8-inch Taxiway Inset Light Type TLP

User Manual

UM-5026, Rev. 1.3, 2022/06/07

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

List of Figures

List of Tables

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 About this Manual

2.1 How to work with the manual

1. Become familiar with the structure and content.

2. 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 Customer Comments and Proposals

This manual has been compiled with all possible care and in view of providing a valuable and practical tool to the Airport Maintenance personnel.

We encourage customers to address us their comments and proposals for improving further the contents of this manual.

Communications should be addressed to the **Customer Service department** of ADB SAFEGATE:

ADB

585, Leuvensesteenweg

B-1930 Zaventem - Belgium

Tel. 32 2 722 17 11 Fax 32 2 722 17 64

E-mail: adb-air@adb-air.com

2.4 Parts Identification

Parts identification symbols (e.g. A1, E4...) appearing in the text, refer to the Exploded View TLP section.

3.0 Product Information TLP inset lights

3.1 Introduction to TLP inset Light

This manual covers the "Low-Energy" taxiway centerline light fixture manufactured in accordance with FAA specification AC 150/5345-46 (except for photometry when it differs from ICAO Annex 14) and compliant to ICAO Annex 14. It describes procedures for the maintenance and troubleshooting of the inset light type TLP.

In this chapter you will find all the general information and the identification of the ADB SAFEGATE taxiway inset lights types TLP.

The ADB SAFEGATE taxiway inset light type TLP is a light fixture which provides optimum visual guidance along the taxiway centerline with minimal maintenance, low life- cycle costs and maximum reliability. With its low protrusion, it is designed to withstand the high impact and roll-over loads imposed by today's wide body aircraft during taxiing operations while remaining waterproof and serviceable.

The TLP taxiway centerline fixture is shipped ready for installation on an 8-inch Shallow base (Euro® or HPI). For installation on a 12" ADB or FAA shallow base or FAA deep bases (L-868 size B) an adapter ring is required.

The ADB SAFEGATE taxiway inset lights type TLP are intended for the following uses:

Centerline lights, in straight and curved sections and on rapid exit taxiways, Intermediate holding position lights, De-/anti-icing facility exit lights, Apron lead-in lights, Runway guard lights where applicable and Stop bar lights straight.

Note
For more detailed information on interoperability, refer to the appendix, INTEROPERABILITY section.

3.2 Taxiway Centerline and Stopbar

Compliance with Standards (current Versions)

FAA	AC150/5345-46, L852-A and L852-C for photometry
ICAO	Annex 14, Vol. I
EASA	CS-ADR-DSN
NATO	STANAG 3316 for design
Canada	TP312
China	CCAR-137CA-R2
Australia	MOS 139

Uses

Inset Taxiway lights used as:

- Centerline lights, in straight and curved sections and on rapid exit taxiways
- Stopbar lights
- Intermediate holding position lights
- De- / anti-icing facility exit lights
- Apron lead-in lights
- Runway guard lights where applicable at night

Features & Benefits

Full range of bi-directional, single and dual lamp (alternately switchable) or uni-directional, single lamp, 8-inch diameter inset lights covering all taxiway applications.

Efficiency

- Optimal and uniform light pattern for both, 1 and 2 lamp versions.
- Designed and built with simplicity and ease of maintenance in mind.
- Extensive use of aluminum alloys reduces fixture weight and eases handling in the field.
- Prisms are clamped to the cover in a multiple contact points gasket by means of a multi-functional lamp and filter holder. This makes prism replacement by airport maintenance personnel fast and easy. No sealing compound nor resin is required.
- Dichroic filters for high transmissivity.
- No optical adjustment required after replacement of lamp, filter or prism.
- Standard adapter rings for installation on 12″ FAA deep or shallow bases.
- Specific rings available to fit mounting bases and seating rings to other standards.
- Installation jig available. Extraction does not require special tools.
- Plug for pressure-testing of fixture after overhaul.

Sustainability

- Extra low profile (6,35 mm) for extended fixture life and improved resistance against snow plows
- Double water barriers seal all possible moisture ingress paths.
- Minimal number of parts, mostly shared in the different applications.
- Lightweight, sturdy, low-energy and environment friendly lighting fixtures (no cadmium plating).
- Smooth outer surface of light cover avoids tire damage and makes light even less sensitive to snowplows.
- Long life, cold mirror halogen lamp(s): 40 W - 6.6 A, nominal lifetime 1500 hours at 6.6 A.
- Finish: Environment-friendly, precision-cast aluminum alloy cover, optical support and inner cover assembly.
- Finish: Passivated, plain stainless steel hardware.

Safety

- Low-temperature lights
- Shallow gully in front of prism windows for sustained optimal light output under heavy rainfall

Accessories

Refer to the TLP inset lights user manual.

Power Supply

- 6.6 A through one or two isolating transformer(s)
- Two or more fittings may be series-connected and fed from a common isolating transformer making use of optional film disc or solid state cut-outs.
- Lamps: 40 W – 6.6 A – cold mirror, prefocused halogen with nominal lifetime of 1500 hours at 6.6 A

Note

- Refer to the appendix of TLP inset lights user manual for a complete power table and the cable loss formula.
- Refer to the annex section.

Maintenance and Installation

Refer to the TLP inset lights user manual and to the interoperability info for installation in a specific base.

Dimensions and Weight

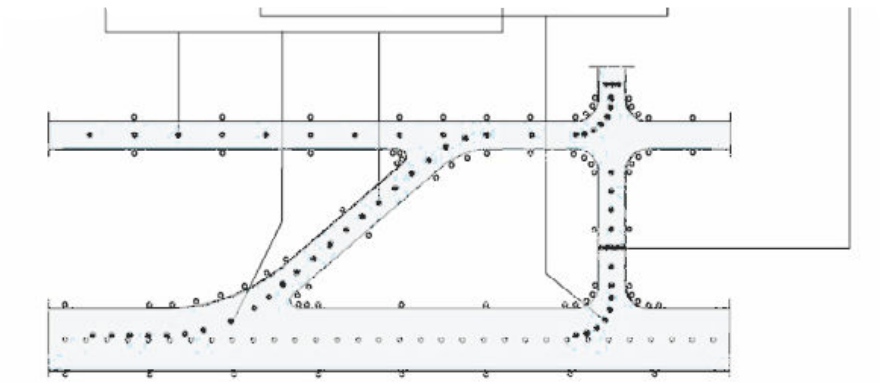
Outer diameter	210 x 210 x 100 mm
	8.3 x 8.3 x 4 in
Weight without packaging	Approx. 2.4 kg
	5.3 lb

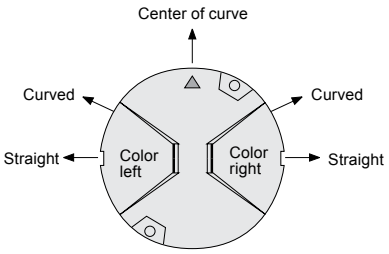
Operating Conditions

Operating temperature	-122 to +122 °F / -50 to +50 °C
Storage temperature	-131 to +131 °F / -55 to +55 °C
Relative humidity	Up to 98 % at +77 °F / 25° C

Selection Chart

Use	Taxiway centre line (all applications CAT.I – II – III except stopbar)				Stop bar CAT. I – II – III
Description	uni- or bi-directional 1 lamp in central position		bi-directional 2 lamps one lamp per beam		uni-directional
Type	straight	curved	straight	curved	straight
Filter	green or yellow	green or yellow	green or yellow	green or yellow	red





Note

- Deep base and / or adapter rings to be ordered separately.
- Color left / color right, only important for curved lights . Red/Red only with one lamp, for use in RVR = 350 m. For stopbar use in RVR < 350 m, order unidirectional lights.
- Do not use 2 lamps with 1 plug. The lifetime of the lamps would be reduced by the higher power dissipated with two lamps on simultaneously. Digit 8 = 2 if digit 4 is 2 or 4.
- Gasket is to be ordered separately, depending on the base.

