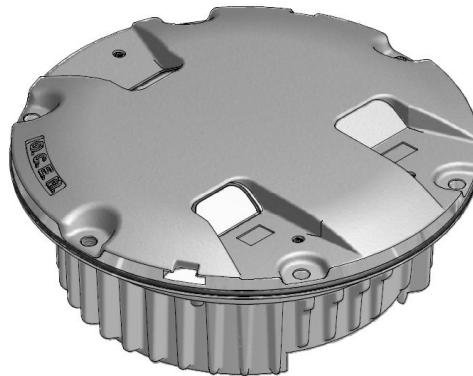




SEMI-FLUSH RUNWAY EDGE LIGHT

SLRE

INSTRUCTION MANUAL FOR USE, INSTALLATION AND MAINTENANCE

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EDITION

Data

04/30/2012	General revision, revised tightening torque values and updated chapter 5 "List of the Recommended Spare Parts"
02/09/2010	New emission

REVISIONS

Index	Date	Description	Written by	Approved by
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LIST OF VALID PAGES

From page 1 to page 29

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LIMITED PRODUCT WARRANTY

THE FOLLOWING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT BY WAY OF LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

OC Energy warrants to each original Buyer of Products manufactured by the Company that such Products are at the time of delivery to the Buyer, free of material and workmanship defects, provided that no warranty is made with respect to:

- (a) any Product, which has been repaired or altered in such a way, in Company's judgement, as to affect the Product adversely;
- (b) any Product which has, in Company's judgement, been subject to negligence, accident or improper storage;
- (c) any Product which has not been operated and maintained in accordance with normal practice and in conformity with recommendations and published specification of Company; and,

OC Energy's obligation under this warranty is limited to use reasonable efforts to repair or, at its option, replace, during normal working hours at the facility of the Company, any Product which in its judgement proved not to be as warranted within the applicable warranty period. All costs of transportation of Products claimed not to be warranted and of those repaired or replaced, to or from the facility of the Company shall be borne by Purchaser. Company may require the return of any Product claimed not to be as warranted to its facility, transportation prepaid by Purchaser, to establish a claim under this warranty. The cost of labour for the installation of a repaired or replaced Product shall be borne by Purchaser. Replacement parts provided under the terms of this warranty are warranted for the remainder of the warranty period of the Products upon which they are installed to the same extent as if such parts were original components thereof. Warranty services provided under the Agreement do not assure uninterrupted operations of Products; Company does not assume any liability for damages caused by any delays involving warranty service.

IMPORTANT: READ THIS DOCUMENT

Before proceeding to the operations of installation, commissioning, operation, maintenance or disposal, carefully read the entire document.

SAFETY INFORMATION

Extreme caution should be exercised when working with this equipment; it is normally used or connected to circuits that operate at dangerous voltages and can be fatal.

The following section contains important safety information that you must follow when installing and using the apparatus.

Misuse of the equipment or lack of care in applying safety procedures and prescriptions specified in this document, may result in a hazard.

Avoid contact with voltage or current sources.

For no reason the protections and the safety devices must be removed.

OPERATION ON THE EQUIPMENT - SKILLS

Operation on the equipment and access to its internal parts shall be done by experienced personnel, adequately trained and aware of the risks related to electricity and high voltages.

Safety rules shall be adopted when operating on the equipment, or on cables and other apparatus connected to the it.

DO NOT OPERATE ON ENERGIZED CIRCUITS

Do not carry out any operation on the converter or on apparatus connected to it when the circuits are energized.

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**WHEN HANDLING AND SERVICING THIS EQUIPMENT, OBSERVE PRECAUTIONS
FOR HIGH VOLTAGE EQUIPMENT**

Before any access, inspection or intervention, be sure to have switched-off the unit, opened the main circuit breaker and removed the supply to the unit (by opening the circuit breaker/switch on the distribution board at the beginning of the supply line). Then wait discharge time (at least 5 minutes), ground carefully the system, and check for voltage presence before accessing.

REANIMATION

The maintenance staff must be aware of the risks related to electricity, criteria to prevent the risk of electric shock and resuscitation techniques.

CE MARK



This equipment complies with the requirements of European regulations for the CE mark.

The user has to respect all prescriptions reported in this document.

This equipment complies with the requirements of the EEC directives 2004/108/EEC and 2006/95/EEC with regard to "Electromagnetic Compatibility" and "Low Voltage Electrical Apparatus" respectively.

OUT OF SERVICE

In case of dismantling, decommissioning, destruction, disposal, the user shall follow all the required precautions for component and material elimination, according to local rules and applicable law.

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1. GENERAL

SLRE	Semi-flush runway edge light is high intensity, bidirectional or unidirectional, inset, 12" steady-burning type. These fixtures are intended for use as runway edge or threshold\end, in order to provide a visual aid to the moving aircraft. SLRE lights are in compliance with ICAO Annex 14 Vol.1, FAA AC 150/5345-46 (Style 2), IEC TS 61827 (Style 3) and NATO-STANAG 3316.
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The fixtures described in this manual are designed to be connected to series circuit, fed through standard isolation transformers connected to CCR with variable current from 2.8 A to 6.6 A.

Location of these fittings shall be in compliance with ICAO – Annex 14, STANAG 3316 and FAA

2. MAIN FEATURES

Each light assembly consists of a **removable fixture** and a **shallow base** receptacle (mounting system B - See fig.11). The fixture is waterproof and designed to withstand aircraft impact and roll-over loads without damage.

The fixture can be bidirectional type (bidirectional dome provided with two optical windows and equipped with two lamps that can operate simultaneously or in independent way) or unidirectional type (unidirectional dome provided with one optical window and equipped with only one lamp); it is also possible to obtain an unidirectional light from a bidirectional dome choosing the 'X – Screened' option (see fig.2); this configuration includes a bidirectional dome and a screen to blind the unused optical window.

2.1. REMOVABLE LIGHT UNIT

The **removable fixture** mainly consists of a **dome**, an **optical assembly** and a **lower cover** (figs. 1/2/3/4/5/6/7/8/9/10)

The **dome** is made of treated aluminium casting and includes one or two windows to seat the prisms, complete with gaskets, kept in the proper position by means of a mounting plate fixed with three screws FHCS M5x12 (fig.1 - n°7). In correspondence of the windows, the dome is outside provided with identification letters "A", "B" and "C". Opposite apertures are parallel to the centerline axis and the different toe-in of the lamps give the correct light beam depending on the kind of fixture: runway edge or threshold\end light.

The dome is provided with six through holes for fastening the fixture to the base and two suitable slots, in opposite position, to make easy the fixture removal by using two suitable lifting tools (available on request, P/N 332.4140 or 332.4230). As alternative, two screwdrivers can be used.

A silicone O-Ring (separately supplied) has to be mounted outside around the dome, to avoid dirt deposits between dome and shallow base (fig.1 - n°19).

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The **optical assembly** (bidirectional) consists of two prisms (fig.1 – n°3) with relevant gaskets (fig.1 – n°4), and one or two filters with relevant holder (fig.1 - n°8,9) and one or two lamps (fig.1 - n°13). Unidirectional fixtures mount only one lamp, one prism and one filter.

Fixtures can be provided with six kind of lamp supporting plate in order to obtain the following configurations:

- ❖ ICAO 45 m and 60 m ("C"+"A")
- ❖ ICAO 45 m and 60 m ("C"+"B")
- ❖ FAA green-red ("C"+"A")
- ❖ FAA green-red ("C"+"B")
- ❖ FAA red-red ("C"+"A")
- ❖ FAA red-red ("C"+"B")

The lamp is of tungsten-halogen type, rated 105 W 6,6 A, 1000 hours average lamp life, with dichroic reflector and male faston plug wires. The lamp is locked into its seat by a single elastic holder (stainless steel) in order to realize an easy and quick lamp replacement.

All the optical assembly parts are factory assembled; they may be field-replaced if necessary (parr. 4.3 - 4.4).

The **lower cover** consists of a treated aluminium casting; it is fastened to the dome by means of three screws HSCH M5x16 (fig.1 - n°22). An O-Ring (fig.1 – n°20) is provided between dome and lower cover. The dome is equipped with a reference pin for its proper positioning on the lower cover.

The cover is provided with one or two threaded hole for cable entry and external grounding screw with yellow-green cable lead, size 2.5 mm², 0.460 m long, with male faston terminal. A suitable valve is outside mounted for the leakage test.

Watertightness between fixture and shallow base is ensured by means of an O-Ring (fig.11 – n°7 separately supplied) to be placed on the relevant groove on the shallow base.

The fixture is supplied with one or two **cable lead with L-823 plug**; they consist of two single-pole teflon leads, size 2.1 mm² (#14 AWG), 0.700 m long. The plug is in compliance with FAA AC 150/5345-26 for very quick coupling with the receptacle mounted on the shallow base.

