8-inch Inset AD-light Type DRC / DTZ

User Manual

AM.03.510e, Rev. 2.1, 2021/12/02

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 About this manual

The manual shows the information necessary to:

- install
- carry out maintenance
- carry out troubleshooting

on the DRC / DTZ light, in the manual referred to as the fixture.

2.1 How to work with the manual

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

2.2 Record of changes

Edition	Editor	Check	Date	Description
1.0	BUG	AHU, TP, VDV	04/2010	New
1.1	MA	MA	12/2010	Update guarantee and company addresses
1.2	BUG	LM	08/2011	New codes for spare parts - infos on adhesives
1.3	BUG	LM,JBE, GMO	09/2012	New codes for spare parts, monitoring option added.
1.4	BUG	HVE, MA, AHU, LM, JBU	04/2013	"Introduction of Torx screws with pre-applied Loctite, correction of code numbers"
1.5	MR	MA	05/2013	Modification of the guarantee
1.6	BUG	MA	07/2015	• Warning on photobiological safety • Correction spare part number
2.0	BUG	WGR, LM, MA, AHU, JBU	11/2015	• Addition of RETILS version • New codes for spare parts

2.3 Abbreviations and terms

Term or abbreviation	Description
AGL	Airfield Ground Lighting
C/L	Centre Line
DRC	AD-light Runway Centre Line light

Term or abbreviation	Description
DTC	AD-light Taxiway Centre Line light Curved section
DTS	AD-light Taxiway Centre Line light Straight section
DTZ	AD-light Touchdown Zone light
FAA	Federal Aviation Administration
Fastener	Generic term for an item that holds the fixture together or that holds the fixture on its mounting support, e.g. nut, bolt, washer
FOD	Foreign Object Debris
HPI	Commercial name for an ADB type of 8" shallow base
ICAO	International Civil Aviation Organisation
IEC	International Electrical Committee
ISO	International Standardization Organisation
Mounting support	A piece of equipment permanently installed in the ground, on which the fixture is installed. It can be a shallow or deep base, with or without adapter ring.
PCB	Printed Circuit Board
Toe-in	The toe-in angle is the angle the beam of light makes with the longitudinal axis of the runway or taxiway.
UNC	Unified Thread Standard

2.4 Icons used in the manual

For all WARNING symbols, see § 2 Safety.

CAUTION
Can cause damage to the equipment.

NOTE
Gives further information.

TIP
Gives information on how to carry out or to understand the instruction or information more easily.

3.0 Description

3.1 Overview

You can find a complete overview of the fixture in all available versions in chapter 7 .

3.2 Intended use

The ADB runway inset light types DRC / DTZ are intended for:

- DRC: runway centre line in category I, II and III
- DRC: Rapid Exit Taxiway Indicator Lights System (RETILS) in category I, II and III
- DTZ: touchdown zone in category II and III

3.3 Monitoring (option)

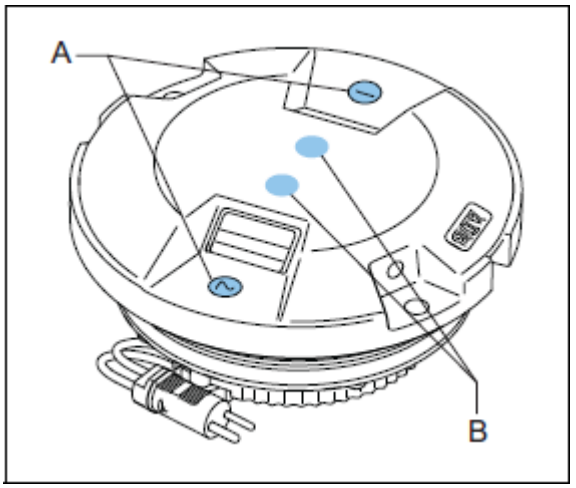
The monitoring option is available. You can use the monitoring option with the Lamp Fault Detection of Constant Current Regulators or with Individual Light Control and Monitoring Systems (ILCMS) that check the status of the light by performing a continuity test on the secondary of the ILCMS remote module. The monitoring option does a check on the light. In case of a failure of the light, the failure is detected by the electronics embedded in the light.

WARNING

Ask your local representative for the compatibility of the ILCMS system and the light.

3.4 Identification on the fixture

3.4.1 Top without toe-in

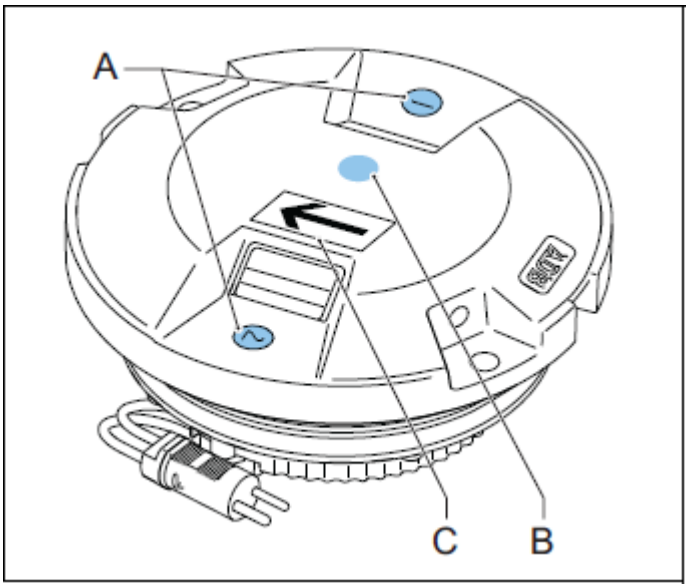


- An embossing (A) 1 and 2 indicates side 1 and 2; A
- Coloured dots (B) at delivery give an indication of the colour of the light at that side.

3.4.2 Top with toe-in

When the fixture has a built-in toe-in:

- An embossing (A) 1 and 2 indicates side 1 A and 2;
- A coloured dot (B) at delivery gives an indication of the colour of the light;
- An arrow (C) shows the direction of the toe-in.

