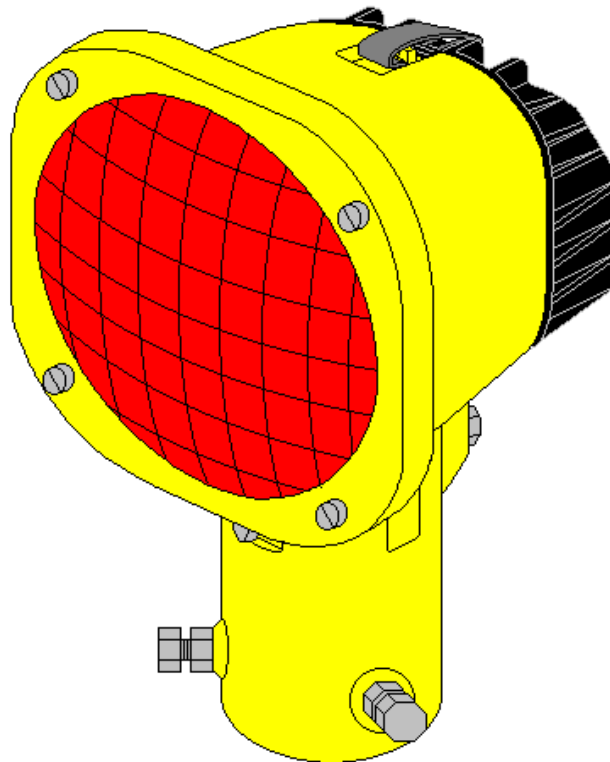


**INSTALLATION DOCUMENTATION
for EL-AT**

DOC 2101.E



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1 Introduction

This document lists the different steps to follow in order to successfully install the elevated fitting **EL-AT**.

You will find in this document two main paragraphs:

"General Information and Requirements": This chapter gives general description and use of the fitting covered by this document.

"Installation of the fitting" : This chapter describes how to install the equipment covered by this document.

1.1 Use restriction notice and warranty

1.1.1 Use of the Document

This documentation is the property of

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This documentation or any parts of this documentation may not be reproduced, stored in a retrieval system or transmitted in any form or by any means (mechanical, photocopying, recording, electronic,...) without THORN's prior consent.

1.1.2 Warranty

THORN Airfield Lighting guarantees that the performance of the elevated lights described in this document, when sold by THORN Airfield Lighting or its licensed representatives, meets the requirements of ICAO Annex 14 volume 1 and FAA specifications.

Any defect in design, material or workmanship, which may occur during proper and normal use over a period covered by the warranty stipulate in the contract, will be replaced by THORN Airfield Lighting free of charge, ex works.

Operational failure resulting from lamp burnt out, improper installation and damage due to airport maintenance equipment is not considered a result of proper use and is beyond the scope of the warranty.

The above constitutes the limits of THORN Airfield Lighting 's liabilities concerning the elevated lights covered by this document.

1.2 Safety instructions

WARNING: Prior to the commencement of work all electrical services MUST be isolated from the supply and connected to earth. Full details of the work involved must be given to the Authorise Person responsible for the electrical engineering services at the airport with regard to the duration of the work, etc.. It is recommended that prior to starting any cutting work the nature and location of services such as cable ducts, etc... should be identified. It is a prerequisite of this type of installation that the work should be carried out by trained and experienced personnel.

1.3 Reference documents

This paper refers to following documents:

- THORN Commercial Documentation General Brochure Doc 1001.E,
- THORN EL-AT Commercial Documentation Doc 1101.E,
- Last Edition of ICAO Annex 14,
- Last Edition of FAA Advisory Circular AC.

1.4 Tools required

1.4.1 Standard tools

- Box spanners 7, 13 and 16 mm or 17 mm
- Open end spanners 10, 13 and 50
- Allen keys no.3
- Screwdrivers
- Crimping tool
- One brush or cloth
- Methylated alcohol

1.4.2 Specific tools

- THORN Levelling tool

2 General information

2.1 Delivery of the fittings

Each unit is individually packed in a durable cardboard box, labelled with its reference name and code. On request one set of fitting documents (= commercial brochure, installation manual, maintenance manual and spare parts list) is delivered with the fittings.

