Bases for Inset Lights

Shallow bases: HPI, Eurobase

Deep bases: L-868

Table of Contents

Record of Changes

Revision	Description	Editor	Checked	Date
1.0	New Manual			
2.0	Introduction of shallow bases, suppression of L-867 and LB bases	BUG		04/06
2.1	Safety notification about use of correct fixing hardware and earthing, refinement of procedures	BUG	GL	11/06
2.2	Clarification about use of Loctite, some paragraphs shifted	BUG	GL, WL	03/07
2.3	Recess diameter, Recess depth	BUG	VI, KC	08/09
2.4	Rebranding	EV		12/09
2.5	Bases with extension pot, recess drilling detailed description, installation tolerances, suppression of information on deep bases	BUG	VI, AHU, WL, VDV	05/11

Safety Instructions

Safety precautions

Operating and maintenance personnel should refer to:

- IEC 61821: Electrical installations for lighting and beaconing of aerodromes - Maintenance of aeronautical ground lighting constant current series circuits
- ICAO Aerodrome Design Manual
  Part 9: Airport Maintenance Practices
- FAA Advisory Circular AC 150/5340-26 "Maintenance of Airport Visual Aid Facilities" for instructions on safety precautions

Personnel must always observe the safety regulations. The equipment has been designed and manufactured to allow safe and secure operation, however, the following rules must be strictly observed.

Keep away from live circuits

Operating and maintenance personnel must always observe all safety regulations.

Never install, service, replace, adjust or attempt to repair life equipment, i.e. equipment switched on.

Resuscitation

Operating and maintenance personnel should get acquainted with the resuscitation techniques described in the First Aid Instruction Manual as issued by the Red Cross Organisation or similar.

Use Restriction Notice and Warranty

Use restriction notice

The content of this Instruction Manual is the property of

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Warranty

If not otherwise agreed in the Purchase Contract, the following rules shall apply concerning warranty.

Any defect in design, material or workmanship, which may occur during proper and normal use over a period of one (1) year from date of installation or a maximum of 18 months from date of shipment, will be replaced by ADB free of charge, ex works. Operational failure resulting from burnt-out lamps, improper maintenance or installation, damage due to improper use of maintenance tools or equipments, vehicles, snow ploughs, aircraft arresting gear hooks or consumable components is not considered a result of proper use and is beyond the scope of the warranty.

Warranty does not cover natural wear and tear or damage arising after delivery owing to faulty or negligent handling, excessive strain, unsuitable materials for operation, deficient civil engineering work, unsuitable soil conditions, and such chemical, electrochemical or electrical influences as were not assumed at the time of the Contract.

All liability for consequences of any inexpert alterations or repairs carried out by Purchaser or a third party shall be waived.

N.V. ADB S.A. shall in no event be liable to Purchaser for any further claims, particularly claims for damages not affecting the goods themselves.

The above constitutes the limits of ADB’s liabilities in connection with the products covered by this manual.

Information about this Manual

Chapter overview

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

Using icons

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.
	Caution	A 'caution' is used when there is danger that the user, through incorrect manipulation, may damage equipment, get an unexpected result or have to restart (part of) a procedure.
	Warning	A 'warning' is used when there is danger of personal injury.
	Reference	A 'reference' guides the reader to other places in this manual, where he/she will find additional information on a specific topic.

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 send us their comments and proposals for improving the contents of this manual further.

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

ADB

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Chapter 1: Product information

Overview

Introduction

This chapter describes the different types of bases and the related international regulations.

Contents

This chapter contains the following topics:

Various types of bases

Introduction

Over time, two main methods of installation of inset lights have been designed:

- Shallow bases allow installing the lights and bases after completion of the civil works. This method is widely used because of the separation of the tasks and an easier organisation of the works.
- The traditional FAA method uses deep bases that are put in position before constructing the pavement.

Refer to FAA specifications AC 150/5340-30 and AC 150/5345-42 for complete information.

Shallow bases

Shallow bases are specifically adapted to the lights they support.

The ADB shallow bases exist in two diameters: 8" and 12"

- There are two versions of the 8" bases:
  - The HPI base is an optimised version for different types of metric fixing hardware.
  - The Euro® base allows various hardware types including both metric and UNC threads.
- 12 inches bases only exist in Euro® execution.

8" lights can be installed on 12" shallow bases by using an adapter ring.

All above models can be delivered with various types of cable entries and fixing hardware.

Refer to "Chapter 7: Parts lists", page 35, for information about available versions.

Deep bases

FAA has defined a complete range of deep bases. ADB inset lights have been designed for installation on L-868 size B bases (load-bearing bases, 12" diameter), either directly (12" lights) or by means of an 8"/12" adapter ring (8" lights).

FAA bases can be supplied in one piece or as multiple section assembly, and with various accessories.

Refer to "Chapter 7: Parts lists", page 35, for information about available versions.

Other types (L-867, E-1315) and sizes (15" etc.) of bases, together with specific adapter rings can be obtained from ADB. Please contact your local agent. Please refer to Chapter 5 for information about the installation method of the FAA deep bases.

Specifications

Shallow bases	There is currently no regulation specifically covering the requirements for shallow bases. ADB shallow bases are fully compliant with the mechanical and environmental requirements of FAA specification AC 150/5345-42 (current edition) and with the installation method described in AC 150/5340-30 (current edition). As they are supporting elements for lighting fixtures, they also comply with the conditions imposed to the lights in FAA specification AC 150/5345-46 (current edition) and specification IEC 61827.
Deep bases	Deep bases are in full compliance with FAA specification AC 150/5345-42, current edition.

Chapter 2: Before starting the installation

Overview

Introduction

This chapter gives useful information about the equipment needed to realise the installation works, as well as advice related to the reception of the goods.

Contents

This chapter contains the following topics.

