



Signature Series™

L-852 A-D Style 3 LED Taxiway Centerline Inset Light

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

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Record of Changes

Page	Rev	Description	EC No.	Checked	Approved	Date
All	A	Released manual.	01073	WT/EPD GM	WT	3/2/05
2-0, 2-3, 7-2	B	Added artic kit wattage and corrected typo in Table 2-1 and Fig 7-1	01397	WT	WT	3/7/05
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Warranties

Products of ADB Airfield Solutions manufacture are guaranteed against mechanical, electrical, and physical defects (excluding lamps) for a period of one year from the date of installation or a maximum of two years from the date of shipment and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

ADB Airfield Solutions will correct by repair or replacement, 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 Airfield Solutions written notice of such defects after delivery of the goods to Buyer.

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Disclaimers

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

Details and values given in this manual are average values and have been compiled with care. They are not binding, however, and ADB Airfield Solutions disclaims any liability for damages or detriments suffered as a result of reliance on the information given herein or the use of products, processes or equipment to which this manual refers. No warranty is made that the use of the information or of the products, processes or equipment to which this manual refers will not infringe any third party's patents or rights. The information given does not release the buyer from making their own experiments and tests.

Section 1

Safety

1. Introduction

This section contains general safety instructions for using your ADB Airfield Solutions 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. Note all warnings and follow all instructions carefully. Failure to do so may result in personal injury, death, or property damage.

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. To avoid injuries, 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.
- store this manual within easy reach 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.

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 property and equipment damage.



WARNING: Failure to observe this warning may result in personal injury, death, or equipment damage.

2. Safety Symbols (*contd.*)



WARNING: Risk of electrical shock. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Disconnect equipment from line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.



WARNING: Wear safety goggles. Failure to observe may result in serious injury.



CAUTION: Failure to observe may result in equipment damage.

3. Qualified Personnel

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 see that its personnel meet these requirements.

4. Intended Use



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

4. Intended Use *(contd.)*

ADB Airfield Solutions cannot be 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 property 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 ADB Airfield Solutions replacement parts
- failing to make sure that auxiliary equipment complies with approval agency requirements, local codes, and all applicable safety standards
- using materials or auxiliary equipment that are inappropriate or incompatible with your ADB Airfield Solutions equipment
- allowing unqualified personnel to perform any task

5. Installation

Read the installation section of all system component manuals before installing your equipment. A thorough understanding of system components and their requirements will help you install the system safely and efficiently.



WARNING: Failure to follow these safety procedures can result in personal injury or death.

- Allow only qualified personnel to install ADB Airfield Solutions and auxiliary 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.

5. Installation *(contd.)*

- 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.

6. Operation

Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.

Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.

- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

7. Action in the Event of a System or Component Malfunction

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.

8. Maintenance and Repair

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks. Only persons who are properly trained and familiar with ADB Airfield Solutions equipment 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 ADB Airfield Solutions 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.

Section 2 Description

1. Introduction

See Figure 2-1. This section describes the ADB Airfield Solutions F-Range Type L-852C-D ITCL Taxiway Centerline Inset Lights referred to in Table 2-1. The ITCL F-Range L-852C and L852D inset light fixtures are manufactured and certified to FAA specification AC 150/5345-46C and FAA, LED supplemental performance requirements per FAA Engineering Brief 67, Style 3 ($\leq 1/4$ inch Height Above Grade). The FAA standard fixture is 12 inch diameter and mounts directly on a FAA L-868B, deep light base. The fixture is intended for use on 4.8 A-6.6 A (3-Step) airfield series circuits. The L-852C & D fixtures are also available in a 10-inch version that mounts on a FAA L868A light base, and the L852C and L-852D 2-piece mounts on a L-868B light base.

Table 2-1 F-Range Series Light Fixtures

Use	Taxiway Centerline (CAT. II-III applications)	
Description	Uni or bi-directional	
Type L-852C-D	FAA straight sections L852C	FAA curved sections L852D
Color	Green or yellow	Green or yellow

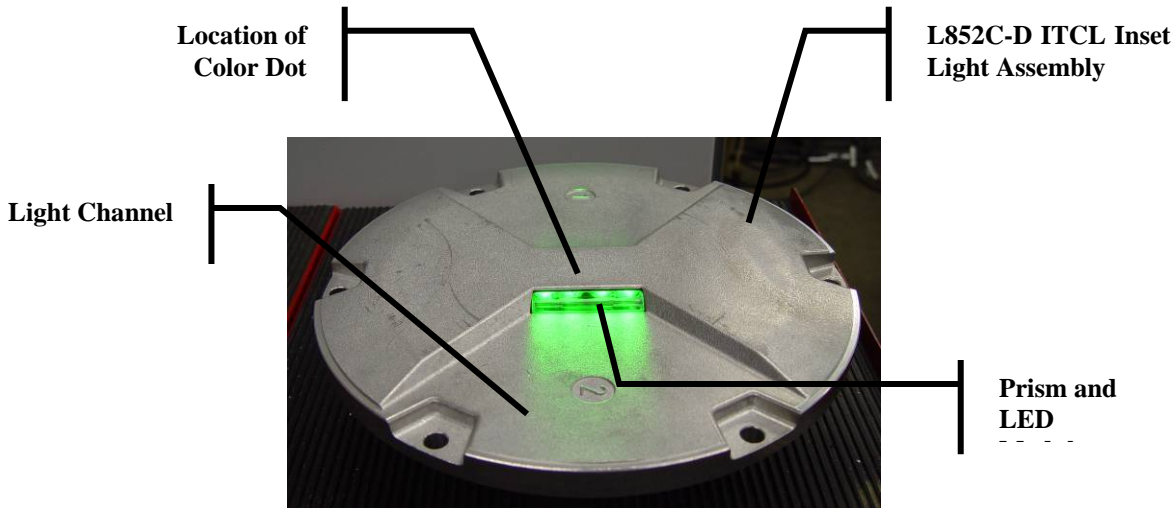


Figure 2-1 L-852C-D Inset Light Fixture – 12 Inch

1. Introduction (contd.)

The beam colors for the F-Range light fixtures are identified by colored dot(s) atop the window. A green dot, for example, refers to a corresponding green LED source. A yellow dot refers to a corresponding yellow LED source. Dot is placed above each window area.

2. Optical Assembly

See Figure 2-2 for the optical assembly. See Figure 2-3 for the L852C and L852D prism. The F-Range series light fixture optical assembly consists of one or two unidirectional or two bi-directional LEDs and prisms. Refer to *Specifications* in this section for details on LEDs and prisms.

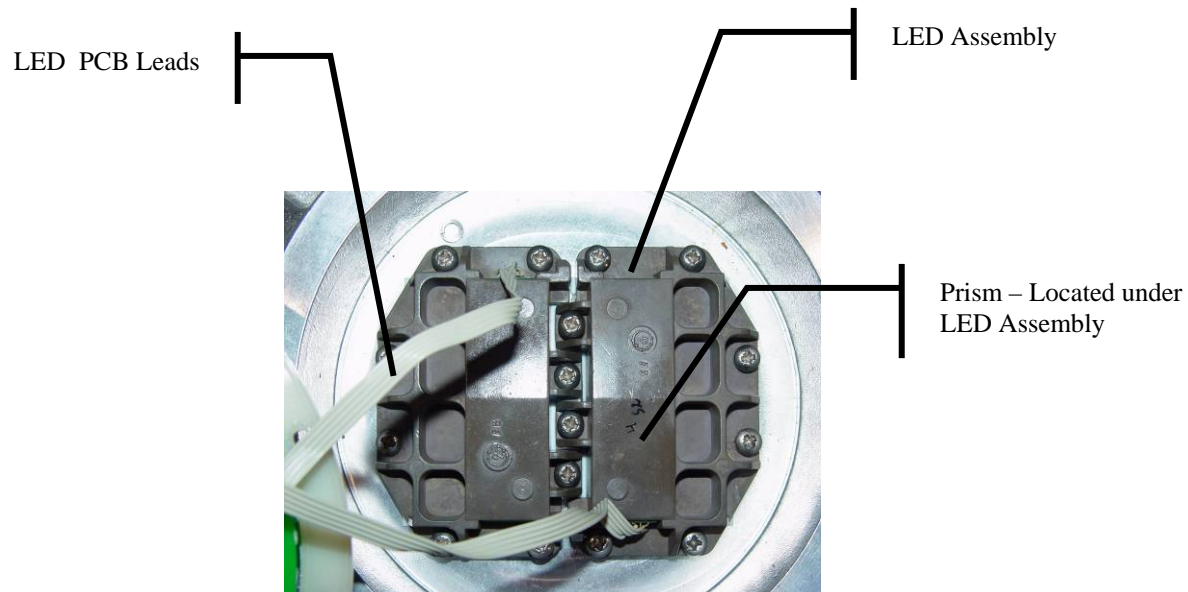


Figure 2-2 Optical Assembly

3. Optical - Prisms



Figure 2-3 Prisms – See Section 7, Fig 7-8, 7-9, 7-10 for detailed information

4. Inner Pan Cover Assembly

See Figure 2-4. The inner cover assembly is comprised of the inner cover, L-823 cordset(s), and pressure release screw.

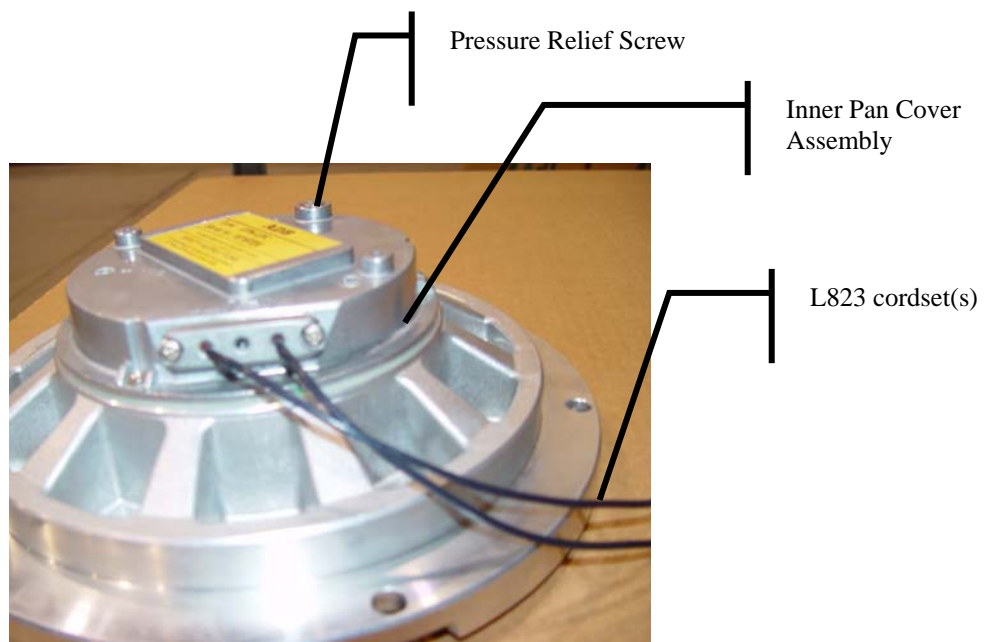


Figure 2-4 Inner Pan Assembly

5. F-Range Light Fixture: Required Equipment

Refer to Table 2-2 for required equipment that is supplied. Refer to Table 2-3 for required equipment that is not supplied. Refer to the *Parts* section for part numbers.

