



UEL and UELC Steady-Burning and Flashing Elevated Approach Light (US and Canada)

User Manual

96A0441, Rev. 1.5.0, 2026-Sep-21



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 C22.2 No.180:13 (R2018) regulations. The CSA 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 below, 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 further 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.

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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

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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 this 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 symbols 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.
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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 these instructions can result in serious injury, death 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.
- CSA – C22.2 No.180:13 (R2018), series isolating transformers for airport lighting.
- 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

Failure to follow this instruction can result in serious injury, death and / or property and 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 elements and kept free of condensation and dust.

Failure to follow this instruction can result in equipment damage

1.1.4 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 OR REPLACE MALFUNCTIONING COMPONENTS ACCORDING TO INSTRUCTIONS PROVIDED IN MANUAL.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN DEATH OR EQUIPMENT DAMAGE

1.1.5 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

2.0 UEL

UEL Approach, Threshold Runway End High Intensity Elevated Light installation and maintenance manual.

2.1 About this manual

The manual shows the information necessary to:

- Install /Use the Device
- Carry Out Maintenance
- Troubleshoot the Device.

2.1.1 How to work with the manual

1. Become familiar with the structure and content.
2. Carry out the actions completely and in the given sequence.

3.0 Introduction

The UEL steady-burning approach, threshold runway end high-intensity elevated light is available with a synthetic rear housing, which is UV-resistant and results in a low weight, or with an aluminum rear housing. The fixture uses low power and long life lamps 1000 hours, 150W only for approach, threshold and threshold wing bar, 100W for runway end and 45W for ICAO stop bar and the fixture's reduced dimensions improve frangibility characteristics and resistance against jet blast and wind load. The UEL also offers easy lamp changes without tools due to a hinged, removable front cartridge, and it mounts straight onto standard 2" EMT (60 mm O.D.), breakable coupling or frangible mast head.

3.1 Steady-Burning and Flashing Elevated Approach Light (US and Canada)

Compliance with Standards

FAA:	AC 150/5345-46 (Current Edition) and FAA-E-982 for mechanical and environmental properties.
ICAO:	Annex 14, Volume I, para. 5.3.4, 5.3.4.17, 5.3.7, 5.3.8, 5.3.10, 5.3.11, and 5.3.19.4.
IEC:	IEC 61827
NATO:	STANAG 3316
T/C:	Transport Canada TP 312

Uses

- Precision approach lighting Cat. I, II and III, white and red
- Threshold and threshold wing bar lighting Cat. I, II and III
- Runway end lighting Cat. I, II and III
- Supplementary ICAO stop bar lights Cat. I, II and III
- Flashing light head, in conjunction with a FCU cabinet

Features

- Low weight (3.75 lb/1.7 kg, including lamp) construction due to the use of synthetic material for rear housing that is resistant to UV and high temperatures.
- Fixture is also available with an aluminum rear housing.
- Reduced dimensions for improved frangibility characteristics and resistance against jet blast and wind load.
- Easy lamp changing without tools due to a hinged, removable front cartridge.
- Low power and long life lamps: 1000 hours, 150 W only for approach, threshold and threshold wing bar, 100 W for runway end and 45 W for ICAO stop bar.
- Cable mechanically protected inside the fixture; built-in stress relief.
- Front glasses, clear or colored, optimized for the different functions. No separate color filters.
- Mounts straight onto standard 2" EMT (60 mm O.D.), breakable coupling or frangible mast head.
- Stable elevation adjustment achieved by readily accessible, lockable adjustment screws.
- Easy aiming, even on top of a mast, by means of dedicated setting devices available either in an electronic or in a simplified, bubble level version.
- Maintenance-free construction and design.
- Also available with an additional medium intensity – low intensity omnidirectional approach light on top

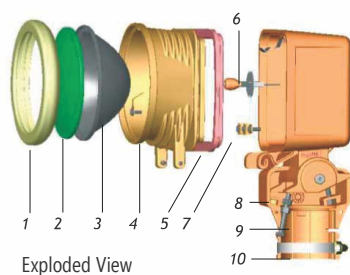
Operating Conditions

Temperature:	-67 °F to +131 °F (-55 °C to +55 °C)
Humidity:	0 to 100%

Altitude: 0 to 10,000 ft (3,000 m)

Wind: Velocities up to 302 knots (560 km/hr)

Construction



1. Front glass/reflector seal
2. Front glass
3. Reflector
4. Removable front cartridge, aluminum alloy, containing the lamp and all optical components
5. Optical cartridge gasket
6. Prefocus halogen lamp
7. Cable stress reliever
8. Main (rear) housing with slip fitter
9. Elevation adjustment screws
10. Bracing clamp with screw

Ordering Code ²

1UE X X X X X X X 1

Lamp Power

- 2 = 45 W (ICAO stop bar)
- 4 = 100 W (runway end)
- 5 = 150 W (other applications) ¹
- 9 = 120 W (flashing light)

Beam Color

- C = White
- G = Green
- R = Red

For Mounting On

- 0 = Ground (with secondary cable)
- 2 = Pole or mast (no cable)

Finish (Aluminum)

- Y = Aviation yellow

Low Intensity Top Light

- 0 = Without

Lock

- 0 = No lock
- 1 = Vandal proof lock for optical cart

Special requirements

- 00 = None

Version

1

Accessories

Adjustment tools (vertical and horizontal)

With clinometer using electronic sensors 1570.05.400

With clinometer using spirit level 1570.05.410

Note

¹ Extension cables, conduits, connector kits, breakable couplings, frangible masts, (needs to be ordered separately). For assistance, please contact ADB Safegate sales.

² Complete, delete or modify as necessary.

Elevated Flasher Aiming Device

This aiming device is used to adjust the vertical elevation of the elevated flash head. For elevated flashing fixture, the aiming device is available either as an electronic or as a simple mechanical (bubble level) based unit. Both aiming devices are accurate to within $\pm 0.5^\circ$.

Aiming Device Ordering Code

Remote Digital Aiming Device ¹ 1570.05.400

Bubble Level Aiming Device² 1570.05.410

Notes

¹ For inaccessible fixture mounting heights up to 33 ft (10 m).

² For fixture mounting heights accessible from the ground, a ladder or a bucket truck.

Aluminum UEL

Used in Canadian and other harsh environments.

Ordering Code

Direction

1 = Elevated Incandescent

Lamp Power

100 = 100W (Runway End)

150 = 150W (Approach centerline & crossbar, side row, threshold & threshold wing bar)

XXX = No lamp

WS = MOD for WS Tower only

Color

C = White

G = Green

R = Red

Special Option

LL = Extra long cord 0.75M (29.5")

Accessories

Adjustment tools (vertical and horizontal)

With clinometer using electronic sensors

1570.05.400

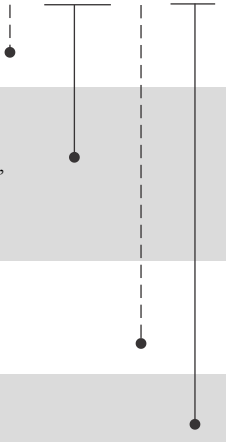
With clinometer using spirit level

1570.05.410

Note

- Extension cables, conduits, connector kits, breakable couplings, and frangible masts, need to be ordered separately.
For assistance, please contact ADB SAFEGATE.
- To order a Standard Digital Aiming Device for use on readily accessible fixture mounting heights, use Part No. 080604.
- 1 Other applications include approach, threshold, and threshold wing bar.

UEL C - 1 - X X X - X - X X



Electrical Supply

From a 2.8 to 6.6 A series circuit, through a suitably rated isolation transformer. Use a 2-core 2.5 mm² (AWG 12) silicon rubber insulated cable between the transformer and the light. For flashing system, see catalog sheet 2091.

Finish

- Front cartridge: painted aviation yellow
- Main body: black, temperature and UV-resistant synthetic material. Cast aluminum option available.
- Stainless steel hardware
- Temperature resistant wiring, gasket and front glass

Characteristics

- UV-resistance: Synthetic main body tested in a Weather-O-Meter per ASTM 23 & 26 for more than 2000 hours
- Degree of protection: IP 43

Installation

- At ground level on 2.36 in (60 mm) O.D. breakable coupling (See Fig. 1)

Figure 1: Fig. 1



- On a 2.36 in (60 mm) O.D. aluminum conduit up to 6.56 feet (2 m) high with breakable coupling 44B0180 (See Fig. 2 and/or catalog sheet 2093)

Figure 2: Fig. 2



- On top of any safety approach mast having a 2.36 in (60 mm) O.D. mounting interface (See Fig. 2)

Figure 3: Fig. 3

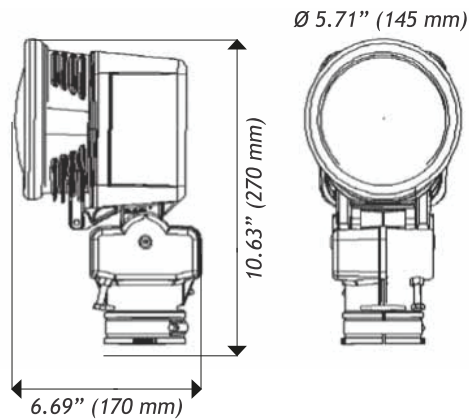


- On top of fiberglass LIR mast, use 2.36 in (60 mm) to FAA LIR lamp support adapter Part No. 4762. (See Fig. 3).

