections in category III applications, <1,200 ft RVR

Features

- Use of L-852K(L) fixture allows fixtures to be reduced by half for curved centerlines where the radius is 75 ft (23 m) to 399 ft (121 m).
- Style 3 - Low protrusion above ground of ≤0.25 in (6.3 mm) reduces vibrations caused by aircraft landing gear, increasing fixture life.
- Greatly reduced maintenance: MTBF of 56,000 hours at 6.6 A.
- Increased traffic efficiency and availability of the runways due to the reduction of maintenance.
- Optimum and homogeneous light distribution along the lights installed on the same runway.
- Fully dimmable lights, respecting the response curve of traditional halogen lights. Operates on the full range of 2.8 A to 6.6 A.
- High discrimination between functions due to the saturated colors, crisp white light, their stability at the different brightness steps and under all viewing angles.
- Operates on either 3- or 5-step ferroresonant or thyristor CCRs that are designed in compliance with IEC or FAA requirements.
- Full compatibility with existing airfield lighting series circuits. No need to replace the CCRs, series transformers, or cables.
- Installation on the same bases as 8- or 12-inch tungsten-halogen lights for a straightforward replacement. Optional snow plow rings are available.
- Substantial investment reduction for new installations using smaller CCR size and series transformers due to a lower installed load.
- Very low working temperature, ensuring longer component life.

- Rugged lightning protection complies with ANSI/IEEE C62.41-1991 Location Category C2 given in 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.
- When turned on, light rise time is low. The light is perfectly adapted for any incursion protection system.
- Optional monitoring function of the individual light source. In case of a defect, the LED light automatically disconnects from the secondary side of the isolation transformer, resulting in an open circuit condition.
- Light channel in front of prism windows protects prisms from damage and prevents rubber buildup thereby maintaining optimal light output.
- Environment-friendly, precision-cast aluminum alloy top, intermediate and bottom covers.
- Corrosion-resistant stainless steel hardware. Use of Torx screws ensures ease of maintenance.
- For FAA applications, includes a UL 467 rated ground lug, which accepts an AWG 6 earth ground wire

Features (Continued)

ITCL-LP lights are part of a complete range of LED in-pavement lights, featuring innovative characteristics, as a leverage for:

Reliability

- Additional water-tightness barriers, protecting both the electronics and the LEDs in case of accidental water ingress along the prism or the gaskets as well as along the cables.

Low protrusion without negative slope

- Limited height above pavement of 6.33 mm (0.25 in) reduces the risk of damage during winter operations
- Despite the low protrusion, no part of the prism is below ground level, avoiding loss of photometry during rainfall and sedimentation on the bottom of the prism.

Maintenance friendliness

- Maintenance-friendly: components subject to wear or damage like prisms and cables can easily be replaced. Neither sealing compounds nor resin are required.
- Innovative design of the cable entry, permitting replacement without the need to open the light. This eliminates the risk of water leakage due to a pinched cable.
- Reduced number of components for maintenance simplicity.
- Pressure-release plug for water-tightness testing of fixture after overhaul.

Optional scratch-resistant prisms

- A higher hardness protective layer can be applied to the prism (see Winter Options in ordering code), making it much more resistant to scratches and sand-blasting.

Dimensions

12" Fixture	
Outside diameter	303.3 mm (11.94 in)
Bolt-circle diameter	285.8 mm (11.25 in)
Overall height	78.4 mm (3.1 in)
8" Fixture	
Outside diameter	202 mm (7.97 in)
Bolt-circle diameter	184 mm (7.24 in)
Overall height	78.4 mm (3.1 in)

Power Supply

6.6 A through one or two series transformer(s). ITCL-LP lights have been designed to work with any IEC- or FAA-compliant transformer up to 100 W without affecting the performance or the lifetime of the light or transformer. However, use of a non-matched transformer will reduce its efficiency. See data sheet 3033 for more details on recommended isolation transformers.

Fixture Type	Fixture Load [1]	Isolation Transformer	Isol. XF Load	Primary CCR Load
L-852A(L), L-852C(L) - No heater				
Unidirectional	5 VA	10/15 W	10 VA	15 VA
Bidirectional [2]	7 VA	10/15 W	9 VA	16 VA
Bidirectional (x2) [3]	5 VA	10/15 W	10 VA	15 VA
L-852A(L), L-852C(L) - With heater				
Unidirectional	30 VA	30/45 W	6 VA	36 VA
Bidirectional [2]	32 VA	30/45 W	6 VA	38 VA
Bidirectional (x2) [3]	30 VA	30/45 W	6 VA	36 VA
L-852B(L), L-852J(L) - No heater				
Unidirectional	7 VA	10/15 W	9 VA	16 VA
Bidirectional [2]	8 VA	10/15 W	9 VA	17 VA
Bidirectional (x2) [3]	7 VA	10/15 W	9 VA	16 VA
L-852B(L), L-852J(L) - With heater				
Unidirectional	31 VA	30/45 W	6 VA	37 VA
Bidirectional [2]	59 VA	65 W	13 VA	72 VA
Bidirectional (x2) [3]	31 VA	30/45 W	6 VA	37 VA
L-852D(L), L-852K(L) - No heater				
Unidirectional	12 VA	20/25 W	8 VA	20 VA
Bidirectional [2]	18 VA	20/25 W	11 VA	29 VA
Bidirectional (x2) [3]	12 VA	20/25 W	8 VA	20 VA
L-852D(L), L-852K(L) - With heater				
Unidirectional	31 VA	30/45 W	6 VA	37 VA
Bidirectional [2]	59 VA	65 W	13 VA	72 VA
Bidirectional (x2) [3]	31 VA	30/45 W	6 VA	37 VA

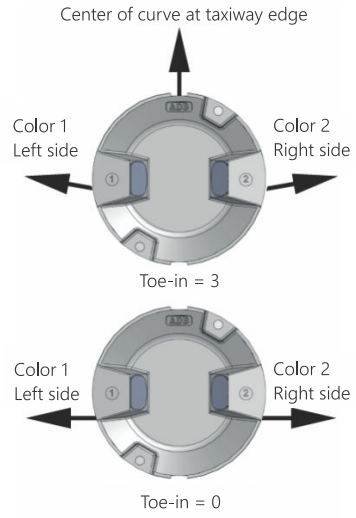
Notes

1 Fixture load varies depending on color(s). The maximum fixture load is provided. Fixture load does not include isolation transformer load.

2 One cord set

3 One cord set per side (2 total)

Toe-in Color Coding



Packaging

12" Fixture	
In cardboard box	7 × 13 × 13 in
Weight with packing	13.15 lb
Weight without packing	11.95 lb
8″ Fixture	
In cardboard box	7 × 13 × 13 in
Weight with packing	9.8 lb
Weight without packing	8.6 lb
8″ Fixture with Snow Plow Ring[1]	
In cardboard box	7 × 13 × 13 in
Weight with packing	42 lb
Weight without packing	40.8 lb

Notes

1 Use L-868B 12″ adapter AW5008ADB1E (unidirectional) / AW5008ADB11E (bidirectional) snow plow rings for mounting on L-868B base can.

3.0 Installation

WARNING

Read the instructions in their entirety before starting installation.

This section provides installation instructions for the ITCL-LP, LED light fixtures.

This section provides instructions for installing the in-pavement lights. Refer to airport project plans and specifications for specific installation instructions. The installation must conform to the applicable sections of the National Electric Code and local codes.

3.1 Overview of Sequence of Work

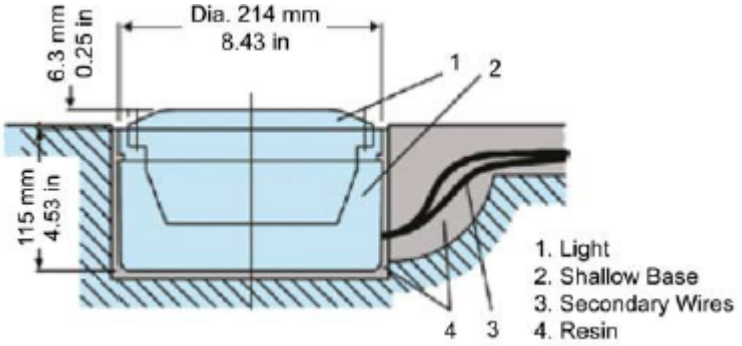
- Electrical contractor locates new light bases and interconnecting conduit trench, and excavates for light base bottom section by saw cutting or core drilling. Electrical contractor prepares subgrade and stone subbase, sets bottom section with rebar, rigid steel conduit stubs, drain, and pours high early strength concrete-encasement excavation. Electrical contractor shall record can locations and elevations of mud plate after concrete-encasement.
- Electrical contractor excavates conduit trench, installs rigid steel and fittings, backfills conduit trench with high early strength concrete.
- General contractor prepares and installs concrete pavement. Electrical contractor makes a pilot core to find mud plate center point indent before final core-drilling.
- Electrical contractor core-drills concrete pavement. Electrical contractor installs top section, y-flange ring, space and lighting fixture, and pours epoxy joint sealer. Provide space for adjustment with spacers, maximum number of spacers shall be 3.
- See specific details as shown in FAA AC 150/5340-30 (current edition).

3.2 Installation Overview

On a shallow base.

The 8" dia. base is secured in the pavement by means of resin. Correct positioning and leveling are obtained with a jig with sighting telescope. Wires between the light and the series transformer are installed either in saw cuts in the pavement filled with resin or in pipes in the lower concrete layers. Mounting on existing or new, larger diameter bases, is made possible by means of dedicated adapter rings.