Table 2-2 Required Equipment Supplied

Description	Quantity
F-Range inset light, with LED assembly ITCL-XXXX	1
Instruction manual – 96A0311	1 per order

Table 2-3 Required Equipment Not Supplied

Description	Quantity
Torque wrench (0 to 200 in-lb) (0–22.6 Nt-M)	1
Alignment jig	1
Diamond-faced core drill, 13 in. (330 mm diameter)	1
Diamond-faced saw, 3/8 in. (9.525 mm) thick	1
Crimping tool	1
Small water suction pump	1
L-830 isolation transformer – See Table 2-5	1 or 2
Set of fiber brushes	1
Set of socket wrenches, 1/2 in. (12.7 mm) drive	1
Set of screwdrivers, one with 3/8 in. (9.525 mm) minimum blade width	1
Silicone grease	As required
Joint sealing filler	As required
Pressure test fitting assembly – See parts list	1
Lifting tool - See page 3-9	1

6. Specifications

This subsection provides specifications for the F-Range Type L-852C-D ITCL inset light fixtures.

Input

6.6 A through one or two series transformer(s). Light fixtures have been designed to work with the properly sized FAA compliant transformers. Severely under loaded transformers may put out too much current which may cause the light fixture to put out the wrong amount of light or cause flickering. See Table 2-5.

Light Source

LEDs, 5 W per side

Expected LED Life

56,000 hours at 6.6 A

Light Source

One watt high lumen density (brightness) LED

Arctic Heater Wattage

40 watts

Photometric Data

Table 2-4 Photometric Data

F-Range Type	Beam	Color	Average Intensity (cd)	Main Beam Aperture	
			FAA Spec Min C Green/Yellow 200 D Green/Yellow 100	Horizontal (°)	Vertical (°)
L-852C	FAA	Green	607 (C)	-3.5 to +3.5	1 to 8
		Yellow	309 (C)		
L-852D		Green	105 (D)	-30 to + 30	1 to 10
		Yellow	132(D)		

Isolation Transformers

Table 2-5 Transformers

Fixture	w/o heater	w/heater	No. of Cordsets
L-852C-D Bi-Directional	L-830-1 (30/45W)	L830-3 (65W)	1
L852C-D Unidirectional	L-830-1 (30/45W)	L-830-1 (30/45W)	1

Prisms

L852A/C Green and Yellow, L-852B/B Green Wide Only, and L852B/D Yellow Wide Only. See Figures 7-8, 7-9, and 7-10 in Section 7.

Light Beam

Table 2-6 Light Beam

F-Range Type	Light Beam
L-852C-D	Switchable light direction bi-directional
L-852C-D	Bi-directional (standard)
L-852C-D	Unidirectional (standard)

Mounting

The F-Range light fixtures mount on an optional ADB Airfield Solutions shallow base or on a 12-inch- (304.8-mm-) diameter deep L-868B light base (standard). Refer to Table 2-6 for connectors supplied.

Table 2-7 Connectors Supplied

If you order this...	This connector is supplied...
L-852C-D fixture without shallow base	L-823 connector
L-852C-D fixture with shallow base	Main lead assembly

Environmental Operating Conditions

The F-Range light fixture is designed to operate under the conditions presented below for temperature, altitude, and relative humidity.

Temperature

-55 to + 55 °C (-67 to +131 °F)

Altitude

Sea level to 10,000 feet (3000 m)

Relative Humidity

Up to 100 %

Dimensions

Table 2-8 F-Range Light Dimensions

FAA Type	FAA Style	FAA Class	Outside Diameter	Bolt-circle diameter
L852C-D 12-Inch	3	2	11.94 in. (303.28 mm)	11.25 in. (285.75 mm)
L852C-D 10-Inch	3	2	9.94 in. (252.47mm)	9.25 in. (234.95mm)

Weight

The weight of the L-852C-D light fixture is 14.7 lb (6.7 kg)

Options

1 or 2 L823 Cordsets
 Bidirectional or Unidirectional
 Arctic Kit

Section 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.

1. Introduction

This section provides instructions for installing the F-Range inset lights. Refer to airport project plans and specifications for the specific installation instructions. See FAA AC 150/5340-30 for additional installation instructions. The installation shall conform to the applicable sections of the National Electric Code and local codes.

2. Unpacking

Each unit is individually packaged in a durable, cushioned, corrugated cardboard carton. To avoid unnecessary damage to the light assembly, unpack the carton at the installation site.

To unpack the carton, open the flaps and carefully remove the top packing material. Thread an eyebolt into each of the two opposite threaded holes. Run a rod through the eyebolts and lift the light assembly from the shipping carton. Set the light assembly in a protected area.

If damage to any equipment is noted, file a claim form with the carrier immediately. The carrier may request to inspect the equipment.

3. Input Requirement Summary

The F-Range light fixture is designed for connection to a 6.6A series lighting circuit via an L-830 isolation transformer. Refer to *Specifications* in the *Description* section for required isolation transformer.

4. Installation on L-868B Base

The light assembly is shipped complete, including the LED assembly, and is ready for installation. Figure 3-1 is typical of all inset light installations. See FAA AC 150/5340-30 for additional installation instructions on L-868 light bases.

To install the inset light fixture on the L-868B base, perform the following procedure:

1. See Figure 3-1. Clean the base receptacle. Make sure that the base receptacle does not contain water and is completely clean and dry. The mating surfaces must be clean and free of foreign particles.

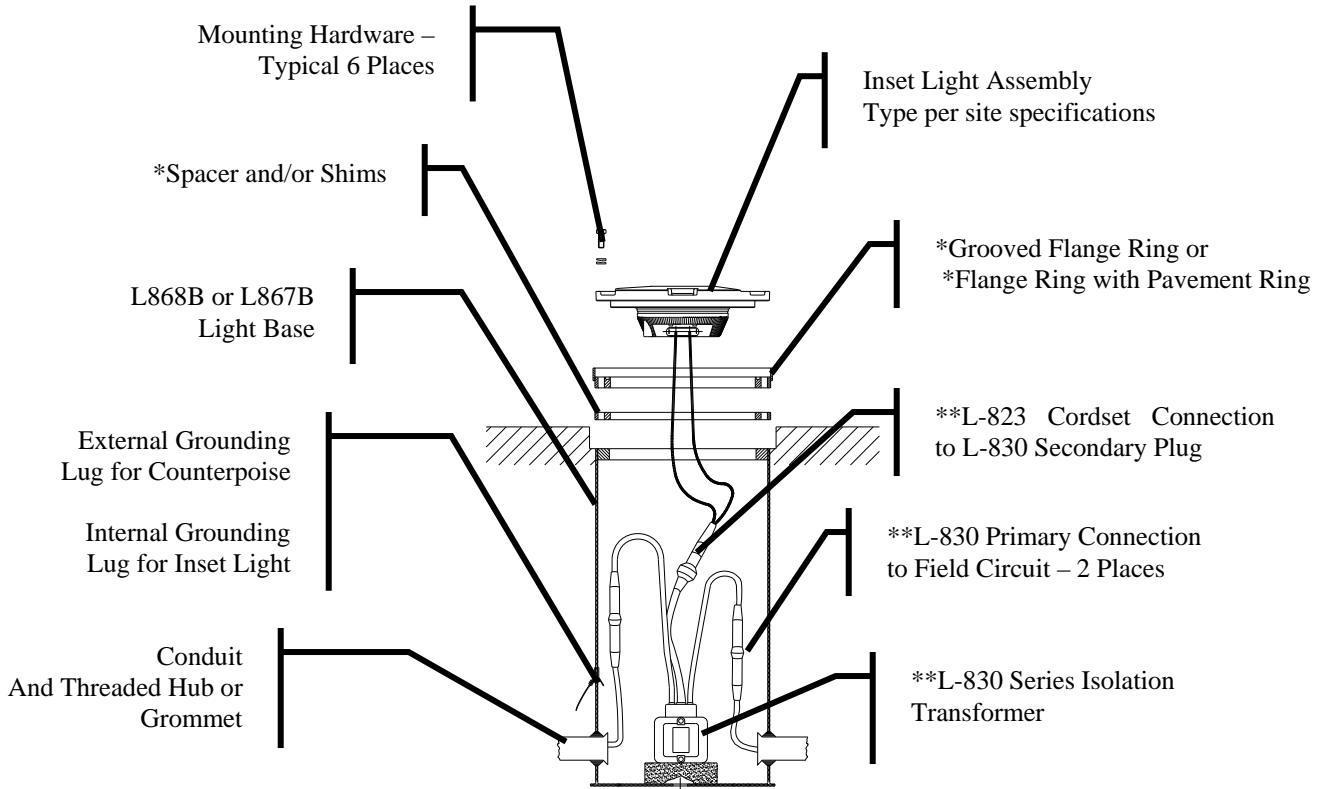


Figure 3-1 Typical Installation on FAA L-868B Base

*Note: These items are per site specifications and must be mounted onto the light base before the inset fixture is installed. Inset fixture may also be mounted directly to the light base flange. See

**Note: Quantity of these items will increase if inset light has switchable option.



CAUTION: Remove all debris found on all mounting surfaces of the light base or associated spacers, flange rings, etc., before installing the light fixture. Failure to remove debris can induce damaging stresses in the light fixture when the mounting bolts are torqued and the fixture is subjected to aircraft roll over loads. See Figure 4-1 for bolt torquing instructions.

4. Installation on L-868B Base

(contd.)

NOTE: Install all shims, spacers, and flange ring, if specified for the installation, prior to installing the inset light assembly. Make sure that all interfacing surfaces are free of debris before installing on the light base. Failure to remove debris can cause uneven loading of the inset fixture when the bolts are torqued. This condition can cause stress cracking in the top cover.

Lifting Tool

2. The lifting tool is comprised of two ½-13 1.0 dia eye bolts and a 3/8 dia x 18 inch long rod.
3. Locate the two mounting bolts #3 and #6 as shown in Fig 4-1. Screw the two eye-bolts into the ½-13 tapped holes. Slip the 3/8 rod through the eye-bolts.
4. Place the inset light fixture next to the L-868 light base so that the L-823 connector can be connected with the mating secondary receptacle from the L-830 isolation transformer in the light base. Make sure that the connection is solid and secure. Refer to *Specifications* in the *Description* section for required isolation transformers. Refer to *Mounting and Connections* in this section.
5. Turn on the power. Operate the light assembly for a minimum of five minutes. Turn off the power.
6. Using the lifting tool position the light assembly over the L-868 base and set onto the base. Align the light to the runway centerline. Make sure items such as spacers, shims, and gaskets are installed on the light base per site plans, specifications, and drawings. Remove the eyebolts and lifting rod.
7. Turn on the power to check that the LED will illuminate. Operate for a minimum of five minutes. After light fixture operation has been verified, remove lifting rod and eye-bolts and then install the six mounting bolts. Before installing mounting bolts either apply thread locking compound or anti-seize component of the bolt threads as noted in Steps 8 and 9.

