Helicopter Approach Path Indicator
(HBA)

User Manual

UM-0051, Rev. 2.1, 2023/01/23

ADB SAFEGATE

A.0 Disclaimer / Standard Warranty

CE certification

The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

ETL certification

The equipment listed as ETL certified means that the product complies with the essential requirements concerning safety and FAA Airfield regulations. The FAA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

All Products Guarantee

ADB SAFEGATE will correct by repair or replacement per the applicable guarantee above, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE furthers reserves the right to require the return of such goods to establish any claim.

ADB SAFEGATE's obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB SAFEGATE's liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB SAFEGATE, warranty is limited to that extended by the original manufacturer. This is ADB SAFEGATE's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Standard Products Guarantee

Products manufactured by ADB SAFEGATE are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

Note

See your applicable sales agreement for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

FAA Certified products manufactured by ADB SAFEGATE

ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE LED products (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition). These FAA certified constant current (series) powered LED products must be installed, interfaced and powered with and through products certified under the FAA Airfield Lighting Equipment Program (ALECP) to be included in this 4 (four) year warranty. This includes, but is not limited to, interface with products such as Base Cans, Isolation Transformers, Connectors, Wiring, and Constant Current Regulators.

Note

See your sales order contract for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

Liability

WARNING

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

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

Unintended uses, includes the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine ADB SAFEGATE replacement parts or accessories.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards if not in contradiction with the general rules.
- Using materials or auxiliary equipment that are inappropriate or incompatible with your ADB SAFEGATE equipment.
- Allowing unskilled personnel to perform any task on or with the equipment.

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1.0 Safety

Introduction to Safety

This section contains general safety instructions for installing and using ADB SAFEGATE equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

1.1 Safety Messages

HAZARD Icons used in the manual

For all HAZARD symbols in use, see the Safety section. All symbols must comply with ISO and ANSI standards.

Carefully read and observe all safety instructions in this manual, which alert you to safety hazards and conditions that may result in personal injury, death or property and equipment damage and are accompanied by the symbol shown below.

	WARNING Failure to observe a warning may result in personal injury, death or equipment damage.
	DANGER - Risk of electrical shock or ARC FLASH Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage. ARC Flash may cause blindness, severe burns or death.
	WARNING - Wear personal protective equipment Failure to observe may result in serious injury.
	WARNING - Do not touch Failure to observe this warning may result in personal injury, death, or equipment damage.
	CAUTION Failure to observe a caution may result in equipment damage.
	ELECTROSTATIC SENSITIVE DEVICES This equipment may contain electrostatic devices.

Qualified Personnel

	Important Information The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements. Always use required personal protective equipment (PPE) and follow safe electrical work practice.

1.1.1 Introduction to Safety

CAUTION

Unsafe Equipment Use
This equipment may contain electrostatic devices, hazardous voltages and sharp edges on components

- Read installation instructions in their entirety before starting installation.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

Failure to follow this instruction can result in serious injury or equipment damage

Additional Reference Materials

Important Information

- IEC - International Standards and Conformity Assessment for all electrical, electronic and related technologies.
- IEC 60364 - Electrical Installations in Buildings.
- FAA Advisory: AC 150/5340-26 (current edition), Maintenance of Airport Visual Aid Facilities.
- Maintenance personnel must refer to the maintenance procedure described in the ICAO Airport Services Manual, Part 9.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- National and local electrical codes and standards.

1.1.2 Intended Use

CAUTION

Use this equipment as intended by the manufacturer
This equipment is designed to perform a specific function, do not use this equipment for other purposes

- Using this equipment in ways other than described in this manual may result in personal injury, death or property and equipment damage. Use this equipment only as described in this manual.

Failure to follow this instruction can result in serious injury or equipment damage

1.1.3 Material Handling Precautions: Storage

CAUTION

Improper Storage
Store this equipment properly

- If equipment is to be stored prior to installation, it must be protected from the weather and kept free of condensation and dust.

Failure to follow this instruction can result in equipment damage

1.1.4 Operation Safety

CAUTION

Improper Operation
Do Not Operate this equipment other than as specified by the manufacturer

- Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.
- Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

Failure to follow these instructions can result in equipment damage

1.1.5 Maintenance Safety

DANGER

Electric Shock Hazard
This equipment may contain electrostatic devices

- Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.
- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

Failure to follow these instructions can result in death or equipment damage

1.1.6 Material Handling Precautions, ESD

CAUTION

Electrostatic Sensitive Devices
This equipment may contain electrostatic devices

- Protect from electrostatic discharge.
- Electronic modules and components should be touched only when this is unavoidable e.g. soldering, replacement.
- Before touching any component of the cabinet you shall bring your body to the same potential as the cabinet by touching a conductive earthed part of the cabinet.
- Electronic modules or components must not be brought in contact with highly insulating materials such as plastic sheets, synthetic fiber clothing. They must be laid down on conductive surfaces.
- The tip of the soldering iron must be grounded.
- Electronic modules and components must be stored and transported in conductive packing.

Failure to follow this instruction can result in equipment damage

1.2 Safety Instruction

Make sure you read this section and are familiar with safety precautions before any work is started.

1.2.1 Product Safety

Airfield lighting fixtures in a constant current circuits are connected in a circuit via isolating transformers with currents between 2.0 – 6.6A in the primary circuits.. The primary voltages, depending on the circuitry, are usually several kilovolts and therefore lethal. Although the open circuit voltages of the isolating transformers are much lower, the peak voltage while opening the secondary circuit under current is also hazardous. So it is vitally important to follow all the safety regulations with adequate circumspection.

In the design of this equipment all the practical safety aspects have been taken into account. It is also important to strictly follow existing international or national regulations, the instructions established by civil aviation authority or airport operator and the following instructions.

1.2.2 Electrical Maintenance

Valid safety regulations must always be followed. Never carry out any maintenance or maintenance measures before the current is confirmed as safely disconnected. Use extreme caution when disconnecting or connecting high voltage primary connectors.

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 AUTHORIZED PERSON RESPONSIBLE FOR THE ELECTRICAL ENGINEERING SERVICES AT THE AIRPORT WITH REGARD TO THE DURATION OF THE WORK AND SO ON. IT IS RECOMMENDED THAT PRIOR TO STARTING ANY CUTTING WORK, THE NATURE AND LOCATION OF SERVICES SUCH AS CABLE DUCTS AND THE LIKE SHOULD BE IDENTIFIED. ANY INSTALLATION OR MAINTENANCE WORK SHOULD ONLY BE CARRIED OUT BY TRAINED AND EXPERIENCED PERSONNEL. ALSO, WHEN WORKING ON CIRCUITS USING AIRFIELD SMART POWER SYSTEM (ASP) THE SCM MUST BE TUNED OFF.

1.2.3 Mechanical Maintenance

When maintaining mechanical components, it is important to follow the instructions for electrical maintenance.

2.0 Introduction

In this section you find a general description and safety instructions related to the installation and usage of the unit.

The HBA system enables the pilot to have the necessary visual information to place the helicopter on the ideal approach slope, being possible to be used both in day and night conditions.

The unit has many advantages and special features:

- Only one unit per approach path.
- Power supply: 230 Vac 50/60 Hz.
- Light intensity controlled by a voltage of 230 Vac 50/60Hz.
- Excellent frangibility without sacrifice of any stability.
- Front glass protecting lenses against sand, wind and engine blast.
- Very easy site adjustment by using a clinometer (precision 1 minute).
- Design ensures very good water-tightness and protection against corrosion.
- Easy maintenance: replacement of main elements (lamps, front glass, filters or reflectors) does not require either unit adjustment or any special tools.
- Very easy access to all components by removing the cover.
- Use of dichroic filters with high transmission factor and good thermal resistance.
- The units of a system could be, as an option, fitted with heating resistors for use in cold or wet areas.
- The light is automatically switched off when a vertical misalignment or a failure of flashing is detected.

2.1 Description of the unit

- The unit is in compliance with ICAO Recommendations of Annex 14 Volume II (Paragraph 5.3.5). For more details, see Recommendations of ICAO Annex 14 Volume II.
- The HAPI system comprises a one unit light box, which generates four distinct luminous beams, from the top to the bottom: Flashing green, green, red and flashing red. These four sectors indicate to the pilot his position in relation to the preferred approach slope (see Figure 1).
- The HAPI device can be installed on the left or behind the F.A.T.O. (see Figure 2), aligned on the preferred approach axis and adjusted on site to the required slope angle (maximum angle = 12° or 21,25%).

Figure 1: HAPI signal

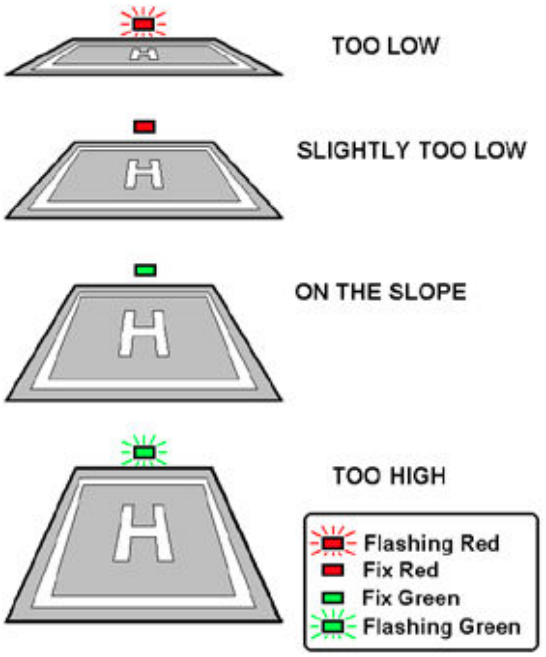
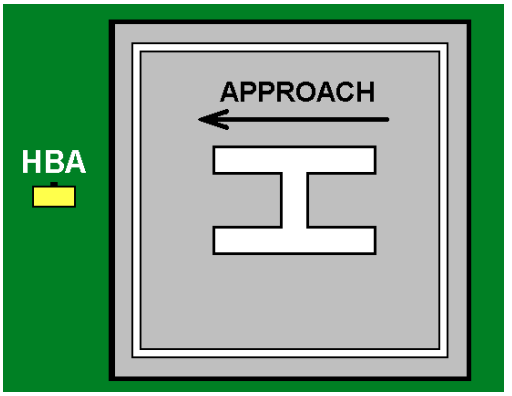


Figure 2: HAPI behind FATO



The HBA is mounted on four legs, each comprising a tripod stand, a frangible coupling and an aluminum tube. The length of the aluminum tube has to be determined at the time of installation. The final length of the tubes will depend upon the height of the HAPI unit, these heights being dependent upon local ground conditions etc.

On the center of each HAPI body there is a datum point which represents the light beam axis. Please note that the HBA equipment should be mounted as low as possible.

The tubes supplied are 60 mm diameter and 400 mm long. Please note that 62 mm of tube is placed inside the frangible coupling and this must be allowed for in calculating the required length.