The fixture 304 mm in diameter and 123 mm (+ 18,5 mm for plugs) high; the protrusion above the ground is 12.7 mm.

An identification data label is externally applied over the lower cover (fig.1 – n°30). Moreover, to identify quickly the beam colour, the letters "A", "B" and "C" of the dome in front of the windows are painted in the same colour of the light beam.

The same colour painting is provided outside on the lower cover.

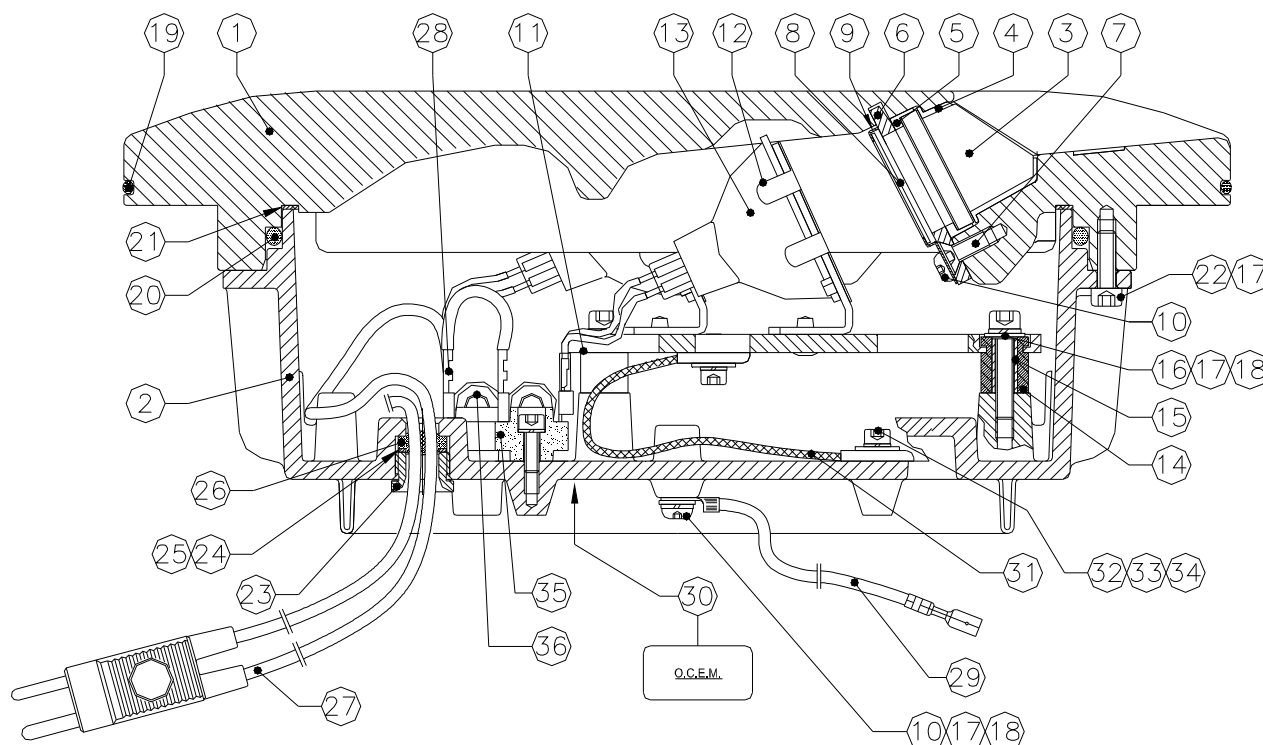
See fig.2 for complete P/N information.

All hardware is made of stainless steel.

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Nr.	Description	Qt.	Nr.	Description	Qt.
1	Dome	1	21	-Expanded PTFE strip	1
2	Lower cover.....	1	22	-HSCH M5x16 inox screw.....	3
3	Prism	2	23	-Cable gland – Nut.....	1
4	Prism gasket	2	24	-Cable gland – Washer.....	1
5	Prism nylon gasket.....	2	25	-Cable gland – Washer (PTFE)	1
6	Mounting plate.....	2	26	-Cable gland – Gasket.....	1
7	FHCS M5x12 inox screw.....	6	27	-Cable lead with plug	1
8	Filter	2	28	-Cable lead with plug - Female faton terminal.....	4
9	Filter-holder	2	29	-Grounding cable lead with male faston terminal.....	2
10	-BHC M5x10 inox screw.....	4	30	-Identification label	1
11	-Lamp supporting plate.....	2	31	-Bare copper plate	2
12	-Lamp elastic spring	2	32	-HSCH M4x10 inox screw.....	2
13	-Lamp	2	33	-Ø4inox grower washer	2
14	-Vibration-damping block.....	4	34	-Ø4x12x1 inox washer.....	2
15	-Spacer.....	4	35	-Insulating strip	2
16	-HSCH M5x25 inox screw	4	36	-Fuse cutout	2
17	-Ø5 inox grower washer	5			
18	-Ø5x10x1 inox washer	7			
19	-O-Ring 41150 silicone.....	1			
20	-O-Ring 6850 silicone	1			

Figure 1 – Section view and Part List

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Basic P/N: _____ **SLRE - I - CPY - 1P - 200 - B - F**

Optical Assembly: _____
 I = ICAO 60 m Runway Edge
 S = ICAO 45 m Runway Edge
 E = FAA L-850C Runway Edge Ⓢ
 A = FAA L-850D Threshold/End Ⓢ

Colour (Left Side) / (Right Side)*: _____
 C = Clear Ⓢ
 Y = Yellow Ⓢ
 R = Red Ⓢ
 G = Green Ⓢ
 X = Screened Ⓢ

Electrical System: _____
 1P = One Cable Lead Ⓢ
 2P = Two Cable Leads Ⓢ

Lamps: _____
 100 = 1x105 W 6.6 A with Reflector Ⓢ
 200 = 2x105W 6.6 A with Reflector Ⓢ

Mounting Assembly: _____
 B = Standard Shallow Base Ⓢ
 O = No Mounting Assembly Ⓢ

Options: _____
 F = Fuse Cutout Ⓢ
 E = Electronic Cutout Relays - not ETL certified

Ⓢ FAA Approved, ETL certified.

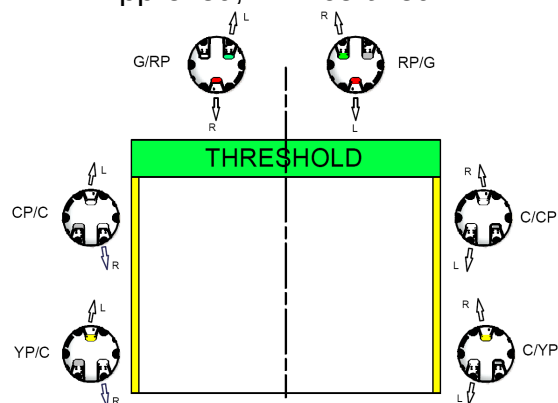
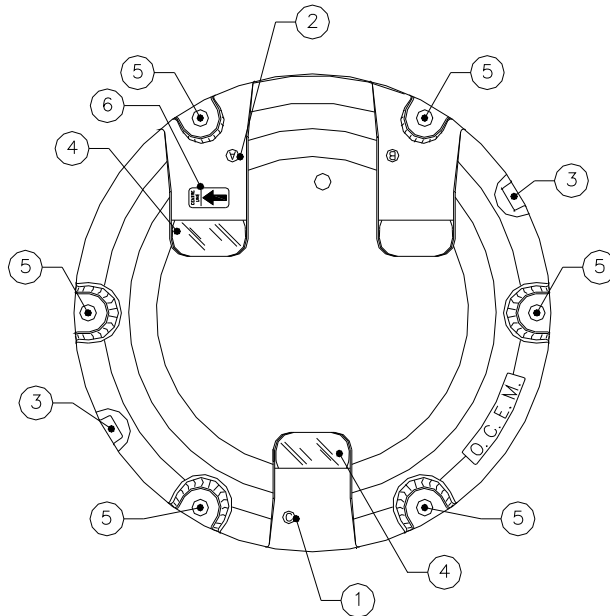


