



INSTALLATION AND MAINTENANCE MANUAL

**L-861T LED
ELEVATED TAXIWAY
EDGE LIGHT**

PN 861T-L-B-066-XX-X

Lot # 5408-74 and higher

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RECORD OF CHANGES

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SECTION 1. GENERAL INFORMATION AND REQUIREMENTS

1.1 INTRODUCTION

This manual is applicable to L-861T Fixtures Lot # 5408-77 and higher only. Refer to DME Document #Y3-01-0158 Addendum to L-861T Elevated Taxiway Edge LED Light Installation and Maintenance Manual for additional information on L-861T Fixtures Lot # 5408-76 and below.

This section describes the DME Corporation L-861T Elevated Taxiway Edge Light Emitting Diode (LED) light.

The L-861T Elevated Taxiway Edge LED light is used to delineate the edges of airport taxiways, holding bays, and aprons. These elevated lights, Part Numbers (PN) 861T-L-B-066-XX-0, 861T-L-B-066-XX-1, 861T-L-B-066-XX-2, and 861T-L-B-066-XX-3 are Electrical Testing Labs (ETL) certified according to FAA specification AC 150/5345-46C, and FAA LED specifications and PN 861T-L-B-066-XX-4, 861T-L-B-066-XX-5, 861T-L-B-066-XX-6, and 861T-L-B-066-XX-7 are certified according to FAA specification AC 150/5345-46D and FAA LED specifications. The DME Corporation L-861T fixture is available in aviation blue.

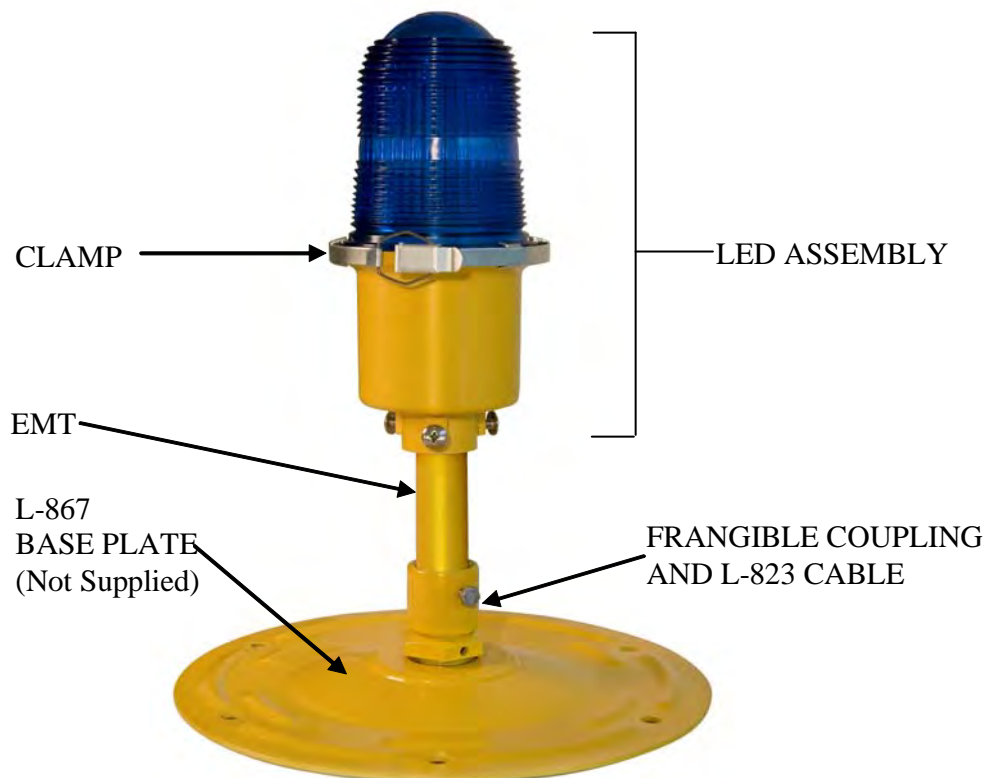


Figure 1-1 L-861 Elevated Taxiway Edge LED Light

1.2 EQUIPMENT DESCRIPTION

The main items in the L-861T Elevated Taxiway Edge LED light are listed below and shown in Figure 1-1.