2.1.1 Recommendations of ICAO Annex 14 Volume II

1. A visual approach slope indicator should be provided to serve the approach to a heliport or helipad when at least one of the following conditions exists:

   a. Obstacle clearance, noise or traffic control procedures require a particular direction to be flown

   b. The environment of the heliport provides few visual surface cues

c. It is physically impractical to install an approach lighting system

d. The characteristics of the helicopter require a stabilized approach

2. The Indicator should be located such that a helicopter is guided to the desired point in the F.A.T.O or the T.L.O.F and so as to avoid dazzling the pilots during the final approach.

3. The equipment shall be frangible and mounted as low as possible.

2.2 Technical description

2.2.1 Optical system

The optical system of the HBA is composed of two separate systems, each of the two systems comprising:

- One 250W, 24V lamp featuring under voltage operation at 21V for full brightness, thus providing a service life greater than 1000 hours, lamp base GY9.5
- One high-purity aluminum reflector
- One red dichroic filter
- One green dichroic filter
- Two lenses

Note
The lenses placed at the front of the optical systems are protected by a tempered plate glass.

2.2.2 Blinking beams production

The green and red flashing beams are produced by using two flaps moved by a system made of electrical synchronous motor, rotating speed reduction assembly and transmission cranks:

- For supply frequency of 50 Hz, the output rotating speed is equal to 125 rpm and the flashing frequency is equal to 2.1 Hz.
- For supply frequency of 60 Hz, the output rotating speed is equal to 150 rpm and the flashing frequency is equal to 2.5 Hz.

2.2.3 Security

In accordance with ICAO recommendations, the HAPI systems must be switched off in the two following situations:

- By lose of site angle alignment
- The HAPI system is not able to emit at least one of the two blinking beams

In order to apply this security function, the HBA is equipped with one electronic PCB called *electronic monitoring PCB*. This PCB drives the switch off of the two lamps after detection of:

- A lose of site angle alignment or
- Default in movement of at least one of the two flaps used to generate the blinking beams

For monitoring the alignment of the site angle, the HBA is equipped with a tilt switch sensor. The loop passing through the tilt switch device is closed only when the alignment remains correct (miss adjustment lower than 30 minutes).

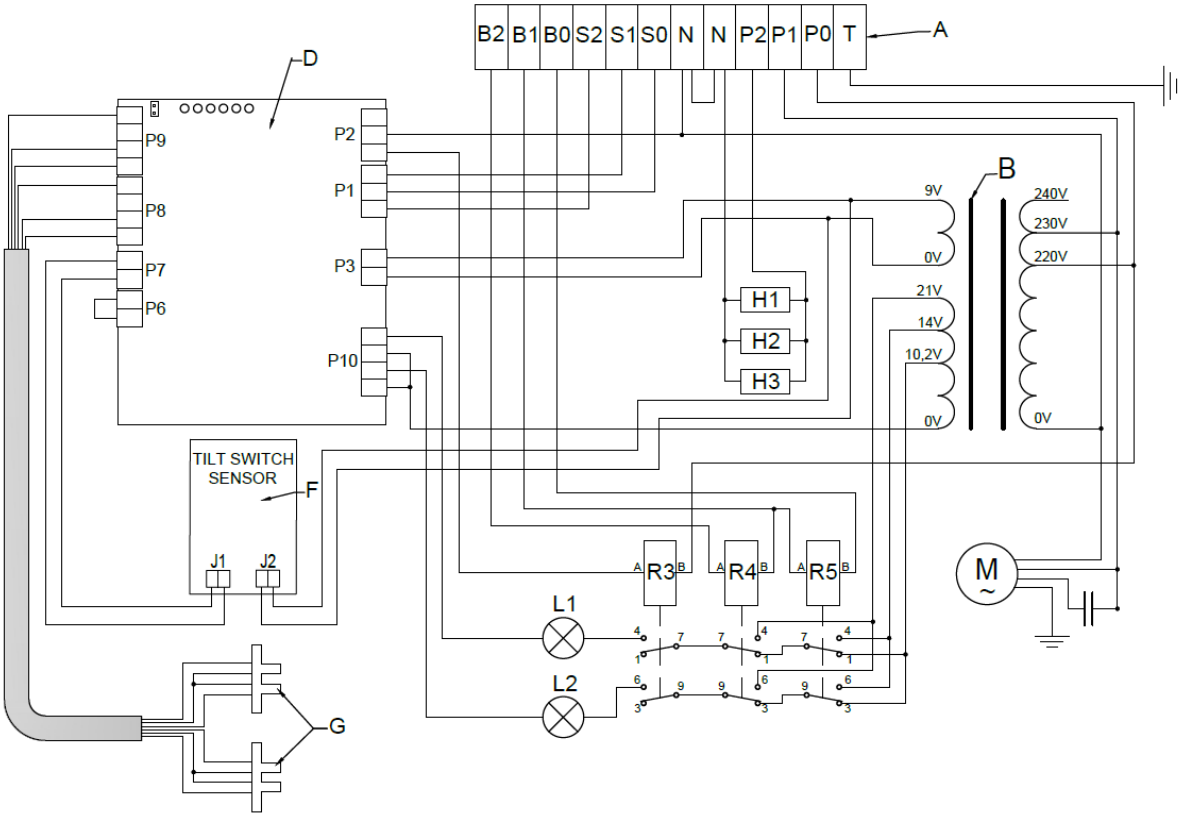
Note
For the adjustment of the tilt switch, see Adjusting the elevation angle.

For monitoring movements of the flaps, the HBA is equipped with two optical sensors (one per flap).

2.2.4 Electrical cabling

Figure 3 below shows the electrical schematic of the internal cabling of the HBA.

Figure 3: Electrical schematic of the internal cabling of the HBA



A - HBA main terminal
B - HBA voltages transformer
M - Gear motor
D - HBA electronic monitoring PCB
F - Tilt switch sensor
G - Optical sensors for flaps
H1, H2, H3 - Heating resistors
R3 - Relay used to switch off the lamps
R4 - Relay used to command the “Higher” brilliancy
R5 - Relay used to command the “Medium” brilliancy
L1, L2 - 250 W / 24 V halogen lamp

2.2.5 Electronic monitoring PCB

Fig. 10 shows the location of the components of the electronic monitoring PCB of the HBA.

The electric signals generated by the use of the tilt switch and the two optical sensors are received and analyzed by the electronic monitoring PCB.

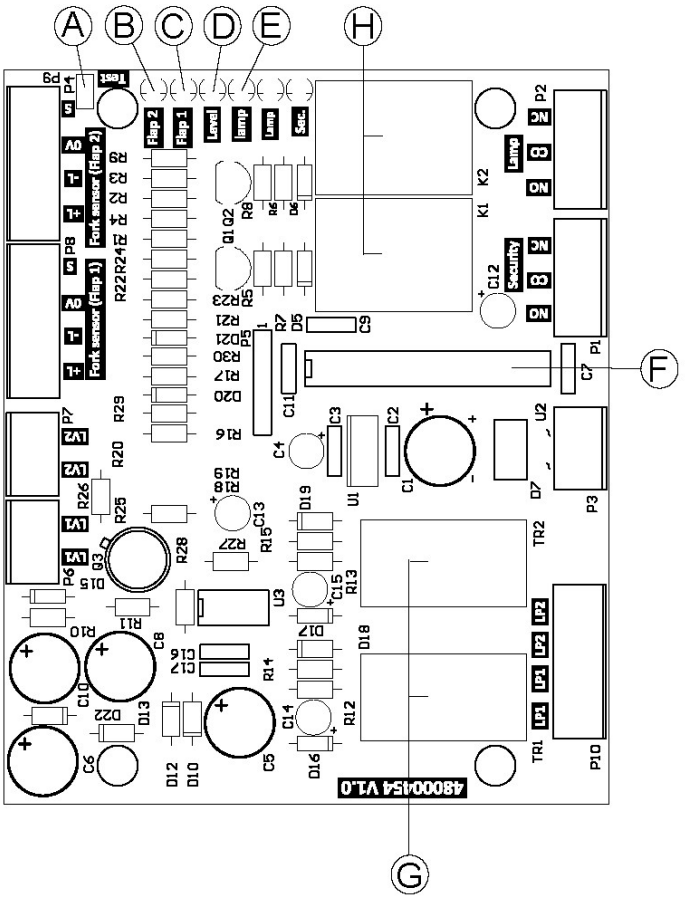
In addition to the security monitoring and management function of the HAPI system, the electronic monitoring PCB monitors in real time the status of the two lamps. Two intensity transformers located on the electronic monitoring PCB board allows verifying if each lamp is On or Off (measure of their currents).

The electronic PCB is equipped of one jumper (S1). This jumper allows bypassing the automatic locking on system defaults detection (the lamps remain Light On if elevation or flaps defaults are detected). This jumper must not be used during the normal operation of the HBA.

Note

In order to filter detection of short or non-persisting defaults (ex: parasites), the software of the micro-controller of the electronic monitoring PCB introduces a confirmation delay after occurrence of the default status or during the return to normal status. This creates a time delay between the detection of default or normal status occurrence and effective corrective action (take this into account during your tests).

A - Test Jumper S1 use to force the power supply of the lamps
B - Site angle alignment default LED
C - Default flap n°1 "bad movement" LED
D - Default Lamp LED
E - Default flap n°2 "bad movement" LED
F - Micro-controller
G - Transformers for detection of the current of the lamps
H - Relay use:
- To switch off the lamps if a default is detected
- To send «HBA Alarm»



2.2.6 Micro-controller

The system monitoring functions are secured by a micro-controller located on the electronic monitoring PCB (**F**). The Inputs / Outputs of the micro-controller are:

1. Micro-controller Inputs:
    - Status of the tilt switch sensor.
    - Status of the optical sensor of flap n°1.
    - Status of the optical sensor of flap n°2.
    - Position of the jumper (S1) => forced power supply of the lamps.

- Status of the lamp n°1.
- Status of the lamp n°2.

2. Micro-controller Outputs:
   - Command of the "Lamps supply shutdown" relay.
   - Command of the "Security" relay use to send HBA status to control room = feedback information of lamps status through a dry contact.
   - Command of the LED for display of defaults.

The status of the security relay is "Failure detected" if at least one of the two lamps is not power on. A lamp is not power on when the lamp is broken, when the lamp has been automatically switched off by the electronic monitoring PCB or the HBA is not powered.

2.2.7 LED used for display of defaults

In order to permit to the maintenance operator to visualize the status of the HBA, the electronic monitoring PCB is equipped of four red LED (see Fig 10).

These four LED display respectively the follows defaults status:

- Default of site angle alignment (detected by the tilt switch sensor) (B)
- Default flap n°1 "Bad movement" (detected by the optical sensor of the flap n°1) (C)
- Default flap n°2 "Bad movement" (detected by the optical sensor of the flap n°2) (E)
- Default Lamp(s) (detected by the dedicated transformers) (D)

2.3 Delivery of the unit

Each unit is composed of four sub-assemblies:

1. One HBA unit with lamps
2. One set of mounting legs for HBA
3. Four frangible couplings
4. Four tripod stands

Each sub-assembly is delivered separately packed (by unit or by batch) in a durable cardboard box, labeled with their reference names and codes.