Figure 2 – Complete P/N identification

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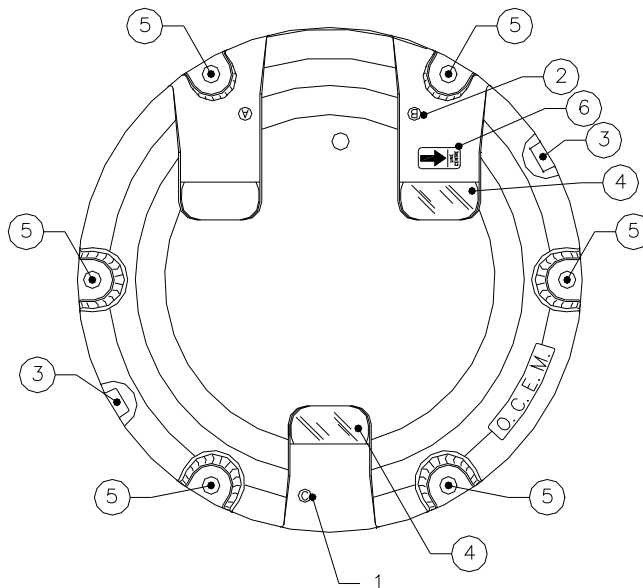
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- 1 - Letter "C" – central beam side
- 2 - Letter "A" – not centered beam side
- 3 - Slot for dome removal
- 4 - Prisms
- 5 - Through holes for light unit fastening
- 6 - Label with arrow for toe-in identification

Figure 3 – Dome – Outside view



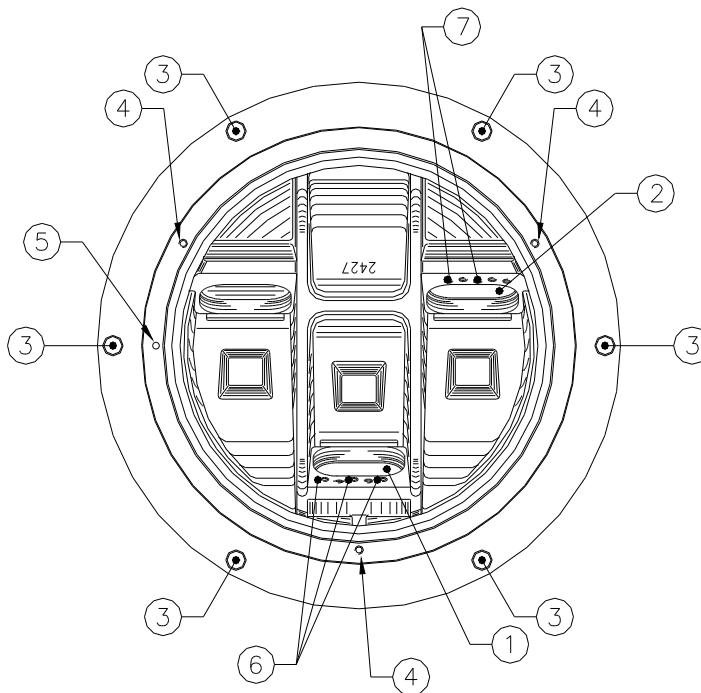
- 1 - Letter "C" – central beam side
- 2 - Letter "B" – not centered beam side
- 3 - Slot for dome removal
- 4 - Prisms
- 5 - Through holes for light unit fastening
- 6 - Label with arrow for toe-in identification

Figure 4 – Dome "C" + "B" – Outside view

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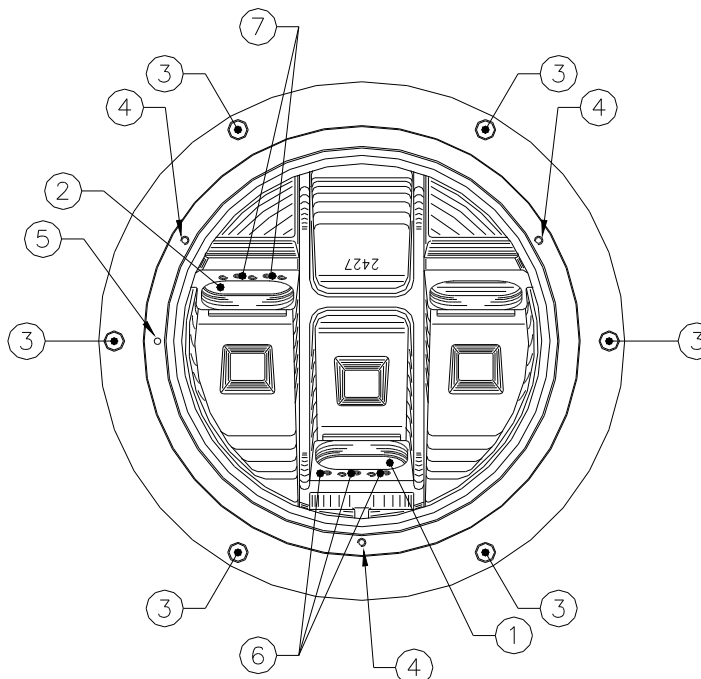
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- 1 - Window "C" to seat the prism – central beam side
- 2 - Window "A" to seat the prism – not-centered beam side
- 3 - Through holes for light unit fastening
- 4 - Holes for lower cover fastening
- 5 - Lower cover reference pin
- 6 - Holes for mounting plate fastening
- 7 - Holes for filter support fastening

Figure 5 – Dome "C" + "A" – Inside view



- 1 - Window "C" to seat the prism – central beam side
- 2 - Window "B" to seat the prism – not-centered beam side
- 3 - Through holes for light unit fastening
- 4 - Holes for lower cover fastening
- 5 - Lower cover reference pin
- 6 - Holes for mounting plate fastening
- 7 - Holes for filter support fastening

Figure 6 – Dome "C" + "B" – Inside view

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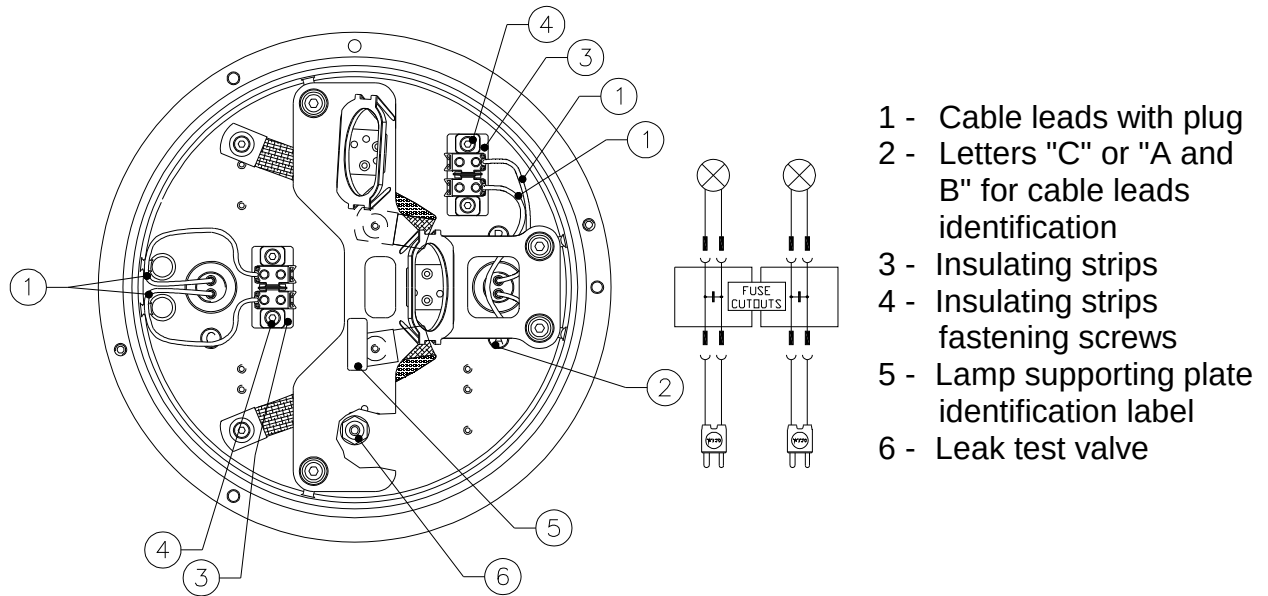


Figure 7 – Lower cover with two cable leads and optional fuse cutout – Inside view