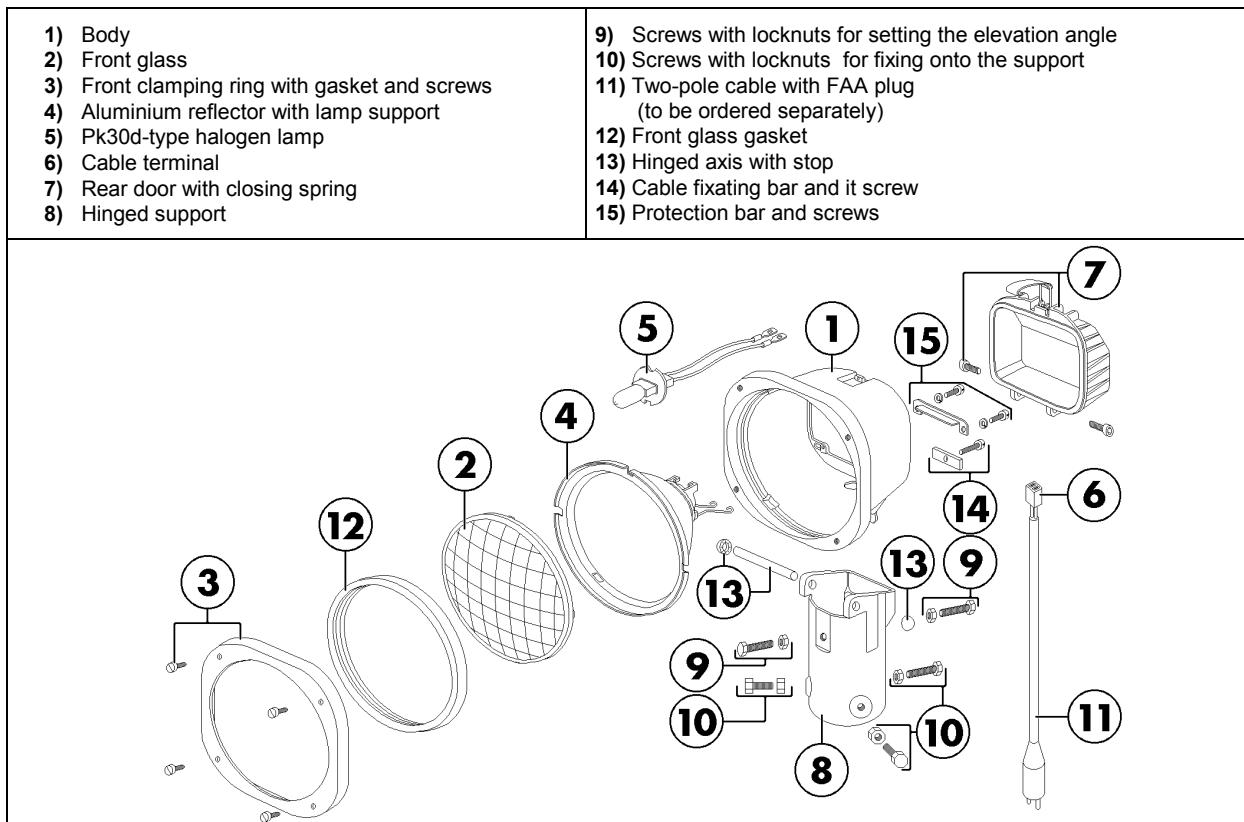
Each fitting is delivered equipped (or not) with one connector without lamp. The Pk30d lamp must be mounted on site in the fitting before its installation on the field.

2.2 Description of the fitting

The **EL-AT** is a unidirectional high intensity fitting mounted with one lamp and one connector. This fitting is equipped with various coloured front glass according to the position on the airfield (namely White, yellow, red, green).

- EL-ATC** : White colour . Approach centre line, approach cross-bars .
High or medium intensity.
- EL-ATS** : Red colour . Approach side row barrettes, Runway End,
Road Holding Position light.
- EL-ATT** : Green colour . Threshold .
- EL-ATW** : Green (dichroic) colour . Threshold wing bar.
- EL-ATJ** : Yellow colour . Runway Guard Light.
- EL-ATF** : Equipped with flash lamp, subject to a separate document ref. DOC 1106.E