3.0 Installation

In this section you can find a description of the different steps for successful installation of the unit. Before you start, make sure you have read and understand Safety Instruction.

The following standard tools and accessories are required for installation and removal of the unit:

- Two 22 mm open-end wrench
- Two 17 mm open-end wrench
- One 22 mm angled open-socket wrench
- One 10 mm open-end wrench
- One 8 mm box-shank nut spinner
- One small screwdriver for slotted head
- Brush and cloth
- Spirit level

The following special tools and accessories are required for installation and removal of the unit:

- One adjustment clinometer (supplied in a plastic case)

The installation steps refer to:

1. Calculation the height of the HBA
2. Replacing the optical head
3. Opening/ closing the optical head
4. Mounting the filter
5. Mounting the lamp
6. Mounting the fitting on its support
7. Making adjustments

3.1 Calculating the the height of the unit

In order to help you to fix the topographic heights of the top of the concrete plinth dedicated to support the HBA, please take into account the following data (see Figure 4 and Figure 5):

- On the rear legs the minimum possible distance between the top of concrete block and the bottom of the HBA Box is 350 mm.
- On the front legs the maximum possible distance between the top of concrete block and the bottom of the HBA Box is 570 mm.

Figure 4: Minimum heights of HBA

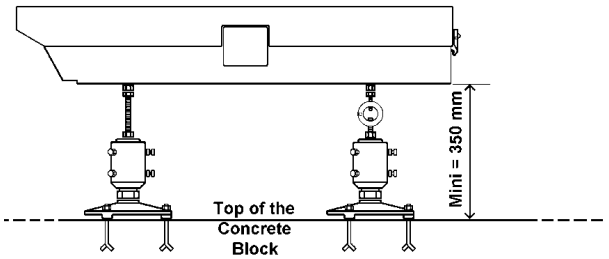
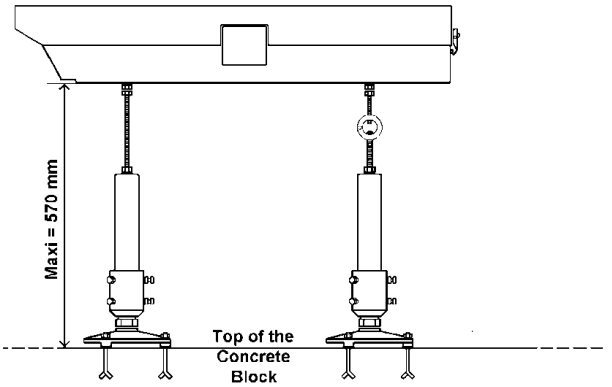


Figure 5: Maximum heights of HBA



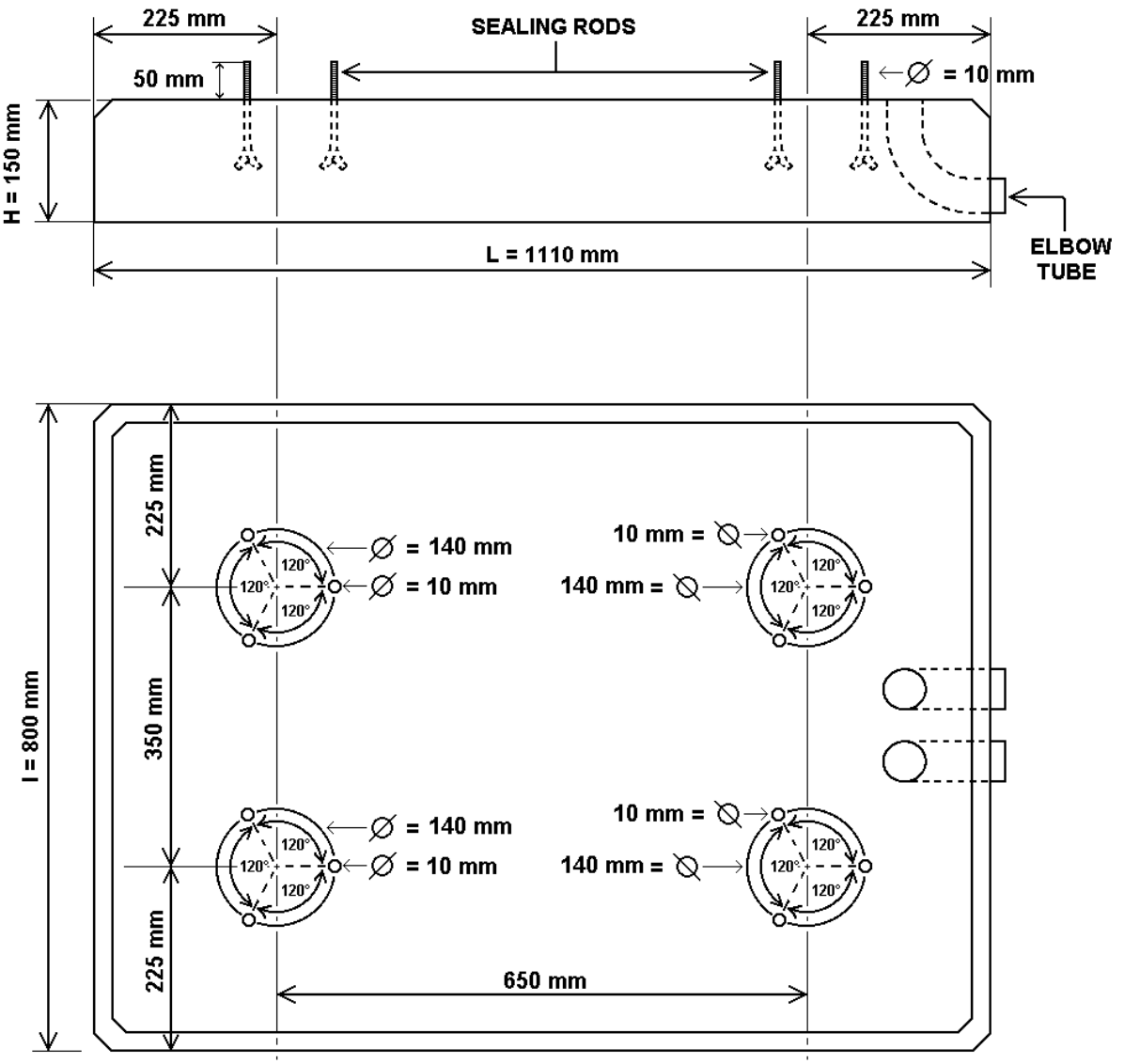
3.2 Installing the fixing rods for tripod stand

Once the location of the HAPI units has been determined, the HBA will need to have a rigid support like a concrete plinth constructed as per the dimensions given in Figure 6. Please note that these dimensions are *minimum* requirements suitable for compacted and stabilized ground and may need to be increased due to local conditions.

Four sets of three M10 threaded rods (sealing rods or anchor studs) may be fixed into the concrete. Figure 6 gives the position of the threaded rods on the concrete plinth.

We would also recommend that one (or two) conduit elbow tubes can be placed in the concrete plinth for power supply and control / monitoring cables (see Figure 6).

Figure 6: Standard size of concrete plinth



3.3 Installing the legs

There are 2 types of legs:

- 2 legs with a differential nut for the rear
- 2 legs without differential nut for front

For each leg:

1. Put the threaded rods (A) in the rigid support (see Installing the fixing rods for tripod stand).
2. Mount the tripod stand (B) on the threaded rods (A).
3. Fix the tripod stand (B). Put three washers, screw and lock the three M10 nuts (C) on the three threaded rods (A).
4. Mount the frangible coupler (D) into the tripod stand (B). Use a 50 mm open-end wrench to lock the frangible coupler (D).

Note

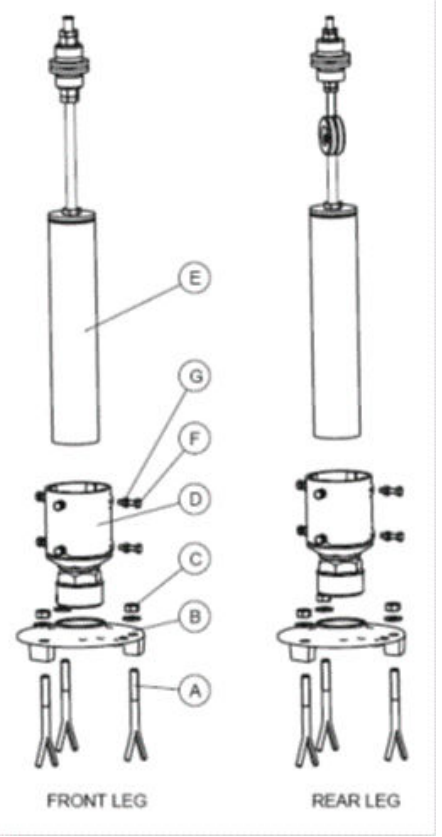
Lubricate, with grease, the thread of the frangible coupler.

5. If necessary, cut the tubes to obtain the requested height (see Calculating the the height of the unit).
6. Mount the tube of the leg (E) in the frangible coupling (D).

CAUTION

the 2 legs with differential nut are mounted in the rear.

7. Use a spirit level and a 10 mm open-end wrench to set the tube (E) vertically in the frangible coupling (D), adjusting the eight fixing screws (F) to suit.
8. Lock by using the eight locknuts (G).



3.4 Mounting the unit on its legs

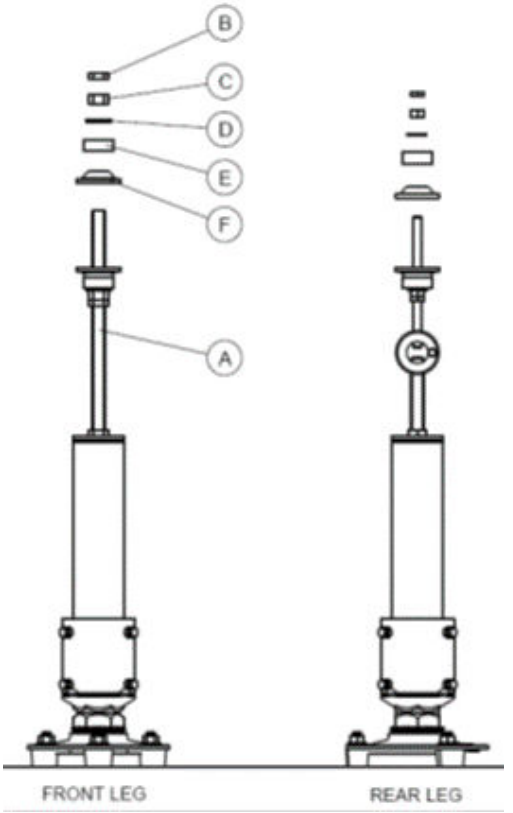
Prepare the top of the legs

For each leg:

1. Put the threaded rods (A) in the rigid support (see Installing the fixing rods for tripod stand).
2. Remove the lock nut (B) from the threaded rod of the leg (A).
3. Remove the fixing nut (C) from the threaded rod of the leg (A).
4. Remove the washer (D) from the threaded rod of the leg (A).
5. Remove the top part of upper knee joint (E) on the threaded rod (A).
6. Remove the second part of upper knee joint (F) on the threaded rod (A).