1.2.1 LED ASSEMBLY

The major components of the LED Assembly consists of the LED housing assembly, LED head assembly, clamp, frangible coupling, cable assembly, and aviation blue lens shown in Figure 1-1.

1.2.2 WIRE, TAXIWAY/EDGE LIGHT (L-823 CABLE)

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

1.2.3 FRANGIBLE COUPLING

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

1.2.4 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.

1.2.5 ARCTIC KIT (OPTIONAL)

The Arctic Kit is an optional kit to melt ice and snow that may have collected on the lens. See Figure 6-1.

1.2.6 BASE PLATE MOUNT (OPTIONAL)

The L-861T LED Taxiway 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.

1.2.7 STAKE MOUNT (OPTIONAL)

Optional stake mounting of the L-861T Elevated Taxiway Edge LED light is detailed in paragraph 7.4.4. Stake-mounted lights require transformer, cables, and connectors that are designed for direct earth burial.

1.3 EQUIPMENT SPECIFICATION DATA

Table 1-1 through Table 1-8 illustrate pertinent reference data on the L-861T Elevated Taxiway Edge LED light. 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 DME Corporation.

1.3.1 FUNCTIONAL CHARACTERISTICS

Table 1-1 lists the functional characteristics of the L-861T Elevated Taxiway Edge LED light.

Table 1-1 Functional Characteristics

Condition	Range
Power Consumption	
With-Out Heater	< 15VA
With Heater	< 30VA
Optics	1 side emitting Blue LED with optically matched glass dome
Weight	~ 4 lbs with 14" EMT and frangible coupling
Height	14-30-inches in 2 inch increments
Total Harmonic Distortion (THD)	< 1.1%
Mean Time Between Failure (MTBF)	> 50,000 hours
Arctic Kit	Optional

1.3.2 PHOTOMETRIC DATA

Table 1-2 lists the photometric data for the L-861T Elevated Taxiway Edge LED light.

Table 1-2 Photometric Data

Color	Light Source	Measured Peak Intensity (candelas)	
		0-6 Degrees Vertical	6 + Degrees
Blue (FAA)	3 W high lumen intensity, side emitting LED	>12 (FAA - minimum 2)	3.5, decreasing with increasing angle (FAA minimum visible)

Table 1-3 Three (3) Step Constant Current Regulator (CCR)

CCR Current (amps)	0 Degree Brightness Level (CD)	% of Max. Brightness
6.6	>12	N/A
5.5	≅5.4	40 (FAA Requirement 30-51)
4.8	≅2.0	15 (FAA Requirement 10-19)

1.3.3 EXTERNAL POWER REQUIREMENTS

Table 1-4 lists the external power requirements of the L-861T Elevated Taxiway Edge LED light.

Table 1-4 External Power Requirements

Input	Power
Current Control Regulator (CCR)	3 Step 4.8A, 5.5A or 6.6A

1.3.4 ENVIRONMENTAL CHARACTERISTICS

Table 1-5 lists the environmental characteristics of the L-861T Elevated Taxiway Edge LED light.

Table 1-5 Environmental Characteristics

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

1.3.5 MECHANICAL CHARACTERISTICS

Table 1-6 lists the mechanical characteristics of the L-861T Elevated Taxiway Edge LED light.

Table 1-6 Mechanical Characteristics

Condition	Range
Yield Device	The L-861 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

1.3.6 EQUIPMENT AND ACCESSORIES SUPPLIED

Table 1-7 lists the equipment and accessories supplied for the L-861T Elevated Taxiway Edge LED light.

Table 1-7 Equipment and Accessories Supplied

Description	Quantity
Elevated light fixture (with optical lens, clamp, EMT, frangible coupling, and LED head assembly)	1
Installation and Maintenance Manual	1 (with each order)

1.3.7 EQUIPMENT REQUIRED BUT NOT SUPPLIED

Table 1-8 and Table 1-9 list the equipment and accessories supplied for the L-861T Elevated Taxiway Edge LED light.