4. Installation on L-868B Base (contd.)

8. If thread locking adhesive is used, apply only one drop of Grade AV Loctite® to each of the six 3/8-inch (9.525-mm-) diameter mounting bolts. Torque the bolts to 185 ±5 inch-pounds (20.902 ± 0.565 Nt-m).

NOTE: When Grade AV Loctite® is used, the bolts must be torqued to 185 ±5 inch-pounds.

9. If using anti-seize lubricate, instead of threadlocking adhesive, on the threads check with the manufacturer of the anti-seize lubricate to find out what the **Lubricity "k" factor** is for the compound that you are going to be using and then refer to Table 3-1.

Table 3-1 Determining Torque Based on "K" Factor

If "k" factor is...	Then recommended torque is...
0.13	141/151 In-Lbs
0.14	152/162 In-Lbs
0.15	164/173 In-Lbs
0.16	175/180 In-Lbs
0.17	180/190 In-Lbs
0.18	197/207 In-Lbs

NOTE: Always torque the bolts across the corners. Refer to *Retorquing Mounting Bolts* in the *Maintenance* section. To torque the outer bolts across corners, tighten bolts in noted sequence: #1 and #4, then #2 and #5, then #3 and #6. See Fig 4-1

NOTE: Applying more than one drop of Loctite to the bolt threads will create future difficulty in removal of the bolts.

NOTE: After several re-lampings, threaded holes may accumulate with dirt and excessive Loctite. If this occurs, screws may not seat properly. Clean holes with light weight oil or diesel fuel using a small fiber brush. Wipe the holes clean with alcohol to remove all oil or diesel fuel and dirt. Clean with dry, oil-free, low-pressure air. After the bolt has been retorqued three times, replace with new bolt. If bolt is continuously loose, inspect taped thread in the light base flange for damage. If thread is damaged, contact ADB Airfield Solutions, Inc., Sales Department for field repair inserts kit.

5. Mounting and Connection

1. See Figure 3-2. For the L-852C-D applications. Note: Lamp number (1 or 2) is cast into the surface of the lamp/light channel. These numbers match with Input 1 and Input 2 (See Figure 3-3) cast into the inner cover just above the L-823 entrance. These numbers are used when a bi-directional fixture has two cordset for the switchable feature.

Mounting Bolt Hole, (6) Holes 60 degrees apart for mounting directly to a FAA L-858B deep light base.

Lamp/Light Channel Marker Number ID

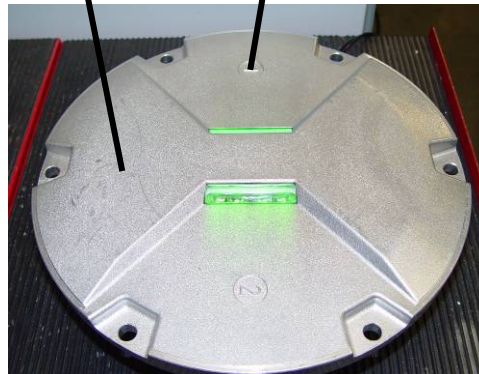


Figure 3-2 Mounting FAA L852C-D



Lamp/Light Channel Marker Input Number

Figure 3-3 Input ID Marking

Section 4

Maintenance

1. Introduction

This section provides maintenance information and procedures for the F-Range light fixtures.

2. Maintenance Schedule

Service life depends upon the entire assembly being waterproof. All surfaces must be clean, dry and free of all foreign matter and all bolts must be properly tightened if the light fixture is to operate for extended periods without requiring maintenance. See FAA AC 150/5340-26 for additional maintenance instructions.

To keep the F-Range light fixtures operating efficiently, follow a preventive maintenance schedule. Refer to Table 4-1. Refer to FAA AC 150/5340-26 for more detailed information.

Table 4-1 F-Range Light Fixture Maintenance

Interval	Check	Action
Daily	Low light output	<ol style="list-style-type: none"> 1. Clean outer surface of prism if dirty. Refer to <i>Cleaning Light Channel and Prism</i> in this section. 2. Check for misalignment or presence of moisture in fixture.
Weekly	For obstruction in light output channel	Clean channel and prism surface. Refer to <i>Cleaning Light Channel and Prism</i> in this section.
Monthly (or more frequently during rainy seasons)	For presence of moisture or water (visual inspection for condensation on inner side of prisms)	<ol style="list-style-type: none"> 1. Open up light assembly. 2. Clean, dry, and inspect light assembly. 3. Replace cover/inner cover gasket and other parts found defective. 4. Replace LED assembly. Refer to <i>Replacing LED Assembly</i> in the <i>Repair</i> section.
Bimonthly	Torque on hold-down bolts	Torque six bolts holding fixture to base. Refer to <i>Retorquing Mounting Bolts</i> in this section. Refer also to <i>Installation on L-828B Base</i> in the <i>Installation</i> section.
Semi-annually (or more frequently during rainy seasons)	For six inches (152 mm) of water in the L-868B base	<ol style="list-style-type: none"> 1. Pump water from base. 2. Remove and inspect light for water damage. Refer to <i>Removing L-868 Base Water</i> in this section.
After snow removal	For damaged light fixtures	<ol style="list-style-type: none"> 1. Replace damaged fixtures. 2. Use a power broom for snow removal, if practical. 3. Follow recommended snow removal techniques described in AC 150/5200-23.

3. Maintenance Procedures

This subsection describes the following maintenance procedures:

- Cleaning light channel and prism
- Retorquing mounting bolts
- Removing L-868 base water
- Lifting inset unit off of the L868 base
NOTE: Before replacing inset
- Testing for leaks

Cleaning Light Channel and Prism

To clean the light channel and prism, perform the following procedure:

1. See Figure 2-1. Use a suitable fiber brush to remove all accumulated debris from the light channel (4).
2. Clean the outer surface of the prism (3) using liquid glass cleaner. If the prism is coated with a substance impervious to the cleaner, apply a suitable solvent sparingly with a wad of cotton or a patch of cloth. After the solvent has acted, remove the softened coating with a clean piece of cotton or cloth. Dry the prism with gently, dry, oil-free compressed air at a pressure no greater than 10 psi (69 K_{Nt}/m²) to evaporate or remove all remaining cleaner.

Retorquing Mounting Bolts

To retorquer mounting bolts, perform the following procedure:

1. If thread locking adhesive is used, apply only one drop of Grade AV Loctite® to each of the six 3/8-inch (9.525-mm-) diameter mounting bolts. Torque the bolts to 185 ±5 inch-pounds (20.902 ± 0.565 Nt-m).

NOTE: When Grade AV Loctite® is used, the bolts must be torqued to 185 ±5 inch-pounds.



CAUTION: Remove all debris found on all mounting surfaces of the light base or associated spacers, flange rings, etc., before installing the light fixture. Failure to remove debris can induce damaging stresses in the light fixture when the mounting bolts are torqued and the fixture is subjected to aircraft roll over loads.

Retorquing Mounting Bolts
(contd.)

2. If using an anti-seize lubricate, instead of threadlocking adhesive, on the threads check with the manufacturer of the anti-seize lubricate to find out what the **Lubricity "k" factor** is for the compound that you are going to be using and then refer to Table 4-2.

Table 4-2 Determining Torque Based on "K" Factor

If "k" factor is...	Then recommended torque is...
0.13	141/151 In-Lbs
0.14	152/162 In-Lbs
0.15	164/173 In-Lbs
0.16	175/180 In-Lbs
0.17	180/190 In-Lbs
0.18	197/207 In-Lbs

NOTE: Always torque the bolts across the corners. See Figure 4-1. To torque the outer bolts across corners, tighten bolts in noted sequence: #1 and #4, then #2 and #5, then #3 and #6.

NOTE: Applying more than one drop of Loctite to the bolt threads will create future difficulty in removal of the bolts.

NOTE: After several re-lampings, threaded holes may accumulate with dirt and excessive Loctite. If this occurs, screws may not seat properly. Clean holes with light weight oil or diesel fuel using a small fiber brush. Wipe the holes clean with alcohol to remove all oil or diesel fuel and dirt. Clean with dry, oil-free, low-pressure air. After the bolt has been retorqued three times, replace with new bolt. If bolt is continuously loose, inspect taped thread in the light base flange for damage. If the thread in the light base is damaged, contact ADB Airfield Solutions, Inc., Sales Department for field repair inserts kit.

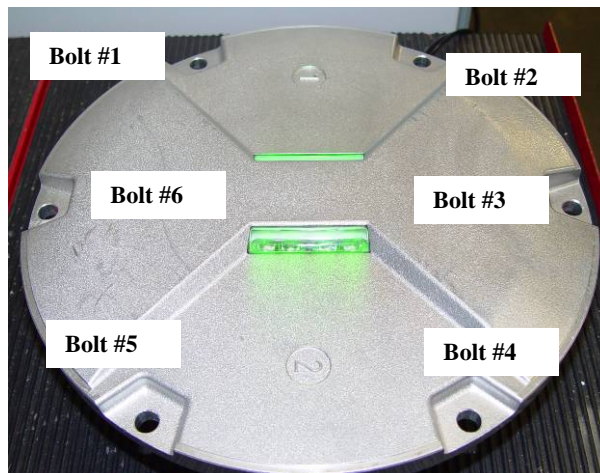


Figure 4-1 Torquing Mounting Bolts

Removing L-868 Base Water



Turn off the circuit when checking water level.

Check the water level in the L-868B base on a regular schedule. If more than six inches (152.4 mm) of water in the light base is found, pump the water from the base and remove and inspect the entire light assembly for water damage. Cover the L-868B base with the appropriate steel cover plate after removing the light assembly.



Water entering the L-868 base can become a serious problem, since freezing water can rupture the base.

Lifting Optical Unit Out of Base

To lift the optical unit from the light base, perform the following procedure:

1. Remove both fixing screws and washers or self locking nuts.
2. See Figure 3-2 in the *Installation* section and Figure 2-1 in the *Description* section. To lift the inset screw $\frac{1}{2}$ -13 Eye Bolt into each of the $\frac{1}{2}$ tapped holes located (180° apart) in the cover. Align the two eyebolts and then insert a $\frac{3}{8}$ diameter bar through the eyebolts and lift the inset fixture off of the light base.
3. Disconnect the light fixture wires from the power wires coming from the transformer(s).
4. Mount a serviced or new light fixture as described in *Installation on L-868 Base* in the *Installation* section.

NOTE: Torque the six screws to 20.902 ± 0.565 Nt-m (185 ± 5 inch-pounds).