Note

Threaded rods diameters are not the same for front and rear legs.



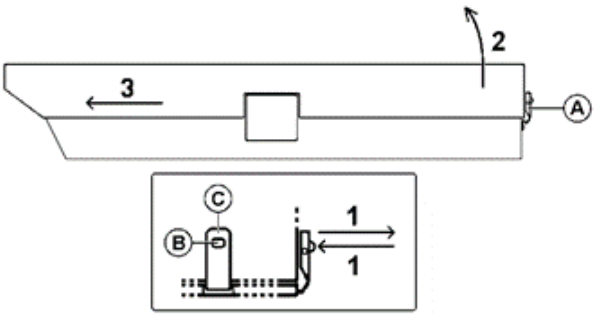
Remove the HBA cover

1. Open the two latches (A).
   The latches are provided with a secondary lock system and a tab (B) needs to be pressed before the latch will open.

Note

The secondary lock system of the latches is used to secure the closing. If you forget to push on the tab, you will not be able to open the latches. Don't force on the latches since they can get damaged.

2. Lift the rear of the cover.
3. Push forward the cover.



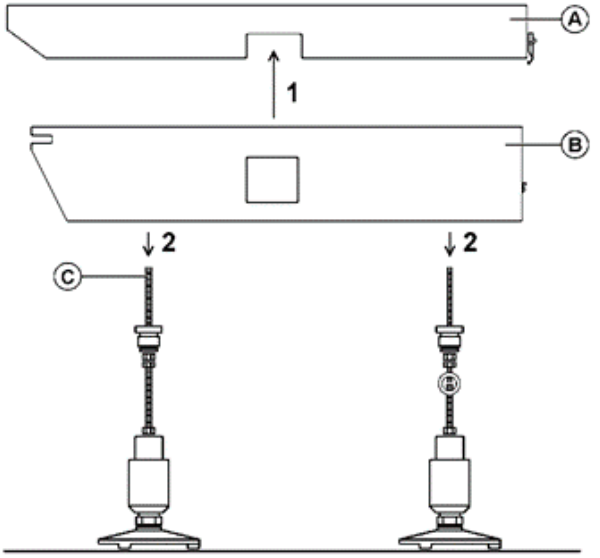
Mount the unit on the legs

1. Remove the cover (A) from the HBA box.
2. Mount the HBA box (B) on its four legs (C).
3. Adjust the height of the front of the HBA.

> **Note**
> A datum point in front of the HBA represent the light beam axis.

4. Adjust approximately the height of the rear of the HBA. This can be done by:
   - Screwing or unscrewing the nuts under the lower knee joint
   - Screwing or unscrewing the threaded rods in the tube

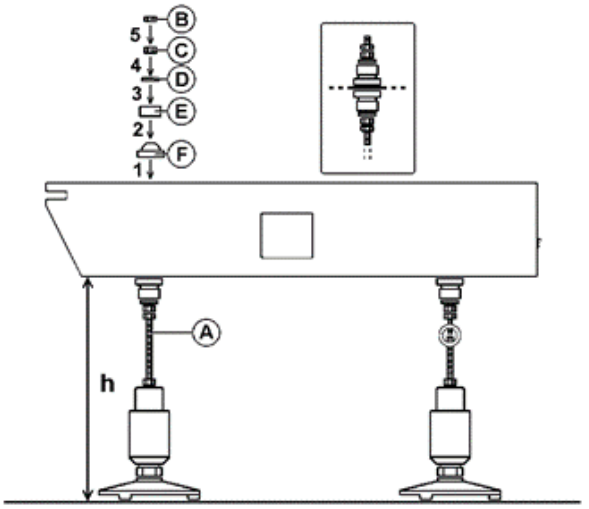
> **Note**
> A minimum of 25 mm is required to be inserted in the tube.



Secure the unit

For each leg:

1. Place the upper knee joint (F) on the threaded rod (A).
2. Mount the top part of the knee joint (E) on the threaded rod (A).
3. Mount the upper washer (D) on the threaded rod (A).
4. Screw the fixing nut (C) on the threaded rod of the leg (A). Do not tighten it at this stage.
5. Screw the locknut (B) on the threaded rod (A) about 10 mm above the fixing nut (C).



3.5 Electrical cabling

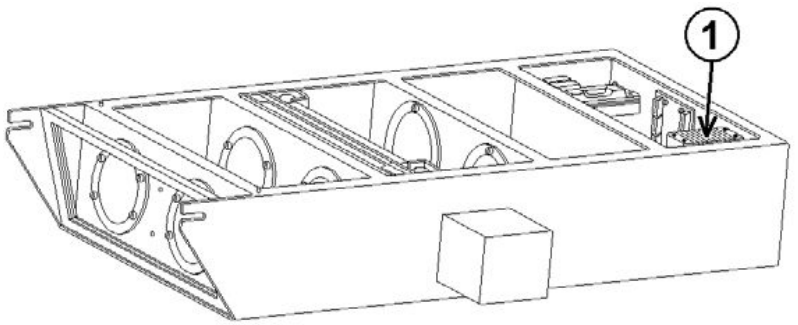
Two types of electrical connections can be made on the HBA:

- Connections of 230 Vac powers supplies
- Connections for input and output of control and monitoring signals (Optional)

Note

On HBA all the electrical connections are carried out on the main terminal, see (1) Figure 7.

Figure 7: Electrical connections



1. Electrical connections with 230 ±10 Vac power supplies: supply of the HBA electrical circuits + supply of the heating resistors (optional):

   a. For HBA without optional heating resistors, use a 3 wires cable (ground = T, Neutral = N, Phase 1 = P1).

      This cable (H07RNF type) must have an outer diameter comprise between 12.5 and 18 mm and a minimum wire section of 2.5 mm^2.

   b. For HBA equipped with optional heating resistors, use a 4 wires cable (ground = T, neutral = N, phase 1 = P1, phase 2 = P2).

      This cable (H07RNF type) must have an outer diameter comprise between 12.5 and 18 mm and a minimum wire section of 2.5 mm^2.

   To adjust the voltage of the lamps, the primary connector of the transformer has 3 voltage entries: 220, 230 and 240 Vac. Use the entry in accordance of the supply voltage. In factory, the transformer is connected for a 230 Vac supply.

2. Electrical connections of control and monitoring cable (optional): Remote control of the brilliance level + feedback of HBA status.

Use a 6 wires cable (H07RNF type) with an outer diameter comprise between 7.5 and 13 mm and a minimum wire section of 0.75 mm^2.

a. Remote control in 230 Vac of brilliancy on three wires (common = B0, MI (30%) = B1, HI (100%) = B2). Without command on MI or HI, the HBA (supplied and in order) is operational in LI (10%).

b. Feedback of HBA status (use of dry contact) on three wires (common dry contacts = S0, output of dry Contact «HBA in service» = S2, output of dry contacts «HBA stopped or failure detected» = S1).

1. The dry contact «HBA in Service» (S0/S2) is closed if the HBA is in service and operational.
2. The dry contact «HBA stopped or failure detected» (S0/S1) is closed if the light output of the HBA is switched off after detection of a critical default (elevation angle default, default of flashing system or failure of a lamp). This contact is also closed if the HBA is not supplied.
3. The maximum acceptable voltage for these dry contacts is 250V and their maximum acceptable current = 1 A.

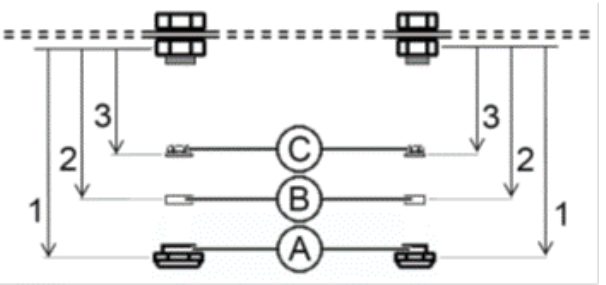
3.6 Installing the compression packers

In order to permit the inputs of the electrical cables insides the box, the HBA has two compression packers (one small and one big) located on the rear part of its bottom. The bigger one is used for entry of power supply cable and the smaller is used for entry of control and monitoring cable.

Open the compression packers

For each of the two compression packers:

1. Unscrew and remove the lower screw (A) of the compression packer.
2. Remove and put apart the internal gasket (B) of the compression packer.
3. Remove and put apart the internal locking ring (C) of the compression packer.



Connect the power supply cable

1. Connect the two wires of the lamp of the new optical head.
2. Pass the power supply cable through the external screws, the gasket and the locking ring of the compression packer (1).
3. Pass the power supply cable through the fix part of the compression packer (2).
4. Pull 50 cm of the power supplies cable inside the HBA box.
5. Uncover the power supplies cable on 3 cm. To do this and in order to do not damage the wires, use a special tool dedicated to uncover cables (3).
6. Skin the 3 (or 4) wires on 1 cm (4).
7. Connect the 3 (or 4) wires of the power supplies cable (T, N, P1, P2).

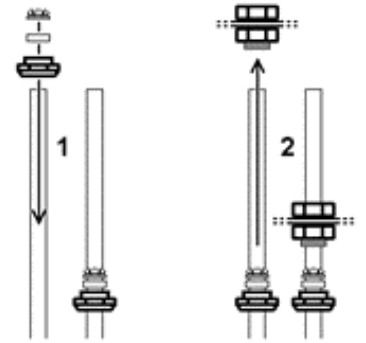
Note

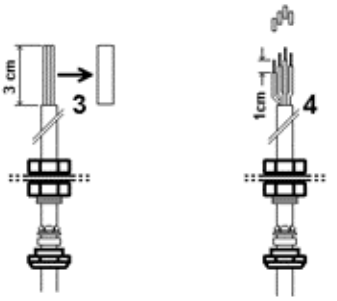
1: The second phase P2 is reserved for the power supply of the heating resistors (optional)
2: The two inputs (N) are linked together with a jumper (J).

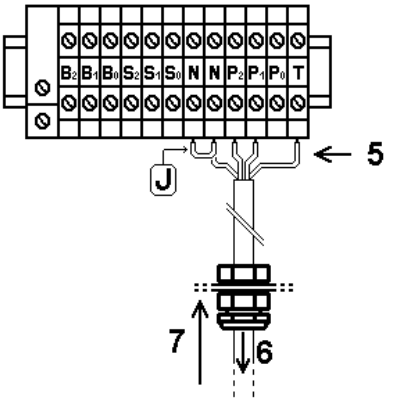
8. Pull the power supplies cable outside the HBA box in order to have the minimum length inside the box (6).
9. Place the locking ring and the gasket inside the fix part of the compression packer.
10. Screw and lock the lower screw on the fix part of the compression packer.
11. If necessary, change the primary connection of the transformer according to the input voltage.

