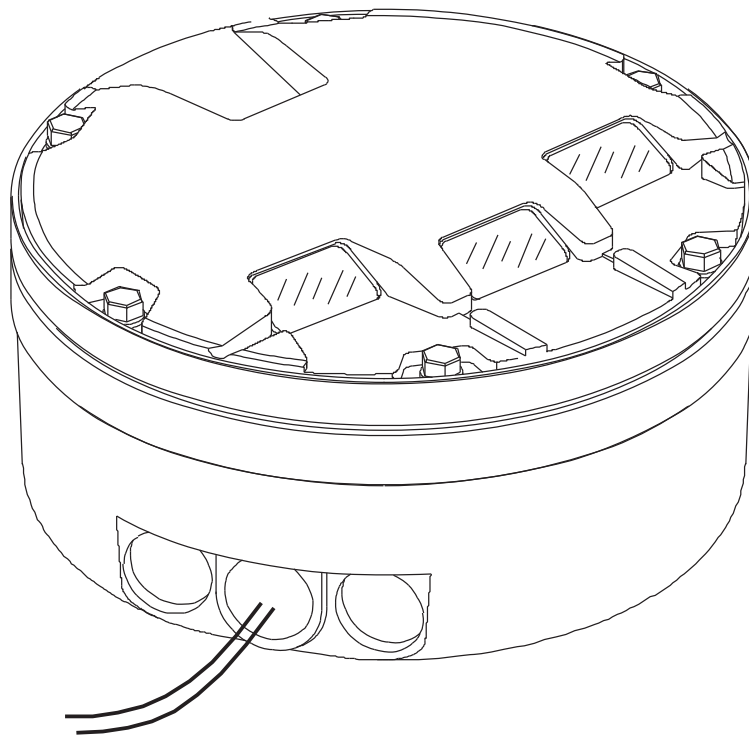


12" F-Range Inset Lights



Type FAP, FED, FEN, FTE, FTH

Record of Changes AM.02.390e

Revision	Description	Editor	Checked	Date
1.0	First edition	TXA	WL	
2.0	New Layout	TXA	WL	
2.1	New table for screws overview and general updating	TXA	WL	4/98
2.2	Modified drawing step 4 procedure Added a "caution" about the anti rotation pin	TXA	WL	7/98
2.3	New optical assembly	DSE	GL	6/00
3.0	ADB Code Assemblies adapted, Earthing of the bases, warranty conditions, safety notifications, installation transferred in AM.05.120 manual, Loctite type, updating of part numbers, explanations about toe-in	EV	BUG	1/04
3.1	Safety instructions, warranty, procedures to unlock and fasten screws, screw references, Loctite types, tightening torques,	BUG	TP, KC, VDV, VI	4/09
3.2	Spare parts	BUG	RAS	05/09
3.3	Rebranding	EV		12/09
3.4	Introduction of Torx screws with pre-applied Loctite, correction of code numbers, code torque wrench	BUG	JWA, MA, AHU, LM, JBU	10/14

Safety Instructions

Safety

This section contains general safety instructions for using your ADB 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. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

To use this equipment safely,

- refer to the International Standard IEC 61820 , *Electrical installation for lighting and beaconing of aerodromes - Constant current series circuits for aeronautical ground lighting - System design and installation requirements*, and to the International Standard IEC 61821, *Electrical installations for lighting and beaconing of aerodromes - Maintenance of aeronautical ground lighting constant current series circuits* for instructions on safety precautions.
 - observe all safety regulations. To avoid injuries, always remove power prior to making any wire connections and touching any live part. Refer to the International Standards IEC 61820 & IEC 61821.
 - read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
 - read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
 - store this manual within easy reach of 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.
 - obtain and read Material Safety Data Sheets (MSDS) for all materials used.
-

Safety Instructions, *continued*

Safety Symbols Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or property and equipment damage.



WARNING 1 : Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING 2 : Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.

WARNING 3 : Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING 4 : Wear safety goggles. Failure to observe may result in serious injury.



WARNING 5 : Do not touch. Failure to observe this warning may result in personal injury, death, or equipment damage.

CAUTION: Failure to observe may result in equipment damage..

Qualified Personnel

The term qualified personnel is defined here as individual 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 see that its personnel meet these requirements.

Safety Instructions, *continued*

Intended Use



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

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

Unintended uses may result from taking 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 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 equipment
 - allowing unqualified personnel to perform any task.
-

Safety Instructions, *continued*

Installation

Read the installation section of all system component manuals before installing your equipment. A thorough understanding of system components and their requirements will help you install the system safely and efficiently.



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

- Allow only qualified personnel to install ADB and auxiliary equipment. Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals and will void the Warranty.
 - Make sure all equipment is rated and approved for the environment in which you are using it.
 - Follow all instructions for installing components and accessories.
 - Install all electrical connections to local code provided they are not in contradiction with the general rules.
 - Use only electrical wire of sufficient gauge and insulation to handle the rated current and voltage demand. All wiring must meet local codes.
 - Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment and animals (e.g. rodents).
 - Protect components from damage, wear, and harsh environment conditions.
 - Allow ample room for maintenance, panel accessibility (power products), and cover removal (power products).
 - 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.
-

Safety Instructions, *continued*

Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
 - Never operate equipment with a known malfunction.
 - Do not attempt to operate or service electrical equipment if standing water is present.
 - Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
 - Never touch exposed electrical connections on equipment while the power is ON.
-

Safety Instructions, *continued*

Action in the Event of a System or Component Malfunction

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.
-

Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with ADB equipment are permitted to service this equipment.

- Always use safety devices when working on this equipment.
 - Follow the recommended maintenance procedures in your equipment manuals.
 - Do not service or adjust any equipment unless another person trained in first aid and CPR (Cardio Pulmonary Resuscitation) is present.
 - Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
 - Use only approved ADB replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals, impair specified performance and create safety hazards.
 - Check 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 electrical equipment.
-

Use Restriction Notice, Warranty and Disclaimers

Use restriction notice

This Instruction Manual is the property of

ADB

585, Leuvensesteenweg

B-1930 Zaventem - Belgium

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

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

Internet: <http://www.adb-air.com>

Except for uses strictly limited to the internal use of the owner of the products described in this manual, this manual or parts thereof may not be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without ADB's prior written consent.

Warranty

, ADB General Conditions for Deliveries and Services available at the time of the offer made by ADB for the delivery of products and services shall apply unless otherwise agreed in writing.

Disclaimers

This manual could contain technical inaccuracies or typographical errors. ADB reserves the right to revise this manual from time to time in the contents thereof without obligation of ADB to notify any person of such revision or change.

Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and ADB disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

Similarly, ADB disclaims any liability for damages or detriments suffered as a result of modification made on site on the products by any other party than ADB.

Information About this Manual

Chapter overview

Each chapter starts with an overview of the topics of that chapter.

Using icons

Additionally to safety symbols, icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

Icon	Type of information	Description
	Note	A 'note' provides information that is not indispensable, but may nevertheless be valuable to the reader, such as hints and tips.
	Reference	A 'reference' guides the reader to other places in this manual, where he/she will find additional information on a specific topic.

Parts Identification

Parts identification symbols (e.g. A1, B4, ...) appearing in the text refer to the Exploded view page 53 .

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:

ADB

585, Leuvensesteenweg

B-1930 Zaventem - Belgium

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

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

Table of Contents

Safety Instructions.....	2
Use Restriction Notice, Warranty and Disclaimers	8
Information About this Manual	9
Chapter 1: Product information	11
General information.....	12
Equipment data	13
Chapter 2: Mounting and connection	16
Important safety notifications	17
General recommendations.....	18
How to mount the light assembly?	19
Installation of adapter ring	21
Chapter 3: Maintenance.....	22
Workshop maintenance and preventive maintenance.....	23
How to lift the light fixture out of the base or adapter ring.....	25
Chapter 4: Servicing in the Maintenance Base.....	26
How to open the light assembly	27
How to replace a lamp	29
How to replace a filter	30
How to replace a prism	31
How to replace the optical assembly.....	33
How to replace the cable set assembly.....	35
How to close and test the light fixture	36
Chapter 5: Troubleshooting	38
Chapter 6: Ordering Codes and Exploded View	39
Complete products and spare parts.....	40
Screws Overview.....	52
Exploded view	53
Accessories.....	54

Chapter 1: Product information

Overview

Introduction In this chapter you will find all the information about the shipment and the identification of the ADB 12" F-Range inset light.

Contents This chapter contains the following topics.