Figure 1: Installation on 8" shallow base

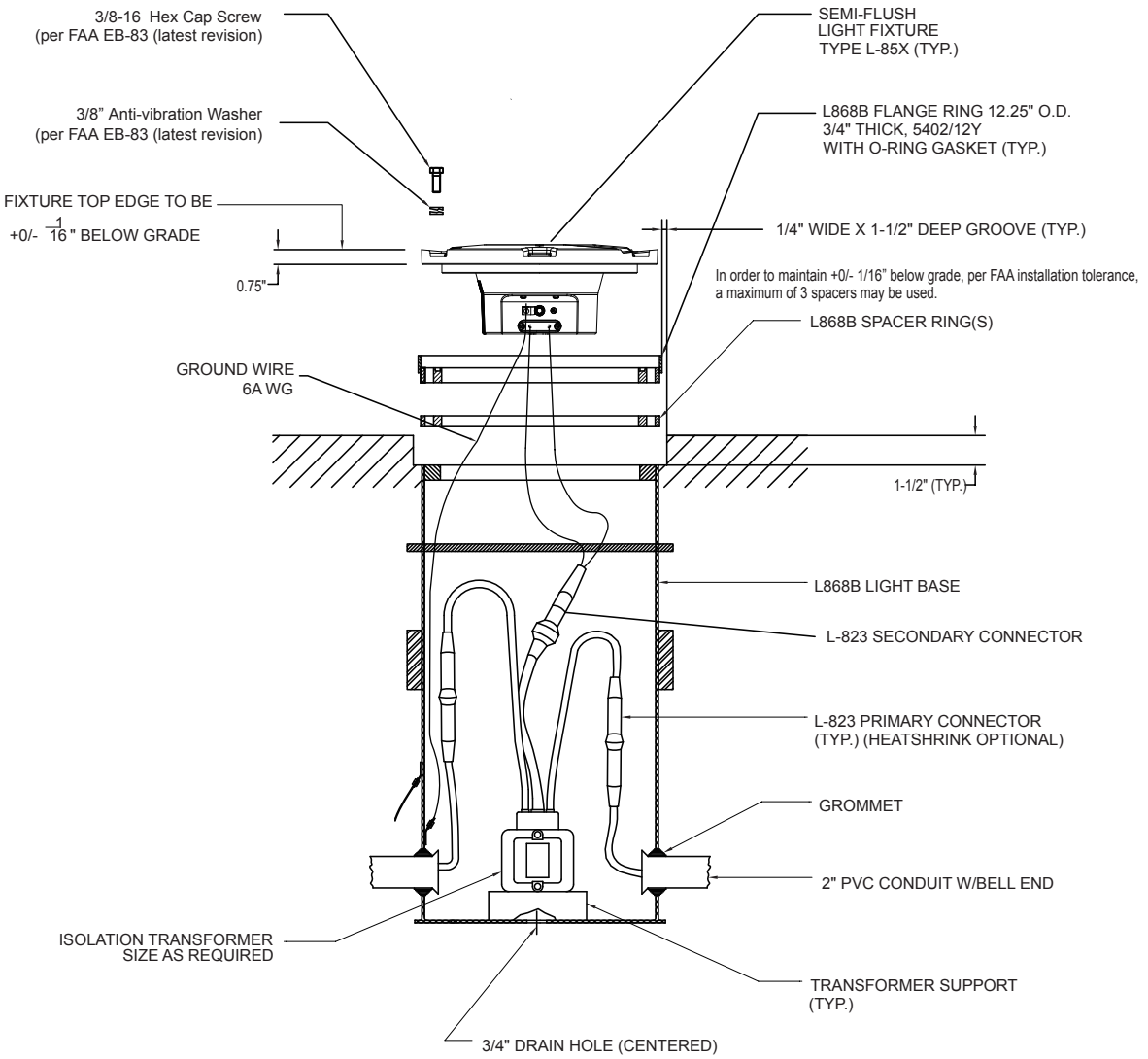


On a FAA L-868B size B steel base.

The 8" dia. light is mounted in an 8" to 12" dia. snow plow or adapter ring bolted onto the base. The 12" fixture is directly mounted without a separate ring. The bases are interconnected by means of conduits protecting the cables. See FAA AC 150/5340-30 for additional design guidance on deep base cans. The series transformer is installed under the light or in a separate pit. See data sheet A.05.120 or DS2012 for more information on base cans.

3.3 Typical L-868 Assembly

Figure 2: Diagram of the Fixture Installed in a 1-Piece Base Can



1. Torque according to: FAA EB-83 (latest revision).

Figure 3: Anti-vibration washer example

CAUTION

Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. The cams (or steps) of each half of the lock washer must face each other.

3.4 Safety Considerations

Read the installation section of all system component manuals before starting these steps. A thorough understanding of system components and their requirements will promote safe and efficient installation. See FAA AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and site plans and specifications for field installation of runway and taxiway in-pavement lights.

DANGER

Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install ADB SAFEGATE and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void FAA approvals. Observe and follow the safety instructions in this document and all other related documentation.
- Make sure all equipment is rated and approved for the environment where it is being used.
- Follow all instructions for installing components and accessories.
- Install all electrical connections in compliance with local and national codes and regulations.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local and national codes.
- Route electrical wiring along a protected path. Make sure it will not be damaged by moving equipment.
- Protect components from damage, wear and harsh environmental conditions.
- Allow ample clearance 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, reinstall them immediately after the work is completed and check them for proper functioning.
- The cord set must be protected prior to installation.

3.5 Photobiological safety

CAUTION

Photobiological safety conforming with IEC 62471

RISK GROUP 0 or 1: Optical radiation emitted from LED lights may be harmful to the eyes. Do not stare with at the light source with bare eyes at a fixture operating at high intensity. Use protection goggles or similar protection method.

Goggles with a transmission factor not higher than 5% in the 400-530 nm band have been tested and provide adequate protection.

3.6 Verify Input Requirements and Equipment Needed

The In-pavement light fixture is designed for connection to a 6.6A or 20A series lighting circuit via an L-830 (60 Hz) or L-831 (50 Hz) isolation transformer.

Make sure you have the necessary tools and materials ready for installation (not supplied). Also consider other tools that might be needed based on site-specific conditions.

Table 1: Suggested Tools and Materials for Installation and Repair

Qty.	Description	Qty.	Description
1	Torque wrench	1	Set of screwdrivers, one with 3/8" (9.525mm) minimum blade width
1	Alignment jig		
1	Diamond-faced core drill	As needed	Silicone grease
1	Diamond-faced saw, 3/8" (9.525mm) thick	As needed	Joint sealing filler
1	Crimping tool	1	Pressure test fitting assembly
1	Small water suction pump	As needed	Dow Corning Molykote® 3452 or equal (P/N 67A0095) - used on top cover prism seal
2	Eyebolts, 3/8 inch (9.525mm) diameter		
1	Lifting rod, 16 inches (406mm) long	As needed	Novagard® Silicone Versilube® G322L™ (P/N 67A0009) - used on O-ring between top cover and inner pan assembly; also may be applied to four nipples of inner pan assembly to install optical assembly
1 or 2	L-830 / L-831 isolation transformer		
1	Set of fiber brushes		
1	Set of socket wrenches, 1/2" (12.7mm) drive		

3.7 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 an IQ0 light fixture where the 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 IQ functionality from a substation.

3.8 Inspect on delivery

1. Inspect all packings for visible damage.
2. Open every damaged box and inspect the contents for damage.
3. Immediately fill a claim form with the carrier if any fixture is damaged.
4. Store the fixture in its original packing in a protected area.

Note
If damage to any equipment is noted, file a claim form with the carrier immediately.

WARNING
Do not damage the cable insulation.

CAUTION
Do not unpack the fixture before it is at the installation site to avoid damage due to transportation and handling.

3.9 Store

Store the fixture in its original packing in a protected area. Indoor storage:

- Storage temperature: 14°F to 122°F (-10°C to +50°C).
- Humidity: <95% non condensing.

For long storage periods (longer than one year), we recommend to energize the LED lights once a year at nominal intensity (6.6 Amps) for 20 minutes.

3.10 Installation on L-868 Base

The light assembly is shipped complete, and is ready for installation.

To install the fixture on an L-868 base, see FAA AC 150/5345-30 and the project site-specific plans and specifications for details on L-868 base installation.

Note

Mounting bolts are not supplied with the fixture. Mounting bolts and anti-rotation lock washers are normally supplied with the base can spacer or flange ring. If a flange ring is used, the bolt length is 1-1/4 inch (32mm) plus the thickness of the flange ring.

Also read the following guidelines:

1. Clean the base receptacle. Make sure the base receptacle is completely clean and dry. The mating surfaces must be clean and free of foreign particles.
2. If, present, fit an appropriate lifting tool into the two threaded holes, which are located 180° apart in the cover.

The lifting tool can be made from two 1/2 x 13 eyebolts (1-inch ID) and a 1/2-inch diameter, 16-inch (406mm) long rod or pipe inserted through the eyebolts.

CAUTION

Never hold the light fixture by the wires. Doing so may damage the insulation, break the waterproof seal and cause insulation faults and water leakage.

3. Carry the light assembly to the base.
4. Place the light assembly next to the opening in the L-868 base so that the L-823 connector can be connected with the mating receptacle from the L-830 or L-831 isolation transformer in the base. Make sure that the connection is solid and secure. Refer to the Electrical Supply section of the User manual for required isolation transformers.
5. Make sure items such as spacers, shims and gaskets are installed on the light base as indicated on site plans, specifications and drawings.
6. Position the light assembly over the L-868 base and set it onto the base. Align the light according to FAA AC 150/5345-30 and project plans and specifications. Remove the eyebolts and lifting rod.

CAUTION

Ensure that the cord set wires are NOT pinched between the base can and the fixture. Pinched wires can cause water to be drawn inside the fixture.

7. If present, lubricate the labyrinth gasket with water. soap may be added to the water (8" only).

CAUTION
Do not use silcon or any other type of grease. Avoid the use of soap that contains silicon or glycerin.

8. Attach the six fixing bolts and anti-vibration washers. [See FAA EB-83 (latest revision)]

CAUTION
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 revision).

9. Turn on the power to determine whether the fixture will illuminate. Operate for a minimum of five minutes.

3.11 Torquing and Installation Guidance for In-pavement Fixtures

In-pavement fixtures must be installed according to the plans and specifications; the applicable regulatory guidance; and the following guidance. The importance of using the proper fixture clamping components and bolt torque to minimize the risk for fixture failure or loosening of clamping components cannot be overemphasized. Refer to FAA Engineering Brief No 83 (latest revision) for torque and installation guidelines for this fixture.

