

L-861E & SE LED RUNWAY THRESHOLD LIGHTS

Installation and Maintenance Manual



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ETL Certified to FAA Specifications
AC 150/5345-46D
and FAA LED Performance Specifications per Engineering Brief 67

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Record Of Changes

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Warranty

Astronics DME Corporation warrants products against mechanical, electrical, physical, and workmanship defects for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first.*

This warranty, excludes consumable items such as batteries, filters, or lamps.

Astronics DME Corporation will repair or replace, at its option, equipment or parts, which fail because of mechanical, electrical, physical, or workmanship defects, provided the equipment or parts were installed operated or maintained in accordance with approved practice, and used for the intended purpose. Any product which has been repaired or altered in such way, in Astronics DME's judgment, as to affect the product adversely will not be covered under warranty.

Astronics DME Corporation reserves the right to examine the part(s) to determine if the equipment/part(s) is (are) covered under this warranty or to authorize scrap on site and provide replacement parts without examination by Astronics DME Customer Product Support.

Astronics DME Corporation shall have the right to substitute replacement parts having the same form, fit, function, and specification.

All repaired or overhauled parts will be warranted to be free from defect in material and workmanship, in accordance with the above stipulations, for a period of ninety (90) days from the date of shipment.

For products not manufactured by, but sold by Astronics DME Corporation, warranty is limited to that extended by the original manufacturer.

Customers must notify Astronics DME Corporation Customer Product Support (CPS) in writing within ten (10) working days of the failure/defect discovery with a detailed description of the problem and, if known, the cause of the problem.

Customers must obtain a Return Material Authorization (RMA) Number (and identify equipment with this number before returning material) from:

Rick Kimmell (Astronics DME Corporation Customer Product Support)
6830 NW 16th Terrace, Fort Lauderdale, FL 33309
DMECPS@astronics.com
(954) 975-2123

Astronics DME Corporation's Customer assumes responsibility for incoming freight and custom charges unless these have been previously authorized in writing by Astronics DME Corporation.*

*In accordance with FAA requirements, Astronics DME Corporation warrants LED airfield lighting products against electrical defects for a period of four years from the date of installation.

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Disclaimer

This manual could contain technical inaccuracies or typographical errors. Astronics DME Corporation reserves the right to revise this manual from time to time in the contents thereof without obligation of Astronics DME Corporation to notify any person of such revision or change.

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1. SAFETY

1.1 Introduction

This section contains general safety instructions. Some safety instructions may not apply to the equipment in this manual. Specific warnings are included in the manual where appropriate. Follow all warnings, cautions and notes in the instructions carefully as failure to do so may result in injury, death, or damage to equipment.

To use this equipment safely

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. Always remove power prior to making any wire connections and touching any parts.
- Refer to FAA Advisory Circular AC 150/5340-26.
- Read and become familiar with the general safety instructions provided in this section of the manual before installing, operating, maintaining, or repairing this equipment.
- Read and carefully follow the instructions given throughout this manual for performing specific tasks and working with specific equipment.
- Keep this manual within easy access of 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.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used.

1.2 Safety Symbols

Become familiar with the safety symbols presented in this section. These symbols will alert you to safety hazards and conditions that may result in personal injury, death, or damage to equipment.

WARNING

May result in injury or death.

CAUTION

May result in damage to equipment.

NOTE

Informational guidance.

1.3 Qualified Personnel

Defined as personnel 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.

1.4 Intended Use

Astronics DME Corporation is not responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death, or equipment damage.

Unintended uses may result from taking the following actions:

- Making changes to equipment that have not been recommended or described in this manual or using parts that are not genuine Astronics DME Corporation replacement parts.
- Failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- Allowing unqualified personnel to perform any task.

1.5 Installation

Read and understand the installation section of all system component manuals before installing the equipment.

- Failure to follow safety procedures may result in injury or death.
- Allow only qualified personnel to install the equipment.
- Use only approved equipment. Using unapproved equipment in an approved system may void agency approvals.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Follow all instructions for installing components and accessories.

- 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.

1.6 Operation

Only qualified personnel 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 using 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.
- 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.
- DO NOT touch exposed electrical connections on equipment while the power is ON.

1.7 Equipment Malfunctions

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.

1.8 Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only properly trained personnel are permitted to service this equipment.

- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in your equipment manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved Astronics DME Corporation replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

2. DESCRIPTION

2.1 Introduction

This section describes the Astronics DME Corporation L-861E & SE Uni-directional and Bi-directional Light Emitting Diode (LED) lights.

The L-861E light is used for Runway threshold/end, non-precision Instrument Flight Rules (IFR) runways, and displaced thresholds.

The L-861SE light is used for Runway threshold/end and non-precision Instrument Flight Rules (IFR) runways.

These lights are Electrical Testing Labs (ETL) certified according to FAA specification AC 150/5345-46D, and FAA LED specifications.

2.2 Equipment Description

The L-861E & SE LED lights intended use is shown in Table 2-1.