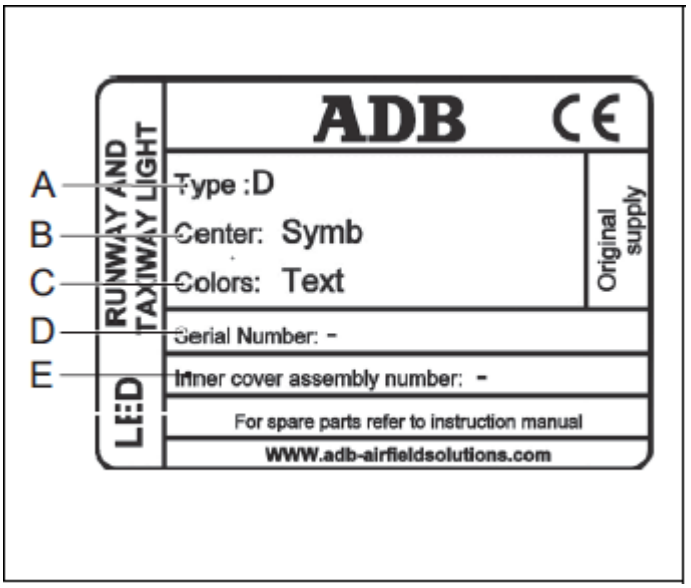


3.4.3 Bottom

A type plate, where:

- **A** : the fixture code.
- **B** : the toe-in:
  - ↑: points in the direction of the centreline or the centre of the curve.A
  - •: no toe-in.
- **C** : the colour of the light at side 1 and 2.
  - E.g. G/Y means green at side 1,

    Yellow at side 2
- **D** : Serial number.
- **E** : Article number of the inner cover assy.



Note

- For an overview of all fixture colour codes see § Fixture code schema .
- If you modify the fixture, it is your responsibility to update the identification. ADB can supply modification stickers: see § Exploded view and components .

4.0 Install and replace the complete fixture

The procedure only gives information on how to replace the complete fixture. For information on how to replace parts of the fixture, see chapter 5 .

4.1 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.

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.

4.2 Store

Store the fixture in its original packing in a protected area.

Indoor storage:

- Storage temperature: -55°C to +55°C.
- Humidity: up to 100% non condensing.

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

4.3 Install

WARNING

- Fasteners:
  - Only use fasteners of the same type as the one originally supplied with the mounting support.
  - Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench and apply the recommended adhesive type. See § 7.3.3.
  - 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 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.
- Make sure the power is OFF when you install or remove any fixture.

CAUTION

Make sure that:

- 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.

Parts:

- Fasteners of the mounting support

Tools:

- Adhesive A. See § Standard toolkit
- Cleaning tap for blind holes (preferably a tap with a right spiral groove)
- Compressed air blower with dry, oil-free air

Prepare

Prepare

1. Make sure that the fixture is completely assembled.
2. Make sure that the fixture is operationally tested. See § Fixture operation test .
3. Make sure a new labyrinth gasket (A) is installed.
4. Make sure that the contact surfaces of the fixture with the mounting support and the gaskets are clean and smooth.
5. With the cleaning tap for blind holes, clean all fixation holes of the mounting support.
6. Make sure that all remains of adhesive are removed from the fixation holes.A
7. With the compressed air blower, blow out all the fixation holes of the mounting support.

Fixture with toe-in only

8. Make sure the arrow (A) points to the centre of the runway.

CAUTION

A toe-in right (B) must be at the left side of the runway (C). A toe-in left (D) must be at the right side of the runway.

Install

Lubricate and connect

9. Lubricate the labyrinth gasket (A) with water.

Note
To facilitate the use, add some soap to the water.

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

10. Apply adhesive on the first three threads of the threaded holes in the mounting support. Use adhesive A.
11. Connect the plug (B) to the receptacle.

Note
For a fixture with two plugs, INPUT 1 feeds side 1 and INPUT 2 feeds side 2.

Install

12. Carefully move the fixture (A) vertically into the mounting support (B). Make sure that you do not pinch the cable leads.
13. Check if the fixture fits correctly in the mounting support.
14. Make sure the dents of the washers (D) face upwards.
15. Gradually tighten the fasteners of the mounting support (C). See § Screws (torque).

CAUTION
Do not use the fasteners to force the fixture in the mounting support. If it happens at all, the threaded hole in the mounting support will be damaged.

4.4 Remove

WARNING
Make sure the power is OFF when you install or remove any fixture.

CAUTION
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
The instructions show only the lifting tool (on wheels).

Parts:

- Complete fixture set. See chapter 7 .

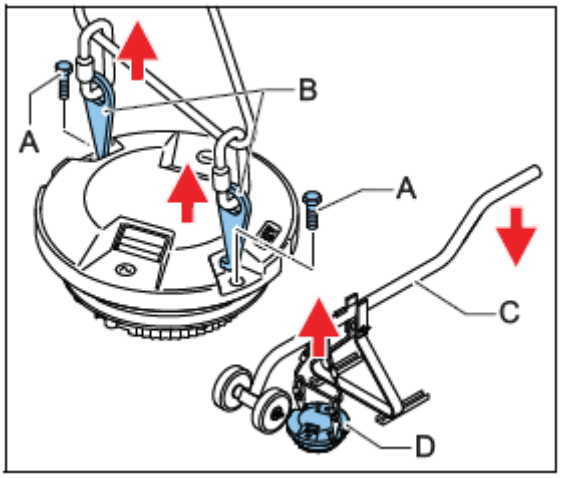
Tools:

- Lifting tool (on wheels). See § Additional accessories .

Install the lifting tool

1. Remove the fasteners of the mounting support (A).
2. Dispose of the fasteners of the mounting support.
3. Fit the wigs of the lifting tool (B) in the holes of the cover.
4. Push down the handle (C).

Note
If you use the basic lifting tool C assembly for inset light tsee § Additional accessories , tool D), make sure you remove the fixture vertically.



5. Put the fixture (D) aside the mounting support.
   Remove
6. Disconnect the plug (A).
7. Remove the labyrinth gasket (B).
8. Dispose of the labyrinth gasket.
9. Install the new fixture. See § Install .

5.0 Maintenance

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, chapter 45 , section 4 .

WARNING

Do not carry out any action on the fixture unless you have read and understood all the information in the chapter 2

WARNING

Make sure that the power to the series circuit is OFF when you carry out maintenance.

5.1 Preventive maintenance schedule

Frequency	Check	Action

Daily	For low light output according to ICAO annex 14	• If the prism is dirty, clean the prism.
		• If the prism is not dirty,
		  • replace the fixture. See chapter 4
		  • and replace the faulty component in the workshop. See § Troubleshooting guide .

Monthly	Visually for condensation on inner side of the prisms (presence of moisture or water)	• Replace the fixture. See chapter 4 . • and replace the faulty component in the workshop. See chapter 6 .
	For failed fixture	• Replace the fixture. See chapter 4 . • and replace the faulty component in the workshop. See chapter 6 .
Half-yearly	For presence of water in the mounting support	• Remove all water from the mounting support. • Dry all parts of the fixture. • Replace all corroded parts. • Remove the cause of the water ingress.
After snow removal	For damaged fixture.	• Replace the total fixture. See chapter 4 . • Use a power broom to remove the snow near the fixture, if practical. • Follow the recommended snow removal techniques described in FAA AC 150/5200-30 to avoid or at least to reduce damage to the fixture.