Also see our Product Center at www.adbsafegate.com.

CAUTION
Read installation instructions in their entirety before starting installation.

- Failure to follow the installation guidance could result in bolt loosening or bolts breaking off, resulting in catastrophic failure of the fixture and/or the mounting system components.
- Failure to follow these warnings may result in serious injury or equipment damage.

3.12 Shallow base can installation

Shallow base cans may be non-load bearing or load bearing depending on location or fixture application. Following are specific requirements to insure that an either an elevated or an in-pavement fixture is properly installed.

CAUTION

Read installation instructions in their entirety before starting installation.

Fasteners:

- Make sure the power is OFF when you install or remove any fixture.
- Only use fasteners of the same type as the one originally supplied with the mounting support. See Base O-ring and Bolt Selection.
- Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench and apply the recommended adhesive type.
- If this is not the case, this may cause the fasteners to loosen, damage the fixture, potentially to loosen the fixture. This can lead to a highly dangerous situation of FOD, with potential lethal consequences.
- Obey the instructions of the adhesives necessary for the fasteners.
- Only install the fixture on mounting supports:
  - That ADB Safegate has approved;
  - That are installed according to the Instruction Manual of the mounting support.
- Failure to do so can result in a highly dangerous situation of FOD, with potential lethal consequences.

Failure to follow these warnings may result in serious injury or equipment damage.

CAUTION

Proper Operation:

- The fixture is supplied from a 6.6 A series circuit;
- The series circuit is powered by a Constant Current Regulator that complies with IEC 61822;
- The transformer is an AGL series transformer that complies with IEC 61823.
- The power of the series transformer shall not exceed 200 W, for versions with the monitoring option.
- The mounting support is correctly earthed. Failure to do so will void the warranty for all damages that occur as a result of voltage surges.
- Never hold the fixture by the cable leads. This can damage the insulation, break the waterproof seal and cause insulation faults and water leakage.

Note

See the Instruction Manual of the mounting support for instructions on how to earth the mounting support.

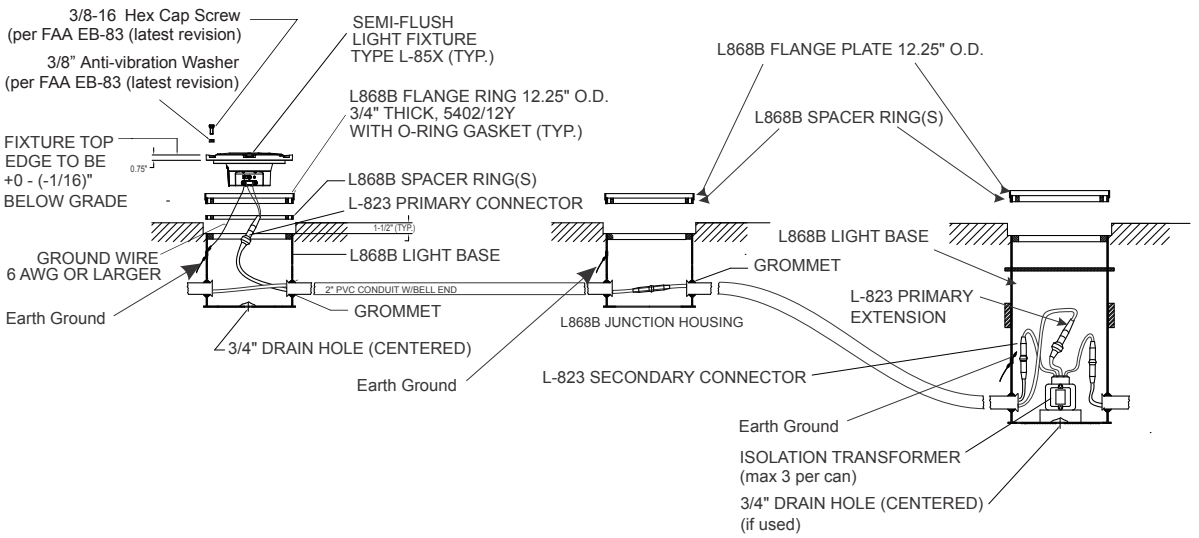
3.12.1 Installation on a Shallow Base

Installing the light fixture on a shallow base involves preparing the pavement recess and wireways, then installing the light fixture on a shallow base.

See FAA AC 150/5345-30 and the project site-specific plans and specifications for details on shallow base installation.

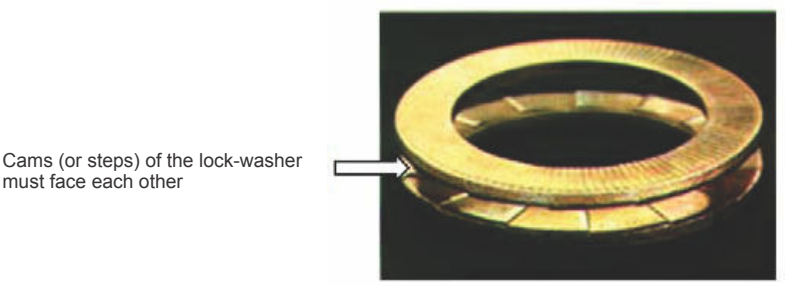
Also follow the applicable instructions in the previous section, when connecting, installing and powering the fixture.

Figure 4: Example of a Shallow Base Installation



1. Torque according to: FAA EB-83 (latest revision).

Figure 5: Anti-vibration washer example



CAUTION

Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. The cams (or steps) of each half of the lock washer must face each other.

4.0 Maintenance

WARNING

Read the instructions in their entirety before starting installation.

4.1 Safety Considerations

Read the installation section of all system component manuals before starting these steps. A thorough understanding of system components and their requirements will promote safe and efficient installation. See FAA AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and site plans and specifications for field installation of runway and taxiway in-pavement lights.

DANGER

Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install ADB SAFEGATE and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void FAA approvals. Observe and follow the safety instructions in this document and all other related documentation.
- Make sure all equipment is rated and approved for the environment where it is being used.
- Follow all instructions for installing components and accessories.
- Install all electrical connections in compliance with local and national codes and regulations.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local and national codes.
- Route electrical wiring along a protected path. Make sure it will not be damaged by moving equipment.
- Protect components from damage, wear and harsh environmental conditions.
- Allow ample clearance 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, reinstall them immediately after the work is completed and check them for proper functioning.
- The cord set must be protected prior to installation.

4.2 Maintenance

This section provides maintenance information and procedures for the F-Range light fixtures.

Preventive Maintenance - Inset Lights

Maintenance personnel must refer to the maintenance procedure described in the ICAO Airport Services Manual, Part 9, Airport maintenance practices and in FAA Advisory Circular N° AC150/ 5340-26.

DANGER

Electric Shock Hazard
This equipment may contain electrostatic devices

- Do not carry out any action on the fixture unless you have read and understood all the information in the Safety Section.
- 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.
- Make sure that the power to the series circuit is OFF when you carry out maintenance.

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

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.

4.3 Removing L-868 Base Water

CAUTION
Turn off the circuit when checking the water level.

If consistent with airport practice, check the water level in the L-868 base on a regular schedule. If more than six inches (150 mm) of water in the light base is found, pump the water from the base and remove and inspect the entire light assembly for water damage. Cover the L-868 base with the appropriate steel cover plate after removing the light assembly.

Note
Water entering the L-868 base can become a serious problem, since freezing water can rupture the base.

4.4 Lifting Optical Unit Out of Base

To lift the optical unit from the light base, perform the following procedure:

1. Remove the six fixing screws and washers or self locking nuts.
2. Fit the appropriate lifting tool into both threaded holes located (180 degrees apart) in the cover, lift the optical unit out of the base and place the optical unit next to the base.
3. Disconnect the light fixture wires from the power wires coming from the transformer(s).

4. Mount a serviced or new light fixture as described in Installation on L-868 Base in the Installation section.
5. Take the in-pavement fixture unit back to the maintenance base where it can be serviced entirely.

CAUTION

Never hold the light fixture by the wires. This may damage the insulation, break the waterproof seal, and cause insulation faults and water leakage.

4.5 Repair Procedures

4.5.1 Opening the Optical Unit

To open the optical unit, perform the following procedure:

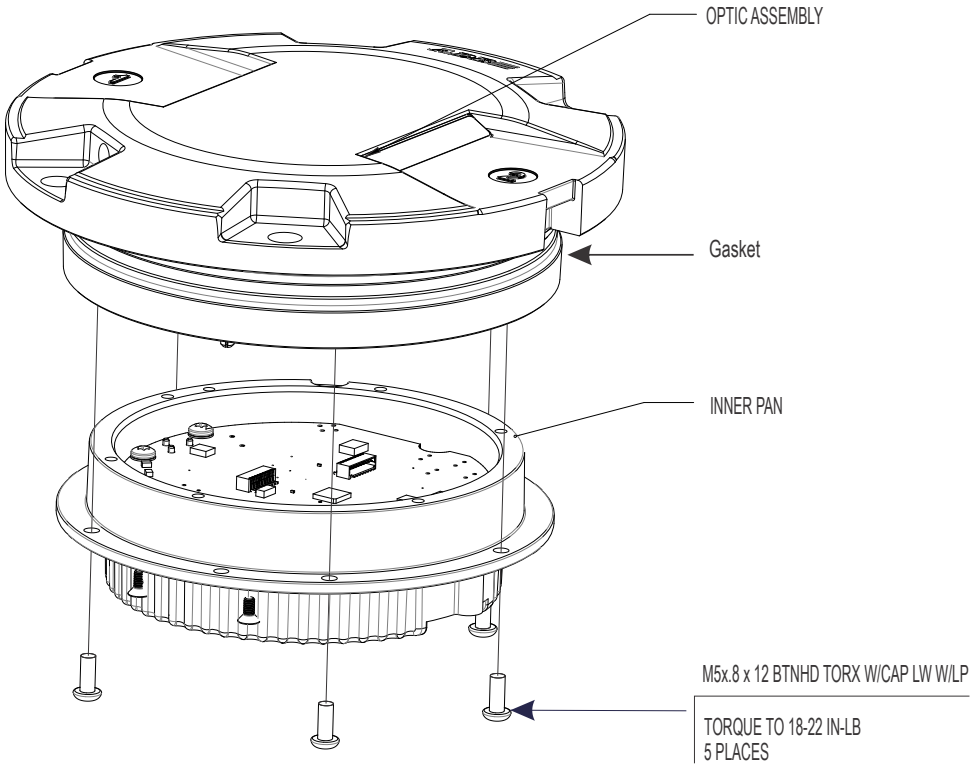
1. Remove the pressure release screw.
2. Dispose of the gasket of the pressure release screw.
3. Remove the inner cover screws.
4. Dispose of the inner cover screws.
5. Remove the upper cover assy.