Table 1-8 Equipment and Accessories Required Not Supplied

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

Table 1-9 Isolation Transformers Not Supplied

Circuit	Transformer	Arctic Kit Installed
6.6 A, 60Hz, series circuit	L-830-16 (10/15W)	No
6.6 A, 60Hz, series circuit	L-830-17 (20/25W)	Yes
6.6 A, 50Hz, series circuit	L-831-1 (30/45W)	Yes or No
20 A/6.6 A, 50 Hz series circuit	L-831-2 (30/45W)	Yes or No
Fixture Load		
L-861T	Fixture Load (Watts)	
Without Arctic Kit	12	
With Arctic Kit (max)	24	

SECTION 2. OPERATION

This section of the manual describes the operational aspects of the L-861T Elevated Taxiway Edge Light Emitting Diode (LED) light. 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.

2.1 MODES OF OPERATION

The L-861T fixtures are configured for 3 Step Constant Current Regulators (CCRs).

2.1.1 BRIGHTNESS SETTING

Set the CCR to the desired brightness level.

2.2 CONTROLS AND INDICATORS

There are no controls and indicators associated with the L-861T Elevated Taxiway Edge LED light. All controls and indicators for operating the lights are on the CCR.

2.3 TURN-ON AND CHECKOUT PROCEDURE

Turn on the lights using the CCR.

2.3.1 OPERATING MODES

The L-861T Elevated Taxiway Edge LED light will automatically switch between intensities depending upon the current from the CCR. There is no user interface to control light intensities.

2.3.2 CHECKOUT

To checkout L-861T Elevated Taxiway Edge LED light, turn on the CCR, step through the brightness levels, and observe intensity change on lights.

2.4 EQUIPMENT SHUTDOWN

Turn the equipment off the lights by turning off the CCR.

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SECTION 3. PERIODIC MAINTENANCE

3.1 INTRODUCTION

This section of the manual lists the maintenance tasks required for the L-861T Elevated Taxiway Edge Light Emitting Diode (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 L-861T equipment performance.

3.2 MAINTENANCE CHECKS

Table 3-1 lists the maintenance checks. To keep the L-861T light fixture operating efficiently, follow a preventive maintenance schedule. Refer to FAA AC 150/5340-26 for more detailed information.

Table 3-1 Maintenance Checks

Interval	Task	Action
Weekly	Check for vegetation	Remove vegetation.
Monthly	Check for misaligned fixture Check for dirty optical column Check housing weep holes Check for dirty frangible coupling weep holes (for stake-mounted fixtures only)	Straighten, level and align Clean with glass cleaner Clean weep holes Clean weep holes
Annually	Check for improper ground elevation Check for improper light elevation Check Housing, EMT, & Frangible Coupling for corrosion present or paint chipped	Grade so frangible point is ~ 1 inch (25.4 mm) above ground elevation Maintain same elevation for all light fixtures Touch up pain 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 less chance of damage to fixtures

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SECTION 4. MAINTENANCE PROCEDURES AND CHECKS

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-861T Elevated Taxiway Edge Light Emitting Diode (LED) light.

4.1 MAINTENANCE PROCEDURES AND CHECKS

These procedures consist of the procedures required for testing, measuring, aligning, and repairing the L-861T Elevated Taxiway Edge Light Emitting Diode (LED) light. The tools and test equipment necessary for the performance of these procedures are also listed as required.

4.1.1 VISUAL OPERATIONAL CHECK

1. With the system operating, visually inspect each L-861T Elevated Taxiway Edge LED light to verify LEDs are on.
2. Visually inspect each L-861T Elevated Taxiway Edge LED light for obvious misalignment.

4.2 OTHER ON-SITE MAINTENANCE

The following maintenance procedures are those required to perform the maintenance tasks listed in Section 3.

4.2.1 VISUAL CHECKS

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

4.2.2 LINE-OF-SIGHT INSPECTION

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

4.2.3 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.