5.2 Part replacement

WARNING

- **Only use fasteners of the same type as the one originally supplied with the fixture.**
- **Always tighten the fasteners to the recommended torque. Use a calibrated torque wrench.**

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.

CAUTION

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

For the correct replacement parts, see § Fixture code schema and § Exploded view and components .

Note

For the correct standard tool kit, see § Standard toolkit .

5.2.1 How to replace parts - general procedure

1. Remove the fixture. See § Remove .
2. Replace the part.
   - Upper cover assy. See § Replace upper cover assy .
   - Prism. See § Replace prism .
   - Optical assy. See § Replace optical assy .
   - Inner cover assy. See § Replace inner cover assy .
   - Repair a faulty light. See § Repair a faulty light (monitoring option) (for monitoring option only).
   - Replace the fuse resistor. See § Replace the fuse resistor (monitoring option) (for monitoring option only).
   - Cable lead. See § Replace cable lead .
   - Labyrinth gasket. See § Replace labyrinth gasket .
3. Make sure that a waterproof test is carried out. See § Waterproof test .
4. Carry out a fixture operation test. See § Fixture operation test .
5. Install the fixture. See § Install .

5.2.2 Replace upper cover assy

CAUTION

Always dispose of the gaskets and the screws when you disassemble the upper cover assy.

Parts

- Upper cover assy
- Inner cover screws
- Gasket of the pressure release screw

Tools:

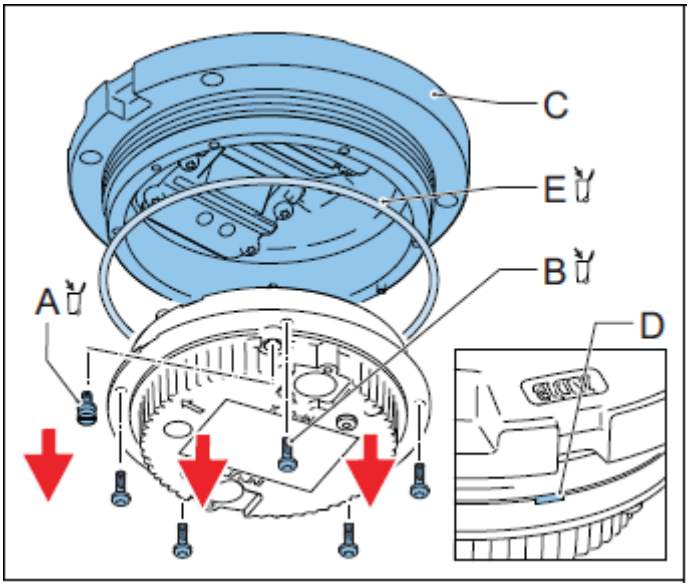
- Lubricant A. See § Standard toolkit .

Disassemble

1. Remove the pressure release screw (A).
2. Dispose of the gasket of the pressure release screw.
3. Remove the inner cover screws (B).
4. Dispose of the inner cover screws.
5. Remove the upper cover assy (C).

Note
Puta screwdriver in the notches D

6. Remove the gasket (E).
7. Dispose of the gasket.



Assemble

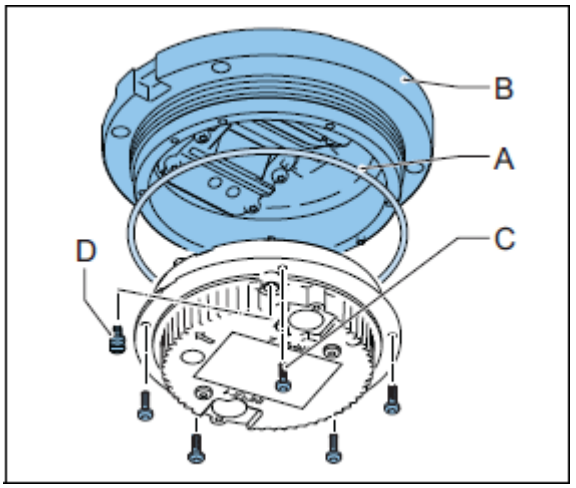
Prepare

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

Assemble

10. Lubricate the new gaskets. *Use lubricant A.*
    - Gasket (A);
    - Gasket of the pressure release screw (D);
11. Install the new gasket (A).

12. Install the upper cover assy (B).
13. Install the new inner cover screws (C). See § Screws (torque).
14. Carry out a waterproof test. See § Waterproof test .
15. Install the new gasket of the pressure release screw (D).
16. Install the pressure release screw. See § Screws (torque).



5.2.3 Replace prism

CAUTION

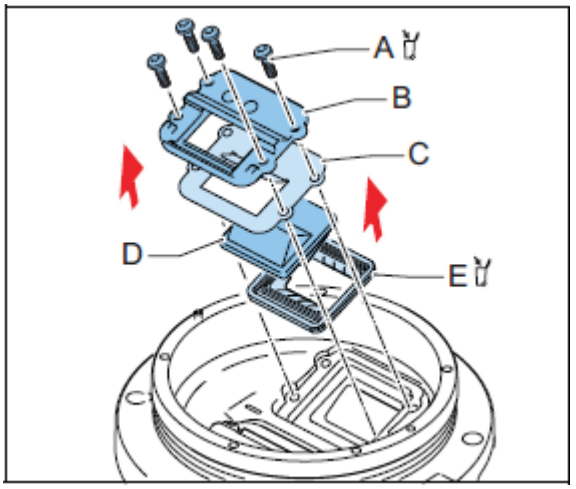
Always dispose of the gaskets and the screws when you disassemble the prism.

Parts

- Prism
- Prism gasket
- Prism screws.

Disassemble

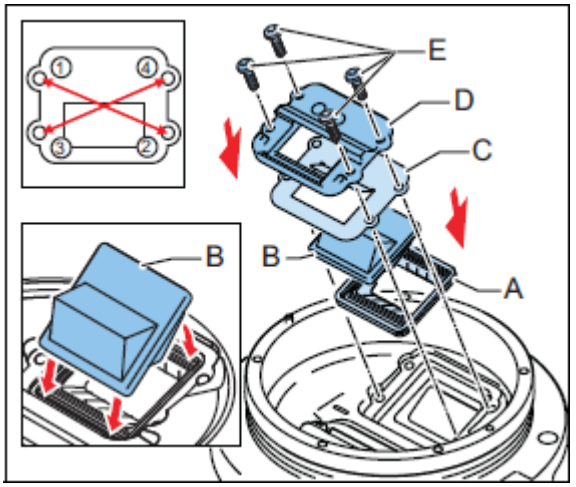
1. Remove the upper cover assy. See § Replace upper cover assy .
2. Remove the prism screws (A).
3. Dispose of the prism screws.
4. Remove the prism bracket (B).
5. Remove the prism protection plate (C).
6. Remove the prism (D).
7. Remove the prism gasket (E)
8. Dispose of the prism gasket.