5. Take the inset fixture unit back to the maintenance base where it can be serviced entirely.



Never hold the light fixture by the L-823 cordset leads. This may damage the insulation, break the waterproof seal, and cause insulation faults and water leakage.

Testing for Leaks

To test for leaks, perform the following procedure:

1. See Figure 6-1 in the *Repair* section. Remove pressure relief screw (1).
2. See Figure 4-1. Screw pressure test fitting (1) into the pressure relief port (the opening created when the pressure relief screw is removed). Screw fitting hand-tight.

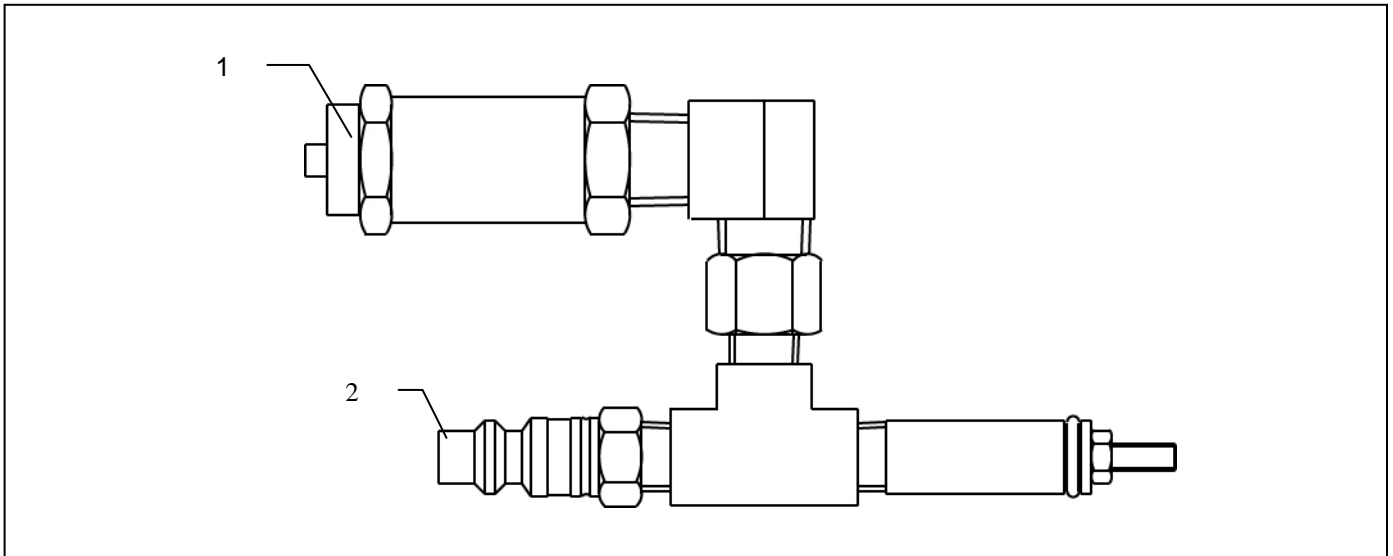


Figure 4-2 Pressure Test Fitting Assembly

1. Pressure Test Fitting
2. Lock Hose Plug Sleeve

3. Attach the shop airline to the lock hose plug sleeve (2).
4. Pressurize to 20 psi.
5. Submerge the pressure test fitting in a water tank. Check for air bubbles. Air bubbles indicate a leak.
6. Locate the leak source, depressurize, replace the seal that is leaking, reassemble, and retest by following steps 4 and 5.
7. See Figure 6-1 in the *Repair* section. If leak is fixed, depressurize and reinstall the pressure release screw (1).

Section 5

Troubleshooting



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



WARNING: De-energize the circuit and lock out the circuit or regulator so that the circuit cannot be energized by remote means before attempting to service the fixture.

1. Introduction

This section contains troubleshooting information. This information covers only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local ADB Airfield Solutions representative for help.

Problem		Page
1.	LED not energizing	5-2
2.	Weak light output	5-2
3.	Light beam distorted	5-2
4.	Short LED life	5-2
5.	Blinking or flashing LED	5-3

2. Troubleshooting Procedures

Troubleshooting procedures for the F-Range inset lights are contained here.

NOTE: The cordset should never be replaced because of problems disconnecting the cordset from the PCB. If the cordset needs to be replaced, then the entire inner cover assembly must be replaced.

Problem	Possible Cause	Corrective Action
1. LED not energizing	<p>LEDs defective</p> <p>PCB defective</p> <p>Moisture inside assembly causing current leakage</p> <p>No connection of primary loop. Defective isolation transformer or secondary wiring</p>	<p>Replace LED assembly. Refer to <i>Replacing LED Assembly</i> in the <i>Repair</i> section.</p> <p>Replace the complete inner cover.</p> <p>Open up light assembly. Clean, dry, and inspect light assembly. Replace O-ring.</p> <p>Check transformer output current with true RMS ammeter.</p> <p>Check power line between the light fixture and the transformer, including connectors.</p>
2. Weak light output	<p>Partial short circuit in primary loop</p> <p>Defective isolation transformer</p> <p>Dirty prism</p> <p>Incorrect current to fixture</p>	<p>Check cable assembly.</p> <p>Replace transformer.</p> <p>Clean prism. Refer to <i>Cleaning Light Channel and Prism</i> in the <i>Maintenance</i> section.</p> <p>Check the current to the fixture to ensure it is within FAA specifications for the selected step. If not, adjust the CCR or repair circuit issues. Ensure that the isolation transformers have adequate capacity to run the fixture, especially if using arctic kit.</p>
3. Light beam distorted	<p>Broken or damaged prism/cover</p>	<p>Replace prism or entire fixture. Refer to <i>Replacing Prism and Prism Gasket</i> in the <i>Repair</i> section.</p>

4. Short LED life	<p>Current too high</p>	<p>Check output current of isolating transformer at full brightness. Current should not exceed 6.7 A.</p> <p>Replace transformer if defective; if not, adjust CCR output current.</p>
--------------------------	-------------------------	---

	Moisture in lighting fixture	<ol style="list-style-type: none"> 1. Open light assembly. Refer to <i>Opening optical assembly</i> in the <i>Repair</i> section. 2. Check for cause of leakage (dirty or damaged seal mating surfaces, defective seals, cracked or broken prism, loose screws or damaged wire insulation). 3. Clean, dry, inspect, or replace damaged components.
5. Flashing LED	<p>Incorrect current</p> <p>Underloaded CCR</p>	<p>Check the current to the fixture to ensure it is within FAA specifications for the selected step. If not, adjust the CCR or repair circuit issues. Ensure that the isolation transformers have adequate capacity to run the fixture, especially if using arctic kit.</p> <p>For Thyristor controlled CCRs, ensure that the CCR has a load at least 25% of maximum output. If not, reduce the output taps to a lower maximum voltage.</p>

Section 6

Repair

1. Introduction

This section describes procedures for repairing and replacing parts in the FAA L-852 inset fixture. It includes opening the optical assembly, and replacing the film disc cutout assembly, LED assembly, and prism and prism gasket. It also describes how to close the optical assembly.

NOTE: If the cordset needs servicing, contact the ADB Airfield Solutions Sales department.

2. Opening Assembly

To open the optical assembly, perform the following procedure:

1. Turn the light unit upside-down.
2. See Figure 6-1. Remove the pressure release screw

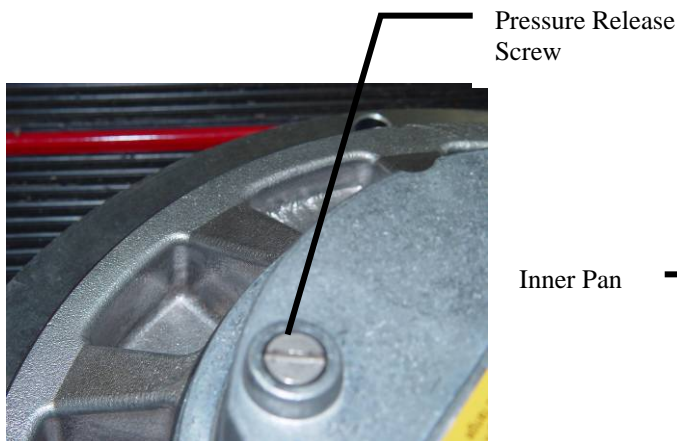


Figure 6-1 Removing Pressure Release Screw

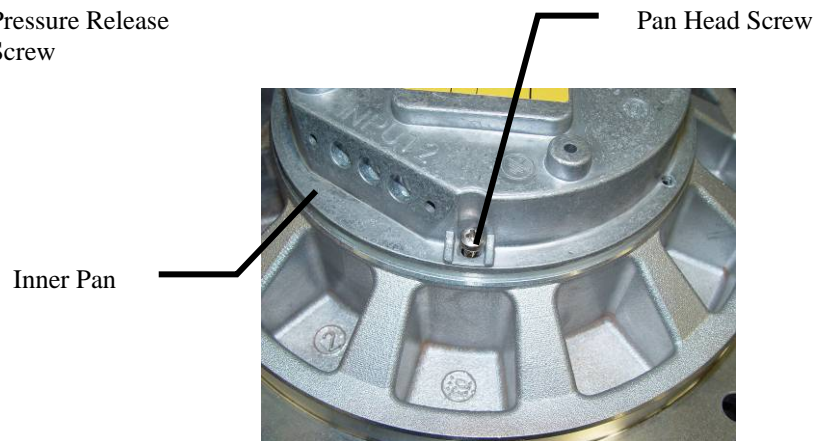


Figure 6-2 Removing Inner Pan Screws

2. Opening Light Assembly

(contd.)

3. Remove the three Phillips pan head screws shown in Figure 6-2. The use of an impact driver may be required to unlock the screws.
4. Carefully lift off the inner pan from the cover, taking care not to damage the flat-wire connections between the main PCB and the LED assemblies.

NOTE: If the inner pan does not separate from the cover assembly, use the screwdriver flat blade to separate it.



CAUTION: Be careful. Do not pull on the flat cable when you lift the inner pan. This might damage the connections! Disconnect the connectors before laying the inner pan on the table.

5. See Figure 6-3. Disconnect the LED assemblies from the main PCB by pulling out the connectors J1 and J3 (J3 is used only in a bi-directional light). Use a small flat screw driver to separate the connector from the base.



CAUTION: Do not pull the flat cable to disconnect because the cable might be pulled out of the connector. Always use a small screw driver to lift/pry off disconnect from the PCB.