For more information about the product, including manuals and certifications, please see our Product Center on the ADB SAFEGATE website: www.adbsafegate.com.

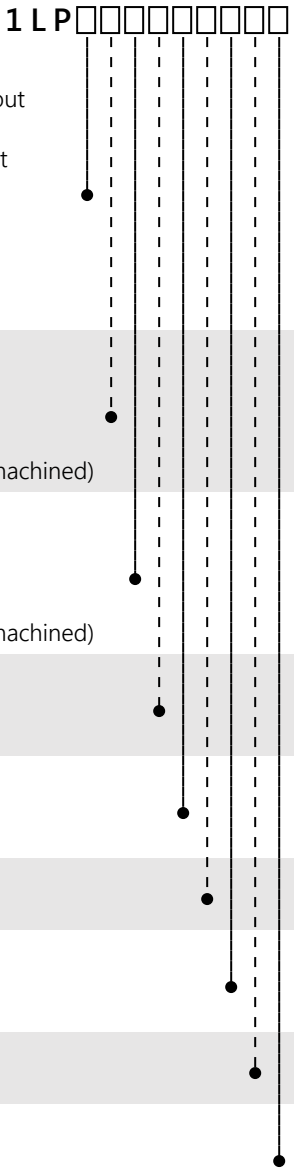
3.3 Differences between versions

All the inset lights used for a particular function look externally identical.

The differences between versions depend on the prism type and color filters used. Make sure to use a fixture with the correct color coding when installing it onto its base.

3.4 Ordering code TLP

The illustration below clarifies the structure of the ordering code for the TLP type.



Note

- Deep base and / or adapter rings to be ordered separately.
- Color left / color right, only important for curved lights . Red/Red only with one lamp, for use in RVR = 350 m. For stopbar use in RVR < 350 m, order unidirectional lights.
- Do not use 2 lamps with 1 plug. The lifetime of the lamps would be reduced by the higher power dissipated with two lamps on simultaneously. Digit 8 = 2 if digit 4 is 2 or 4.
- Gasket is to be ordered separately, depending on the base.

3.5 Film disc cut-out

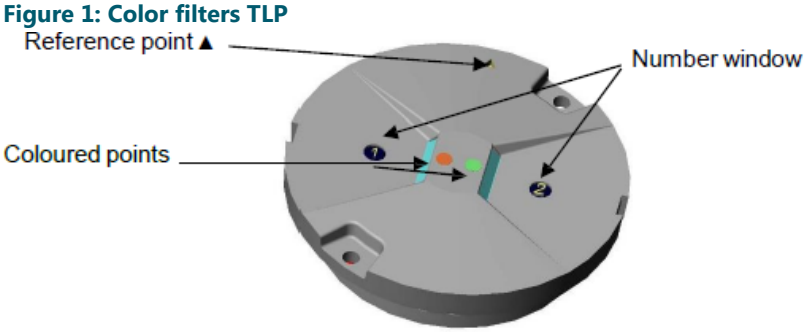
For some applications, optional film disc cut-outs are available. They form an electrical bypass over the lamp within 15 seconds after lamp failure. After a lamp failure, the film disc cut-out must be replaced.

3.6 Color filters

The colors of the inset light filters are identified by colored points atop the window. A green point, for example, refers to a corresponding green filter.

The indication 1 or 2 on the top of the cover stands respectively for left window or right window (reference point ▲ points upwards). The latter information is important only for curved section lights.

Figure 1: Color filters TLP



3.7 Equipment data

3.7.1 Equipment supplied

Each unit is supplied completely assembled, tested and sealed, ready for installation. The electrical connection is made via one cable assembly with either FAA L-823 style 6 2-pole plug, 3-pole plug derived from FAA L-823 style 6 or flat 3- pole plug. A labyrinth gasket is included.

Each unit is individually packed in a durable, cushioned and corrugated cardboard box, labeled with ADB SAFEGATE ordering number.

Upon customer request, the lights can also be palletized in a cardboard box in a number of layers, each fitting separated by cardboard.

At least one instruction manual is delivered per order.

Note

Ordering codes and reference data pertinent to the light fixture and its components are listed in the tables in Ordering code TLP and Complete Fixtures and Components section.

3.7.2 Equipment required for installation and maintenance

Beyond the light itself, some equipment is required for installation and maintenance. This equipment is not supplied with the light but can be obtained through ADB SAFEGATE.

Note

It is listed in Accessories section.

4.0 Installation

4.1 Introduction

This chapter instructs you how to connect and mount the TLP inset light on its base or adapter ring.

It includes important safety notifications regarding the choice and use of fixing hardware.

NOTICE

It is assumed that the base supporting the TLP inset light, the adapter ring (if needed) and the secondary connector are already installed.

4.2 Safety instruction — Fixing elements Important safety notifications

Various types of fixing hardware can be used for the fixation of the light on its base or adapter ring (e.g. screws or studs and nuts). Moreover, bases and adapter rings may be supplied with threaded holes according either to ISO metric or UNC standards.

WARNING

Only use fixing hardware of the same type as the one originally supplied with the base or adapter ring!

Always tighten the fixing hardware to the recommended torque, using a calibrated torque wrench and applying the recommended type of sealant!

Refer to How to mount the light assembly? section for the tool to use, requirement description regarding the use of Loctite adhesives / sealants and the necessary torque to apply.

Do not insert a 3 / 8- to 16-inch UNC screw in a M10 threaded hole. Such a a combination damages the female thread and does not ensure a correct fastening so that the screw could become loose under repeated operation of rolling aircrafts. Using screws of incorrect standard might lead to either damage to the thread in the base or to an incorrect fixation of the lights.

Generally, using fixing hardware of a different type of the one originally supplied with the bases or adapter rings, or tightening it at an incorrect torque, may lead to a loosening of the fixing hardware, damage to the light and base, and potentially to the separation of the light fitting or parts thereof from its base. This can lead to a highly dangerous situation of *Foreign Object Debris* (*FOD*), with potential lethal consequences.

4.3 General recommendations regarding installation

4.3.1 Receiving, storage and unpacking

1. Upon receipt of goods at the site store, check all packing for visible damage.

   Every damaged box should be opened and its contents inspected for damage.

   Important

   If equipment is damaged, a claim form shall be filed with the carrier immediately. It may then be necessary for the carrier to inspect the equipment.

2. Store the light assembly preferably in its original packing in a protected area.

   When stored unpacked (not recommended), please take care not to damage the cable insulation.

3. Unpack the light assembly at the installation site to avoid damage during transportation and handling.

4.3.2 Electrical connection

The light assemblies covered by this manual are designed for connection to 6.6 or 20A series circuits via one (or more) L-830 or L-831 series transformer. (In case of use on a 20A series circuit, we consider that the series transformer is a 20A / 6.6A transformer). The current to the light should not exceed 6.6A + 3%.

Note

In case of use on a 20 A series circuit, we consider that the series transformer is a 20 A / 6.6 A transformer.

The series transformer and associated connectors have to be ordered separately.

4.3.3 Base Earthing

Whatever the chosen installation method, it is strongly recommended to earth the base, especially in locations presenting a risk of lightning strikes.

Note

- Failure to earth correctly the base will void the warranty for all damages occurring as a result of voltage surges.
- Guidelines on how to realize the earthing of the base are given in instruction manual user manual UM-0106.

4.4 How to mount the light assembly?

CAUTION

Make sure that the contact surfaces of the light assembly with base or adapter ring and the gaskets are absolutely clean and smooth.

4.4.1 Use the correct fixing hardware

Please refer to Safety chapter.

CAUTION

Only use fixing hardware of the same type as the one originally supplied with the base or adapter ring!

In ADB SAFEGATE shallow bases delivered since mid-2006, the type of thread can be METRIC M10 or 3/8"-16UNC.

How to be sure of the type of fixing hardware you are using?

- M10 screws require the use of a 17mm socket.
- 3/8"-16UNC screws require a 9/16" socket, this is approximately 14.3mm.

WARNING

On a base or adapter ring with metric M10 female thread, never use a screw that can be fastened with a socket smaller than 17mm. It would indicate that you are inserting a 3/8"-16UNC screw in a M10 female thread.