Assemble

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 (A).
12. Install a new prism (B).
    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 protection plate (C).
17. Install the prism bracket (D).
18. Install but do not tighten the new prism screws (E).
19. Tighten the prism screws crosswise. See § Screws (torque).
20. Install the upper cover assy. See § Replace upper cover assy .



5.2.4 Replace optical assy

CAUTION

Always dispose of the gaskets and the screws when you disassemble the optical assy.

Parts

- Optical assy
- Optical assy screws.
- Gasket for optical assy
- Gasket of the pressure release screw

Tools

- Lubricant A. See § Standard toolkit .

Disassemble

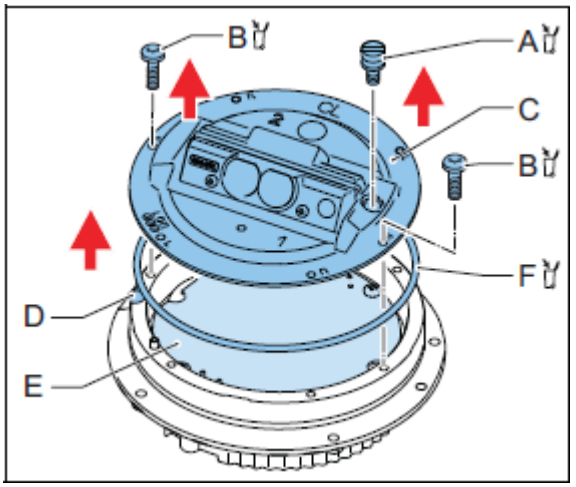
1. Remove the upper cover assy. See § Replace upper cover assy .
2. Remove the pressure release screw (A).
3. Dispose of the gasket of the pressure release screw.
4. Remove the optical assy screws (B).
5. Dispose of the optical assy screws.
6. Remove the optical assy (C).

CAUTION

The optical assy is connected to the PCB. If you pull too hard, you can the demaged thePCB

Note

Put a screwdriver in the notches (D).

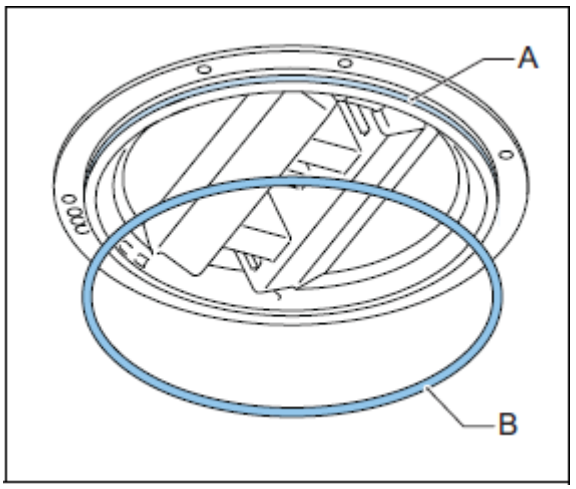


7. Disconnect the wires from the optical assy to the PCB (E). *Pull the wires, not the connector.*
8. Remove the gasket (F).
9. Dispose of the gasket.

AssemblePrepare

10. Make sure that all parts are clean.

11. Pay special attention to the part where the gasket must fit (A).
12. Lubricate the new gasket (B).
    Use lubricant A.
13. Install the new gasket.

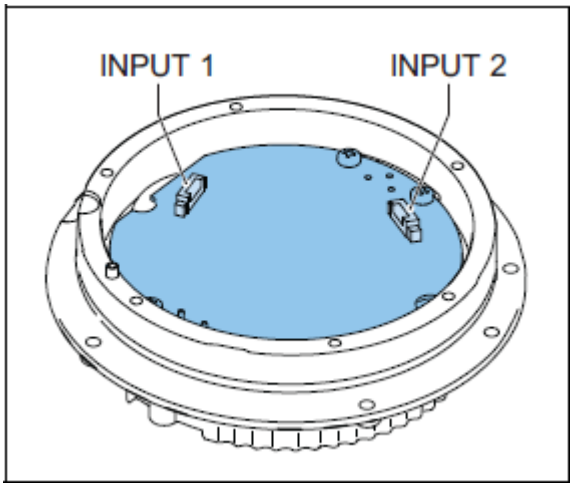


Connect to PCB

14. Connect the optical assy to input 1 and 2 on the PCB, if applicable.

Note

- INPUT 1 and INPUT 2 are labelled underneath the connector.
- When you have an unidirectional light, connect the optical assy to connector INPUT1.



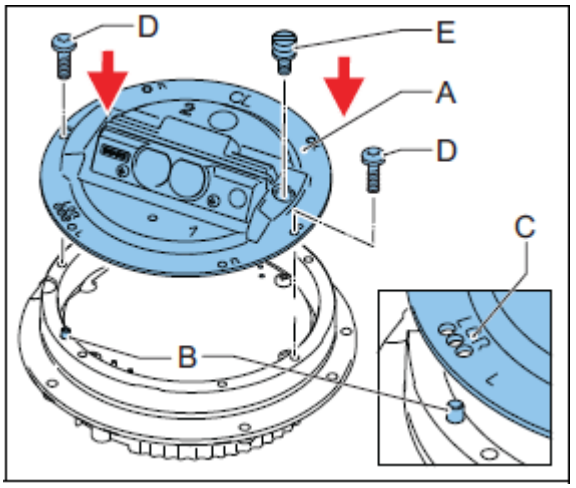
Assemble

15. Install the optical assy (A).

Note

Make sure that the locating pin (B) is set to the correct hole (C) of the optical assy. See also § Overview .

- Mark 'L' : toe-in left;
- Mark 'O' : no toe-in;
- Mark 'R' : Toe-in right.



16. Install the new optical assy screws (D). See § Screws (torque).
17. Lubricate the new gasket of the pressure release screw. *Use lubricant A.*
18. Install a new gasket on the pressure release screw (E).
19. Install the pressure release screw. See § Screws (torque).
20. Install the upper cover assy. See § Replace upper cover assy .