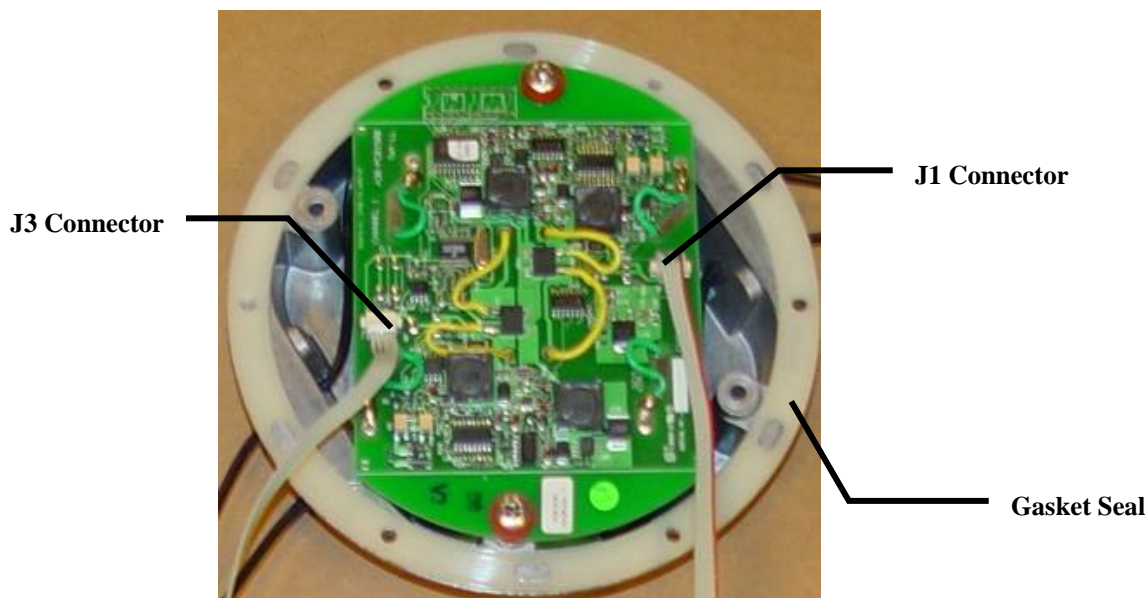


Figure 6-3 Disconnecting LED Assemblies

2. Opening Light Assembly*(contd.)*

6. Remove the inner pan from the cover.

NOTE: See Figure 6-3. Always replace the cover/inner cover gasket and the 3 pan head screws (C2) with washers by new ones when a light is opened and closed again. This guarantees light fixture water tightness.

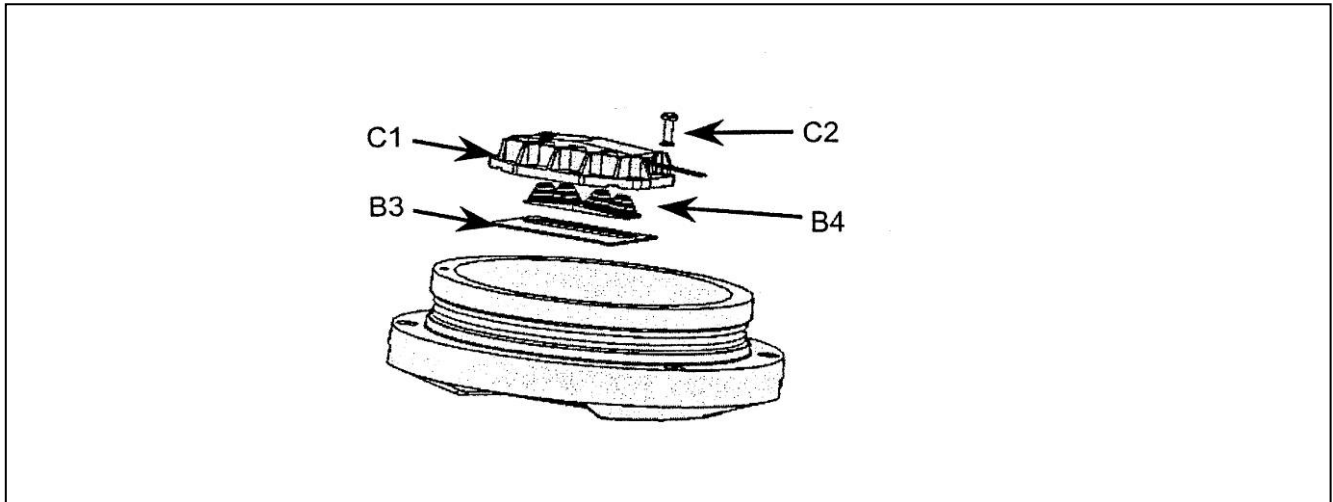


Figure 6-4 Replacing LED Assembly

3. Replacing LED Assembly



WARNING: Turn off the circuit before replacing LEDs. Failure to observe this warning may result in personal injury, death, or equipment damage.

Refer to Table 6-1 and 6-2 and Numerical Parts List for parts referred to in Figures 6-4 and 6-5.

Table 6-1 Parts List for Replacing LED Assembly

Item	Description	Part Number	Quantity	Note
C2	Phillips pan head screws	64A0972-14	8	
C1	LED assembly w/o Arctic Kit		1	
	LED assembly, green	1413.05.100	1 or 2	
	LED assembly, yellow	1413.05.010	1 or 2	
C1	LED assembly w/ Arctic Kit			A
	LED assembly, green	62A2161-2	1	
	LED assembly, yellow	62A2161-1	1	
B4	Collimator	4071.95.760	1	B
B3	Flat seal	4071.96.150	1	C

Note A: The LED module has been notched to clear the Arctic Kit thermostat
 Note B: The collimator is included in the LED Assembly and should not need to be replaced unless damaged.
 Note C: The Flat seal is included in the LED Assembly and should not need to be replaced unless it has been damaged.

To replace the LED assembly, perform the following procedure:

1. Open the light assembly. Refer to *Opening Light Assembly* in this section.
2. See Figure 6-3. Unscrew the eight Phillips pan head screws (C2).
3. Remove the LED assembly.
4. Replace with new LED assembly.

NOTE: Make sure the new LED assembly is the correct color. The color is indicated by a colored ring around the flat cable:

- no ring: green LED assembly
- yellow ring: yellow LED assembly



CAUTION: Replace the flat seal only if it has been damaged.

7. Install the new LED assembly and re-install the Phillips pan head screws (C2) with washers and tighten them. Refer to *Retorquing Mounting Bolts* in the *Maintenance* section.

NOTE: If both LED assemblies of a straight bi-directional light must be replaced together, it is easier to install both assemblies in the cover before starting tightening the screws (C2).

8. Close the light fixture. Refer to *Closing Light Fixture* in this section.

4. Replacing Prism and Prism Gasket

Refer to Table 6-4 for parts referred to in Figure 6-8.

Table 6-2 Parts List for Replacing Prism and Prism Gasket

Item	Description	Part Number	Quantity	Note
C2	Phillips pan head screws	64A0972-14	3	
	Prism, L-852D curved – Green Only	1428.00.700		A
	Prism, L-852C, straight – Green & Yellow	1428.00.710		
	Prism, L852D , curved – Yellow Only	1428.00.720		
B1	Prism gasket	4071.94.250		
Note A	See Fig 7-8, 7-9, and 7-10 in Section 7 for distinguishing features of each of the prisms			

4. Replacing Prism and Prism Gasket *(contd.)*

Replace the prism if it is broken or its surface is badly pitted or scarred.

To replace the prism and prism gasket, perform the following procedure:

1. Open the light assembly. Refer to *Opening Light Assembly* in this section.
2. See Figure 6-4. Unscrew the eight Phillips pan head screws (C2).

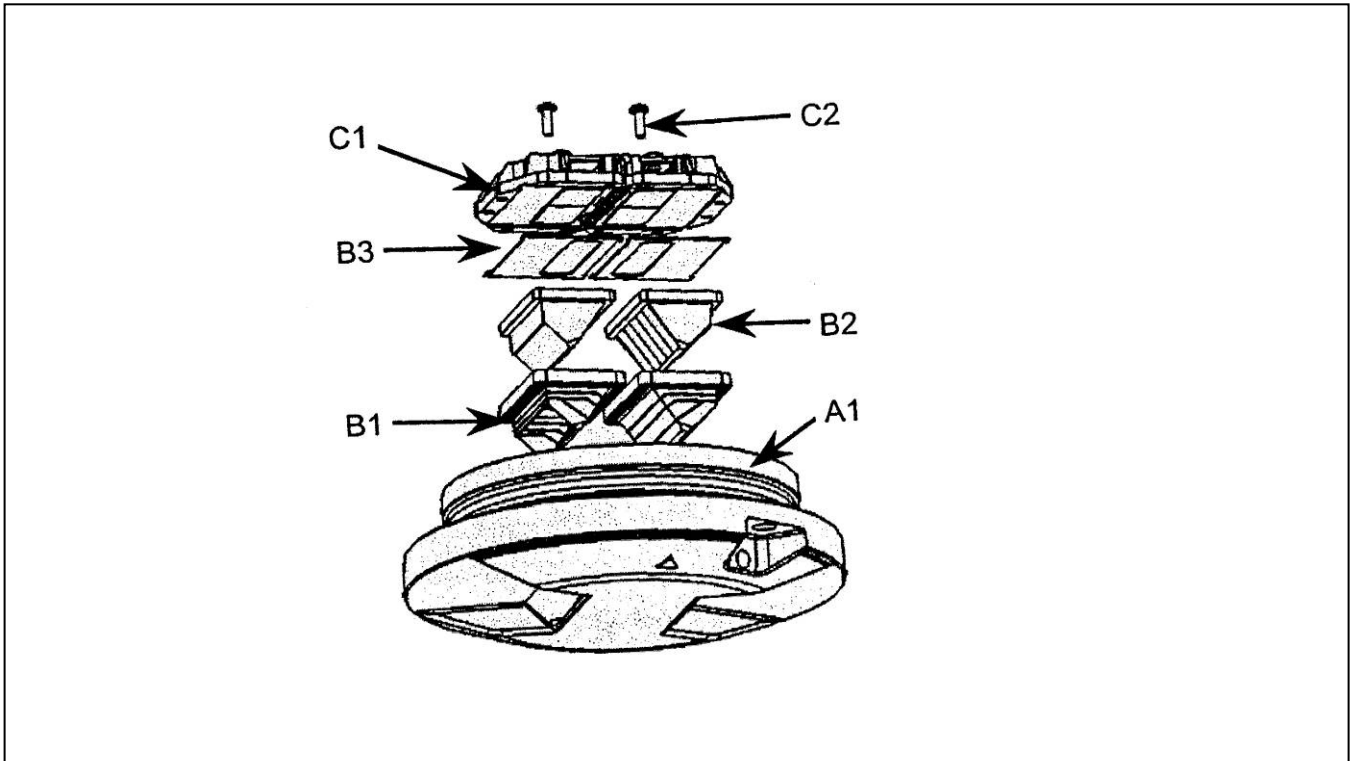


Figure 6-2 Replacing Prism and Prism Gasket

3. Remove the LED assembly (C1). Note: the collimator (B4), and the flat seal (B3) are a part of the LED Assembly (C1).
4. Push the prism (B2) with the prism gasket (B1) toward the inside of the cover (A1).
5. Clean the prism recess in the cover thoroughly with any effective solvent.

4. Replacing Prism and Prism Gasket *(contd.)*



CAUTION: If collimator or the flat seal have been damaged replace them with new parts.