Topic	See Page
General information	12
Equipment data	13

General information

ADB 12" F-Range inset lights

The ADB 12" F-Range Inset Lights are light fixtures which provide optimum visual guidance with minimal maintenance, low life-cycle costs and maximum reliability. They are designed to withstand the high impact and roll-over loads imposed by today's widebody aircraft during landing and take-off operations while remaining waterproof and serviceable.

The 12" F-Range fixtures are shipped ready for installation on ADB 12" shallow bases (Eurobase ®) or on FAA deep bases (B, C or D dia.) with an adapter ring.

The 12" F-Range family types are intended for the following uses:

- FAP: Approach Centreline and Side Row Barrettes
 - FTH: Threshold and Threshold Wing Bars
 - FTE: Combined Threshold and Runway End
 - FED: Runway Edge
 - FEN: Runway End.
-

Purpose of this manual

This manual describes procedures for the installation, maintenance and troubleshooting of the 12" inset light family.

Scope of this manual

This manual covers the light fixtures manufactured in accordance with FAA specification AC 150/5345-46 (except for photometry when it differs from ICAO Annex 14) and the photometric requirements of the latest edition of ICAO Annex 14.

Equipment data

Equipment supplied

Each unit is supplied completely assembled, tested and sealed, ready for installation. The electrical connection is made via 1, 2 or 3 cable assembly(ies) with FAA L-823 style 2-pole plugs. An o-ring gasket (E6) is included.

Each unit is individually packed in a durable, cushioned and corrugated cardboard box, labelled with ADB and ordering numbers.

At least one instruction manual is delivered per order.

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.

References



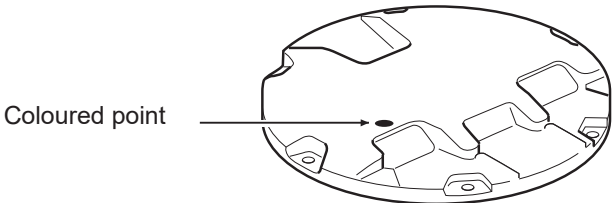
Ordering codes and reference data pertinent to the light fixture and its components are listed in the tables on pages 40 to 53.

Differences between versions

All the inset lights used for a particular function look externally identical. The differences between versions depend on the colour filters and the toe-in used. Make sure to use the correct colour code and toe-in when installing the light onto its base.

Beam colour

The colour of the inset light filters is identified by coloured points on the top of the window. A red point, for example, refers to a corresponding red filter.

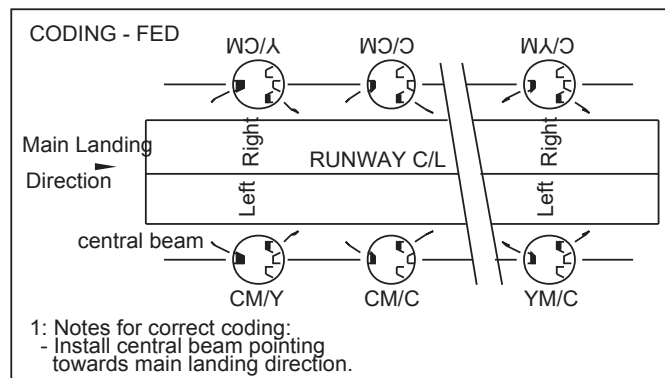
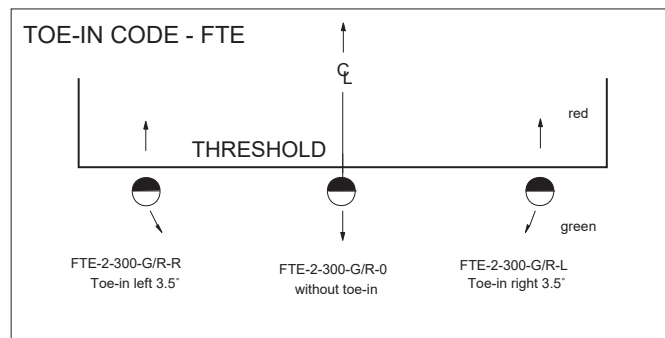
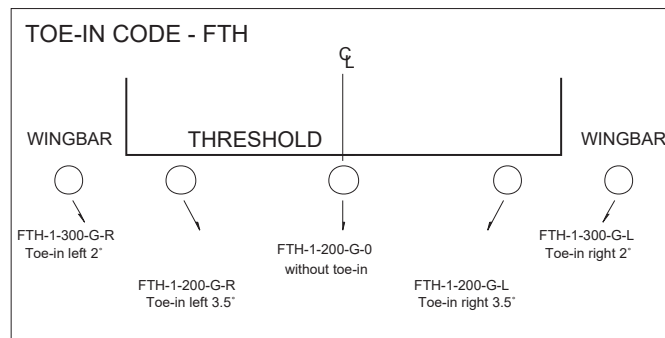
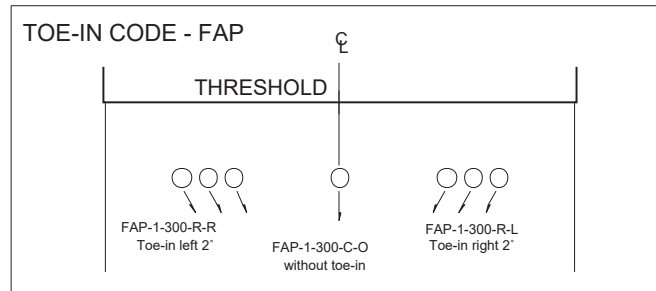


In the 12" F-Range inset lights, light beam coloration is obtained by a dichroic coating applied on the inner face of the prism. Therefore, no separate colour filters are required.

Equipment data, *continued*

Toe-in coding

For some applications, the inset lights are delivered with built-in toe-in. The toe-in side (left or right) is determined when looking in the direction of the (main) beam.

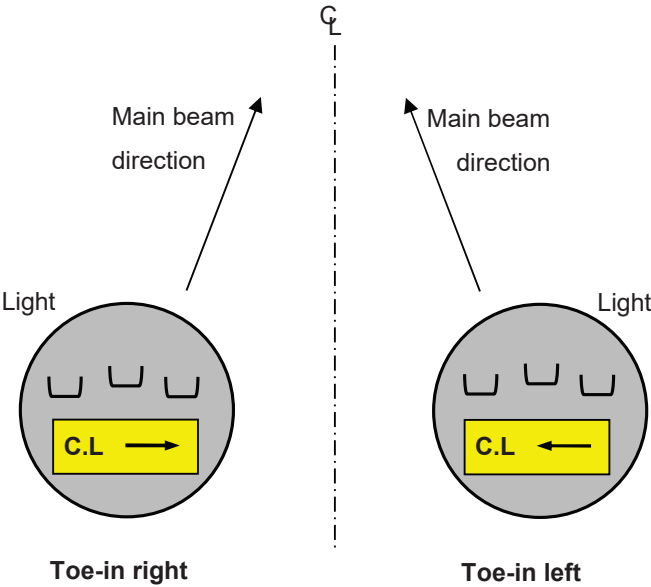


Equipment data, *continued*

According to this toe-in, those lights are to be installed to the left or to the right of the Runway/ Approach centre line. The built-in toe-in is referenced with labels (black letters on yellow background):

Label	Toe-in	Installation
C.L. →	right	to the left of the centre line when looking in the direction of the (main) beam
C.L. ←	left	to the right of the centre line when looking in the direction of the (main) beam
No label	no	on the centre line

NB: the arrow points towards the R/ W centre line.



**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 purchased from ADB.

Chapter 2: Mounting and connection

Overview

Introduction

This chapter instructs you how to connect and mount the 12" F-Range inset lights on their base.

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



It is supposed that the base supporting the 12" F-Range inset light and the secondary connector(s) are already installed. All information pertinent to the installation of bases is available in the instruction manual Am.05.120, Edition 2.2 or subsequent

Contents

This chapter contains the following topics.

Topic	See Page
Important safety notifications	17
General recommendations	18
How to mount the light assembly?	19
Installation of adapter ring	21

Important safety notifications

Fixing hardware 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.



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 the paragraph "How to mount the light assembly", page 19, for the tool to use, the requirement for use of Loctite and the torque to apply.

It is possible to insert a 3/8"-16 UNC screw in a M10 threaded hole. However, such 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.

General recommendations

Receiving, storage and unpacking



1. Upon receipt of goods at the site store, check all packings for visible damage. Every damaged box should be opened and its content inspected for damage.
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, 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.

Electrical connection

The light assemblies covered by this manual are designed for connection to 6.6 or 20-A series circuits via one, two or three L-830 or L-831 series transformer(s). The current to the light should not exceed 6.6A + 3%.

Refer to ADB cat. leaflet A.06.112 or Instruction manual AM.06.112 for more information on series transformers.

The series transformers are to be ordered separately.