UEL-1-150 Packing Data

Net weight ¹	3.75 lb (1.7 kg)
In cardboard box	11.81 × 8.27 × 8.66 in (30 × 21 × 22 cm)
Gross weight	4.41 lb (2.0 kg)

Dimensions



Photometric Data

Lamp specification: prefocus halogen - PK 30d - 6.6 A - 1000 hours rated life at full intensity. Max. power rating: 150 W

Lamp (W)	Color	Curve	Avg. Int. (cd)	Beam Spread	
				Horz.	Vert.
150	White	Fig. 4	>22,108	-10 to +10	2 to 13
>150	Red	Fig. 5	>6,921	-5 to +9	3 to 13
>150	Green	Fig. 6	>19,075	-2 to +9	2 to 11
>150	Green	Fig. 7	>17,929	-5 to +9	2 to 13
>100	Red	Fig. 8	>5,322	-6 to +6	0.2 to 4.5
>45	Red	Fig. 9	>309	-10 to +10 (rectangle)	1 to 8 (rectangle)

Figure 4: Fig. 4 - Approach Centerline

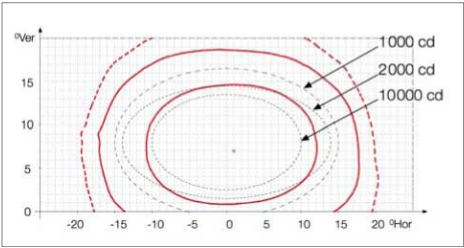
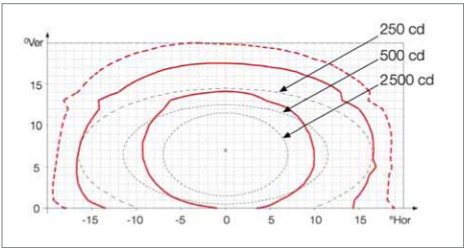


Figure 5: Fig. 5 - Approach Side Row



¹Complete with glassware, without lamp, cable or breakable coupling

Figure 6: Fig. 6 - Threshold

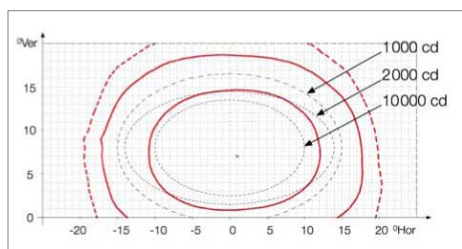


Figure 7: Fig. 7 - Threshold Wing Bar

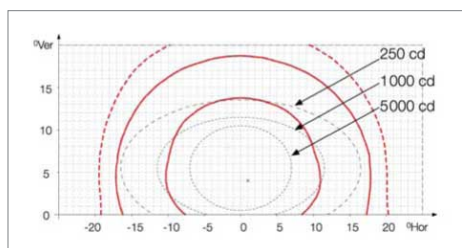


Figure 8: Fig. 8 - Runway End

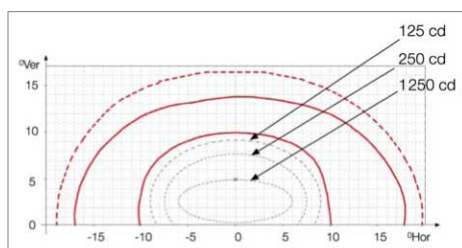
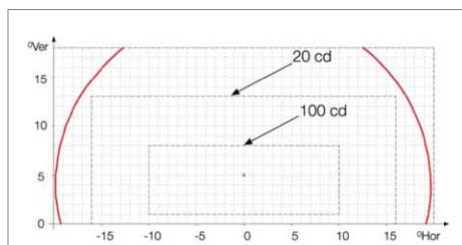


Figure 9: Fig. 9 - Supplementary Stop Bar



4.0 Installation

4.1 Electrical Connections

1. The UEL-1-150, UEL-1-100 and, UEL-1-045 light assemblies are designed for connection to 6.6 or 20 Amps series circuits with an FAA L-830 or L-831 isolation transformer with a nominal secondary current of 6.6A. The isolation transformers are to be ordered separately.
2. The UEL-1-120 light assemblies are designed for connection to a ICC control cabinet by means of a 5-core cable. Refer to ADB Manual 96A0400 for more information on the connection to the FCU control cabinet and the type of cable to use. The ICC control cabinets are to be ordered separately. See ADB Catalog Sheet 2091.

4.2 Delivery Inspection, Storage and Unpacking

1. Upon receipt of goods, inspect all packaging for visible damage.
 - a. If packaging is damaged, open the affected packaging and check the equipment for damage. Take care not to damage the cable insulation when unpacking the equipment or when it is unpacked.
 - b.



IMPORTANT

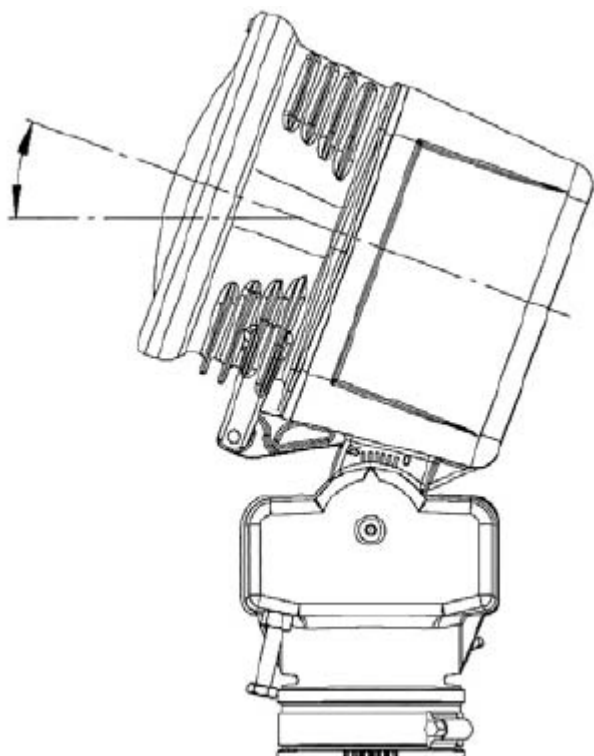
If damage to the equipment is detected, immediately complete a claim form with the carrier. The carrier may need to inspect the equipment.

2. Store the equipment in its original packaging in a clean, dry, and protected indoor area.
3. Unpack at the installation site just before installation to avoid damage during transportation and handling.

4.3 Elevation and azimuth setting angles

Set the Elevation and azimuth setting angles according to the specific use and location of the light. More information can be found in ICAO Annex 14, Appendix 2, Fig. 2.1 to 2.4 and 2.8.

Refer to [“Aiming the UEL Lamp holders” on page 16](#) of this manual, for instructions about how to set the elevation angle.



4.4 Equipment required for installation

Equipment in the table below you will find a list of the equipment required for installation, but not supplied with the lights:

Table 1: Equipment required, but not supplied with the UEL light

Description	Part Number	Quantity
L-867 base plate assembly and gasket (if base mounted)		A/R
L-867 deep base (if base mounted)		A/R
Conduit elbow (if mounted on conduit elbow)	1409.00.012	A/R
Frangible coupling MR/F2 for mounting on 60mm O.D. conduit	1409.05.027	A/R
Frangible coupling for ground mounting	1409.06.020	A/R
2-core cable with factory-molded FAA L-823 plug	-	1/light
Primary connector kit, 1-pole	-	1/light
Secondary connector kit, 2-pole	-	1/light
Natural hydraulic vacuum silicone grease	7850.42.210	A/R
Scotch N° 33 electrical tape	7637.55.123	A/R
Standard leveling device	1570.05.410	A/R
Electronic leveling device	1570.05.400	A/R

4.5 How to mount the UEL at ground level

Introduction The UEL is mounted on a frangible coupling which is screwed into a mounting device such as a conduit elbow or a deep base with cover.

4.5.1 Procedure 1. UEL-1-150 steady burning light

Instructions on how to install the UEL-1-150 at ground level:

1. Connect the plug to the receptacle of the cable coming from the transformer. The transformer receptacle rests in the upper part of the conduit elbow or the cover plate.