Table 2-1 L-861E & SE Use

L-861E	Runway threshold/end, non- precision Instrument Flight Rules (IFR) runways, and displaced threshold.	Bi-directional: red-green, red-red Unidirectional: green
L-861SE	Runway threshold/end and non- precision Instrument Flight Rules (IFR) runways.	Bi-directional: red-green Unidirectional: green

The Astronics DME Corporation L-861E & SE LED light is shown in Figure 2-1.

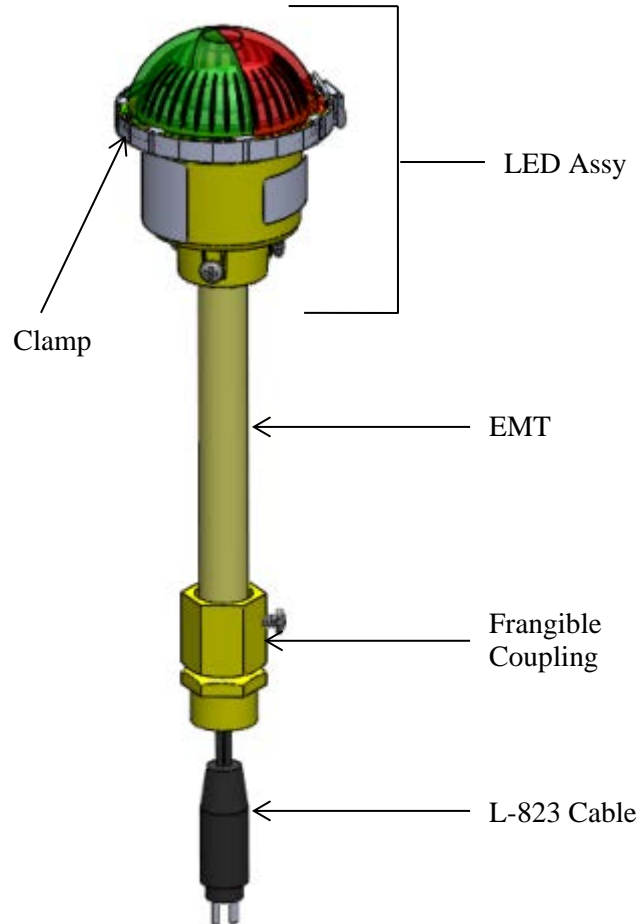
**Equipment
Description
(cont.)**

Figure 2-1 L-861E LED Light
(Typical for SE)

The major components of the L-861 LED Light are shown in Figure 2-1 and Figure 8-1.

2.2.1 LED Assembly

The major components of the LED Assembly consists of the LED housing assembly, LED head assembly, clamp, and lens shown in Figure 2-1.

2.2.2 Wire, Taxiway/Edge Light (L-823 Cable)

The wire consists of an L823 cable, the strain relief and fast receptacle connectors that are attached to the cable.

2.2.3 Frangible Coupling

The frangible coupling is used to connect the EMT to the base plate.

2.2.4 Electrical Metallic Tubing (EMT)

The EMT is used to connect the LED Assembly to the frangible coupling. The cable assembly runs through the EMT and connects to the power source. The EMT comes in various sizes to provide an overall height from 14 inches to 30 inches in 2-inch increments. The measurements for the various sizes are taken from the grade to the top of the fixture.

2.2.5 Arctic Kit (Optional)

The Arctic Kit is an optional kit to melt ice and snow that may have collected on the lens. See Figure 7-1.

2.2.6 Base Plate Mount (Optional – Not Shown)

The L-861 LED light is typically installed on the L-867 base plate. Base mounting is recommended because maintenance is easier to perform. Optional mounting can be on stake mounted 30 inch galvanized steel stake.

2.2.7 Stake Mount (Optional – Not Shown)

Optional stake mounting of the L-861E & SE LED light is detailed in paragraph 3.4.4. Stake-mounted lights require transformer, cables, and connectors that are designed for direct earth burial.

2.3 Equipment Specification Data

Table 2-2 through Table 2-8 illustrates pertinent reference data on the L-861E & SE LED Lights. Included are tables containing functional characteristics, external power requirements, environmental characteristics, equipment and accessories supplied, and equipment required for operation and maintenance, but not supplied by Astronics DME Corporation.

2.3.1 Functional Characteristics

Table 2-2 through Table 2-4 list the functional characteristics of the L-861E & SE LED Light.

Table 2-2 Functional Characteristics – No Arctic Kit

	Fixture Load VA/PF	Isolation Transformer	CCR Load VA
861 E Uni Grn/Blk 6.6A Input Power	11.55/0.89	10/15W	16.2
861E Bi Red/Grn Red/Red 6.6A Input Power	14.0/0.89	10/15W	16.5
861 SE Uni Grn/Blk 6.6A Input Power	16.3/0.88	20/25W	17.6
861 SE Bi Red/Grn 6.6A Input Power	19.12/0.85	20/25W	20.95

Table 2-3 Functional Characteristics – Arctic Kit

	Fixture Load VA/PF	Isolation Transformer	CCR Load VA
861 E Uni Grn/Blk 6.6A Input Power	26.1/0.97	30/45W	38.4
861E Bi Red/Grn Red/Red 6.6A Input Power	26.4/0.96	30/45W	37.6
861 SE Uni Grn/Blk 6.6A Input Power	26.9/0.96	30/45W	39.6
861 SE Bi Red/Grn 6.6A Input Power	29.3/0.93	30/45W	41.84