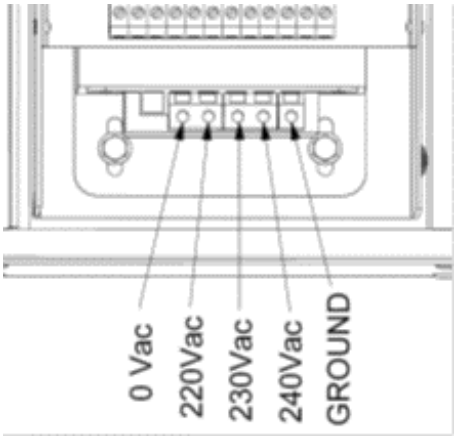
Note

If a compression packer is not used, it must be plugged to guarantee the IP of the HBA box.



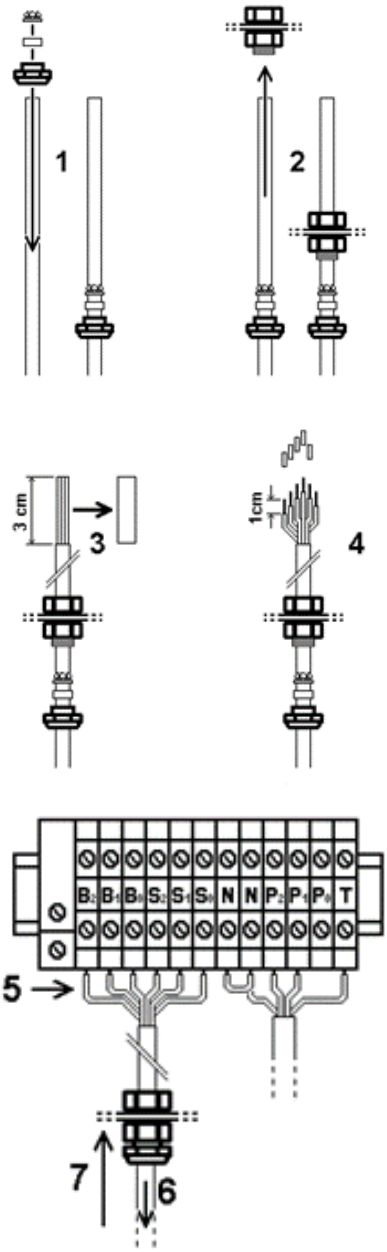






Connect the control and monitoring cable

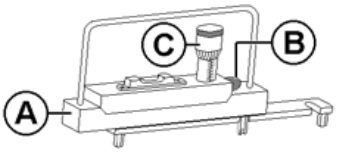
1. Connect the two wires of the lamp of the new optical head.
2. Pass the control and monitoring cable through the external screws, the gasket and the locking ring of the compression packer (1).
3. Pass the control and monitoring cable through the fix part of the compression packer (2).
4. Pull 50 cm of the control and monitoring cable inside the HBA box.
5. Uncover the control and monitoring cable on 3 cm. To do this and in order to do not damage the wires, use a special tool dedicated to uncover cables (3).
6. Skin the 3 (or 6) wires on 1 cm (4).
7. Connect the 3 (or 6) wires of the control and monitoring cable (B0, B1, B2, S0, S1, S2) on the main terminal of the HBA (see Installing the compression packers).
8. Pull the control and monitoring cable outside the HBA box in order to have the minimum length inside the box (6).
9. Place the locking ring and the gasket inside the fix part of the compression packer.
10. Screw and lock the lower screw on the fix part of the compression packer.

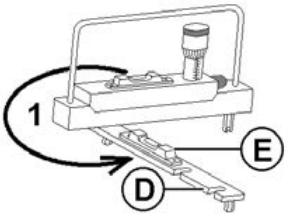


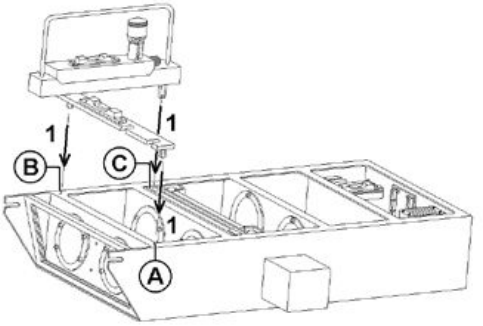
3.7 Adjusting the elevation angle

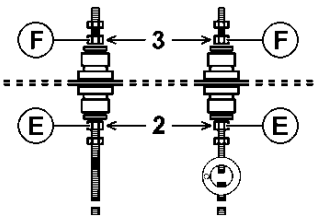
Rough adjustment

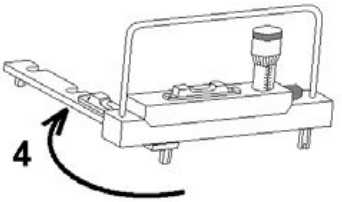
1. Take out the clinometer (A) from its box.
2. Release the locking screw (B), use the fine tuning device (C) to fix the requested angle.
3. The angle set on the clinometer corresponds to the approach slope (middle of "fix green" beam).
4. Tighten the locking screw (B) to lock the selected angle.
5. Open the movable arm of the clinometer in order to have the fine tuning device on the right side.
6. Put the three legs of the clinometer on the three reference points of the HBA (A, B and C).
7. Use the spirit level of the movable arm and play on the lower fixing nuts (E) of the two front legs to adjust the horizontally of the HBA.
8. Fix this position by screwing (not too tight) the upper fixing nuts (F) of the two front legs.
9. Use the spirit level of the fine tuning device and play on the lower fixing nuts (E) of the two rear legs to adjust the elevation angle of the HBA.
10. Fix this position by gently screwing, not too tight, the upper fixing nuts (F) of the right rear leg.
11. Remove the clinometer, move the movable arm of the clinometer on its axis so that you have the fine tuning device on the left side.
12. Put the three legs of the clinometer on the three reference points of the HBA (A, B and D).
13. Verify the spirit level of the movable arm. If necessary, adjust the horizontally with the lower fixing nut of the left front leg.
14. Use the spirit level of the fine tuning device and play on the lower fixing nuts (E) of the left rear leg to adjust the elevation angle of the HBA.
15. Fix this position by screwing (not too tight) the upper fixing nuts (F) of the left rear leg.
16. Fix the HBA adjustment by screwing (not too tight), the lower (I) and the upper (J) locking screws of the four legs.

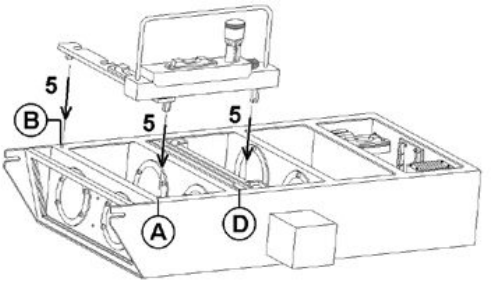


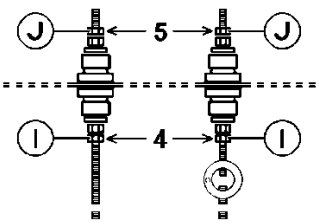












Fine adjustment

1. On the two rear legs, release the locking screw (H) of the

3.8 Calibrating the tilt switch

To be compliant with recommendations of Volume II of the Annex 14 of I.C.A.O concerning HAPI, the HBA is equipped with a tilt switch device, dedicated to detect the default of the elevation angle. The tilt switch cut the supply of the lamps of the HBA after a confirm detection of too important modification of the elevation angle of the HBA.

During installation, after adjustment of the elevation angle, the tilt switch sensor must be calibrated in order to set it to the real elevation of the HBA.

The tilt switch device is located in the HBA at the rear part on the right, see (A) in Figure 8, and comprises, see (B) and (C) in Figure 9:

- Tilt switch box with lid and four screws (B)
- Tilt switch sensor (C)

Figure 8: Tilt switch location

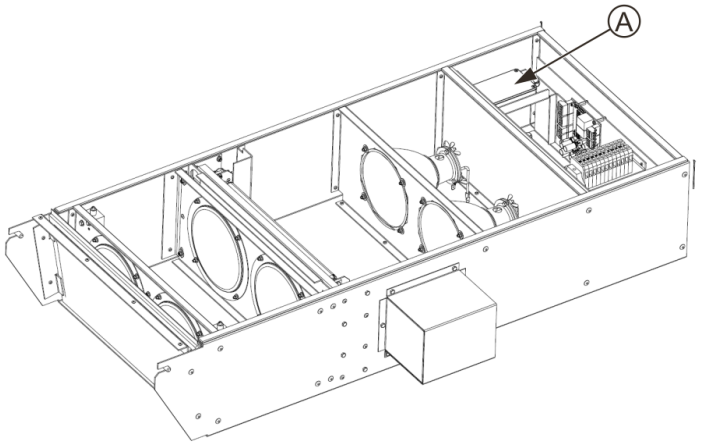
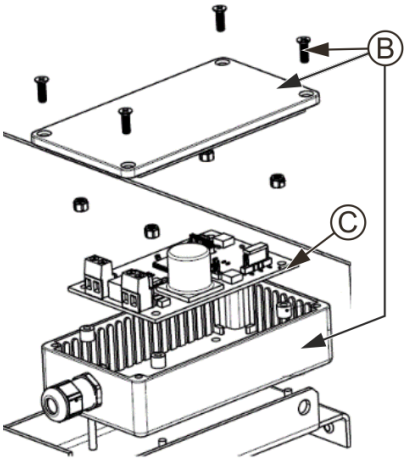
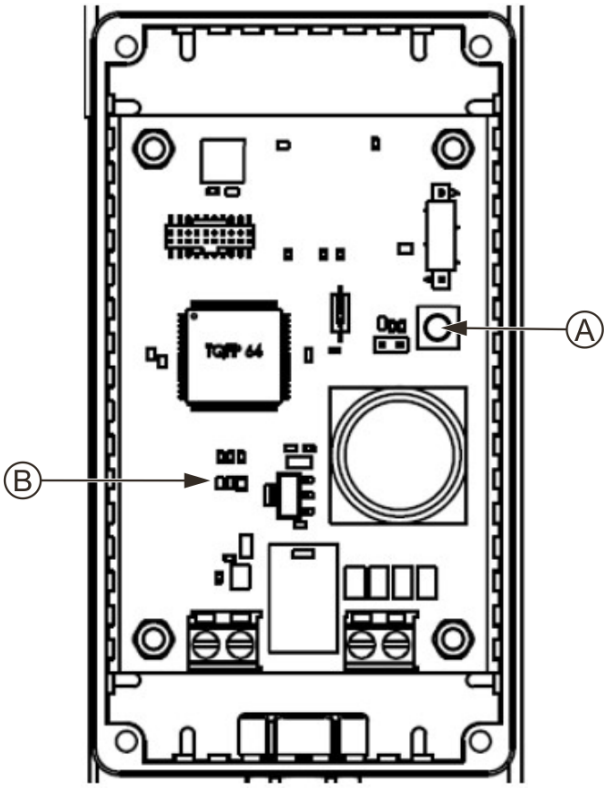


Figure 9: Tilt switch



Calibrating the tilt switch

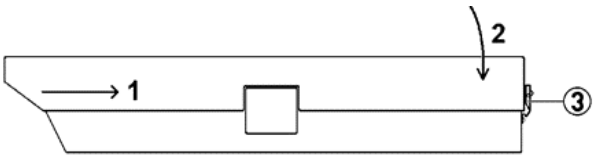
1. Open the HBA cover.
2. Open the lid of tilt switch box by removing the four screws.
3. Power ON the HBA unit.
4. When the light fixture starts up, press the calibration button S2 (A) until LED1 (B) start to flash very fast in red.
5. Release the calibration button and wait while the calibration is processing.
6. When the calibration is done LED3 (B) will light up in steady green.
7. Attach and fasten the tilt switch box lid using the four screws.
8. Put the HBA cover back if required.