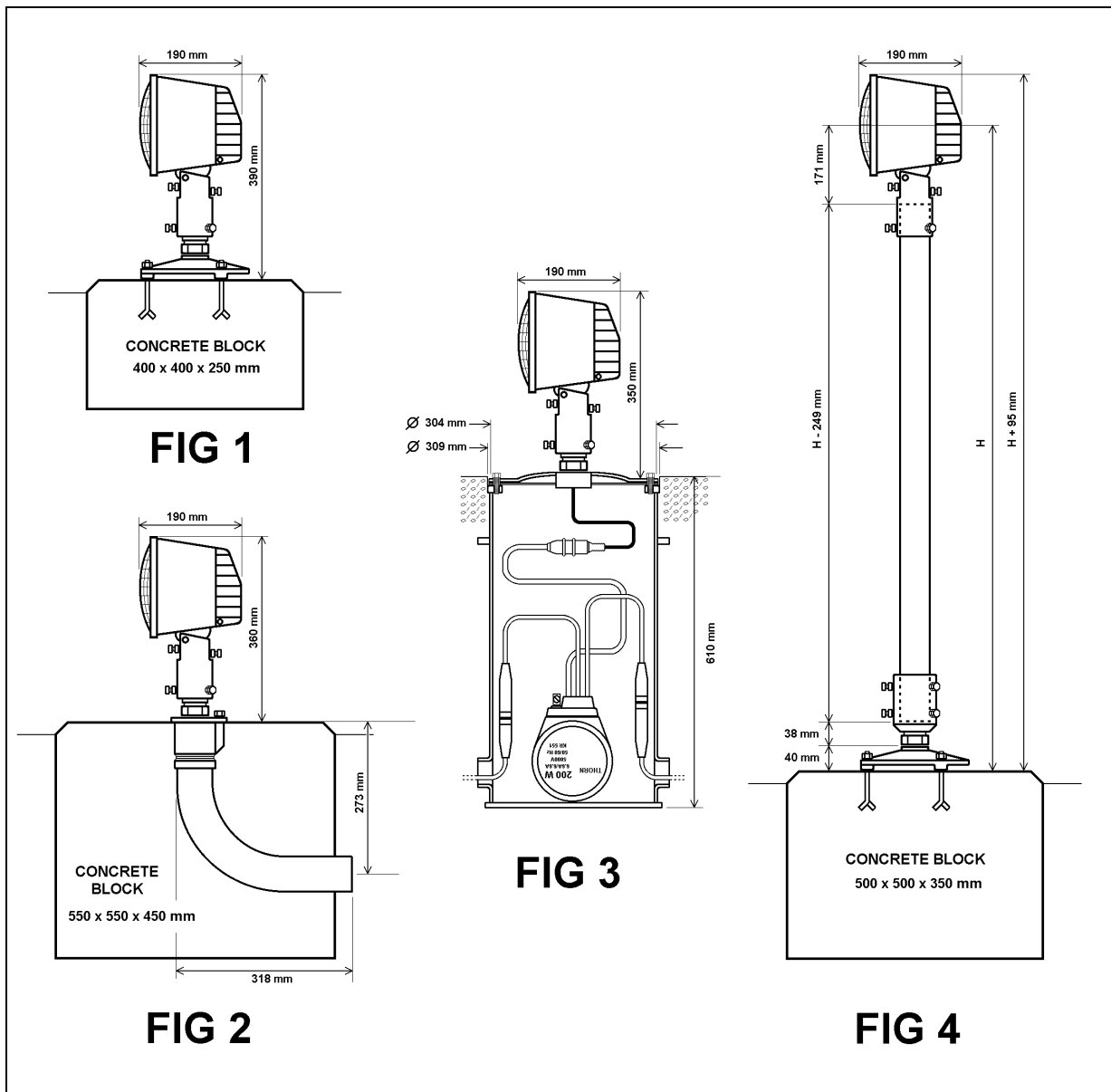
2.3 Design of the fitting



3 Typical Installation

3.1 Ground fixing

- Ground level mounting with Frangible Collar on a Tripod Stand (**Fig 1**).
- Ground level mounting with Frangible Collar on Conduit Elbow (**Fig 2**).
- Ground level mounting with Frangible Collar on FAA Deep Can and Base Plate (**Fig 3**).
- Up to 1.8 m on a Pole and a Frangible Coupling (**Fig 4**).
- Between 1.8 m and 8.10 m on Tilttable Mast .
- On any other safety support with 44 mm, 50 mm or 60 mm external diameter.



3.2 Angles Adjustment

Find here after the standard recommended angles adjustments for EL-AT type unidirectional elevated light fitting.