Table 2-4 Functional Characteristics

Condition	Range
Optics 861E Red/Green	1 White/1 Green LED w/optically matched glass dome
861E Red/Red	2 White LEDs w/optically matched glass dome
861E Green	1 Green LEDs w/optically matched glass dome
861SE Red/Green	1 White/2 Green LED w/optically matched glass dome
861SE Green	2 Green LEDs w/optically matched glass dome
Weight	~ 4 lbs with 14" EMT and frangible coupling
Height	14-30-inches in 2 inch increments
Total Harmonic Distortion	< 1.1%
Arctic Kit	Optional

2.3.2 Photometric Data

Complies with EB67D, Appendix I, photometric intensity curve for 3 and 5 step CCR.

Table 2-5 lists the photometric data for the L-861E & SE LED Light.

Table 2-5 Photometric Data L-861E & SE White

Type	Main beam		10 %		Intensity (candelas)	
	H	V	H	V	Green	Red
L-861E	±1.5	3.5 to 5.5			300	
	±3	1.5 to 7.5			180	
	±5	0 to 9			90	10
L-861SE	±15	2 to 10	±20	-3 to 15	600	
	±5	0 to 9				20

2.3.3 External Power Requirements

Table 2-6 lists the external power requirements of the L-861E & SE LED Light.

Table 2-6 External Power Requirements

Input	Power
Constant Current Regulator (CCR)	3 Step 4.8A, 5.5A , and 6.6A or 5 Step 2.8A, 3.4A, 4.1, 5.2A and 6.6A

2.3.4 Environmental Characteristics

Table 2-7 lists the environmental characteristics of the L-861 LED Light.

Table 2-7 Environmental Characteristics

Condition	Range
Temperature: Operating Storage/Shipping	-40°C to +55°C (-40°F to +131°F) -66°C to +55°C (-67°F to 131°F)
Temperature Shock	Withstands exposure of the hot light fixture to cold water spray
Salt fog	Withstands exposure to a corrosive salt atmosphere
Wind	Velocities up to 300 mph (482 kph)
Altitude	Sea level to 10,000 feet (3000 m)
Precipitation	Withstands exposure to rain, snow, ice, and standing water
Solar radiation	Withstands exposure to solar radiation

2.3.5 Mechanical Characteristics

Table 2-8 lists the mechanical characteristics of the L-861E & SE LED Light.

Table 2-8 Mechanical Characteristics

Condition	Range
Yield Device	The L-861E & SE has a yield point near the point or position where the light attaches to the base plate. The yield point is 1-1/2 inches (38.10 mm) above grade, and will give way before any other part of the fixture is damaged, and will withstand a bending moment of 150 foot-pounds (203 Newton-meters (N-m)) without failure.
Insulation Resistance	Resistance of 50 meg-ohms lead-to-case

2.3.6 Equipment and Accessories Supplied

Table 2-9 lists the equipment and accessories supplied for the L-861E & SE LED Light.

Table 2-9 Equip and Accessories - Supplied

Description	Quantity
Light fixture (with optical lens, clamp, EMT, frangible coupling, and LED head assembly)	As Required
Installation and Maintenance Manual - Y3-01-0170	Download from www.astronics.com

**2.3.7 Equipment
Required - Not
Supplied**

Table 2-10 and Table 2-11 list the equipment and accessories required but not supplied.

Table 2-10 Equip and Accessories Req'd- Not Supplied

Description	Quantity
Cross point screwdriver	1
Wrench	1
Torque Wrench	1
Isolation transformer for series circuit	1

Table 2-11 Isolation Transformers Required - Not Supplied

Circuit	Transformer
6.6 A, 60/50Hz, series circuit	L-830-16 / L-831-16 (10/15W)
6.6 A, 60/50Hz, series circuit	L-830-17 / L831-17 (20/25W)
20 A/6.6 A, 60/50 Hz series circuit	L-830-2 / L-831-2 (30/45W)

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3. INSTALLATION

WARNING

Allow only qualified personnel to perform the following tasks. Observe and follow the safety instructions in this document and all other related documentation.

3.1 Introduction

This section of the manual contains general instructions for installation of the L-861 E & SE LED Light at a typical site. Refer to the airport project plans and specifications for the specific installation instructions.

3.2 Unpacking

The equipment is shipped ready for installation. Handle equipment very carefully to prevent component damage. Unpack the carton upon receipt and check the contents and their condition. Note any exterior damage to the carton that may lead to detection of equipment damage.

3.3 Placement

This subsection describes the placement of the L-861E & SE LED Light fixtures. Follow the guidelines below, along with FAA specification AC 150/5340-24 and site plans, when placing the L-861 light fixture.

3.4 Installation

This subsection provides installation instructions for the L-861 LED Lights.

3.4.1 Base Mounting

L-861E & SE light fixtures can be mounted on an L-867 base plate with a diameter and bolt-hole corresponding to either a 12 inch (304.8 mm) diameter L-867B base or a 16 inch (406.4 mm) diameter L-867D base plate per FAA AC 150/5345-46. The base plate is designed to receive a frangible coupling using a female thread. The standard coupling thread is 1-1/2-12. A gasket is supplied with the base plate to form a watertight seal between the base plate and the L-867 light base per FAA AC 150-5345-42.