3.9 Commissioning

Close the cover

1. Put the front part of the cover on the front part of the HBA box.
2. Slide the cover to the rear of the HBA.
3. Press the rear of the cover.
4. Lock the two latches in the upright position.



Power On the unit

1. The two lamps are and stay light on.
2. The engine of the flaps turns continuously.

In case of operational problem, see Maintenance.

Test the Brilliancy Levels

1. If the remote control of the brilliancy levels is requested, verify that this control is possible.
2. Apply successively 230 Vac (directly or using the control panel) on the dedicated wires of the control and monitoring corresponding to MI and HI.
3. Verify that these commands are operative.

4.0 Maintenance

In this section you can find a description of the different steps for the maintenance of the unit.

Before you start, make sure you have read and understand Safety Instruction.

4.1 Basic maintenance program

There are recommended maintenance tasks to ensure that the equipment is in correct operating condition.

Maintenance tasks	
Weekly	• Visual inspection of the unit. • Removal of dust from external surfaces of the unit.
Monthly	• Check of the optical window, check for mechanical damage. • Check for proper fixing of the unit in its base.
Yearly	• Detailed inspection of the unit. • Check of the body resistance, check for mechanical damage (for example cracks around prism windows). • Clean of the optical windows.

A daily function check is referred to in the document:

> ICAO, Airport Services Manual Part 9, Airport Maintenance Practice and FAA AC 150/5340-26A, Maintenance of airport visual aids facilities

4.2 Workshop maintenance

Before you start, make sure you have read and understand Safety Instruction.

The HBA is a precision guidance system. The optical system of an indicator unit is adjusted in factory. Therefore, no disassembly work is required concerning lenses, lenses supporting flanges, filters support, flaps or clinometer support. If such disassembly work is required, a new adjustment (in factory) should be carried out.

Usually, no readjustment is required after the maintenance work described below. However, an yearly checking of the indicator is recommended. If necessary, perform a new adjustment of the indicator by means of the clinometer.

The workshop maintenance refers to following:

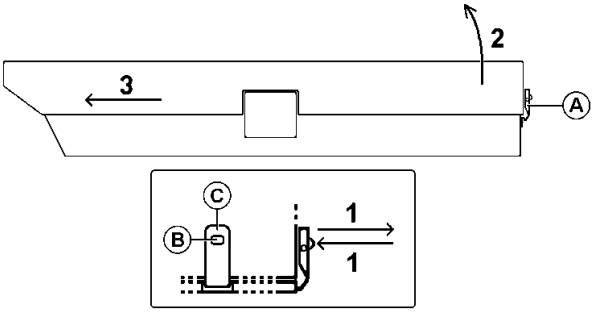
1. Opening/closing the unit
2. Replacing a lamp
3. Replacing a lamp holder
4. Replacing a filter
5. Replacing a protection front glass
6. Replacing a reflector
7. Replacing the gear motor
8. Replacing the electronic block
9. Replacing the electronic monitoring PCB
10. Replacing a brilliancy and security relay

Note
For all other operations please refer to Installation.

4.2.1 Opening and closing the unit

Open

1. Open the two latches (A).
2. The latches are provided with secondary lock system and a tab (B) that needs to be pressed before the latch will open.

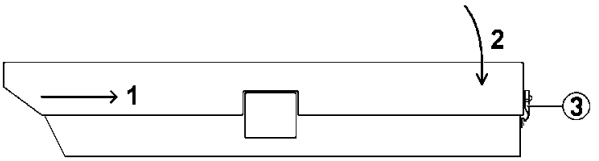


Note
The secondary lock system of the latches is used to secure the closing. If you forget to push on the tab, you will not be able to open the latches. Do not force on the latches since they can get damaged.

3. Lift the rear of the cover.
4. Push forward the cover.

Close

1. Put the front part of the cover on the front part of the HBA box.
2. Slide the cover to the rear of the HBA.
3. Push down the rear of the cover.
4. Lock the two catches in the right position.

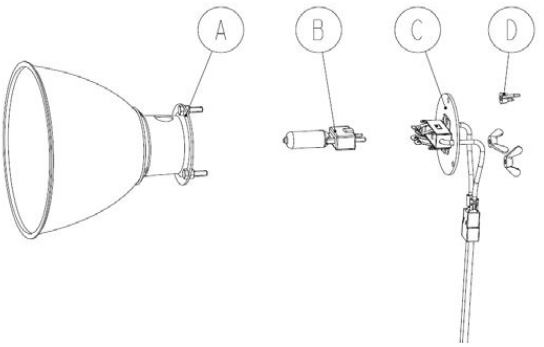


4.2.2 Replacing a lamp

CAUTION
Do not touch the glass of the lamp with bare fingers. Take hold of the lamp by the ceramic end. In case of contact of the lamp glass with foreign elements, clean it with alcohol and a clean cloth.

Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Release the 3 wing nuts (D).
3. Remove the lamp holder (C) from its support (A).
4. Remove the lamp (B) from the lamp holder (C).



Replace

1. Mount the new lamp (B) on the lamp holder (C).
2. Put the lamp holder (C) with the lamp (B) on its support (A).

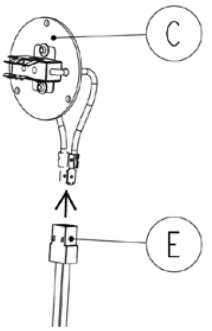
CAUTION
There is only one position for the lamp holder.

3. Tighten the 3 wing nuts (D) on the screws.
4. Mount the cover of the HBA (see Opening and closing the unit).

4.2.3 Replacing a lamp holder

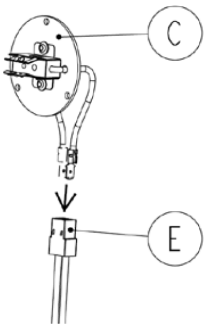
Remove

1. Remove the lamp from the HBA (see Replacing a lamp).
2. Disconnect the terminals of the lamp holder (C) from their plug (E).



Replace

1. Connect the terminals of the lamp holder (C) with their plug (E).
2. Mount the lamp in the HBA (see Replacing a lamp).



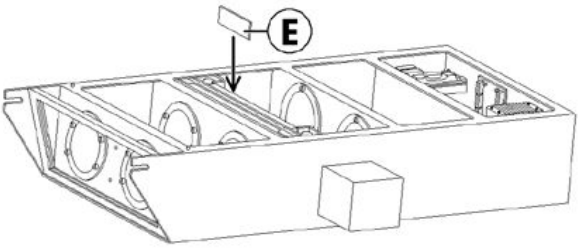
4.2.4 Replacing a filter

Each of the two optical systems of the HBA is equipped of two filters (one red filter + one green filter).

The red filter must be mounted up and the green filter down.

Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Manually turn the crank until the flaps are in open position.
3. Loosen the two screws of the side springs holding the filter without removing them.
4. Rotate the springs.
5. Remove the filter (E).

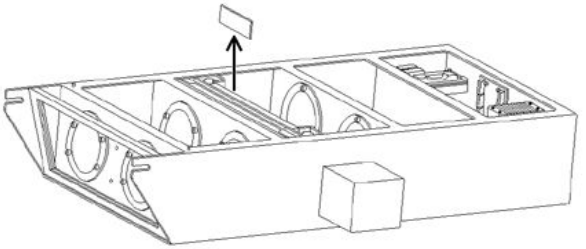


Replace

1. Mount a new filter on its holder.

> **Note**
> The red filter must be pressed against its support and the green filter must be pressed against the red filter.

2. Refit the side springs and lock the fixing screws.
3. Mount the cover of the HBA (see Opening and closing the unit).

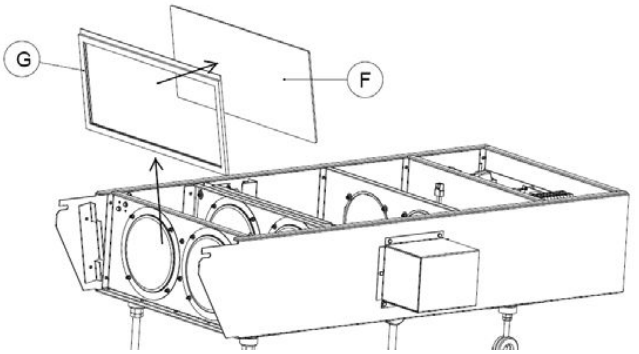


4.2.5 Replacing the protection front glass

The lenses placed at the front of the optical systems are protected by a tempered plate glass.

Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Remove (slide it up) the protection front glass with its gasket from the HBA body.
3. Remove the gasket (G) of the protection front glass (F).

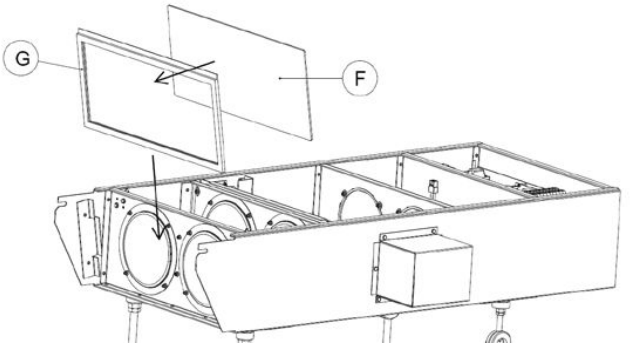


Replace

1. Mount the gasket (G) on the new protection front glass (F).
2. Replace (slide it down) the protection front glass with its gasket on the HBA body.

> **Note**
> The lip of the gasket must be at the top.