5. Using a small brush, apply a thin layer of MOLYKOTE lubricant Part number 67A0095 in the prism recess.
6. Before replacing the prism verify that you are reinstalling the correct prism. See Figures 7-8, 7-9, and 7-10 to identify the prism.
7. Place a new prism gasket (B1) over the prism (B2) and gently push the prism/gasket assembly in the prism recess from the inside. Clean the inner surface of the prism.
8. Install the LED assembly over the prism. Re-install the Phillips pan head screws (C2) with washers and tighten them. Refer to *Retorquing Mounting Bolts* in the *Maintenance* section.

NOTE: If the flat seal has been damaged replace the seal.

9. Close the light fixture. Refer to *Closing Light Fixture* in this section.

5. Closing and Testing Light Assembly

To close and test the light assembly, perform the following procedure:

1. See Figure 6-7. Turn the cover (A1) upside down.

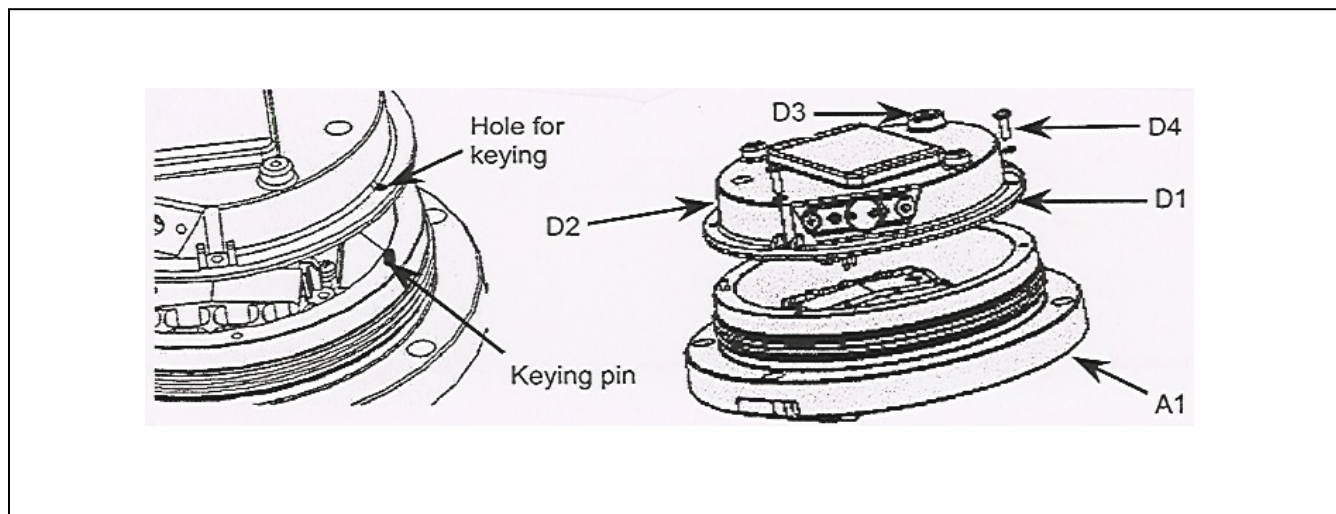


Figure 6-3 Closing Light Fixture

5. Replacing Arctic Kit

Note: Determine if failure is the thermostat or one or both of the heating elements. See parts list for top cover with the factory installed heating elements.



CAUTION

If the one or both of the Arctic Kit heating elements fail, the elements **can not** be replaced in the field. Return the top cover to the factory to be repaired or contact SAS sales dept and order a replacement top cover assembly. See numerical parts list table in Section 7.

If thermostat failed proceed as follows:

1. Disconnect the two thermostat leads from PCB disconnects.
2. Remove the two screws holding the thermostat in place and then desolder the other thermostat leads. Replace the thermostat and re-solder the leads and then install the new thermostat. See Figure XX.

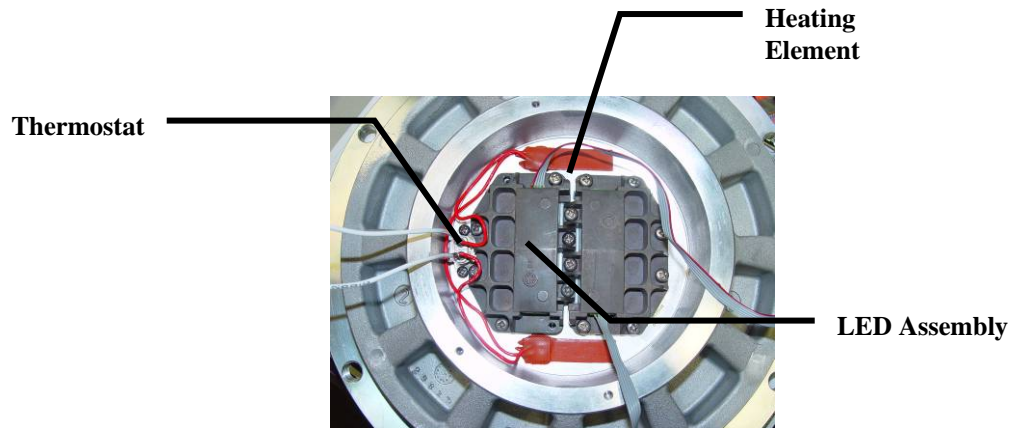


Fig 6-4

3. Before installing the new thermostat, put a thin coat of ThermalCote thermal joint compound (67A0033) on the face of the flange. Torque the screws to 10-12 in-lbs.

6. Closing and Testing Light Assembly

1. Make sure the contact surfaces of the cover and of the inner cover to the gasket are clean.
2. Put a new cover/inner cover gasket (D1) over the inner cover (D2).
3. Make sure that the pressure release screw (D3) is loose or removed.
4. Connect the LED assemblies to the main PCB. For bi-directional lights, each LED assembly is connected to the connector (J or J3) just below it.
5. Gently put the inner cover (D2) on top of the cover (A1), taking into account the keying pin between both parts. Make sure that all components in the cover and the inner cover such as the cover/inner cover gasket (D1) are correctly positioned and that the flat wires do not get damaged between (A1) and inner cover (D2).
6. Press the inner cover (D2) on the cover (A1) and secure with new Phillips pan head screws (D4) with washers. Refer to *Retorqing Mounting Bolts* in the *Maintenance* section.
7. Check the electrical insulation from two-pole plug to frame by means of a 500 V insulation tester. Apply an AC current not exceeding 6.6 A on the two-pole plug and observe normal operation of the LEDs.



CAUTION: The electronic circuit is designed to be fed from a regulated AC current generator only, for example, a constant current regulator. Do not use a voltage generator as this might damage the electronic components or fail to energize the light.

9. Check the water proofness of the fixture by applying air pressure of 20 psi using the Pressure Test Assembly, 44A6104, through the pressure port found on the bottom of the Inner Cover Assembly. See Fig 7-4. While pressure is applied, immerse the light fixture for one minute in water and look carefully for any air bubbles emanating from the light fixture. Dry the fixture and remove it from the air hose. If leaks are found disassembly fixture and replace leaking seal.
10. Install and tighten the pressure release screw (D3).

Section 7

Parts

1. Introduction

To order parts, call ADB Airfield Solutions Customer Service or your local representative. Use this four-column parts list, and the accompanying illustration, to describe and locate parts correctly.

2. Using the Illustrated Parts List

This subsection describes how to use the illustrated parts list covered later in this section. It does not provide the actual parts list.

The Item column numbers correspond to the numbers that identify parts in illustrations following each parts list. NS (not shown) indicates that a listed part is not illustrated.

The Description column gives the part name, as well as its dimensions and other characteristics when appropriate. Indentions show the relationships between assemblies, subassemblies, and parts.

The Part Number column gives the ADB Airfield Solutions part number.

Part Number	Description	Notes
xxxxxxx	Assembly	A
xxxxxxx	Part ()	
xxxxxxx	Part or Assembly	
xxxxxxx Note A:	Assembly	

Unless items in description column are marked with () all items are 1 per unit, assembly, or subassembly. The code AR (As Required) is used if the part number is a bulk item ordered in quantities or if the quantity per assembly depends on the product version or model.

The Note column contains letters that refer to notes at the end of each parts list. Notes contain special ordering or product/part version information.

**3. F-Range Low Profile Light
Fixture Ordering Code**

Figure 7-1 shows how to determine the part number for a particular L-852C-D F-Range light fixture.

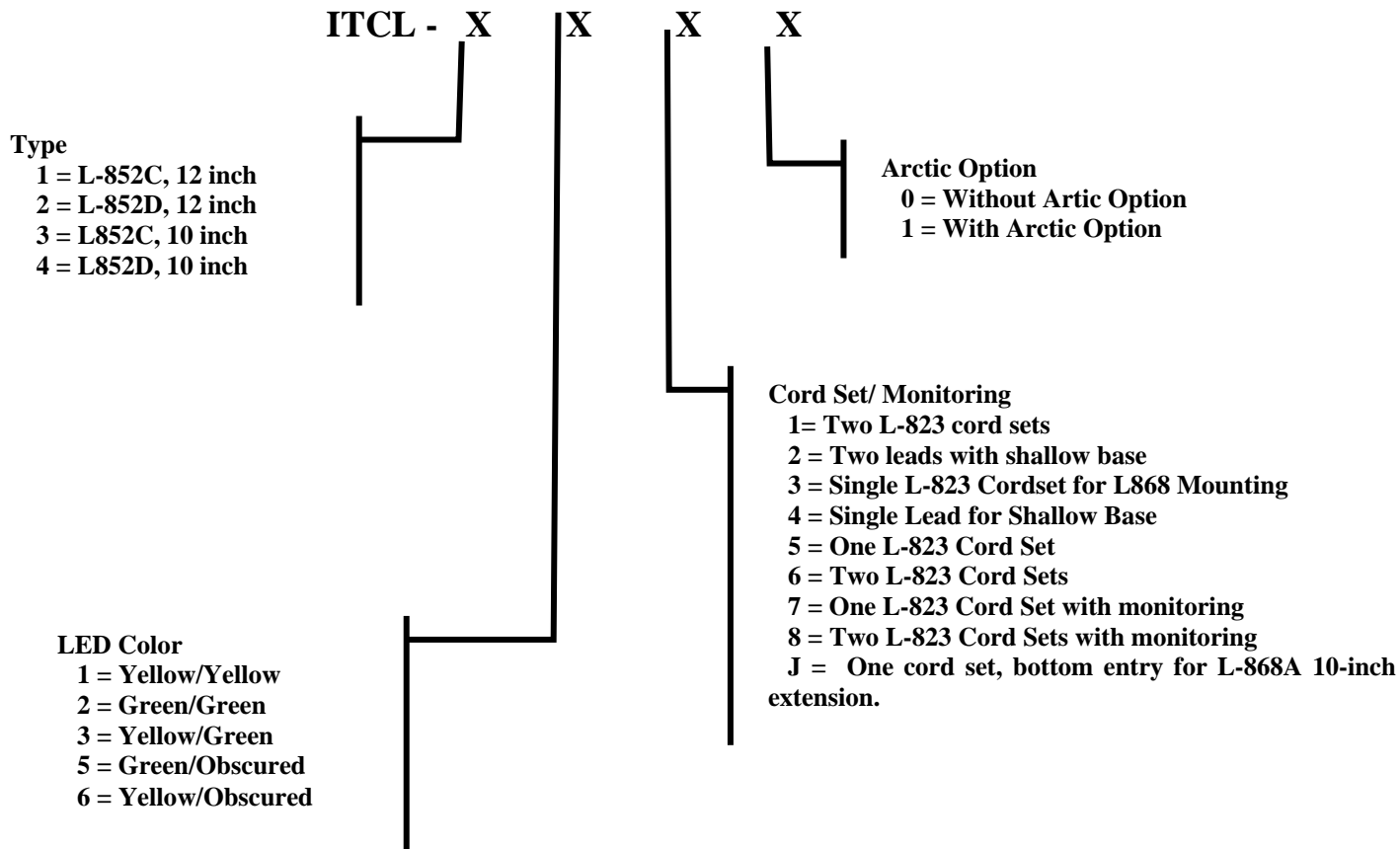
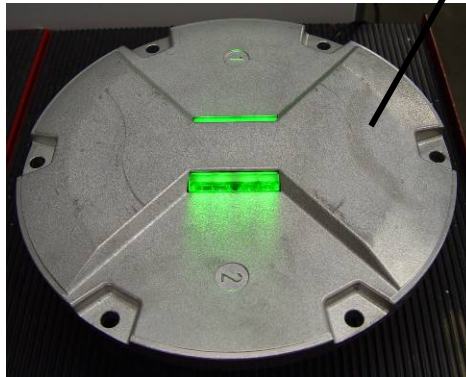