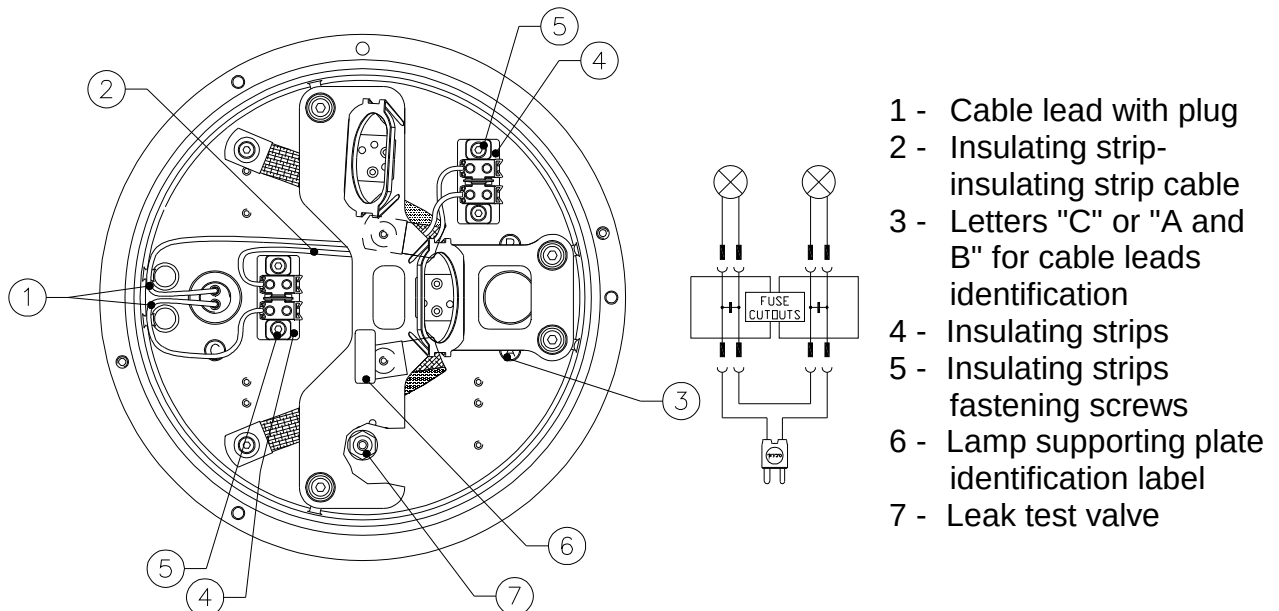


Figure 8 – Lower cover with one cable lead and optional fuse cutout – Inside view

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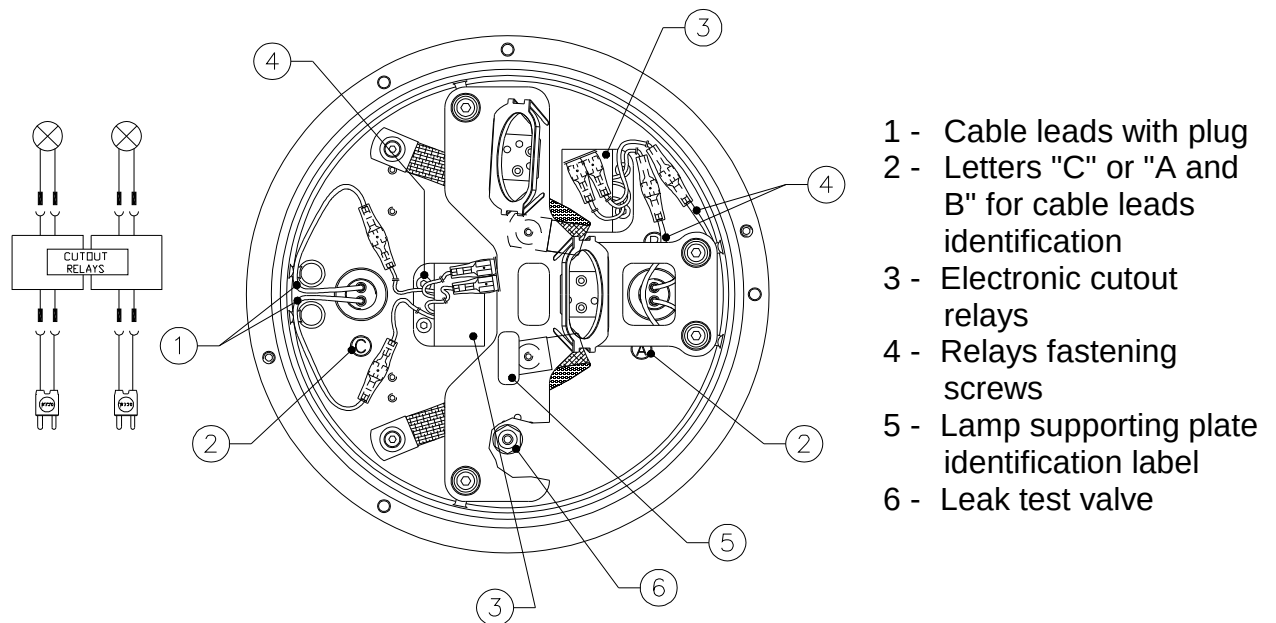


Figure 9 – Lower cover with two cable leads and optional electronic cutout relays – Inside view

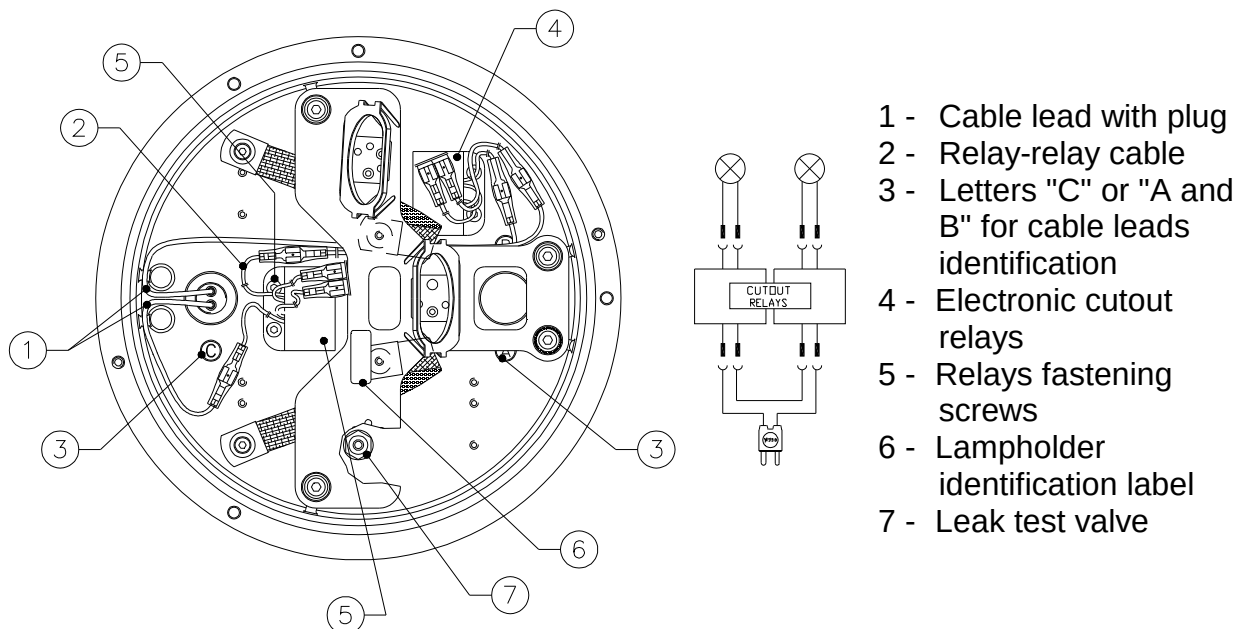


Figure 10 – Lower cover with one cable lead and optional electronic cutout relays – Inside view

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2.2. SHALLOW BASE

The **shallow base** (mounting system B) (fig.11) consists of a treated aluminium casting containing an electrical feed-thru system to connect the power cables, consisting of one or two cable leads with receptacle incoming inside the base through one or two cable glands. The cable lead with receptacle consists of two single-pole leads, size 2.5 mm², 1.00 m long, with FAA L-823 receptacle.

The letters "A" and "B" are printed inside the base for cable leads identification.

The base is equipped with an internal grounding screw with yellow-green cable lead, size 2.5 mm², 0.250 m long, with female faston terminal for quick connection to the corresponding of the fixture. An additional external grounding screw is provided close to the cable entry.

The shallow base is designed for cementing in place by means of epoxy-resin in a hole drilled in the pavement.

The fixture has to be fastened to the base by means of six hex cap screws, complete with external silicon-coated lock-washer.

An O-Ring (separately supplied) must be placed between base and fixture for watertightness (fig.11 - n°7) placed in the relevant shallow base groove.

The 12" shallow base is 320 mm in diameter and 150 mm high.

On request, special bases without cable leads can be supplied, provided with holes suitable for conduit connections.

Inside the base two suitable holders (fig.11 - n°9) are provided to properly sustain the secondary power cable, in case of this cable is inside incoming through a conduit.