NOTE: Install the base according to FAA Advisory Circular AC 150-5340-24 and site plans.

3.4.2 Light Base Mounting

1. Install the L-867 base on undisturbed soil. If the soil is unsuitable, remove soil to an adequate depth and replace with compacted acceptable material.

NOTE: In closed duct systems, install in soil conditions with good drainage. Use light bases having a drain hole to prevent water accumulation.

2. Orient the cable entrance hubs of the light base in the proper directions according to site plans.
3. Level the light base so that the mounting flange surface is level with the finished grade.
4. With the base at the proper orientation and held at proper elevation, place approximately 4 inches (101.6 mm) of concrete backfill around the outside base.

NOTE: If the concrete backfill is omitted, the earth backfill must be compacted to maintain proper elevation and orientation of the base.

5. Slope the top of the concrete away from the flange portion of the base so the sloped outer edges of the concrete are a surface grade.
6. Connect the field circuit to the appropriate isolation transformer. Refer to Table 2-11.

NOTE: Use a brick to raise the transformer about 3 inches above the bottom surface of the L-867 light base to avoid the possibility of the transformer being partially immersed in water in case water accumulates above the level of the ducts or pipes.

After connecting transformer, check the continuity of the series loop.

7. Wrap the connector joints in the primary circuit with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape one-half lapped, extending at least 1-1/2 inches (3.81 cm) on each side of the joint.
8. Clamp the female secondary plug from the isolation transformer to the L-867 base plate fitting using the clamp device supplied with the base plate.
9. Bolt the base plate with the base plate gasket to the L-867 base using six 3/8-16 stainless steel bolts. Apply a drop of thread lock to each bolt thread, and torque bolts to 100-110 inch-lbs. (11.3Nm).
10. Once the base plate is installed, the light fixture assembly is ready to be installed.

11. Connect the male plug from the light fixture to the female plug on the secondary lead of the isolation transformer by first loosening the frangible coupling screw until the coupling is free. Then retighten the screw finger tight.
12. Plug the cable into the mating isolation transformer secondary lead.
13. Loosen the screw on the coupling to free the coupling. Hand screw the coupling into the base plate hub. Finish tightening the coupling with a wrench.

CAUTION: Do not tighten the coupling if the coupling screw is still tight. Damage to the cable connection to the transformer will occur.

14. Tighten the coupling screw that secures the EMT to the frangible coupling.
15. Level and align the light fixture. Refer to 3.4.3.

3.4.3 Light Fixture Leveling and Alignment

NOTE: Level the light fixture only after mounting it on the base.

1. Remove clamp and lens, refer to 7.3.4, step 3. Slightly loosen the three screws on the bottom of the housing.
2. Align tabs parallel to runway. See Figure 3-1.
3. Place a level on top of the housing. Level the housing by adjusting the three cross point leveling screws.
4. Install lens and clamp, refer to 7.3.5, step 3.

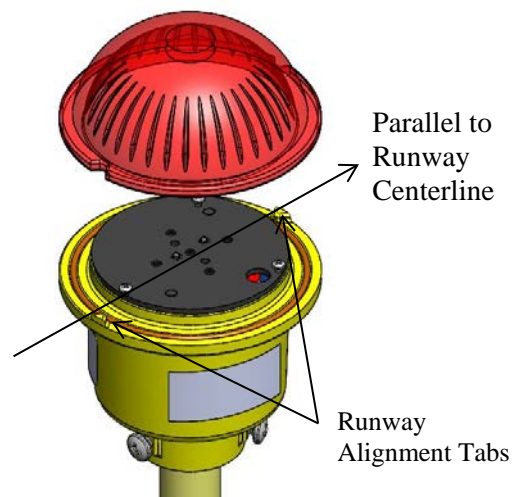


Figure 3-1 L-861E LED Light

3.4.4 Stake Mounting (Optional)

Mount the column light fixtures on 30 inch (762 mm) galvanized steel stake with a fitting attached to the top of each stake to receive the male thread of the frangible coupling. Stake mounting requires cable and connections that are designed for direct earth burial. Install according to appropriate FAA and local contractor specifications.

1. Assemble the stake by attaching the stake hub to the metal stake using two 3/8-16 x 3/4 inch hex head screws and 3/8 inch lock washers.
2. Install the stake in 6 inch diameter holes in the ground at a depth of 30 inches so the mounting hub of the stake is level.

NOTE: The top of the stake should be even with the ground within one degree of the vertical. In areas where frost may cause heaving, anchor the stake with concrete and use a permeable backfill material such as sand around the buried electrical components. Cover the top surface with an impervious material to reduce moisture penetration.

CAUTION: Do not drive stakes. Driving stakes may damage the stake and cause light fixture misalignment. Refer to FAA specification AC 150/5340-24.

3. Backfill around the stake with compacted earth passing a 1 inch (25.4 mm) sieve.

NOTE: Use a level to make sure the stake is vertical before backfilling around the stake. Backfill with concrete in case of unstable soil conditions.