Note

Do not tape the plug/receptacle assembly; the tape will interfere with the quick disconnection in case of impact.

2. Screw the frangible coupling in the conduit elbow or cover plate.
3. Remove the optical assembly by opening the UEL assembly, swinging the optical assembly down and lifting it out of the hinge.



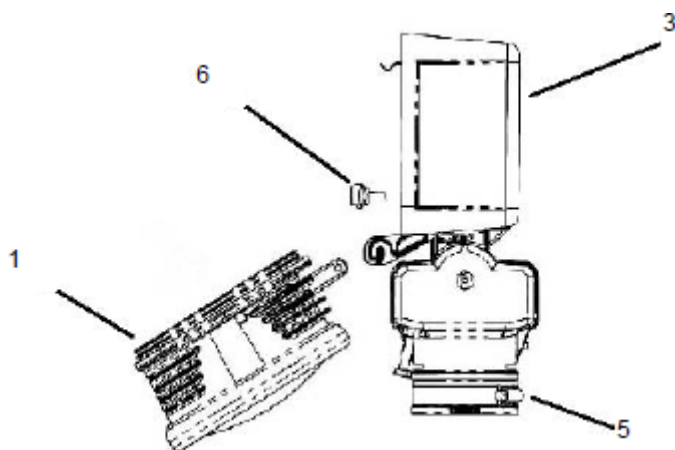
Note

See [Figure 10](#).

4. Insert the cable through the housing (3), and install the light without optical cartridge on the frangible coupling, without tightening the clamp (5).
5. Clamp the cable into the stress reliever (6). In case of a top light, the two cables should be clamped into the cable stress reliever.

6. Cut the two-core cable in the light fitting to the right length, maintaining sufficient slack to easily connect it to the lamp with the cartridge hinged down. Crimp the "fast-on" connectors on the cores of the cable. Slip the insulation sleeves over the cores of the cable.
7. Adjust the position of the light unit as described in chapter "Orientation and elevation settings."
8. Once the position of the light is correct, put the optical cartridge back in place.
9. Connect the lamp to the "fast-on" connectors. Do not forget to slip the insulation sleeves over the "fast-on" connectors to avoid short-circuits.
10. Close the light fitting.

Figure 10: UEL Lamp Assembly



4.5.2 Procedure 2. UEL-1-120 flashing light

How to install the UEL-1-120 at ground level:

1. Make sure that a sufficient length of the cable coming from the FCU cabinet is available above the conduit elbow or the cover plate.
2. Install the frangible coupling on the conduit elbow or cover plate.



Note

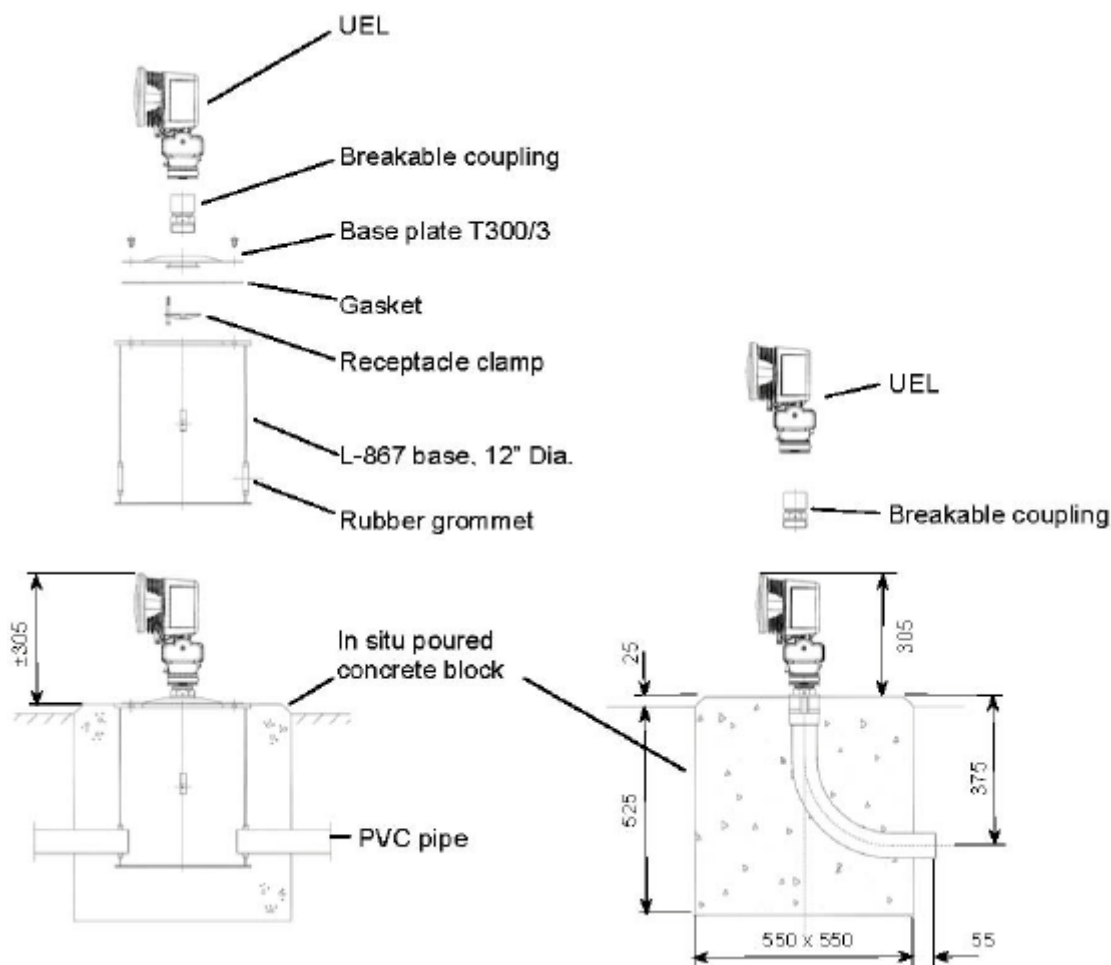
See [Figure 10](#).

3. Remove the optical assembly (1) by opening it down, disconnecting the lamp connector and lifting the cartridge out of the hinge. Insert the cable through the housing (3), and install the light without the optical assembly on the frangible coupling, without tightening the clamp (5).
4. Clamp the cable into the stress reliever (6).
5. Cut the cable in the light fitting to the required length, maintaining sufficient slack to easily connect the cable to the connector. Connect the cable to the connector.
6. Adjust the position of the light unit as described in "Aiming the UEL Lamp holders" on page 16.
7. Once the position of the light is correct, put the optical assembly back in place.
8. Insert the lamp connector back in place.

9. Close the light fitting.

Figure 10 gives an overview of the procedure described above.

Figure 11: Application Diagrams



4.6 How to mount the UEL on a 60mm O.D. conduit

The UEL is mounted on a piece of aluminum conduit with 60 mm O.D., with a maximum length of 2 m. The conduit is fastened in a frangible coupling, which in turn is screwed into a conduit elbow or on a base cover.

4.6.1 Procedure 1. UEL-1-150 steady burning light

How to install the UEL-1-150 on a 60 mm O.D. conduit:

1. Before installing the light, prepare a two-core cable with plug, making sure that a sufficient length of cable is available above the conduit elbow or cover plate. Connect the plug of the two-core cable to the receptacle of the cable coming from the transformer. The transformer receptacle rests in the upper part of the conduit elbow or the cover plate. Do not tape the plug/receptacle assembly in order to allow for quick disconnection in case of impact.
2. Install the frangible coupling on the conduit elbow or cover plate, and the conduit on the frangible coupling. Make sure that the conduit is perfectly vertical, using the screws of the frangible coupling for adjustment. Tighten the counter-nuts.
3. Remove the optical cartridge (1) by hinging it down and lifting it out of the hinge. Insert the two-core cable through the housing (3), and install the light without optical cartridge on the conduit, without tightening the bracing clamp (5).
4. Clamp the cable into the stress reliever (6). In case of a top light, the two cables should be clamped into the cable stress reliever.

5. Cut the cable in the light fitting, maintaining sufficient slack to easily connect it to the lamp with the cartridge hinged down. Crimp the "fast-on" connectors on the cores of the cable. Slip the insulation sleeves over the cores of the cable.
6. Adjust the position of the light unit as described in "Aiming the UEL Lamp holders" on page 16.
7. Once the position of the light is correct, put the optical cartridge back in place.
8. Connect the lamp to the "fast-on" connectors. Do not forget to slip the insulation sleeves over the "fast-on" connectors to avoid short-circuits.
9. Close the light fitting.