Note

Put a screwdriver in the notches.

6. Remove the gasket.
7. Dispose of the gasket.

Figure 6: Disassemble the Light Unit

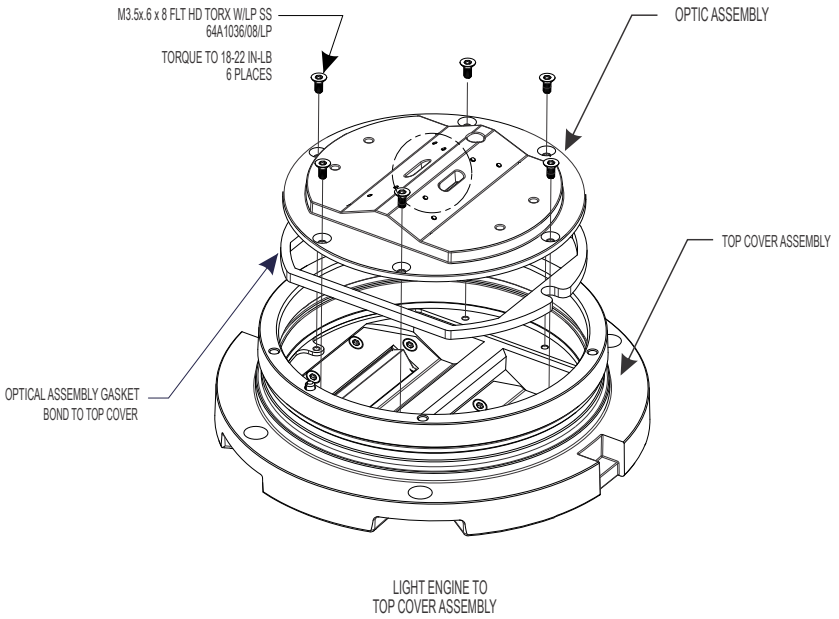


4.5.2 Removing the LED Assembly

1. Turn the top cover assembly over.
2. Remove the LED Assembly pressure release screw.
3. Remove the four screws attaching the LED assembly to the top cover assembly.

> **Note**
> The optical assembly is connected to the PCB. If you pull too hard, you can damage the PCB. Disconnect the wires carefully.

4. Remove and dispose of the gasket.



4.5.3 Cleaning the Light Channel and Prism

To clean the light channel and prism, perform the following procedure:

1. Remove the four screws of the prism retaining bracket. Gently remove the prism and the prism seal.
2. Use a suitable fiber brush to remove all accumulated debris from the light channel.
3. Clean the outer surface of the prism using liquid glass cleaner. If the prism is coated with a substance impervious to the cleaner, apply a suitable solvent sparingly with a wad of cotton or a patch of cloth. After the solvent has acted, remove the softened coating with a clean piece of cotton or cloth. Dry the prism gently with dry, oil-free compressed air at a pressure no greater than 10 psi (69 kPa) to evaporate or remove all remaining cleaner.
4. If the prism is damaged go to the next procedure.

4.5.4 Replace the fuse resistor (monitoring option)

Parts

- Fuse resistor kit.

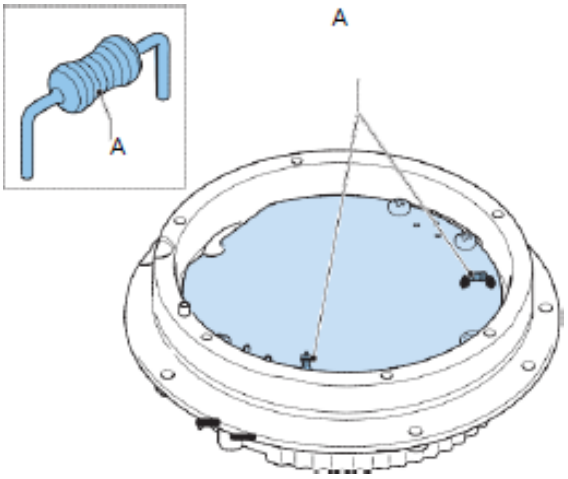
Item	Description	Version	Part Number
A	Fuse resistor (available as a kit containing 20 resistors)	Monitoring option	6132.00.250

Tools

- Pliers

Note
Bidirectional lights have two fuse resistors. Undirectional lights have only one fuse resistor.

Note
Fuse resistors are located on the PCB of the inner cover assembly. (A) Always replace all fuse resistors located on the PCB.



Disassemble

1. Remove the fuse resistor(s) (A) by pulling the legs of the fuse resistor.
2. Test the fuse resistor with an OHM-Meter. A faulty fuse resistor will show open.
3. Dispose of the old fuse resistor/s.
4. Take the new fuse resistor/s from the kit.
5. Place the new fuse resistor in the socket.

   Assemble

   Insert the legs of the new fuse resistor in the socket and press into place. Proceed to: " Closing the Optical Unit".

4.5.5 Replacing Prism

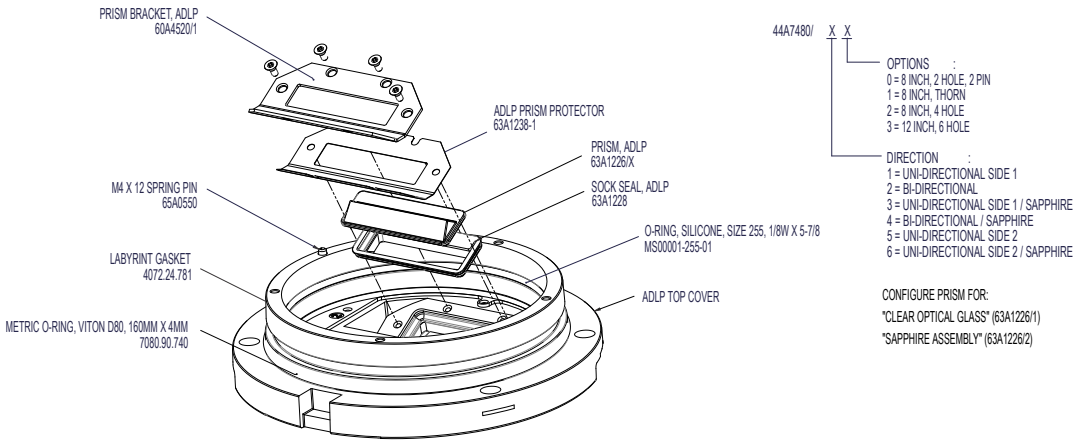
Replace the prism if it is broken or its surface is badly pitted or scarred.

CAUTION
Always dispose of the gaskets and the screws when you disassemble the prism.

To replace the prism, perform the following procedure:

Prism Removal

1. Remove the upper cover assembly. See " Opening the Optical Unit".
2. Remove the LED Assembly Following the steps above.
3. Remove the prism screws.



4. Dispose of the prism screws.
5. Remove the prism bracket.
6. Remove the prism.
7. Remove the prism gasket.
8. Dispose of the prism gasket.

Replace the Prism

Prepare

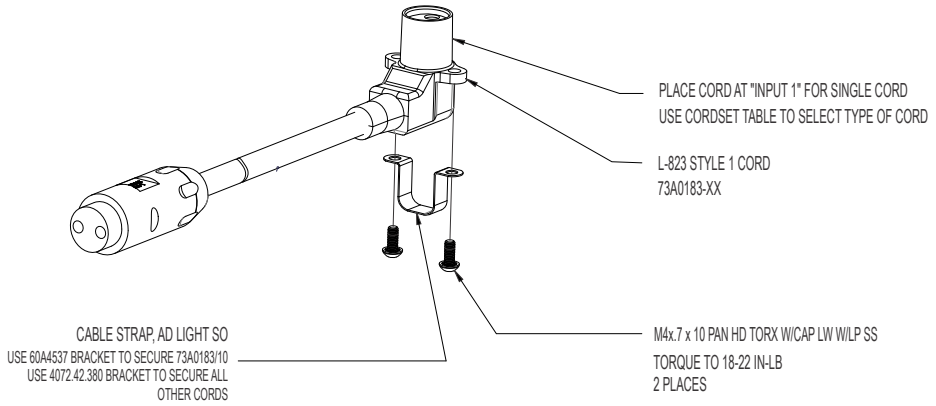
9. Make sure that all parts are clean.
10. Pay special attention to the parts where the gasket must fit.

Assemble prism

11. Install a new prism gasket.
12. Install a new prism. Tilt the prism a little and press the prism firmly.
13. Make sure the prism and the prism gasket are correctly in position. If it is not the case re-install the new prism and prism gasket.
14. Make sure you installed the correct prism and prism gasket.
15. Clean the surface of the new prism with a methanol moist cloth.
16. Install the prism bracket.
17. Install but do not tighten the new prism screws.
18. Tighten the prism screws crosswise. See " Fastener Torque Table".
19. Install the upper cover assembly. See " Fastener Torque Table".