Base Earthing

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

Failure to earth correctly the base will void the warranty for all damages occurring as a result of voltage surges.



Note: Guidelines on how to realize the earthing of the base are given in instruction manual Am05.120

Location and tolerances

The applicable documents for location details and tolerances are the following:

Organisation	Applicable documents
ICAO	Annex 14
	Aerodrome Design Manual Part 4
FAA	Advisory Circular AC no. 150/5340-28

How to mount the light assembly?

Before you start Make sure that the contact surfaces of the light assembly with base and the gaskets are absolutely clean and smooth.

Use the correct fixing hardware Please refer to the paragraph "Important safety notifications", page 17: **only use fixing hardware of the same type as the one originally supplied with the base or adapter ring!**

In ADB shallow bases delivered since mid-2006, the type of thread is indicated on the bottom or the flange of the base: **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.



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.

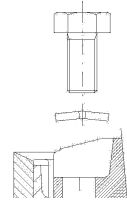
Installation procedure

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

Step	Action
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	Apply a light coat of neutral vacuum type silicone grease (ADB PN 7850.42.210) to a new, clean O-ring gasket (E6).
3	Place the O-ring (E6) carefully in its groove. CAUTION: Never reuse an already used gasket.
4	Connect the light by inserting its 2-pole plug(s) into the corresponding socket(s) in the base.
	Pull up the supply cable and plug the light fitting cable into the socket.
	Apply insulating tape around the plug/ socket assembly.

How to mount the light assembly?, *continued*

Installation procedure, cont'd

Step	Action
5	Apply Loctite on the three first threads of the threaded holes in the base. CAUTION: Always use Loctite 2701 to fasten the light fixture on its support.
6	Gently install the light fixture in the base using one of the lifting devices (see page 25). CAUTION: Make sure not to pinch the wires.
7	Make sure that the washers are mounted correctly -dents facing upwards- to avoid denting the cover. 
8	Torque down gradually and crosswise the 6 screws and washers (A1-A2) or self locking nuts. CAUTION: Make sure the screws are tightened with a torque of 21 Nm/ 190 Lb.in .

Installation of adapter ring

Adapter ring Installation

To install the adapter ring, proceed as follow:

Step	Action
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 (ADB 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.
4	Mount the adapter ring onto the base and torque down the fixation screws. CAUTION: Make sure the screws are tightened with a torque of 21 Nm/ 190 Lb.in .
5	Install the light as described above.

Chapter 3: Maintenance

Overview

Introduction

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 in the maintenance workshop will be described in detail in chapter 4.

Warranty limitation

The lights are delivered fully tested and sealed. In case of malfunctioning during the warranty period, the defective light shall be shipped back to ADB without opening it. Any attempt to open the light during the warranty period will void the warranty.

Contents

This chapter contains the following topics.

Topic	See Page
Workshop maintenance and preventive maintenance	23
How to lift the light fixture out of the base or adapter ring	25

Workshop maintenance and preventive maintenance

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 (see p25).

Preventive maintenance

The assembly's service life depends to a large extent on its waterproofness. 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.



For components mentioned in this chapter, refer to the exploded view on page 53.

Workshop maintenance and preventive maintenance, continued

Preventive maintenance tasks

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.

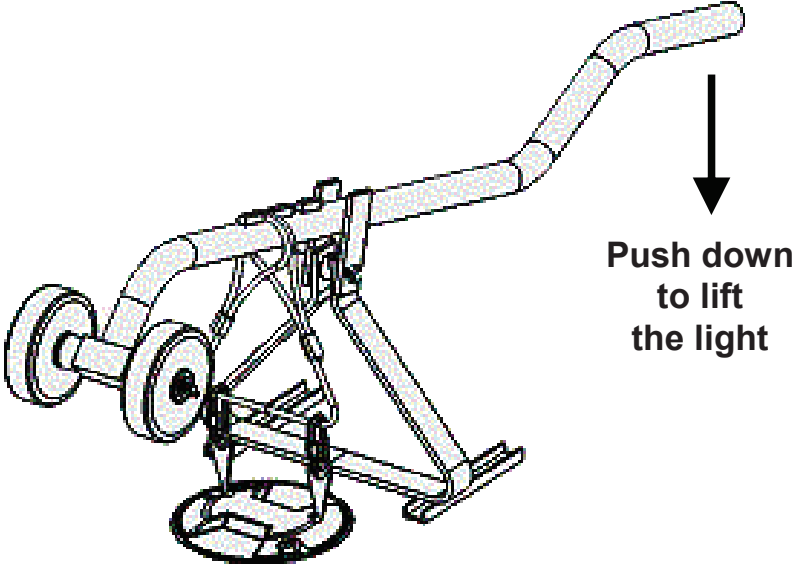
Interval	Check	Action
Daily	for lamp failure	Replace lamp and film disc cut-out (if any).
	for low light output	1. Clean outer surface of prism if dirty. 2. Check for misalignment or presence of moisture in fixture. 3. Check for lamp ageing or displacement
Weekly	for obstruction in light output channel	Clean channel and prism surface
Monthly *	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 O-ring and other parts found defective.
Bimonthly	torque on hold-down bolts	Refer to the paragraph " How to mount the light assembly?", page 19, for the tool to use, the requirement for use of Loctite and the torque to apply.
Semi-annually *	for presence of water in base	1. Pump water from base. 2. Remove, dismantle and inspect light for water damage. 3. Cure the cause of water ingress.
After 800 hours of operation at 6.6 A	Replace lamps of complete subsystems (e.g. R/W centreline)	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 800 hours, but, in practice, life spans of 2000 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.

* More frequently during rainy seasons.

How to lift the light fixture out of the base or adapter ring

Lifting tool Beside the simple jig delivered with the standard tool case, ADB has developed a more sturdy and efficient lifting tool (see illustration below). See paragraph Accessories, page 54 for references.

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

Step	Action
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 O-ring gasket and discard it.
5	Mount a serviced or new fitting as described on page 19.
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.

Chapter 4: Servicing in the Maintenance Base

Overview

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

Preliminary All the screws used in this product are listed at the end of this manual.



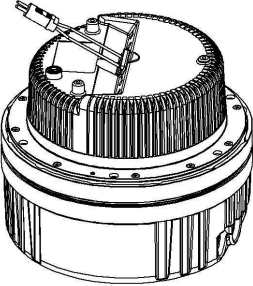
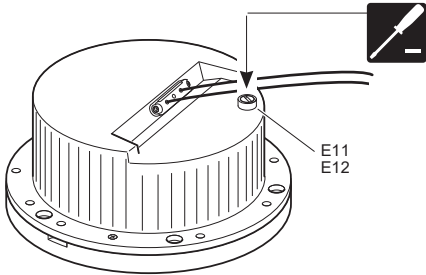
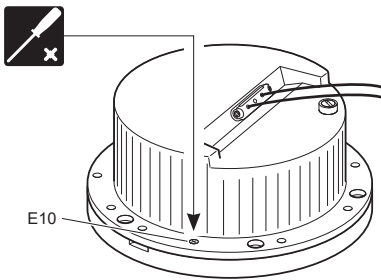
Refer to the table “Screws Overview” page 52 for the tool to use and the torque to apply.

Contents This chapter contains the following topics.

Topic	See Page
How to open the light assembly	27
How to replace a lamp	29
How to replace a filter	30
How to replace a prism	31
How to replace the optical assembly	33
How to replace the cable set assembly	35
How to close and test the light fixture	36

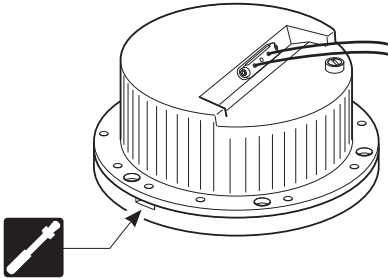
How to open the light assembly

Procedure To open the light assembly, proceed as follows (for the tools to use, refer to page 52 “Screws Overview”):

Step	Action
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.  A technical drawing of a cylindrical light unit with a flared top. It is shown upside down, resting on its top surface. A small rectangular component is visible on the top surface.
2	Remove the pressure relieve screw (E11).  A technical drawing of the light unit from the side. A screw labeled E11 is being removed from the top surface. A screwdriver is shown with an arrow pointing to the screw head. A label E12 points to a hole on the side of the unit.
3	Remove the 6 screws (E10). The use of an attack driver may be required to unlock the screws. • Always use a new bit for each light requiring the use of an attack driver. • Take care that the bit is well positioned on the screw head and that the driver is aligned with the axis of the screw.  A technical drawing of the light unit from the side. Six screws labeled E10 are being removed from the bottom flange. A screwdriver is shown with an arrow pointing to one of the screws. A label E10 points to one of the screws.