Figure 7-1 L-852 C-D ITCL, Style 3, Inset Light Part Numbers

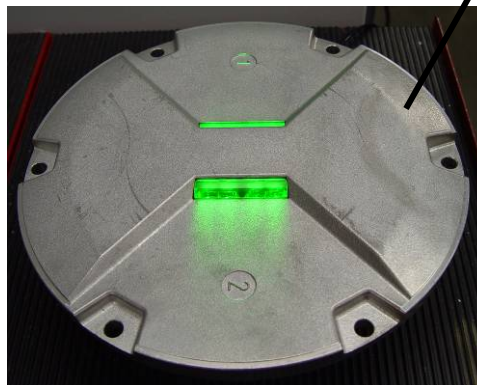
**4. F-Range L-852A-D Light
Fixture Parts**

See Figure 7-2 thru 7-X. See Numerical and Spare Parts List for full description.



- L852C Assembly**
- ITCL-1230**
- ITCL-1231**
- ITCL-1240**
- ITCL-1330**
- ITCL-1331**
- ITCL-1530**
- ITCL-1630**

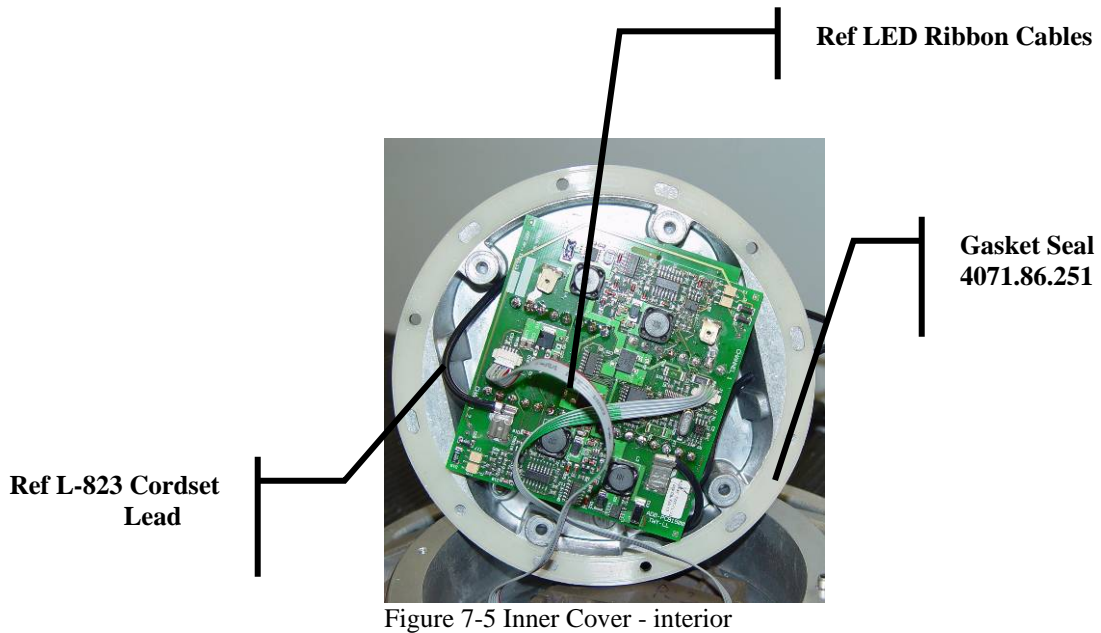
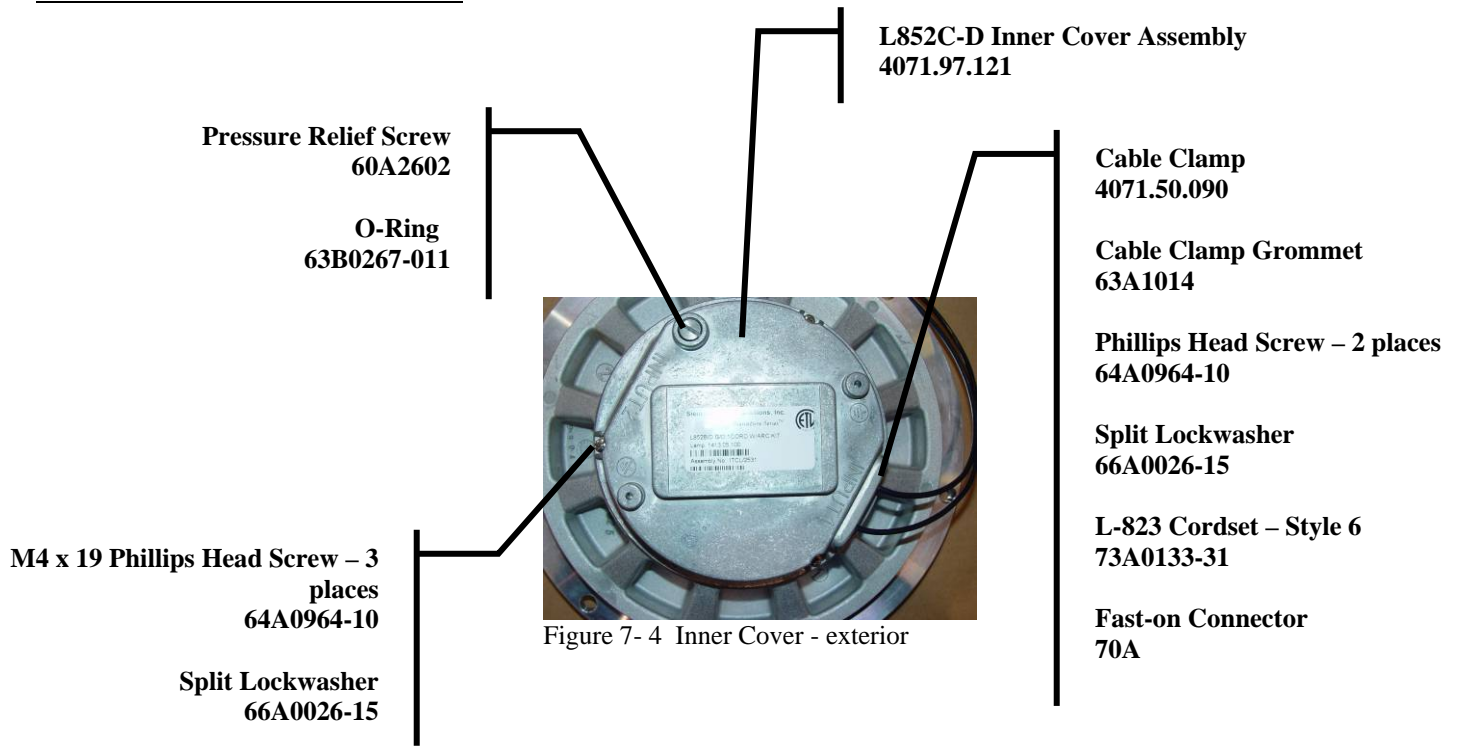
Figure 7-2 L852C



- L852D Assembly**
- ITCL-2230**
- ITCL-2231**
- ITCL-2240**
- ITCL-2330**
- ITCL-2331**
- ITCL-2530**
- ITCL-2531**
- ITCL-2630**
- ITCL-2631**

Figure 7-3 L852D

**F-Range L-852C-D Light
Fixture Parts – cont'd**

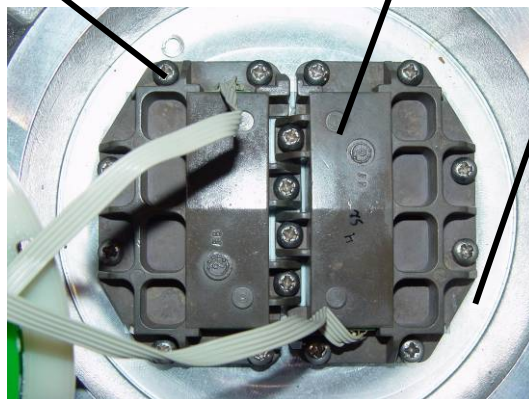


NOTE: The Inner cover comes as a complete assembly including the L823 Cordset. There are no repairable/replaceable parts in the assembly except the gasket seal, pressure screw, and the L-823 Cordset...