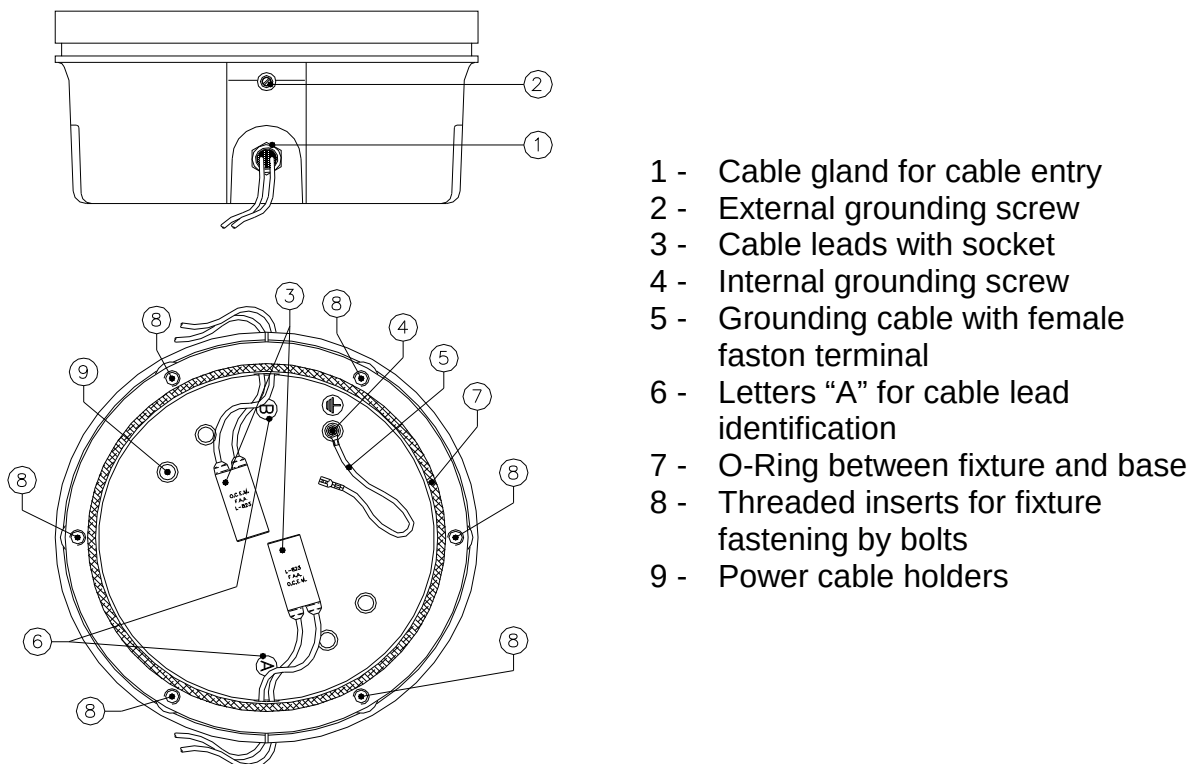


Figure 11 – Standard 12" shallow base (mounting system "B")

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3. INSTALLATION

Using the scheme of light configuration in fig.12, drill each recess in pavement following the instruction in fig.13. Make sure the recess size and depth are maintained within the specified limits. All surfaces of the recess must be clean and dry. If any of these surfaces is damp, it is desirable that it be dried and blown clean with a compressed air blast. The recess side walls must be perpendicular to the pavement surface. The bottom surface must be flat or slightly concave to assure that the shallow base rest securely and in true position. The recess can best be drilled using a diamond-faced core drill in a sturdy, stable drill rig.

Mark on the pavement surface the aiming direction of the light by chalk, nails or other devices.

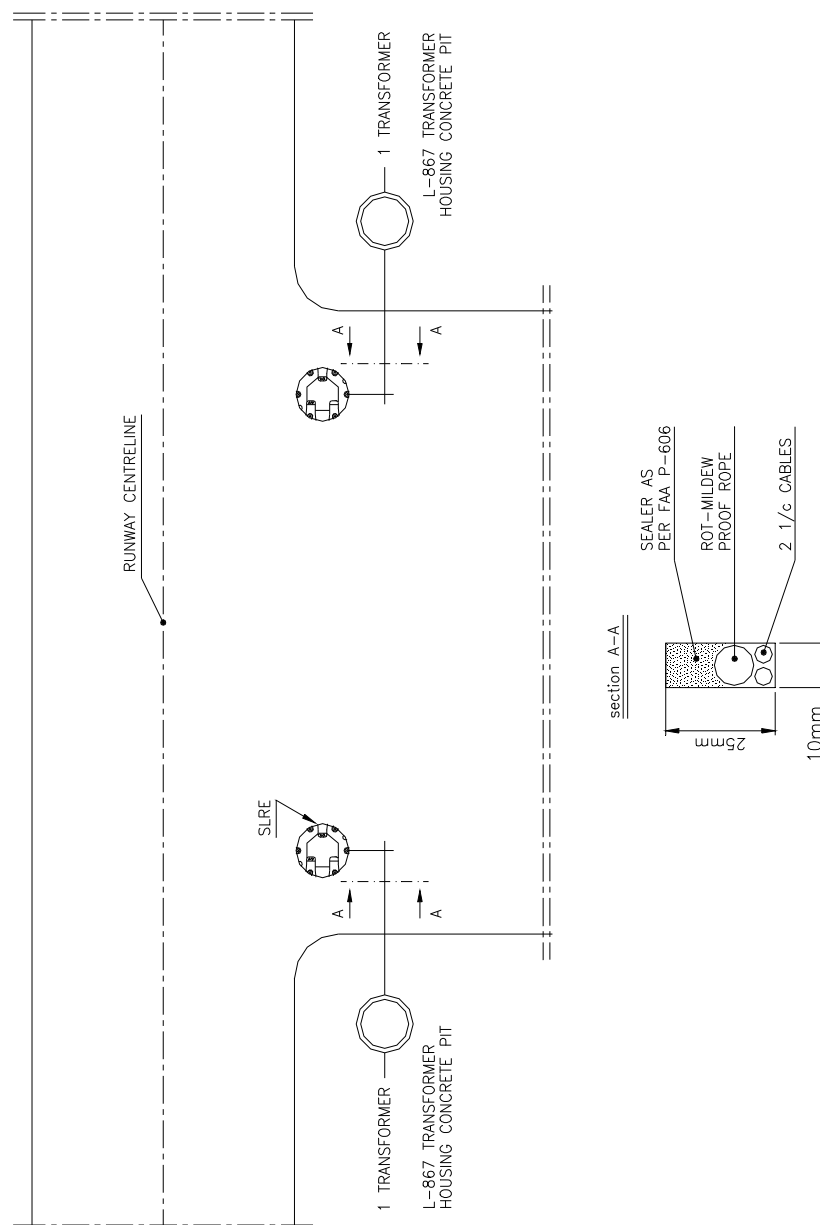


Figure 12 – Example of threshold configuration (one transformer per each fixture)

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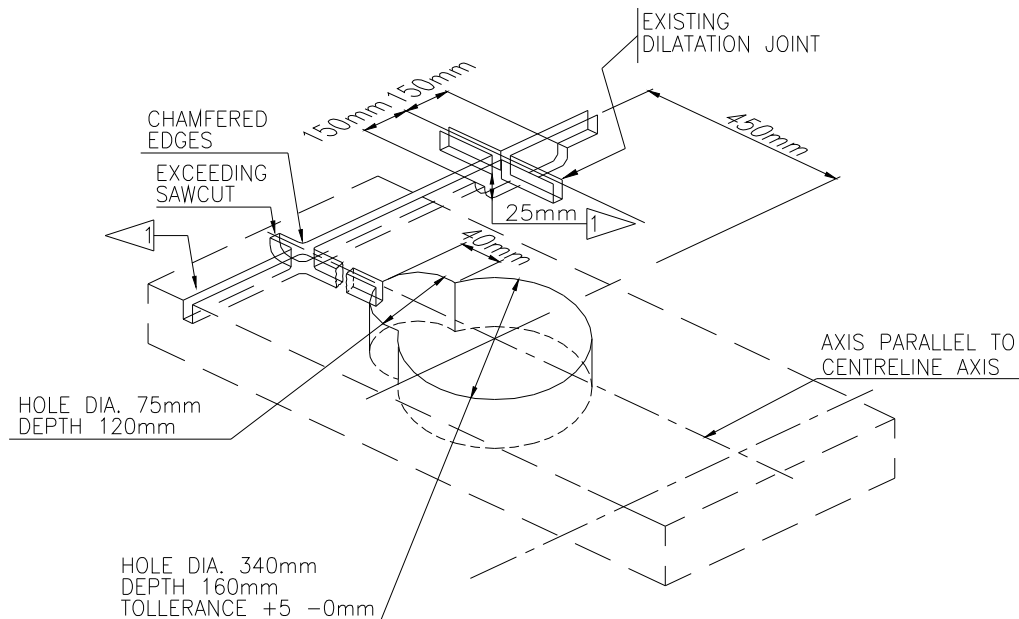


Figure 13 – Sawcutting and joint intersection details

3.1. INSTALLING THE SHALLOW BASE

Two different installations are possible:

- Method “A” – cable leads to be laid in wireways
- ▣ Method “B” – cable leads to be laid in cable ducts (fig.10)

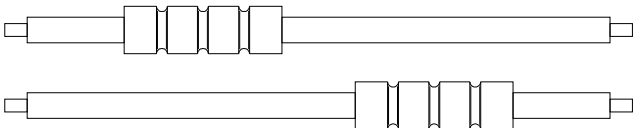
Proceed as follow to realize a proper installation.