5.2.5 Replace inner cover assy

Parts

- Inner cover assy

Disassemble

1. Remove the optical assy. See § Replace optical assy .

Assemble

2. With a new inner cover assy, assemble the optical assy. See § Replace optical assy .

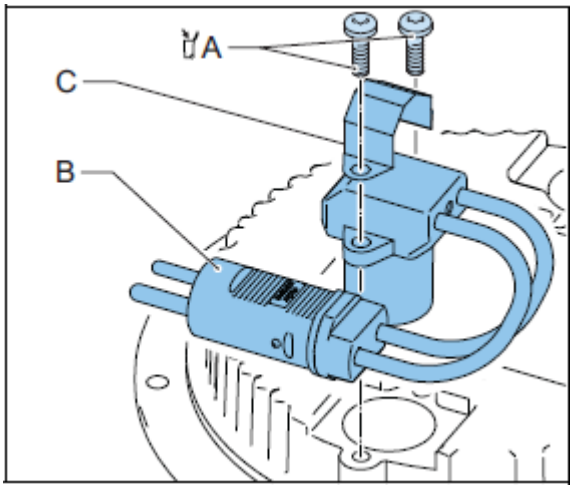
5.2.6 Replace cable lead

Parts

- Cable lead
- Cable lead screws.
- Plug bracket

Disassemble

1. Remove the cable lead screws (A).
2. Dispose of the cable lead screws.
3. Remove the plug bracket (C).
4. Remove the cable lead (B).



Assemble

5. Install the new cable lead.
6. Install the plug bracket.
7. Install the new cable lead screws. See § Screws (torque).

5.2.7 Replace labyrinth gasket

CAUTION

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

Note

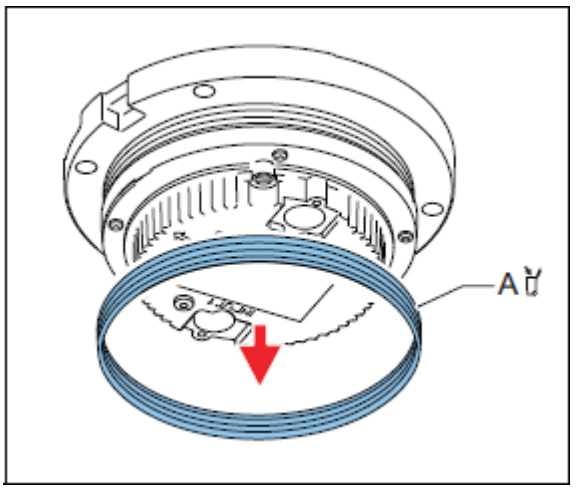
Only valid for 8"version lights.

Parts

- Labyrinth gasket

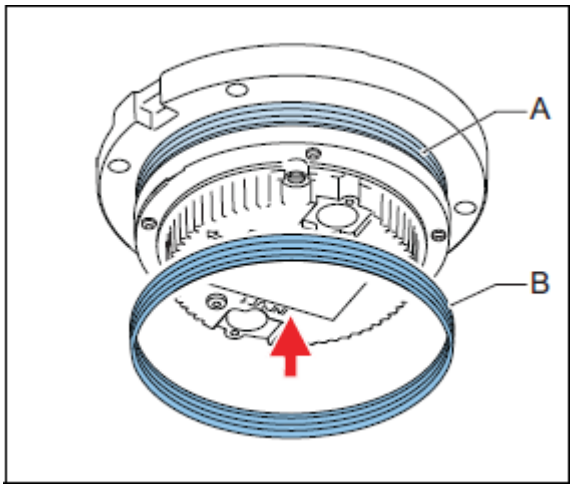
Disassemble

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



Assemble

3. Make sure that all parts are clean.
4. Pay special attention to the part where the labyrinth gasket must fit (A).
5. Install the new labyrinth gasket (B).



5.2.8 Repair a faulty light (monitoring option)

Disassemble

1. Remove the upper cover assembly. See § Replace upper cover assy .
2. Remove the optical assembly. See § Replace optical assy .
3. Replace the fuse resistors. See § Replace the fuse resistor (monitoring option) .

   Connect
4. Take a new optical assy.
5. Connect the PCB. See § Replace optical assy . *Do not fasten the optical assy.*
6. Do a fixture operation test. See § Fixture operation test .
7. If the fixture does not turn on:
8. Dispose of the used inner cover assy.
9. Take a new inner cover assy with new fuse resitors.
10. Connect the PCB. See § Replace optical assy . *Do not fasten the optical assy.*
11. Do a fixture operation test. See § Fixture operation test .
12. If the fixture does not turn on, contact ADB.

    Assemble
13. Assemble the optical assy. See § Replace optical assy .
14. Assemble the upper cover assy. See § Replace upper cover assy .
15. Dispose the used optical assembly.

5.2.9 Replace the fuse resistor (monitoring option)

Parts

- Fuse resistor kit. See § DRC, DTZ Spare Parts .

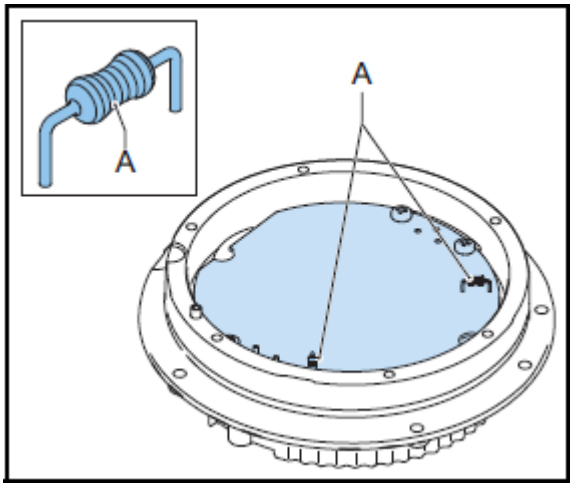
  Tools
- Pliers

Note

- Bidirectional lights have two fuse resistors.
- Undirectional lights have only one fuse resistor.
- Fuse resistors are located on the PCB of the inner cover assy
- 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. Dispose of the old fuse resistor.
3. Take the new fuse resistor from the kit.
4. Place the new fuse resistor in the socket.



Assemble

5. Insert the legs of the new fuse resistor in the socket.

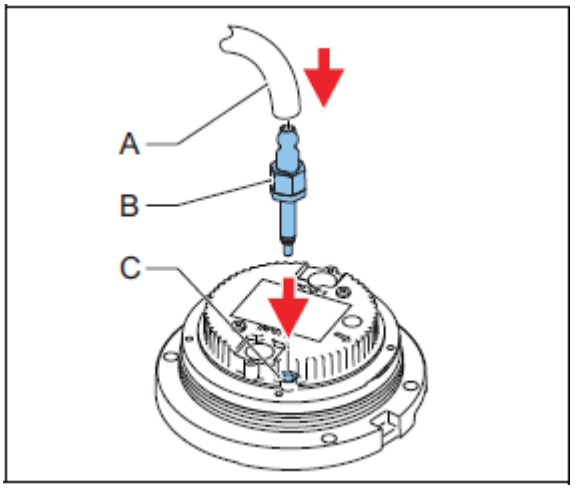
5.3 Waterproof test

Tools

- Air hose with dry air
- Water container with water
- Waterproof test adapter (tool A). See § Additional accessories .