How to open the light assembly, *continued*

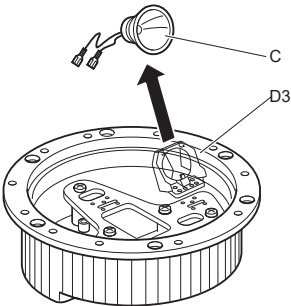
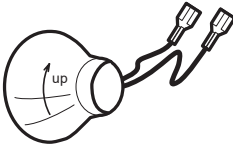
Procedure

Step	Action
4	Introduce the special opening tool (NC 4071.53.220) in the dedicated slot between cover and inner cover and rotate it to separate the inner cover from the cover. 

How to replace a lamp

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

Procedure To replace a lamp, proceed as follows (for the tools, refer to page 52 “Screws Overview”):

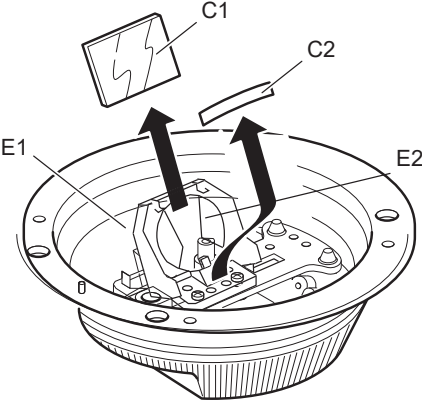
Step	Action
1	Disconnect the fast-on connectors of the lamp from the terminal block (E1).
2	Release the lamp spring (D8).
3	Remove the lamp (C) from the lampholder (D3), holding the reflector. 
4	If a cut-out is used, remove it by loosening the screw which secures the cut-out clip to the terminal block (E1) and rotate cut-out clip free.
5	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.
6	Install a new lamp. To optimise photometric output, make sure that the lamp is correctly positioned with the "arrow" pointing upside (up).  CAUTION: Never touch the quartz 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.
8	Reassemble in reverse order.



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

How to replace a filter

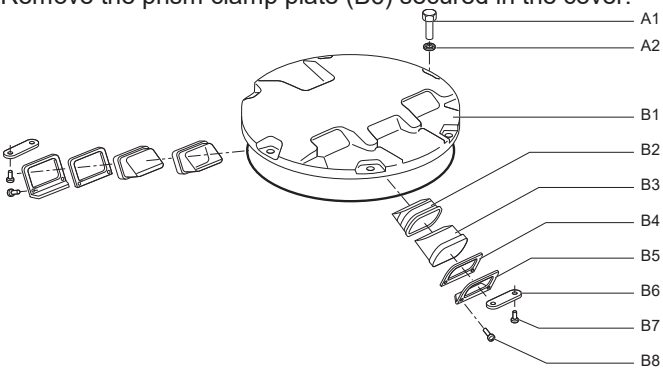
Procedure To replace a filter, proceed as follows:

Step	Action
1	Release the lamp spring (E2). 
2	Lift the filter (C) and the filter spring (C2) out of the lamp holder (E1).
3	Put a new filter in the lamp holder
4	Secure the springs (E2 and C2)

How to replace a prism

Procedure

To replace a prism, proceed as follows:

Step	Action
	The use of an attack driver may be required to unlock the screws fastening the prism. - Always use a new bit for each light requiring the use of an attack driver. - Take care that the bit is well positioned on the screw head and that the driver is aligned with the axis of the screw.
1	Remove the prism clamp plate (B6) secured in the cover. 
2	Remove the prism keeper plate (B5) and the flat gasket (B4).
3	Push the prism (B3) with the sleeve gasket (B2) towards the inside of the cover.
4	Clean and degrease the prism chamber with any effective solvent. CAUTION: Never use any abrasive substance. Remnants of Loctite are present in the fixation holes of the screws B7 and B8. 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.
5	Apply a thin layer of lubricant MOLYKOTE HP870 INERTA (ADB PN 7850.05.061) in the prism chamber using a small brush.
6	Bring a new sleeve gasket (B3) over the new prism.
7	Push the prism/gasket assembly home in the prism chamber from the inside and clean the inner surface of the prism.

How to replace a prism, *continued*

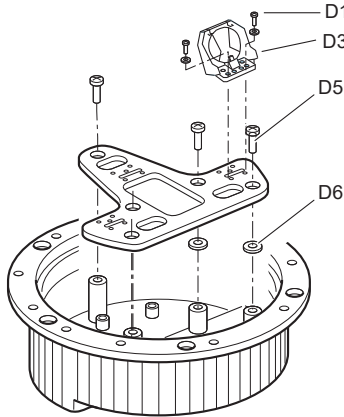
Procedure

Step	Action
8	Mount a new flat gasket (B4) under the prism-keeper plate (B5).
9	Introduce new screws (B8) and turn them by a few turns only.
10	Fit the prism clamp plate (B6) in the appropriate recess in the cover.
11	Secure it to the cover by means of new screws (B7).
12	Torque down the 4 B7 and B8 screws.
	Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.

How to replace the optical assembly

Procedure

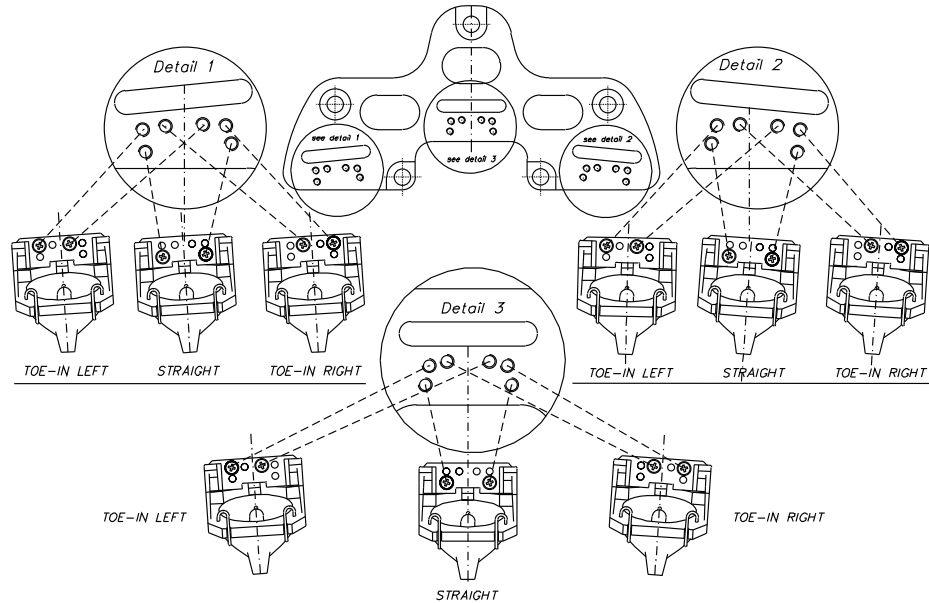
To replace the optical assembly, proceed as follows:

Step	Action
1	Remove the lamp(s) as explained on page 29.
2	Remove the lampholder(s) (D3) by loosening the screws (D1). 
3	If necessary, remove the optical support (D4 or D7) by loosening the screws (D5).
4	Position the new optical support with new dampers (D6).
5	Torque down the fixing screws (D5).  Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.
6	Position the lampholder(s) according to the required toe-in (see para. "Toe-in" next page) and fix the screws (D1).  Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.
7	Reinstall the lamp(s) as described on page 29.