Important safety notifications

Limits of use

The shallow bases described in the present manual have been designed for the mounting of ADB Airfield Lighting inset lights in pavements made of asphalt or Portland cement concrete. In case of mounting of non-ADB material, the end-user takes complete responsibility for the coordination of installation details like (but not limited to) dimensions, mechanical resistance, type and fastening torque of the screws or nuts, electrical connection, etc.

Please refer to the installation manual of the lighting fixture for complete information about the installation of the light on the base.

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! Refer to the Instruction Manual of the light, for the tool to use, the eventual requirement for use of Loctite and the torque to apply.

It is possible to insert a 3/8"-16 UNC screw in a M10 thread. However, such a combination damages the female thread and does not ensure a correct fastening so that the screw could become loose under repeated solicitations operation of landing/rolling aircrafts. Using screws of incorrect length might lead to either damage to the female thread in the base or adapter ring or to an improper fastening of the lights.

Generally, using fixing hardware of a different type of the one originally supplied with the bases or adapter rings, or tightening 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

Reception and storage

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

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

2. Store the bases preferably in their original packing in a protected area.

3. In order to avoid extra handling work, it is advisable to store the bases according to their type and application and taking into account the work schedule.

Base Earthing

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

This recommendation is extremely important in case of LED lights: this is the only way to guarantee a complete effectiveness of the protection system against voltage surges included in the LED light fitting.

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

Note: Guidelines on how to realize the earthing of the base are given:

- for shallow bases, in Chapter 4: Installation of shallow bases, page 20 Note: Provisions for earthing connections (holes for self-tapping screws) are present on the inner cover of the lighting fixture and on the inner and outer surface of the base. An earthing kit available from ADB can be used to connect the earthing connection of the light to the base.
- for deep bases,FAA advisory Circular AC 150/5340-30.

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. 150/5340-30

Installation equipment

Tool case

ADB has designed a tool case (ADB part number **1411.19.421**) containing 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 may be of no use for your specific case). The table below lists the tools included in the case:

Description	CN	Description	CN
Empty box	6169.01.007	Screwdriver, flat blade 8x150	8961.05.250
Torque wrench	8961.06.203	Screwdriver, Pozidriv2x125	8961.05.220
Socket hex, 3/8”, for 3/8” screw	8961.06.008	Loctite 2701	7870.05.130
Socket hex, 3/8”, for M10 screw	8961.06.000	Loctite 222	7870.05.140
Socket, 1/4", 1.6x8 Flat	8961.05.050	Molycote BG87 INERTA grease (to replace prisms)	7850.05.060
Socket, 1/4", Pozidriv2	8961.05.060	Natural hydraulic vacuum silicone grease	7850.42.220
Extension, 1/4"	8961.06.220	Attack driver	8961.04.100
Adaptation, 1/4"-3/8"	8961.06.010	Dead blow hammer	8961.04.110
Hinged handle - short	8961.06.110	Bit holder	8961.04.120
Plier	8961.10.110	Bit Pozidriv2	8961.04.130
Opening tool	4071.53.220	Lifting tool assembly for inset lights	1411.19.550

Additional tools and equipment

A number of accessories are available to help in the installation of shallow or deep bases. If no code number is indicated in the table below, please contact ADB or its local agent for exact definition of the product.

Description	CN
Crimping tool for external crimp connection	-
High Precision Installation Jig for shallow bases: - for bases with M10 screw fixing kit - for bases with M10 stud fixing kit - for bases with 3/8" UNC screw fixing kit	 1411.17.030 1411.17.020 1411.17.010
Telescope assembly for ditto	1411.19.251
Simplified Installation Jig for shallow bases	1411.19.260
Installation jig for deep bases	*
Diamond-toothed core drill 230 to 270 and 330 to 380 mm dia.	*
10 mm thick diamond-toothed saw blade	*
Sealing resin for shallow base installation (paste and liquid)	*
Sealing resin for saw cuts	*
Set of fibre brushes	*
Base (shallow or deep)	see cat. leaf.
Adapter ring	see cat. leaf.
Sealing compound for adapter ring (RTV106)	7835.55.151

* Contact ADB

Installation jigs

Generalities

While high accuracy is necessary (see "Installation tolerances", page 18) in fact the installation of mounting bases is very easy and requires just some care and well-adapted jigs.

The jig is a tripod frame used to maintain the mounting bases in place until the sealant has set. In order to get the required stability it is advisable to weight the jig or the base down (e.g. by means of stones).

The jig allows for accurately positioning the base at the correct location, adjusting the elevation, the orientation and levelling the base as required.

The use of a jig does not release the installation personnel from the need to perform good survey work and to accurately position marks.

Jigs must have certain features to satisfy the installation requirements:

- independently adjustable feet (tripod: isostatic).
- strong and rigid structure
- accurate plate to permit survey measurements
- adaptable to any size of base in any level position
- easy to transport and to fix at any place
- easy to adapt to the top of the base without need to disassemble the lighting fixture or plywood cover, extending working time
- capacity to take additional load

ADB can provide standard jigs or complete assistance for installation.

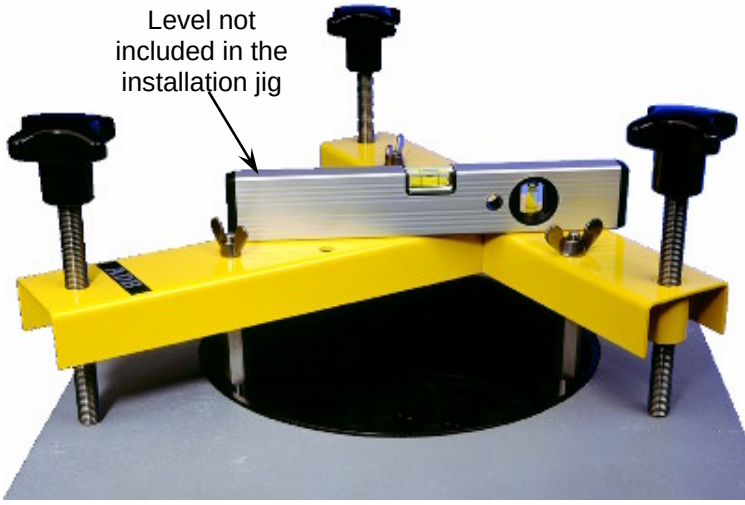
Installation jigs, *continued*

Installation jigs for shallow bases

Two types of installation jigs for shallow bases are available to position and level the shallow base (HPI or Euro®):

- The High Precision Installation Jig exists in three versions, depending on the type of fastening hardware (see table above). The telescope permits alignment with the highest possible accuracy.
  This jig can be used to install bases with the light already mounted (see Procedure 1 of the paragraph "Installation methods and procedures", page 21).