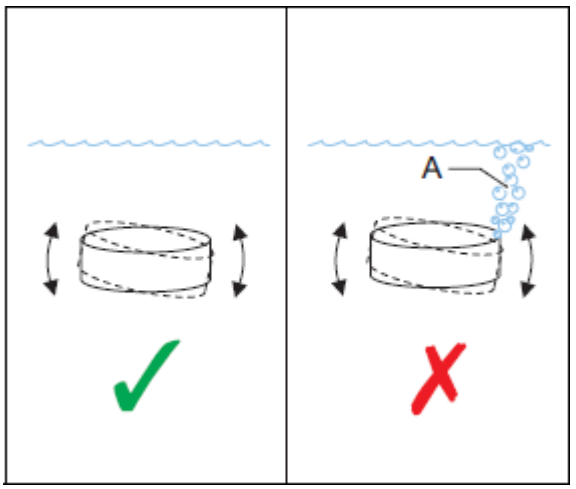
Connect

1. Connect the air hose (A) to the waterproof test adapter (B).
2. Connect the waterproof test adapter to the hole of the pressure release valve (C).
3. Apply 20 to 30 kPa (0.2 - 0.3 Bar) over pressure on the air hose.



Test

4. Submerge the fixture in water and turn regularly.
5. If you still see a stream of bubbles (A) after three minutes of submersion there is a leak.
6. Remove the fixture from the water.
7. Disconnect the waterproof test adapter.
8. Dry the fixture.



In case of a leak

9. Locate the leak source.
10. Replace the gasket or part that causes the leak.

> **Note**
> Also check contact surfaces for any scratches, corrosion or other damage.

11. Repeat the waterproof test.

5.4 Fixture operation test

Tools

- FAA or IEC series transformer, powered from a FAA or IEC constant current generator

Note

The power of the series transformer shall not exceed 200 W, for versions with the monitoring option.

1. Connect the fixture to the transformer
2. At this moment, do not connect a remote communication unit between the fixture and the transformer.
3. Set the step of the constant current generator to 6.6 A.
4. Check if the light works properly for 10 s.
5. Turn OFF the constant current generator.
6. If the fixture did not work or has switched off before the end of the test time, see § Troubleshooting guide .

6.0 Troubleshooting

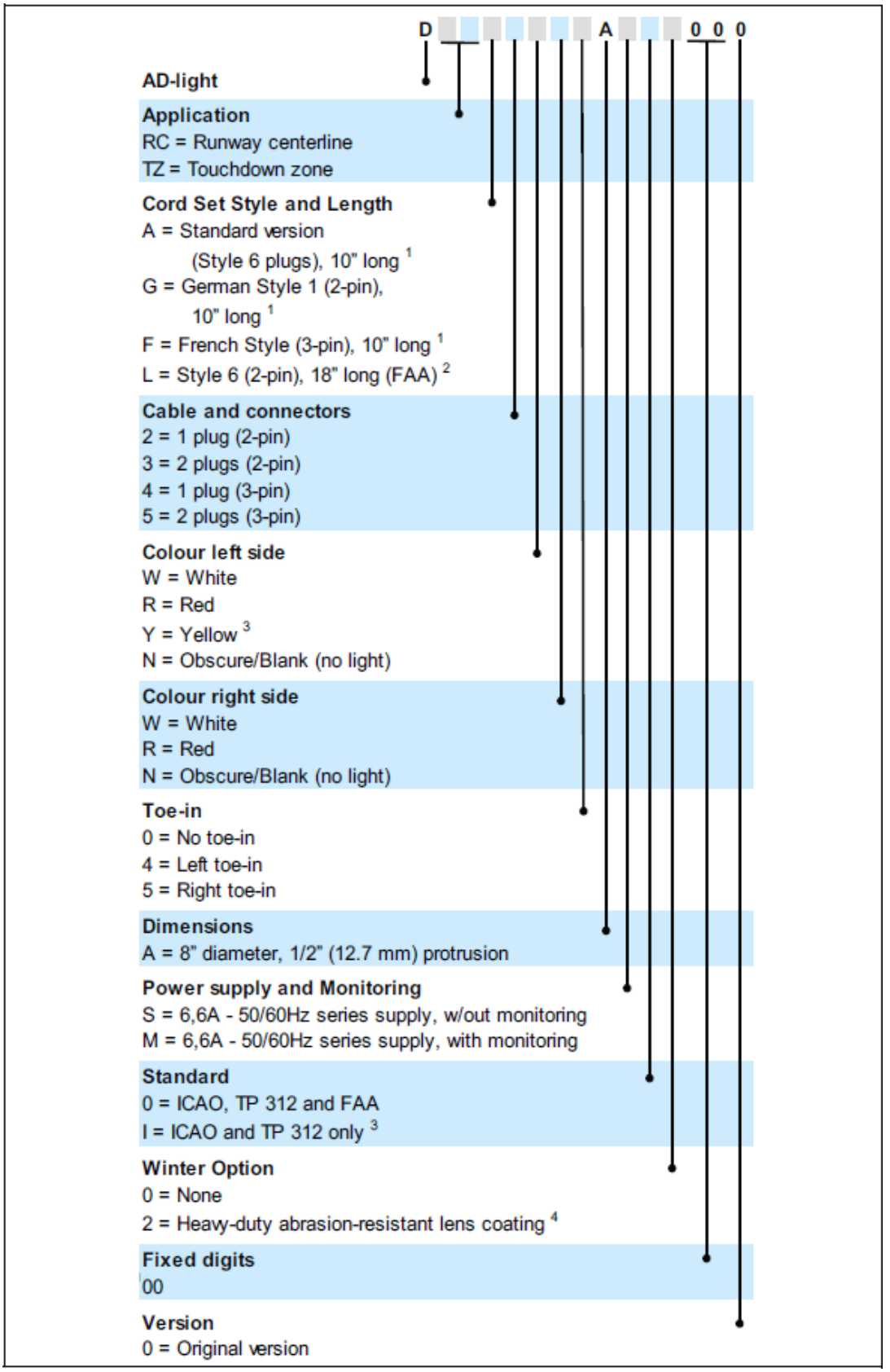
6.1 Troubleshooting guide

Table 1: Table: 6.1 Troubleshooting guide

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

7.0 Technical data

7.1 Fixture code schema



Ordering code notes

[1] Fixture with 10" cord sets are for installation on shallow bases.

[2] Fixtures with 18" cord sets are for installation on deep base cans.

[3] To be used for RETILS application.

[4] Typically used for intensive winter service where sand is applied to runways and rotating brushes are used.