4. Make electrical connections by installing the transformer primary cables to the field circuit. Then insert the transformer secondary plug in the cable connectors supports forked tine and attach the cable connector support to the stake hub using 1/4-20 x 3/4 inch hex head screw and 1/4 inch lockwasher.

NOTE: The small hole at the lower end of the stake is provided for a counter poise wire connection.

5. Install the light fixture on the stake.
6. Level the light fixture, refer to 3.4.3.

4. OPERATION

4.1 Introduction

This section of the manual describes the operational aspects of the L-861 LED Lights. The following paragraphs outline the details on controls, indicators, and system operation. Turn-on and turn-off operations are described, along with notes regarding safety hazards, where necessary

4.2 Modes of Operation

The L-861E & SE LED Lights are configured for 3 or 5 Step 6.6A Constant Current Regulators (CCRs).

4.3 Brightness Settings

Set the CCR to the desired brightness level.

4.4 Turn On And Checkout Procedure

Turn on the lights using the CCR.

4.5 Operating Modes

The L-861E & SE LED Lights will automatically switch between intensities depending upon the current from the CCR. There is no user interface to control light intensities.

4.6 Checkout

To checkout L-861 LED Lights, turn on the CCR, step through the brightness levels, and observe lights change intensity.

4.7 Equipment Shutdown

Turn off the lights by turning off the CCR.

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5. MAINTENANCE

5.1 Introduction

This section of the manual lists the maintenance tasks required for the L-861E & SE LED Light. This includes performance checks, on-site maintenance, and off-site maintenance. The performance checks and maintenance tasks in this section are required to ensure optimum equipment performance.

5.2 Maintenance Checks

Table 5-1 lists the maintenance checks. To keep the L-861E & SE LED Light operating efficiently, follow a preventive maintenance schedule. Refer to FAA AC 150/5340-26 for more detailed information.

Table 5-1 Maintenance Checks

Interval	Task	Action
Weekly	Check for vegetation	Remove vegetation.
Monthly	Check for misaligned fixture	Straighten, level and align
	Check for dirty optical column	Clean with glass cleaner
	Check housing weep holes	Clean weep holes
	Check for dirty frangible coupling weep holes (for stake-mounted fixtures only)	Clean weep holes
Annually	Check for improper ground elevation	Grade so frangible point is ~ 1 inch (25.4 mm) above ground elevation
	Check for improper light elevation	Maintain same elevation for all light fixtures
	Check Housing, EMT, & Frangible Coupling for corrosion present or paint chipped	Touch up paint as necessary
Unscheduled	Make prediction of heavy snowfall, if necessary	Use red flags or sticks to mark location of fixtures to facilitate snow removal and lessen chance of damage to fixtures

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6. TROUBLE SHOOTING

6.1 Introduction

This section of the manual provides onsite corrective procedures in order to diagnose, isolate, and repair malfunctions and faults that may be found in the L-861E & SE LED Light in its operational environment. Field repair is limited to the replacement of easily replaceable components.

6.2 Equipment Required

The following equipment is required to perform the onsite corrective maintenance procedures:

- Standard tool kit
- Multi-meter

6.3 Troubleshooting Procedures

The L-861E & SE LED Light must be operated as described in Section 4. When a fault or malfunction occurs, corrective maintenance is required by an onsite technician to isolate and correct the problem. The following items should be checked/verified before other troubleshooting/maintenance procedures are performed:

- Check all cables are connected
- Check all power connections are intact

If the above do not correct the malfunction, refer to Table 6-1.

CAUTION

When removing and replacing the electronics module, handle with care to avoid damage to discrete components that can be caused by electrostatic discharge. To avoid voltage overload, make sure the power is turned off when the replacement of a module is required.

Table 6-1 Troubleshooting Procedures

Problem	Possible Cause	Corrective Action
LED not lighting	Defective electronic module Loose wire connection Deteriorated wire insulation Moisture present in fixture	Replace the head assembly Tighten wire connections Replace wires Open and dry the housing assembly. Replace any damaged items
LED too dim	Dirty lens Service life of LED exceeded	Clean lens Replace head assembly
Ice forming on lens (Optional Arctic Kit Installed)	Defective arctic component on PWA Defective Heater	Replace PWA Check Heater with Ohmmeter. With Heater disconnected from Heater PWA, Heater should measure 0.5-1 ohm. If Heater measures higher, or open, replace heater.

7. REPAIR

7.1 Introduction

This section of the manual provides maintenance personnel with step-by-step procedures for performing the maintenance procedures. It also lists the maintenance tasks required for the L-861E & SE LED Light.

These repair procedures are typical for the L-861E & SE configurations. These repair procedures will only show one configuration and are typical for the other configurations.

Differences between the configurations will be noted in the repair procedure when required.

7.2 Repair Procedures

These procedures consist of the procedures required for testing, measuring, aligning, and repairing the L-861 LED Light. The tools and test equipment necessary for the performance of these procedures are also listed as required.

7.2.1 Visual Operational Check

1. With the system operating, visually inspect each L-861 LED Light to verify LEDs are on.
2. Visually inspect each L-861 LED Light for obvious damage.