4.6.2 Procedure 2. UEL-1-120 flashing light

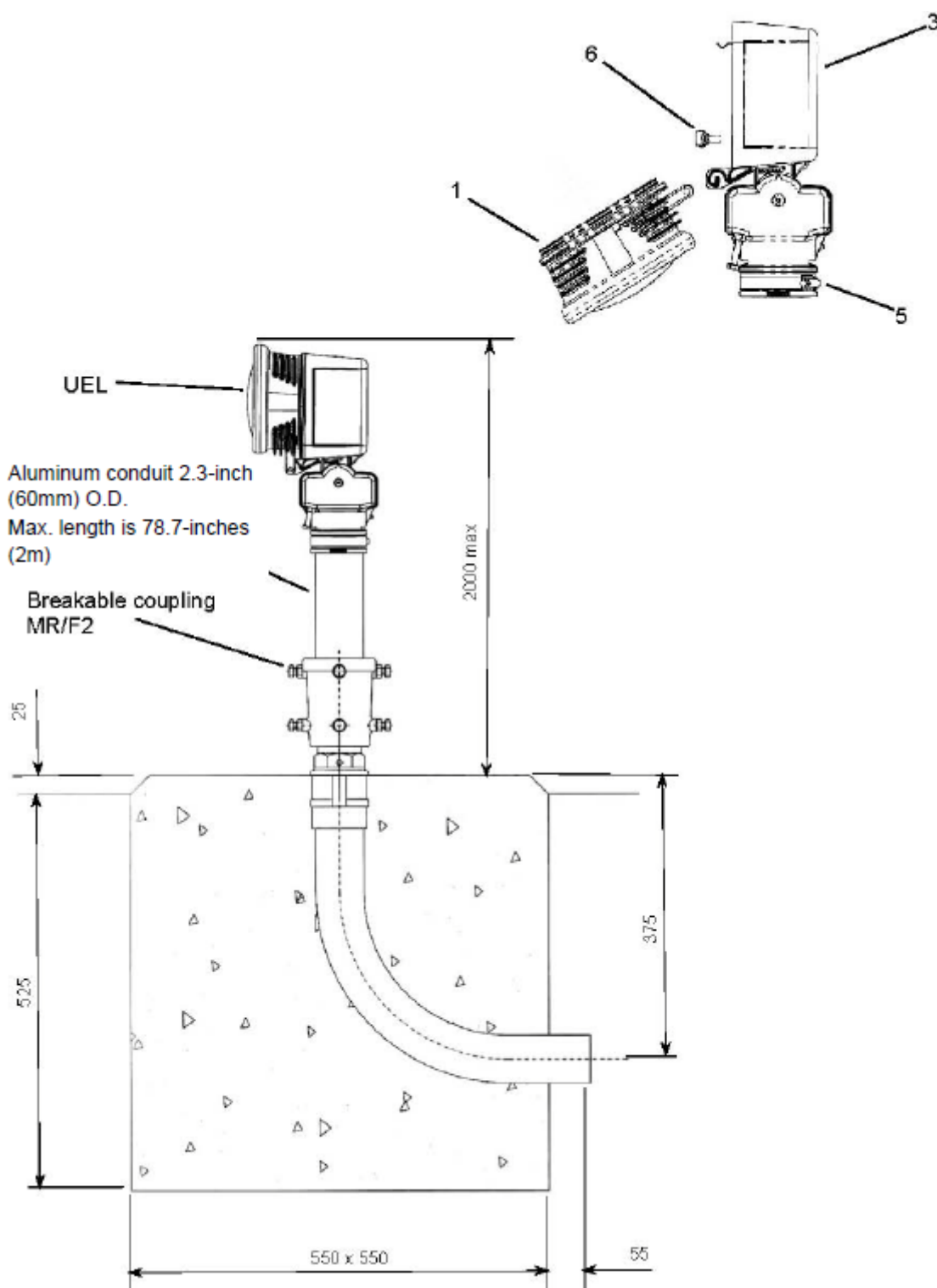
How to install the UEL-1-120 on a 60 mm O.D. conduit:

1. Before installing the light, make sure that a sufficient length of 5-core cable coming from the FCU cabinet is available above the conduit elbow.
2. Install the frangible coupling on the conduit elbow or cover plate, and the conduit on the frangible coupling. The conduit must be perfectly vertical, using the screws of the frangible coupling for adjustment. Tighten the counter-nuts.
3. Remove the optical cartridge (1) by hinging it down, disconnecting the lamp connector and lifting the cartridge out of the hinge. Insert the cable through the housing (3), and install the light without optical cartridge on the conduit, without tightening the bracing clamp (5).
4. Clamp the cable into the stress reliever (6).
5. Cut the cable in the light fitting to the right length, maintaining sufficient slack to easily connect the cable to the connector.
Connect the cable to the connector.
6. Adjust the position of the light unit as described in "Aiming the UEL Lamp holders" on page 16.
7. Once the position of the light is correct, put the optical cartridge back in place.
8. Insert the lamp connector back in place.

9. Close the light fitting.

Illustration The illustration below gives an overview of the procedure described above.

Figure 12:



4.7 How to mount the UEL on a safety approach mast

When the UEL has to be installed at more than 2 m (6.7 feet) above ground level, a safety approach mast with a 60mm O.D. top piece must be used.

4.7.1 Procedure 1. UEL-1-150 steady burning light

How to install the UEL-1-150 on a safety approach mast:

1. Before installing the light, install a two-core secondary cable from the transformer to the top of the mast, according to the instructions of the manufacturer of the mast. Make sure to provide sufficient slack in the cable so as to cope with possible height adjustment of the mast.
2. Lower the mast. Remove the optical cartridge by hinging it down and lifting it out of the hinge. Insert the two-core cable through the housing (3), and install the light without optical cartridge on top of the mast, without tightening the bracing clamp.
3. Clamp the cable into the stress reliever. In case of a top light, the two cables should be clamped into the cable stress reliever.
4. Cut the two-core cable in the light fitting to the right length, maintaining sufficient slack to easily connect it to the lamp with the cartridge hinged down. Crimp the "fast-on" connectors on the cores of the cable. Slip the insulation sleeves over the cores of the cable.
5. Adjust the position of the light unit as described in chapter "Orientation and elevation settings".
6. Once the position of the light is correct, put the optical cartridge back in place.
7. Connect the lamp to the "fast-on" connectors. Do not forget to slip the insulation sleeves over the "fast-on" connectors to avoid short-circuits.
8. Close the light fitting.

4.7.2 Procedure 2. UEL-1-120 flashing light

How to install the UEL-1-120 on a safety approach mast:

1. Before installing the light, install a 5-core cable coming from the FCU cabinet to the top of the mast, according to the instructions of the manufacturer of the mast. Make sure to provide sufficient slack in the cable so as to cope with possible height adjustment of the mast.
2. Lower the mast. Remove the optical cartridge (1) by hinging it down, disconnecting the lamp connector and lifting the cartridge out of the hinge. Insert the cable through the housing (3), and install the light without optical cartridge on top of the mast, without tightening the bracing clamp (5).
3. Clamp the cable into the stress reliever (6).
4. Cut the cable in the light fitting to the right length, maintaining sufficient slack to easily connect the cable to the connector. Connect the cable to the connector.
5. Adjust the position of the light unit as described in chapter "Orientation and elevation settings".
6. Once the position of the light is correct, put the optical cartridge back in place.
7. Insert the lamp connector back in place.
8. Close the light fitting.

5.0 Aiming the UEL Lamp holders

An aiming device is used to set the vertical angular position of the lamps. The lamp holders are mounted on conduit, pipe, or towers as outlined in the site installation drawings.

For the elevated flashing fixture, the aiming device is available either as an electronic or as a simple mechanical (bubble level) based unit. Both aiming devices are accurate to within $\pm 0.5^\circ$.

Table 2: Elevated Flasher Aiming Devices

Device	Part No.
Electronic Aiming Device	1570.05.400
Bubble Level Aiming Device	1570.05.410

5.1 Bubble Level Aiming Device

The bubble level aiming device consists of a support, which is secured on the light unit, in the place of the optical cartridge, and which is equipped with a elevation angle setting device, a sighting device (both with a graduated scale) and a bubble level.

The elevation angle setting device is graduated from 0 to 25° . For the azimuth setting, the system can be rotated around a vertical axis, and has 4 set positions that allow aiming at reference points (generally other lights) in a direction parallel or perpendicular to the center line. The sighting device is graduated from -4 to $+4^\circ$ to allow for toe-in angles. Two additional set positions at -15 and $+15^\circ$ permit the setting of elevated REIL/RTIL flashing lights.

1. Assemble the system by removing the optical cartridge and installing the leveling device in its place.
2. Tighten the securing screw.
3. Set the elevation angle on the setting device and the azimuth (toe-in) angle on the sighting device. For the correct elevation and toe-in angles refer to the project plans and specifications.