- A Simplified Installation Jig (1411.19.260) is also available. It is universal for any type of fastening hardware and includes 3 alignment studs for screw applications (metric or UNC) and 3 alignment studs for studs applications (always metric). Note that with this jig it is not possible to install the base with the light already mounted on top of it.



See "Site survey", page 19 for practical information on the convenient number of jigs.

Installation jigs, *continued*

Installation jig for deep bases

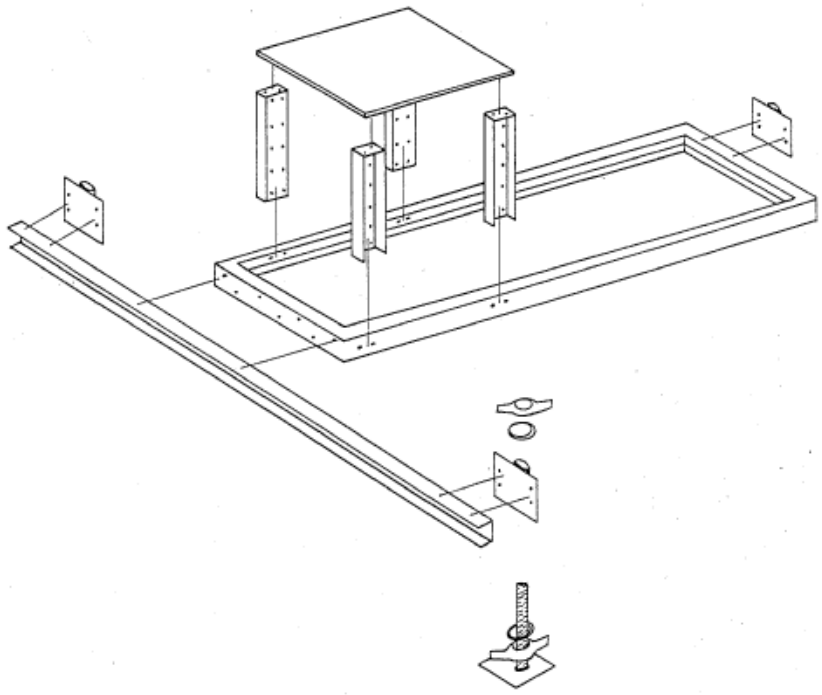
An installation jig is essentially made of an accurate adapter plate, with holes to hang the base from it, and a tripod structure.

On-site building of installation jigs is simple and inexpensive. Each construction site is different, which may make adaptations in the design necessary. Therefore we recommend to design and build on-site installation jigs adapted to the local conditions. If doing so, the jig must be designed with accuracy and sturdiness in mind.

If required, ADB can also provide a standard jig.

See "Site survey", page 19, for practical information on the convenient number of jigs.

The figure below shows the mounting principles of an installation jig.



Sealants

Recommen-dations

Special attention must be paid to selecting the different sealants depending on the different purposes: base filling, wireways or shallow base fixing.

This choice depends on:
- pavement type: concrete, asphalt, ...
- application
- specific characteristics
- environment at installation & in service

Be sure to select a durable sealant providing good adhesion to the contact materials, sufficient flexibility, long aging time, good heat dissipation and resistance, and acceptable curing time for the conditions it will be used in.

Refer to the technical data supplied by the manufacturer, particularly for resin preparation, weather and temperature limitations, pot life and curing time.

Our local agent can give you advice on the choice of recommended sealants.

Validity date

Always check validity date of sealing resin before using it. The use of resin beyond its validity date may lead to defective or unreliable sealing/binding.

Chapter 3: Starting the installation: survey work

Overview

Introduction

Before sealing the bases, they need to be carefully positioned and aligned. This chapter contains the necessary information about installation tolerances and explains how to organise an accurate installation.

Contents

This chapter contains the following topics:

Installation tolerances

General

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. 150/5340-30

The above documents may be superseded by the specification document edited by the engineering consultant.

The installation of bases requires great care for the initial positioning. The bases are to support lights and these lights have very narrow positioning tolerance.

Corrections in case of wrong installation

Errors in base installation will invariably either bring extra costs for spacer corrective rings or involve extra work for breaking down already finished pavement.

In particular for inset lights there is no adjustment facility within the lights and the base position affects directly the position and orientation of the fixture.

For shallow bases, almost no correction is possible once the base is anchored. The only solution is to drill through the base and install a new one. For deep bases, some corrections are possible, but they are always costly and difficult, and lead to a delay in the completion of the works.

It is therefore highly important to take the greatest care in observing the above mentioned tolerances.

Site survey

Introduction

The site survey takes place in two steps:

1. Using a theodolite, all locations of the bases must be marked in order to prepare the necessary recesses (shallow bases) or excavations (deep bases).
2. After the excavations have been made at the marked locations, the bases are connected to the jigs, put in place and connected to the ducts. The base then needs to be positioned accurately within the tolerances defined above.

Always keep in mind the tolerances as stated in "Installation tolerances", page 18, which means that a qualified team of surveyors familiar with their instruments is required.