3.2.1 Azimuth angle

A) Approach lighting

- Centre Line = 0°

- Cross-Bars and Side Row Barrettes = Toe in of + 2°

B) Runway Threshold Lighting = Toe in of + 3.5°

C) Runway Threshold Wing Bar Lighting = Toe in of + 2°

D) Runway End Lighting = 0°

E) Stop Bar Lighting = 0°

F) Runway Lighting = 0°

3.2.2 Site angle

A) Approach lighting

- Centre Line and Cross-Bars

* Fitting installed between 0 and 315 m (from the threshold) = + 5°

* Fitting installed between 316 m and 475 m (from the threshold) = + 6°

* Fitting installed between 476 m and 640 m (from the threshold) = + 7°

* Fitting installed over 641 m (from the threshold) = + 8°

- Side Row Barrettes

* Fitting installed between 0 and 115 m (from the threshold) = + 5.5°

* Fitting installed between 116 m and 215 m (from the threshold) = + 6°

* Fitting installed over 216 m (from the threshold) = + 6.5°

B) Runway Threshold Lighting = + 5.5°

C) Runway Threshold Wing Bar Lighting = + 5.5°

D) Runway End Lighting = + 2.5°

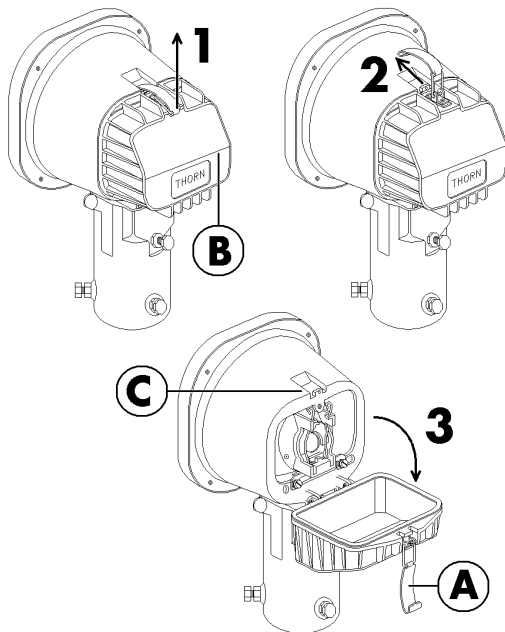
E) Stop Bar Lighting = + 5°

F) Runway Lighting = + 5°

4 Installation

4.1 Opening and closing the EL-AT

4.1.1 Opening the EL-AT

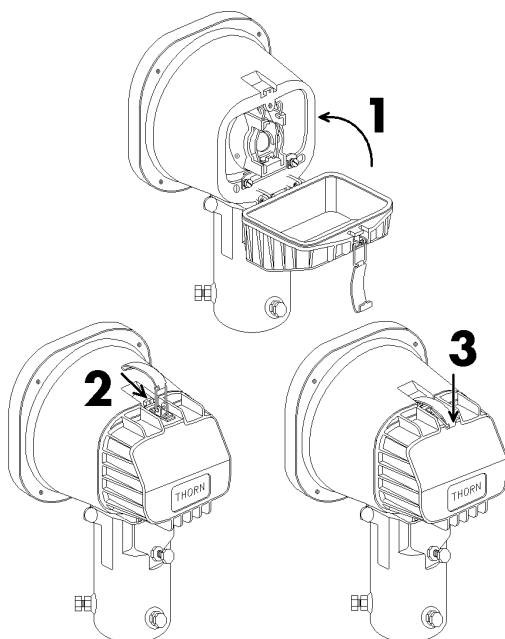


A) Pull up the rear part of the closing spring (A) of the rear door (B).

B) Unhook the spring from the fitting body (C).

C) Tilt the rear door of the EL-AT to open it.

4.1.2 Closing the EL-AT



A) Close the rear door of the EL-AT.

B) Hook the closing spring of the rear door on the body of the fitting.

C) Push down the rear part of the closing spring of the rear door.

4.2 Mounting the fitting on its support

4.2.1 Preparing the electrical cabling

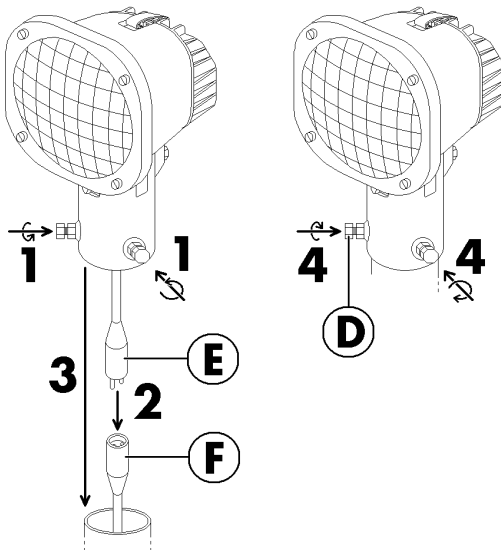
Whatever is the type of support used to hold the **EL-AT** fitting (frangible collar or other safety support with 44 mm, 50 mm or 60 mm external diameter), the secondary cable dedicated for the power supply of the fitting must be pass through the support previously to the installation of the fitting on it.