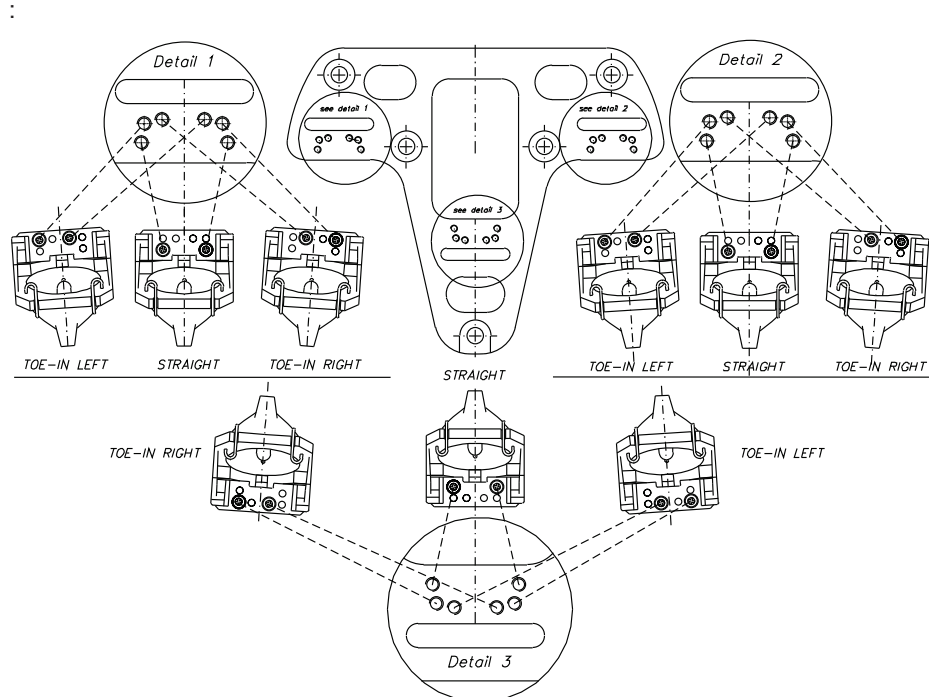
How to replace the optical assembly, *continued*

Toe-in

Position of lamp holder on optical support (FAP / FTH-1-200):



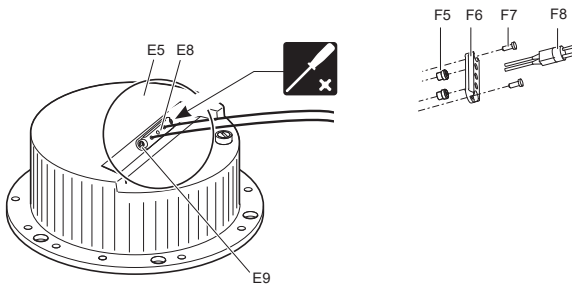
Position of lamp holder on optical support (FED / FTH-1-300 / FTE / FEN):



How to replace the cable set assembly

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

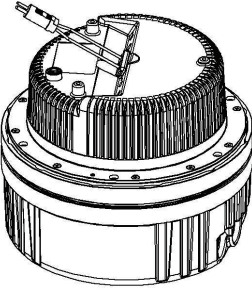
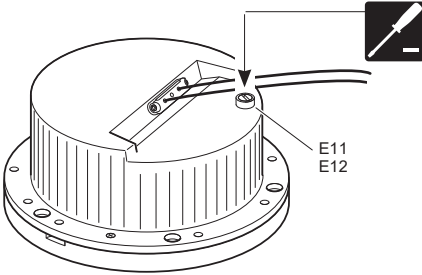
Procedure To replace the cable set assembly, proceed as follows:

Step	Action
1	Remove the optical assembly as described on page 33.
2	Remove both screws (E9) and the wire clamp (E8). 
3	Cut the fast-on connectors (E3) from the cable assembly.
4	Pull the cable assembly out of the inner cover (E5) and discard the grommets (E7).
5	Bring the new ADB cable assembly through the wire clamp (E8). CAUTION: One wire per hole.
6	Put a new wire grommet (E7) on each of the wires, taking care of the direction (the smaller diameter into the inner cover recesses).
7	Introduce the wires in the inner cover.
8	Reinstall the wire clamp (E8) by means of both screws (E9). Do not torque down the screws entirely at this step.
9	Remove the insulation of the wires over about 5 mm.
10	Crimp on new fast-on spade connectors (E3, ADB code Nr 6111.87.140) and connect to the terminals. Adjust the wires inside the inner cover.
11	Torque the screws (E9).  Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.

How to close and test the light fixture

Procedure ALWAYS REPLACE COVER/INNER COVER GASKET AND FIXING SCREWS BY NEW ONES!

To close the light fixture, proceed as follows:

Step	Action
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. 
2	Make sure that the contact surfaces with the O-ring are clean. Remnants of Loctite may be present in the fixation holes of the screws E10. 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 O-ring gasket (B9) greased with high quality neutral silicone grease (ADB PN 7850.42.210) over the cover in the appropriate groove.
4	Remove the pressure release screw (E11). 
5	Gently put the inner cover (E5) on the cover (B1), taking into account the keying pin between both parts. Make sure the lampholders and lamps are correctly positioned and that the wires of the lamps do not get pinched between cover and inner cover.

How to close and test the light fixture, *continued*

Procedure

Step	Action
6 	Press the inner cover on the cover and secure with new screws (E10). Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.
7	Check electrical insulation from each two-pole plug to frame by means of a 500 V insulation tester. Apply an AC or DC voltage not exceeding 15 V across each two-pole plug and observe normal operation of corresponding lamp.
8	Check waterproofness 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 water-tightness test adapter can be ordered from ADB (see ordering code page 54).
9 	Replace the O-ring seal of the pressure release screw (E11) and secure the pressure release screw. Refer to the table "Screws Overview" page 52 for the tool to use and the torque to apply.

Chapter 5: Troubleshooting

Troubleshooting table 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.

Problem	Possible cause	Solution
Light does not energise.	Lamp(s) defective	1. Replace lamp(s). 2. Replace film disc cut-out (when used).
	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.
	Defective isolation transformer or secondary wiring	Check transformer output current with Am meter. Check power line between the light fixture and the transformer, including connectors.
Light does not energise at normal level.	Resistance too high or partial short circuit. Light misaligned. Dirty prisms.	1. Replace cable assembly or inner cover assembly. 2. Replace lamp(s) and/or transformer(s). 3. Clean prisms and check orientation of light.
Light beam out of alignment	Broken or damaged prism/cover	1. Replace prism or entire outer cover assembly. 2. Check lamp positioning.
Improper beam colour	Wrong prism	Replace prism with one of the proper colour.
	Dichroic coating damaged	Replace prism.
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 assembly	1. Open light assembly. 2. Clean, dry, inspect or replace damaged components.
	Defective lamp or lamp bulb touched with bare fingers (lamp interior will have a yellow-white powdery appearance if air has entered through a hole or crack)	1. Replace lamp. 2. If used, replace film disc cut-out.

Chapter 6: Ordering Codes and Exploded View

Overview

Introduction

In this chapter you will find an overview of the main and sub-assemblies and the exploded views of the 12"F-Range inset lights.

Contents

This chapter contains the following topics.

Topic	See Page
Complete products and spare parts	40
Screws Overview	52
Exploded view	53
Accessories	54

Complete products and spare parts

Spare parts

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 cutouts, 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.

List of tables

Below you will find a list of all tables in this chapter:

Table	See page
Table 1: Fixtures and main assemblies of 12"F-Range inset lights; standard versions	41
Table 2: Fixtures and main assemblies of 12"F-Range inset lights; special versions	42
Table 3: 12"F-Range inset lights: Fixing kits	43
Table 4: 12"F-Range inset lights: Covers	45
Table 5: 12"F-Range inset lights : Optical assemblies and Lamps	48
Table 6: 12"F-Range inset lights: Inner covers	49

Complete products and spare parts, *continued*

Table 1 In the table below you will find all fixtures and main assemblies of the 12"F-Range inset lights (standard versions):

Fixtures				Main assemblies	
Category	Description	Ordering code	ADB code	Cover	Inner cover
FAP	approach	FAP-1-300-C-O-I-0	1TAA51931103	1411.41.000	1411.41.100
		FAP-1-300-R-L-I-0	1TAA52911103	1411.41.060	1411.41.100
		FAP-1-300-R-R-I-0	1TAA52921103	1411.41.060	1411.41.100
FTH	threshold	FTH-1-200-G-L-I-0	1THA33911103	1411.41.020	1411.41.110
		FTH-1-200-G-O-I-0	1THA33931103	1411.41.020	1411.41.110
		FTH-1-200-G-R-I-0	1THA33921103	1411.41.020	1411.41.110
	threshold wingbars	FTH-1-300-G-L-I-0	1THA53911103	1411.41.070	1411.41.100
		FTH-1-300-G-R-I-0	1THA53921103	1411.41.070	1411.41.100
FTE	threshold + end (2 inlets)	FTE-2-300-G/R-L-II-0	1TEA53212103	1411.41.010	1411.41.130
		FTE-2-300-G/R-O-II-0	1TEA53232103	1411.41.010	1411.41.130
		FTE-2-300-G/R-R-II-0	1TEA53222103	1411.41.010	1411.41.130
FED	runway edge bidirectional (1 inlet)	FED-2-200-CM/C-L-I-0	1TLA31111103	1411.41.040	1411.41.160
		FED-2-200-CM/Y-L-I-0	1TLA31411103	1411.40.000	1411.41.160
		FED-2-200-YM/C-L-I-0	1TLA34111103	1411.40.010	1411.41.160
		FED-2-200-RM/Y-L-I-0	1TLA32411103	1411.40.060	1411.41.160
		FED-2-200-YM/R-L-I-0	1TLA34211103	1411.40.070	1411.41.160
		FED-2-200-C/CM-R-I-0	1TLA31121103	1411.41.050	1411.41.170
		FED-2-200-C/YM-R-I-0	1TLA34121103	1411.40.020	1411.41.170
		FED-2-200-Y/CM-R-I-0	1TLA31421103	1411.40.030	1411.41.170
		FED-2-200-R/YM-R-I-0	1TLA34221103	1411.40.080	1411.41.170
		FED-2-200-Y/RM-R-I-0	1TLA32421103	1411.40.090	1411.41.170
FEN	rwly end	FEN-1-100-R	1TEA12931103	1411.41.030	1411.41.120

Note: Complete fixtures are supplied **without fixing hardware**. Fixing hardware is supplied with the mounting system (bases or mounting rings) or can be ordered separately (see fixing hardware kits).

