

Obstacle Warning Lights



HISTORY

1955 : Creation of the company in Douai – France

1974: Creation of the Export department

1986: Invention of the PREVECTRON® E.S.E. air terminal

1999: ISO certification

2001: Extension of INDELEC group of companies, covering the complete French territory.

2002: Inauguration of INDELEC new headquarters
New ISO 9001 : 2000 certification

2004: The French leading manufacturer of obstacle warning lights
Delta Box joins INDELEC group of companies



PRODUCT RANGE

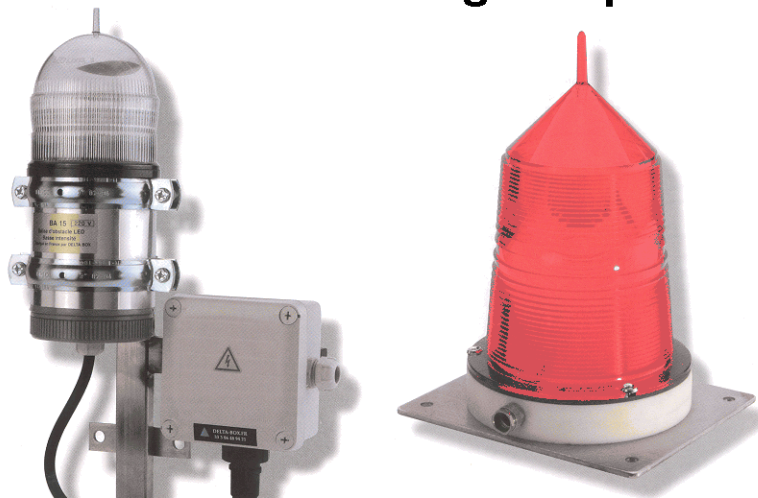
Direct Lightning Protection



Indirect Lightning Protection



Obstacle Warning Lamps



Fall Arrest Systems



Standards & Regulations



STANDARDS & REGULATIONS



Standards

ICAO Annex 14 - third edition July 1999

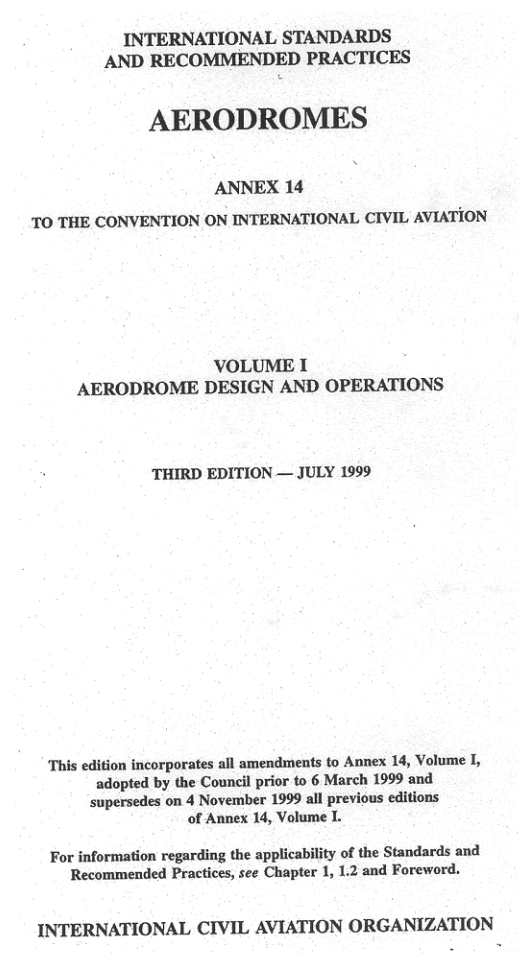
The USA have their own standard edited by the FAA.

Certification :



In France, the French STNA (Civil Aviation Technical Department) is in charge of obstacle warning lights testing and certification.

In the USA, Intertek Testing Service (ITS) is in charge of testing and certification.