In the example **DRCA2WR0AS00000:**

- D: AD-light
- RC: Runway Centreline
- A: Standard version
- 2: One 2-pole plug
- W: Colour 1 is white
- R: Colour 2 is red
- 0: No toe-in
- A: 8" diameter
- S: 6,6A, without monitoring
- 0: Compliant to ICAO and FAA
- 0: No winter option
- 0: Fixed digit
- 0: Fixed digit
- 0: Original version

7.2 Hardware kits

Note
HPI bases only accept metric fasteners.

Metric fasteners kits

To install 8" inset lights on ADB 8" mounting supports.

Hardware kit		**Components**					
Description	**ADB Part number**	**7100.08.759 Stainless steel screw M10 X25**	**7150.53.320 Stainless steel nut M10**	**7156.53.330 Stainless steel self locking nut M10**	**7284.10.470 Stainless steel lock washer M10**	**7284.70.345 Nylon encapsulated washer M10**	**4071.50.240 Metric anti-rotation pin**
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"	1411.20.430			2			
Metric screw kit 8" (Germany)	1411.20.441	2				2	
Metric screw kit 8" (without anti-rotation pins	1411.20.522	2			2		

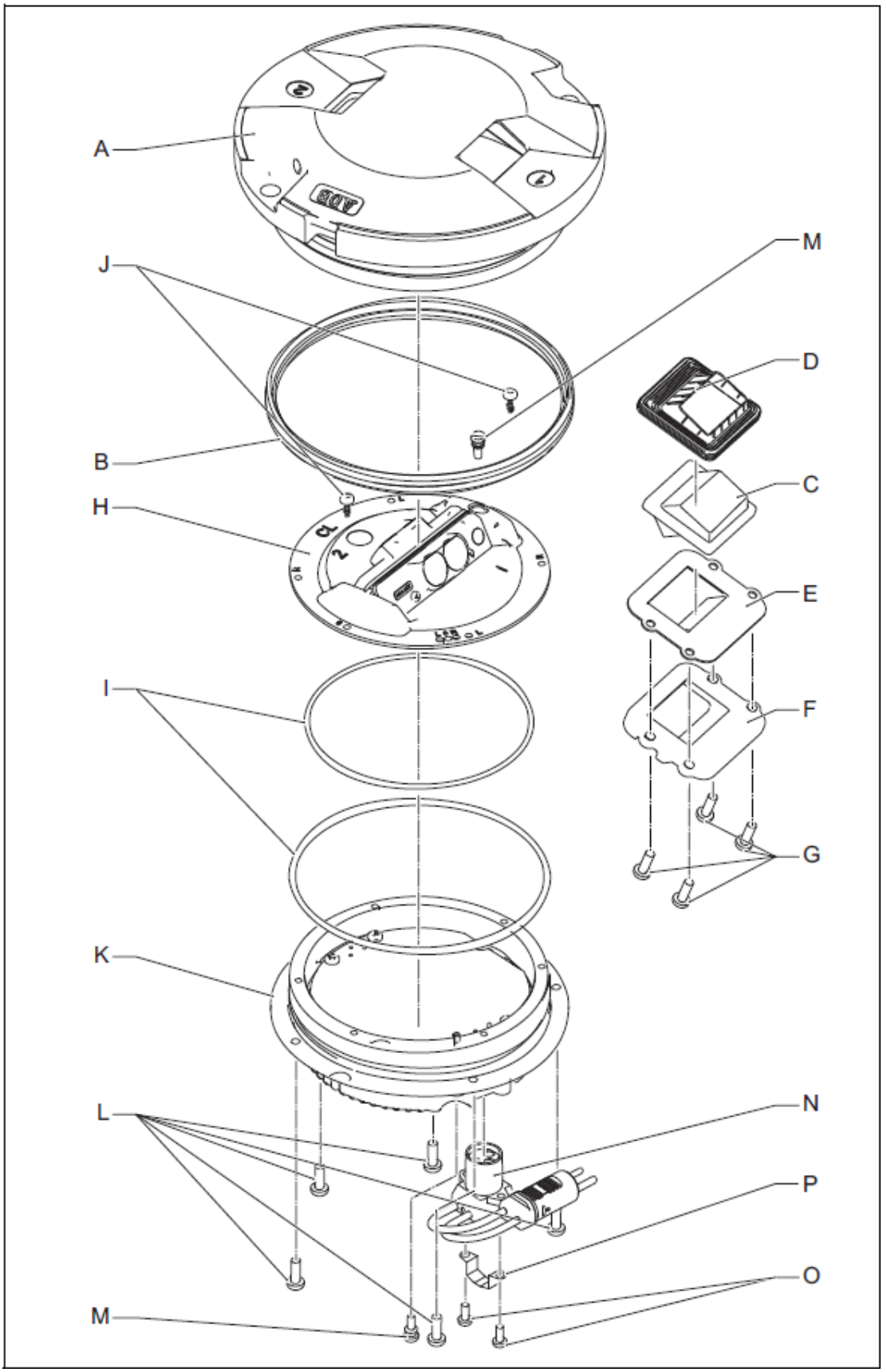
UNC fasteners kit

To install 8" inset lights on ADB 8" mounting supports.

Hardware kit		Components		
Description	**ADB Part number**	**7200.13.806 Stainless steel screw 3/8" - 16 UNC**	**7284.10.470 Stainless steel lock washer M10**	**4071.50.120 UNC anti-rotation pin**
UNC screw kit 8"	1411.20.411	2	2	2