4.2.4 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 hex 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.

CAUTION: If the unit is equipped with an Arctic Kit then after the clamp is removed carefully tilt the lens to the side of the housing and unplug the lens heater from the Heater Control Board (see Figure 6-1).

4.2.5 CLOSING ACCESS TO INTERNAL COMPONENTS

1. Make sure all components are correctly installed in the housing assembly.
2. If the unit is equipped with an Arctic Kit plug the lens heater connector into the Heater Control Board. Install lens assembly on housing assembly and install band clamp around lens and housing.
3. 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 hex bolt finger tight, then continue tightening the hex bolt ¼ 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.

4.2.6 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.

4.2.7 ELECTRICAL COMPONENT INSPECTION

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

4.2.8 LED HEAD ASSEMBLY REMOVAL

1. Gain access to internal components. Refer to paragraph 4.2.4.
2. Pull LED head assembly from housing assembly.
3. Disconnect 2 power wires from bottom of LED head assembly.

4.2.9 LED HEAD ASSEMBLY INSTALLATION

1. If the unit IS NOT equipped with an Arctic Kit connect power wires to electrical connectors (tabs) on bottom of head assembly. If the unit IS equipped with an Arctic Kit connect 1 power wire to LED head assembly and 1 power wire to wire from Heater Control Board with male (tab) connector. The wire from the Arctic Kit with a female connector is connected to the other male connector tab on the LED head assembly.
2. Close access to internal components. Refer to paragraph 4.2.5.

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SECTION 5. CORRECTIVE MAINTENANCE

5.1 CORRECTIVE MAINTENANCE

5.1.1 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-861T Elevated Taxiway Edge Light Emitting Diode (LED) light in its operational environment. Field repair is limited to the replacement of easily replaceable components.

5.1.2 TEST EQUIPMENT REQUIRED

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

- Standard tool kit
- Multi-meter

5.1.3 TROUBLESHOOTING PROCEDURES

The L-861T Elevated Taxiway Edge LED light must be operated as described in Section 2. 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 AC power connections are intact
- If the above do not correct the malfunction, refer to Table 5-1.

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 5-1 Troubleshooting Procedures

Problem	Possible Cause	Corrective Action
LED not lighting	Defective electronic module	Replace the head assembly
	Loose wire connection	Tighten wire connections
	Deteriorated wire insulation	Replace wires

Problem	Possible Cause	Corrective Action
	Moisture present in fixture	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 kit	Replace arctic kit

SECTION 6. PARTS LIST

6.1 GENERAL

This section of the manual contains the source data of all electrical and selected mechanical replacement parts of the L-861T Elevated Taxiway Edge Light Emitting Diode (LED) light (Table 6-1).

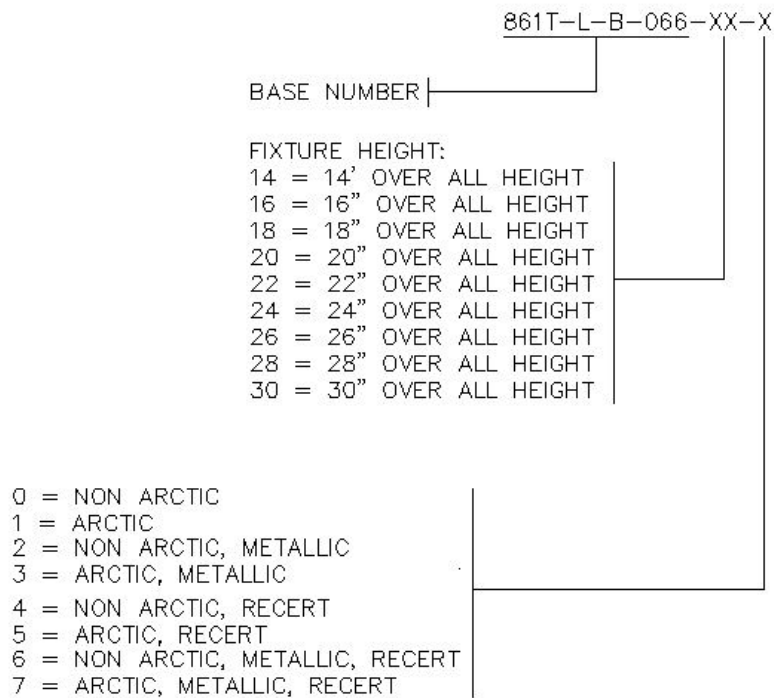
6.1.1 NAME OF PART AND DESCRIPTION

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

6.1.2 PART NUMBER

This column gives the designation assigned to a component.