4.5.6 Replace cable lead

Figure 7: Disassemble the Cord Set



1. Remove the cable screws.
2. Dispose of the cable screws.
3. Remove the cable.

Assemble the Cord Set

4. Install the new cable.
5. Install the new cable screws. See " Fastener Torque Table".

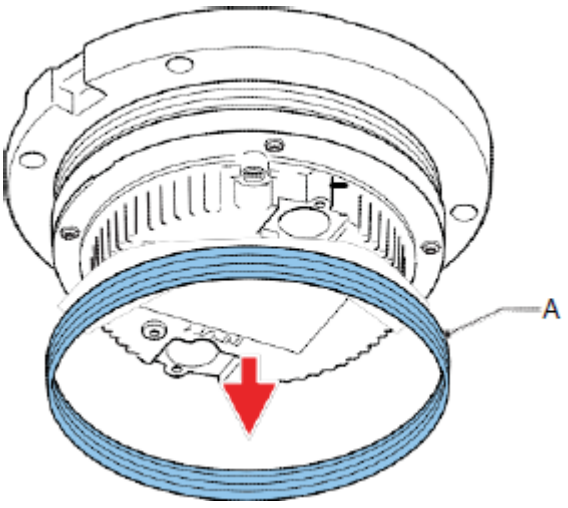
4.5.7 Replace labyrinth gasket (8" only)

Note

Always dispose of the labyrinth gasket when you remove the fixture from the mounting support.

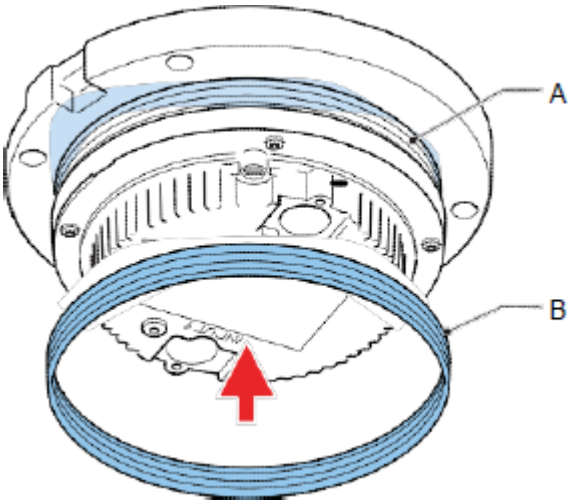
Remove the Labyrinth Gasket

1. Remove the labyrinth gasket (A).
2. Dispose of the labyrinth gasket.



Install the new Labyrinth Gasket

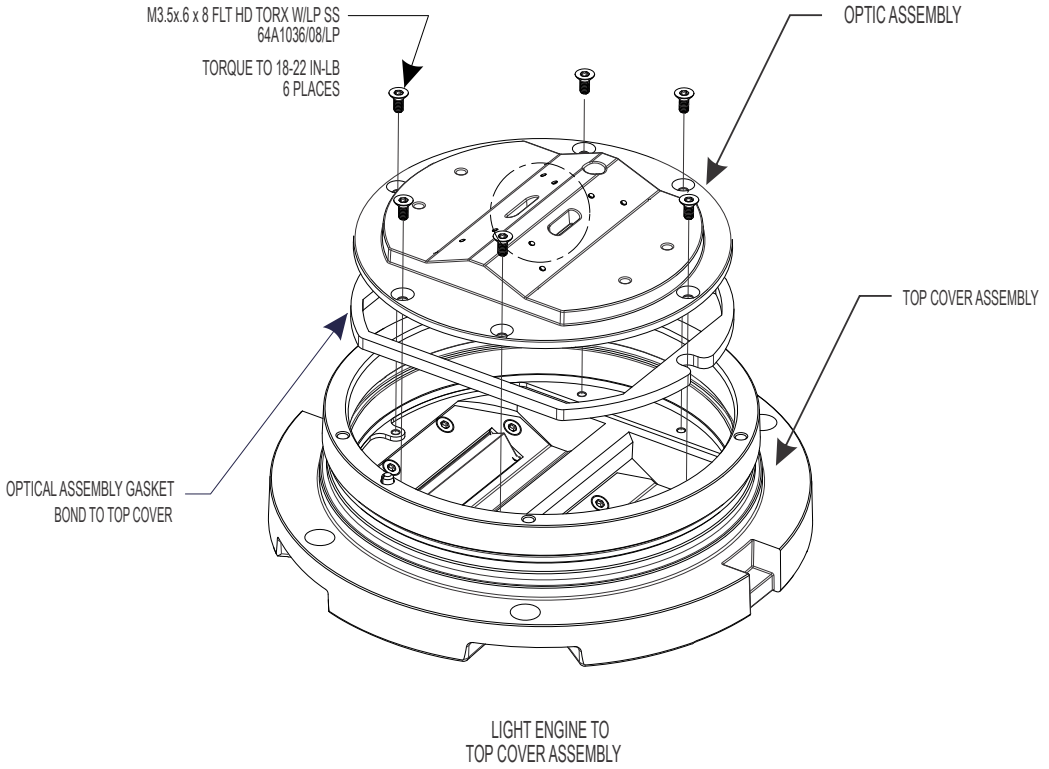
3. Make sure that all parts are clean.
4. Inspect and clean the part where the labyrinth gasket must fit (A).



5. Install the new labyrinth gasket (B).

4.5.8 Closing the Optical Unit

1. Make sure that all parts are clean.
2. Pay special attention to the parts where the gasket must fit.

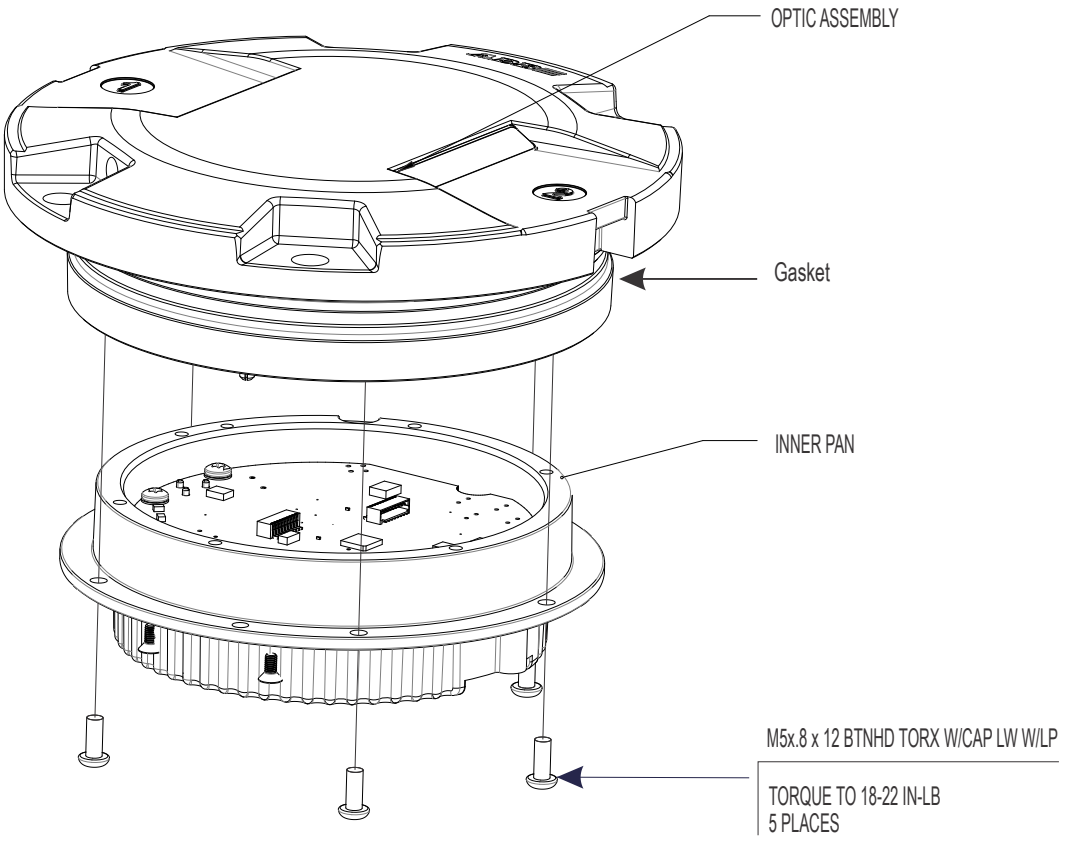


3. Install the LED Assembly using the four screws.

Note
Make sure that the locating pin is set to the hole marked '0' of the optical assembly.

4. Connect the wires to the PCB. INPUT 1 and INPUT 2 are labeled underneath the connector. When you have an unidirectional light, connect the optical assembly to connector INPUT1
5. Lubricate the new gasket of the pressure release screw. Use lubricant A.
6. Install a new gasket on the pressure release screw.
7. Install the pressure release screw.

Assemble the Light Unit



8. Lubricate the new gaskets. Use lubricant A. See " Adhesives and Lubricants".
   - Gasket;
   - Gasket of the pressure release screw;
9. Install the new gasket.
10. Install the upper cover assembly.
11. Install the new inner cover screws (C).See " Fastener Torque Table".
12. Carry out a waterproof test. See " Testing for Leaks".
13. Install the new gasket of the pressure release screw.
14. Install the pressure release screw. See " Fastener Torque Table".