7.3 Exploded view and components

7.3.1 Exploded view



7.3.2 DRC, DTZ Spare Parts

	Components		Versions	DRC	DTZ
A	Upper cover assy (includes metal cover, prisms, prism gaskets, prism protection plates, prism screws and prism brackets)		Unidirectional, window 1	4072.50.920	4072.50.920
			Unidirectional, window 2	4072.50.910	-
			Bidirectional	4072.50.900	-
B	Labyrinth gasket (10 pcs)			4072.76.560	4072.76.560
	Labyrinth gasket (100 pcs)			4072.76.570	4072.76.570
C	Prism (10 pcs)		Straight sections	SP.4072.18.336	SP.4072.18.336
D	Prism gasket (10 pcs)			SP.4072.18.363	SP.4072.18.363
E	Prism protection plate (10 pcs)			SP.4072.18.380	SP.4072.18.380
F	Prism bracket (10 pcs)			SP.4072.18.350	SP.4072.18.350
H	Optical assy		Red / Red	4072.52.020	-
			Red / Clear	4072.52.040	-
			Red / Blank	4072.52.050	-
			Clear / Red	4072.52.920	-
			Clear / Clear	4072.52.030	-
			Clear / Blank	4072.24.930	4072.24.930
			Blank / Red	4072.52.070	-
			Blank / Clear	4072.52.060	-
			Yellow / Blank	4072.62.080	-
I	O-ring gasket		For optical assy (100 pcs)	SP.7080.90.295	SP.7080.90.295
			For inner cover (100 pcs)	SP.7080.90.310	SP.7080.90.310
K	Inner cover assy without monitoring	1 input	For unidirectional light	4072.24.960	4072.24.960
			For bidirectional light	4072.25.100	-
		2 inputs	For bidirectional light	4072.25.200	-
K	Inner cover assy with monitoring	1 input	For unidirectional light	4072.25.120	4072.25.120
			For bidirectional light	4072.25.230	-
		2 inputs	For bidirectional light	4072.25.240	-
N	Cable lead		With Style 6 2-pole plug (10 pcs)	SP.4072.24.951	SP.4072.24.951
			With Style 1 2-pole plug (German version) (10 pcs)	SP.4072.24.731	SP.4072.24.731
			With flat 3-pole plug (French version) (10 pcs)	SP.4072.40.370	SP.4072.40.370
			18" long, with Style 6 2-pole plug (10 pcs)	SP.4072.42.350	SP.4072.42.350
	Fuse resistor kit (20 resistors)		For lights with monitoring option	6132.00.250	6132.00.250
P	Plug bracket (10 pcs)			SP.4072.42.380	SP.4072.42.380
	Modification sticker (10 pcs)			SP.4072.27.810	SP.4072.27.810

7.3.3 Screws

Screw type	Name	Details	Spare part number	Torque (Nm)	Adhesive type
G	Prism screws (100 pcs)	SCREW M5x14 DIN 7985-T-A2-LOCK 2045	SP.7100.10.211	4.0	Not required
J	Optical assy screws (100 pcs)	SCREW M4x10 DIN 7985-T-A2-LOCK 2045	SP.7100.10.101	2.5	Not required
L	Inner cover screws (100 pcs)	SCREW M5x14 DIN 7985-T-A2-LOCK 2045	SP.7100.10.211	3.5	Not required
M	Pressure release screw assy (10 pcs) Pressure release gasket (10 pcs)	(Screw + gasket)	SP.4072.24.940	2.5	Not required
		Gasket	SP.7080.90.012		
O	Cable lead screws (100 pcs)	SCREW M4x10 DIN 7985-T-A2-LOCK 2045	SP.7100.10.101	2.5	Not required
	Fasteners of the mounting support (not supplied with the fixture)	Screw FT.HEX M10x25, SST, Hex Head or Screw FT.HEX 3/8" - 16UNCx7/8"		21-23	A

Notes
1) See § Standard toolkit .

7.4 Standard toolkit

	Details	Article number
	Complete tool kit. *The toolkist consists of the components listed below* .	1411.19.421
	Tool case	6169.01.007
Adhesive A	Loctite 2701	7870.05.130
Adhesive B 1)	Loctite 222	7870.05.140
Adhesive C 1)	Loctite 638	7870.05.097
Adhesive D 1)	Loctite 243	7870.05.160
Lubricant A	Vacuum silicone grease (50 g) to install O-ring gaskets	7850.42.220
Lubricant B	Molykote HP870 Inerta (100 g) to replace prism	7850.05.061
Tool A	Torque wrench	8061.06.255
Tool B	Socket, hex 3/8", screw 3/8", J9/16LA	8961.06.008
Tool C	Socket, hex 3/8", screw M10, J 17LA	8961.06.000
Tool D	Socket, 1/4", 1.6x8 Flat, RS.8E	8961.05.050
Tool E	Socket, 1/4", Pozidriv2, RD.2	8961.05.060
Tool F	Extension, 1/4", R.210	8961.06.220
Tool G	Adaptation, 1/4"-3/8", R.232	8961.06.010
Tool H	Hinged handle - sort	8961.06.110
Tool I	Pliers	8981.10.110
Tool J	Opening tool	4071.53.220

	Details	Article number
Tool K	Screwdriver, flat blade AG. 8x150	8961.06.250
Tool L	Screwdriver, pozidriv AD.2x125	8961.05.220
Tool M	Torque screwdriver	8961.06.255
Tool N	Screwdriver, Torx ANX20x100	8961.05.300
Tool O	Screwdriver, Torx ANX25x100	8961.05.290
Tool P	Attack driver	8961.04.100
Tool Q	Hammer 212A50s	8961.04.110
Tool R	Bit holder	8961.04.120
Tool S	Bits END202, Pozidriv2	8961.04.130
Tool T	Bit, Torx TX20 EX.620	8961.06.020
Tool U	Bit, Torx TX25 EX.625	8961.06.025

Notes
1) Obey the instructions of the manufacturer of the adhesive.

7.5 Additional accessories

You can buy these accessories separately.

Tool	Details	Article number
A	Waterproof test adapter inset 8" AD-light	1411.17.150
B	Set of spare anchor hooks for lifting tool 1411.19.550	1411.19.560
C	Lifting tool (on wheels)	1420.55.600
D	Basic lifting tool assembly for inset lights	1411.19.550

7.6 Specifications

Item	Description
Lamp rating	12 W per side
Nominal supply current	6.6 A +/- 3%
Rated frequencies	50 / 60 Hz (+/- 7.5%)
Protection class	IP67
Dimensions (diameter height)	203 mm x 97 mm
Weight	4.0 kg

7.7 Ambient conditions

Item	Description
Temperature	-55 to +55 °C
Altitude	From sea level to 3000 m
Relative humidity	Up to 100%, condensing

Appendix A: INTEROPERABILITY

ADB SAFEGATE Interoperability

CAUTION

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

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

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

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

Table 2: 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 4072.24.781 / 1 pc 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

Note

Contact your ADB SAFEGATE Sales representative for more information.

Appendix B: CABLE LOSS

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

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

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

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

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

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

As such we can calculate:

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

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

WARNING

Cable lengths should not exceed 100 meters.

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

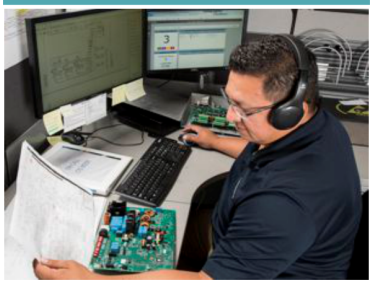
For a primary cable of e.g., 100 m of 6 mm^2 CU-wire, 100 m × 0.12 W/m = 12 W equals the additional loss to be taken into account.

Appendix C: 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

C.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.

C.2 Recycling

C.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.

C.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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Contact: Tel.: +1 (614) 861 1304, Fax: +1 (614) 864 2069	Email: sales.us@adbsafegate.com Internet: www.adbsafegate.com

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