The opposite -inserting a M10 screw in a 3/8"-16UNC female thread- is impossible.

4.4.2 Installation procedure

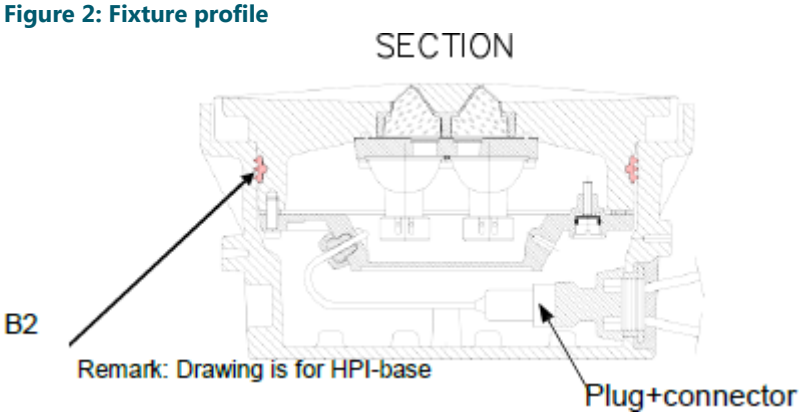
NOTICE

Always take into account the information from the interoperability between light and base. Refer to appendix, INTEROPERABILITY section.

To mount and connect the light assembly, proceed as follows:

1. In case a light has already been mounted on the base, remnants of Loctite are present in the fixation holes.
   Clean them using a cleaning tap for blind holes (preferably use a tap with a right spiral groove) and blow with dry, oil-free compressed air.
2. If the labyrinth gasket (B2) is not installed, put a new, clean one in the dedicated groove at the cover periphery.

Figure 2: Fixture profile



CAUTION
Never reuse an already used gasket.

3. Slightly moisten the gasket with soapy water, to lubricate.

CAUTION
Never lubricate the gasket with silicone or any other kind of grease. Avoid the use of soap containing silicone or glycerine.

4. Apply Loctite on the three first threads of the threaded holes in the base.

NOTICE
Refer to interoperability between light and base. Please find it in the appendix, INTEROPERABILITY section.

CAUTION
Always use Loctite 2701 to fasten the light fixture on its support.

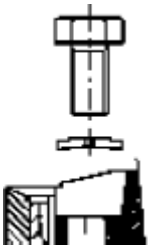
5. Connect the light by inserting its plug into the receptacle of either the shallow base, the secondary cable or the transformer.
6. Gently install the light fixture; press it home in the adapter ring or base.

   Make sure not to drop the light assembly or to pinch the wires.

CAUTION
In case of curved sections of taxiway, make sure that the arrow on the top of the light is pointed toward the center of curvature of the taxiway.
Verify the light fixture is seating correctly onto the base or adapter ring.

7. Make sure that the lock washers are mounted correctly-dents facing upwards - to avoid denting the cover.

Figure 3: Installation drawing



8. Torque down gradually the 2 screws (or self-locking nuts in case of a stud-equipped base).

CAUTION
Make sure the screws are tightened with the correct torque.

NOTICE
Refer to interoperability between light and base. Please find it in the appendix, INTEROPERABILITY section.

4.5 Adapter ring Installation

To install the adapter ring, proceed as follow:

1. Clean the contact surfaces of the deep base and adapter ring.

   In case an adapter ring has already been mounted on the base, remnants of Loctite are present in the fixation holes. Clean them using a cleaning tap for blind holes (preferably use a tap with a right spiral groove) and blow with dry, oil-free compressed air.

2. Put onto the contact layer of the base a layer of RTV106 (NC 7835.55.151) or equivalent.
3. Apply Loctite on the three first threads of the threaded holes in the base.

CAUTION

Always use Loctite 2701 to fasten the adapter ring on its support.

NOTICE

Refer to interoperability between light and base. Please find it in the appendix, INTEROPERABILITY section.

4. Mount the adapter ring onto the base and torque down the fixation screws.

CAUTION

Make sure the screws are tightened with the correct torque.

5. Install the light as described above.

5.0 Maintenance

This chapter describes general ideas on workshop maintenance and preventive maintenance and you will learn how to lift the unit out of the base or adapter ring. The servicing of the light assembly is described in detail in Fixture and component related maintenance — detailed procedures section.

Parts identification symbols (e.g. A1, B4, ...) appearing in the text refer to the Exploded View TLP section.

5.1 Overall maintenance — types and tasks

This sub chapter describes the general ideas on workshop maintenance and preventive maintenance. The servicing of the light assembly will be described in detail in sub chapter Fixture and component related maintenance — detailed procedures.

5.1.1 In-the-field-maintenance

The light assemblies can be serviced in the field, but it is recommended to limit field maintenance to cleaning the prisms. It is recommended to replace the inset lights at regular intervals and to have them overhauled in the maintenance shop. The same applies to lights found unserviceable in the field.

No specific tools are required to remove or re-install the fittings, except for the lifting tool (refer to Lifting tool section).

5.1.2 Preventive maintenance — Part 1

The assembly's service life depends to a large extent on its watertightness. All metal mating surfaces and seals must be clean, smooth, dry and free of all foreign particles if the light fixture is to operate for extended periods without requiring maintenance.

Greasing of O-ring seals may be required as indicated in this manual.

Preventive maintenance of the light fixtures should be performed as listed in the table on the next page.

Maintenance frequency depends on the conditions under which the runway is used (i.e. climate, traffic, etc.). The recommended practices for maintenance are described in the FAA advisory circular no. AC 150/5340-26 and in the ICAO Aerodrome Design Manual, Part 9 Airport Maintenance Practices.

Note

For components mentioned in this chapter, refer to the Screws Overview section.

5.1.3 Preventive maintenance — Part 2

In the table below you will find a checklist of preventive maintenance tasks. In case lights are found to be defective during the warranty period, do not open them as explained below, but replace them by new units, and send the defective ones, unopened, to ADB SAFEGATE (this does not apply to lamp replacements).

Table 1: Preventive maintenance tasks

Interval	Check	Action
Daily	For lamp failure	Replace lamp and film disc cut-out (if any).
	For low light output	1. Clean outer surface of prism if dirty. 2. Check for misalignment or presence of moisture in fixture. 3. Check for lamp ageing or displacement
Weekly	For obstruction in light output channel	Clean channel and prism surface.
Monthly [1]	For presence of moisture or water (visual inspection on condensation inside of prisms)	1. Open up light assembly. 2. Clean, dry and inspect. 3. Replace cover/inner cover gasket and other parts found defective.

Table 1: Preventive maintenance tasks (Continued)

Interval	Check	Action
Bimonthly	Torque on hold-down bolts	How to mount the light assembly? section for the tool to use, the requirement for use of Loctite and the torque to apply. Please find the requirement for use of Loctite adhesives and the torque to apply in the appendix, INTEROPERABILITY section.
Semi-annually [2]	For presence of water in base	1. Pump water from the base. 2. Remove, dismantle and inspect light for water damage. 3. Cure the cause of water ingress.
After 1500 hours of operation at 6.6 A	For replacement of lamps	It is recommended to replace the lamps systematically when 80 % of the useful life has been reached. At full brightness (6.6 A), it represents 1500 hours, but, in practice, life spans of 3000 to 4000 hours can be expected.
After snow removal	for damaged light fixtures	1. Replace badly damaged fixtures. 2. Use a power broom for snow removal in the vicinity of the light fixture, if practical. 3. Follow recommended snow removal techniques described in FAA AC 150/5200-30 to avoid or at least to reduce damage to light fixtures.

Notes
1 More frequently during rainy seasons
2 More frequently during rainy seasons.

5.2 Fixture and component related maintenance — detailed procedures

This chapter describes how to perform the various servicing tasks in the maintenance base.

All the screws used in this product are listed at the spare parts section of this manual.

Note
Refer to the Screws Overview section for the tool to use and the torque to apply.