	A	B	
1	•	▣	Unscrew the six locking screws and remove the fixture from the base using the lifting tool P/N 332.4140 or 332.4230 (as alternative two screwdrivers can be used).
2	•	▣	To assure an adequate bond between base and hole all external surfaces of the base should be sandblasted and must be cleaned with solvent. TAKE CARE NOT TO DAMAGE THE ELECTRICAL SYSTEM.
3	•	/	Connect an insulated G/Y grounding wire of suitable length to the grounding screw externally provided on the wall of the base.

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4	•	/	Splice the light base leads to the power cables using solderless squeeze connectors, as shown in the figure, crimped with the proper tool. Connect also the grounding wire to the main grounding network by using a suitable clamping lug.  ATTENTION: Insulate each splice carefully using either heat shrinkable insulating tubing properly applied or at least three layers of plastic electrical insulating tape applied with half overlap.
5	•	□	<u>Mount the positioning jig (P/N 332.4301) on the base as shown in fig.15. An optical device for proper fixture orientation is available (P/N 332.4351 fig.16).</u>
6	•	/	Properly arrange the leads in the wireways using small pieces of insulating tape if necessary.
7	•	□	Completely cover the bottom of the base with sealer material, apply a thin coat of sealer to the bottom of the drilled hole to assure a bond between the bottom of the light base and the drilled hole. It may be necessary to place temporary plugs so as to block the wireways entrances into the drilled hole (METHOD "A") or the cable ducts entrance (METHOD "B"). The plugs will retain the sealer while it begins to dry up. ATTENTION: avoid starting the installation when the ambient temperature is below 10°C (86°F), unless the sealer used is designed to dry up at a lower temperature.
8	•	□	Push the base into the recess until its upper side is at the level of the pavement surface; take care no sealer flowing inside the base. Align the notch of the base with the markings on the pavement surface.
9	•	/	Observing the circular level fixed on the jig, level the jig by operating the three leveling lobe knobs (fig.15). If necessary, a weight may be placed on the jig to hold the light base in position. The remainder of the space between the sides of the shallow base and the drilled hole should be filled with sealer up to approx 25 mm from the pavement, according to the local needs. Fill the remaining 25 mm with a suitable joint sealing filler.

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10	/	■	Observing the circular level fixed on the jig, level the jig by operating the three leveling lobe knobs (fig.15). If necessary, a weight may be placed on the jig to hold the light base in position. When the shallow base is in its final position, the conduit(s) must be properly jointed to the hole(s) provided on the shallow base. This(these) hole(s) can be provided either on the wall either on the bottom, the number and the dimensions according to customer requirements (fig.14). The remainder of the space between the sides of the shallow base and the drilled hole should be filled with sealer up to approx 25 mm from the pavement, according to the local needs. Fill the remaining 25 mm with a suitable joint sealing filler.
11	/	■	Lay the secondary power cable, equipped with a suitable two-pole receptacle kit, and the grounding wire inside the cable duct.
12	•	■	To install the fixture place the O-Ring around the dome (fig.1 - n°19) and between fixture and base (fig.11 - n°7); connect the plug and the grounding wire of the fixture with the receptacle and the grounding wire of the base; press the fixture by hand onto the base and secure it using the six locking screws complete with washer, one drop of anaerobic adhesive, medium type (e.g. Loctite 243), should be applied. Tightening torque is 35 Nm. ATTENTION: The fixture is subject to mechanical damage and/or optical misalignment if not properly seated on the base flange.

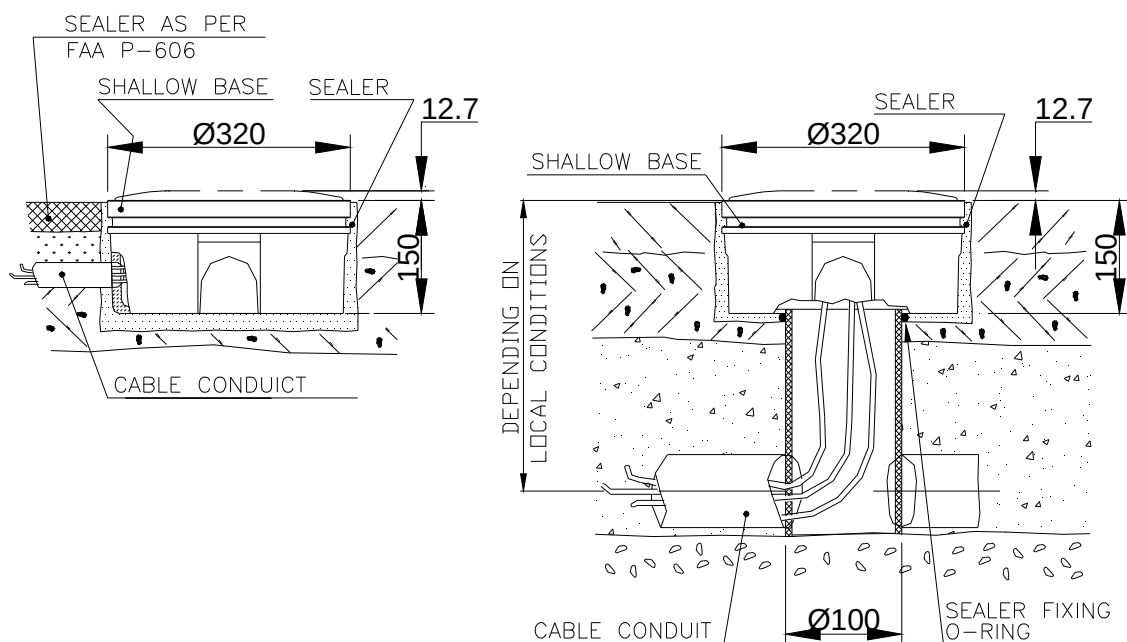
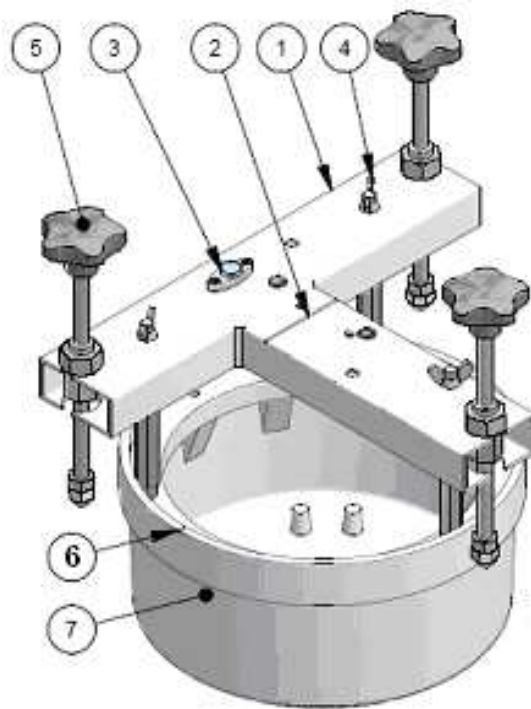


Figure 14 – 12" shallow base for side or bottom ducts (method "B")

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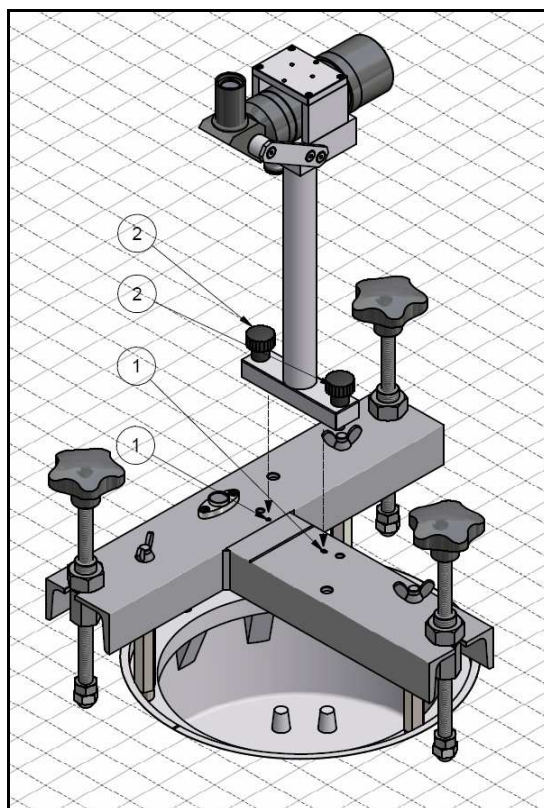
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- 1 - Positioning jig
- 2 - Align the jig notch with the mark on the pavement
- 3 - Circular level
- 4 - Screws and spacers for the jig mounting
- 5 - Lobe knob for positioning jig levelling
- 6 - Shallow base notches aligned with the notch on the jig
- 7 - Shallow base

Figure 15 – Shallow base installation details



- 1 - Positioning jig holes for optical device reference pins
- 2 - Fixing knobs

Figure 16 – Optical device (refer to the manual UT-MT-0485 for further information)

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3.2. INSTALLING THE LIGHT UNIT ON L-868 BASE, SIZE B

Install L-868 light base in compliance with FAA AC 150/5340-30.