STANDARDS & REGULATIONS

The ICAO is listing the following obstacles to aircraft navigation :

- ✘ Factory chimneys
- ✘ Towers (Telecom, TV, Radiocom...)
- ✘ High voltage overhead cables
- ✘ Bridges
- ✘ High rise buildings
- ✘ Power generation installations
- ✘ Cranes



STANDARDS & REGULATIONS

The type of beacon is based on the height of the obstacle :

White colour flashing high intensity lights

H > 150m

Non flashing red low intensity lights

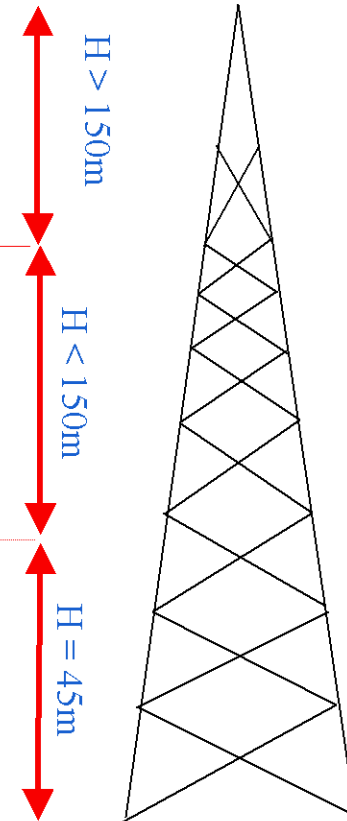
Or/and

White or Red flash Medium intensity lights

H < 150m

Non flashing red colour low intensity lights

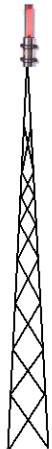
H = 45m



STANDARDS & REGULATIONS

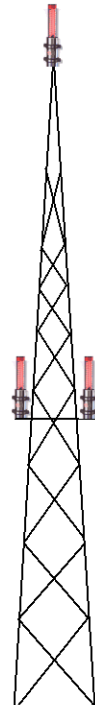
Installation of obstacle warning lights on a tower :