Two types of EL-AT exist :

- 1) EL-AT delivered equipped with already equipped with FAA secondary connector.
 In this case, the end secondary cable (FAA secondary receptacle) dedicated to supply the fitting must go out enough of the support to permit an easy connection on it of the FAA secondary plug of the fitting.
- 2) EL-AT delivered without connector but with a connection kit.
 In this case, the end secondary cable dedicated to supply the fitting must go out the support on at least **50 cm**.

4.2.2 Mounting the fitting on its support

4.2.2.1 EL-AT delivered with FAA connector



A) Unscrew but not remove the three fixing screws (**D**) of the EL-AT.

B) Hold the fitting over its support.

C) Connect the FAA plug (**E**) of the fitting on the FAA receptacle (**F**) of the support.

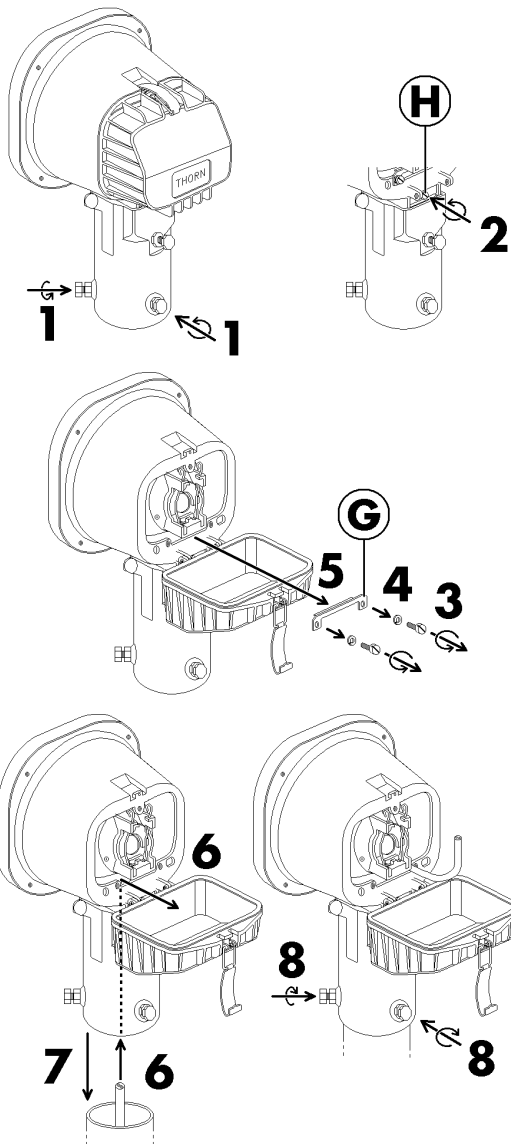
D) Mount the EL-AT on the its support.

Note : During this operation, pull carefully the cables and the FAA connector into the support.

E) Screw a little the three fixing screws of the EL-AT to fix the fitting on the support.

4.2.2.2 EL-AT equipped with connection kit

4.2.2.2.1 Installing the cable into the fitting



A) Unscrew but not remove the three fixing screws of the EL-AT.

B) Unscrew but not remove the fixing screw of the cable fixing bar (**H**).

C) Open the EL-AT fitting (see paragraph 4.1.1).

D) Remove the protection bar (**G**).
- Unscrew and remove the two fixing screws.
- Remove two locking washer.
- Remove the bar.

E) Hold the fitting over its support.

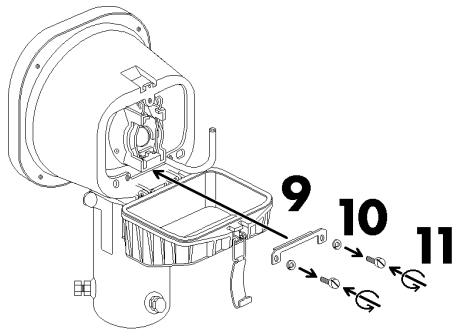
F) Pass the end of the supply cable through
-1- The hinged support of the EL-AT.
-2- The dedicated hole located in the bottom of the body of the EL-AT.

G) Pull all the cable inside the body of the EL-AT.

H) Mount the EL-AT on its support.
Note : During this operation, pull as much as possible the cable into the fitting.