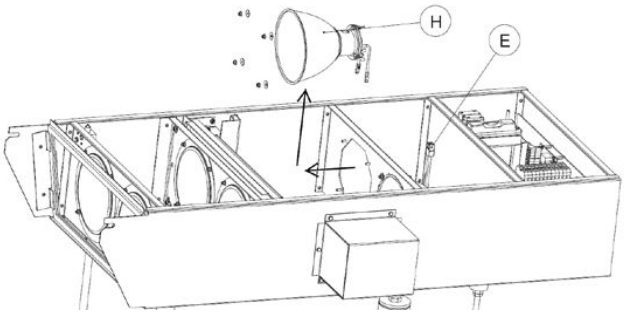
3. Mount the cover of the HBA (see Opening and closing the unit).



4.2.6 Replacing a reflector

Remove

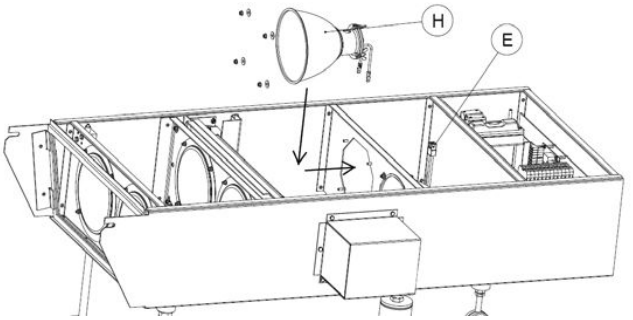
1. Disconnect the terminals of the lamp holder from their plug (E).
2. Remove the four fixing screw, nuts and washers of the reflector (H).
3. Remove the reflector from the HBA body.



Replace

1. Mount the reflector (H) in the HBA body.

> **Note**
>
> a. The aligned hole and a wing nut of the lamp holder must be at the top.
>
> b. Fit a new reflector assembly in its housing, and press on the reflector firmly in order to make it oval.
>
> The reflector housing is a non-regular octagon (width greater than height).
> The top and bottom surfaces of the reflector should be rub against the housing.

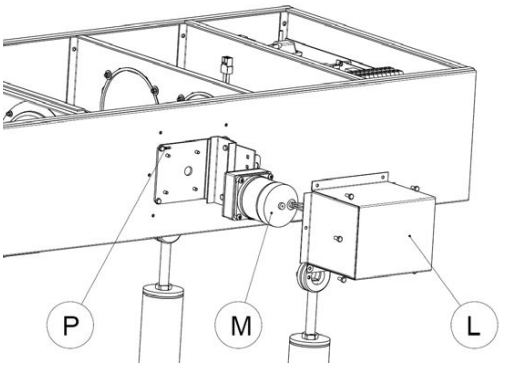


2. Mount, tighten and lock the four fixing screws, washers and nuts of the reflector.
3. Connect the terminals of the lamp holder with their plug (E).
4. Mount the lamp in the HBA (see Replacing a lamp).

4.2.7 Replacing the gear motor

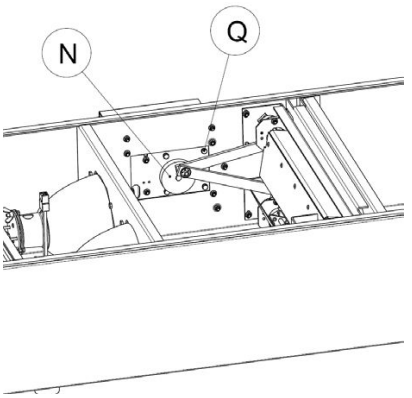
Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Release and remove the motor cover (L).
3. Disconnect the 3 motor wires (note the positions) and remove the capacitor.
4. Release and remove the earth terminal of the motor (P).
5. Loosen the locking screw of the crank (N).
6. Release and remove the 4 screws of the gear motor (Q).
7. Remove the gear motor (M).



Replace

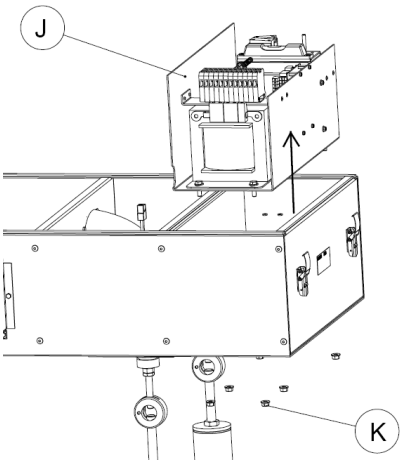
1. Slide the crank (N) on the axis of the new gear motor (M).
2. Put on the 4 screws (Q) and lock the washers of the gear motor and lock them.
3. Lock the screw of the crank (N) on the gear motor axis. The screw must be on the flat of this axis. The rods must be parallel to the edge of the HBA.
4. Put on the earth terminal (P) and lock it with its screw and nut.
5. Reconnect the 3 motor wires (use the position note above). Put on the new capacitor.
6. Re-position the motor cover and fix it with its screws and nuts.
7. Mount the cover of the HBA (see Opening and closing the unit).



4.2.8 Replacing the electronic block

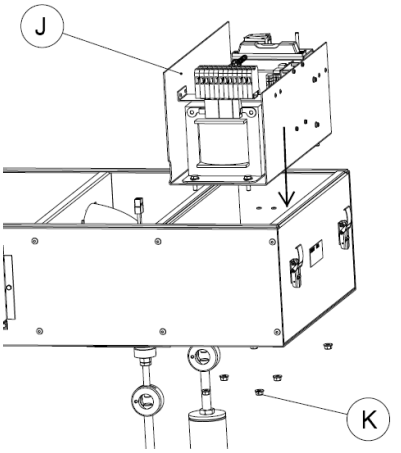
Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Disconnect the power supply and remote the control cables from main terminal.
3. Disconnect the two sensor connectors from the electronic monitoring PCB (J4 and J5).
4. Disconnect the two motor conductors from the main terminal (first note the position).
5. If necessary disconnect the heating resistor conductor (motor and lenses) from main terminal (first note the position).
6. Disconnect the two lamp holders (see Replacing a lamp holder).
7. Disconnect the earth wire of the body from main terminal.
8. Loosen and remove the six nuts (K).
9. Smoothly remove the electronic block (J). Take hold on it by plug and tilt switch supports. Forward the lamps wires.



Replace

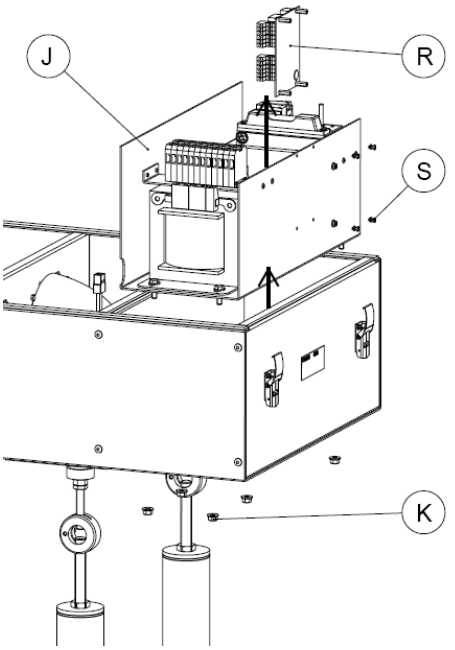
1. Verify that the isolating plate is in place, side lamps.
2. Press the electronic block (J) in place. The lamps conductors must be inside.
3. Pass the power supply and remote control cables and the earth wire of the body through the below rectangular hole.
4. Replace the electronic block. Take hold on it by plug and tilt switch supports and smoothly put it in his place. The six fixings screws must pass through their holes at the bottom of the body.
5. Make sure the sensors, motor and heating resistances are not placed under the electronic block.
6. Tighten and lock the six fixating nuts (K).
7. Connect the earth wire of the body to the main terminal.
8. Reconnect the two sensors connectors to the electronic monitoring PCB (J4 and J5).
9. Reconnect the motor conductors (and, if necessary, the heating resistors conductors) to the main terminal.
10. Pass the lamps conductors in lamp section and connect the two lamp holders, see Replacing a lamp holder.
11. Reconnect the power supply and remote control cables to the main terminal.
12. Calibrate the tilt switch, see Calibrating the tilt switch.
13. Mount the cover of the HBA (see Opening and closing the unit).



4.2.9 Replacing the electronic monitoring PCB

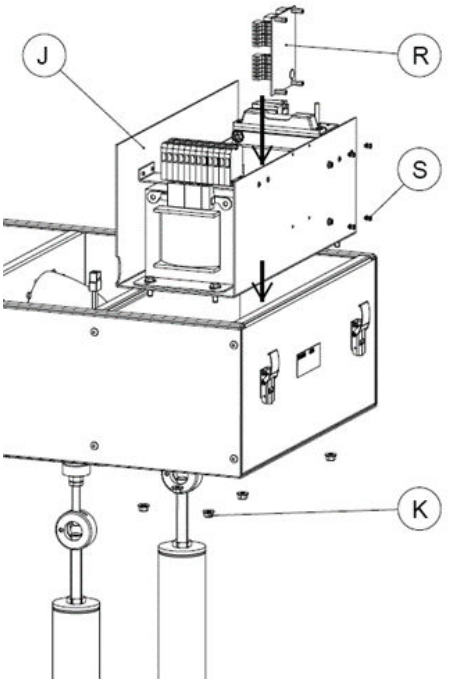
Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Disconnect the power supply and remote control cables from the main terminal.
3. Disconnect the two sensor connectors from the electronic monitoring PCB (P8 and P9).
4. Disconnect the two motor conductors from the main terminal (first note the position).
5. If necessary disconnect the heating resistor conductor (motor and lenses) from main terminal (first note the position).
6. Disconnect the earth wire of the body from main terminal.
7. Loosen and remove the six nuts (K).
8. Smoothly remove the electronic block (J). Take hold on it by plug and tilt switch supports. Put it on the top of the HBA.
9. Disconnect all the connectors of the electronic PCB (P1, P2, P3, P6, P7 and P10).
10. Release the four screws (S) of the electronic PCB (R) and remove it.



Replace

1. Install the new electronic PCB (R) and fasten it using the screw (S).
2. Connect the connectors P1, P2, P3, P6, P7 and P10.
3. Verify that the isolating plate is in place, side lamps.
4. Present the electronic block (J) in place.
5. Pass the power supply and remote control cables and the earth wire of the body thought the below rectangular hole.
6. Replace the electronic block. Take it by plug and tilt switch supports and smoothly put it in his place. The 6 fixings screws must pass through their holes at the bottom of the body.
7. Make sure the sensors, motor and heating resistances conductors do not stay under the electronic block.
8. Screw and lock the six fixating nuts (K).
9. Connect the earth wire of the body to main terminal.
10. Reconnect the two sensor connectors to the electronic monitoring PCB (P8 and P9).
11. Reconnect the motor, and heating resistors if necessary, conductors to the main terminal.
12. Reconnect the power supply and the remote control cables to the main terminal.
13. Mount the cover of the HBA (see Opening and closing the unit).