Usually one theodolite and one spirit level are used:

- one theodolite for alignment (Mind environmental effects).
- one level for leveling

Using approved reference points, the surveyors will fix designed coordinates of each base in relation with their jig.

Alignment and level positioning are executed step by step, until final result satisfies both requirements.

The quantity of jigs to provide on the field depends on the rolling time of each jig, the total quantity of bases to install and the staff available for installation.

Let's take a practical example to illustrate this rolling time:

- Day 1:
    - Positioning of the jig by the survey team: alignment, elevation and azimuth based on design data within tolerances
    - Connection of cables, earthing, conduits
- Day 2:
    - Checking and approvals
    - Sealing
- Day 3 :
    - Jig removal

If for instance 30 bases are to be installed per working day, 90 jigs will be necessary with this rolling time of 3 days.

30 bases are then installed in 3 days, 60 in 4 days, 90 in 5 days, etc...

The above figures are given only as examples, they may differ widely depending on the applied method.

Chapter 4: Installation of shallow bases

Overview

Introduction

Several installation techniques are possible, depending on local requirements, site organisation or soil conditions. This chapter describes a standard technique, giving additional information regarding less frequent or more specific methods.

Contents

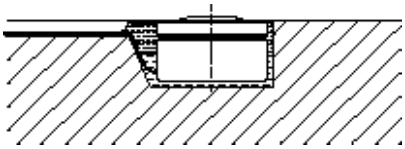
This chapter describes the successive steps for a standard method of installation. It contains the following topics.

Installation methods and procedures

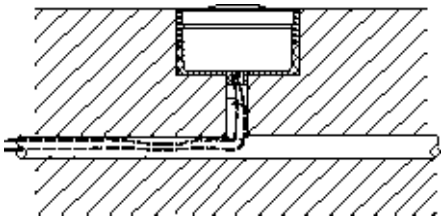
Two installation methods

The Shallow base (HPI or Euro®) is sealed into a recess cored out in the pavement. The isolating transformer is usually installed in a steel base or pit located in or next to the runway shoulder. Two methods are possible:

1. The light fixture is connected to the transformer by means of two wires sealed into a saw cut in the pavement.



2. The light fixture is connected to the transformer by means of a two-core cable running into conduits in the subgrade or the lower layers of the pavement.



Two procedures

There are two procedures to install 8" light assemblies with shallow bases (HPI or Euro®):

Procedure	Carry out the following steps:	See
Procedure 1	1. In the workshop, mount the light unit onto the base.	Instruction manual of the light
	2. Install the shallow base (HPI or Euro®) fitted with the light fixture.	Page 26 - 32
Procedure 2	1. Install the shallow base (HPI or Euro®) and provide a temporary protection.	Page 26 - 32
	2. Mount, later on, the light unit onto the shallow base.	Instruction manual of the light

We recommend procedure 1 for 8" light fittings installed according to Method 1. For 8" light fittings installed according to Method 2 and 12" light fittings, only procedure 2 is valid.

Note: Procedure 1 is possible only with the High Precision Installation Jig (see paragraph "Installation equipment", page 12.

Installation methods and procedures, *continued*

Advantages of procedure 1

The advantages of procedure 1 are listed below:

- maintaining perfect waterproofness between fitting and base (or, if any, adapter ring) as the labyrinth gasket will never be exposed to dirt or other damage;
- assuring the correct positioning of the light fixture in the base;
- ease of installation, since the complete installation is achieved in one operation.

However, care should be taken to avoid damaging the lights already installed due to heavy trucks and construction equipment rolling over the lights before the runway surface has been cleaned and turned over to air operations. The presence of gravel, sand and other construction materials can damage the exposed optical surfaces when run over by vehicles.

For this reason, some contractors prefer to adopt procedure 2, which requires the provision of temporary covers (3/4" thick, plywood or steel) for the bases.

Important reminder: Fixing hardware

Please refer to the paragraph "Important safety notifications", page 10.

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! Refer to the Instruction Manual of the light, for the tool to use, the requirement for use of Loctite and the torque to apply

Sealing resin quantity and recess dimensions

In the table below you will find an overview of the required sealing resin quantity and the recess diameter and depth:

	ADB 8" shallow base	**ADB 12" shallow base**	**Saw cuts for wire ways (2 wires AWG10- ext. Ø 4.9 mm each)** (see note)
Recess diameter	240 mm (-10 / +30 mm)	340 mm (-10 / +40 mm)	12 mm width
Recess depth	125 mm (-0 / +5 mm)	160 mm (-0 / +5 mm)	25 mm depth
Quantity of resin	± 2.1 dm³ (HPI) / 1.4 dm³(Eurobase)	± 2.5 dm³	± 0.30 dm³ per meter

Note: Dimensions of the saw cut are given for information only. They may differ in function of various parameters including the number and type of cables.
Dimensions of the saw cuts for various numbers or types of wires or cables are given in the ADB "Airfield Lighting Design Manual", Volume II.

Earthing

Instructions for earthing

In case the base and the lighting fixture are not equipped with three pole connectors, earthing must be done by direct connection of the earthing conductor to the shallow base.

Provisions for earthing connections (holes for self-tapping screws) are present on the inner and outer surface of the base, self tapping screws, Nomel washers and earthing lugs are supplied with the bases. Use the external hole for Installation Method 1 (wires in saw cut in the pavement) and the internal hole for Installation Method 2 (cable entering the base though a central hole). In the particular case of bases equipped with feed-throughs or cable glands situated at the bottom of an extension pot, use the external hole.

As mentioned before, failure to earth correctly the base will void the warranty for all damages occurring as a result of voltage surges.

Earthing of the shallow bases shall happen using a copperconductor, min. 4 mm², connected to the counterpoise cable protecting the electrical circuit. Each base may be individually connected to the counterpoise, laying the earthing wire in the same saw cut or conduit as the secondary supply wires of the light. Alternatively, several bases can be connected together, with one common earthing wire to the counterpoise.