4.5.9 Fastener Torque Table

Table 2: Fastener Torque

Screw Type	Name	Details	Part Number	Torque in-lbs. (N•m)
G	Prism screws	Screw M5x14	7100.10.211	35 (4.0)
J	Optical assy screws	Screw M4x10	7100.10.101	22 (2.5)
M	Inner cover screws	Screw M5x14	7100.10.211	31 (3.5)
N	Pressure release screw assy	Assy (screw + gasket)	4072.24.940	22 (2.5)
		Gasket only	7080.90.012	
P	Cable lead screws	Screw M4x10	7100.10.101	22 (2.5)

4.5.10 Adhesives and Lubricants

Table 3: Adhesives

Adhesive A	Loctite 2701 (follow manufacturer's instructions)	7870.05.130
Adhesive B	Loctite 222 (follow manufacturer's instructions)	7870.05.140
Adhesive C	Loctite 638 (follow manufacturer's instructions)	7870.05.097
Adhesive D	Loctite 243 (follow manufacturer's instructions)	7870.05.160

Table 4: Lubricants

Lubricant A	Vacuum silicone grease (50 g) to install O-ring gaskets (follow manufacturer's instructions)	7850.42.220
	Novagard® Silicones Versilube® G322L™ • used on O-ring between top cover and inner pan assembly; also may be applied to four nipples of inner pan assembly to install optical assembly	67A0009
Lubricant B	Molykote HP870 Inerta (100 g) to replace prism (follow manufacturer's instructions)	7850.05.061
	Dow Corning Molykote® 3452 or equal • used on top cover prism seal	67A0095

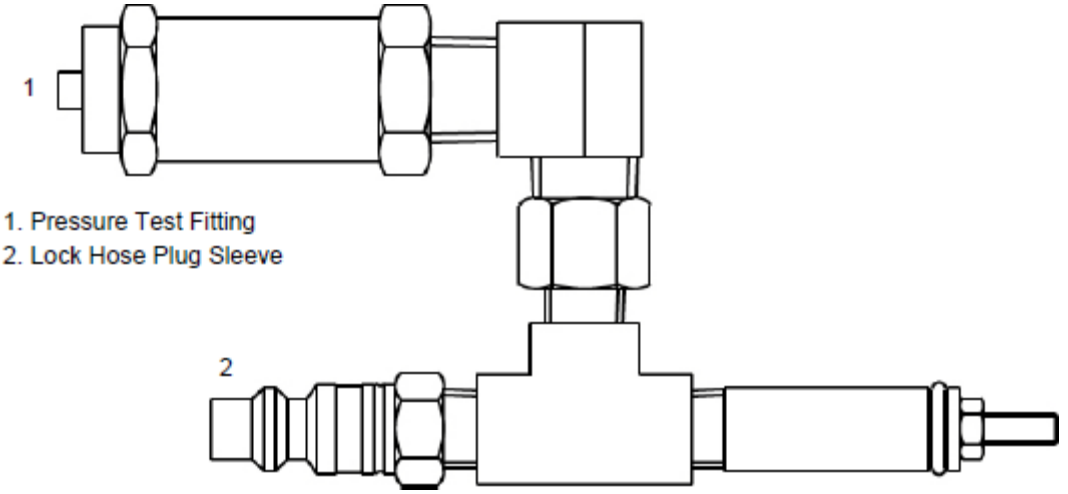
4.5.11 Testing for Leaks

To test for leaks, perform the following procedure:

1. See Figure 8.
   Remove pressure relief screw.
2. See Figure 9.
   Screw pressure test fitting into the pressure relief port (the opening created when the pressure relief screw is removed). Screw fitting hand-tight.

Figure 8: Pressure Relief Screw

Figure 9: Pressure Test Fitting Assembly



1. Pressure Test Fitting
2. Lock Hose Plug Sleeve

3. Attach the shop airline to the lock hose plug sleeve (2).
4. Pressurize to 20 psi.
5. Submerge the pressure test fitting in a water tank.
   Check for air bubbles. Air bubbles indicate a leak.
6. Locate the leak source, depressurize, replace the seal that is leaking, reassemble, and retest by following steps 4 and 5.
   If leak is fixed, depressurize and reinstall the pressure release screw (1).

Go to Overview of Sequence of Work to finish.

4.6 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.

4.7 Bolt Torque Preventive Maintenance Schedule

An established schedule for checking light fixture bolt torque and bolt condition is mandatory. This is particularly true for areas that are subject to high impact loads from aircraft such as runway status lights, runway touchdown zone lights, runway centerline lights, and taxiway lead-off lights. Although AC 150/5340-26 offers a recommended schedule for periodic checks, these checks should be tailored to the facility based on local conditions such as environmental issues and runway traffic load.

1. Torque according to: FAA Engineering Brief No 83 (latest revision).

Figure 10: Anti-vibration washer example

CAUTION

Per FAA AC 150/5340-30, Chapter 10, and FAA Engineering Brief No 83 (latest revision), it is extremely important that other types of washers, such as split washers, must not be used. Failure to use properly installed anti-vibration lock washers will cause mounting bolts to become loose. The cams (or steps) of each half of the lock washer must face each other.

FAA Cert Alert No. 14-03 refers to AC 150/5340-26 for the frequency of checking bolt torque. AC 150/5340-26 (latest revision) paragraph 5.3.4.1.4, *Bi-Monthly Checks* states: "*The torque of the bolts attaching the light fixture to its base should be checked with a calibrated torque wrench – never use an impact wrench.*"

Regular inspection as outlined in FAA Engineering Brief 83 (latest edition), Canada Civil Aviation Safety Alert Document CASA 2014-05, and any other applicable regulatory guidelines is critical in insuring torque on all bolts is restored to optimum values. Bolts that loosen more often should be inspected and re-torqued on a more frequent basis.

It is especially important to maintain a regular inspection schedule for LED fixtures. Since LED fixtures operate more reliably and are not subject to removal/replacement/re-torque as frequently as would be seen with incandescent fixtures, it is even more important to implement regular torque inspections.

It is critical that remedial action be taken if bolts are found to be loose or missing during inspection. If this occurs, it is important to carefully inspect all structural elements of the mounting system as defined in Installation. Also inspect the base can for general structural conditions such as:

- Is the base can solidly mounted in the pavement, and not moving or rocking during rollovers?
- If a base can extension is present, are all extension attachment bolts tight?

If poor base can structure or mounting system components are not in accordance with regulatory requirements or are in poor condition, it is the airport's responsibility to:

- Increase the frequency of bolt torque inspection to insure that no bolts become loose or missing.
- Quickly replace/repair the mounting system components, which may include replacing the entire base can.

Airport operators must also ensure these maintenance activities are properly documented.

Digital Asset Tracking and Service Application Information

ALIS is 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.

Easy to implement and use, cloud-based software enables a more reliable and fail-safe approach to asset tracking and maintenance by always using live field data and eliminating inefficiencies caused by human error. Every asset is registered using GPS data and its status recorded, so airport maintenance teams get a clearer view of maintenance schedules and history, allowing them to manage resources more effectively as well as improve the safety and longevity of airside assets. This increased visibility helps airports plan and schedule preventive maintenance, or undertake corrective maintenance more quickly, to reduce downtime and significantly improve operational availability.

https://adbsafegate.com/product-center/airfield/airside-services/ALIS-airside-maintenance

- Easily integrates electronic torque measurements and photometric measurement reports to provide a complete view of the asset's status.
- ALIS can be integrated with the AirTorque or Ingersoll Rand® QX series wrenches, which are used for accurate, ergonomic torque inspections of AGL fixtures. The applied torque can seamlessly be registered in the ALIS system as a part of the maintenance record.
- The iPhone application of ALIS – ALIS Personal – makes it easier than ever to register maintenance actions while working. It will proactively show you which assets you still need to work on and select the closest one to you automatically. ALIS Personal acts as a feedback and information device for the associated torque wrench.

5.0 Troubleshooting

Table 5: Troubleshooting Guide

Problem	Possible cause	Possible solution
No light or light flickers	Connection to the input power has a malfunction.	• Remove the fixture. Check the electrical connection, the cable and the receptacles.
	The LED has a malfunction	• Replace the optical assy.
	Connection of the optical assy to the PCB has a malfunction.	• Remove the optical assy. • Check the electrical connections and the cable.
	The PCB has a malfunction	• Replace the inner cover assy.
Light output too low	The prism is dirty.	• Clean the prism.
	The LED has a malfunction.	• Replace the optical assy.
	The PCB has a malfunction.	• Replace the inner cover assy.

6.0 ITCL-LP Parts

ITCL-L and ISTB-L (Low Protrusion) / ITCL-L CT and ICAO/TP312 Straight

Ordering Code

D X X X 2 R N 0 X X F X X X 0

D = AD light

Application
2S = FAA L-852S
RE = FAA RWSL REL[1]

Cord Set Style and Length
J = Style 1 SO Jacketed cable, 2-pin, 18" long
L = Style 6 (2-pin), 18" long

Cable and Connector
2 = 1 plug (2-pin)

LED Color 1 – Left
R = Red

LED Color 2 – Right
N = Obscure/Blank (no light)

0

Dimensions
B = 8" diameter, 1/4" protrusion[4]
D = 12" diameter, 1/4" protrusion

Power Supply and Monitoring
S = 6.6A, 50/60Hz, w/out monitoring option
M = 6.6A, 50/60Hz, with monitoring option[1]

Specifications
F = FAA

Winter Options
0 = None[1]
1 = Arctic kit
2 = Heavy-duty abrasion-resistant lens coating[2,3]
3 = Arctic kit & heavy-duty abrasion-resistant lens coating[2,3]

Bolt Holes/Fixation Options
0 = Standard (6 bolts for 12" fixture; 2 bolts/2 fixing pins for 8" fixture)
1 = 4 bolts (8" fixture)[1]

Ground Lug Options
0 = Without ground lug[2]
U = With UL 467 ground lug (FAA standard)
R = FAA RWSL Applications[1,5]

Notes
1. For RWSL applications, use options M, 0 and R for Power Supply, Winter Options, and Ground Lug Options respectively.
2. Not ETL Certified.
3. Typically used for intensive winter service where sand is applied to runways and rotating brushes are used.
4. Fixture is ETL Certified when used with 12" snow plow ring adapter, Part No. 62A2244-10.
5. Includes 10-32 x 1/2 hex head earth ground lug.