6.1.3 ORDERING INFORMATION



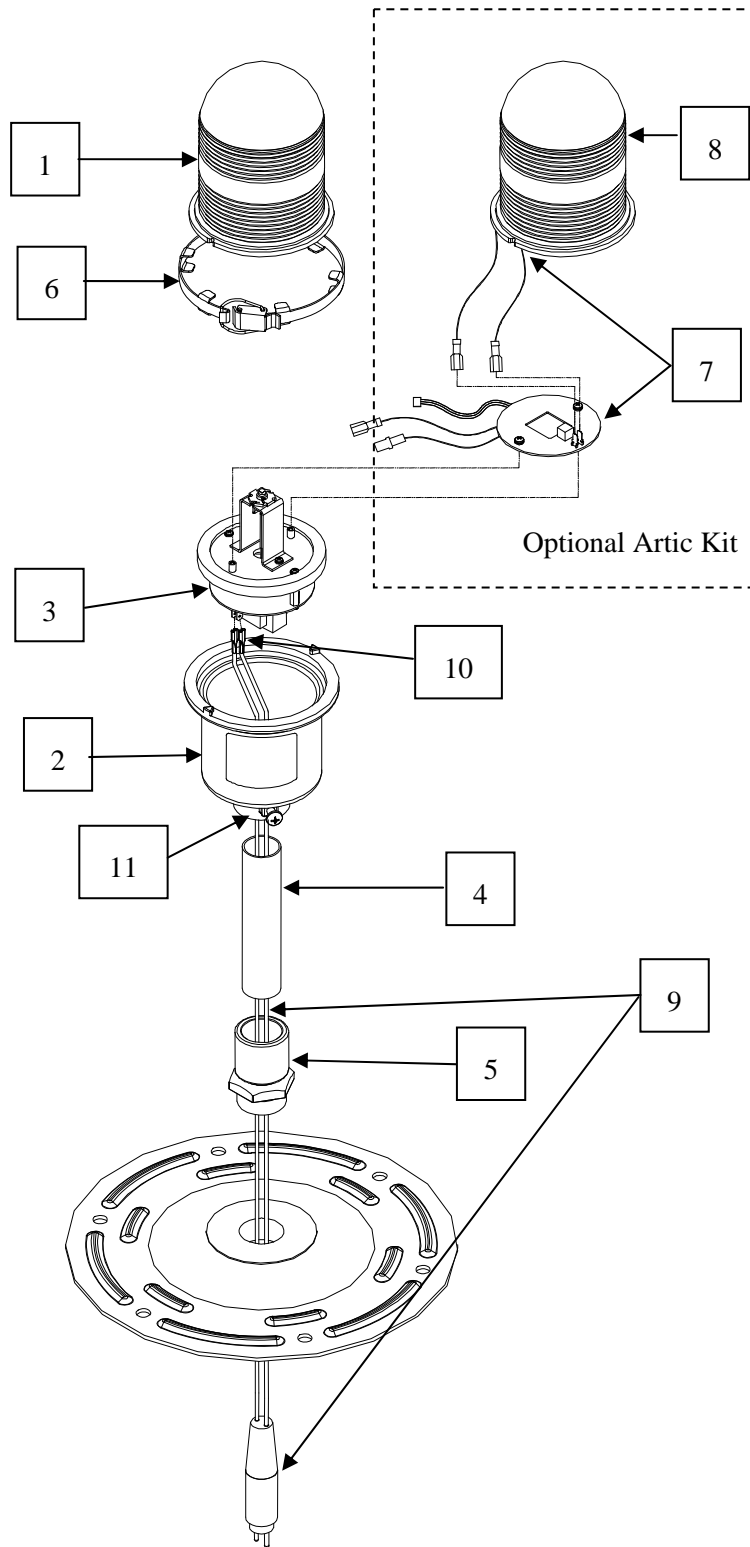


Figure 6-1 L-861T Elevated Taxiway Edge LED light

Table 6-1 Parts List

Figure/Item	Part Name/Description	Part Number
Figure 6-1	L-861T LED Taxiway Light	See paragraph 6.1.3
Item 1	Lens	A1-32-0001-001
Item 2	Housing	
	Metallic	A1-17-1026-002
	Non-Metallic	A1-17-1026-001
Item 3	LED Head Assembly	
	Note: These components are no longer available and are replaced by the parts below.	A3-06-2093-001 Used on: 861T-L-B-XX-0 861T-L-B-XX-1 861T-L-B-XX-2 861T-L-B-XX-3
		A3-06-2093-002 Used on: 861T-L-B-XX-4 861T-L-B-XX-5 861T-L-B-XX-6 861T-L-B-XX-7
Item 4	EMT	
	14-inch	A1-17-1034-01
	24-inch	A1-17-1034-06
	30-inch	A1-17-1034-09
Item 5	Frangible Coupling 1-1/2 inch	A1-17-1029-001
Item 6	Clamp	A1-17-1027-001
Item 7	Arctic Kit Assembly	A3-06-2104-001
Item 8	Lens, Arctic	A3-06-2110
Item 9	Wire, Taxiway/Edgelight	10518-101-001
Item 10	Conn, Fast Recpt	A1-03-0260-001

Figure/Item	Part Name/Description	Part Number
Item 11	Strain Relief Bushing	D5975012-013

SECTION 7. INSTALLATION

7.1 INTRODUCTION

This section of the manual contains general instructions for installation of an L-861T Elevated Taxiway Edge Light Emitting Diode (LED) light at a typical site. Refer to the airport project plans and specifications for the specific installation instructions.

7.2 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.

7.3 PLACEMENT

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

- The L-861T light fixture is normally positioned a maximum of 10 feet (3.048m) off the edge of the hard surface of the taxiway, and in a straight line with all other light fixtures on the same side of the runway.
- The longitudinal spacing of the light fixtures should not exceed 200 feet (60.96 m) to define the lateral limits of the taxiing paths. The longitudinal spacing of the lights is influenced by the physical layout of the taxiways.