The counterpoise cable shall be a non-stranded bare wire, min. 13mm², connected at least every 300m (1,000 ft) to copper-clad ground rods, and installed above the protected electrical cables.

How to drill the recess - Method 1 (with wire ways in the pavement)

Introduction

This part of the manual describes how to make the recess in the pavement in the case where the wires are laid in a saw cut. Please refer to next section page 26 for the case where wires are running in a conduit below the pavement.

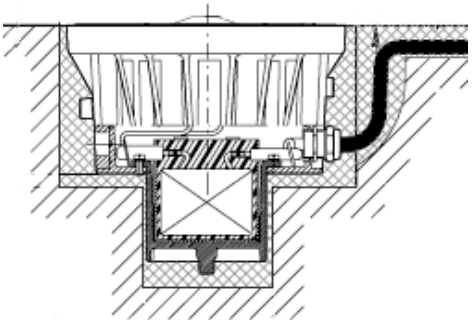
The description below is based on the choice of installation procedure 1. This means that the lighting fixture (plus adapter ring, if needed) has been mounted on the shallow base before starting the installation.

Please refer to the Instruction Manual of the lighting fixture for this preliminary operation.

In case it has been decided to mount the light later on the base (installation procedure 2), a temporary protective cover (plywood or metal) should be provided to protect the shallow base. In the description below, explanations are given when installation procedure 2 differs from the one described.

Procedure

The table below shows the different steps to perform.

Step	Action
1	Determine the exact position of the light and mark it with reference marks to facilitate the positioning of the drill. Refer to the section "Site survey", page 19, for accurate positioning of the base.
2	Drill a recess (see dimensions page 22), by means of a diamond-faced core drill mounted on a sturdy rig.
3	The recess sides must be vertical; the bottom must be flat or slightly concave to ensure correct positioning of the base.
4	Specific case of the FTO 230V version, with transformer in an extension pot. In this case drill an additional hole, 100 mm (-0 / +10 mm) in diameter and with a total depth of 205 mm (-0 / +5 mm), centered on the main hole. 

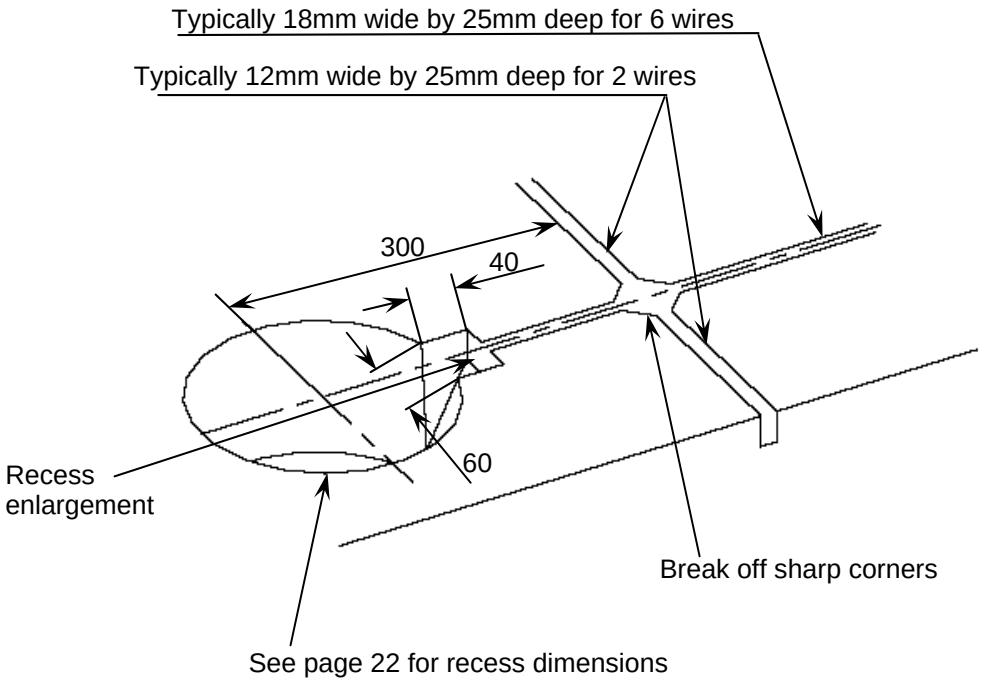
How to drill the recess - Method 1 (with wire ways in the pavement), *continued*

Procedure

5	Saw the wire ways using a diamond-toothed saw. If wire ways cross construction joints, extend the sawcut 15 mm below the existing joint over a distance of 15 cm at each side of the joint. Enlarge the recess around the wire ways to allow an easy outlet of the cables out of the base.
6	Clean (pressure water wash) and dry the surface and sides of the recess before installing the light. The temperature of the base, the recess sides and wire ways should not be below the minimum curing temperature of the resin.

Illustration

The illustration clarifies this method:



Note: Dimensions of the saw cut are given for information only. They may differ in function of various parameters including the number and type of cables.

How to drill the recess - Method 2 (with conduits under the pavement)

Introduction

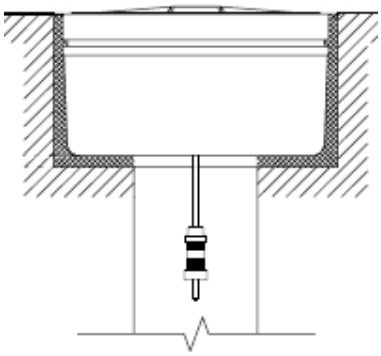
This part of the manual describes how to make the recess in the pavement in the case where the wires are running in a conduit below the pavement. Please refer to previous section page 24 for the case where wires are laid in a saw cut.

Usually, installation procedure 2 is used in case of installation with conduits under the pavement. This means that the lighting fixture (plus adapter ring, if needed) will be mounted on the shallow base after installation of the base.