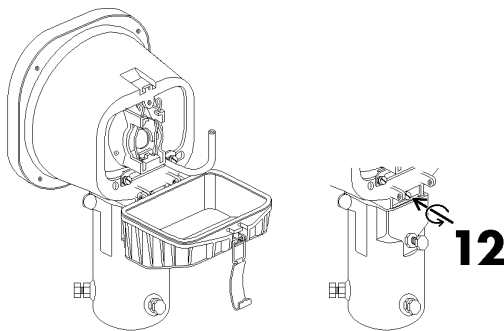
I) Screw a little the three fixing screws of the EL-AT to fix the fitting on the support.

J) Bent the end of the cable outside the body.



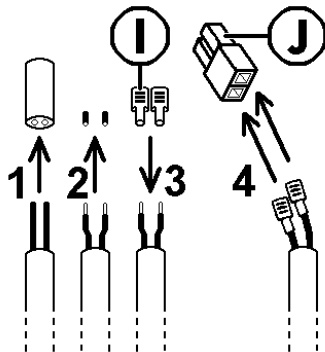
K) Reinstall the protection bar over the cable

- Install the bar on the fitting over the cable.
- Install the locking washer on the two fixing screws.
- Mount, screw and lock the two fixing screws.



L) Screw and lock the fixing screw of the cable fixing bar.

4.2.2.2.2 Mounting the Connection kit on the cable



A) Unsleeve the cable on 3 cm.

B) Unsleeve the two wires on 1 cm.

C) Crimp on each wire the termination of the connection kit delivered with the EL-AT (I).

D) Insert the two terminations into the terminal plastic body (J).

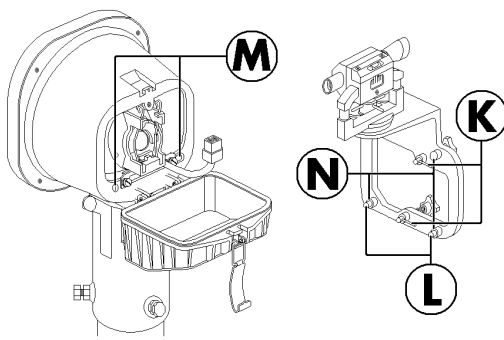
4.3 Adjustments

4.3.1 Mounting the adjustment tool on the fitting

A) Check that the support of the fitting is correctly assembled and that all the components of the support are fixed and blocked.

B) Open the EL-AT fitting (see paragraph 4.1.1).

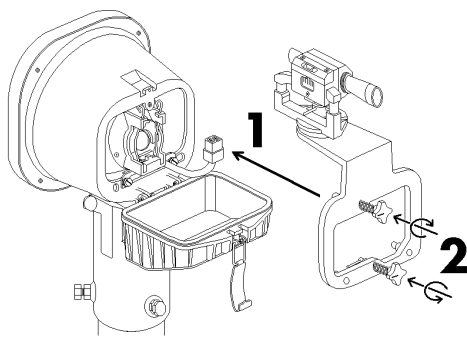
C) If necessary, turn the two fixation bars (**K**) of the adjustment tool to have them horizontal and oriented to the left.



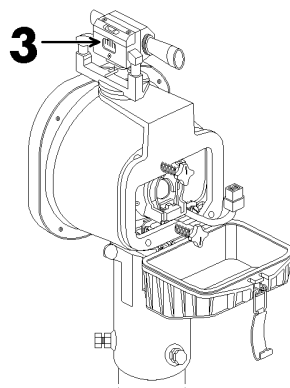
D) Install the adjustment tool on the rear of the fitting.

a) Insert the two dots (**L**) in the two dedicated holes (**M**) of the body of the fitting.

b) Verify that the three reference points (**N**) of the tools are in contact with body of the fitting.



E) Turn the two fixation bars to fix the tool on the body of the fitting.



F) Set the site angle on the tool to 0°.

G) Now the EL-AT fitting is ready for the adjustment operations.

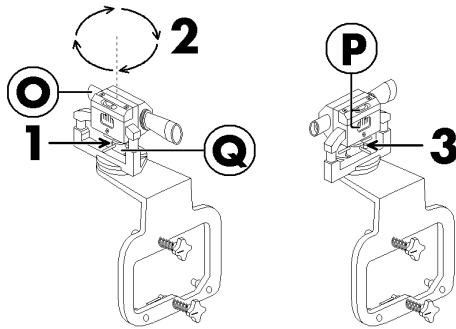
4.3.2 Adjustment in site and azimuth

The EL-AT light fitting is a directional light fitting and must be, after its installation on field, adjust in azimuth and site. The THORN specific adjustment tool is dedicated to make the adjustment of the direction (sight telescope (O)) and of the elevation angle (one spirit level (P)) of the EL-AT.