Below 45 m



One level

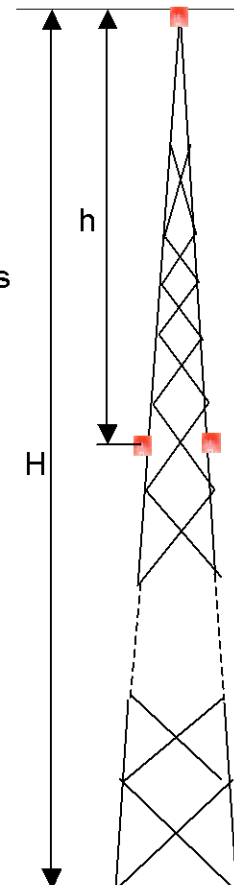
Above 45 m



Several levels

Number of levels = $H / 45$

$h \leq 45$ m
 $h = H / \text{Number of levels}$

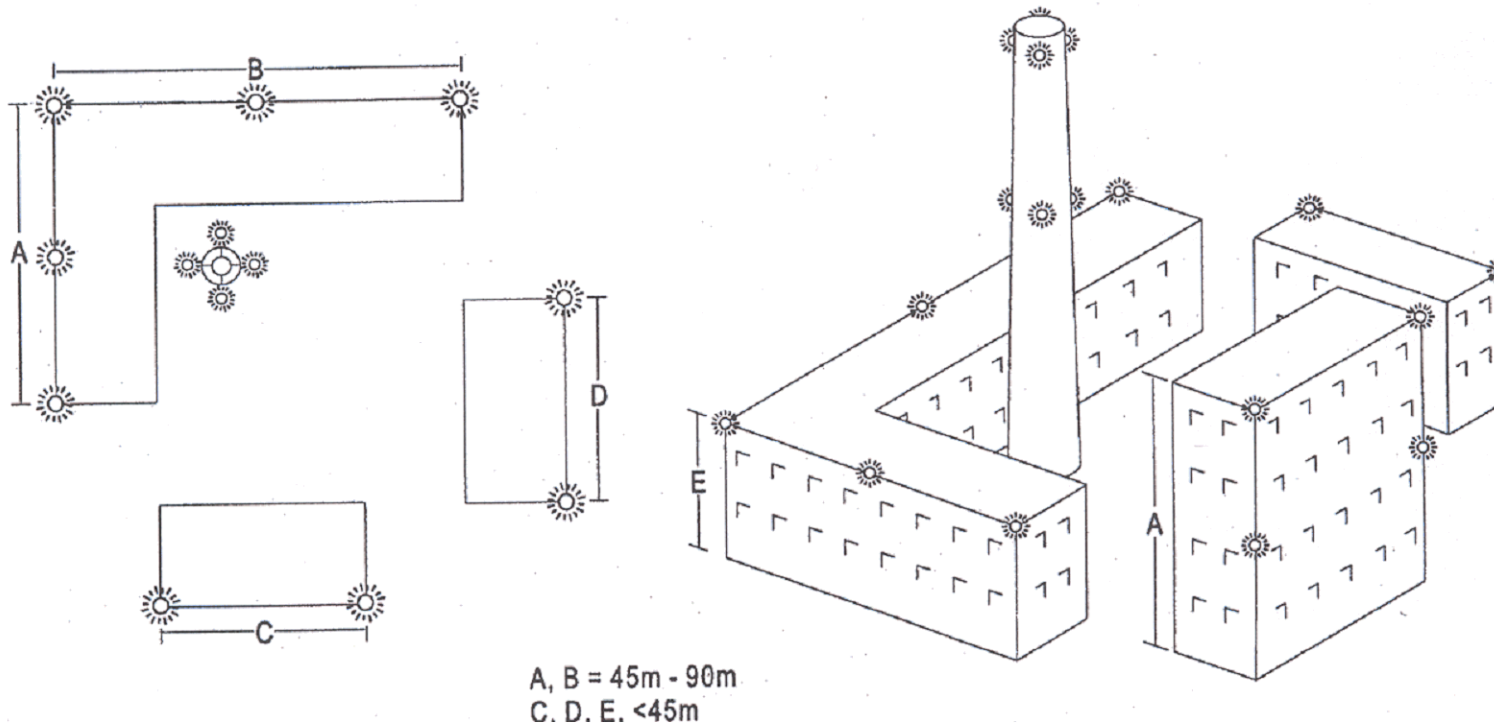


H = Height of the tower

h = Interval between two levels

STANDARDS & REGULATIONS

Installation of obstacle warning lights on a building :



The lights should be fixed from 1,5m to 3m from the top of the chimneys.

Three lights should be fixed regularly at 120° along the chimney circumference.

STANDARDS & REGULATIONS

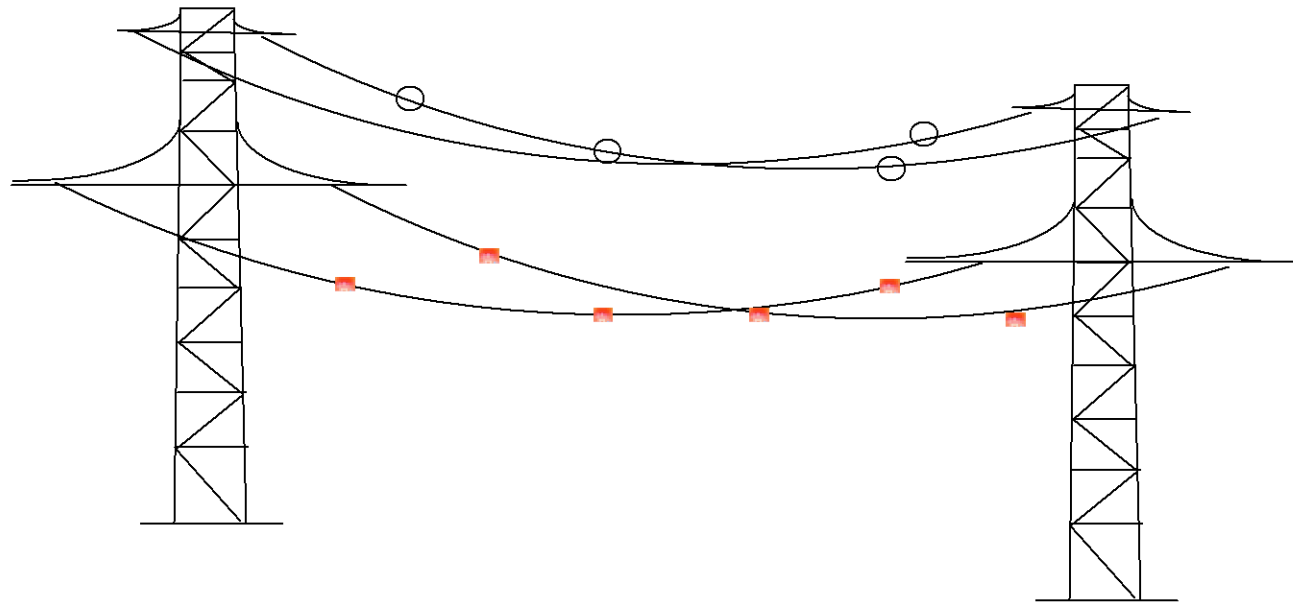
Installation of obstacle warning lights on HV overhead cables :