In this case, a temporary protective cover (plywood or metal) should be provided to protect the shallow base.

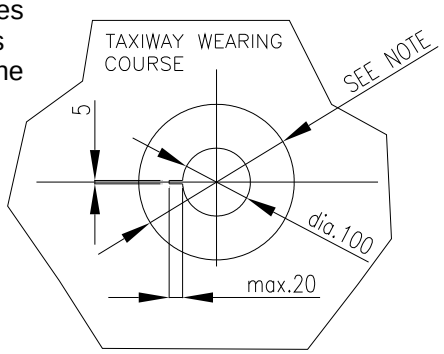
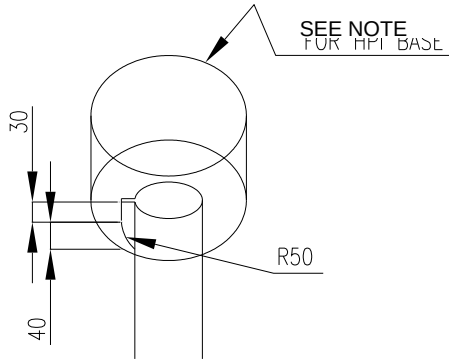
Procedure

The table below shows the different steps to perform.

Step	Action
1	Determine the exact position of the light and mark it with reference marks to facilitate the positioning of the drill. Refer to the section "Site survey", page 19, for accurate positioning of the base.
2	Drill a vertical hole, 100 mm (-0 / +10 mm) diameter, in the pavement by means of a diamond-faced core drill mounted on a sturdy rig, until the drill reaches the conduit.
3	Drill a recess (see dimensions page 22), by means of a diamond-faced core drill mounted on a sturdy rig. Take care to centre the recess on the 100 mm diameter hole made in step 2. 
4	The recess sides must be vertical; the bottom must be flat or slightly concave to ensure correct positioning of the base.

How to drill the recess - Method 2 (with conduits under the pavement), *continued*

Procedure

5	In the particular case of bases equipped with feed-throughs or cable glands situated at the bottom of an extension pot, make a notch according to the drawing on the top of the vertical conduit, aligned with the earthing hole of the base.   (Note: drawing is for a 8" base, 12" is similar. See dimensions of the recess page 22)
6	Clean (pressure water wash) and dry the surface and sides of the recess before installing the light. The temperature of the base, the recess sides and wire ways should not be below the minimum curing temperature of the resin.

How to position and seal the base

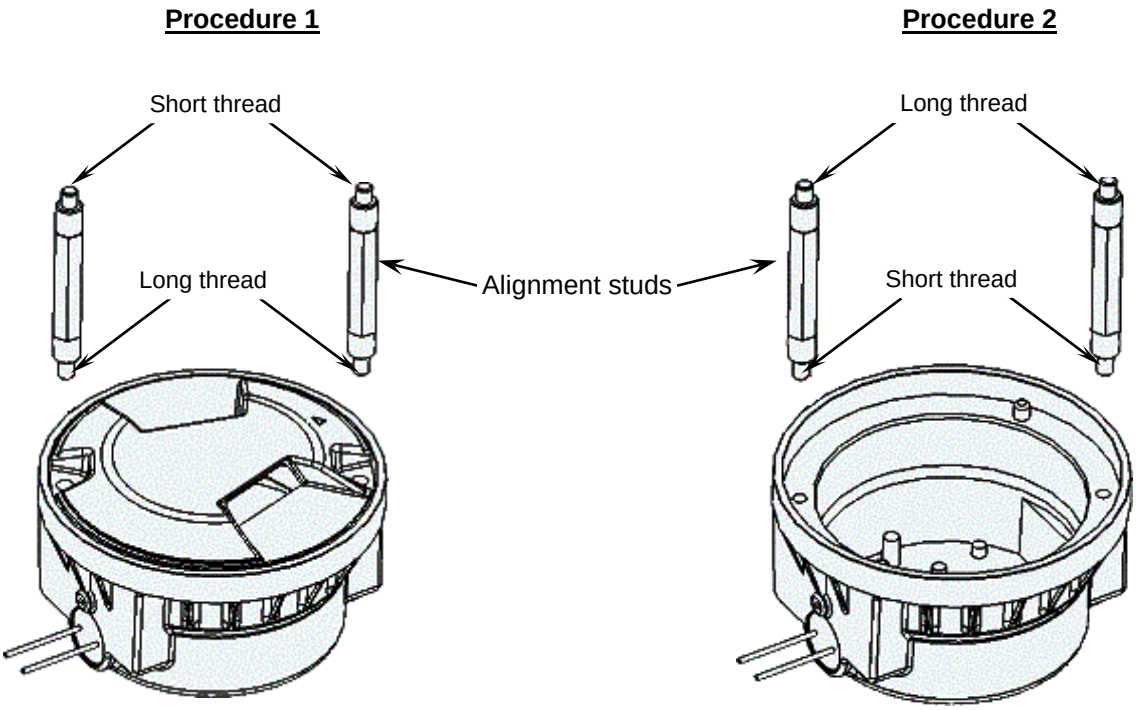
Installation jig

The High Precision Installation Jig allows using either Procedure 1 or 2, while the Simplified Installation Jig can be used only for Procedure 2.

Never lift the light fixture by holding the wires as this may damage the insulation, break the waterproof sealing and cause electrical and moisture leakage.