Ordering Code

D XX X X X X X X X 0 X X X 0

D = AD light

Application
2C = ICAO/TP 312 Straight Taxiway
CT = ICAO/TP 312 Curved Taxiway

Cord Set Style and length
J = Style 1 (2-pin) SO jacketed cable, 18" long

Cable and Connector
2 = 1 plug (2-pin)
3 = 2 plugs (2-pin)

LED Color 1 – Left
G = Green
Y = Yellow
N = Obscure/Blank (no light)

LED Color 2 – Right
G = Green
Y = Yellow
N = Obscure/Blank (no light)

Toe-in
0 = No toe-in
3 = Left/Right[2]

Dimensions
B = 8" diameter, 1/4" protrusion [1]

Power Supply and Monitoring
S = Current driven, 50/60Hz, w/out monitoring
M = Current driven, 50/60Hz, with monitoring

Standards
F = FAA
I = ICAO[2]

Winter Options
0 = None
1 = Arctic kit
2 = Heavy-duty abrasion-resistant lens coating
3 = Arctic kit and heavy-duty abrasion-resistant lens coating

Bolt Holes/Fixation Options
0 = Standard (6 bolts for 12" fixture; 2 bolts/2 fixing pins for 8" fixture)
1 = 4 bolts (8" fixtures)

Ground Lug Options
0 = Without ground lug
U = With UL 467 ground lug (FAA standard)

Figure 11: ITCL-L TP312 Ordering Code Notes

Ordering Code Notes

[1] 12-inch snow plow ring adapter is ordered separately.
Part No. AW5008ADB11E(bidirectional) or AW5008ADB1E(unidirectional)

[2] Used with ICAO/TP 312 curved taxiway centerline only.

Figure 12: ITCL-L FAA L-852A-D(L) and L-852J-K(L)

Ordering Code

D XX X X X X X X X X X X 0

D = AD light

Application
2A = FAA L-852A
2B = FAA L-852B
2C = FAA L-852C
2D = FAA L-852D[1]
2J = FAA L-852J
2K = FAA L-852K

Cord Set Style and Length
J = Style 1 (2-pin) SO jacketed cable, 18" long

Cable and Connector
2 = 1 plug (2-pin)
3 = 2 plugs (2-pin)

LED Color 1 – Left
R = Red
G = Green
W = White
Y = Yellow
N = Obscure/Blank (no light)

LED Color 2 – Right
R = Red
G = Green
W = White[1]
Y = Yellow
N = Obscure/Blank (no light)

Toe-in
0 = No toe-in
3 = Left/Right[2]
4 = Toed Left[2,3]
5 = Toed Right[2,3]

Ground Lug Options
0 = Without ground lug
U = With UL 467 ground lug (FAA standard)

Bolt Holes/Fixation Options
0 = Standard (6 bolts for 12" fixture; 2 bolts/2 fixing pins for 8" fixture)
1 = 4 bolts (8" fixtures)

Winter Options
0 = None
1 = Arctic kit
2 = Heavy-duty abrasion-resistant lens coating
3 = Arctic kit and heavy-duty abrasion-resistant lens coating

Standards
F = FAA

Power Supply and Monitoring
S = Current driven, 50/60Hz, w/out monitoring
M = Current driven, 50/60Hz, with monitoring

Dimensions
B = 8" diameter, 1/4" protrusion
D = 12" diameter, 1/4" protrusion

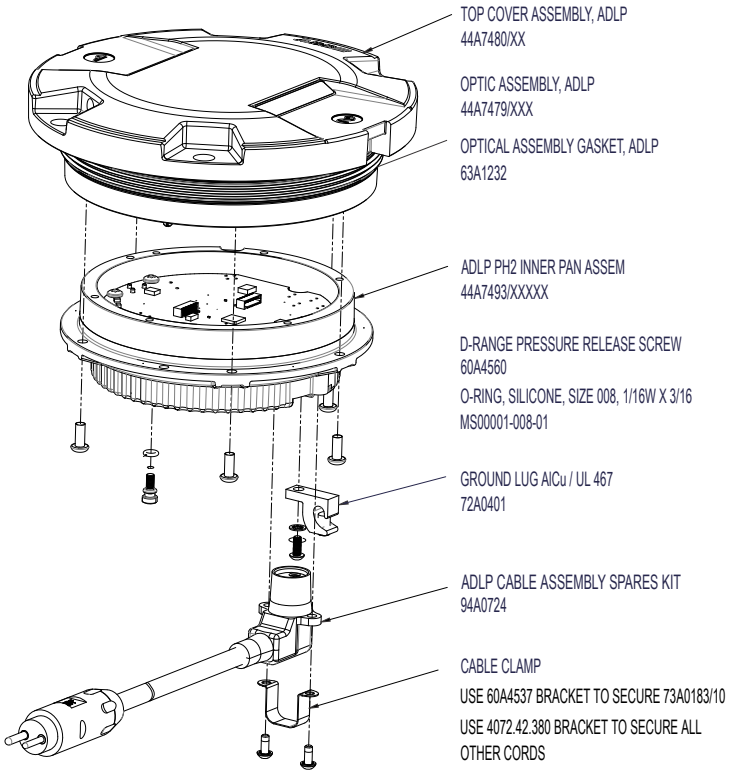
Notes

[1] L-852D is also used for FAA medium-intensity runway edge and threshold applications.

[2] L-852J(L) and L-852K(L) only

[3] Side 1 (left) is the only side populated when unidirectional.

Figure 13: 8" ITCL-LP Light Fixture Assembly



CORDSET TABLE		
LOCAL VERSION	CORDSET DESCRIPTION	PART NUMBER
A	ADB STYLE 6 WITH 10" CORD	4072.24.950
G	GERMAN (STYLE 1 PLUGS AND NAMEPLATE)	4072.24.730
F	FRENCH (3 POLE PLUGS AND PRISM PROTECTION	4072.24.770
L	FAA (STYLE 6 PLUGS WITH 18" WIRES)	4072.42.350
J	FAA STYLE 1 SOOW JACKETED	73A0183/10

STANDARD ADLP RWSL HARDWARE SPARES KIT 94A0725 IS REQUIRED
FOR ALL SPARE REPLACEMENTS EXCEPT CABLE SPARE KIT 94A0724

Figure 14: 12" ITCL-LP Light Fixture Assembly

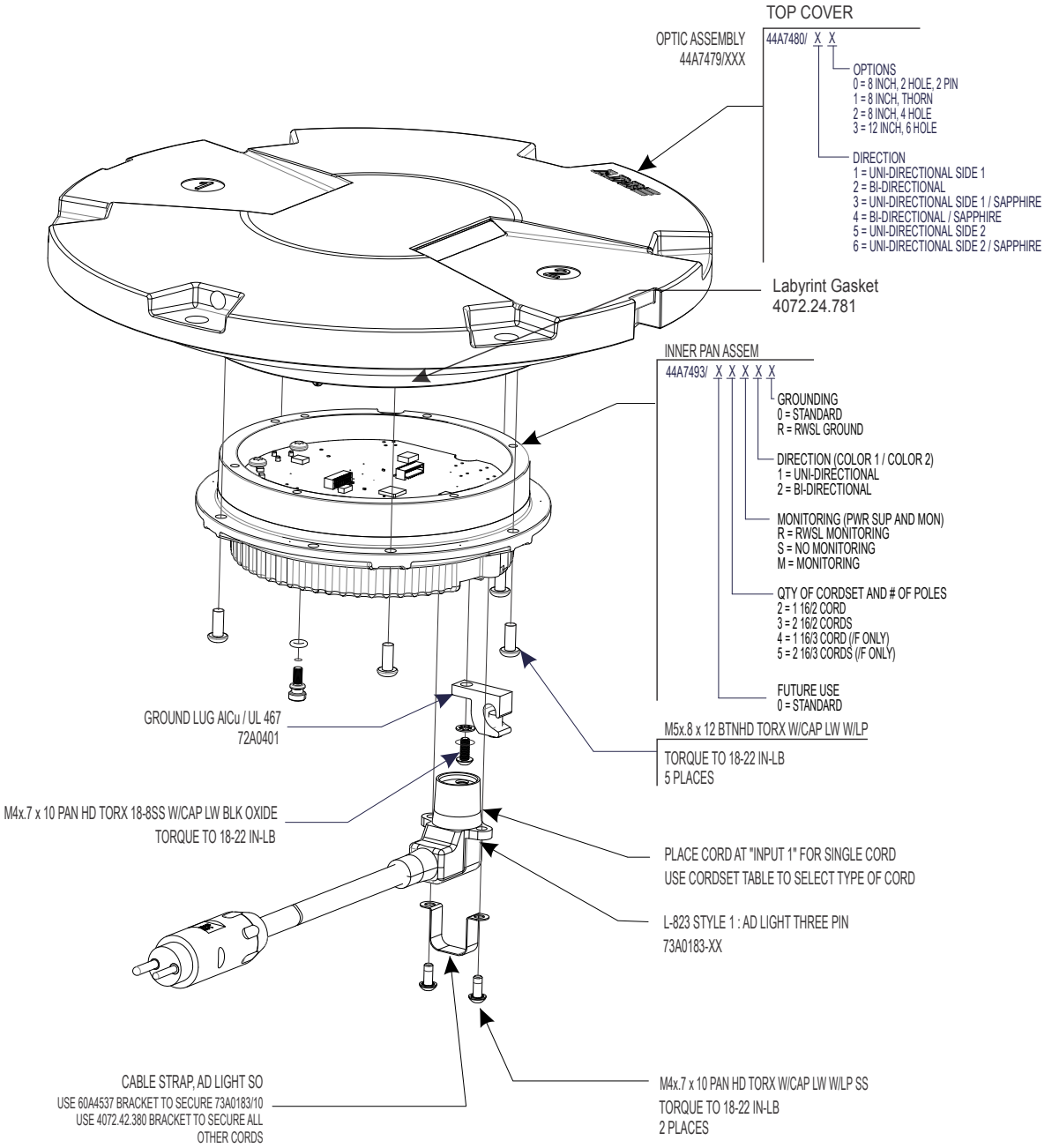


Table 6: ITCL-LP Light Spare Parts

Order Code	Description	ITCL-LP	Notes
44A7479-XXXX	LED Assembly	1	44A7479-XXXX
44A7480-XX	Top Cover	1	44A7480-XX
44A7493-XXXX	ADLP Pan Assembly	1	44A7493-XXXX
63A1232	ADLP Optical Assembly Gasket	1	
60A4537	ADLP SOOW Cable Clamp	1 or 2	FAA Jacketed Cordset Clamp