5.2.1 How to lift the light assembly out of the base or adapter ring

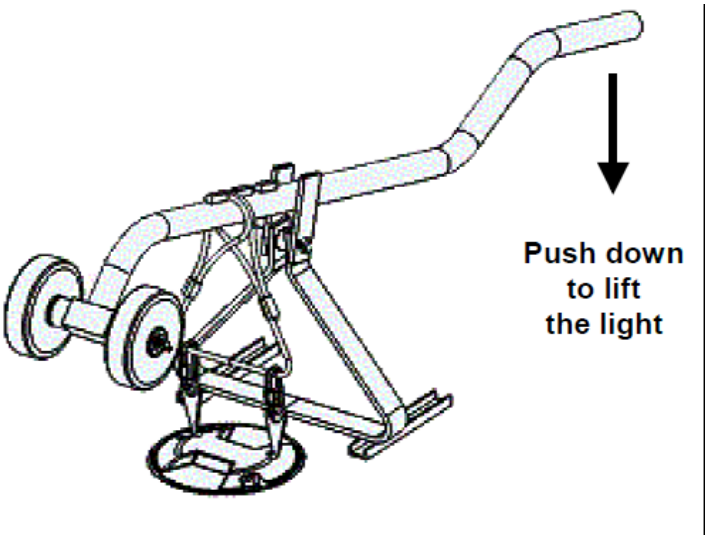
5.2.1.1 Lifting tool

Beside the simple jig delivered with the standard tool case, ADB SAFEGATE has developed a more sturdy and efficient lifting tool (see illustration below). Refer to Accessories section.

5.2.1.2 Lifting Procedure

To lift the optical unit out of the base receptacle or adapter ring, proceed as follows:

1. Remove the fixing screws and washers (A1-A2) or self locking nuts and discard them.
2. Fit the appropriate lifting tool into both holes located (180° apart) in the cover (B1), lift the optical unit out of the base or adapter ring and place it next to it.



3. Disconnect the light fixture wires from the power wires coming from the transformer(s).
4. Remove the labyrinth gasket and discard it.
5. Mount a serviced or new fitting as described in Installation procedure section.
6. Take the optical unit back to the maintenance base where it can be serviced entirely.

CAUTION

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

5.2.2 How to open the light assembly?

To open the light assembly, proceed as follows (for the tools to use, refer to Screws Overview section):

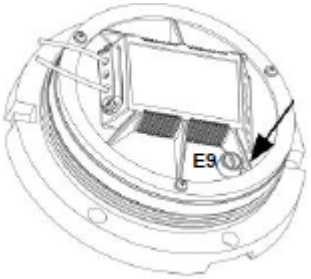
1. Turn the light unit upside-down.

In order for the light to rest on a stable surface it is advised to lay it upside down on the top of a shallow base.

Figure 4: Light opening procedure 1

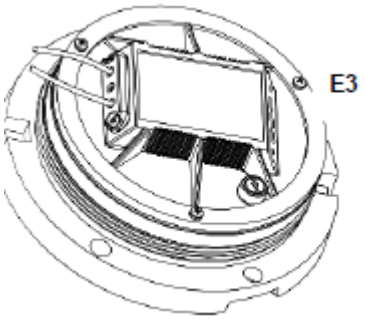
2. Remove the pressure release screw (E9).

Figure 5: Light opening procedure 2



3. Remove the three screws (E3).

Figure 6: Light opening procedure 3



CAUTION

do not apply a torque higher than 2.5Nm and do not use an attack driver: in both cases the screw head could break. Make use of a torque wrench to avoid exceeding the maximum torque.

In case the screws are difficult to unlock, use a 2000W hot air heater or similar to heat up the cover around the screw during 2 minutes; then try again.

Figure 7: Light opening procedure 4

In some exceptional cases the screw might remain locked after heating during 2 minutes. In this case start again heating up during 6 minutes and the screw should release.

4. Separate the inner cover from the cover & optical assembly by unplugging the fast-on connectors from the terminal block assembly.

   When the inner cover does not separate from the cover assembly, use the screwdriver flat blade to separate it.

CAUTION

Always replace the cover / inner cover gasket (E1) and the 3 screws with washers (E3) when a light is opened and closed again. This to guarantee fixture watertightness.

5.2.3 How to replace a lamp?

5.2.3.1 Film disc cut-out

Remember

When used, always replace the film disc cut-out each time a lamp has to be replaced.

5.2.3.2 Lamp Replacement

To replace a lamp, proceed as follows (for the tools to use, refer to Screws Overview section):

1. Open the light assembly (as described in How to open the light assembly? section).
2. Unplug the lamp spring (D1) by pushing on the spring wires, close to lamp and filter support (C5).

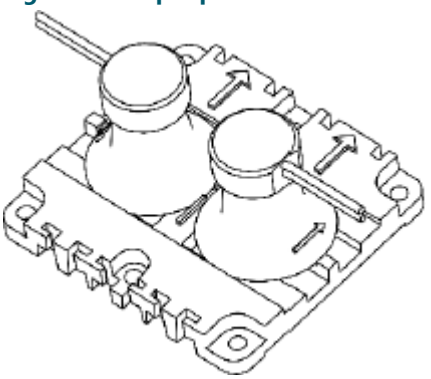
   Remove the lamp (D2) from the lamp and filter support.

Figure 8: Lamp replacement 1

3. Introduce a new lamp.

   Make sure the arrow on the lamp is parallel with the 2 arrows on the lamp and filter support.

Figure 9: Lamp replacement 2



CAUTION

For bi-directional, 1-lamp application, install the lamp in the middle;

For uni-directional, 1-lamp application or bi-directional, 2-lamp application, install the lamp in front of the working window(s).

Never touch the bulb of the lamp with your bare fingers. It would reduce the lifetime of the lamp considerably. Should it happen, clean the bulb with methylated spirit.

NOTICE

Make sure there is good contact between fast-on connectors and terminals.

4. Reinstall the lamp spring (D1) on the right position to hold the lamp (see picture below).

Figure 10: Lamp replacement 3

5. If a cut-out (E6) is used, remove it by loosening the screw which secures the cut-out clip to the terminal block and rotate cut-out clip free.
6. If a cut-out is used, position a new disc (small button side up) in the terminal block.

   Rotate the cut-out clip on top of the cut-out and hold while tightening the screw. Make sure that the pressure applied by the clip on the film disc is sufficient to assure good contact. If loosened, remove the clip and bend it slightly to increase its pressure.

5.2.4 How to replace the filter and the flat seal?

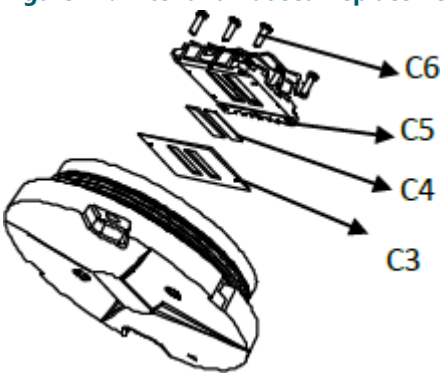
To replace the filter (C4) and the flat seal (C3), proceed as follows:

CAUTION

Do not apply a torque higher than 2.5 Nm and do not use an attack driver: in both cases the screw head could break. Make use of a torque wrench to avoid exceeding the maximum torque.

1. First remove the lamp(s) C6 (see previous page step 1-2); then remove the 6 screws (C6) and lift off the lamp / filter holder (C5).

Figure 11: Filter and flat seal replacement



2. Remove the flat seal (C3) and the filter(s) (C4).
3. Remnants of Loctite are present in the fixation holes of the screws C6.

   Clean them using a cleaning tap for blind holes (preferably use a tap with a right spiral groove) and blow with dry, oil-free compressed air.
4. Install the new filter(s) properly: right color on the right place!

   Install the filter for the left window in the opening where there is a “1” on the lamp and filter; the colored filter for the right window must be installed where there is a “2” on the lamp and filter (idem as color points on page 14).
5. Position the new flat seal (C3) over the pins of the lamp(s) and filter(s) holder (C5) and fix all components (C5, C6 and D2) again in the cover.