Complete products and spare parts, *continued*

Table 2 In the table below you will find all fixtures and main assemblies of the 12"F-Range inset lights (special versions):

Fixtures				Main assemblies	
Category	Description	Ordering code	ADB code	Cover	Inner cover
FTE	threshold + end (1 inlet)	FTE-2-300-G/R-L-I-0	1TEA53211103	1411.41.010	1411.41.180
		FTE-2-300-G/R-O-I-0	1TEA53231103	1411.41.010	1411.41.180
		FTE-2-300-G/R-R-I-0	1TEA53221103	1411.41.010	1411.41.180
FED	runway edge bidirectional (2 inlets)	FED-2-200-CM/C-L-II-0	1TLA31112103	1411.41.040	1411.41.140
		FED-2-200-CM/Y-L-II-0	1TLA31412103	1411.40.000	1411.41.140
		FED-2-200-YM/C-L-II-0	1TLA34112103	1411.40.010	1411.41.140
		FED-2-200-RM/Y-L-II-0	1TLA32412103	1411.40.060	1411.41.140
		FED-2-200-YM/R-L-II-0	1TLA34212103	1411.40.070	1411.41.140
		FED-2-200-C/CM-R-II-0	1TLA31122103	1411.41.050	1411.41.150
		FED-2-200-C/YM-R-II-0	1TLA34122103	1411.40.020	1411.41.150
		FED-2-200-Y/CM-R-II-0	1TLA31422103	1411.40.030	1411.41.150
		FED-2-200-R/YM-R-II-0	1TLA34222103	1411.40.080	1411.41.150
	runway edge unidirectional (1 inlet)	FED-2-200-Y/RM-R-II-0	1TLA32422103	1411.40.090	1411.41.150
		FED-1-100-CM/N-L-I-0	1TLA11911103	1411.40.040	1411.41.120
		FED-1-100-YM/N-L-I-0	1TLA14911103	1411.40.050	1411.41.120
		FED-1-100-RM/N-L-I-0	1TLA12911103	1411.40.100	1411.41.120
		FED-1-100-N/CM-R-I-0	1TLA11921103	1411.40.040	1411.41.120
		FED-1-100-N/YM-R-I-0	1TLA14921103	1411.40.050	1411.41.120
		FED-1-100-N/RM-R-I-0	1TLA12921103	1411.40.100	1411.41.120

Note: Complete fixtures are supplied **without fixing hardware**. Fixing hardware is supplied with the mounting system (bases or mounting rings) or can be ordered separately (see fixing hardware kits).

Complete products and spare parts, *continued*

Table 3

In the table below you will find the fixing kits of 12" F-Range inset lights:

METRIC FIXING HARDWARE KITS								
Fixing hardware kit		Components						
Description	ADB Part Number	7100.08.759 St. Steel Screw M10 X25	7150.53.320 St. Steel nut M10	7150.53.330 St. St. self-locking nut M10	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 ADB 8" shallow bases or adapter rings (1)	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)	1411.20.440	2				2	
	Metric screw kit 8" (w/o anti-rotation pins)	1411.20.520	2			2		
For mounting 12" inset lights or adapter rings on to ADB 12" shallow or deep bases	Metric screw kit (France) 12"	1411.20.480	6			6		
	Metric nut kit (Frankfurt) 12"	1411.20.510		6		6		
	Metric screw kit 12" (Germany)	1411.20.490	6				6	
	Self-locking nut kit 12"	1411.20.500			6			

Note (1): HPI bases only accept Metric hardware

Complete products and spare parts, *continued*

Table 3,
continued

UNC FIXING HARDWARE KITS								
Fixing hardware kit		Components						
Description	ADB Part Number	71200.13.806 St. St. Screw 3/8"-16 UNC	7284.10.470 St. Steel lock washer M10	4071.50.120 UNC anti-rotation pin				
For mounting 8" inset lights on to ADB 8" shallow bases or adapter rings	UNC screw kit 8"	1411.20.410	2	2	2			
For mounting 12" inset lights or adapter rings on to ADB 12" shallow or deep bases	UNC screw kit 12"	1411.20.450	6	6				

Complete products and spare parts, *continued*

Table 4 In the table below you will find the parts and main assemblies of the 12" F-Range covers:

No.	ADB part number	Description	1411.40.xxx										
			000	010	020	030	040	050	060	070	080	090	100
B1	1411.42.000	machined FAP/FTH-300 cover with positioning pin, w/o prisms											
B1	1411.42.010	machined FTH 200 cover with positioning pin, w/o prisms											
B1	1411.42.020	machined FTE cover with positioning pin, w/o prisms											
B1	1411.42.030	machined FED bidirectional left cover with positioning pin, w/o prisms	1	1					1	1			
B1	1411.42.040	machined FED bidirectional right cover with positioning pin, w/o prisms			1	1					1	1	
B1	1411.42.050	machined FED unidirectional /FEN cover with positioning pin, w/o prisms					1	1					1
B2	4071.50.030	prism sleeve gasket	2	2	2	2	1	1	2	2	2	2	1
B3	1428.00.250	FAP clear prism											
B3	1428.00.271	FTE/FED/FEN red prism							1	1	1	1	1
B3	1428.00.280	FTH/FTE green prism											
B3	1428.00.290	FED yellow prism	1	1	1	1		1	1	1	1	1	
B3	1428.00.300	FED clear prism	1	1	1	1	1						
B4	4071.50.042	flat prism gasket	2	2	2	2	1	1	2	2	2	2	1
B5	4071.50.052	prism keeper plate	2	2	2	2	1	1	2	2	2	2	1
B6	4071.50.360	prism clamp	2	2	2	2	1	1	2	2	2	2	1
B7	7100.10.190	SCREW M5x10 DIN 965-T-A2-LOCK 2045	4	4	4	4	2	2	4	4	4	4	2
B8	4071.53.703	SCREW M5x13 DIN 7985-T-A2-LOCK 2045	4	4	4	4	2	2	4	4	4	4	2
B9	7080.90.710	O-ring gasket between cover and inner pan	1	1	1	1	1	1	1	1	1	1	1

Complete products and spare parts, *continued*

Table 4,
continued

In the table below you will find the parts of the 12" F-Range covers:

No.	ADB part number	Description	1411.41.xxx							
			000	010	020	030	040	050	060	070
B1	1411.42.000	machined FAP/FTH-300 cover with positioning pin, w/o prisms	1						1	1
B1	1411.42.010	machined FTH 200 cover with positioning pin, w/o prisms			1					
B1	1411.42.020	machined FTE cover with positioning pin, w/o prisms		1						
B1	1411.42.030	machined FED bidirectional left cover with positioning pin, w/o prisms					1			
B1	1411.42.040	machined FED bidirectional right cover with positioning pin, w/o prisms						1		
B1	1411.42.050	machined FED unidirectional /FEN cover with positioning pin, w/o prisms				1				
B2	4071.50.030	prism sleeve gasket	3	3	2	1	2	2	3	3
B3	1428.00.250	FAP clear prism	3							
B3	1428.00.261	FAP red prism							3	
B3	1428.00.271	FTE/FED/FEN red prism		1		1				
B3	1428.00.280	FTH/FTE green prism		2	2					3
B3	1428.00.290	FED yellow prism								
B3	1428.00.300	FED clear prism					2	2		
B4	4071.50.042	flat prism gasket	3	3	2	1	2	2	3	3
B5	4071.50.052	prism keeper plate	3	3	2	1	2	2	3	3
B6	4071.50.360	prism clamp	3	3	2	1	2	2	3	3
B7	7100.10.190	SCREW M5x10 DIN 965-T-A2-LOCK 2045	6	6	4	2	4	4	6	6
B8	4071.53.703	SCREW M5x13 DIN 7985-T-A2-LOCK 2045	6	6	4	2	4	4	6	6
B9	7080.90.710	O-ring gasket between cover and inner pan	1	1	1	1	1	1	1	1