Illustration

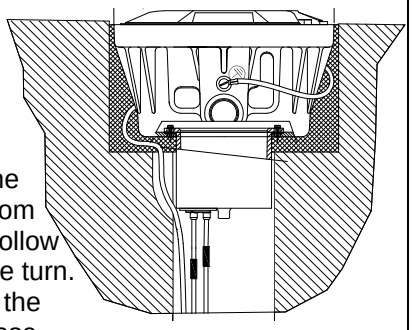
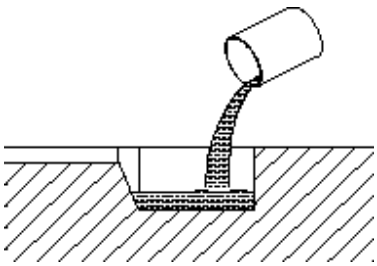
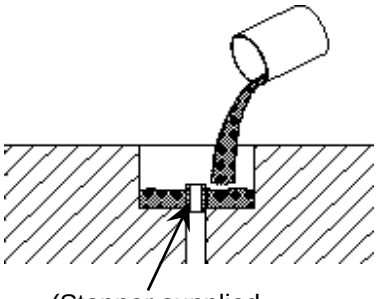
The figures below show how to use the alignment studs of the High Precision Installation Jig, for both Procedure 1 and 2:



Important Note: never use the alignment studs to mount the light on the base. Use the fixing hardware supplied with the base for that purpose.

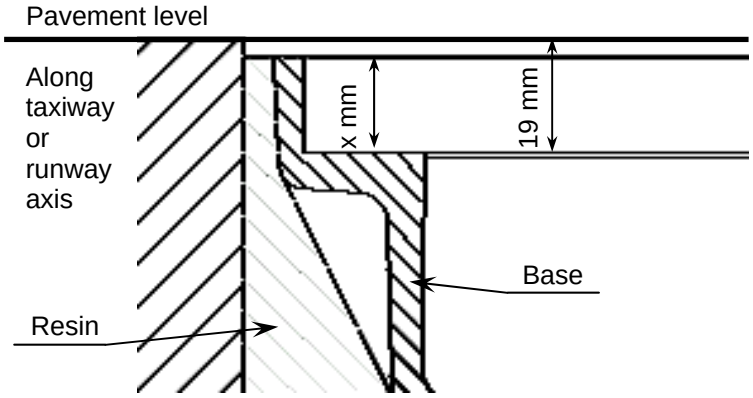
How to position and seal the base, *continued*

Procedure To seal and position the base, proceed as follows:

Step	Action
1	In case of installation method 1 (wires in saw cuts), connect the earthing wire to the external hole provided on the shallow base.  In the particular case of bases equipped with feed-throughs or cable glands situated at the bottom of an extension pot, allow for enough slack in the earthing wire to make at least a complete turn around the base. Insert the wire in the notch, make it follow the bottom of the recess to its outer side and then follow the bottom of the side over one complete turn. Lift the end of the wire and connect it to the external hole provided on the shallow base. In case of bases with central hole, the earthing wire is connected later to the internal hole.
2	Remove the fixation bolts (or the self-locking nuts) and use the visible thread to fit the installation jig. Assemble the ADB installation jig, if necessary, and mount it onto the light as shown on the previous page. Refer to the illustration supplied with the installation jig. Screw the alignment studs **hand tight** in the provided base holes.
3	Pour approx. 0.6 dm^3 (for 8" base) or 1 dm^3 (for 12" base) resin into the recess. This quantity will be sufficient to fill all voids under the base when installed.  or  This operation has to be done in dry conditions. (Stopper supplied by thirds)

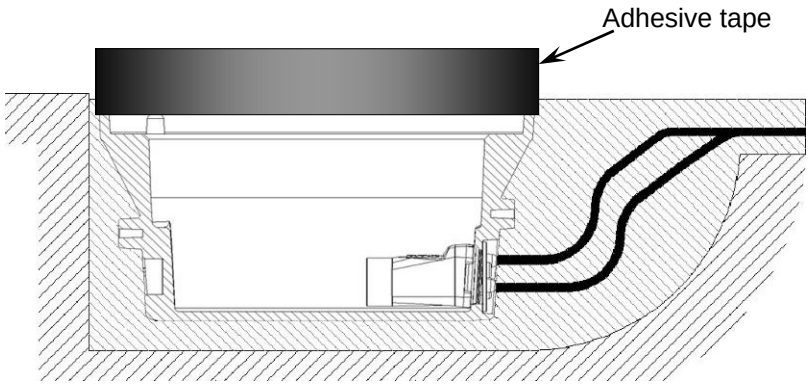
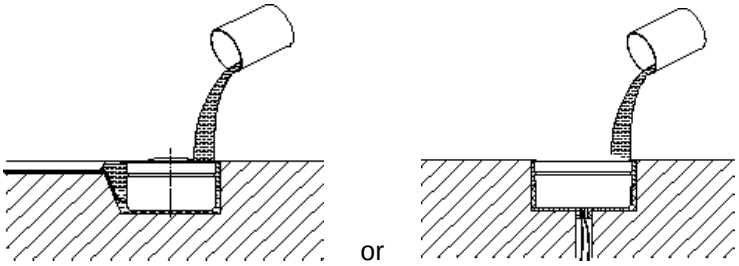
Continued on next page

How to position and seal the base, *continued*

Step	Action
4	Position the assembly (shallow base with light unit and installation jig) in the recess and make sure that the wires are properly located on the bottom of the wire way. Refer to the "Site survey", page 19 for accurate positioning of the base. Follow the instruction included with the installation jig to properly position the shallow base in azimuth and in height. The flange supporting the light in the shallow base should be 19 mm (-0 / +1.5 mm) below the pavement surface, to ensure a correct light output and fixture projection above pavement level.  If the pavement is not plane, take the measurement where the pavement level is the highest, this is usually along the taxiway or runway axis. Note: - x = 18 mm for 8" bases - x = 16 mm for 12" bases

Continued on next page

How to position and seal the base, *continued*

Step	Action
5	To guarantee the stability of the base during curing, put a weight on the base/jig assembly (otherwise the base may be expelled from the recess by flotation). To avoid spilling resin on the light fixture or in the annular space between the light and the base, a piece of adhesive tape should be installed around the top of the base as shown in the figure below. 
6	Fill the remaining voids around the base using liquid resin, up to the base top.  Depending on the pavement slope, it may be necessary to make a dam using putty at the beginning of the wire way to prevent the liquid sealant from flowing into it.
7	When the sealant has sufficiently cured, remove the installation jig. Remove the protecting tape.
8	Connect the wires according to the procedure described on page 32, “How to connect the wires or cables”.