Note

Refer to the table Screws Overview for the tool to use and the torque to apply.

5.2.5 How to replace the prism / prism gasket?

To replace the prism (C2) and the prism gasket (C1), proceed as follows:

CAUTION

Do not apply a torque higher than 2.5Nm and do not use an attack driver: in both cases the screw head could break. Make use of a torque wrench to avoid exceeding the maximum torque.

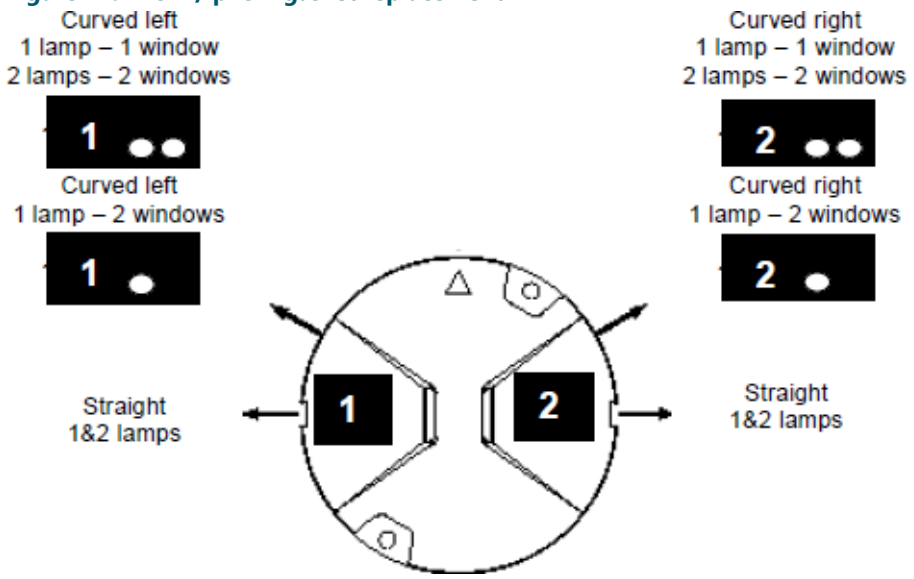
CAUTION

Replacement of the prism and prism gasket also implies replacement of the flat seal and the lamp holder. All parts are included in the prism spare part kits.

In case the screws are difficult to unlock, see step 3 in How to open the light assembly? section.

1. First remove the lamp (see step 1-2 in Lamp Replacement section); then remove the lamp and filter support (C5) by unscrewing the 6 screws (C6).
2. Remove the prism(s) from the gasket; remove the gasket from the cover.
   Remnants of Loctite are present in the fixation holes of the screws C6.
3. Clean them using a cleaning tap for blind holes (preferably use a tap with a right spiral groove) and blow with dry, oil-free compressed air.
4. Put the new gasket in the cover; position the prism(s) in the gasket properly: right type on the right place!

Figure 12: Prism / prism gasket replacement



5. Replace the old lamp holder (C5) and flat seal (C3) by the new parts from the spare part kit.
6. Fix all components (C3, C4, C5, C6 and D2) again in the cover. Refer to the table in Screws Overview section for the tool to use and the torque to apply.

5.2.6 How to replace the cable set assembly?

5.2.6.1 Cable sets

Restriction

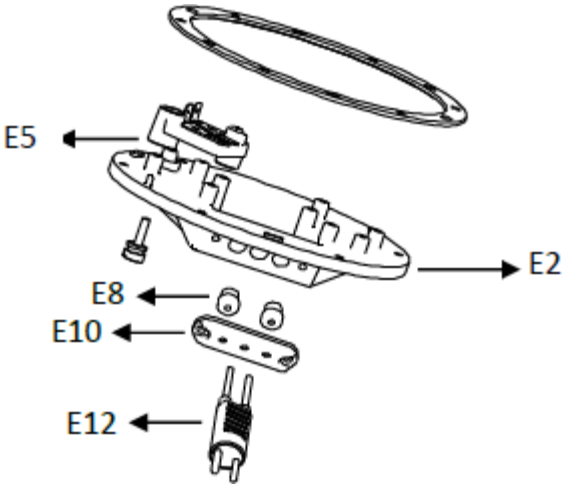
Only use ADB SAFEGATE cable sets. Usage of substitutes voids the warranty.

5.2.6.2 Cable Replacement

To replace the cable set assembly, proceed as follows:

1. Remove the cover and optical assembly by unplugging the lamp fast- on connectors from the terminal block (E5).

Figure 13: Cable assembly replacement



2. Remove the wire clamp (E10) by loosening its two retaining screws.
3. Cut the fast-on connectors from the cable assembly (E12).
4. Pull the cable assembly out of the inner cover and discard the grommets (E8).
5. Bring the new ADB SAFEGATE cable assembly through the wire clamp (E10)

CAUTION

Use only one wire per hole.

NOTICE

Only use ADB SAFEGATE cable sets. Usage of substitutes voids the warranty.

6. Put a new wire grommet (E8) on each of the wires, taking care of the direction (the smaller diameter into the inner cover recesses).
7. Reinstall the wire clamp (E10) by means of both screws (E11).
   Do not torque down the screws entirely at this step.
8. Remove the insulation of the wires over about 5 mm.
9. Crimp on new fast-on connectors (Part number 6111.87.140) and connect to the terminals (E5).
   Adjust the wires inside the inner cover.
10. Torque the screws (E11).

Note
Refer to the table in the Screws Overview section for the tool to use and the torque to apply.

5.2.7 How to close and test the light assembly?

Important
Always replace cover / inner cover gasket and fixing screws by new ones!

To close an optical unit, proceed as follows:

1. Turn the cover (B1) upside down.

   In order for the cover to rest on a stable surface it is advised to lay it upside down on the top of a shallow base.

   Figure 14: Closing procedure 1

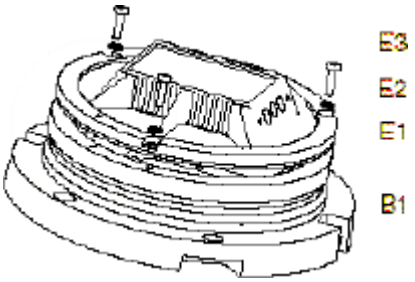
   

2. Make sure the contact surface with the inner cover is clean.

   Remnants of Loctite may be present in the fixation holes of the screws E3. Clean them using a cleaning tap for blind holes (preferably use a tap with a right spiral groove) and blow with dry, oil-free compressed air.

3. Put a new cover/inner cover gasket (E1) over the inner cover (E2).

   Figure 15: Closing procedure 2

4. Check that the pressure release screw (E9) is loose or removed.
5. Gently put the inner cover (E2) on top of the cover, taking into account the keying pin between both parts.

   Make sure that all components in the cover and the inner cover such as the cover/inner cover gaskets (E1) are correctly positioned and that the wires do not get damaged between both parts: cover (B1) and inner cover (E2).

6. Press the inner cover (E2) on the cover (B1) and secure with the screws (E3).

Note
Refer to the table in the Screws Overview section for the tool to use and the torque to apply.

7. Check electrical insulation from two-pole plug to frame by means of a 500V insulation tester.

   Apply an AC or DC voltage not exceeding 6 V across the two-pole plug and observe normal operation of the lamp.

8. Check watertightness of the fitting by applying with dry air a pressure of 0.4 bar (40 kPa) above the atmospheric pressure via the pressure release hole.

Whilst pressure is applied, immerse the light fixture for three minute in water and look carefully for NO stream of bubbles emanating from the light fixture.

If no leakage occurs, dry the fixture and remove the air hose.

Else, locate the leak source. Dry the fixture, remove the air hose. Replace the leaking gasket or part (check the contact surfaces for any scratches, corrosion or other damage) and repeat the test.

For this purpose a watertightness test adapter can be ordered from ADB SAFEGATE (refer to the ordering code in the Spare parts chapter).