7.3 Maintenance

7.3.1 Visual Checks

1. With the system operating, visually inspect each L-861 LED light to verify all lamps are on.
2. Visually inspect each LED Housing Assembly for obvious misalignment.

7.3.2 Line-of-Sight Inspection

1. Visually inspect the lights for obstructions.
2. Refer to FAA specification AC 150/5340-24 for visibility requirements.

7.3.3 Lens and Housing Cleaning and Inspection

1. Inspect the lens, housing, and other parts for moisture and dirt.
2. Clean all moisture and dirt from the lens, inside and out.
3. Replace any damaged parts.

7.3.4 Access To Internal Components

1. Shut off CCR.
2. Remove the light fixture by doing the following:
 - a. Gain access to female plug under base plate and disconnect the cable plug of the light fixture from the female plug on the secondary lead of the isolation transformer.
 - b. Loosen the bolt that attaches the frangible coupling to the EMT column.
 - c. Pull the cable through the frangible coupling.
3. Remove lens assembly by loosening the band clamp around the lens and housing. See Figure 7-1.
4. Remove O-Ring (no arctic kit) or Heater (arctic kit) if required.

7.3.5 Closing Access To Internal Components

1. Make sure all components are correctly installed in the housing assembly.
2. Ensure O-Ring (no arctic kit) or Heater (arctic kit) is positioned in the base properly.
3. Install lens assembly on housing assembly and install band clamp around lens and housing.
4. Install the light fixture to the frangible coupling and Isolation Transformer by doing the following:
 - a. Insert the cable plug and EMT into the frangible coupling and tighten the bolt finger tight, then continue tightening the bolt $\frac{1}{4}$ turn from finger tight.
 - b. Connect the cable plug of the light fixture to the female plug on the secondary lead of the isolation transformer.
5. Level and align, refer to 3.4.3.

7.3.6 Electrical Connections

1. Remove all power from the system.
2. Check that all connections and cable connections are tight and clean. Replace or tighten all connections and terminal lugs that show signs of heating.

7.3.7 Electrical Component Inspection

1. Visually inspect the electrical components for overall condition.
2. Inspect for chipped, cracked or broken parts.
3. Visually inspect wiring insulation for signs of deterioration such as brittle, cracked, or damaged insulation.
4. Check all terminal connections to ensure they are tight and corrosion free.

7.3.8 LED Head Assembly Removal

See Figure 7-1.

1. Gain access to internal components. Refer to paragraph 7.3.4.
2. Remove 3 screws holding light engine to base.
3. Remove LED head assembly from housing assembly. If Heater (arctic kit) is installed, disconnect two wires from PWA and pull wires through hole in the plate of the light engine.
4. Disconnect 2 power wires from bottom of LED head assembly.

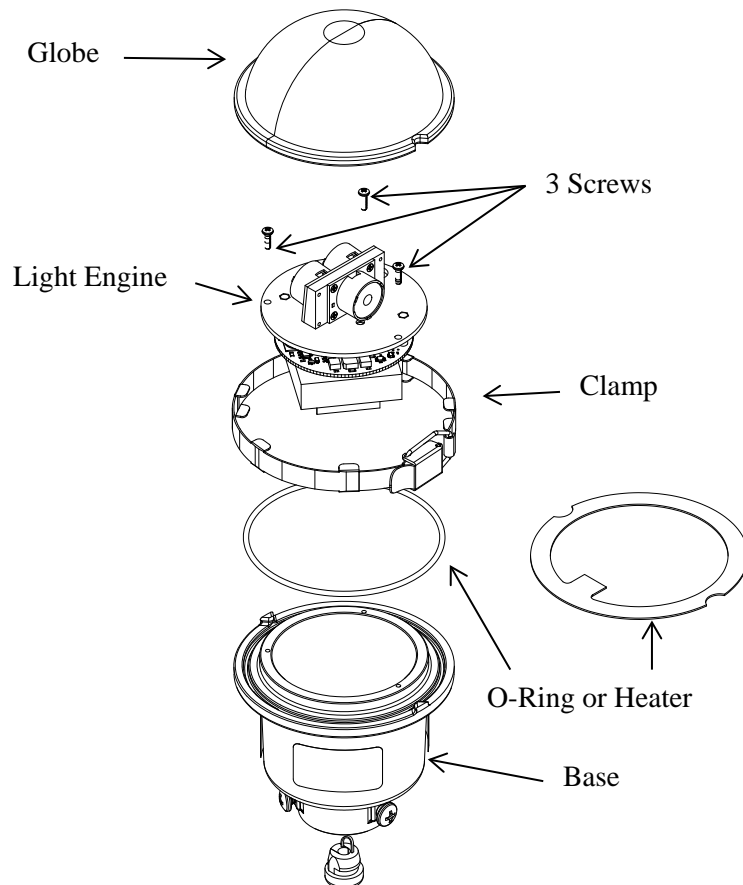


Figure 7-1 Head Assembly

7.3.9 LED Head Assembly Installation

1. Connect power wires to electrical connectors (tabs) on bottom of head assembly.
2. If Heater (arctic kit) is installed, position heater over light engine, route two wires through hole in light engine plate and connect wires to the PWA.
3. Position light engine into base.
4. Install 3 screws, securing light engine to base and tighten.
5. Close access to internal components. Refer to paragraph 7.3.5.