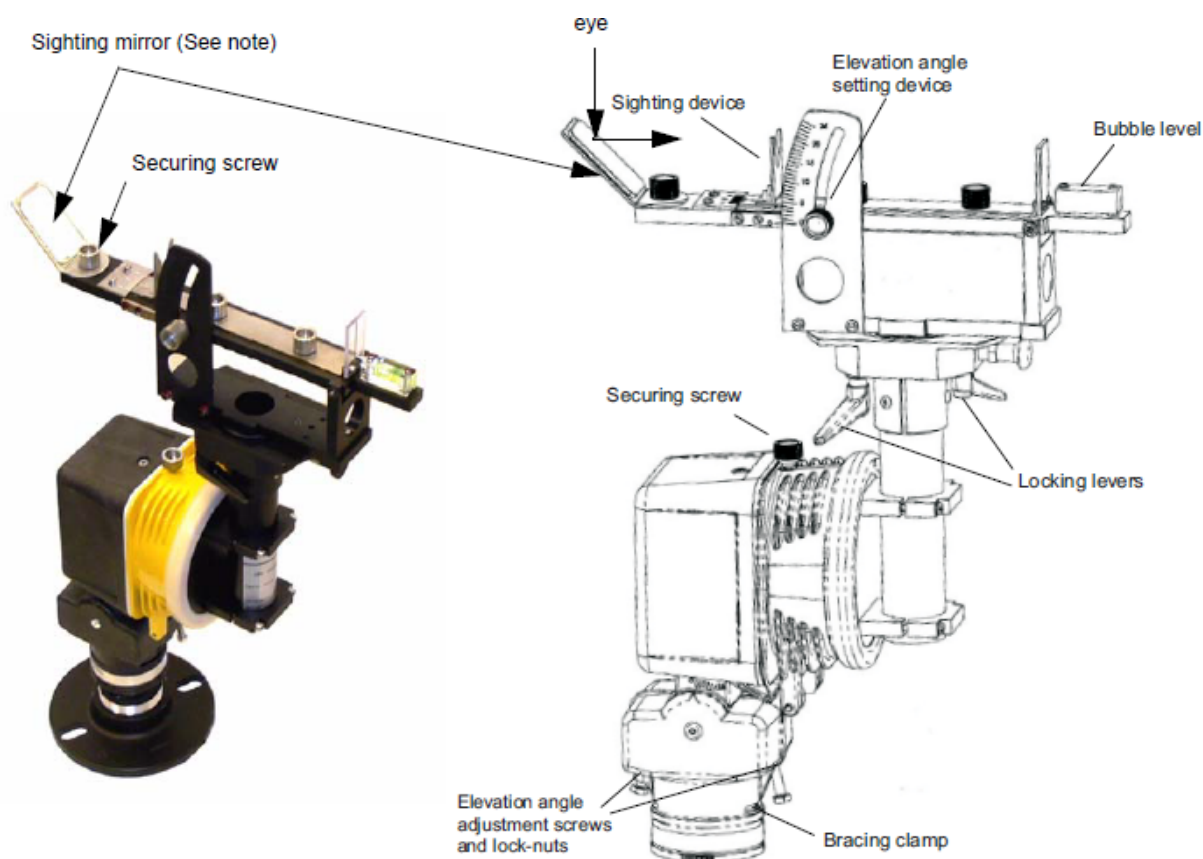
Note

FAA MALSR fixtures are usually set at $+6^\circ$.

4. Approximately level the light to allow the azimuth orientation of the light.
5. Set the light in the correct direction using the sighting device, aiming at the next or former light in the same alignment. For lights in a barrette, a side row or a wing bar, aiming laterally at another light is possible. For this purpose release the two locking levers, turn the system 90° until a distinct click can be felt, and tighten the locking levers. If there is no light in the same alignment, use a reference pole.
6. Secure the bracing clamp. Loosen the lock-nuts.
7. Use the bubble level to set the light at the correct elevation by unscrewing/ tightening slightly the two elevation angle adjustment screws. Tighten the screws sufficiently to avoid any play, but do not over-tighten them. Once this is done, secure the two lock-nuts.

8. Remove the device. Put the optical cartridge back in place, connect the lamp and latch the lamp.

Figure 13: Bubble Level Aiming Device (1570.05.410)



Note

Use the mirror to look down through the sighting device for horizontal alignment. You may optionally look directly through the sighting device by loosening the mirror securing screw and rotating it out of the way.

5.1.1 Adjusting Horizontal

To adjust the horizontal, perform the following procedure:

1. Loosen the 3 screws in slip collar and/or the 8-32 set screw in the slip collar.
2. Rotate the assembly to the correct horizontal position with the center of the light beam parallel to the runway centerline.
3. Retighten screws.

5.2 Electronic Aiming Device

This system is suited for elevated fixtures mounted on safety approach masts or fiberglass towers, when it is not possible to get access to the top of the mast/tower in its standing position.

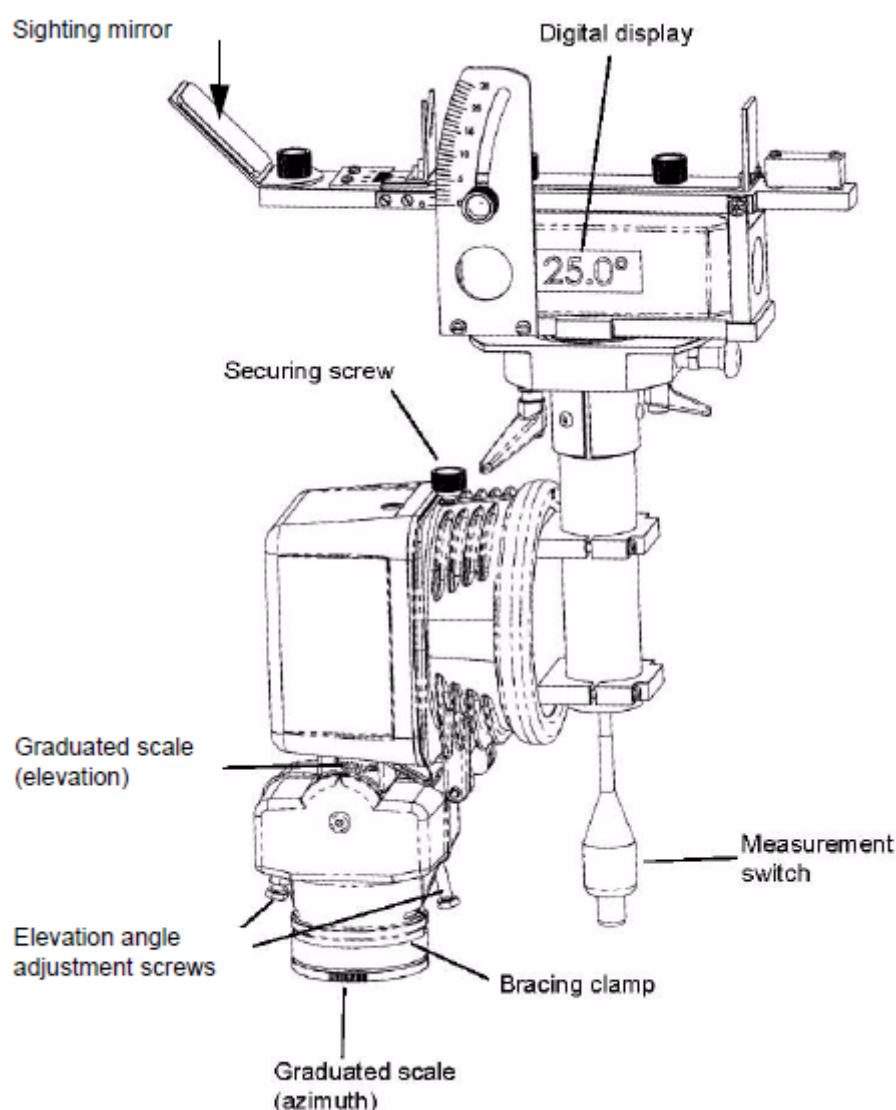
Composition : The system consists of a support similar to the one used with the bubble level device (see [“Bubble Level Aiming Device” on page 16](#)). However, the support is equipped with a sensor activated with a switch, with a 33 ft. (10 m) long cable. The operator can then operate the sensor from the ground, and read the elevation angle measurement when the mast/tower is tilted on the ground.



Note

During the installation of the approach line, a quicker method is to use a platform at the light level for an easy initial adjustment.