9. Replace the O-ring seal of the pressure release screw (E9) and secure the pressure release screw.

Note

Refer to the table in the Screws Overview section for the tool to use and the torque to apply.

5.3 Product Troubleshooting

In the table below a number of problems are listed in the first column. In the second column, you will find the possible causes of the problem and in the third column the solution.

Table 2: Troubleshooting table

Problem	Possible cause	Solution
Lamp does not energize.	Lamp defective	1. Replace lamp. 2. If used, replace film disc cut-out.
	Loose or broken contacts	Tighten or replace the contacts.
	Moisture inside assembly causing current leakage	1. Open light assembly. 2. Clean, dry, inspect or replace damaged components.
	Defective cable assembly or defective crimping	1. Open light assembly. 2. Replace cable assembly.
	No connection of primary loop. Defective isolation transformer or secondary wiring	Check transformer output current with A-meter.Check power line between the light fixture and the transformer, including connectors.
Weak light output	Partial short circuit. Defective isolation transformer. Dirty prism. Blackened bulb Damaged reflector Defective film disc cut-out	1. Check cable assembly and terminal block connections. 2. Replace lamp, cut-out and/or transformer. 3. Clean prism.
Light beam distorted	Broken or damaged prism/cover	1. Check lamp positioning. 2. Replace prism or entire fixture.
Improper color	Broken filter	1. Replace filter.

Table 2: Troubleshooting table (Continued)

Problem	Possible cause	Solution
Short lamp life	Too high current (lamp will have black burns)	Check output current of isolating transformer at full brightness. Current should not exceed 6.7 A. Replace transformer if defective; if not, adjust CCR output current.
	Moisture in lighting fixture	1. Open light assembly. 2. Check for cause of leakage (Dirty or damaged seal mating surfaces, defective seals, cracked or broken prism, loose screws or damaged wire insulation. 3. Clean, dry, inspect or replace damaged components.
	Defective lamp or lamp bulb touched with bare fingers (lamp interior will have a yellowish powdery appearance if air has entered through a hole or crack)	1. Replace lamp. 2. If used, replace film disc cut-out.

5.4 Accessories

In the lists below you will find useful accessories for the installation, maintenance and repair of the TLP light.

5.4.1 Tool case

ADB SAFEGATE has designed a tool case (part number **1411.19.421**) including the basic tools necessary for the maintenance of inset lights. It can also be used for the installation of the light fixture (please note this is a general tool case, some tools are of no use for TLP Lights). The table below lists the tools included in the case:

Table 3: Maintenance tools overview

Description	Part Number	Description	ADB Part Number
Tool case	6169.01.007	Screwdriver, flat blade AG. 8x150	8961.05.250
Torque wrench	8961.06.255	Screwdriver, Pozidriv AD.2x125	8961.05.220
Socket hex 3/8", screw 3/8", J 9/16LA	8961.06.008	Loctite 2701	7870.05.130
Socket hex 3/8", screw M10, J 17LA	8961.06.000	Loctite 222	7870.05.140
Socket, 1/4", 1.6x8 Flat, RS.8E	8961.05.050	Lubricant Molykote HP870 Inerta (100 gr) (to replace prism)	7850.05.061
Socket, 1/4", Pozidriv2, RD.2	8961.05.060	Natural hydraulic vacuum silicone grease (50 gr)	7850.42.220
Extension, 1/4", R.210	8961.06.220	Attack driver	8961.04.100
Adaptation, 1/4"-3/8", R.232	8961.06.010	Hammer 212A50	8961.04.110
Hinged handle - short	8961.06.110	Bit holder	8961.04.120
Plier	8981.10.110	Bits END202, Pozidriv2	8961.04.130
Opening tool	4071.53.220	Lifting tool assembly for inset lights	1411.19.550
Screwdriver ANX25x100 TX20	8961.05.300	Bit Torx 1/4" - TX20 EX.620 L=70mm	8961.06.020
Screwdriver ANX25x100 TX25	8961.05.290	Bit Torx 1/4" - TX20 EX.625 L=70mm	8961.06.025

5.4.2 Additional accessories

The following accessories can be purchased separately:

Table 4: Additional accessories overview

Description	ADB Part Number
Watertightness test adapter for inset lights	1411.17.100
Set of spare anchor hooks for lifting tool 1411.19.550	1411.19.560
Lifting tool on wheels (refer to Lifting Procedure)	1420.55.600

5.4.3 Fixing Elements

The fixing hardware for securing the fitting on to the mounting interface is generally not supplied with the fitting as it depends on the exact type of mounting interface. It can be purchased as kits or loose components, as listed in Fixing Hardware Kits for TLP section.

6.0 Spare parts

In this chapter you will find an overview of the main and sub-assemblies and the exploded views of the 8-inch TLP inset light. References of the types of products described in this manual, of their spare parts and accessories are listed in this chapter, together with exploded views.

Tip

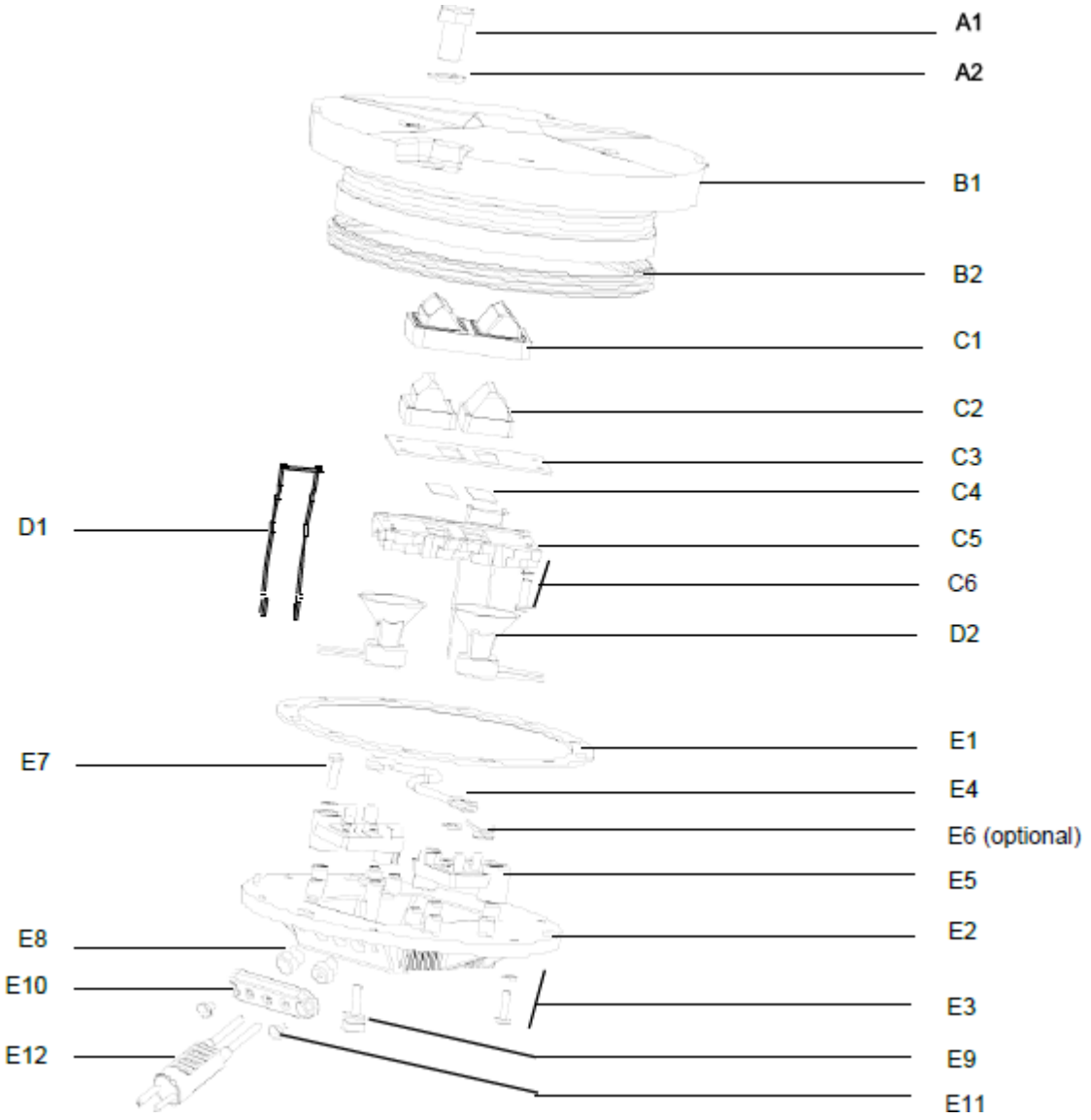
It is recommended to create a sufficiently large stock of spare parts to maintain the fittings. It will mainly consist of consumables like lamps, O-ring gaskets, film disc cut-outs, etc. Other components that may need replacement, such as prisms, prism gaskets, terminal blocks and hardware even as sub-assemblies should be stocked in smaller quantities. The stock should also contain some complete fittings of each type.