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8. PARTS

8.1 Introduction

This section of the manual contains the source data of all electrical and selected mechanical replacement parts of the L-861E & SE LED Light, shown in Table 8-1 and Table 8-2.

8.2 Name of Part and Description

A brief electrical or mechanical description of each component is given in this column.

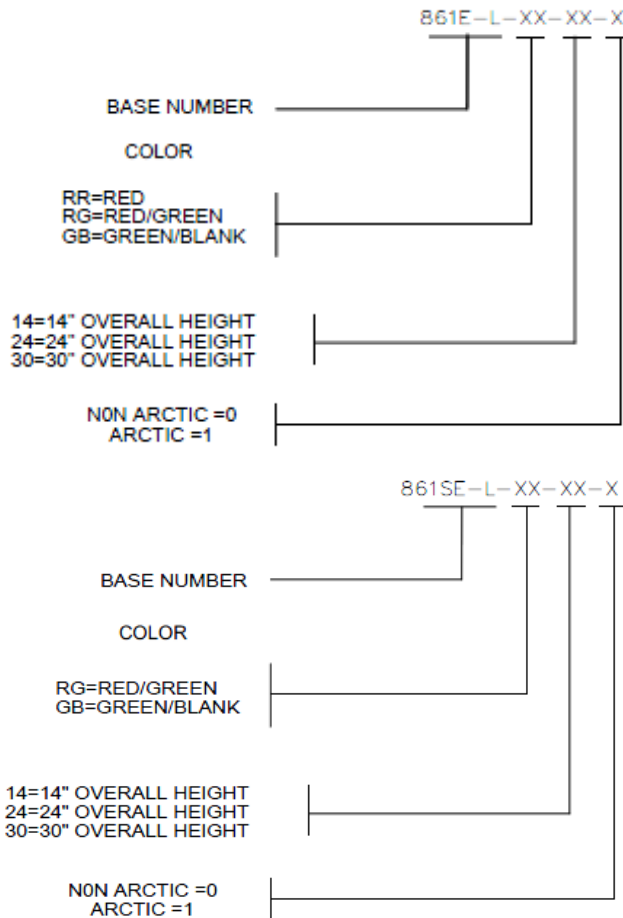
8.3 Part Number

This column gives the designation assigned to a component.

8.4 Ordering Information

Use the part numbering scheme in 8.4.1 to order the fixtures and the information in Table 8-1 and Table 8-2.