The lights must not be fixed on the cable at less than 10m from the tower.

The intervals between two lights on the cable depend on the location:

Vicinity of an airport (approx 10 000 m radius): 70 m

Other: 105 m



STANDARDS & REGULATIONS

According to the French Civil Aviation Technical Department STNA, in specific location (airport vicinity...), the obstacle warning light must be equipped with uninterruptible power system and follow the following requirements:



Uninterruptible Power System

- ✓ BBS system (Master +Slave)
- ✓ 48 VDC power supply
- ✓ 10 hours autonomy (batteries)
- ✓ Night only.



**Dual power supply
(generators...)**

- ✓ BBS system (Master +Slave)
- ✓ 220VAC power supply
- ✓ Day & Night.

Products



LOW-INTENSITY LIGHTS

LED LOW-INTENSITY LIGHTS



ADVANTAGES

- ✓ Extended life time
- ✓ Easy installation
- ✓ Progressive end of functions(decreasing luminous intensity)
- ✓ Lowest electrical consumption

Technical Specifications

- ✓ RED colour
- ✓ Long life: 100 000 h (approx. 10 years)
- ✓ 12V, 24V, 48V, 110V, 230V - 50Hz
- ✓ Power consumption: 3 W
- ✓ Luminous intensity > 10 cd
- ✓ Integrated photocell (option).
- ✓ IP 66

OPTIONS

- ✓ Stainless Steel mounting (single or double)
- ✓ Connection box for single beaconing
- ✓ Connection box for double beaconing: BBS system (master and slave) or simultaneous.
- ✓ Beacon failure alarm driving box

LOW-INTENSITY LIGHTS

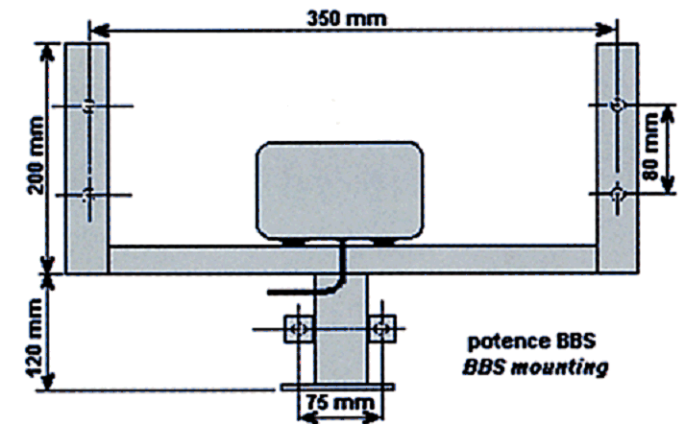
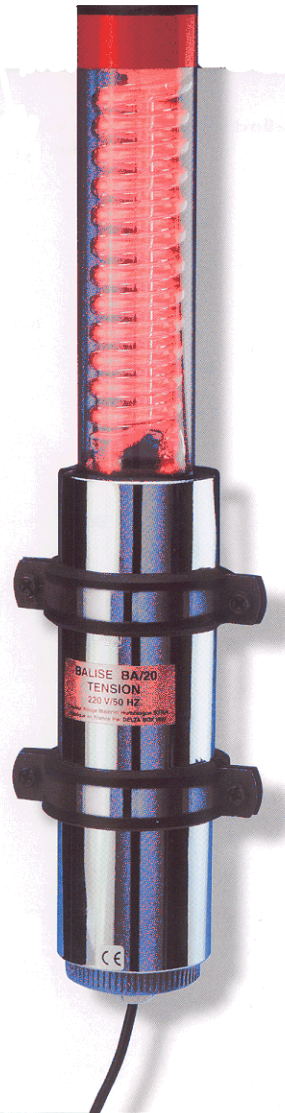
NEON LOW-INTENSITY LIGHTS