6.1 Exploded View TLP

TLP Inset light

The illustration below represents the exploded view of a Taxiway Low Protrusion inset light (TLP):

Figure 16: TLP light exploded view



6.2 Complete Fixtures and Components

6.2.1 Fixtures and main Assemblies of the TLP inset Light

In the table below you will find all fixtures and main assemblies of the TLP 8-inch inset lights:

Table 5: Screws and references

	Fixtures			Main assemblies	
Category	**Description**	**Ordering code**	**Code**	**Cover & Optical assembly**	**Inner cover assembly**
TLP Centerline	Bidirect. 1 lamp straight	TLP-2-040-GG-S-1 TLP-2-040-GY-S-1 TLP-2-040-YG-S-1 TLP-2-040-YY-S-1	1LP133S100M0 1LP134S100M0 1LP143S100M0 1LP144S100M0	Not available as spare part.Buy whole new light	1412.10.001
	Bidirect. 2 lamps straight	TLP-2-080-GG-S-2 TLP-2-080-GY-S-2 TLP-2-080-YG-S-2 TLP-2-080-YY-S-2	1LP233S200M0 1LP234S200M0 1LP243S200M0 1LP244S200M0		1412.10.011
	Bidirect. 1 lamp curved	TLP-2-040-GG-C-1 TLP-2-040-GY-C-1 TLP-2-040-YG-C-1 TLP-2-040-YY-C-1	1LP133C100M0 1LP134C100M0 1LP143C100M0 1LP144C100M0		1412.10.001
	Bidirect. 2 lamps curved	TLP-2-080-GG-C-2 TLP-2-080-GY-C-2 TLP-2-080-YG-C-2 TLP-2-080-YY-C-2	1LP233C200M0 1LP234C200M0 1LP243C200M0 1LP244C200M0		1412.10.011
	Unidirect. 1 lamp straight	TLP-1-040-GN-S-1 TLP-1-040-YN-S-1 TLP-1-040-NG-S-1 TLP-1-040-NY-S-1	1LP139S100M0 1LP149S100M0 1LP193S100M0 1LP194S100M0		1412.10.001
	Unidirect. 1 lamp curved	TLP-1-040-GN-C-1 TLP-1-040-YN-C-1 TLP-1-040-NG-C-1 TLP-1-040-NY-C-1	1LP139C100M0 1LP149C100M0 1LP193C100M0 1LP194C100M0		1412.10.001
TLP Stopbar	Unidirect. 1 lamp straight	TLP-1-040-RN-S-1 TLP-1-040-NR-S-1	1LP129S100M0 1LP192S100M0		1412.10.001

Note

Complete lights are delivered **without fixing hardware**. This hardware is delivered together with the mounting system (base or adapter ring), or can be ordered separately (refer to Fixing hardware kits section).

6.2.2 TLP Cover and optical Assembly Parts

In the table below you will find the TLP 8-inch cover and optical assembly parts and their availability as spare part or not; in the latter case, order the complete light (refer to Fixtures and main Assemblies of the TLP inset Light):

Table 6: Components of the TLP covers and optical assemblies

Cover & Optical assembly TLP components		
No.	**Part number**	**Description**
B2	Refer to the matrix in the INTEROPERABILITY for the correct part number.	Labyrinth gasket
C1	SP.010818	Prism gasket 1 window (10 pcs)
C1	SP.010809	Prism gasket 2 windows (10 pcs)
C1, C2, C3 and C5	SP.013036	TLP Prism kit Straight Bidirectional (color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013037	TLP Prism kit Straight Unidirectional (color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013038	TLP Prism kit Straight Stopbar (uni) (color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013039	TLP Prism kit Curved Bi (1 central lamp) (color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013041	TLP Prism kit Curved Left (1 side lamp) (color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013040	TLP Prism kit Curved Bi (2 lamps)(color filter, and lamp are not included)
C1, C2, C3 and C5	SP.013042	TLP Prism kit Curved Right (1 side lamp) (color filter, and lamp are not included)
C3	SP.010813	Flat seal (10 pcs)
C4	SP.010810	Dichroïc filter green (10 pcs)
C4	SP.010811	Dichroïc filter yellow (10 pcs)
C4	SP.010823	Dichroïc filter red (10 pcs)
C4	SP.4071.97.091	Blanking screen (10 pcs)
C6 = E3	SP.7100.10.125 +SP.7284.10.416	SCREW M4x14 DIN 7985-T-A2 (100 pcs) + Lockwasher M4 Stainless Steel - DIN 127B (100 pcs)
D1	SP.010816	Lamp fixing spring (10 pcs)
D2	SP.010699	Halogen lamp, 40W-6.6A (10 pcs)

6.2.3 TLP Cover and optical Assembly Parts

In the table below you will find the TLP 8" inner cover assembly components and their availability as spare part or not; in the latter case, order the complete inner cover assembly (refer to Fixtures and main Assemblies of the TLP inset Light section):

Table 7: Components of the TLP covers and optical assemblies

Inner Cover assembly TLP components		
No.	**Part number**	**Description**
E1	SP.010812	Gasket between top cover and inner cover (10 pcs)
E3 = C6	SP.7100.10.125	SCREW M4x14 DIN 7985-T-A2 (100 pcs)
E4		Heat resistant wire (only for 2-lamp version)

Table 7: Components of the TLP covers and optical assemblies (Continued)

Inner Cover assembly TLP components		
No.	**Part number**	**Description**
E5 + E7, no E6	1411.21.010	Terminal block assembly with fixing hardware and w/o cut-out
E5 + E7+ E6	1411.21.000	Terminal block assembly with fixing hardware and with film disc cut-out
E6	SP.010557	Film disc cut-out (optional) (10 pcs)
E9	SP.010869	Pressure release plug & O-ring for pressure release screw (10 pcs)
E10	SP.010762	F-range wire clamp (40 pcs)
E11	SP.7110.08.360	SCREW M4x10 DIN 7500CE-TX-A2 (40 pcs)
E12, E8	SP.013033	Kit FAA PLUG STYLE 6 2,5^2 L=400MM PTFE (5pcs)

6.3 Fixing hardware kits

In the table below you will find the fixing kits of 8" and 12" F-Range inset lights: The choice for hardware kit depends on several criteria : the used thread in the base (metric of UNC), the use of screws or studs and the base itself (refer to interoperability matrix)

Table 8: Fixing hardware kits of F-Range inset lights

METRIC FIXING HARDWARE KITS								
Fixing hardware kit			**Components**					
Description	**Part Number**	**7100.08.759 St.Steel Screw M10 X25**	**7150.53.320 St. Steel Nut M10**	**7150.53.330 St.St.Steel Self-locking Nut M10 H100**	**7150.53.335 St.St. Self-locking Nut M10 H80**	**7284.10.470 St. Steel Lock Washer M10**	**7284.70.345 Nylon Encap. Washer M10**	**4071.50.240 Metric Anti-Rotation Pin**
For mounting 8" inset lights on to 8" shallow bases or adapter rings								
Metric screw kit 8" (with anti-rotation pins)	1411.20.400	2				2		2
Metric nut kit 8"	1411.20.420		2			2		
Self-locking metric nut kit 8 (H100)"	1411.20.430			2				
Self - locking metric nut kit 8" (H80)	1411.20.435				2			
Metric screw kit 8" (Germany)	1411.20.441	2					2	