Figure 14: Electronic Aiming Device (1570.05.400)



1. Lower the mast. See instruction manual of the supplied masts.
2. If the mast has been correctly installed, i.e. its tilting axis is perpendicular to the centre line, a light with 0° toe-in will have its front surface fully horizontal when the mast is tilted over 90° (down to the horizontal). With the mast in this position, adjust the light by turning it around the tube, and then tighten the bracing clamp. For lights with a toe-in, first adjust the light for 0° toe-in. Make a reference mark on the tube just below the zero mark at the bottom of the slip fitter. Using the graduated scale, turn the light around the tube to the desired toe-in, and tighten the bracing clamp.
3. Remove the optical cartridge and install the leveling device in its place. Tighten the securing screw.

4. Raise the mast. Operate the switch to take a measurement.
5. Lower the mast and read the angle indicated on the digital display. Calculate the difference between the real angle and the required one.
6. If necessary, adjust the elevation angle by unscrewing/tightening slightly the two opposite screws. Tighten the screws sufficiently to avoid any play, but do not overtighten them. Once this is done, secure the two counter-nuts. While doing the correction, two measurements means are useable: - The elevation scale on the side of the light body (coarse measurement); - The leveling device itself, by taking a measurement before and after correction (fine measurement).
7. Raise the mast and repeat the operation 6 until the adjustment is correct.
8. Lower the mast and remove the device. Put the optical cartridge back in place, without forgetting to connect the lamp.

6.0 Maintenance

6.1 Preventive maintenance

In the table below you will find a checklist of preventive maintenance tasks.



Note

Before attempting to service, de-energize and lockout the circuit or the regulator so that the fixture cannot be energized by remote means.

Table 3: Preventive maintenance tasks

Interval	Check	Action
Daily	Lamp failure	Replace lamp.
	Dimly burning lamp	Replace lamp if discolored, blackened or distorted.
	Broken lens	Replace optical cartridge.
Weekly	Obtrusion of the light beam by vegetation	1. Remove vegetation. 2. Use weed killer.
	Dirty lens	Clean with glass cleaner.
Monthly	Fixture misalignment	Straighten level and align fixture.
Semi-annually	Presence of water in optical cartridge	Inspection of the light: check drain holes and status of the lens and gaskets.
	Paint flaking off	Repaint fixture.
Annually	Cracks, corrosion, shorts	Repair or replace.
	Dirty contacts	Clean when system is deactivated.
	Loose connections	Tighten loose connections.
In preparation of heavy snowfall		Mark location of low mounted fixtures (use red flags or sticks) to facilitate snow removal and lessen the risk of damage to the fixtures by snow removal equipment.

6.2 How to replace the lamp

Lamp replacement can be performed preferably in the maintenance office, or at the location of the fixture.

How to replace a lamp in the maintenance office:

1. Open the fitting by hinging down the optical cartridge ([Figure 15](#)).
2. (UEL-1-150): Slide the insulating sleeves away from the "fast-on" connectors and disconnect the lamp ([Figure 16](#)) from the cable wires. (UEL-1-120): Disconnect the cable from the lamp ([Figure 16](#)).
3. Remove the optical cartridge and replace it with another one of the same model, in refurbished condition. If damaged, replace the insulation sleeves.
4. (UEL-1-150): Reconnect the lamp. Apply a light coat of silicone grease to the fast-on connectors. Slide the insulating sleeves back in place over the fast - on connectors (UEL-1-150): Re-connect the lamp cable.
5. Close the optical cartridge.

6. Back in the maintenance office:
 - a. Remove the lamp (on the UEL-1-120, by unscrewing the four fixation screws)
 - b. Clean the cartridge and especially the front glass ([Figure 15](#)), check the condition of the reflector ([Figure 15](#)), the gaskets ([Figure 15](#) and [Figure 16](#)) and the spring ([Figure 16](#)), and replace if needed.
 - c. Carefully install the new lamp in the keyed aperture at the rear of the optical cartridge (on the UEL-1-120, retighten the four screws). The optical cartridge is now ready to be used again.
-



Note

If replacing the lamp on the airfield, the lamp can be changed without removing the optical cartridge from the light. This task should be done carefully, especially at night or working in poor weather conditions.



Note

Touching the quartz bulb with bare fingers may seriously shorten the lamp's life. If the bulb has been touched, wipe it carefully with a piece of lens cleaning tissue or similar material moistened with alcohol.

The illustrations in [Figure 15](#) and [Figure 16](#) clarifies the procedure described above.

Figure 15: Open the Light

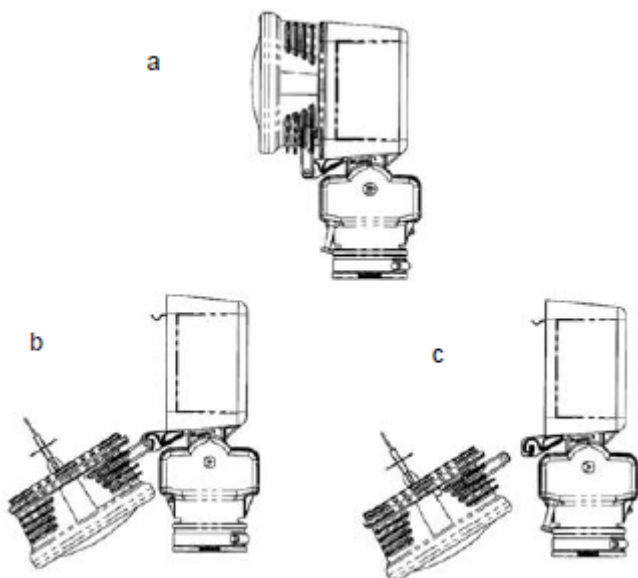
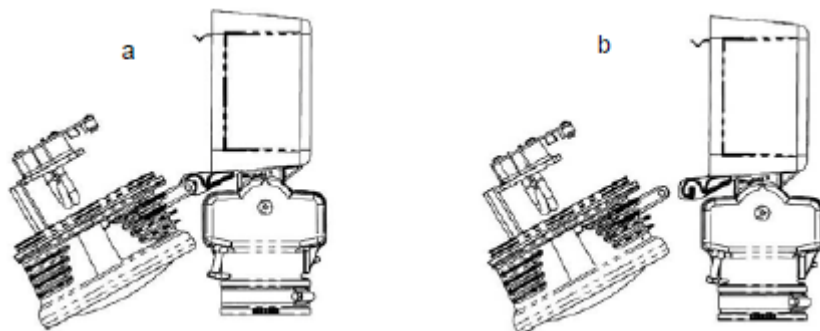


Figure 16: Remove/replace the Lamp Cartridge



6.3 How to dismantle the optical assembly

How to dismantle the optical assembly (to be done in the maintenance office):

1. Remove the optical cartridge (1) from the light.
2. Remove the lamp ([Figure 17](#)).
3. Slide the front gasket ([Figure 17](#)) around the front of the cartridge. This releases the reflector ([Figure 17](#)) and the front glass ([Figure 17](#)).
4. Reassembly is done in the opposite order.



Note

As the reflector used in the optical assembly is not symmetrical, correct positioning is necessary and will be obtained when the hole in the reflector corresponds with the positioning pin of the optical cartridge.

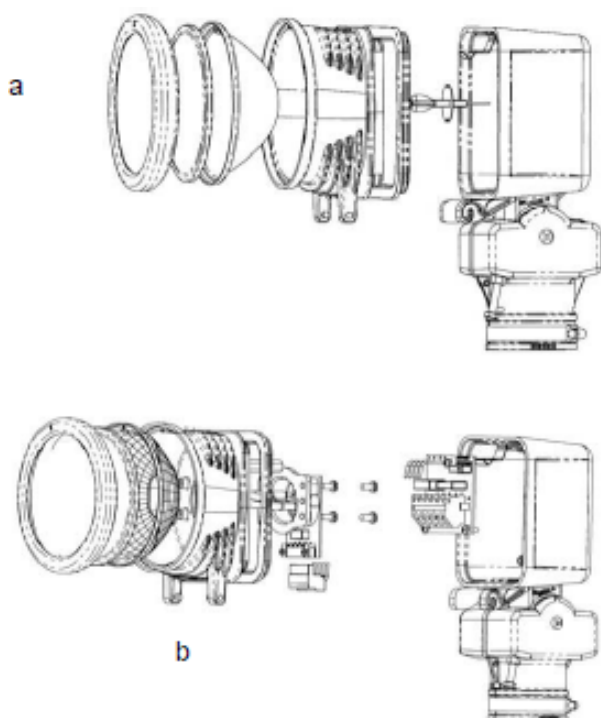


Note

The clear front glass is designed to spread the light, created by lines on the internal surface. Therefore, it is important that those lines be positioned vertically and not horizontally.

The illustrations below clarify the procedure described above.

Figure 17: Dismantle/assemble the Optical Assembly



7.0 Troubleshooting

In the table below, potential problems are listed in the first column. In the table second column, you will find the possible causes of the problem and in the third column the solution:



Note

Before attempting service, de-energize and lockout the series circuit or the regulator so that the fixture cannot be energized by remote means.