TECHNICAL SPECIFICATIONS

- ✓ RED Colour
- ✓ Long Life: 25 000 h (3 to 5 years)
- ✓ 12V, 24V, 48V, 110V, 230V - 50Hz
- ✓ Power consumption: 18 W
- ✓ Luminous intensity > 20 cd ou 35 cd
- ✓ Integrated photocell (option).
- ✓ IP 66

OPTIONS

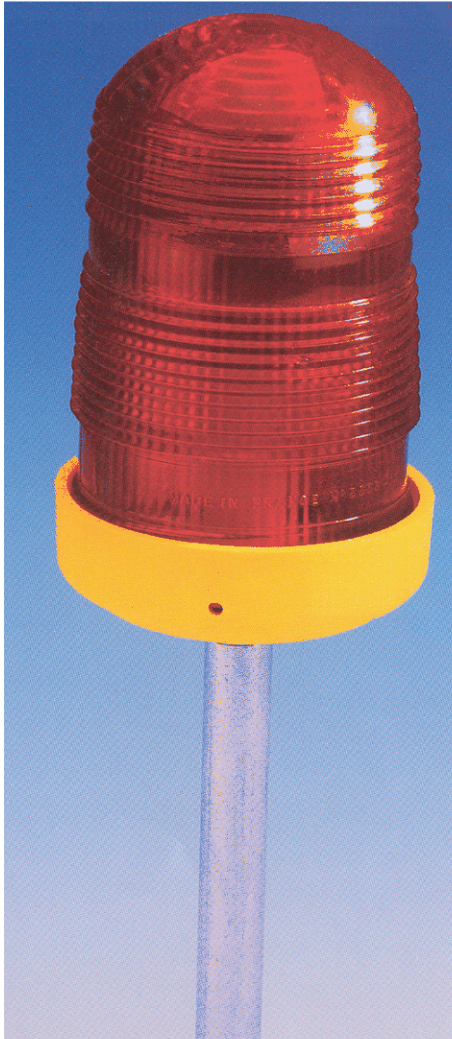
- ✓ Stainless Steel mounting (single or double)
- ✓ Connection box for single beaconding
- ✓ Connection box for double beaconding: BBS system (master and slave) or simultaneous.
- ✓ Beacon failure alarm driving box



Example of double beaconding stainless steel mounting with connexion box

LOW-INTENSITY LIGHTS

INCANDESCENT BULB LOW-INTENSITY LIGHTS



TECHNICAL SPECIFICATIONS

- ✓ RED colour
- ✓ Life Long: 8 000 h (one year)
- ✓ 12VDC, 110V- 50Hz, 230V - 50Hz
- ✓ Power consumption: 55 W
- ✓ Luminous intensity > 35 cd
- ✓ IP 65
- ✓ Galvanised steel mounting

OPTIONS

- ✓ Double beaconing
- ✓ Double beaconing connection box (BBS system (master and slave) or simultaneous) and double mounting.
- ✓ Beacon failure alarm driving box

MEDIUM-INTENSITY LIGHTS

NIGHT MEDIUM-INTENSITY LIGHTS

TECHNICAL SPECIFICATIONS



- ✓ Omni-directional Quartz/Xenon lamps
- ✓ RED or WHITE colour
- ✓ Flashing rate: 20 - 60 flash / minute
- ✓ Life Long: 15 000 h to 20 000 h
- ✓ 230V - 50Hz
- ✓ Power consumption: approx 200 W
- ✓ Luminous intensity: 2000 cd
- ✓ IP 65
- ✓ High voltage driving box 12kg, 430x330x200mm
- ✓ Connection driving box/lamp: 5m cable with IP68 fast connector on the driving box.