Table 8: Fixing hardware kits of F-Range inset lights (Continued)

METRIC FIXING HARDWARE KITS								
Fixing hardware kit		Components						
Description	Part Number	7100.08.759 St.Steel Screw M10 X25	7150.53.320 St. Steel Nut M10	7150.53.330 St.St.Steel Self-locking Nut M10 H100	7150.53.335 St.St. Self-locking Nut M10 H80	7284.10.470 St. Steel Lock Washer M10	7284.70.345 Nylon Encap. Washer M10	4071.50.240 Metric Anti-Rotation Pin
Metric screw kit 8" (w/o anti-rotation pins)	1411.20.522	2				2		
For mounting 12" inset lights or adapter rings on 12" shallow or deep bases								
Metric screw kit (France) 12"	1411.20.482	6				6		
Metric screw kit 12" (Germany)	1411.20.492	6					6	
Self-locking nut kit 12" (H100)	1411.20.500			6				
Self-locking metric nut kit 12" (H80)	1411.20.505				6			

Notes

1 **Note (1): HPI bases only accept Metric hardware**

UNC FIXING HARDWARE KITS							
Fixing hardware kit			Components				
Description	Part Number	7200.13.806 St. St. Screw 3/8" - 16 UNC	7284.10.470 St.Steel Lock Washer M10	4027.50.120 UNC Anti-Rotation Pin			
For mounting 8" inset lights on 8" shallow bases or adapter rings							
UNC screw kit 8"	1411.20.411	2	2	2			
For mounting 12" inset lights or adapter rings on 12" shallow or deep bases							
UNC screw kit 12"	1411.20.452	6	6				

6.4 Screws Overview

The table below gives for each screw used in this product, the reference on the exploded view, the type of screw, the tool to use and the torque.

Screws used in the TLP light

The table below gives for each screw used in this product , the reference on the exploded view, the type of screw, the tool to use and the torque.

Table 9: Screws and references

Screw	Tool	Torque
A1 (not supplied with the light) Screw FT.HEX M10 x 25, SST, Hex Head or Screw FT.HEX 3/8"-16UNC X7/8"	Socket hex 17mm or Socket hex 9/16"	Refer to the appendix, INTEROPERABILITY section.
C6 - 7100.10.125 SCREW M4x14 DIN 7985-T-A2	Torx20	2.5 Nm / 23 Lb.in
E3 - 7100.10.125 SCREW M4x14 DIN 7985-T-A2	Torx20	2.5 Nm / 23 Lb.in
E7, E11- 7100.08.360 - SCREW M4x10 DIN 7500CE-T-A2	Torx20	3.5 Nm / 31 Lb.in
E9- 4070.77.150 - Pressure release screw	1.6 x 8 Flat	2.5 Nm/ 23 Lb.in
Self-locking nut (M10)	Socket hex 17mm	Refer to the appendix, INTEROPERABILITY section.
Screws delivered for installation of adapter ring on deep base	Socket hex 17mm or Socket hex 9/16"	Refer to the appendix, INTEROPERABILITY section.

Appendix A: INTEROPERABILITY

ADB SAFEGATE Interoperability

Table 10: Interoperability matrix

Base type	Required O-ring	Bolt installation		Stud installation	
		Required dimension	Recommended torque	Required nut	Recommended torque
ADB 8" Eurobase; ADB 8" HPI; Adapter ring ADB 8" to 12"	White labyrinth gasket 4072.76.560 / 10 pcs 4072.76.570 / 100 pcs	1411.20.522 Metric screw kit 25 mm	21 Nm + Loctite 2701	1411.20.430 Self-locking nut kit H100	21 Nm + Loctite 2701
RELIANCE base 8" 135 mm;	White labyrinth gasket 4072.76.560 / 10 pcs 4072.76.570 / 100 pcs	1411.20.522 Metric screw kit 25 mm	40 Nm no Loctite	1411.20.435 Self-locking nut kit H80	35 Nm no Loctite
ERNI 8" EE08-150; ERNI 8" ED08-133	Red labyrinth gasket 4072.76.580 / 10 pcs 4072.76.590 / 100 pcs	1411.20.522 Metric screw kit 25 mm	40 Nm no Loctite	1411.20.435 Self-locking nut kit H80	35 Nm no Loctite
THORN 8" 100 mm; THORN 8" 133 mm	Grey o-ring SGE.SP24522 / 10 pcs SGE.SP24525 / 100 pcs	1411.20.522 Metric screw kit 25 mm	40 Nm no Loctite	1411.20.435 Self-locking nut kit H80	35 Nm no Loctite
THORN 8" MK2 133 mm	White labyrinth gasket 4072.76.560 / 10 pcs 4072.76.570 / 100 pcs	1411.20.522 Metric screw kit 25 mm	40 Nm no Loctite	1411.20.435 Self-locking nut kit H80	35 Nm no Loctite
IDM 6494 120 mm; Adapter ring SG / Thorn / ID 8" to 12"	White labyrinth gasket 4072.76.560 / 10 pcs 4072.76.570 / 100 pcs	1411.20.522 Metric screw kit 25 mm	40 Nm no Loctite	1411.20.430 Self-locking nut kit H100	35 Nm no Loctite

Note

Contact your ADB SAFEGATE Sales representative for more information.

Appendix B: POWER TABLE

TLP 8-inch Fixture – Power Table

Fixture type	Fixture load	Isolation transformer			CCR load
		Rating	Loss	Efficiency	
TLP (unidirectional, inset)	40VA	45 W	7 VA	0.85	47 VA
TLP (bidirectional, inset, 1 lamp)	40 VA	45 W	7 VA	0.85	47 VA
TLP (bidirectional, inset, 2 lamps)	2 x 40 VA	2 x 45 W	2 x 7 VA	0.85	2 x 47 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 secondary transformer depends on the supplier of secondary transformers.

For more information about the product, including manuals and certifications, please see our Product Center on the ADB SAFEGATE website: www.adbsafegate.com.

Appendix C: 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)

For example for 1km 2.5 mm^2 copper cond., the resistance R is calculated like this:

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:

- for a 2.5 mm2 Cu-wire (2 conductors) : 0.6 W / m
- for a 4 mm2 Cu-wire (2 conductors) : 0.4 W / m
- for a 6 mm2 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.

NOTICE

Secondary cable lengths should not exceed 100 m.

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.

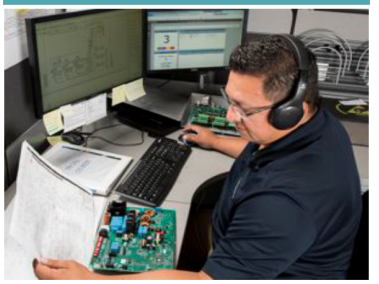
For a primary cable of e. g. 100 m of 6mm^2 CU-wire, 100 m * 0,12 W / m = 12 W equals the additional loss to be taken into account.

Appendix D: 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

D.1 Telephoning Customer Service

When you call for technical assistance, you should have the appropriate product documentation at hand. Be prepared to give the following information:

- To what product does the question relate?
- The exact wording of any messages that appeared on the Operator Interface screens (Computer System related assistance only).
- What happened, and what you were doing before and during when the problem occurred.
- How have you tried to solve the problem.

D.2 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.

D.3 Disposal

Tip

You can also contact the customer service team to get information on adequate disposal options or recycling of electrical devices delivered by .

NOTICE

Electrical equipment that is not in use or needed anymore, must be disposed according to the applicable legal environmental regulations. Electrical must not be disposed with household waste. Follow the applicable regulations established by the responsible local authorities. Contact the responsible local authorities for more information on local waste disposal sites or recycling centers.

D.4 Recycling

D.4.1 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.

D.4.2 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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