8.4.1 L-861 LED Light Fixture



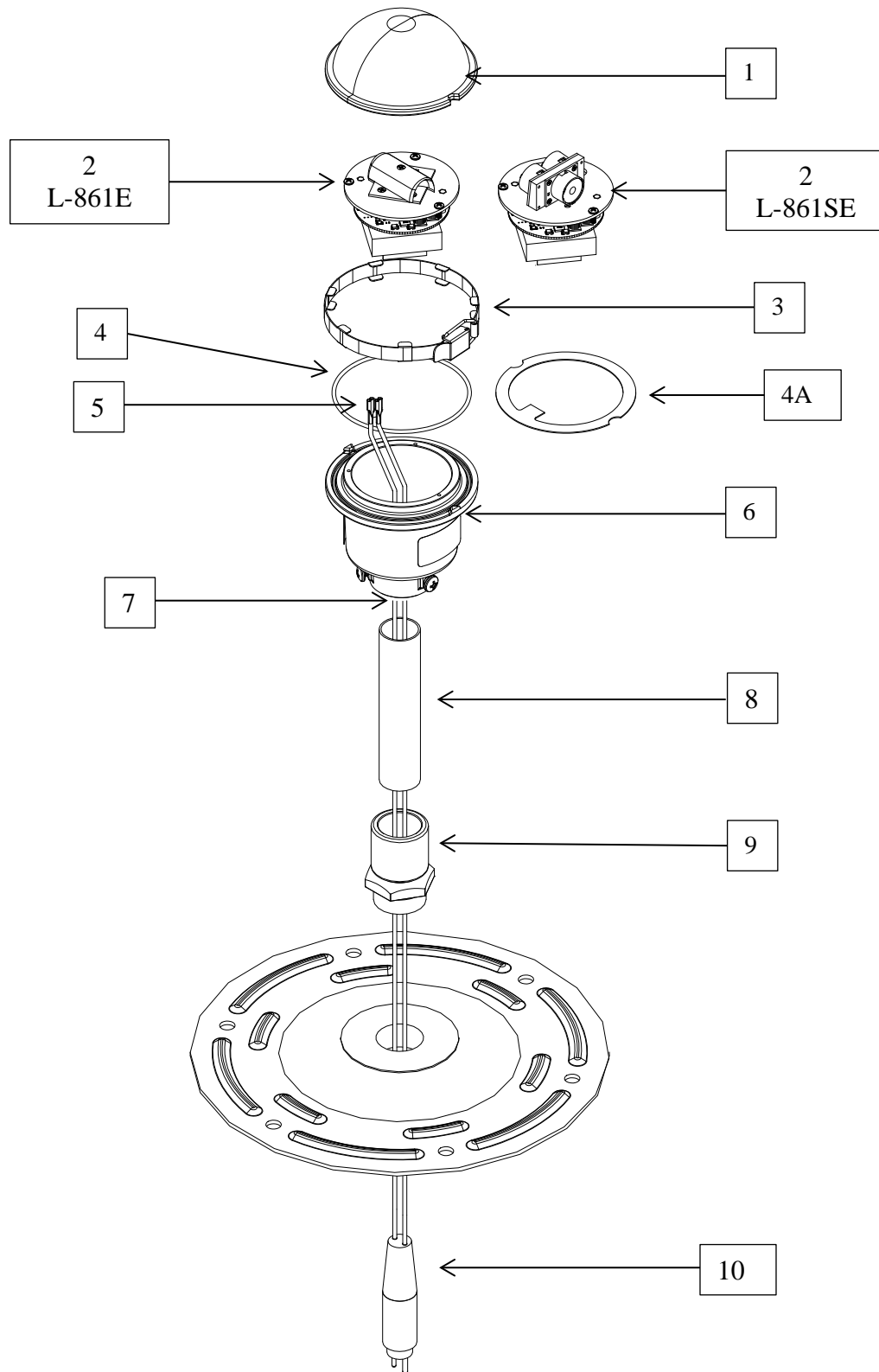


Figure 8-1 L-861E and SE LED Light

Table 8-1 L-861E Parts List

Item	Part Name/Description	Part Number
Figure 8-1	L-861E LIGHT	See para 8.4.1
1	Globe, L861	
	Globe, L861E, Green/Red	A1-32-0014-010
	Globe, L861E, Green/Blank	A1-32-0014-011
	Globe, L861E, Red	A1-32-0014-002
2	Light Engine Assy	
	Assy, Light Engine, 861E, Red/Green	A3-06-3114-001 (Used with Item 1 – Green/Red)
	Assy, Light Engine, 861E, Red/Red	A3-06-3114-002 (Used with Item 1 – Red)
	Assy, Light Engine, 861E, Green/Blank	A3-06-3114-003 (Used with Item 1 – Green/Blank)
	Assy, Light Engine, 861E, Red/Green, Arctic	A3-06-3114-004 (Used with Item 1 – Green/Red)
	Assy, Light Engine, 861E, Red/Red, Arctic	A3-06-3114-005 (Used with Item 1 – Red)
	Assy, Light Engine, 861E, Green/Blank, Arctic	A3-06-3114-006 (Used with Item 1 – Green/Blank)
3	Clamp, Band, L-861 Colors	A1-17-1027-003
4	O-Ring, 3 ¾ ID, 0.013 Thick	AS568A-154
4A	Heater, Silicone, L861	A1-01-0163-001
5	Conn, Fast Recept, 14-16 AWG, .187 x.032	A1-03-0260-001
6	Base, L-861 Colors	A1-17-1067-001
7	Bushing, Strain Relief	D5975012-013
8	EMT	
	EMT, Modified, 9” (used on 14” overall height)	A1-17-1034-03
	EMT, Modified, 19” (used on 24” overall height)	A1-17-1034-08
	EMT, Modified, 25” (used on 30” overall height)	A1-17-1034-21
9	Frangible Coupling, 1 ½” Baseplate	A1-17-1029-01
10	Wire, Taxiway/Edge Light	10518-101-001

Table 8-2 L-861SE Parts List

Item	Part Name/Description	Part Number
Figure 8-1	L-861SE LIGHT	See para 8.4.1
1	Globe, L861	
	Globe, L861E, Green/Red	A1-32-0014-010
	Globe, L861E, Green/Blank	A1-32-0014-011
2	Light Engine Assy	
	Assy, Light Engine, Red/Green	A3-06-3115-001 (Used with Item 1 – Green/Red)
	Assy, Light Engine, Green/Blank	A3-06-3115-002 (Used with Item 1 – Green/Blank)
	Assy, Light Engine, Red/Green, W/Arctic	A3-06-3115-003 (Used with Item 1 – Green/Red)
	Assy, Light Engine, Green/Blank, W/Arctic	A3-06-3115-004 (Used with Item 1 – Green/Blank)
3	Clamp, Band, L-861 Colors	A1-17-1027-003
4	O-Ring, 3 ¾ ID, 0.013 Thick	AS568A-154
4A	Heater, Silicone, L861	A1-01-0163-001
5	Conn, Fast Recept, 14-16 AWG, .187 x.032	A1-03-0260-001
6	Base, L-861 Colors	A1-17-1067-001
7	Bushing, Strain Relief	D5975012-013
8	EMT	
	EMT, Modified, 9” (used on 14” overall height)	A1-17-1034-03
	EMT, Modified, 19” (used on 24” overall height)	A1-17-1034-08
	EMT, Modified, 25” (used on 30” overall height)	A1-17-1034-21
9	Frangible Coupling, 1 ½” Baseplate	A1-17-1029-01
10	Wire, Taxiway/Edge Light	10518-101-001