Table 4: Troubleshooting

Problem	Possible cause	Solution
Lamp does not energize.	Lamp defective	Replace lamp.
	Loose or broken contact or connector	Tighten or replace the contacts or connector.
	Moisture present in fixture	Open up and dry, inspect lens for cracks. Check the gaskets. Check that the drainage hole, in the bottom of the optical cartridge, is not obstructed.
	Deteriorated wire insulation	Replace wires.
	Defective isolation transformer	Check transformer secondary current (in short- circuit) with true RMS Ammeter.
Short lamp life	(UEL-1-150): Too high current (lamp will have black burns)	Check output current of isolating transformer at full brightness. Current should not exceed 6.7 A. Replace transformer if defective; if not, adjust CCR output current.
	Moisture in assembly	Open up and dry, inspect lens for cracks. Check the gaskets. Check that the drainage hole, in the bottom of the optical cartridge, is not obstructed.
	Defective lamp or lamp bulb touched with bare fingers (lamp interior will have a yellow-white powdery appearance if air has entered through a hole or crack)	Replace lamp.

8.0 Parts

Ordering Code ²

Lamp Power

- 2 = 45 W (ICAO stop bar)
- 4 = 100 W (runway end)
- 5 = 150 W (other applications) ¹
- 9 = 120 W (flashing light)

Beam Color

- C = White
- G = Green
- R = Red

For Mounting On

- 0 = Ground (with secondary cable)
- 2 = Pole or mast (no cable)

Finish (Aluminum)

- Y = Aviation yellow

Low Intensity Top Light

- 0 = Without

Lock

- 0 = No lock
- 1 = Vandal proof lock for optical cart

Special requirements

- 00 = None

Version

- 1

1UE XXXXXXXX1

Accessories

Adjustment tools (vertical and horizontal)

With clinometer using electronic sensors 1570.05.400

With clinometer using spirit level 1570.05.410

Note

¹ Extension cables, conduits, connector kits, breakable couplings, frangible masts, (needs to be ordered separately). For assistance, please contact ADB Safegate sales.

² Complete, delete or modify as necessary.

Elevated Flasher Aiming Device

This aiming device is used to adjust the vertical elevation of the elevated flash head. For elevated flashing fixture, the aiming device is available either as an electronic or as a simple mechanical (bubble level) based unit. Both aiming devices are accurate to within $\pm 0.5^\circ$.

Aiming Device Ordering Code

Remote Digital Aiming Device ¹ 1570.05.400

Bubble Level Aiming Device ² 1570.05.410

Notes

¹ For inaccessible fixture mounting heights up to 33 ft (10 m).

² For fixture mounting heights accessible from the ground, a ladder or a bucket truck.

Aluminum UEL

Used in Canadian and other harsh environments.

Ordering Code

Direction

Lamp Power

Color

Special Option

Accessories

1 = Elevated Incandescent

100 = 100W (Runway End)
150 = 150W (Approach centerline & crossbar,
side row, threshold & threshold wing bar)
XXX = No lamp
WS = MOD for WS Tower only

C = White
G = Green
R = Red

LL = Extra long cord 0.75M (29.5")

Adjustment tools (vertical and horizontal)
With clinometer using electronic sensors
With clinometer using spirit level

UEL - 1 - XXX - X - XX

1570.05.400

1570.05.410

Note

Extension cables, conduits, connector kits, breakable couplings, and frangible masts, need to be ordered separately.
For assistance, please contact ADB SAFEGATE.

To order a Standard Digital Aiming Device for use on readily accessible fixture mounting heights, use Part No. 080604.

1 Other applications include approach, threshold, and threshold wing bar.

8.1 Assemblies and Exploded Views Overview

It is recommended to create a sufficiently large stock of spare parts to maintain the fittings. It will mainly consist of consumables like lamps, gaskets, etc. Other components that may need replacement, such as front glasses, hardware and sub-assemblies should be stocked in smaller quantities. The stock should also contain some optical cartridges and complete fittings of each type.

Adjustment tools (elevation and azimuth) With electronic clinometer 1570.05.400 Without electronic clinometer 1570.05.410

Note

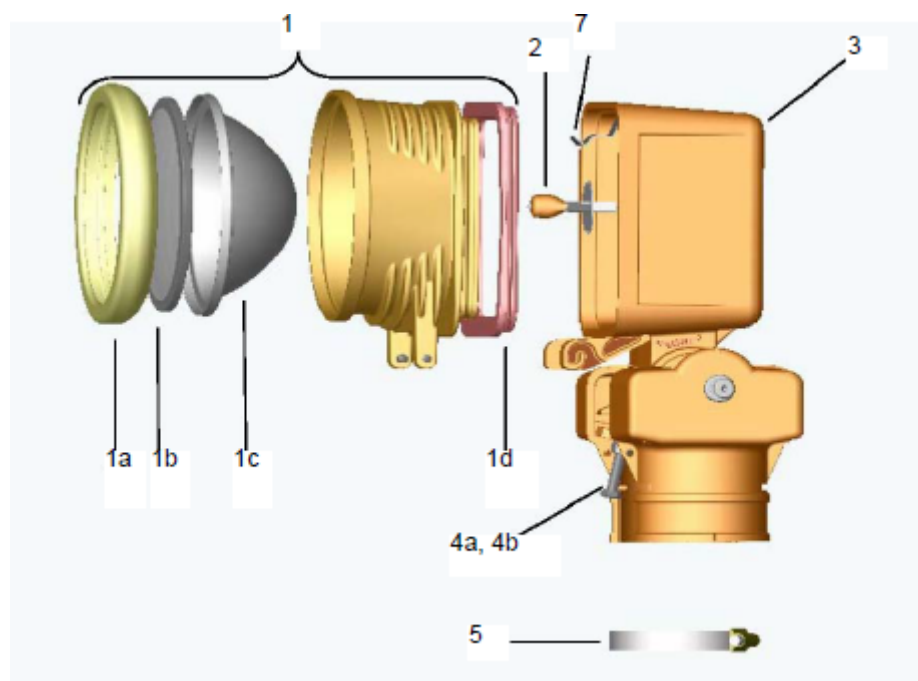
Extension cables, conduits, connector kits, frangible couplings and, frangible masts, that need to be ordered separately. For assistance, please contact ADB.

8.1.1 Exploded views

The illustration below shows the exploded view of the UEL-1-150.

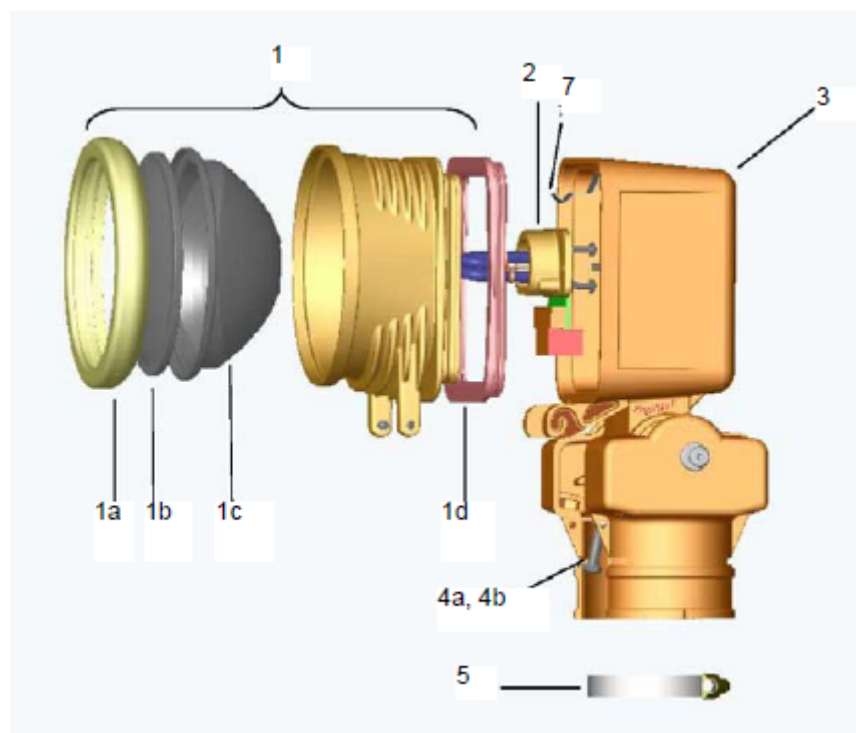
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Figure 18: UEL-1-150 Exploded View



The illustration below shows the exploded views of the UEL-1-120.

Figure 19: UEL-1-120 Exploded View



In the table below you will find all parts of the UEL-1-150 and UEL-1-120 lights.