MEDIUM-INTENSITY LIGHTS

DAY & NIGHT MEDIUM-INTENSITY LIGHTS



TECHNICAL SPECIFICATIONS

- ✓ Omni-directional Quartz/Xenon lamps
- ✓ RED or WHITE colour
- ✓ Flashing rate: 20 - 60 flash / minute
- ✓ Life Long: 15 000 h to 20 000 h
- ✓ 230V - 50Hz
- ✓ Power consumption: approx 200 W
- ✓ Luminous intensity: 2000 cd (night) – 20 000 cd (day)
- ✓ IP 65
- ✓ High voltage driving box 12kg, 530x430x200mm
- ✓ Connection driving box/lamp: 5m cable with IP68 fast connector on the driving box.

MEDIUM-INTENSITY LIGHTS

HALOGEN MEDIUM-INTENSITY LIGHTS

TECHNICAL SPECIFICATIONS

- ✓ Halogen lamp. Focal distance: 77,5mm / Fresnel's lens: 35 prims
- ✓ RED colour
- ✓ Flashing rate: 20 - 60 flash / minute
- ✓ Life Long: >15 000 h
- ✓ 12V, 24V230V - 50Hz
- ✓ Luminous intensity: 2000 cd
- ✓ Power consumption: approx 100 W
- ✓ IP 66

OPTIONS

- ✓ Photocell
- ✓ Fix position available



HV OVERHEAD CABLES LIGHTS



BEACON FOR HIGH VOLTAGE

USE

The High Voltage overhead cables represents a real danger for aircraft flying at low altitude. Moreover, the intervals between the supporting towers are increasing (increasing voltage, crossings of rivers or valleys...). As a result, the beaconing of the towers is ineffective and does not comply with the ICAO requirements.

The beaconing of the cables themselves is then necessary. The beacon for high voltage (BHT model) has been specially designed for this specific environment, using the electromagnetic field close to the cables as its power supply (technically and financially, use of low voltage lights is not conceivable)

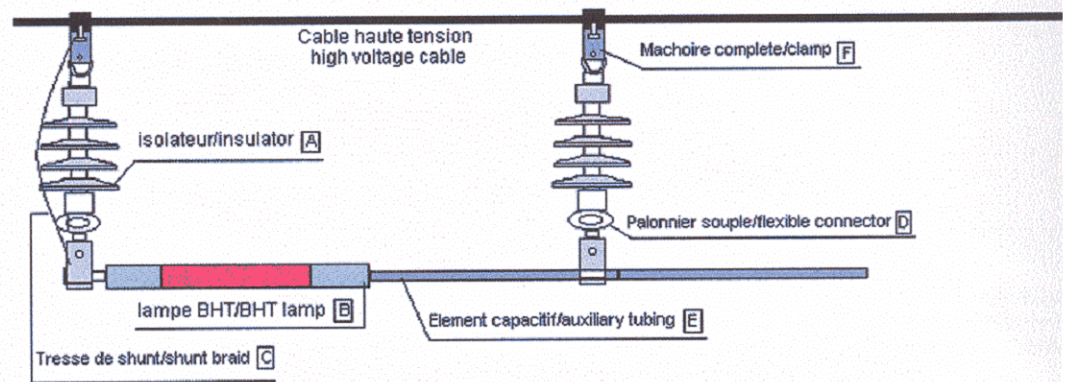
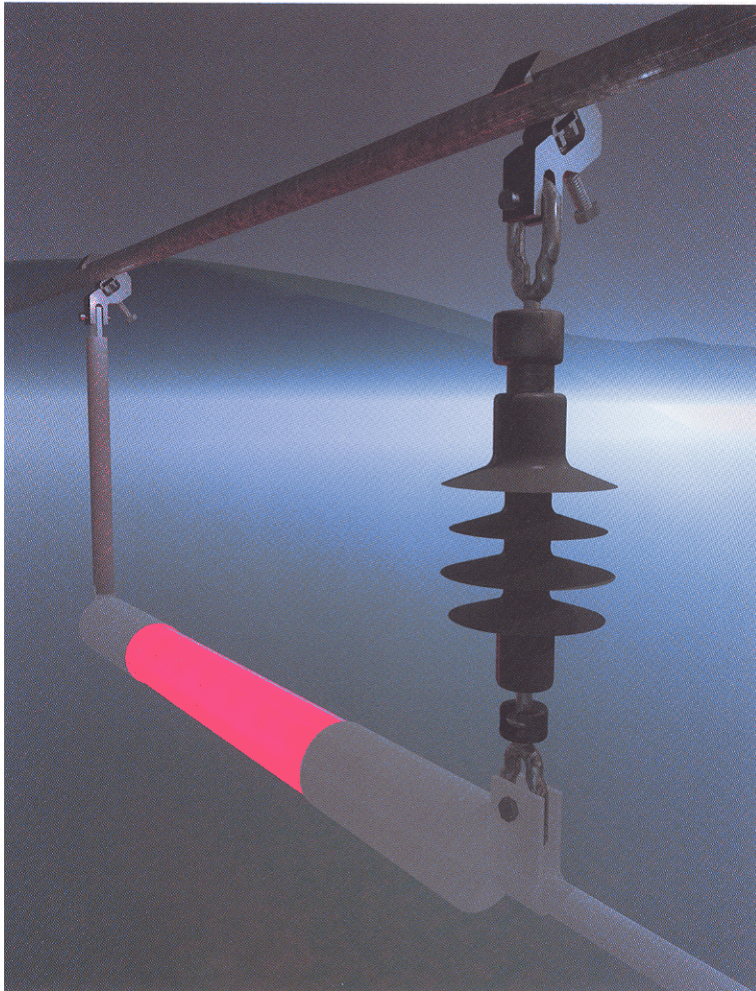
Therefore, the BHT obstacle warning light allows the beaconing of the HV overhead cables in accordance with the ICAO requirements (section 6.3 Annex 14 Volume I)