- Closer spacing of the light should be provided on short taxiway sections, curves, and entrances to taxiways from runways or aprons.

7.4 INSTALLATION

This subsection provides installation instruction for the L-861T light fixtures.

7.4.1 BASE MOUNTING

L-861T 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.

7.4.2 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 1-9.

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 torques bolts to 100-110 inch-lbs. (11.3Nt-m).
10. Once the base plate is installed, the light fixture assembly is ready to install.
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 hex screw until the coupling is free. Then retighten the hex screw finger tight.
12. Plug the cable into the mating isolation transformer secondary lead.
13. Loosen the hex 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 hex screw is still tight. Damage to the cable connection to the transformer will occur.

14. Tighten the coupling screw that secures the column to the frangible coupling and the adjustable head.

15. Level the light fixture. Refer to 7.4.3.

7.4.3 LIGHT FIXTURE LEVELING

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

1. Remove clamp and lens, refer to 4.2.4, step 3. Slightly loosen the three cross point screws on the bottom of the housing.

CAUTION: If the Arctic kit is installed, use care when removing the LED lens assembly. There are two wires attached from the heater assembly in the LED housing to the heater element attached to the lens that must be disconnected.

2. Place a level on top of the housing. Level the housing by adjusting the three cross point leveling screws.
3. Install lens and clamp, refer to 4.2.5, step 2.

7.4.4 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.

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5. Install the light fixture on the stake.
6. Level the light fixture, refer to 7.4.3.