How to connect the wires or cables

Method 1

If the wires are laid in saw cuts (installation method 1), proceed as follows:

This operation has to be done in dry conditions.

Step	Action
1	Connect the light fixture wires to the supply wires coming from the transformer, using insulated crimp-on connectors. Offset the connectors as shown below to save space in the wire way and avoid short circuits. Use an appropriate tool that requires complete crimp before releasing. 
2	Carefully insulate each connection using a small heat-shrinkable sleeve or by applying insulating tape.
3	Check the wires for continuity and insulation.
4	Keep the wires on the bottom of the sawcut. Fill the wire way completely with a suitable sealing resin and let it cure.
5	If the installation has been done without the light mounted on the base (Procedure 2), mount it now. Please refer to the Instruction Manual of the lighting fixture for this operation.

Method 2

If the wires are laid in conduits underneath the light fitting (installation method 2), proceed as follows:

Step	Action
1	Connect the earthing wire to the internal hole provided on the shallow base.
2	Pull up the supply cable and plug the light fitting cable into the socket.
3	Apply insulating tape around the plug/socket assembly.
4	Mount the light on the base. Please refer to the Instruction Manual of the lighting fixture for this operation.

Chapter 5: Installation of deep bases

General information

FAA standards

Deep bases are fully defined in FAA AC 150/5345-42. FAA also provides accurate guidelines on the installation of the bases in AC 150/5340-30. In addition, other specifications like FAA AC 150/5370-10, not directly related to the bases are relevant and determine accessories and/or details of the mounting bases.

These standards define mainly the ducts' inner diameter as a function of their cabling or wiring capacity, the type of sealant used to bind the bases into the pavement, the grounding system, etc...

Please refer to the above standards for any information relevant to the installation of deep bases.

Please also refer to IEC 61820 "Electrical installations for lighting and beaconing of aerodromes -Constant current series circuits for aeronautical ground lighting - System design and installation requirements".

Chapter 6: Maintenance

Shallow Bases

No specific maintenance operation is required for the base itself. However, the tightening torque of the screws or nuts fastening the light on the base shall be checked regularly.

When checking the tightening torque or installing a new light on the base, **always tighten the fixing hardware to the recommended torque, using a calibrated torque wrench!** Refer to the Instruction Manual of the light, for the frequency of the control, the tool to use, the requirement for use of Loctite and the torque to apply.

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

When the lighting fixture is removed for any reason, it is advised to check the base for presence of water.

If any trace of water ingress is present, pump the water, clean the base and more specifically the gasket surface and mating surfaces with the lights, and re-install a maintained light using a new gasket.

In case shallow bases with studs are used and some studs are damaged, please contact ADB to receive the detailed repair procedure.

Deep Bases

Introduction

The maintenance of a steel base consists essentially of checking the water level. However, the tightening torque of the screws or nuts fastening the light on the base shall be checked regularly.

When checking the tightening torque or installing a new light on the base, **always tighten the fixing hardware to the recommended torque, using a calibrated torque wrench!** Refer to the Instruction Manual of the light, for the tool to use, the requirement for use of Loctite and the torque to apply.

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

The tightness of the grounding lug screw is also checked.

Water level

Semi-annually check the water level in the base or transformer pit.

This operation shall be included in the fixture inspection.

When removing the fixture, check for water level and if higher than 150 mm (6”), pump water from base.

Chapter 7: Parts lists

Overview

Introduction

Information about the types of products described in this manual, of their sub-assemblies and accessories is given in this chapter.

Shallow bases

A wide range of shallow bases are available. They are adapted to the various customers' needs for what concerns:

- Size: 8" or 12" diameter
- Mounting hardware: screws, studs and bolts, in both UNC and metric sizes
- Types of cable entries: by a central hole, by ADB feed-through, by compression gland
- Number of cable entries: 1, 2 or 3
- Type of connectors
- Special executions

Please contact ADB via your local representative for the reference data of the shallow base you need.

Adapter rings

A complete range of adapter rings of various dimensions with various types of mounting hardware is available. Please contact ADB via your local representative for the reference data of the adapter ring you need.

Overview, *continued*

Deep bases

A complete range of airport light bases and transformer housings, made to FAA AC 150/5345-42 (current edition), is available.

A temporary plywood cover is provided to protect the top flange during transportation and to ease installation. The bases are equipped with the appropriate type, quantity and position of duct entrance(s) and with earthing terminals (as required). The spacer and flange rings, accurately machined, are zinc -plated and chromated. They include stainless steel mounting screws and gaskets to ensure the watertightness of the assembly. The base covers are made from hot-dip galvanized machined steel or from zinc-coated or yellow painted pressed steel. These base covers are supplied with stainless steel mounting screws and with a gasket.

For ordering bases, please specify:

- Depth
- Number, diameter, type and location of conduit entrances
- Number and position of ground connection
- Drain hole
- Couplings. For the entries, the location(s) should be given with respect to the light beam axis (disregard beam toe-in or toe-out angle, if any).
- Special execution or optional extras

A comprehensive range of mud plates, plywood covers, screws, lock washers, polyethylene gaskets, grooved rings, cover plates with accessories, O-ring seals, spacer rings, ... are available for either single-section or multiple sections bases. Please contact your local ADB representative with your requirements.

ADB
Leuvensesteenweg, 585 – B 1930 Zaventem – Belgium
Tel: 32/2/722.17.11 – Fax: 32/2/722.17.64