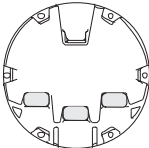
Complete product and spare parts, *continued*

Illustrations

The illustration below shows the 12" F-Range covers:

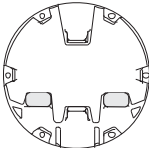
COVERS

**FAP-1-300
FTH-1-300**



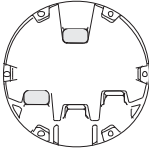
1411.41.000
1411.41.060
1411.41.070

FTH-1-200



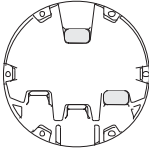
1411.41.020

FED-2-200-Right



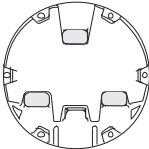
1411.40.020
1411.40.030
1411.40.080
1411.40.090
1411.41.050

FED-2-200-Left



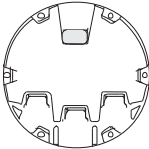
1411.40.000
1411.40.010
1411.40.060
1411.40.070
1411.41.040

FTE-2-300



1411.41.010

**FED-1-100
FEN-1-100**



1411.40.040
1411.40.050
1411.40.100
1411.41.030

Complete product and spare parts, *continued*

Table 5 In the table below you will find the parts of the 12" F-Range optical assemblies and lamps:

No.	ADB part number	Description	FAP	FTH300	FTH200	FTE	FEN	FED-2-200	FED-1-100
C	2990.40.900	cold mirror prefocus halogen lamp 105 W - 6.6 A - 1000 hrs	3	3	2	3	1	2	1
D1	7100.08.360	SCREW M4x10 DIN 7500CE-T-A2	6	6	4	6	2	4	2
D2	7284.10.416	Lockwasher M4 DIN 127B	6	6	4	6	2	4	2
D3	1411.22.002	Lamp support assembly	3	3	2	3	1	2	1
D4	4071.83.080	Optical support FAP/FTH300	1	1					
D7	4071.83.090	Optical support FTH200/FTE/FEN/FED			1	1	1	1	1
D5	4071.53.703	SCREW M5x13 DIN 7985-T-A2-LOCK 2045	5	5	5	5	5	5	5
D6	4070.72.640	Vibration damper grommet	5	5	5	5	5	5	5

Complete product and spare parts, *continued*

Table 6 In the table below you will find the parts of the 12" F-range inset lights inner covers:

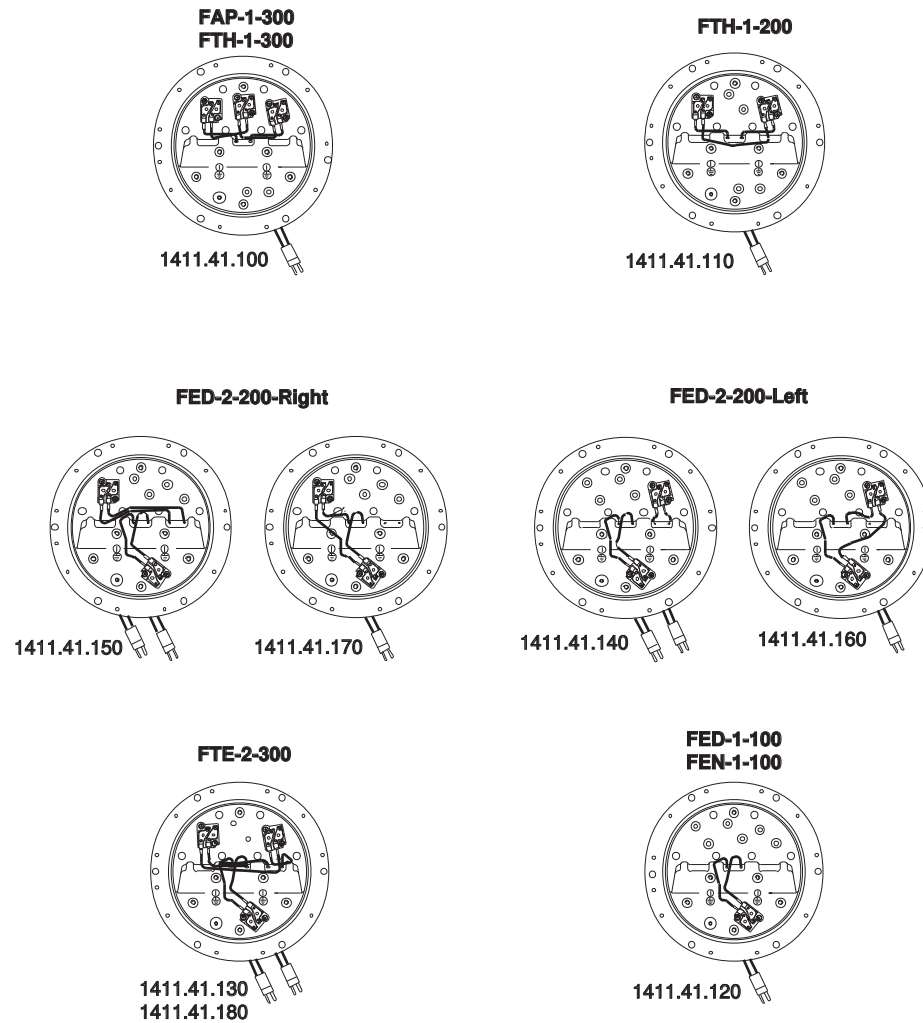
No.	ADB part number	Description	1411.41.xxx								
			100	110	120	130	140	150	160	170	180
E1	1411.21.000	terminal block assembly with fixing hardware and with cut-out	3	2	1	3	2	2	2	2	3
E1	1411.21.010	terminal block assembly with fixing hardware and w/o cut-out	3	2	1	3	2	2	2	2	3
E2	1411.21.140	cable assembly	2	1		1			1	1	2
E3	6111.87.140	female fast-on connector	2	2	2	4	4	4	2	2	2
E4	1458.03.680	FAA L-823 2-pole plug moulded on heat resistant 50 cm wires 1.9 mm² STY6	1	1	1	2	2	2	1	1	1
E5	4071.62.630	inner cover machined for one cable inlet	1	1	1				1	1	1
E5	4071.62.650	inner cover machined for two cables inlet				1	1	1			
E6	7080.90.650	O-ring seal between topcover and shallow base, for F-Range 12"	1	1	1	1	1	1	1	1	1
E7	6126.01.031	wire grommet	2	2	2	4	4	4	2	2	2
E8	4071.50.090	wire clamp	1	1	1	2	2	2	1	1	1
E9	7100.08.360	SCREW M4x10 DIN 7500CE-T-A2	2	2	2	4	4	4	2	2	2
E10	7100.10.190	SCREW M5x10 DIN 965-T-A2-LOCK 2045	10	10	10	10	10	10	10	10	10
E11	4070.77.150	pressure release screw	1	1	1	1	1	1	1	1	1
E12	7080.90.016	O-ring for the pressure release screw of inset lights	1	1	1	1	1	1	1	1	1
E13	xxxx.xx.xxx	identification plate	1	1	1	1	1	1	1	1	1

Complete product and spare parts, *continued*

Illustrations

The illustration below shows the 12" F-Range inner covers:

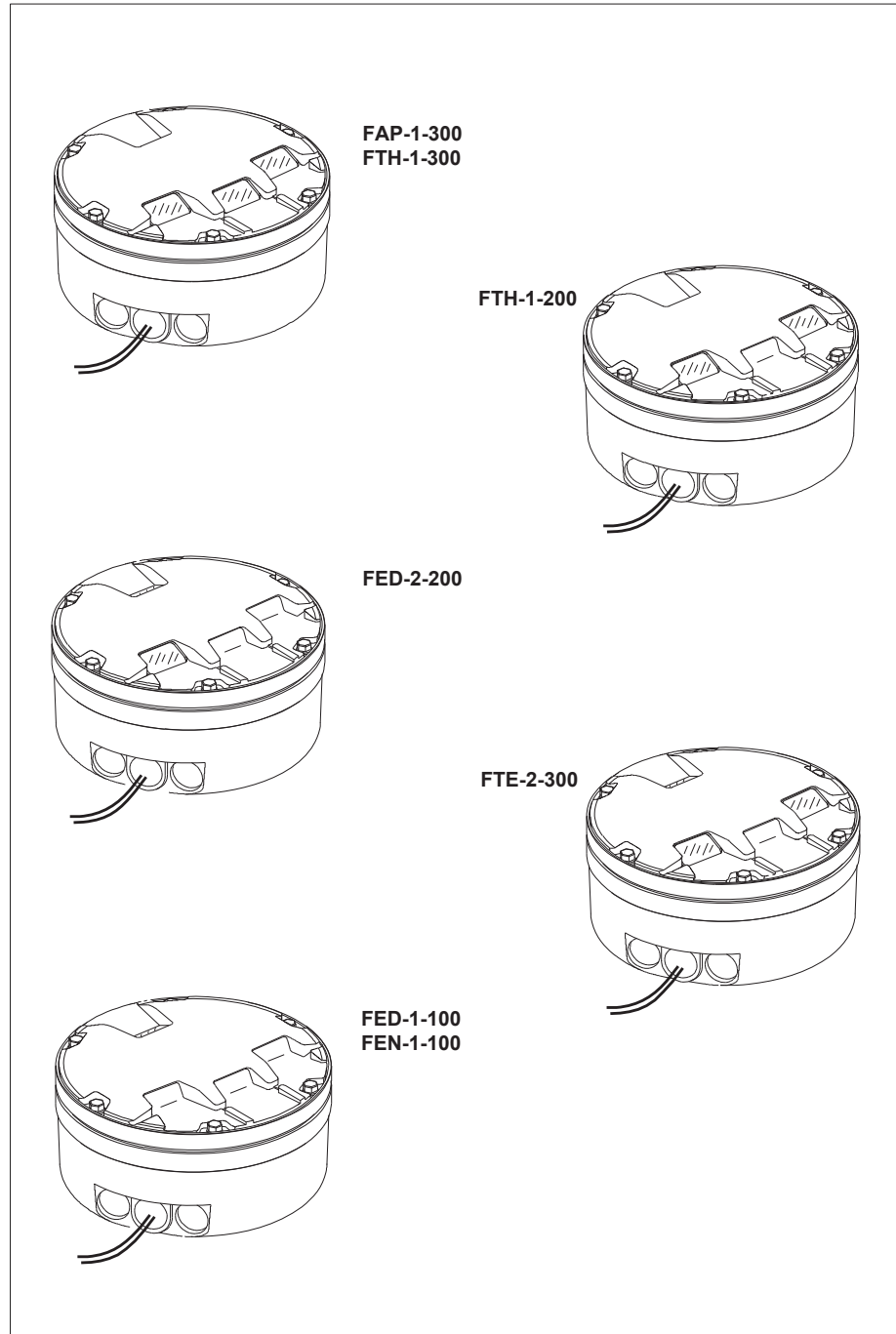
Inner Covers



Complete product and spare parts, *continued*

Illustrations

The illustration below shows the 12" F-Range types:



Screws Overview

Table

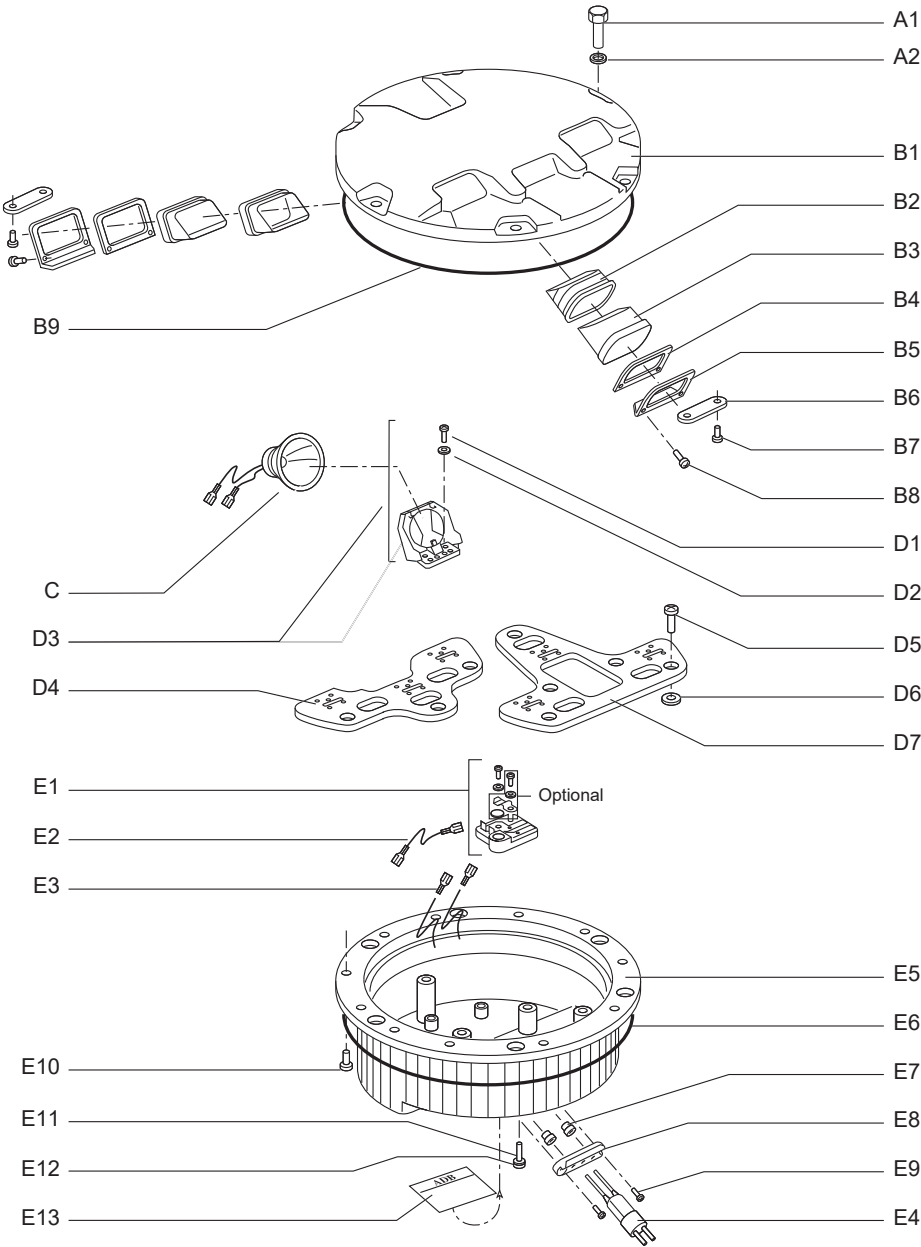
The table below gives for each screw used in F-Range 12" , the reference on the Exploded view, the type of screw, the tool to use and the torque:

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"		21 Nm/ 190 Lb.in
B7 - 7100.10.190- SCREW M5x10 DIN 965-T-A2-LOCK 2045	Torx25		3.5 Nm/ 31 Lb.in
B8 - 4071.53.703- SCREW M5x13 DIN 7985-T-A2-LOCK 2045	Torx25		3.5 Nm/ 31 Lb.in
D5 - 4071.53.703 - SCREW M5x13 DIN 7985-T-A2-LOCK 2045	Torx25		3.5 Nm/ 31 Lb.in
D1 - 7100.08.360 - SCREW M4x10 DIN 7500CE-T-A2	Torx20		3.3 Nm/ 30 Lb.in
E9 - 7100.08.360 - SCREW M4x10 DIN 7500CE-T-A2	Torx20		3.5 Nm/ 31 Lb.in
E10 - - 7100.10.190- SCREW M5x10 DIN 965-T-A2-LOCK 2045	Torx25		2.5 NM/ 23 LB.in
E11 - 4070.77.150 pressure release screw	1.6x8 Flat		2.5 Nm/ 23 Lb.in
Self-locking nut (M10)	Socket hex 17mm		21 Nm / 190 Lbin
Screws delivered for installation of adapter ring on deep base	Socket hex 17mm or Socket hex 9/16"		21 Nm/ 190 Lb.in

Exploded view

12" F-Range

The illustration below represents the exploded view of a 12" F-Range inset light
(Part references are those used throughout the text of this manual):



Accessories

Accessories In the lists below you will find useful accessories for the installation, maintenance and repair of the 12" F-Range inset lights.

Tool case ADB has designed a tool case (ADB 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 12" F-Range inset lights). The table below lists the tools included in the case:

Description	ADB 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

Additional accessories The following accessories can be purchased separately:

Description	ADB Part Number
Watertightness test adapter for inset lights	4060.84.570
Set of spare anchor hooks for lifting tool 1411.19.550	1411.19.560
Lifting tool on wheels (see illustration page 25)	1420.55.600

Fixing hardware 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 on page 43.

ADB

Leuvensesteenweg, 585 – B 1930 Zaventem – Belgium

Tel. : 32/2/722.17.11 – Fax : 32/2/722.17.64

ADB
Airfield Solutions