**F-Range L-852C-D Light
Fixture Parts – cont'd**

**M4 x 14 Phillips Head Screw – 8
places each LED Assembly
64A0964-14**

**Split Lockwasher
8 places each LED Assembly
66A0026-15**



**L852 LED Green Assembly
1413.05.100**

**L852 LED Yellow Assembly
1413.05.010**

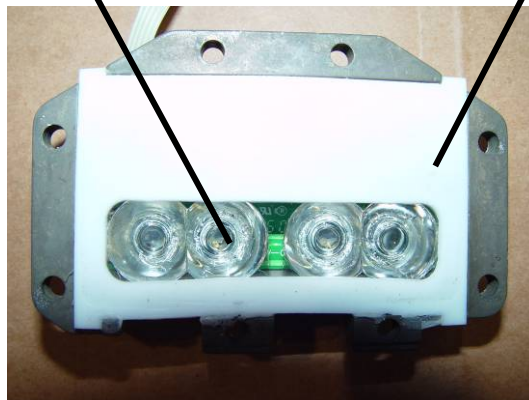
Top Cover w/o heater

62A2160-1 Unidirectional

62A2160-2 Bi-directional

Figure 7- 6 LED Assembly w/o Arctic Kit

Ref LED Collimator



**Gasket
4071.96.150**

Figure 7-7 LED Assembly Gasket

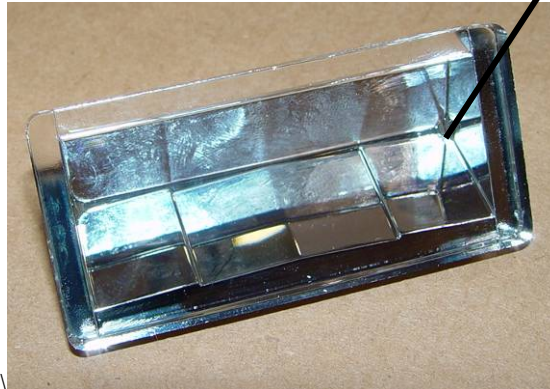
NOTE: The LED Assembly is typically purchased as a complete assembly although the flat gasket can be replaced if damaged or lost. The purpose of the flat gasket is to provide a cushion between the glass prism and the LED assembly, and prevent the collimator and LED strip from falling out of the LED module assembly when it is being bolted to the top cover. Figure 6-7 and Numerical Parts list table for LED Assembly part numbers.

**F-Range L-852C-D Light
Fixture Parts – *cont'd***



**Prism – L852D Green
Wide Only
1428.00.700
7 Prismatic Areas w/
LIGHT GRAY coating**

Figure 7-8 L852D Prism



**Prism – L852C Green
and Yellow
1428.00.710
4 Prismatic Areas w/
LIGHT GRAY Coating**

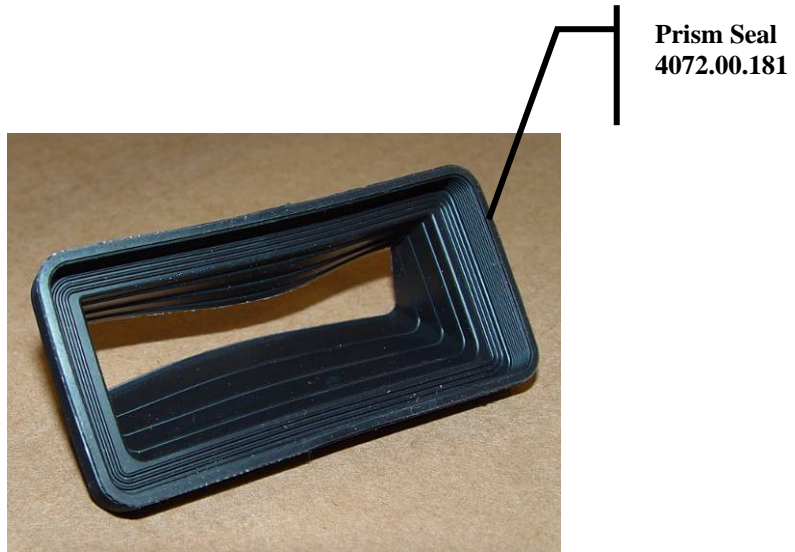
Figure 7-9 L852C Prism



**Prism – L852D Yellow
Wide Only
1428.00.720
7 Prismatic Areas w/DARK
GRAY coating**

Figure 7-10 L852D Prism

**F-Range L-852C-D Light
Fixture Parts – *cont'd***

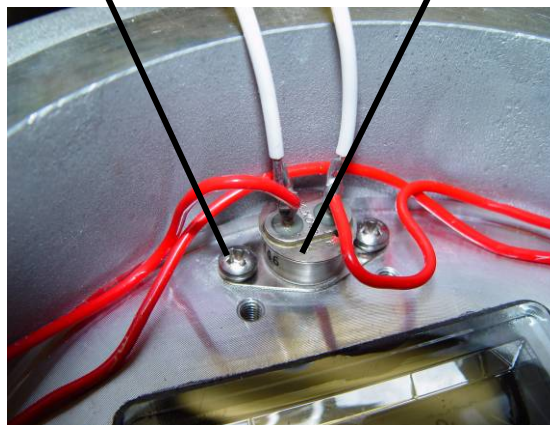


**Prism Seal
4072.00.181**

Figure 7-11 L852A-D Prism Seal

#6-32 x .25 Phillips Pan
Head Screw 64A0198-4

#6 Split Lockwasher
66A0026-11



**Arctic Kit Thermostat
54A0017-8060**

**Thermal Joint Compound
67A0033**

Figure 7-12 Arctic Kit Thermostat

L852 LED Green Assembly
Arctic Kit side
62A2161-2

L852 LED Yellow Assembly
Arctic Kit Side
62A2161-1

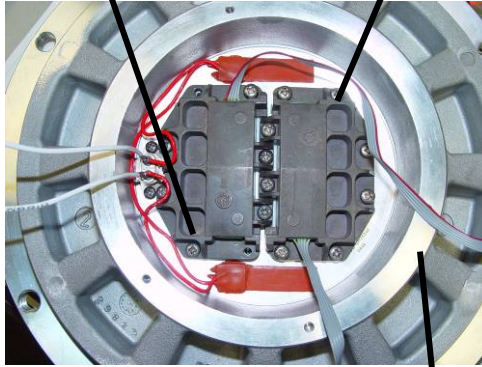


Fig 7-13 Arctic Kit LED Assemblies

L852 LED Green Assembly
1413.05.100

L852 LED Yellow Assembly
1413.05.010

L852 Top Cover w/heater
44A6463-1 Unidirectional
44A6463-2 Bi-directional

Note: The LED Assembly used on the side where the Arctic Kit Thermostat is located uses a notched- out LED cover to fit behind the thermostat. See Numerical Parts List for part number and descriptions.

5. Numerical Parts List and Recommended Spare Parts

Numerical Parts List and Recommended Spare Parts
See Ref Figures listed.

Item Part No.	Ref Fig No.	Description	Notes
ITCL-1230	7-2	L-852C green/green 1 L-823 cordset Inset Assembly	A,B
ITCL-1231		L-852C green/green 1 L-823 cordset Inset Assembly W/Arctic Kit	A,B
ITCL-1240		L-852C green/green 1 L-823 cordset Inset Assembly W/Shallow Base	A,B
ITCL-1330		L-852C yellow/green 1 L-823 cordset Inset Assembly	A,B
ITCL-1331		L-852C yellow/green 1 L-823 cordset Inset Assembly W/Arctic Kit	A,B
ITCL-1530		L-852C green/obscured 1 L-823 cordset Inset Assembly	A,B
ITCL-1630		L-852C yellow/obscured 1 L-823 cordset Inset Assembly	A,B
ITCL-2230		7-3	L-852D green/green 1 L-823 cordset Inset Assembly
ITCL-2231	L-852D green/green 1 L-823 cordset Inset Assembly W/Arctic Kit		A,B
ITCL-2240	L-852D green/green 1 L-823 cordset Inset Assembly W/Shallow Base		A,B
ITCL-2330	L-852D yellow/green 1 L-823 cordset Inset Assembly		A,B
ITCL-2331	L-852D yellow/green 1 L-823 cordset Inset Assembly W/Arctic Kit		A,B
ITCL-2530	L-852D green/obscured 1 L-823 cordset Inset Assembly		A,B
ITCL-2531	L-852D green/obscured 1 L-823 cordset Inset Assembly W/Arctic Kit		A,B
ITCL-2630	L-852D yellow/obscured 1 L-823 cordset Inset Assembly		A,B
ITCL-2631	L-852D yellow/obscured 1 L-823 cordset Inset Assembly W/Arctic Kit		A,B
44D0465-1	NS	Shallow Base Assembly	A,B
44A6104	4-2	Pressure Test Assembly	
Notes: A = Purchase as complete assembly only B = Recommended Spare Part NS = Not Shown			

**5. Numerical Parts List and
Recommended Spare Parts –
cont'd**

Item Part No.	Ref Fig No.	Description	Notes
44A6463-1	7-13	ITCL Top Cover Assembly W/Arctic Kit – 1 window (Unidirectional)	B
44A6463-2	7-13	ITCL Top Cover Assembly W/Arctic Kit – 2 window (Bidirectional)	B
54A0017-8060	7-12	Arctic Kit Thermostat	B
60A2602	7-4	Pressure release screw	B
62A2160-1	7-6	Top Cover w/o heaters Unidirectional	B
62A2160-2	7-6	Top Cover w/o heaters Bidirectional	B
62A2161-1	7-13	L852 LED Yellow Assembly for Arctic Kit side	A,B
62A2161-2	7-13	L852 LED Green Assembly for Arctic Kit side	A,B
63B0267-011	7-4	Pressure relief screw o-ring	B
63A1014	7-4	Grommet (2)	B
64A0198-4	7-12	#6-32 x .25 Lg Phillips Pan Head Screw (2)	B
64A0964-10	7-4	M4 X 19 Phillips Head Screw (3)	B
64A0964-14	7-6	M14 X 14 Phillips Head Screw (8)	B
66A0026-11	7-12	#6 Split Lockwasher (2)	B
66A0026-15	7-4 7-6 7-12	Split Lockwasher (3) (8) (2)	B
67A0033	7-12	Thermal Joint Compound – for Artic Kit Thermostat only	B
70A0329	7-4	Female Disconnect – Insulated (2)	B
73A0133-31	7-4	L-823 Cordset Style 6	B
1413.05.010	7-6 7-13	LED assembly, yellow (1 or 2)	A,B
1413.05.100	7-6 7-13	LED assembly, green (1 or 2)	A,B
1428.00.700	7-8	L-852D prism for green – wide only w/LIGHT GRAY coating (1 or 2)	A,B
Notes: A = Purchase as complete assembly only B = Recommended Spare Part NS = Not Shown			

**6. Numerical Parts List and
Recommended Spare Parts –
cont'd**

Item Part No.	Ref Fig No.	Description	Notes
1428.00.710	7-9	L-852C prism for green and yellow w/LIGHT GRAY coating (1 or 2)	B
1428.00.720	7-10	L-852D prism for yellow – wide only w/DARK GRAY coating (1 or 2)	B
4071.50.090	7-4	F-Range Cable Clamp	B
4071.96.150	7-7	Flat seal – LED (2)	B
4071.86.251	7-5	Inner Cover (TLP) Gasket	B
4071.97.121	7-4	L852C-D Inner Cover Assembly	A,B
4071.95.760	7-7	Collimator (1 for a unidirectional, 2 for a Bidirectional)	B
4072.00.181	7-11	Prism seal (1 for a unidirectional, 2 for a Bidirectional)	B
64A0964-14	7-6	Screw, M4 x 14 DIN7985-Z-A2	B
66A0026-15	7-6	Lock washer, M4 DIN 127B-A2	B
Notes: A = Purchase as complete assembly only B = Recommended Spare Part NS = Not Shown			