The fixture is shipped complete (including the lamps) and is ready for installation as received, except the dome outside O-Ring, separately supplied (Fig.1 – n°19).

Be sure the flange on the transformer housing is clean and the O-Ring (if used) is in place in the O-Ring groove.

Connect the plug of the fixture to the receptacle of the isolating transformer inside the deep base. Connect the grounding wire of the fixture to the grounding wire of the deep base (faston connection). Then press the fixture firmly and evenly by hand onto the base flange. Secure the fixture to the base by using the six locking screws complete with washers, supplied with the base. One drop of anaerobic adhesive, medium type (e.g. Loctite 243) should be applied to the screws before installation; tightening torque is 25 Nm.

The fixture is subject to optical misalignment and/or mechanical damage if not properly seated.

3.3. SECONDARY WIRING

The IEC 61823 International Standard (AGL series transformers) states at para. 4.6 that “if an earthing connection is provided, it shall be connected to the larger socket of the transformer secondary connector.”

This means that, when a fixture is directly connected to the relevant isolation transformer (provided with earthing connection), the fixture secondary side is wired to the grounding network through the larger pin of fixture plug.

In case of an inset fixture, installed in the taxiway/runway pavement on its shallow base far from the relevant isolation transformer, it is necessary to provide a secondary extension between fixture and transformer. To help the installer to identify the larger socket of the female connector inside the base (when installed), the base secondary cable leads are identified by a colour code: the grey wire is wired to the larger socket, the black wire to the other one. In this way it will be easy to assure the earthing wiring, above described, between the larger socket of the transformer secondary connector and the larger pin of the fixture plug.

4. MAINTENANCE

WARNING

**BEFORE ANY MAINTENANCE INTERVENTION, MAKE
SURE THE POWER SUPPLY BE SWITCHED OFF.**

DO NOT OPERATE ON LIVE PARTS!!!

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The preferred method of maintaining these lights is replacing each fixture periodically and systematically and return it to the maintenance shop for renovation.
Field servicing shall be limited to cleaning the prisms.

4.1. REMOVING AND OPENING THE LIGHT UNIT FROM THE BASE

Remove the fixture from the base by unscrewing the six locking screws complete with washers. Raise the fixture by using the two lifting tools (P/N 332.4140 or 332.4230) inserted in the suitable slots provided on the dome. As an alternative, two screwdrivers can be used.

Disconnect the fixture plug and grounding cable from those inside the shallow base.

Unscrew the leak valve cap and push the valve central pin, in this way the light internal pressure is the same of the atmospheric pressure. Open the fixture by unscrewing the three locking screws HSCH M5x16 (fig.1 - n°22). If the lower cover assembly is hard to remove, it is possible to use two of these screws in two threaded holes close to the locking holes.

Every time the fixture is removed from the base receptacle and opened, inspect the following parts:

- a) prism: if it is dirty or damaged take provision as described at paragraphs 4.2 - 4.3;
- b) all the fixture gaskets: O-Rings between dome and lower cover (fig.1 – n°20); O-Ring around the dome (fig.1 – n°19); prism gasket (fig.1 - n°4); O-Ring between fixture and shallow base (fig.11 – n°7); check the integrity and replace them, if necessary, as described at paragraph 4.5;
- c) cable lead with plug and replace it, if damaged, as described at paragraph 4.6.

4.2. PRIMS CLEANING

4.2.1. Prism outside cleaning

- Removing the fixture is not necessary to clean the outer surface of the prisms, and if already removed is not necessary to open it. Clean the prisms surface with non abrasive glass product.

4.2.2. Prism inside cleaning

Normally the cleaning of the prism inside surfaces is not necessary because fixture is watertight. Whenever it is necessary, remember the following rules.

Remove the fixture from the base and open it following instructions of par. 4.1. and proceed as follows:

- remove the filter assembly (fig.1 - n°8,9) unscrewing the relevant screws BHC M5x10 (fig.1 - n°10)
- clean the prisms surfaces with non abrasive glass product

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- dry them carefully
- reassembly the light unit

Final check before fixture re-assembling.

Verify the correct position of O-Ring between dome and lower cover (fig.1 - n°20).

Mount the lower cover on the dome and fasten it by means the three screws HSCH M5x16 (fig.1 - n°22); tightening torque is 2.5 Nm.

Verify that:

- the O-Ring around the dome (fig.1 – n°19) is right placed on the relevant groove;
- the O-Ring between fixture and shallow base (fig.11 – n°7) is right placed on the relevant groove.

The fixture is ready to be field installed.

4.3. PRISM REPLACEMENT

If the prism is damaged it must be replaced as described below.

It is highly recommended to do a complete overhaul of the fixture. Contact OCER for any suggestion.

4.3.1. Removing the prism

Remove the fixture from the base and open the fixture, as described at paragraph 4.1.

Clean out possible pieces of the old prism and all accumulated debris from the inside. Remove the filter assembly (fig.1 - n°8,9) unscrewing the relevant screws BHC M5x10 (fig.1 - n°10); unscrew the three screws FHCS M5x12 (fig.1 - n°7) and remove the mounting plate (fig.1 - n°6). Then remove the old prism and the gasket, carefully clean the prism seat by scraping and taking care not to damage the relevant walls.

4.3.2. Installing the new prism

Place a new gasket (fig.1 - n°4) in the prism cavity on the dome, then position and press by hand the prism (fig.1 - n°3) in the relevant seat and place a new prism nylon gasket in the back side of the prism (fig.1 - n°5).

Then fasten the mounting plate (fig.1 – n°6) with the three relevant screws FHCS M5x12 (fig.1 - n°7); tightening torque is 2.5 Nm. Inspect all components inside the fixture for damages or signs of corrosion. Replace all necessary components.

Reassembly the fixture following instructions of par 4.2.

4.3.3. Pressure test

The assembly should be given a 1.38 kPa air pressure test. This can be done by connecting an external air pressure line to the valve (fig.7 – n°7) provided on the lower cover. Immerge the assembly under water, so air loss will be easily viewed if some part is damaged or assembling is wrong.

If there is no air loss then test is passed successfully.

Light unit is ready to be field installed.

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4.4. FILTER REPLACEMENT

Remove the fixture from the base and open the fixture, as described at paragraph 4.1. It is highly recommended to do a complete overhaul of the fixture. Contact OCER for any suggestion.

4.4.1. Removing the filter

Clean out possible pieces of the old filter and all accumulated debris from the inside. Remove the filter assembly (fig.1 - n°8,9) unscrewing the relevant screws BHC M5x10 (fig.1 - n°10).

4.4.2. Removing the filter

Place a new filter assembly (fig.1 - n°8,9) and fix it to the dome using the relevant screws BHC M5x10 (fig.1 - n°10). Inspect all components inside the fixture for damages or signs of corrosion. Replace all necessary components.

Reassembly the fixture following instructions of par 4.2.

4.5. RELAMPING

Remove the fixture from the base and open the fixture, as described at paragraph 4.1. Disconnect the faston terminals of the lamp (fig.1 – n°13) wires from the insulating strip or from the electronic cutout relay.

CAUTION: touching the quartz bulb with bare fingers may seriously shorten the lamp life. If the quartz bulb has been touched, wipe it clean with a piece of fabric suitable for lens cleaning, or similar, moistened with isopropyl alcohol

Connect the faston terminals of the new lamp wires to the insulating strip or to the electronic cutout relay and slide the lamp into its lamp-holder seat

Reassembly the fixture following instructions of par 4.2.

4.6. GASKETS

4.6.1. Gasket examination

Every time a fixture is opened each O-Ring must be examined as described below and **replaced** if necessary.