Table 6: ITCL-LP Light Spare Parts (Continued)

Order Code	Description	ITCL-LP	Notes
4072.42.380	ADLP Cable Clamp (non-jacketed)	1 or 2	Non-jacketed Cordset Clamp
73A0183-10	Jacketed Style 1 Cordset 18 inch (450 mm)	1 or 2	
4072.24.770	French Style 10" Cordset (250 mm)	1 or 2	
4072.24.951	Non-FAA Cordset 10" (250 mm)	1 or 2	
60A4560	Pressure Release Screw	1	
MS00001-225-01	Bottom Pan O-Ring	2	Must be replaced after each opening of the light assy
MS00001-008-01	Pressure Screw O-Ring	2	Must be replaced after each opening of the light assy
	RWSL Kits		
44A7480/XX	Top Cover Assembly		44A7480/XX
44A7479/XXXX	Optic Assembly		44A7479/XXXX
44A7493/XXXXX	Bottom Pan Assembly		44A7493/XXXXX
94A0724	RWSL Cable Assembly Spares Kit		
94A0725	ADLP RWSL Hardware Spares Kit		

Figure 15: Top Cover Lens Assembly ADLP 44A7480-XX

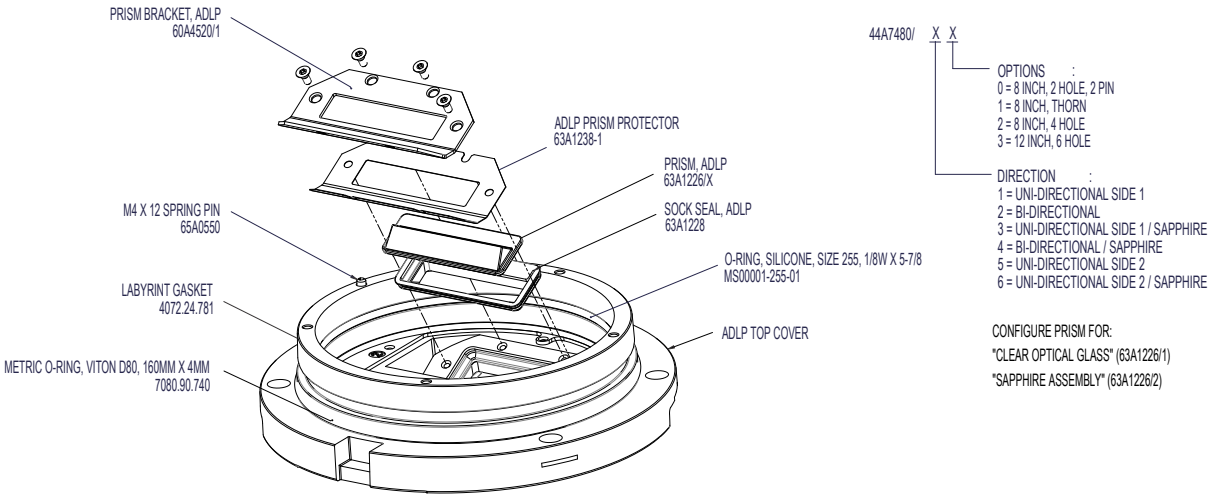


Figure 16: Light Assembly to Top Cover

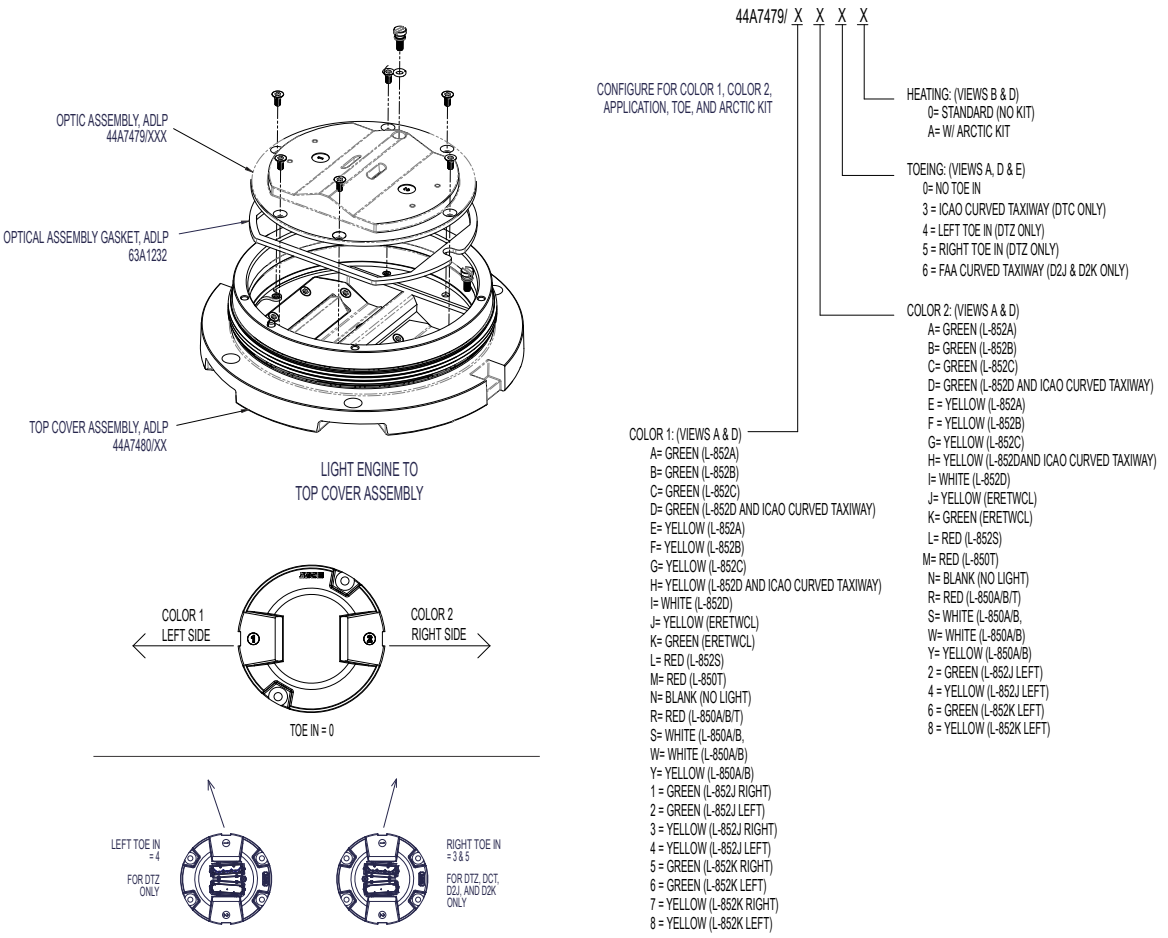
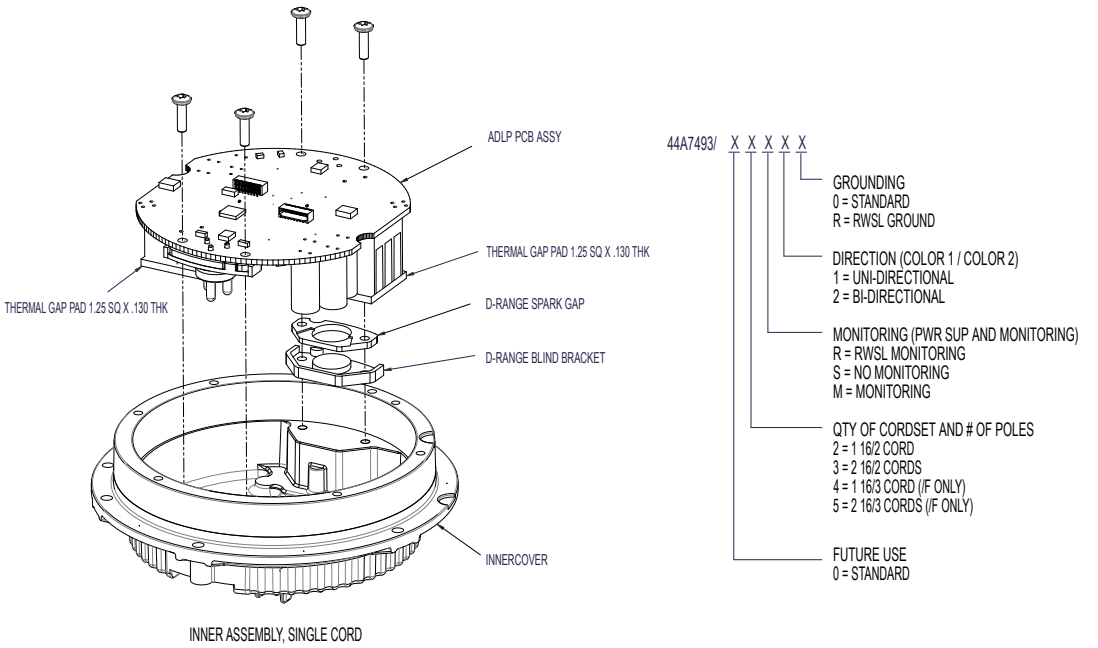


Figure 17: Pan Assembly 44A7493/XXXXX



Appendix A: SUPPORT

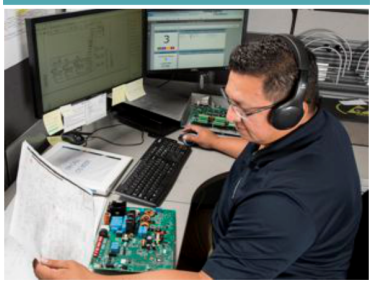
Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

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

A.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.

A.2 Recycling

A.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.

A.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.

Company Addresses

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Contact: Tel.: +32 2 722 17 11, Fax: +32 2 722 17 64	Email: marketing@adbsafegate.com Internet: www.adbsafegate.com

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