4.3.2.1 Adjustment in azimuth

A good way to make the adjustment of the direction of the fitting is to take as target for the aiming the other fitting normally install on the same line.

Depending on the position of the fitting on the airfield (beginning or end of the approach system, right side or left side of the runway threshold/end, etc..), It is more easy to make the aiming forward, backward, on the right side or on the left side. In order to allow these four type of aiming, the sight telescope installed at the top of the tool is movable and have four fix positions corresponding to the four aiming possibilities.

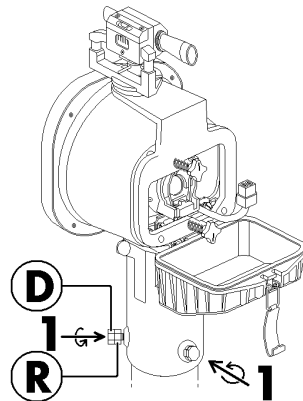


A) If necessary, set the site angle of the tool on zero.

B) Unscrew the fixation screw (Q) of the sight telescope sub assembly.

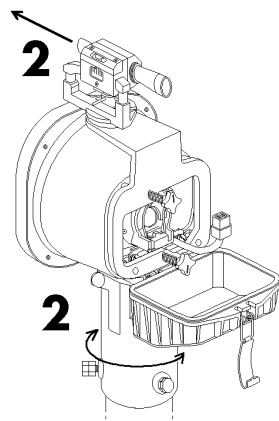
C) Turn the sight telescope sub assembly to obtain the required aiming.

D) Screw and lock the fixation screw of the sight telescope sub assembly.



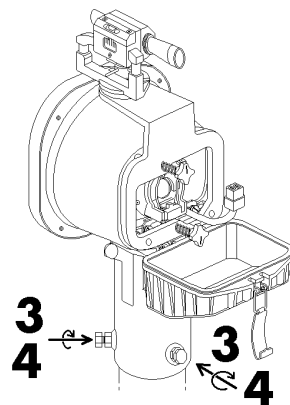
A) If necessary, unscrew a little the three fixing screws (**D**) of the EL-AT.

B) Unscrew the three locknuts (**R**) of the three fixing screws of the EL-AT.



C) Turn the EL-AT fitting on its support to make alignment of the target used for aiming and the corresponding vertical bar of visible in the sight telescope.

Note : In the sight telescope you can see 13 bars. The central bar "0°" is use for adjustment with no toe-in and the other bars are use for adjustment with positive or negative toe-in of : 1.5°, 2°, 3°, 3.5°, 4°, 4.5°.

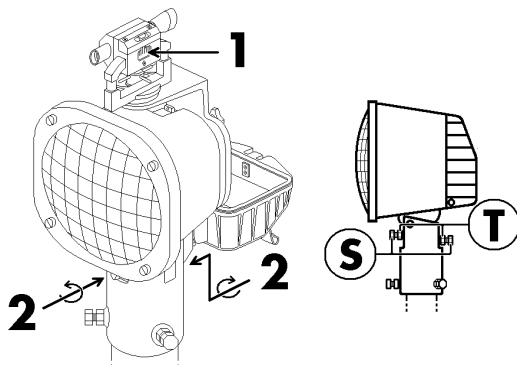


D) Screw and lock the three fixing screws of the EL-AT.

Note : During this operation verify that the adjustment remain correct.

E) Screw and lock the three locknuts of the three fixing screws of the EL-AT.

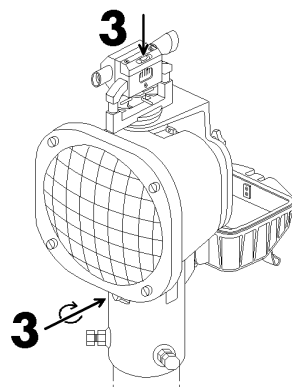
4.3.2.2 Adjustment in Site



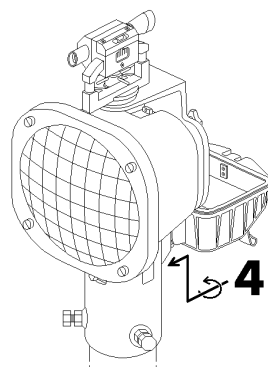
If you during the adjustment in azimuth you did not use the “forward aiming”, don’t forget to put back the telescope sub assembly in “forward aiming” before making the site angle adjustment. See **Paragraph 4.3.2.1**.