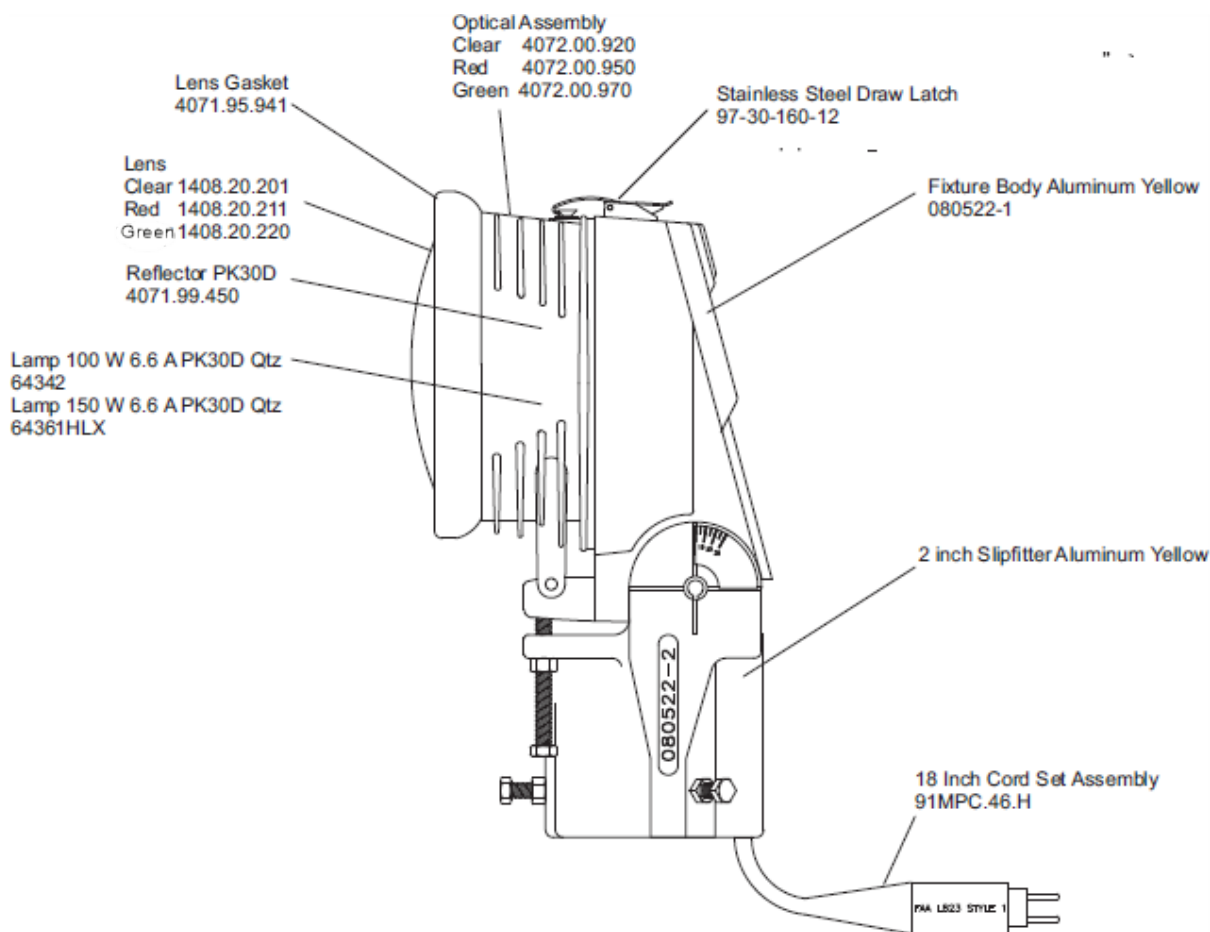
Table 5: Parts List

References related to exploded view		UEL White	UEL Red	UEL Green	UEL flash
Complete fitting (with or without L.I. top light)		(*)	(*)	(*)	(*)
1	Optical front cartridge assy. (aviation yellow) Optical front cartridge for:	4072.00.920		4072.00.971	4072.00.980
	Appr.side rows		4072.00.951		
	Runway end		4072.04.941		
	Suppl stop bars		4072.04.951		
1a	Lens / reflector seal	4071.95.943	4071.95.943	4071.95.943	4071.95.943
1b	Front glass or lens	1408.21.201		1408.20.220	1408.20.230
	Approach (150W)		1408.20.211		
	End (100W)		1408.20.240		
	Suppl. Stop bar (45W)		1408.20.250		
1c	Reflector	4071.99.450	4071.99.450	4071.99.450	4071.98.151
1d	Front cartridge gasket	4071.95.953	4071.95.953	4071.95.953	4071.95.953
2	Lamp PK30D				
	Halogen 45W-6.6A		2990.48.330		
	Halogen 100W-6.6A		2990.48.325		
	Halogen 150W-6.6A	2990.48.340 (New Part No: SP.010704)			-
	Flashing lamp 400V 60J	-	-	-	SP.011868
	Lamp Connection Kit	6120.00.010	6120.00.010	6120.00.010	-
	Flasher Trigger PCB	-	-	-	-
4a	Leveling screw M6 x 40 Stainless steel DIN 933	7100.08.593	7100.08.593	7100.08.593	7100.08.593
	Cable clamp	4071.95.992	4071.95.992	4071.95.992	4071.95.992
5	Bracing clamp with screw	1409.07.100	1409.07.100	1409.07.100	1409.07.100

Table 6: Optional items for UEL-1-150

Description	Part Number	Order quantity (each)
Secondary cable with molded-on L823 style 1 2-pole connector, 0,5m for ground mounting	1MC3DA050C01	1
Red lens assy, for LI top light	1480.03.315	1
Clear lens assy, for LI top light	1480.03.295	1
Lamp for L.I. top light Gy 9.5 45W 6.6A	2990.40.820	1
Lamp socket for L.I. top light	6114.00.080	1
6-pole plug with leads for UEL with top light	6104.40.200	1

Figure 20: UELC-1-XXX-X-XX Parts



8.2 Spare Components

Description	Part No.
Optical assembly, clear	4072.00.920
Optical assembly ¹ , red	4072.00.950
Optical assembly ¹ , green	4072.00.970
Lens gasket	4071.95.941
Lens only, clear	1408.20.201
Lens only, red	1408.20.211
Lens only, green	1408.20.220
Reflector PK30D	4071.99.450
Lamp, 45 W, 6.6 A	2990.48.330
Lamp, 100W, 6.6 A	2990.48.325
Lamp, 150W, 6.6 A	2990.48.340

¹ Includes gasket, reflector, and lens

Appendix A: Support

Your airport needs fast, reliable support when technical issues affect operations. ADB SAFEGATE provides 24/7 phone support by experienced technical service and support teams to help you troubleshoot issues and reduce disruption.

For general product information, solutions and more, visit the ADB SAFEGATE website, www.adbsafegate.com.

Global Technical Service & Support

For support in Europe, the Middle East, Africa and Asia Pacific, contact ADB SAFEGATE's technical support specialists. Trained in all areas of system issues, troubleshooting, quality control and technical assistance, our highly experienced Technical support specialists offers 24/7 phone support.

- Europe: **+32-2-722-17-11**
- China: **+86-10-8476-0106**
- Middle East and Africa: **+971-4-452-7575**

Live Technical Support – Americas

For support in the Americas, contact ADB SAFEGATE's U.S.-based technical support specialists. The team provides support for airfield lighting products, power and control systems, weather systems, and Safedock A-VDGS.

Phone support is available 24/7.

- United States: **+1-800-545-4157**
- Canada: **+1-905-631-1597**

You can also reach the Americas support team by email during regular business hours:

- Airfield Technical Service: techservice.us@adbsafegate.com
- Apron (previously Gate) Technical Service: gateservice.us@adbsafegate.com
- Weather Customer Service: CustomerServiceWeather@adbsafegate.com

Before You Call

Help us resolve your issue faster by having the right information ready before you contact Technical Support.

For Airfield Lighting, Control Systems, and Weather Product Issues

Please review the following before calling:

- Review the product manual and troubleshooting guide.
- Be near the product and ready to troubleshoot.
- Have a True RMS Multimeter available, along with any other necessary tools.
- Have the following information ready:
 - Airport code
 - Company name, phone number, and email address
 - Product number or part number, if available

For Safedock A-VDGS Issues

Please collect the following information before calling:

- Gate number
- Flight number
- Aircraft type
- Time of the event
- Description of the issue
- Any actions already taken to resolve the issue
- CCTV footage of the incident, if available, to help align the event with the Safedock log file

A.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.

A.2 Recycling

A.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.

A.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 European Union (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 Restriction of Hazardous Substances (*RoHS*)/Waste Electrical and Electronic Equipment (*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.

Company Addresses

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