Any O-Ring that is stretched, torn, has a permanent set or some other defect, which would prevent it from forming a water-tight seal **must be replaced with a new O-Ring**.

Remove the fixture from the base and open the fixture, as described at paragraph 4.1.

Light assembly is equipped with the following gaskets:

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- O-Ring between dome and lower cover (fig.1 - n°20);
- O-Ring around the dome (fig.1 - n°19);
- O-Ring between fixture and shallow base (fig.11 – n°7);
- prism gasket mounted between prism and the dome (fig.1 - n°4). As much as regards prism gasket replacement see par 4.3.

4.6.2. O-Ring replacement

Remove the old O-Ring from the groove and clean the flange mating surfaces and the groove, scraping carefully. Take care not to damage the mating surface and the bottom and sides of the groove. Position it in the centre of its groove and push it inside.

NOTE 1: Make sure that the proper O-Ring is re-inserted into the groove.

NOTE 2: The seat of an O-Ring gasket is dimensioned to allow the proper positioning when compressed between the mating surfaces. Screws properly tightened are important in obtaining a complete seal.

TIGHTENING TORQUE	
lower cover HSCH M5x16	2.5 Nm
fixture locking screw	35 Nm (for shallow base) 25 Nm (for L-868 base, size B)

4.7. CABLE LEAD WITH PLUG

4.7.1. Removing the cable lead with plug

Remove the fixture from the base and open the fixture, as described at paragraph 4.1. Inside the lower cover, disconnect the pair of wires with faston terminals from the insulating strip of the damaged cable lead. Remove the faston terminals by cutting the cables, unscrew the gland and pull out the cable lead with gland gasket.

4.7.2. Installing the new cable lead with plug

Insert on the new power supply cable lead with plug the new gland nut with teflon washer, metal washer and then the new gland gasket so that the available length of cables outside the fixture is approx. 50 cm when re-assembled. Pull both cables through the suitable hole provided in the bottom of the lower cover; then splice each cable for a length of approx. 7 mm and clamp the female faston terminal to the cable.

Place the gland gasket inside its seat and tighten the gland nut. Restore internally the electrical connections.

Reassembly the fixture following instructions of par 4.2.

4.7.3. Pressure test

The assembly should be given a 1.38 kPa air pressure test.

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See par 4.3.3.

4.8. VIBRATION-DAMPING BLOCK

Remove the fixture from the base and open the fixture, as described at paragraph 4.1

It is recommended to replace all the four vibration-damping blocks.

Remove the lamp supporting plate (fig.1 – n°11) complete with lamps, by unscrewing the four screws HSCH M5x25 (fig.1 - n°16).

Remove the brass spacers and then the vibration-damping blocks.

Mount the new vibration-damping blocks in their seats and insert the new brass spacers.

Reassembly the lamp supporting plate, by tightening the four screws HSCH M5x25 (fig.1 - n°16); tightening torque is 2.5 Nm.

Reassembly the fixture following instructions of par 4.2.

4.9. PRESSURE VALVE

If a leakage is found through the pressure valve during an air pressure test, check carefully where the leakage happens. If the leakage is between the valve (fig.7 – n°7) and the lower cover, check the tightening of the valve body to the lower cover from the inside of the fixture.

In case the pressure valve needs replacing, operate as follows, considering the fixture already open, as described at paragraph 4.1. Remove the valve cap. Unscrew the valve body with gasket from the inside of the lower cover by clamping the hexagonal end section of the valve body. Screw the new valve on the lower cover; tightening torque is 0.35 Nm. Check the valve core is tightened to the valve body and then screw its cap.

Reassembly the fixture following instructions of par 4.2.

4.10. CLEANING

Service life depends upon the entire assembly being waterproof. All surfaces must be clean, dry and free of all foreign matter if the light fixture is to operate for an extended period without requiring maintenance.

NOTE: see par 5.0 for recommended spare parts list

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4.11. MAINTENANCE PROGRAM

In order to ensure maximum light fixture life, the installed units should be subject to a maintenance program in accordance with the following instructions and taking as reference the Airport Service Manual ICAO - Part 9 - Airport Maintenance Practices or FAA AC 150 5340-30.

4.11.1. DAILY OPERATIONAL CHECKS

A daily operation check should be made of the fixture. The lights should be energized and visually inspected. If any lamps are out, the location of the fixture should be recorded and replaced at the time when the circuit is de-energized, as described at paragraph 4.1.

4.11.2. CLEANING

Regular cleaning is necessary in order to ensure that in-pavement lighting fixtures operate at maximum efficiency. The prism should be cleaned periodically as per paragraph 4.2. The regularity and type of cleaning will be dictated by the weather and the location of the fixtures.

4.11.3. SNOWPLOW OPERATIONS

Snowplow operators should exercise extra care not to strike the light fixtures with snowplow blades. After snow removal operations, inspect all light fixtures to locate and replace, if necessary, any damaged light assemblies.

Passes over the light rows should be made with a power broom only if practical. Whenever snowplows must traverse in-pavement light fixtures, they should be either travelling at less than 10 km/h or have the blades lifted clear of the fixtures. Recommended snow removal techniques are described in Airport Service Manual ICAO - Part 9 - Airport Maintenance Practices or FAA AC 150/5200-30.

4.11.4. MONTHLY INSPECTIONS

This fixture is designed to exclude both ground and surface water from entering. If the lights are not properly maintained (e.g. screws not properly tightened and O-Rings or gaskets in bad condition) water may enter inside the fixture and create serious problems. To prevent this from occurring, it is recommended that each fixture be inspected from the presence of water at least once a month. More frequent inspection is desirable during and following rainy season.

4.11.5. SCREWS TIGHTNESS

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Light unit locking screws should be checked for proper torque at least once every three months or more frequently during the two-four weeks following the reinstallation of a serviced fixture.

4.11.6. LEAKAGE TEST

If any fixture contains water, remove the water and clean and dry the entire fixture. Pressure test the fixture to find the leak. Inspect the O-Ring and gasket grooves and clean. The O-Rings and gaskets should be replaced, the fixture repaired and completely serviced and reinstalled as specified herein.

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5. LIST OF THE RECOMMENDED SPARE PARTS

CODE	DESCRIPTION	FIG.	ITEM
152.9000	Dome ("C"+"A") complete with prisms and gaskets	1	1, 3, 4, 5, 6, 7
152.9050	Dome ("C"+"B") complete with prisms and gaskets		
152.9011	Lower cover with two cable leads with plug, valve and grounding cable	1	2, 10, 17, 18, 23-29, 32-34
152.8051	Lower cover with a cable lead with plug, valve and grounding cable		
152.9025	Lamp supporting plate for SLRE-I, SLRE-S and SLRE-E fixtures ("C"+"A")	1	11
152.9085	Lamp supporting plate for SLRE-I SLRE-S and SLRE-E fixtures ("C"+"B")		
152.9141	Lamp supporting plate for SLRE-A-GPR fixtures ("C"+"A")		
152.9151	Lamp supporting plate for SLRE-A-GRP fixtures ("C"+"B")		
152.9161	Lamp supporting plate for SLRE-A-RPR fixtures ("C"+"A")		
152.9171	Lamp supporting plate for SLRE-A-RRP fixtures ("C"+"B")	1	14, 15, 16, 17, 18
152.8080	Vibration-damping block with hardware		
760.2190	105 W tungsten-halogen, 6.6 A, with dichroic reflector	1	13
152.9040	Dichroic YELLOW filter complete with holder for SLRE-I, SLRE-S and SLRE-E	1	8/9
152.7190	Dichroic RED filter complete with holder for SLRE-I, SLRE-S and SLRE-E		
152.7195	Dichroic RED filter complete with holder for SLRE-A		
153.0070	Dichroic GREEN filter complete with holder for SLRE-I, SLRE-S and SLRE-E		
341.0830	Aluminium screen for unidirectional light	1	3
318.1140	Prism		
325.0311	Prism gasket	1	4
341.0960	Prism mounting plate	1	6
325.8010	Prism nylon gasket	1	5
758.2025	O-ring for lower cover	1	20
758.2016	O-ring for dome	1	19
000.1466	Fuse cutout	1	32
329.3025	Insulating strip for fuse cutout with hardware	6 - 8	4, 5
202.0012	Electronic cutout relay with hardware	7 - 9	4, 5
786.7045	Valve for watertightness test	6-7-8-9	7, 8
152.6148	FAA L-823 plug with gland nut and gasket	1	23-28
011.3020	Cable lead with receptacle L-823, for shallow base, 1.00 m long	11	3
752.1014	Grease for O-ring, 400 g		
712.0004	Anaerobic adhesive for screws, 50 ml		
152.8065	Shallow base fixing hardware, dia. 12"		
325.2000	Silicone O-Ring for base, 12" dia.	8	7