A) Set the requested site angle on the tool (from 0° to 10°).

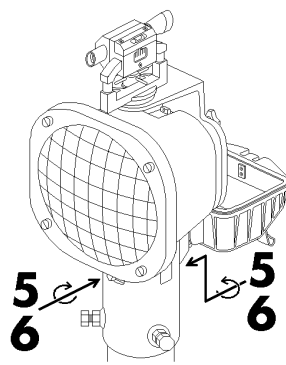
B) Unscrew the two locknuts (T) of the two elevation angle adjustment screws (S) of the EL-AT.



C) Unscrew the elevation angle adjustment screw located on the front of the fitting until the bubble of the spirit level of the tools is positioned in the middle of the spirit level.



D) Screw the elevation angle adjustment screw located on the rear of the fitting.

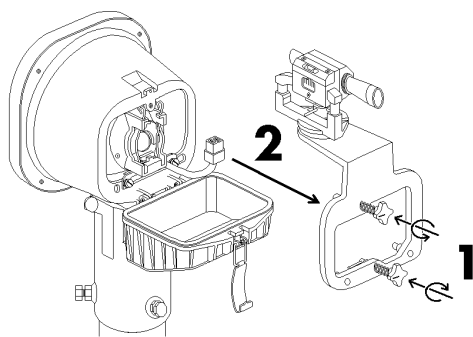


E) Screw and lock the two elevation angle adjustment screws of the EL-AT.

Note : During this operation verify that the adjustment remain correct.

F) Screw and lock the two locknuts of the two elevation angle adjustment screws of the EL-AT.

4.3.3 Removing the adjustment tool



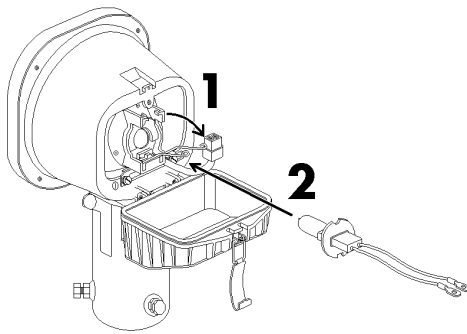
A) Turn the two fixation bars of the adjustment tool to have them horizontal and oriented to the left .

B) Remove the adjustment tools from the back of the EL-AT fitting.

C) Close the EL-AT fitting (see paragraph 4.1.2).

4.4 Mounting a lamp on EL-AT

CAUTION : Do not touch the lamp with bare fingers. The lamp is usually supplied with a protective sleeve. Keep it on until the end of the installation. In case of contact of the lamp quartz with foreign elements, clean it with alcohol and a clean cloth. Only Pk30d 200 , 150, 100 or 45 W - 6.6A with focal at 16 mm have to be used.

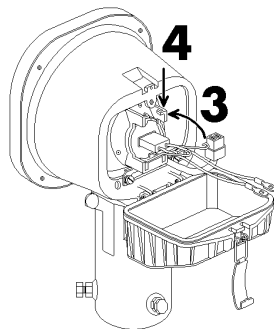
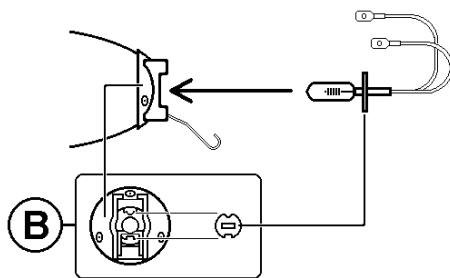


A) Open the EL-AT fitting (see paragraph 4.1.1).

B) Open the lamp fixing spring.

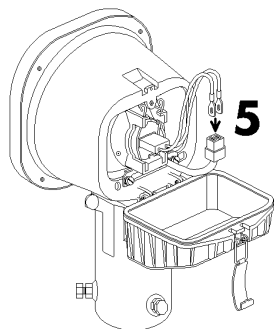
C) Install a lamp on the lamp holder located on the rear part of the reflector.

Note : Ensure that the indentations in the Lamp Holder line up with those in the Pk30d Lamp (See **(B)**).



D) Close the lamp fixing spring.

E) Lock the two ends of the lamp fixing spring.



F) Connect the lamp on the cable terminal.

Note : Place the wires of the lamp in order to prevent contact with the reflector after the closing of the fitting.

G) Close the EL-AT fitting (see paragraph 4.1.2).

COMMENTS

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