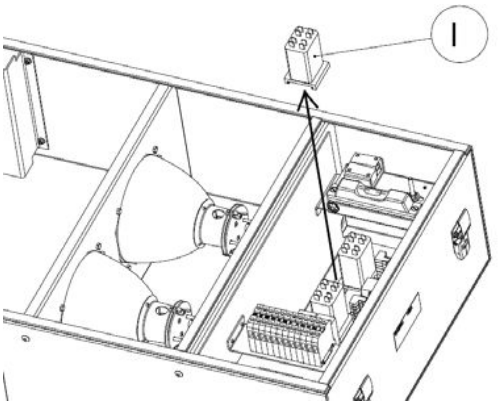
4.2.10 Replacing a brilliancy or security relay

Remove

1. Remove the cover of HBA (see Opening and closing the unit).
2. Disconnect the relay (Fast on terminals).

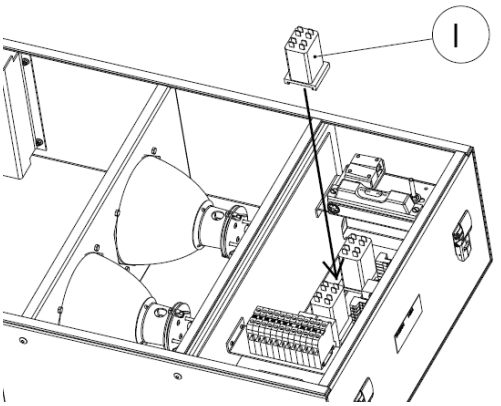
> **CAUTION**
> Note the positions of the wires.

3. Remove the relay (I) from the DIN rail.



Replace

1. Mount a new relay (I) on the DIN rail.
2. Connect the fast on terminals: make sure that the terminal lugs are in good position.
3. Mount the cover of the HBA (see Opening and closing the unit).



5.0 Spare Parts

5.1 Helicopter Approach Path Indicator (HBA)

The following is a list of spare parts and a view on the next page for HBA fitting.

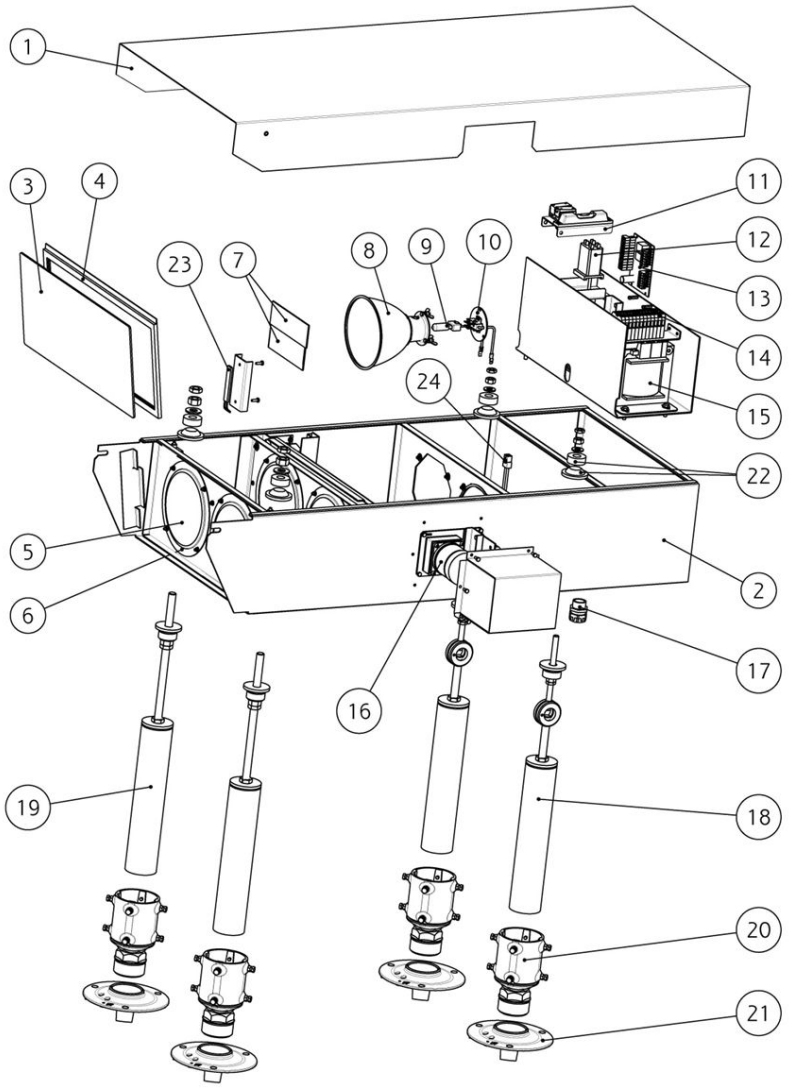
Note
Contact ADB SAFEGATE for assistance with ordering spare parts and accessories, www.adbsafegate.com.

Item	Description	Quantity per		Order code	Old code
		fitting	code		
	HBA complete unit without legs - Without heating resistors - With heating resistors	-	1	 SGEHBA.10146 SGEHBA.10145	 96215757 96215764
	HBA clinometer	-	1	SG10147	96215695
1	Cover and fixing system	1	1	SG17761	59005600
3	Protecting front glass	1	1	SG12828	96216775
4	Front glass gasket	1	1	SG12830	96216777
5	Lens (must be optically adjusted in factory)	4	1	On Request	-
6	Lens fixing circle + screws (must be adjusted in factory)	4	1	On Request	-
7	Dichroic red filter	2	1	SG13115	96217113
7	Dichroic green filter	2	1	SG13116	96217114
8/10	Reflector with GY9.5 lamp holder and fixing screws	2	1	SG16619	96262224
9	Pre-focused halogen lamp: - 24V 250W GY9.5 (after Sept 2012) - 24V 250W G6.35 (up to Sept 2012)	 2 2	 1 1	 SG17210 SG12438	 24160743 96200958
10	Lamp holder - for GY9.5 lamp (after Sept 2012) - for G6.35 lamp (up to Sept 2012	 2 1	 2 2	 SG16620 SG13048	 96262223 96217024
11/12/13/ 14/15	Complete supply and control sub-assembly	1	1	SG12993	96216964
11	Tilt switch module **Note** This part is no longer available. Complete supply and control sub-assembly must be replaced.	1	1	-	-
12	Remote control relay	3	1	SG18524	-
13	Electronic monitoring PCB	1	1	SG15117	99074979
14	Connections terminal	1	1	On Request	-
15	Transformer module	1	1	On Request	-
16	Flaps gear motor	1	1	SG18522	-
	Flaps sensor	2	2	SG18523	-

Item	Description	Quantity per		Order code	Old code
		fitting	code		
17	Set of two compression packers	1	1	On Request	-
18/19	Set of 4 legs for mounting on tripod: 2 front + 2 rear - L400 - L700	1	1	SG10149	96215731 99071961
20	Breakable coupling with - 2" NPS thread - 2" BSP thread	4	1	SG10148 SG12533	96215666 96215670
21	Tripod stand with - 2" NPS thread - 2" BSP thread	4	1	SG12532 SG12534	96215669 96215671
	Sealing rod and nut	12	1	SG12471	96213508
	Anchor stud M10 stainless steel	12	1	SG16094	-
22	Cups and pivot joints	1	1	On Request	-
23	Heating resistor (optional)	3	1	SG14957	96252455
24	Cable terminal	2	1	SG12667	96216594

Note
Component availability or component design may be subject to change.
Changes in this document due to error or content updates may be done at any time without prior notice. For more information contact ADB SAFEGATE, see www.adbsafegate.com.

Figure 10: HBA overview

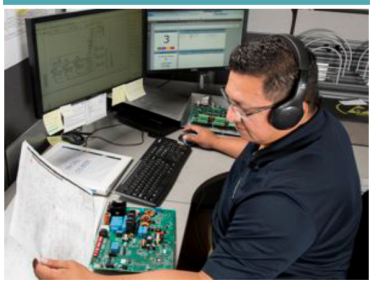


6.0 SUPPORT

Our experienced engineers are available for support and service at all times, 24 hour/7 days a week. They are part of a dynamic organization making sure the entire ADB SAFEGATE is committed to minimal disturbance for airport operations.

ADB SAFEGATE Support

Live Technical Support - Americas
If at any time you have a question or concern about your product, just contact ADB SAFEGATE's technical service department. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists are available 24 hours a day, seven days a week to provide assistance over the phone.
ADB SAFEGATE **Americas Technical Service & Support (US & Canada): +1-800-545-4157**
ADB SAFEGATE Americas Technical Service & Support (International): +1-614-861-1304
During regular business hours, you can also Chat with a Service Technician. We look forward to working with you!



Before You Call
When you have an airfield lighting or system control system problem it is our goal to support airfield maintenance staff as quickly as possible. To support this effort we ask that you have the following information ready before calling.

- The *airport code*
- If not with an airport, then company name (prefer customer id number)
- Contact phone number and email address
- Product with part number preferable or product number
- Have you reviewed the product's manual and troubleshooting guide
- Do you have a *True RMS* meter available (and any other necessary tools)
- Be located with the product ready to troubleshoot

Note

For more information, see www.adbsafegate.com, or contact ADB SAFEGATE Support via email at support@adbsafegate.com or
Brussels: +32 2 722 17 11
Rest of Europe: +46 (0) 40 699 17 40
Americas: +1 614 861 1304. Press 3 for technical service or press 4 for sales support.
China: +86 (10) 8476 0106

6.1 ADB SAFEGATE Website

The ADB SAFEGATE website, www.adbsafegate.com, offers information regarding our airport solutions, products, company, news, links, downloads, references, contacts and more.

6.2 Recycling

6.2.1 Local Authority Recycling

The disposal of ADB SAFEGATE products is to be made at an applicable collection point for the recycling of electrical and electronic equipment. The correct disposal of equipment prevents any potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling. The recycling of materials helps to conserve natural resources. For more detailed information about recycling of products, contact your local authority city office.

6.2.2 ADB SAFEGATE Recycling

ADB SAFEGATE is fully committed to environmentally-conscious manufacturing with strict monitoring of our own processes as well as supplier components and sub-contractor operations. ADB SAFEGATE offers a recycling program for our products to all customers worldwide, whether or not the products were sold within the EU.

ADB SAFEGATE products and/or specific electrical and electronic component parts which are fully removed/separated from any customer equipment and returned will be accepted for our recycling program.

All items returned must be clearly labeled as follows:

- For *ROHS/WEEE* Recycling
- Sender contact information (Name, Business Address, Phone number).
- Main Unit Serial Number.

ADB SAFEGATE will continue to monitor and update according for any future requirements for *EU directives* as and when *EU member states* implement new *regulations* and or *amendments*. It is our aim to maintain our *compliance plan* and assist our customers.

Powering Your Airport Performance from Approach to Departure

adbsafegate.com