HV OVERHEAD CABLES LIGHTS

BEACON FOR HIGH VOLTAGE

TECHNICAL SPECIFICATION

- ✓ Light source: Neon
- ✓ RED Colour
- ✓ Luminous intensity > 10 cd
- ✓ Life Long: > 15 000 h
- ✓ Capacitive power supply
- ✓ IP 65



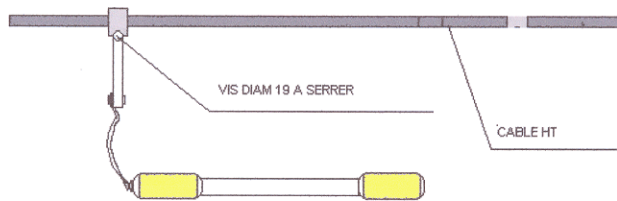
HV OVERHEAD CABLES LIGHTS

BEACON FOR HIGH VOLTAGE

Installation

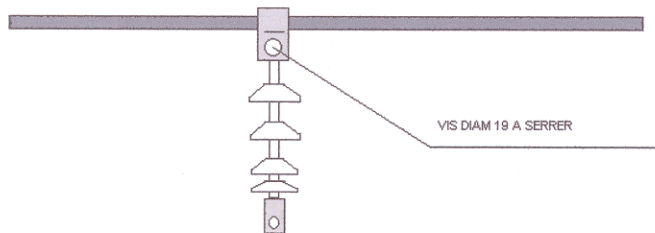
N° 1

Fixing the light on the cable



Etape N° 3

Fixing the antenna insulated bracket on the cable



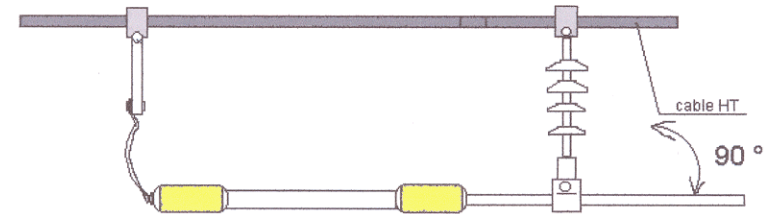
Etape N° 2

Fixing the antenna on the light



Etape N° 4

Fixing the insulated bracket to the antenna



Note: The antenna length depends on the line voltage (>220kV, > 160kV, > 90kV)

CONCLUSION

Thank you for your kind attention.

**We are staying at your disposal to answer your questions
and study your projects in collaboration with Delta Box
engineers.**

